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(Illustrated articles are marked with an asterisk.)

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POISON IVY AND ITS REMEDIES.

A correspondent asks: "Can you inform me by what characteristics I can determine the poisonous species of dogwood and ivy, and what simple remedy there is for their effect on the skin?"

Poisonous dogwood is a name improperly given in some parts of the United States to the rhus venenata, a species of poisonous sumach. It is sometimes called poison elder. It is a neat, graceful shrub growing from 6 to 18 feet high, and is found in swamps from Canada to Louisiana. The young shoots are purple or green clouded with purple, and marked by orange-colored dots which turn grayish; the leaves have 7 to 13 leaflets, which are dark green, pointed and entire on the margins; the greenish yellow flowers are in loose axillary panicles, and the greenish white fruit hangs in loose clusters on stems 6 to 8 inches long, and remains after the leaves have fallen; the juice is milky, and dries to a black varnish. This has poisonous qualities which are virulent. Its effect is an acute eczematous inflammation of the skin, often accompanied with much swelling.

The poison ivy or poison oak, in some places called mercury vine, the toxicodendron group of the botanists, includes two species with white or dun-colored berries in loose panicles and highly poisonous foliage. It has leaves of 3 leaflets, which are rhombic ovate, and variously notched, lobed, or even entire; its flowers are in loose slender axillary panicles; the smooth fruit is pale brown. It is found nearly all over the country, and especially in moist and shady places, and presents two forms, one erect and the other climbing. It clammers over rocks and fences, and by means of aerial rootlets ascends the trunks of the tallest trees, and adheres with great pertinacity. When wounded it exudes a milky juice, which becomes black on exposure to the air, and upon fabrics makes a stain indelible by all ordinary solvents. The leaves taken internally promote the secretions of the skin and kidneys. This plant is highly poisonous to some persons. Many can handle these plants without any unpleasant results, while others are seriously affected by touching them or even passing near them. The poisonous properties are due to a volatile acid, which has been called toxicodendric.

Many remedies are employed for poisoning by these plants, some of which will have beneficial effect on some persons, while on others have no effect at all. Water saturated with salt will often prove a cure, and at other times have no effect. The same may be said of sweet oil. There has been a remedy employed in some of the New England States that has been claimed to be effectual. It was this, the fat of the common black snake (basanion constrictor) rendered into oil and applied to the parts affected. A strong lye made from wood ashes has been beneficially used, and so has an application of iodide of potassium. Another remedy is to take the fresh bark of the witchhazel (Virginian hamamelis), boil and apply the liquor as hot as the patients can bear it. A decoction made of the rattlesnake weed (hieracium venosum) applied to the parts afflicted will in most instances afford relief. Another remedy is to take one pint of the bark of the spotted alder, add one quart of water, and boil down to one pint; wash the parts poisoned several times a day. This remedy is said not to be injurious. Another remedy is to take the leaves of the poisonous nightshade (belladonna), boil them in milk to a poultice, bind it on the poisoned parts, and renew as often as it gets dry. A solution of belladonna, say a teaspoonful to a tumbler of water, with which bathe the parts freely. This has been used with signal success. Extract of lobelia or a poultice made from the fresh leaves may be used, but the external use of the plant in excess may produce vomiting and symptoms of poisoning. It ought to be applied under the advice of a physician. Another remedy is to bathe parts with spirits of niter. If the blisters are broken, so as to allow the niter to penetrate the cuticle, a simple application may effect a cure. Apply several times daily. Another remedy is to take three or four drops of the medicinal remedy known as rhus toxicodendron, drink two or three times daily in half a glass of water.

A NEW THEORY OF THE SOLAR SPECTRUM.

Since the invention of the spectroscopic, and its application to the study of the solar spectrum, the dark lines in the latter have been considered as absorption bands, caused by a layer of ignited metallic vapors, which surrounded the photosphere of the sun and changed the luminous and continuous spectrum of the photosphere into one covered with a multitude of dark lines, corresponding with the bright lines which we can produce by the combustion of various metallic substances.

Professor Henry Draper now comes forward with a series of experiments and deductions from the same, and proves that we must change this theory and form another conception, namely, that the solar spectrum consists also of bright lines and bands superposed on a less luminous background of continuous spectrum. Such a conception, combined with observations in regard to these bright lines, opens the way to the discovery of metalloids, sulphur, phosphorus, selenium, chlorine, bromine, iodine, fluorine, carbon, etc., the lines of which thus far have not been discovered in the solar spectrum. At the same time many of the dark lines, not thus far accounted for, may be due to being merely intervals between very bright lines.

That an incandescent gas in the solar atmosphere should not always be subject to the law, that it absorbs rays of the same refrangibility as it emits, may, at first sight, be difficult to understand. But the fact is, the substances thus far investigated in the sun have been metallic vapors, to which,

according to our present knowledge of chemistry, hydrogen also belongs. The metalloids may, and probably do, behave differently; the intensity of the light, from a great thickness of incandescent hydrogen, overpowers the effect of the photosphere; and instead of throwing a shadow of the rays of the same refrangibility, it increases the luminosity. It is as if a person looked through a yard thickness of ignited sodium vapor to a candle flame; he would see no dark sodium light, but a bright one; while looking at a very bright flame, he would see the comparatively dark sodium lines.

This would necessitate the supposition that some incandescent gases could give out more light than other substances in the sun, and why not? Has not Huggins shown that, in the outburst of the star r Coronae Borealis, hydrogen could give bright lines on a bright background of a similar nature to the background of the solar spectrum?

It is evident that bright lines on a less bright background make to ocular observations not so much impression upon the mind as the dark lines, and this is the simple reason that thus far they have been overlooked. If, however, the solar spectrum is photographed, such lines become very prominent; and the photograph being a permanent record, they may be easily compared with bright lines photographed from other spectra, such as those of air, oxygen, nitrogen, carbonic acid, etc., illuminated by means of the electric spark.

This is what Professor Henry Draper has been doing, and we call attention to the following article containing an account of the manner in which he demonstrated the presence of oxygen in the solar photosphere.

Fraunhofer who, about one century ago, first discovered the dark lines of the spectrum, which at the present day are named after him, also discovered that these lines are different when the light of some of the prominent fixed stars is investigated; and Berzelius, in remarking this, said in the beginning of this century that the study of these lines would at some future day lead us to the knowledge of the cause of the development of light in the heavenly bodies. This was a genuine prophecy, of which the world now begins to see the realization.

DISCOVERY OF OXYGEN IN THE SUN BY PHOTOGRAPHY.

Professor Henry Draper has announced the discovery of a series of bright lines or bands in the photograph of the solar spectrum, which correspond exactly with the principal bright lines or bands seen in photographs obtained by means of electric illumination in the spectrum of oxygen.

He has, in the American Journal of Science and Arts, published a paper and illustrated it with a photograph, in which he shows the perfect coincidence of certain bright lines. The photograph contains in its upper half the solar spectrum, and in its lower half the spectrum of air obtained by passing the spark of a Gramme induction machine (driven by Brayton's petroleum motor) from an iron to an aluminum point. The coincidence of the luminous oxygen and even of the nitrogen lines is really remarkable; and as the photograph is stated to be absolutely free from hand work or retouching, it places the subject in question beyond doubt. Thus the iron and aluminum lines, produced by the effect of the powerful electric current upon the electrodes, show themselves, and the first may be traced in the solar spectrum at the corresponding places, as might be expected.

We will only add that Professor Draper has made detailed comparison of these lines in the spectra of air, oxygen, nitrogen, hydrogen, carbonic acid, carburetted hydrogen, and cyanogen, so as to be sure of the luminous lines belonging to oxygen, and he has also made experiments with these gases at various pressures, as in some of them the lines vary with the pressure. It may be remarked as an important fact that the spectrum of oxygen is not subject to variation, but that its lines are constant at all pressures.

Science is already largely indebted to Professor Draper for the originality of his researches, and no doubt important results may be expected in the train of research he is now following. It is useless to speculate as yet on the nature of the sun, and it is better left to later times, when our knowledge of this remarkable body will be more complete; but one thing is certain, that the idea of Herschel that the sun may be an inhabited globe must be given up. It is undoubtedly a body at a temperature so high that the substances present there are dissociated and cannot enter into chemical combinations. However, that we will find there all the elements present on our globe may be anticipated if we adopt the theory of Kant and Laplace of a common origin of our whole planetary system out of one single nebula.

AN ELECTRIC FIRE.

A fire recently occurred at the Western Union Telegraph Office, in New York city, that was one of those incidental circumstances in the operation of a great enterprise that imparts a lesson of experience. The cause was defective insulation of wires that came in contact, in what is known as the "grand switch." This switch is situated in an upper story, and consists of a mahogany table about 25 feet long and 5 broad. It is of elegant cabinet work, placed vertically, and contains about 400 wires, which pass from the battery room through apertures in the ceiling into the switch. It also controls about 10,000 connections. It is, in fact, a systematized combination of all the wires issuing from the chief office to every part of the country.

These wires as they enter the switch are separated and insulated. By some means two of the wires, not sufficiently insulated, came in contact with each other. Electrical heat

was generated, which soon set the wood of the switch on fire. When discovered the conflagration could not have been continued over ten minutes, yet the time was sufficient to seriously damage the elegant woodwork, warp and twist the multitude of wires into every conceivable shape, and render them inoperative and worthless for future use.

The actual loss to the building will not exceed \$700, but the fire caused a temporary cessation of business of the department, which, together with the loss of wires, switch, and the extra labor entailed, it is claimed, will make the loss to the company about \$20,000.

#### SUNSHINE IN LONDON AND NEW YORK.

At the Royal Observatory, Greenwich, Eng., a self-registering sun dial is used to indicate and record the daily duration of sunshine. The instrument consists of a lens made in the form of a ball, of glass, 4 inches in diameter, supported concentrically with a metallic bowl. The focus of the ball lens falls on the concave surface of the bowl, in which is placed a strip of suitable combustible material; the arrangement being such that, when the sun shines, the material is charred and a burned line is made, the length and position of which indicates the time and the duration of the solar radiance. Some very curious results are given, which illustrate in a striking manner the difference between the atmospheric conditions of London and New York, especially in the fall and winter months.

During the entire year ending April, 1877, there were, according to this register, only 1,200 hours of sunshine at Greenwich, or an average of a trifle over 3¼ hours per diem. The monthly record was as follows:

May.....	152.3	Sept.....	106.1	Jan.....	18.7
June.....	184.5	Oct.....	47.3	Feb.....	36.4
July.....	214.3	Nov.....	35.9	Mar.....	99.3
Aug.....	216.9	Dec.....	6.5	Apr.....	71.8

We have not at hand any reliable register of sunshine in New York like the above; but it is within the experience of every one living here that our periods of sunshine far surpass those of London. For example, London makes the beggarly show of only six and a half hours of sun during the entire month of December. In New York, we have in December many days of solar brilliancy, any one of which would register more hours of sunshine than the Londoners get during the whole month.

We hope that some one will introduce the globe lens here and ascertain the exact sunny records for this latitude. The instrument would form a useful addition to the meteorological observatory of the Central Park.

#### DIMNESS OF THE EYES.

Dr. George C. Harlan, of Philadelphia, Pa., has lately communicated to the Medical Society, of that city, some very interesting observations concerning that insidious and often incurable disease, albuminuria. The presence of the disease, in cases previously unsuspected, he has discovered by examination of the patient's eyes by means of the ophthalmoscope. In one instance, a gentleman, 35 years of age, a picture of health, with appetite and digestion good, complained of a dimness in the sight of the left eye, which rapidly increased, and then the right eye became similarly affected. Examination of the eyes with the instrument showed well marked *retinitis albuminurica*. Further medical examinations revealed the presence of the hyaline casts, and the fact that the patient had reached the last stages of albuminuric disease. Two and a half months later he died. Dr. Harlan cites quite a number of other cases of persons who considered themselves in perfect health, but in whose eyes the impress of the terrible disease was discovered, and who quickly succumbed to its power. It remains for the students of medical science to discover some means whereby the early approach of the disease can be detected and proper remedies applied in time to effect a cure.

#### Professor Isaac W. Jackson.

Professor Isaac W. Jackson died on the 28th ult. in Schenectady, N. Y., in the 73d year of his age. For 51 years he was a professor in Union College. He was born at Cornwall, Orange county, N. Y., in 1805. In 1824 he was graduated at the Albany Academy with the highest honors. Two years later he was graduated at Union College, where he has ever since remained as tutor and professor. As a student, an author, and an instructor in mathematics, he gave evidence of the singleness of purpose with which he took up his life work. His works and text books on conic sections, optics, mechanics and trigonometry, have received the cordial appreciation of competent critics, and have stood the severest test of use in the class room both at home and in foreign lands. In the development of the art of landscape gardening and the improvement of horticulture, he was peculiarly fortunate. The College garden owed its existence to his wise forethought and prudent management. Through his famous garden he contributed largely during many years to the introduction and distribution of the choicest fruits and flowers. Professor Jackson's life was a noble, self-sacrificing one. He devoted himself earnestly to the education and improvement of the youths under his charge.

**CLEOPATRA'S NEEDLE.**—In preparing to move the obelisk at Alexandria, two inscriptions have been found upon it—one in Latin, the other in Greek. They fix as the year of its erection at Alexandria, by Barbarus, prefect of Egypt, the eighth year of Augustus Cæsar's reign; or about 32 years before the birth of Christ. Fontius, the engineer, did it.

#### Odors of the Human Body.

At a recent meeting of the American Neurological Association, Dr. Hammond called attention to some facts in regard to the natural odor of the body in the human species, and of the faculty which some of the lower animals possessed,—that of differentiating between the odors of different individuals. Besides the inherent odor of the body, there was reason for believing that an entirely different one may be given off, not only as a consequence of disease, but as a result of emotional disturbance. During the middle ages, manifestations of the kind in question were not uncommon in the persons of both sexes, and were attributed to miraculous power. That such cases existed was probable, not, however, as a special gift of God, but as a neurosis similar to other instances which had come under the doctor's own observation. Cases were then cited, of a number of the more important instances among the saints, who were considered highly odoriferous. So far as the author of the paper was aware, there had been no attention given to the subject in the relations now under notice. The cases cited by Dr. Hammond as bearing upon this point were briefly as follows:

A young married lady of strong hysterical tendencies, from whom, during a paroxysm, an agreeable odor, similar to that of violets, was exhaled only from the left lateral half of the anterior wall of the chest. At such times the perspiration was remarkably increased in this region, as compared with the corresponding part opposite. The odor was perceptible at a distance of several feet, but was entirely absent during the intervals of the paroxysms. From an examination of an alcoholic extract of the odoriferous perspiration exhaled by this patient, it was presumed that the odor was due to the presence of butyric ether. The local application of several remedies to the parts, among which were preparations of carbolic acid, soap and water, and other alkaline substances, gave the patient only temporary relief from the odor; but the internal administration of the salicylate of soda, in doses of five grains, entirely cured this lady of her violaceous odor, and the perspiration of the region was reduced to the normal character.

A second case was that of a young lady in whom the first exhibition of the odor (in this case that of pine apple) occurred contemporaneously with an attack of chorea.

In a third case a pine-apple odor was emitted from the skin of the head, neck, and chest of a woman whenever she was angry.

A fourth case was that of a man who, during frequent hypochondriacal periods, emitted a violaceous odor. Occasionally cases were met with from whom a disagreeable odor was exhaled during sexual excitement. No opinion as to the actual and immediate cause of these odorousemanations was expressed, further than that they were due to a nervous disturbance.

Dr. Hammond passed around a small vial containing an alcoholic extract of the odoriferous perspiration of his first patient, which had a distinct violet smell; also a second vial of the same extract, with the addition of bicarbonate of soda, smelling strongly of pine-apple.

The paper was discussed by Drs. Jewell, Beard, Hammond, Seguin, Hamilton, and Spitzka, cases of a similar nature to those mentioned in Dr. Hammond's paper being cited.

#### Combination Wood and Iron Pavement.

By permission of the Commissioners of Sewers of the City of London, a portion of the new wood paving in Beech street has been charged with iron (3 cwt. to the square yard) by way of experiment. The object is to increase the durability of wood and preserve and protect it from heavy racking traffic, and to test the practicability of securing small blocks of iron without framework, and so as to deaden the noise and counteract the other disadvantage of metal, as hitherto applied. The ordinary wood paving blocks are beveled by machinery on the upper and lower edges, and between each row is laid a row of cast iron blocks of double wedged section, thicker at the upper and lower surfaces than in the center, so as to fit mechanically between the bevelled wood blocks, which on section are thicker in the center than at the upper and lower surfaces. The iron blocks weigh 16 lbs. each, are rounded and serrated on surface for foothold, and perforated for grouting material, and are bedded in sand on the ordinary concrete bed.

#### Hints for Home Builders.

First, let your cellars be large, well ventilated, and lined with stone or cemented above the level of the ground. The breath of life in furnace-heated houses depends literally on the air of the cellar, unless there be a flue for fresh air extending from the furnace out-of-doors (never the case in cheap, showy houses). The air of the whole house is sucked through this narrow and often unclean apartment, the care of which is usually intrusted to ignorant servants. We have spoken in a previous number of the malaria engendered by massing quantities of vegetables in the cellars, as is the practice in farmhouses during the winter. The lining of stone or cement not only prevents dampness, but is absolutely necessary in streets through which the sewers pass, as a protection from rats. Terriers, ferrets, traps, or poison are feeble defences against the legions which swarm in nightly from a neighboring culvert. Next to the cellars comes the kitchen, which should be large, airy, and sunny. To take no higher ground, conveniences in this department are a politic investment which pay a full interest of capital, espe-

cially to the housekeeper who does not live in a large city. Stationary tubs, closets beneath the dressers for flour, dry groceries, spices, etc., will be likely to tempt into her household a better class of servants, and, when she is forced to turn cook and baker herself, will take half the burden from her weary hands. An addition to comfort, much neglected by builders, is the lighting of stairways, closets, pantries. We have in our mind's eye a modest little house, in a closely built neighborhood of dark buildings, which gives you a sunny, cheerful welcome in every corner: a result produced not only by windows wherever a window is practicable, but by a sky-light of plate glass which sends down sunshine through three floors of closets, halls, and pantries. A mistake made also, which resolves itself into a question of humanity, is the placing the servants' chambers on the top of the house, be that three or seven stories above the kitchen. Passing along a city street at night one cannot look up at the dim lights burning in these far skyey attics without a groan of compassion for the wearied wretches dragging themselves to their beds up yonder after the day's hard labor.—*Scribner*.

#### To Detect Bad Water.

For detection of animal decomposition products in water, a watery extract of gall nuts was used by M. Fauré. It has also been recommended to use tannic acid for improvement of bad drinking water. M. Kämmerer has recently advised the use of tannin for discovering putrefying animal products in water. He considers that the presence of gelatin in ground water can no longer be doubted, and it is often found in comparatively large quantities. The presence of salt and other compounds in water may delay the precipitation by tannin; hence the purity of water should not be affirmed, as regards tannin reaction, till after 24 hours of this. Every water which becomes troubled in a considerable degree through tannin must be held dangerous as drinking water. For this judgment it is all the same whether a precipitate occurs at once or only after a long time; for the time depends less on the nature of the precipitated body than on the dissolved substances which retard precipitation.

#### American Institute Exhibition.

Applications for space should be forwarded at once to the General Superintendent, room 22, Cooper Union building, New York, and all details arranged through him with as little delay as possible. Persons familiar with the exhibitions annually given by this Institute are aware that one of the great troubles with which the exhibitor has to contend is that of sufficient space; as all applications which comply with the rules are considered in the order of their coming, it is therefore evident that better location is secured by the early than by the late applicant. The Exhibition will open on the 12th day of September.

#### Pigeon vs. Locomotive.

A race between a carrier pigeon and a mail train recently took place from Dover to London. The pigeon was of the Belgian breed, and was "homed" to a house in Cannon street. On the train leaving Dover it was thrown from a carriage, and was observed to circle round for a few moments, when it took its flight in a line between Sittingbourne and Maidstone, which would, of course, be the nearest route to London. Although the railway people were confident in the powers of their locomotive (the Continental express) the bird arrived twenty minutes before the train. The times are not given, but the pigeon must have flown at the rate of fifty miles an hour.

#### Spontaneous Combustion of Zinc Dust.

Zinc dust, so called, is a fine, grayish powder, used extensively in dye works, and consists of 40 per cent zinc, 2½ per cent lead, 4 per cent cadmium, 50 per cent oxide of zinc, 3½ per cent carbonate of zinc, and some non-metallic dust. Such zinc dust becomes spontaneously incandescent at the presence of moisture, and has been known, says *Dingler's Journal*, to cause conflagration on shipboard.

#### Davyum—A New Metal.

Another new metal has been discovered. M. Sergius Kern, of St. Petersburg, has found in platinum "ores" a new metal which appears to occupy a place midway between molybdenum and ruthenium. He is studying its physical and chemical properties, and proposes to call it Davyum, in honor of Sir Humphrey Davy. Platinum is found in the metallic state in alluvial deposits; but is rarely, if ever, pure, being generally alloyed with iron, palladium, osmium, iridium, and copper.

#### Solubility of Sulphur in Acetic Acid.

Liebermann draws attention to the fact that sulphur is soluble to a not inconsiderable degree in warm concentrated acetic acid, while a trace is taken up even by the dilute acid. If the concentrated solvent be diluted with water, much of the sulphur separates as "milk of sulphur;" if it be concentrated with the Bunsen pump, fine long prisms of sulphur separate; when cooled, the liquid deposits sulphur in a crystalline form. All modifications of this element appear to be taken up by acetic acid. The author points to cases in analysis where these changes occur, and are apt to mislead the operator.—*Wiener Anz.*

SILVER was first coined by Phidon, King of Argos, about 860 B. C., the epoch of the building of Carthage, and about 140 years after the construction of Solomon's Temple.