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WONDERS OF SCIENCE.

Curious Effects of Heat and Cold—Tricks of Jugglers

The effects of heat on some substances is truly wonderful. Its effects are of five different kinds;—expansion, which changes the size of bodies; liquefaction and vaporization, which changes their form; incandescence, which changes their color; and combustion, which changes their nature. Atoms in violent vibration by heat urge each other apart, and cause the body to which they belong to occupy a greater space. Heat, therefore, opposes cohesion. Solids, in which cohesion is strongest, expand the least under the influence of heat; liquids, having less cohesion, expand more; and gases and vapors, in which cohesion is entirely wanting, expand the most. Heat converts some solids into liquids, liquids into gases and vapors by weakening their cohesion. It turns ice, for example, into water, and water into steam. All solids except clay are expanded by heat; but not equally. Of the metals, zinc is among those that expand most. Clay is contracted by baking, and ever afterwards remains so; this is supposed to be owing to a chemical change produced in it by heat. The expansion of solids is illustrated by a brass ball suspended from a pillar, to which is also attached a ring just large enough to let the ball pass through it at ordinary temperature. Heat the ball with a lamp placed beneath, and it will expand to such a degree that it can not pass through the ring. Let it cool, and it will go through as before. A sheet-iron stove in which a hot fire is quickly kindled or put out, sometimes makes a crackling noise, in consequence of the rapid expansion or contraction of the metal. A blower placed on or taken from a hot fire produces a similar noise for the same reason. New furniture standing in the sun or near a fire is apt to warp and crack in consequence of the expansive effect of heat. When boiling water is poured into china cups and glass vessels they often crack. This is because the inner surface is expanded by heat, while the outer is not, china-ware and glass being bad conductors. The unequal expansion cracks the vessel. Cold water poured on a hot glass or stove produces the same effect. On the same principle glass chimneys are apt to crack when brought too suddenly over the flame of a lamp or gas-burner. A cut made in the bottom with a diamond allows an opportunity for expansion and prevents the chimney from breaking. When a glass stopper becomes fastened in a bottle it may often be withdrawn by placing the neck of the bottle in warm water. The neck is expanded before the heat reaches the stopper. The force with which a body expands when heated, and contracts when cooling is very great. In iron bridges, therefore, and other structures in which long bars of metal are employed, there is danger of the parts separating, unless provision is made for the expansion caused by a rise of temperature. The middle arch of an iron bridge has been known to rise an inch in the summer of a temperate climate. So, when great lengths of iron pipe are laid for conveying steam or hot water, sliding joints must be used, or the apparatus will burst in consequence of the expansion of the metal. The fact that heat expands bodies and cold contracts them is often turned to practical account. Coopers, for instance, heat their iron hoops, and while they are thus expanded put them on casks which they thus fit. As they cool, they contract and bind the staves tightly together. The wheel-wright fastens the tire, or outer rim of iron on his wheel in the same way. The contraction of iron, when cooling, has been ingeniously used for drawing together the walls of buildings that have bulged out and threaten to fall. Several holes are made opposite

each other in the walls, into which are introduced stout bars of iron, projecting on both sides, and terminating at each end with a screw. To each screw a nut is fitted. The bars are then heated by lamps placed beneath, and when they have expanded the nuts are screwed up close to the walls. As the bars cool they gradually contract, and with such force as to bring the walls back to a perpendicular position. Liquids when heated, expand much more than solids, but not all alike. Thus water, raised from its freezing point to a temperature at which it boils, has its bulk increased one twenty-second; alcohol, between the same limits, increases one-ninth. The higher the temperature the greater the rate at which liquid expands. In proportion as heat expands liquids it rarefies them, the same quantity of matter being made to occupy a larger space. This fact is shown in the process of boiling. Water at certain temperatures forms a remarkable exception to the general law that liquids are expanded by heat and contracted by cold. As it cools down from the boiling point it contracts, and consequently increases in density, until it reaches thirty-degrees, or seven degrees above its freezing point. Below this temperature it expands. The expansion of water in freezing is proved every winter by the bursting of pipes, pitchers, etc., containing it. The force with which it expands is tremendous. Strong metallic vessels have been known to burst asunder with a loud report by the expansive force of water while freezing. When a liquid is converted into a solid the heat no longer needed to oppose cohesion is given out. Extreme cold is thus modified by the very act of freezing. When a solid is rapidly melted, so much heat is absorbed by the liquid that intense cold is produced. This is the principle upon which freezing mixtures operate. Ice cream, for instance, is frozen with a mixture of salt and snow or pounded ice; the latter is rapidly melted, and so much heat is absorbed in the process that the cream is brought to a solid form. This process of vaporization is no less wonderful. heat, applied to a solid, first expands it, then melts it, and finally turns it into a vapor. Sometimes solids pass at once into vapor, without becoming liquids. A great degree of heat is essential to vaporization. At ordinary temperatures, wherever a surface of water is in contact with the air, vapor is formed. This process is known as spontaneous evaporation. By this means the atmosphere becomes charged with moisture, and clouds and dews are formed. The drier the air, and the more it is agitated so as to bring fresh currents in contact with the liquid, and more rapidly does evaporation take place. A drop of water let fall on a cold iron moistens its surface; let fall on a very hot iron, it hisses and runs off without leaving any trace of moisture. In the latter case the water does not touch the iron at all, but it is separated from it by a thin layer of vapor into which a part of the drop is converted by the heat radiated from the iron. Laundresses try their irons in this way to see if they are hot enough for use. On the same principle, jugglers plunge their hands into melted metal with impunity, by first wetting them. The moisture on their hands is converted into vapor, which keeps the seething metal from their skin for a sufficient length of time to enable them to perform the trick.

John Carr Moody, Counselor at Law, Vallejo, Cal., says that he suffered seven years from a cruel joint trouble—rheumatic in its nature and exceedingly painful. Commander Coghlan, of the U. S. Navy, strongly urged him to use St. Jacobs Oil. After continuous use of the remedy the effect was so wonderful that he must congratulate himself specially, and the human race generally, on the perfection of the product.

DRIFTING.

BY T. H. HANSEN, READ.

My soul to-day
Is far away,
Sailing the Vesuvius Bay;
My winged boat,
A bird aloft,
Swings round the purple peaks remote:
Round purple peaks
It sails, and seeks
Blue inlets and their crystal creeks.
Where high rocks throw,
Through deeps below,
A duplicated golden glow.

Far, vague and dim
The mountains swim;
While on Vesuvius' misty rim,
With outstretched hands,
The gray smoke stands,
Overtaking the volcanic lands.

Here Ischia smiles
O'er liquid miles;
And yonder, bluest of the isles,
Calm Capri waits,
Her sparkling gales,
Beguiling to her bright estates.

I heed not, if
My ripting skiff
Float swift or slow from cliff to cliff;
With dreamful eyes
My spirit lies
Under the walls of Paradise.

Under the walls,
Where swells and falls
The bay's deep crystal at intervals,
At peace I lie
Blown softly by,
A cloud upon this liquid sky.

This day, so mild,
Is Heaven's own child,
With earth and ocean reigned:
The air I feel
Around me steal
Are murmuring to the murmuring keel.

With dreamful eyes
My spirit lies
Where summer sings and never dies—
O'er the sea's blue
She glows and shines,
Among her future oil and vines.

You deep bark goes
Where traffic flows,
From lands of sun to land of snows;
This happier one
Its course to land of sun,
From land of snow to land of sun.

The fisher's child,
With tresses wild,
Unto the smooth, bright sand beguiled,
With glowing lips
Sings as she skips
Or gazes at the fat old ship.

Oh, happy ship,
To rise and dip,
With the blue crystal at your lip,
Oh, happy crew,
My heart with you,
Sails, and sails, and sings anew!

No more, no more
The worldly shore
Uphraught to the world's uproar!
With dreamful eyes
My spirit lies
Under the walls of Paradise.

THE GREAT GERMAN REMEDY.

FOR RHEUMATISM,

Nervous, Sciatica, Lumbago, Backache, Soreness of the Chest, Gout, Quinsy, Sore Throat, Swellings and Sprains, Burns and Scalds, General Bodily Pains, Tooth, Ear and Headache, Frosted Feet and Ears, and all other Pains and Aches.

No Preparation on earth equals St. Jacobs Oil as a safe, sure, simple and cheap External Remedy. A trial will convince the most skeptical trifling outlay of 10 Cents, and every one suffering with pain can have cheap and positive proof of its efficacy.

Directions in Eleven Languages.

SOLD BY ALL DRUGGISTS AND DEALERS IN MEDICINE.

A. VOGELER & CO.,
Baltimore, Md., U. S. A.

"It is the little bits of things that fret and worry us," says Josh Billings; "we can dodge an elephant, but we can't a fly."

MOTHERS, READ.

Give: About nine years ago I had a child two years old and almost dead. The doctor I had attending her could not tell what ailed her. I asked him if he did not think it was worms. He said no. However, this did not satisfy me, as I had convinced in my own mind that she had obtained a bottle of Dr. C. McLANE'S CELEBRATED VERMIFUG EUCALYPTI. I gave her a teaspoonful in the morning and another at night, afterwards she passed seventy-two worms and was a well child. Since then I have never been troubled. It is in my family. The health of my children remained so good that I had neglected watching their actions until about three weeks ago, when two of them presented the same sickly appearance that Fanny did nine years ago. So I bought a bottle of worms, and went to work at once with a little of Dr. C. McLANE'S VERMIFUG EUCALYPTI between four of my children. Their ages being as follows: Alice, 5 years; 1 bar-bet, 4 years; Emma, 6 years; John, 2 years. Now comes the result: Alice and Emma came out all right, but Charlie passed forty-five and Johnny about sixty worms. The result was so gratifying that I spent two days in showing the wonderful effect of your Vermifuge around the city, and now have the worms on exhibition in my store. Yours truly, JOHN PIPER.

The genuine DR. C. McLANE'S VERMIFUG EUCALYPTI is manufactured only by Fleming Bros., Pittsburgh, Pa., and bear the signatures of C. McLANE and Fleming Bros. It is never made in London or New York. Be sure you get the genuine. Price, 25 cents a bottle.

FLEMING BROS., Pittsburgh, Pa.

ROYAL BAKING POWDER

Absolutely Pure.

This powder never varies. A marvel of purity, strength and wholesomeness. More economical than the ordinary kinds, and cannot be sold in competition with the inferior article. Beware of cheap imitations. Sold only in cans. ROYAL BAKING POWDER CO., 106 Wall-st., N. Y.

King of the Blood

It is not a "cure all," it is a blood-purifier and tonic. Impurity of the blood poisons the system, deranges the circulation, and thus induces many disorders, known by different names to distinguish them according to effects, but being really branches or phases of that great general disorder, Impurity of Blood. Such are Dyspepsia, Biliousness, Liver Complaint, Constipation, Nervous Disorders, Headache, Backache, General Weakness, Heart Disease, Dropsy, Kidney Disease, Piles, Rheumatism, Catarrh, Scrofula, Skin Disorders, Pruritus, Ulcers, Scaldings, &c. &c. King of the Blood prevents and cures these by attacking the cause, impurity of the blood. Chemists and physicians agree in calling it "the most genuine and efficient preparation for the purpose." Sold by Druggists, 25 per bottle. See testimonials, directions, &c., in pamphlet, "Treatise on Diseases of the Blood," wrapped around each bottle. H. RANSOM, SON & Co., Props. Buffalo, N. Y.

Notice of Application to Purchase Timber Lands.

LAND OFFICE AT VANCOUVER, W. T., May 15, 1883.

Notice is hereby given that in compliance with the provision of the Act of Congress approved June 2, 1882, entitled "An act for the sale of timber lands in the States of California, Oregon, Nevada, and in Washington Territory," Richard Sweeney, of Multnomah County, Oregon, has this day filed in this office his application to purchase the north-east 1/4 of section 10, township 10 north, of range 5 west of the Willamette Meridian.

Testimony in the above case will be taken before the Register and Receiver at Vancouver, Wash. Terr., on Saturday, the 25th day of July, 1883.

Any and all persons having adverse claims to the above described lands, or any portion thereof, are hereby required to file their claims in this office within sixty (60) days from date hereof.

FRED. W. SPARLING, Register.

—SHELOU'S CURE will immediately relieve Croup, whooping cough and Bronchitis. Sold by W. E. Dement.

ST. JACOBS OIL



THE GREAT GERMAN REMEDY.

FOR RHEUMATISM,

Nervous, Sciatica, Lumbago, Backache, Soreness of the Chest, Gout, Quinsy, Sore Throat, Swellings and Sprains, Burns and Scalds, General Bodily Pains, Tooth, Ear and Headache, Frosted Feet and Ears, and all other Pains and Aches.

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A. VOGELER & CO.,
Baltimore, Md., U. S. A.

NEVILLE & CO.

Pacific Net and Twine Co.

San Francisco, April 11th, 1883.

DEAR SIR:

For general convenience, we have sent a supply of No. 30, 12-ply Genuine Scotch Salmon Net Twine, to the care of A. M. JOHNSON & CO., Astoria, which will be sold at low enough figures to make it an object for all net menders to use it for repairs, in place of the more costly No. 40, 12-ply.

Fishermen who have heretofore used this grade of twine for repairs, claim that the durability of the patch is equal to the balance of the net, after the latter has had a few weeks use. We think it will be money in your pocket to try it. For prices and samples apply to A. M. JOHNSON & CO., Astoria.

A. M. Johnson & Co.

DEALERS IN Groceries & Crockery

A FULL LINE OF Artists' Materials.

WM. EDGAR, Dealer in Cigars, Tobacco and Cigarettes

GENUINE ENGLISH CUTLERY

Revolvers and Cartridges.

HANSEN BROS. SASH AND DOOR FACTORY. AND PLANING MILL.

Barbour's

No. 40 12-Ply SALMON TWINE!

CORK AND LEAD LINES, SEINE TWINES.

A Full Stock Now on Hand.

HENRY DOYLE & CO., 511 Market Street, San Francisco. Sole Agents for the Pacific Coast.

Hardware and Ship Chandlery.

A. VAN DUSEN & CO. DEALERS IN Hardware and Ship Chandlery.

Pure Oil, Bright Varnish, Binnacle Oil, Cotton Canvas, Hemp Sail Twine, Cotton Sail Twine, Lard Oil, Wrought Iron Spikes, Galvanized Cut Nails.

Agricultural Implements, Sewing Machines, Paints and Oils, Groceries, etc.

NOTICE TO THE PUBLIC.

The O. R. & N. Co. Will Transact their Business at the MAIN STREET WHARF, Which has been Leased, Until Further Notice.

E. A. NOYES, Agent.

PARKER HOUSE.

A. ANSELL, Manager.

ASTORIA, OREGON.

FIRST CLASS HOTEL.

ALL MODERN IMPROVEMENTS. HOT AND COLD BATHS. None But White Help Employed. FREE COACH TO THE HOUSE.

IT IS A FACT

—THAT—

JEFF'S CHOP HOUSE

ON Concomly Street is the Best in Town.

—THAT—

He has Always on Hand FRESH Shoal Water Bay and Eastern Oysters.

—THAT—

"JEFF" IS THE BOSS CATERER.

—THAT—

He has been Proprietor of the "Aurora Hotel" in Knappton seven years.

OPEN DAY AND NIGHT.

ROSCOE'S FIRST CLASS Oyster Saloon,

CHENAMUS STREET, ASTORIA.

THE UNDERSIGNED IS PLEASED TO announce to the public that he has opened a

FIRST CLASS Eating House,

And furnishes in first-class style OYSTERS, HOT COFFEE TEA, ETC AT THE

Ladies' and Gent's Oyster Saloon, CHENAMUS STREET.

Please give me a call. ROSCOE DIXON, Proprietor.

COSMOPOLITAN

Chop House and Restaurant.

OPEN DAY AND NIGHT.

Meals 25 cents and upwards.

L. WILBROX & G. BOULARD, Proprietors.

MAIN STREET, ASTORIA.

PIONEER RESTAURANT AND LODGING HOUSE.

Refitted throughout; the Table supplied with the best—the beds clean and comfortable.

A First-class House. Board by the week, \$5.00 Meals to order. J. G. ROSS, Proprietor.

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Doors, Windows, Blinds, Transoms, Lumber.

All kinds of OAK LUMBER, GLASS, TURNING AND Bracket Work A SPECIALTY.

Boats of all Kinds Made to Order.

Orders from a distance promptly attended to, and satisfaction guaranteed in all cases.

S. ARNDT & FERCHEN,

ASTORIA, OREGON.

The Pioneer Machine Shop

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All kinds of ENGINE, CANNERY, STEAMBOAT WORK

Promptly attended to. A specialty made of repairing CANNERY DIES, FOOT OF LAFAYETTE STREET.

ASTORIA IRON WORKS.

BENTON STREET, NEAR PARKER HOUSE, ASTORIA, OREGON.

GENERAL MACHINISTS AND BOILER MAKERS.

LAND and MARINE ENGINES

Boiler Work, Steamboat Work and Cannery Work a specialty.

CASTINGS, Of all Descriptions made to Order at Short Notice.

A. D. WASS, President. J. G. HUSTLER, Secretary. I. W. CASE, Treasurer. JOHN FOX, Superintendent.

A. V. Allen,

(SUCCESSOR TO PAGE & ALLEN.)

Wholesale and retail dealer in Groceries, Provisions, Crockery.

Glass and Plated Ware, FRUITS and VEGETABLES.

Together with Wines, Liquors, Tobacco Cigars

LOEB & CO., JOBBERS IN WINES, LIQUORS, AND CIGARS.

AGENTS FOR THE Best San Francisco House and Eastern Distilleries. Tumblers Decanters, and All Kinds of Saloon Supplies.

All goods sold at San Francisco Prices. MAIN STREET, Opposite Parker House, Astoria, Oregon.

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BUSINESS CARDS.

C. W. FULTON, ATTORNEY AT LAW. Rooms 5 and 6, Odd Fellows Building.

E. C. HOLDEN, NOTARY PUBLIC, AUCTIONEER, COMMISSION AND INSURANCE AGENT.

JAY TUTTLE, M. D. PHYSICIAN AND SURGEON. OFFICE—Rooms 1, 2, and 3, Pythian Building. RESIDENCE—Over J. E. Thomas' Drug Store.

GEO. F. PARKER, SURVEYOR OF Clatsop County, and City of Astoria. Office—Chenamus street, Y. M. C. A. hall Room No. 8.

F. F. HICKS, DENTIST. ASTORIA, OREGON. Rooms in Allen's building up stairs, corner of Cass and Sherman streets.

J. Q. A. BOWLEY, ATTORNEY AT LAW, Chenamus Street, ASTORIA, OREGON.

J. J. JONES, STAIR BUILDER, Ship and Steamboat Joiner.

DR. J. E. LAFORE, DENTIST. Room 11, Odd Fellows Building, Astoria, Or. Gas administered for painless extraction of teeth.

GENERAL STEAMSHIP AGENCY. Bills of Exchange on any Part of Europe. I AM AGENT FOR THE FOLLOWING well known and commodious steamship lines: STATE LINE, RED STAR, WHITE STAR, HAMBURG-AMERICAN, DOMINION LINE, NATIONAL, and AMERICAN LINE.

Prepaid tickets to or from any European Port. For full information as to rates of fare, sailing days, etc., apply to I. W. CASE.

BOZORTH & JOHNS.

Real Estate and General Insurance Agents.

ASTORIA, Oregon. WE WRITE POLICIES IN THE WESTERN, State Investment, Hamburg, Bremen and North German Fire Insurance Companies, and represent the Travelers' Life and Accident of Hartford, and the New York Life, of N. Y.

We have the only complete set of township maps in the county, and have made arrangements to receive applications, filings, and final proofs on Homesteads, Preemptions, Timber Lands, etc., having all the official blanks therefor. Our maps can be examined in the office, upon the payment of a reasonable fee.

We also have for sale city property in Astoria and additions, and farms and live land property.

Rents, and other collections made, and loans negotiated.

BOZORTH & JOHNS.

GRAND CLEARANCE SALE!

To make room for more

Hardware and Ship Chandlery

A. VAN DUSEN & CO. Will sell at cost their entire stock of HATS AND CAPS —AND— BOOTS AND SHOES.

These goods must be disposed of as we are soon to receive another large lot of Hardware and Ship Chandlery. And must have room to store it.

THE LATEST STYLES IN WALL PAPER AT B. E. FRANKLIN'S, NEXT DOOR TO ASTORIAN OFFICE.

A very large Stock from which to select. Window curtains made to order. My patent Trimmer to cut Wall Paper will be found convenient to my patrons.

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A. VAN DUSEN & CO. DEALERS IN Hardware and Ship Chandlery.

Pure Oil, Bright Varnish, Binnacle Oil, Cotton Canvas, Hemp Sail Twine, Cotton Sail Twine, Lard Oil, Wrought Iron Spikes, Galvanized Cut Nails.

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