Useful Information.

Why do Paints Dry?

It was proved long ago, that linseed oil, when exposed to the air, became covered with a hard crust, and that this crust is produced by the absorption of oxygen. Paint made from oil and coloring matter alone does not dry because it parts with any thing or because it gives off any vapor, but because it becomes hard by the action of the atmosphere. It is stated in a recent work on paints that oil does not form even the basis of a paint. This is more technical than judicious. Oil alone, if laid on in thin, successive coats, becomes very hard and forms a durable and impervious varnish, which protects the wood beneath almost as well as paint would do, at least so far as moisture and air are concerned. Against the sun's rays, however, it is a poor defense. But as it has been found impossible to apply a sufficient coat of this varnish in any thing like a reasonable time, the oil has in general been mixed with various colored powders or pigments, which thicken it and thus enable us to lay on a heavier coat. Many of these pigments have no action on the oil, and it is always best that they should have no action. Compounds of lead, which are known to form chemical compounds with the oil, are amongst the very poorest paints. White lead is confessedly one of the least efficient of all our preservative agents, the authority referred to to the contrary notwithstanding.

When paint is applied to a fresh surface of wood, it often appears to dry in a short time. In this case, however, it will be found that the paint has not really dried, but that the oil has been absorbed by the wood; and in this case the pigment is often left in the form of a friable powder, loosely adherent to the surface to which it was applied. It rubs off very easily. This occurs to a less extent with white lead than with any other paint, simply because the lead combines with the oil and holds it on the surface, thus preventing its sinking in. We are inclined to regard this feature as one which confers no advantages upon white lead. It is probably better for the wood that as much oil as possible should soak into it, and it is no great disadvantage that the paint of the first coat should not adhere strongly. Where economy is an object, the absorption of the oil is prevented by first applying a coat of cheap sizing. The size fills up the pores of the wood, and prevents the sinking in of the oil. For in-door work, this answers very well, but for out-door purposes it is objectionable.

But all paints do not dry in the manner that we have mentioned. For in-door work, where it is desirable that the paint should dry rapidly and have a dead or non-reflecting surface, paint is generally mixed with turpentine. This is a volatile oil, which passes off rapidly when exposed to the air, and thus leaves the paint behind as a thin crust. This ability of the paint to resist atmospheric influences is thereby lessened; and this, for in-door work, is a matter of no consequence. It would be wrong, perhaps, to say that the oil of turpentine passes off entirely by evaporation, as a small portion probably becomes oxidated and remains behind. The amount so retained is, however, very small.—*American Homestead.*

A New Weather Vane.—The old weather-cock has two essential faults; it indicates a direction when there is a dead calm. It gives no means of learning the force of the wind; while it fails to show the true course of the same, by exhibiting merely its horizontal component. M. Tany proposes the arrangement to be attached to the ordinary lightning rod. Just above a suitable shoulder on the latter is placed a copper ring, grooved and made into a pulley easily rotated in a horizontal plane. Around this passes a knotted cord, the ends of which are secured to the extremities of a short stick or metal rod, to which is secured a simple streamer. Thus constructed the vane indicates a calm by falling vertically, and besides shows the strength of the wind by being blown out more or less from the lightning rod. As is evident, it is capable of motion in every direction, so that if there exist in the wind an upward tending vertical component, the same will be shown.

Tanning Lamb-Skins with the Wool on.—Wash the pelts in warm water, and remove all fleshy matter from the inner surface; then clean the wool with yellow soap, and rinse the soap thoroughly out. When this is done apply to the flesh side the following mixture for each pelt: Common salt and alum, one quarter of a pound of each, and half an ounce of borax, dissolved in a quart of warm water; add to this enough rye-meal to make a thick paste, and spread the mixture on the flesh side of the pelt. Fold the skin lengthwise and let it remain two weeks in an airy and shady place, then remove the paste from the surface; wash and dry. When nearly dry scrape the flesh side with a knife, working the pelt until it becomes thoroughly soft.

New Way of Coloring Metals.

It is announced that metals may be colored quickly and cheaply by forming on their surface a coating of a thin film of a sulphide. So for instance brass articles may be thus in five minutes coated with any color varying from gold to copper red, then to carmine, dark red, and from light anilin blue to a blue white, like sulphide of lead, and at last a reddish white, according to the thickness of the coat, which depends on the length of time the metal remains in the solution used. The colors possess the most beautiful luster, and if the articles to be colored have been previously thoroughly cleaned by means of acids and alkalies, they adhere so firmly that they may be operated upon by the polishing steel. To prepare the solution dissolve 1¼ ounces of hyposulphite of soda in 1 pound of water, and add 1½ ounces of acetate of lead dissolved in ½ pound of water. When this clear solution is heated to 190° to 210° Fahr., it decomposes slowly and precipitates sulphite of lead in brown flocks. If metal is now present, a part of the sulphite of lead is deposited thereon, and, according to the thickness of the deposited sulphite of lead, the above-mentioned beautiful luster colors are produced. To produce an even coloring, the articles must be evenly heated. Iron treated with this solution takes a steel-blue color; zinc, a brown color; in the case of copper objects, the first gold color does not appear; lead and and zinc are entirely indifferent. If instead of the acetate of lead an equal weight of sulphuric acid is added to the hyposulphite of soda, and the process carried on as before, the brass is covered with a very beautiful red, which is followed by a green, (which is not in the first-mentioned scale of colors,) and changes finally to a splendid brown with green and red irisglitter. This last is a very durable coating, and may find special attention in manufactures. Very beautiful marbleized designs can be produced by using a lead solution thickened with gum tragacanth, on brass which has been heated to 210° Fahr., and is afterward treated by the usual solution of sulphide of lead. The solution may be used several times.

Pepsin and the Digestion of Fibrin without Pepsin.—Experiments performed in the physiological laboratory of Heidelberg by Gustave Wolffhügel, under Kühne's direction, have led to the results essentially differing from those of Von Wittich and previous experimenters. 1. Wolffhügel finds that pepsin is not diffusable. 2. That the pyloric glands produce no pepsin. 3. That both hydrochloric and citric acids in solution, containing 0 4 per cent. at a temperature of 60° C., are capable of dissolving boiled fibrin, though somewhat slowly, and of converting it into peptone. 4. This power of forming peptone is perceptible in both acids at a temperature of 40° C. (104° F.) Though the action of nitric acid is decidedly slower, on this account nitric acid is to be preferred to hydrochloric in experiments on the presence and action of pepsin.

Bracounot described a sugar obtained from mushrooms which was found to be mannite. A. Muntz examined several different species, and in some no mannite was found, but a sugar which was undoubtedly trehalose or mycose; some contained both sugars.

Good Health.

Catching Cold.

Catching cold is "as easy as lying," but to explain the pathology thereof is by no means so readily done. In fact, until the recent researches of Dr. Rosenthal, whose work on the subject is attracting much notice in Europe, almost nothing was known about it except the mere fact that the ailments popularly ascribed to "cold" are liable to occur after the body, or some part of it, has been suddenly chilled, that is, cooled below the normal temperature. There are two factors concerned in this chilling process; the nature of the external medium—such as air or water—in contact with the body; and the condition of the blood-vessels.

Dry air has very little power to abstract heat, if it be still; but a slight wind, from the constant contact of fresh particles of cold air on the surface of the body, soon carries off its heat. If there is much moisture combined, the chilling effect reaches its maximum. Experience has shown that it is not so much the absolute lowness of temperature which gives rise to colds, as sudden changes from a higher to a lower. The reason of this was not understood until Dr. Rosenthal explained it. When the surface of a healthy animal is exposed to cold the cutaneous vessels contract, and by thus confining the blood to the interior of the body, prevent its cooling, and preserve the temperature of the vital organs, unless the application of cold be continued for a considerable time. This is not the case, however, when the animal has been previously exposed to warmth. The cutaneous vessels become paralyzed by the heat, and remain dilated even after the cold has been applied. The blood is thus exposed over a large surface and becomes rapidly cooled, even though the temperature of the surrounding medium is not very low.

In Rosenthal's experiments, animals were kept from 97 to 104 degrees F. The temperature of the animals themselves quickly rose during their confinement to 111 or 113 degrees. After their removal it not only sank to the normal temperature, but even below it, so that an animal which was from 108 to 111 degrees in the warming apparatus fell to 96.8 degrees, and remained at that for several days, although the room in which it was kept was moderately warm. Confinement in a close office, hot theater, or crowded ball-room, will have a similar effect on man. From such places, people pass out into the cool, open air, or sometimes even purposely station themselves in a draught. The blood, which is coursing through the dilated vessels of every part of the surface, is rapidly cooled, and, on its return to the internal organs, cools them much more quickly than it could have done had the person simply been exposed to cold without dilatation of the vessels by previous warmth. Rosenthal lays much stress on the great effect of sudden cooling in bringing on a cold, the sudden change in the temperature of the blood producing an irritating effect, and inducing inflamation in any weak organ in a way that a gradual alteration would not do. It would seem, however, that the alteration must be from a temperature above to one below the normal temperature of the blood, and not a mere reduction from one considerably above the normal to one at or near it.

When much heated we may stand for a short time in a cool atmosphere with impunity; but if we stand long enough to produce a shiver, we run a great risk of catching cold. The fact that it is more dangerous to sit for a long time in wet clothes, appears to indicate that a considerable and more gradual cooling, such as may then occur will produce similar effects to a slight cooling suddenly effected by exposure to a cold draught after being in a chill, is causing inflammations may be partly due to the effect of cold on the tissues themselves, and partly to the congestion which will occur in some parts when the blood is driven out of others by the contraction of their vessels. Rosenthal is inclined to ascribe the chief power to the former cause. Everybody knows the beneficial effect of cold baths, cold sponging, etc., in "hardening" persons, as it is termed, so that they are able to face almost any weather and to endure sudden changes of temperature without injury. Rosenthal considers that the frequent application of cold water or cool air increases the tone of the cutaneous vessels, so that they do not become so much relaxed by heat as to be unable to contract with sufficient force when necessary. The power of regulating the temperature is thus preserved, and the person prevented from catching cold.—*Journal of Chemistry.*

The Therapeutic Use of Dry Powdered Blood.—Dr. De Pascale, of Nice, several years ago published some observations on the very beneficial effect of warm blood taken the moment when extracted from the calf or ox, killed for general domestic use. He described at that time several cases of hæmoptysis, in which a complete cure had been affected by this treatment. In a paper recently published, he states that, finding among his English and American patients at Nice an unconquerable repugnance to such a remedy, he was led to adopt the plan of giving the blood in the form of dry powder. This is merely the revival of a practice which was in vogue many years ago, and which has occasionally been tried in this country. The blood of the ox, after being dried in a water-bath, is reduced to a very fine powder, and grated through a sieve. Dry blood can be taken for any length of time, being almost tasteless, and no repugnance is likely to be felt, as is often the case with raw meat. It can be taken as any common powder, mixed with soups, milk, marmalade, or chocolate, or enclosed in a wafer. In some cases, where even the name of blood might have offended the patient, Dr. De Pascale has given it, mixed with a small quantity of pepsin, under the name of "nutritive powders." The quantity he prescribes has varied according to the age, sex, or the state of health and digestive power of the patient. In general, he begins with thirty grains, which is increased according to circumstances; but the quantity must be left to the discretion of the physician.

Hint for Projectors of Towns and Streets.—It is worthy of remark that the arranging of the streets according to the cardinal points involves a sanitary objection of no mean import. No fact is better established than the necessity of sunlight to health, and no constitution can long endure, without ill effects, the total privation of its health-giving power. Every house on the South side of a street running East and West must have its front rooms, which are generally its living rooms, entirely deprived of the sun during the summer. This fact, coupled with that of the indoor life of American, and particularly Western women, is enough to account for a very large share of the nervous debility which so generally prevails. If the rectangular system must be adhered to in city arrangement, it would be far better that the lines of streets should be Northwest and Southeast, and the cross streets at right angles with them, than as now disposed; in this case the rooms in front or the rear of a house enjoy at least sunshine in the morning or evening. A strong proof that sunshine is wholesome is found in the fact that during epidemics people occupying rooms not exposed to sunlight are comparatively much worse off than those who enjoy that blessing.—*Manufacturer and Builder.*

Domestic Economy.

Food.

Though man does not live by bread alone, the bread portion of his sustenance is of very great importance. Ignoring the body is as fruitful in mischievous results as living for it alone. Body and soul are so dependent on each other that what affects one affects the other, and the more finely organized the body and the soul of any person may be, the greater must be his care to keep the two in perfect harmony.

It makes a world of difference what one eats. No class of people are so particular about their food, the quality, the mode of cooking, and the manner of serving, as those who live by their brains. They know that the human animal who would keep in the highest working order must be as carefully groomed, as nicely fed, as perfectly appointed as Goldsmith Maid or Dexter, and they lay their plans accordingly. The cooking a potato, the compounding a cup of coffee, the broiling a steak, the making and baking a loaf of bread, are to them of vital importance, as indeed, they should be to everybody. A great many people never stop to enquire what particular diet is best for them, but following the injunctions of St. Paul, in a sense never intended by him, eat what is set before them, asking no questions for conscience sake or any other sake. If "hog and hominy" is the standard dish, they live on that; if hot soda biscuit and steak fried in lard are provided, that must redinforce their strength and content their appetites. It is a melancholy fact that horses and cows and dogs are more intelligent feeders than most human beings, and by natural consequence, they rarely have dyspepsia, gout or humors. If men and women would be governed in their diet by reason as rigidly as brutes are by instinct, a large portion of the ills that flesh is heir to would never be heard of.

How many who read this column understand the chemistry of food, and know just what they must eat to make them warm, what food builds up bone and sinew, and muscle, and what will best supply the nervous waste? How many understand the effect of diet on the temper and disposition of the mind, and avoid whatever will make them irritable, stupid and melancholy? How many mothers regulate the food of their children with reference to these results, and by so doing secure the tranquillity of their entire households? How many students are there, who, alive to the importance of proper diet, eat only food "convenient for them?"

The object of this article is not so much to impart knowledge as to awaken in other minds a desire to investigate this subject in its various bearings. There are books full of information of all sorts respecting the chemistry of food, the composition of bone, and muscle, and brain, and blood, which, if generally understood, and their suggestions carried out, would go far to banish sickness, and crime, and want.—*N. Y. Tribune.*

Water in the House.—A prominent writer says: "Let nobody be deterred from bringing water in the house by any fears of failure and perplexity. You might just as well stop the circulation of blood in the body because it is subject to derangement, as to refuse the circulation of water in the house because now and the a pipe overflows, and your frescoes are ruined. Good workmen will prevent any such accident, but if they cannot, give up your frescoes; do not give up your life blood. When I see the farmhouses, the dairies, the kitchen, whose only source of supply is the well in the yard, or the hogshead at the back door, how life would be lengthened and sweetened if all this heavy, and hard and slow water-bringing could be supplanted by a turn of a screw, I wonder that we do not manage to introduce it, somehow, into our marriage contracts. What an increase of vital force would ensue; what a diminished demand for divorce; what a strengthening and upbuilding of the family bond, if a girl should refuse to marry until there was an inexhaustible supply of water, at least in the kitchen. A house without water works ought to be considered as incomplete as a house without doors, and as incomplete in the country as in the city."

How to Cook Fresh Fish.—After fresh fish have been dressed well and washed, roll them in Indian meal, (after being sifted of course,) put them into a hot spider where there has been a large spoonful or two of lard melted. Sprinkle over some salt, then put the spider into the well heated oven and let them crisp over. Take them from the oven, lay them on a deep plate, turn all the fat out of the spider; (it will only be found fit for soap grease). Now put one quarter of a pound of butter in the spider, put it over the fire, and when it is all melted, add one half tea cup of strong vinegar to the melted butter, stir quickly, and pour it over the fish and serve immediately. I find but very few people but what think this method of cooking fresh fish, is very superior to the more common way of cooking it without adding the vinegar gravy.—*Ohio Farmer.*

Previous to the Franco-Prussian war, the St. Laurent, of the French line, was fitted with electric lights of great power, which were plainly discernible for many miles at sea. At the beginning of the war this light was taken from the steamer and used by the Government for harbor defence, and has not since been used at sea. The managers of the French line are now considering the propriety of providing all their ships with lights of this description, which would, except under circumstances most unusual, render a collision impossible. The substitution of life-rafts for life-boats is also under consideration.

Poultry Yard.

Success With Hens.

In the breeding of hens it is important to procure the variety to meet the requirement in each particular case. If you breed for eggs you want one variety; if for flesh or size, another. And after you have obtained the kind you desire, as for instance, the production of eggs, it is essential that a due regard be had to management in order to secure the best results.

As we cannot give our own experience in all matters pertaining to poultry breeding, we commend the following as apparently worthy of consideration:

In this section, most of the breeds of fowls, with their crosses, are kept—generally in small numbers—with varied success. The breed, it is known, has an influence, but much is due probably to the method of keeping, or management. The following is the conclusion I have arrived at, as to the point most favorable to success with hens as layers:

We have observed, that the smaller the number of hens the more eggs per hen were obtained.

That a laying hen wants quiet and contentment. There should be no crowding nor close confinement, but plenty of air, plenty of light, security for laying, cleanliness, good water, variety of food—corn and buckwheat as a base. The buckwheat should be ground and made into cake, mainly, though also fed in the grain.

That a young hen will lay better than an old one; that its flesh is also better; that some breeds, like the French, are preferred for the table.

That the different popular breeds all do well, though varying with different owners, showing that keeping or locality has an influence.

That crosses sometimes are as good as the breeds whence they are obtained. Thus the Black Spanish and Brahma couple well together, both for laying and hatching; but the cross must not be perpetuated by itself; in this case it has deteriorated. Keep up from the original stock and it will be reliable. Other crosses have also done well. Many remarkable cases are reported, some of which have come under our own cognizance.

The Brahma and Black Spanish cross will lay, with slight interruption, the year round. It will continue to lay, if sufficient and regular food be given it, in a barn or other outbuilding exposed to the cold. The greatest success has been obtained in this way with this cross.

It has long been known, and is now more apparent, that there is no profit, but loss, in keeping the common hen, which will seldom lay in winter, and only when its quarters are made warm and pleasant as in summer.

The breeds, and care with them, are sure to secure success. This has sometimes been obtained when they have been neglected, and sometimes not; but we have never known a success to fail where care is taken, and the principles above enumerated carried out. Room, contentment, with a sufficiency of food, are the main things. Then a good breed—non-sitter for eggs—and there will be a balance on the right side of the ledger. It is best to begin on a small scale, and increase, dividing the number as it increases into as many communities as space and number require. If a dozen or fifteen hens are found profitable, the dozen or fifteen hens and their space need but be repeated. This will make so many distinct henneries, though joined together, separated only by a partition. The principle here is, that hens want to be acquainted with each other, used to each other; in other words, a family. With a large number, even though space be given them, there will be an air of strangeness and fear never wholly overcome. Hence the secret of dividing into small communities.—*National Live Stock Journal.*

Dr. Marcy, says *Les Mondes*, has recently demonstrated that the heart acts like all mechanical motors in that the frequency of the pulsations varies according to the resistance which it meets in driving the blood through the vessels. When the resistance becomes greater, the throbs diminish; they accelerate, on the contrary, if the opposition becomes less. During life, the action of the nervous centers makes itself felt on the heart, of which it renders the pulsations slower or quicker, whatever may be the resistance experienced. Dr. Marcy eliminated this nervous influence by removing the heart of an animal, and causing it to work under purely mechanical conditions. The heart of a turtle was arranged with a system of rubber tubes representing veins and arteries. Calf's blood, defibrinated was caused to circulate, and a registering instrument noted the amplitude and frequency of the movements of the organ. When the tube containing the blood leaving the heart was compressed, the liquid accumulated in the rear of the obstacle and the heart emptied itself with greater difficulty, the pulsations weakening perceptibly. On relaxing the pressure, thus allowing free course to the blood, the throbs accelerated rapidly.

Breath of the Nevada Ups.—Billy Anderson, the well-known lawyer, who is now in this city, and who for some years (since 1868,) has been a resident of Eastern Nevada, gives a startling account of the effects of the poisonous fumes from the smelting furnaces there in use. He speaks particularly of the town of Eureka, where these furnaces are very numerous and are scattered through the village. He says that in approaching the place a smell resembling that of garlic can be detected at a distance of at least three miles. Often the smoke and fumes hang over the town in clouds so dense as to resemble a London fog, and the smell of the poisonous gases is almost unendurable. Kittens and puppies die soon after coming into the world, and it is found impossible to rear these animals in the place. A sheet of white paper laid in the open air and left over night, will be covered with a thick white crust. The arsenical fumes mingled with those of lead and other minerals, more or less affect the health of all who reside in the town. Some are but slightly affected, while others suffer very severely. The poisonous atmosphere of the place not only affects the physical but also the mental health of many, causing them to become morose, nervous, and in some cases, wandering in mind.—*Enterprise.*