Practical manual of health and temperance

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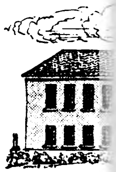

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PRACTICAL MANUAL

OF

Health and Temperance:

EMBRACING THE

TREATMENT OF COMMON DISEASES, ACCIDENTS AND EMERGENCIES, THE ALCOHOL AND TOBACCO HABIT, USEFUL HINTS AND RECIPES.

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NEW EDITION, REVISED AND ENLARGED.

FORTIETH THOUSAND.

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PREFACE.

THE increasing interest in the subjects of health and temperance reform has created a great demand for popular literature on the subject, to meet which, in part, has led to the preparation of this little volume. The small size of the volume necessarily restricts the number of topics to those of the most practical character, and makes it impossible to treat any of the numerous subjects touched upon in an exhaustive manner. The author has endeavored, however, to present such simple and practical suggestions on a large variety of topics as will make the book of real practical service to every one into whose hands it may fall.

The "Forty Scientific Arguments against the Alcohol Habit" presents in a condensed form an array of scientific facts which must carry conviction to the minds of all candid persons who have not yet taken their stand upon the side of total abstinence.

The "Ten Scientific Arguments against Tobacco-Using" deals with this most common but obnoxious and depraving vice in a brief but direct manner, and is a summary of the scientific evidence against this growing evil.

The suggestions and hints given under the head of "Hygiene," if thoroughly appreciated and applied, will obviate a very large proportion of the ills and suffering incident to domestic life.

The section on "Food and Diet" contains much which may be new to a majority of those who have never investigated the subject from the standpoint of health. It is not intended to be in any sense complete, the object being only to call attention to a few of the ways in which disease and premature death are occasioned by errors in diet. Those who are interested to pursue the subject further should send to the Office of publication for other works treating it more at length.

In "Simple Remedies for Common Diseases" are given directions for treating many common maladies with such remedies (with few exceptions) as are to be found in any household.

"Accidents and Emergencies" will be found to afford such information as may enable a person to be the means of saving many lives if it is carefully and promptly applied at the proper time.

Under the head of "Tests for Adulteration," are given the most reliable tests for the various adulterations of food, together with a test for bad water,—all of which have been so simplified that they can be employed by any person of ordinary intelligence without the aid of expensive chemical apparatus or professional skill.

It is the hope of the author that this little volume may be the means of enlisting the interest of those into whose hands it may fall in the great subject of hygiene, and that, by pointing out some of the causes of disease and death, it may lead to their avoidance, and thus to the prolongation of human life and the mitigation of suffering.

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PRACTICAL MANUAL

OF

HEALTH AND TEMPERANCE.

Forty Scientific Arguments Against the Alcohol Habit.

1.—Alcohol is a Chemical Agent.

The chemist describes alcohol as a liquid technically known as *hydrated oxide of ethyl*, containing two atoms of carbon, six of hydrogen, and one of oxygen, and represented by the formula, C_2H_5HO. It is colorless when pure, and very inflammable, burning with a pale blue flame. It is closely allied to such chemical compounds as naphtha, turpentine, benzine, fusel oil, kerosene, and burning fluid. It is seldom found pure, usually containing from two to fifty per cent of water, besides various impurities, chief among which is *fusel oil*, another variety of alcohol.

With the exception of air and water, no example can be produced in which a chemical compound is of service in the vital economy as an article of habitual use; and neither of these really enters into the vital structure of the body. The oxygen of the air destroys the worn-out particles of the body, and water is the vehicle by which useful material is introduced into the body and circulated through it, and impurities and useless particles washed out of the tissues, and removed from the vital domain.

2.—Alcohol Possesses Active Chemical Properties.

The active chemical properties possessed by alcohol render it not only unfit for introduction into the body, but actually dangerous. As we shall hereafter show, its various active chemical and physical properties are the means by which it exerts so potent an influence for evil. No one would think of making habitual use as a beverage of sulphuric acid, aqua ammonia, or any similar substance possessing equally active chemical properties, and yet alcohol, in a pure state, is scarcely less active than the substances mentioned.

3.—Alcohol is a Desiccant.

Pure alcohol is a most powerful drying agent, on account of its great affinity for water. So great is its avidity for water that it is extremely difficult to obtain it in a perfectly pure state, and it is equally difficult to preserve it free from water when it has been made so by delicate chemical processes. A piece of flesh placed in alcohol soon becomes shriveled, hard, and leathery from the action of the alcohol upon the albuminoid elements of the flesh. This action is readily shown by the following simple experiment:—

Place in a goblet the whites of two or three eggs from which the yolk has been carefully removed. Now add two or three tablespoonfuls of strong alcohol. In a minute or two the colorless transparent albumen has become opaque, white, and hard, as though it had been dropped into boiling water.

A piece of the most tender steak placed in alcohol becomes in a few days as tough as sole leather.

It is due, in part, to this desiccating or drying property that alcohol does its work of destruction upon the blood corpuscles, the liver, the brain, and various other parts of the body. The brain of a hard drinker can be distinguished from that of a total abstainer by its hardness. The famous anatomist, Hyrti, asserted that he could tell the brain of a drunkard in the dissecting room in the dark.

4.—Alcohol is an Antiseptic.

Although itself the result of fermentation, it has the remarkable property of preventing this change in other substances. It has been suggested that this is an argument in favor of its use as a beverage, as it may prevent the destruction of the tissues and so preserve life. The argument is in the highest degree fallacious. Alcohol preserves from decay, but not from death.

A few years ago the writer heard of an old gentleman who had reached the advanced age of one hundred and seventeen years. Thinking that this remarkable age might have been attained through temperate habits of life, he took considerable pains to hunt him up. To his disappointment, he learned before seeing the centennarian that he had been addicted to the use of whisky and tobacco for upwards of a century. He found him puffing away at a short pipe, a poor, shriveled-up caricature of humanity, with only a partial semblance to a human form, quite incapable of any enjoyment by the sort of negative pleasure afforded by his pipe and toddy, in fact, nothing more nor less than a human pickle, *dead*, in fact, in a practical sense, for thirty or forty years, though his friends had neglected to bury him. Alcohol makes a very good pickle, but human pickles are not useful members of society.

5.—Alcohol Comes of a Bad Family.

"A man is known by the company he keeps." This adage is equally applicable to some other things as well as men. It holds good respecting alcohol, at least. Chemical compounds are divided into groups, the various members of which possess similar characters as regards composition and properties; and it is not usual to find one member of such a group possessing only wholesome or negative properties, while all the rest are virulent poisons. Among the various groups of chemical compounds referred to, there is one known as "The Alcohol Group." The following is a list of the principal members of

THE ALCOHOL FAMILY.

	Chem. Comp.
Methylic Alcohol (naphtha),	$C H_3HO$
Ethylic Alcohol (com. alcohol),	C_2H_5HO
Propylic Alcohol,	C_3H_7HO
Butylic Alcohol,	C_4H_9HO
Amylic Alcohol (fusel oil),	$C_5H_{11}HO$

The first, *Methylic Alcohol,* or wood naphtha, is derived from the distillation of wood. It produces intoxication very quickly, when drank, but its effects are very transient, owing to its great volatility. It is not often used as an intoxicant, but has been so employed by persons of peculiar taste, or confirmed inebriates who were restrained from obtaining their accustomed allowance of grog. We once had a patient who had on several occasions swallowed a half pint of naphtha when brandy or whisky could not be obtained.

The second in the list, *Ethylic Alcohol,* or wine spirit, is the intoxicating element of spirituous liquors, and is obtained by the distillation of fermented liquids. The most common form in which it is used as a beverage is in brandy, whisky, beer, wine, etc. It is seldom found pure in commerce, being usually mixed with water. This variety of alcohol is more intoxicating in its effects, and more injurious to the vital tissues than the preceding.

Propylic Alcohol, like the preceding, is obtained by distillation, being one of the by-products of the process of making common alcohol from fermented grain. It is not used as an intoxicant, except as an impurity of ordinary liquors; but when obtained in a pure state, as it has been for purposes of experiment, it is found to be heavier and still more intoxicating than the preceding.

Butylic Alcohol, the fourth in the list, is generally obtained by the fermentation of beet root. It is also undoubtedly produced in the fermentation which occurs in butter and cheese when they become old and rancid, since these substances contain an acid known as butyric acid, which is derived from this variety of alcohol. It is this which gives to frowy or rancid butter and very old cheese their peculiar flavor. This member of the family is still more active in intoxicating properties than those already mentioned, producing an intoxication which is very slowly recovered from, and in which there is very great prostration, trembling of the muscles, and great coldness. Recovery is very slow.

Amylic Alcohol, or fusel oil, is produced in the fermentation of potatoes, and also, to some extent, in the fermentation of grains and fruits. It has a burning taste and pungent odor, and is the characteristic constituent of bad whisky. A few drops of fusel oil will produce as profound an intoxicating effect as a considerable quantity of ordinary alcohol, which accounts for the infuriating and deadly effects of bad whisky, as well as its rapidly fatal effects, as seen among miners, negroes, and Indians. The deadly effects of cheap rum from the West Indies have become so manifest in some of the South Sea Islands controlled by the English government that it has become necessary to prohibit its introduction.

There are numerous other alcohols closely allied to those mentioned, and with similar properties, besides those numerous other compounds which are classed by the chemist in the "alcohol series," among which are the well-known substances, *carbolic acid* and *creosote*, the caustic and poisonous properties of which are too well known to require more than mention. If not own brothers, these compounds are at least cousins of "the demon of the cup."

The chemical formulæ of the various varieties of alcohol are given to show their intimate relations to each other. It will be observed that they are all made up of the same elements,—carbon, hydrogen, and oxygen, or C, H, O, the only difference being in the proportion of the several elements. For example, the only difference between *Ethylic Alcohol*, or wine spirit, and *Methylic Alcohol*, or wood naphtha, is one atom of carbon and two of hydrogen; while the disgusting *Butylic Alcohol* differs from wine spirit by only two atoms of carbon and four of hydrogen. *Carbolic Acid* only differs from wine spirit by containing four more atoms of carbon, the proportions of hydrogen and oxygen being just the same.

In this connection, we should make note of the fact that alcohol is in the strictest sense of the word a chemical or inorganic compound, since it is derived from the destruction of organic or organized matter, and may be produced from inorganic substances by chemical processes, which is not true of any organized substance, such as grains and fruits, or any animal or vegetable substance.

A DOZEN CHILDREN OF BACCHUS.

The *Ethylic* member of the "alcohol family" has a numerous progeny, representatives of which are found in all the countries of the globe. The chief of those in common use as beverages in this country are included in the following table, which also gives the percentage of alcohol each contains:—

	Per cent.		Per cent.
Small Beer,	1–3	Whisky,	46
Cider,	5	Rum,	48
Perry,	5	Brandy,	54
Ale,	10–20	"Bitters,"	6–60
Wine,	7–25	Jamaica Ginger,	
Gin,	39	Absinthe,	

It will be noticed that one of the "bitters" given above, Richardson's, contains more alcohol than the strongest rum. "Temperance Bitters" is more than one-sixth alcohol; and "Vinegar Bitters," the manufacturers of which publish a temperance almanac to advertise it, and claim that it is absolutely free from alcohol, contains more alcohol than small beer, hard cider, or light wine. These bitters, with scores of others, have an immense sale, thousands making habitual use of them who profess to be total abstainers. Several of them are kept on the counters of the bar-keeper as regularly as "Holland Gin," "Jamaica Rum," or "Old Rye."

"Jamaica ginger" will burn like pure alcohol, and absinthe is a compound of very strong alcohol with oil of wormwood. The latter intoxicant has been introduced into this country very recently, but is to be seen displayed in the windows of the grog-shops in certain parts of New York and other large cities. It has been in use in France for many years, and, as we were credibly informed when in Paris, is there well recognized as exceedingly deadly in its effects, producing speedy derangement of the stomach and a rapid decline.

6.—Alcohol is a Poison to Plants.

Vital properties are pretty much the same in a general way, whether manifested by a mushroom or a man; and any substance which will destroy the life of a plant is not likely to be wholesome for human beings. If a plant be watered with a solution of alcohol, its leaves soon wither, turn yellow, and the plant dies, even when the proportion of alcohol is so small as one part in one thousand parts of water.

7.—Alcohol is a Poison to Animals.

A tadpole dropped into a vessel containing alcohol dies in a minute. Leeches and other small animals succumb in like manner. Some time ago the writer tried an experiment with small minnows, the following description of which is quoted from a lecture before the Lake Bluff Temperance Convocation, August, 1882:—

"I made an experiment the other day with some minnows. First I put a minnow into a glass containing two teaspoonfuls of alcohol in a half-pint of water. In five seconds he turned over on his back, in ten seconds he began to float toward the top, and in sixty seconds he was dead. I thought that if I dropped another into a glass containing pure alcohol he would die at once. I tried it, and the minnow lived for three minutes. I then put a minnow out on the table, and he lived for six or seven minutes.

I determined that the reason for this curious result was that when the minnow was put into pure alcohol, he simply died of suffocation. In the other case, where the fluid was about the strength of small beer, the minnow became saturated with the alcohol inside as well as outside, by taking it in through the gills, and thus died of alcoholic poisoning. In the first case the gills closed firmly as soon as the minnow was dropped into the alcohol, and he died because he could not breathe, just as the other one died when laid out on the table. This might be taken to show that, in the case of the minnow, at least, moderate drinking is more fatal to longevity than hard drinking."

A New York journal recently reports a series of experiments by a French physician on the influence of alcoholic liquors on fowls, as follows:—

"He administered to them brandy and absinthe, and found one and all to take so kindly to their unwonted stimulants that he was forced to limit each bird to a daily allowance of six cubic centimeters of spirits or twelve of wine. There was an extraordinary development of cocks' crests, and a rapid and general loss of flesh. The experiments were continued until it appeared that two months' absinthe drinking sufficed to kill the strongest cock or hen, while the brandy drinkers lived four months and a half, and the wine bibbers held on for ten months before they died the drunkard's death."

Some Pennsylvania beer sellers tried the effects of beer on a goat. Whether the experiment was for the purpose of determining the quality of the beer, or the constitutional toughness of the goat; is not recorded; but the result was fatal to the goat, notwithstanding the hardihood for which he is proverbial. Just how many glasses were required to extinguish him is not mentioned; but he died, and the high quality of the beer was established beyond the possibility of cavil.

But this is not the end of the story. The Humane Society learned of the proceeding, and immediately began an action against the beer venders for cruelty to animals. The action was undoubtedly justifiable, but it is a matter of wonderment that the same lawmakers who have made it an offense to kill goats with beer, have never once thought of its being a crime to destroy human beings by the same means, although there are a hundred thousand human beings sacrificed by this means, to one goat. It is to be hoped that the question of prohibition will be agitated until human beings are at least as well protected as goats.

The eminent Dr. Dujardin Beaumetz of Paris has been engaged for some years in conducting experiments upon the effects of alcohol on various animals, chiefly pigs, and finds it to be uniformly that of a poison.

A brilliant writer wittily says, If lower animals were addicted to the drug to one-tenth the degree man is, in a short time there would not remain upon the face of the earth an animal which would be *tamable, workable,* or *eatable.*

8.—Alcohol is a Poison to Human Beings.

Notwithstanding the apparent impunity with which diluted alcohol in the form of various liquors may be taken, pure alcohol is rapidly and certainly fatal when taken into the stomach without dilution. Cases of instant death from drinking a considerable quantity of strong liquor have often been recorded; and numerous cases of death from this cause are constantly occurring in every large city. As we shall show hereafter, alcohol in every form is still a poison, the rapidity of its effects being largely determined by the degree of dilution in which it is introduced into the system.

9.—Alcohol is a Destructive Agent.

Aside from its poisonous character, using the word in the ordinary sense, alcohol is a destructive agent. When pure, it possesses properties closely allied to those of a caustic, and when taken into the mouth occasions an intense burning. Applied closely to the skin, it speedily destroys it. This is exactly what would be expected of any chemical agent possessing such active properties as does this.

10.—Alcohol is an Irritant.

The irritating effects of alcohol are readily observed by placing a drop upon a raw surface, or in contact with some sensitive organ, as the eye. Even a very dilute solution will produce intense inflammation. Still more profound, though for the time less sensibly irritating, effects are produced when the alcohol is absorbed into the system and comes in immediate contact with the delicate internal structures of the body.

11.—Alcohol is a Narcotic.

Its first effects are exciting; but like most other substances of similar nature, its secondary and more prominent effect is that of a narcotic. It benumbs the sensibilities. If a man is exhausted, it relieves the sense of fatigue by obtunding his senses, not by replenishing his wasted energy. Persons who have died from the effects of an overdose of alcohol, present all the indications of narcotic poisoning.

12.—Alcohol is an Anæsthetic.

A tablespoonful of strong alcohol held in the mouth for two or three minutes, will obtund the sense of taste so as to render a person unable to determine between sweet and sour, saline and bitter. If taken in sufficient quantity, it will relieve the sense of pain sufficiently to enable a surgeon to perform an operation with little or no suffering on the part of the patient. A few years ago we employed it successfully as an anæsthetic to enable us to perform an operation upon the eyes. The patient, a lady, asserted that she felt scarcely any pain, although the operation involved the most sensitive portions of the eye, and required fully half an hour for its performance, as both eyes were operated upon. It is an interesting fact in this connection, that the two great anæsthetics which are so successfully employed in surgery—ether and chloroform—are both derived from alcohol, the anæsthetic effects of the latter being simply intensified in the former.

13.—Alcohol is a Food.

The aristocratic toper, who wishes to give an air of respectability to his vice, will claim that alcohol is a food. He will cite, in proof, instances in which persons have lived for weeks by the aid of no other nutriment, taking nothing but alcohol and water. This semblance of argument scarcely needs exposure; for the most that can be claimed is that it proves merely that persons have lived several weeks while taking only alcohol and water. The fact that individuals have in several instances been known to live from thirty to sixty days while taking only water, shows conclusively that those persons who lived a shorter time on brandy and water, lived in spite of the alcohol instead of by the aid of it. A conclusive evidence that alcohol is not a food is found in the fact that when taken into the system it undergoes no change such as foods undergo. It is alcohol in the still, alcohol in the stomach, alcohol in the blood, alcohol in the brain, in the liver, in all the tissues, and alcohol in the breath, in the perspiration, and in all the excretions. In short, alcohol is not used in the body, but leaves it as it enters, a rank poison.

14.—Alcohol is Not a Beverage in a Physiological Sense.

Water is the *only drink;* that is, the only liquid capable of supplying the demand of the system for fluid. The various beverages in common use are of value only to the extent that they contain water, the universal solvent. Alcohol, then, is neither food nor drink. It satisfies the craving for food, but does not replenish the tissues. Although a liquid, instead of supplying the needs of the system for liquid food, it creates a demand and a necessity for more.

15.—Alcohol Makes Bad Blood.

Those who have maintained that alcohol is a food have made many experiments for the purpose of establishing their theory upon scientific grounds. By these experiments it has been found that the urine and other excretions contain less of the worn-out material of the tissues when a person is using alcohol than when he is abstaining. From this alone it is concluded that alcohol prevents the wearing out or disintegration of tissue—a most astonishing conclusion. No one but a man stoutly prejudiced in favor of alcohol would think of forming such a conclusion. A far more rational deduction from the premises would be that the presence of alcohol in the system *prevents* the excretory organs from eliminating from the body the *dead* and *poisonous products* which result from the wearing out of the tissues. This conclusion would seem to be far more reasonable, since alcohol itself is a poison which is thrown out by the same organs whose proper function it is to remove the debris of the tissues. These organs cannot perform more than a certain amount of labor. If most of their activity is expended in eliminating alcohol, of course they can perform less of their proper labor, and so the dead products of disorganization will be left to accumulate in the body, and produce a deceptive increase of weight. It is by this means that the drunkard often acquires a bloated appearance. Every one knows that such an accumulation of tissue is not healthy flesh; yet it is of the same character as that which leads some prejudiced scientists to pronounce in favor of alcoholic beverages as a preventive of waste.

It is on account of this impure state of the system that the flesh of spirit-drinkers is notoriously so difficult to heal in cases of wounds, or surgical operations.

16.—Alcohol Destroys the Blood.

When this fiery drug is taken into the stomach, it is soon absorbed into the circulation, where it comes in contact with the corpuscles of the blood. The effect upon these delicate and important structures we can study by applying alcohol to the blood outside of the body; for the corpuscles will retain their life and activity for several weeks after being removed from the body, if placed under proper conditions. To make sure of no mistake about this matter, we will perform the experiment while we write. Our microscope, which will magnify one million times, being in readiness, we thrust a needle into a finger, and thus obtain a tiny drop of blood. Placing it upon a glass slide, we adjust it upon the instrument and look at it. Although the film of blood in view is so thin as to be transparent, it is crowded with beautiful bi-concave discs, the red blood corpuscles, each of which is perfectly formed, though only 1-3500 of an inch in diameter. Now we apply a drop of alcohol, a very tiny drop. Mark the effect. No sooner does it touch these little bodies than they begin to shrink, and soon lose all resemblance to their natural appearance. In a short time they are seen to be breaking up into fragments; and in five minutes from the commencement of the experiment the once beautiful and symmetrical little bodies which compose one-half of the blood, are reduced to broken fragments and shapeless masses. They have been fairly cut in pieces and eaten up by the alcohol.

The contact of alcohol with the corpuscles also causes them to lose their coloring matter, a very important part, as it is by means of this that they are enabled to perform their work as oxygen carriers. This effect may be observed in those which give no other evidence of injury from the alcohol. When taken in considerable quantity, it causes the corpuscles to adhere together in little bundles, thus occasioning obstructions of the capillaries.

"But what harm does this do?" says the drunkard or the moderate drinker; "the loss of a few blood corpuscles cannot be of any great consequence." The ultimate effect is the same as though the supply of air was cut off from the lungs by a cord tightly drawn around the neck. The business of the red corpuscles is to carry oxygen from the lungs to the tissues. If they are destroyed, oxygen cannot be carried in sufficient quantity, and the blood becomes foul, being charged with large quantities of carbonic acid, the poisonous substance which ought to be replaced by oxygen. One of the quickest known ways of destroying life is to cause an animal to inhale a poisonous gas known as carbonous oxide, which has the effect to paralyze all the blood corpuscles. Alcohol does the same thing just in proportion to the quantity taken.

17.—Alcoholic Degeneration.

In addition to its effects upon the corpuscles, alcohol produces other serious changes. One of the most important of these is coagulation or thickening of the fibrine of the blood, which occasions the formation of little clots which are swept along in the blood current until they reach the finest capillaries, where they are lodged, thus obstructing the circulation, and, according to the eminent Prof. Carpenter of England, constituting the first beginning of organic disease of the nerve centers and other important organs. These minute clots often constitute the cause of boils and troublesome abscesses ; and when they become large, as they sometimes do, they may produce instant death by the plugging up of a large artery in the brain, an accident which, there is every reason to believe, is not uncommon in cases in which large quantities of alcoholic spirits are taken.

Alcohol also greatly increases the amount of fat in the blood, probably by preventing the changes necessary to the complete digestion or assimilation of fat. In consequence of this surplus of free fat in the blood, fatty degeneration of the heart, vessels, liver, kidneys, and in fact of every part of the body, is induced, the fat particles being deposited in these various organs in place of their proper tissue.

It may be further objected that these changes do not occur unless very large quantities of alcohol are used. This, again, is an error. Dr. Carpenter is authority for the assertion that the changes in the corpuscles and in the fibrine of the blood take place when not more than one part of alcohol to five hundred of blood is employed. Thus it will be seen that the very weakest wines are unsafe, since none of them contain less than three to five per cent. Even small beer would be capable of doing mischief in this way.

18.—A Drunkard's Heart.

When alcohol is taken into the blood, it soon comes in contact with the nerve centers which govern the action of the heart. Its effect is the same as upon the other nerve centers. It paralyzes them, just as chloroform does the brain. Then the heart is like a steam engine without a governor, or a clock from which the pendulum weight has been removed. It runs down with wonderful rapidity. This effect is largely due, also, to the influence of alcohol upon the small blood-vessels, the nerves which control them becoming paralyzed, and they become dilated or relaxed, and so afford less resistance to the action of the heart, allowing it to beat too rapidly. This increased action is most unfortunately mistaken for increase of strength on the part of the organ, when it is mere increase of action, *wasted force.* The amount of extra work done by the heart under the influence of liquor may be readily estimated. Dr. Parkes, by a series of careful experiments, found that the pulse of a man whose heart beat about 74 times a minute, or 106,000 times in twenty-four hours, when drinking only water, was, when under the influence of one ounce of alcohol per day, compelled to beat 430 times more in a day. Two ounces of alcohol per day caused an increase of 1,872 beats a day. Four ounces required 12,960 extra beats. Six ounces drove the pulse up to 18,432 extra beats; and eight ounces to 25,488 unnecessary beats, or nearly one-quarter more than when taking only water.

The results of this experiment are of great value. They show very clearly how alcohol wastes not only the force of the heart, but of the whole body. The force exerted by the heart at each beat has been variously estimated at from five to fifty pounds. Assuming ten pounds as the actual amount of force expended, we may readily ascertain the amount of force wasted through the increased action of the heart by different quantities of alcohol. Thus, one ounce of alcohol, with 430 extra beats, caused a waste of 4,300 pounds of force; that is, of force equivalent to that expended in lifting 4,300 pounds one foot high in a minute. When two ounces were employed, the wasted force was 18,720 pounds. With eight ounces of the poison, the force wasted was 254,880 pounds, or more than 127 tons extra. When we consider how much labor would be required to lift 127 tons of coal a foot high, or one-tenth of that amount ten feet high, the result seems almost incredible ; but there is neither reason nor opportunity for doubting the fact. Other observers have repeated the experiments, and with similar results. Dr. Richardson finds the results confirmed by his experiments upon animals. If the force of the heart should be taken at fifty pounds, as estimated by some of the most eminent physiologists, the results would, of course, be five times as great as those given. Dr. Parkes observed that after the conclusion of the experiment, five or six days elapsed before the young man recovered his natural condition, before the alcohol was fully eliminated, the heart in the meantime remaining weaker than natural, as shown by the sphygmograph.

In a state of health, the heart is almost wholly composed of muscular tissue and blood-vessels. It is, in fact, a hollow muscle, by the contraction of which the blood is propelled into the remotest corners of the vital economy, carrying in its scarlet stream the elements from which the tissues are rebuilt. The amount of work performed by this little organ is enormous. The strength which it exerts in each contraction has been variously estimated by different experimenters, one of the lowest estimates being ten pounds for each beat or pulsation. As the heart beats on an average seventy-two times a minute, a little computation will show that the work of this little organ is equivalent to lifting the enormous weight of one million thirty-six thousand and eight hundred pounds, or more than five hundred tons, one foot high. The heart is frequently called upon to do a large amount of extra work, as in rapid walking, or running, lifting, or physical labor of any kind. Severe mental labor also brings an extra strain upon it, and its integrity is of the utmost consequence to the safety of the rest of the body.

When alcohol is taken into the blood, it soon comes in contact with the nerve centers which govern the action of the heart. Its effect is the same as upon other nerve centers. It paralyzes them, just as chloroform does the brain.

In addition to this, the fatty particles which are so abundant in the blood of a spirit drinker, are deposited in the walls of the heart in the place of the muscular tissue which should compose them. The walls are thus weakened, and are liable at any time to rupture. It is a fact well known to physicians, that this is one of the most common causes of heart disease. We have seen scores of cases of heart disease in the large hospitals of New York, the larger share of which were in persons addicted to the use of liquor.

The pulse of a toper is so characteristic. It is weak, frequent, easily quickened even by very slight exercise, and very irregular. Alcohol has a direct depressing influence upon the heart, diminishing its power for work, and rendering it subject to both functional and organic disease.

19.—The Whisky Flush.

The local blood supply of the body is regulated by means of special nerves which follow the blood-vessels from the heart to their minutest distribution. One of the effects of alcohol is to paralyze the centers in which these nerves originate, the effect of which is to allow the vessels to become unnaturally dilated, allowing too much blood to enter various parts, thus occasioning congestions and even inflammations. In this way the lungs, liver, heart, or any other part of the body may become diseased. It is this which causes the drunkard's face to flush ; and not only the face but the whole body, the brain, the liver, every vital organ, is in the same state of congestion. Is it any wonder that the toper feels depressed and enervated, and in need of a "pick me up" the next morning after a debauch ? or that he falls so easy a victim to causes of disease which others escape ? It was long ago observed that drunkards are the favorite victims of cholera, the plague, sunstroke, and other causes of speedy death. The system is prepared by the paralyzing influence of the drug for almost any form of malady to which human flesh is heir.

20.—A Toddy Blossom.

One of the signs of intemperance, which its victims put forth the most strenuous efforts to suppress, is that peculiar enlargement of the nose, with intense redness, so appropriately termed the "rum blossom." The example given in the plate, though an extreme case, is no exaggeration, as it is a fac-simile of the "blossom" belonging to a somewhat popular politician in one of our Western cities. Like the drunkard's ring, the rum blossom, although something of a blemish, is chiefly important in consequence of its significance, since it does not particularly interfere with the functions of the organ to which it is attached. The mode of development of the rum blossom is interesting. It may be best explained by reference to an experiment sometimes performed by physiologists upon lower animals. A white rabbit is generally selected for the experiment, which consists in dividing a certain nerve, which in a curious manner, not wholly understood, controls the circulation in the ear of the rabbit. The object of this nerve is to keep the blood-vessels of the rabbit's ear in a state of proper contraction, thereby regulating the supply of blood. The moment it is divided, the blood-vessels relax, become filled with blood, and the ear blushes. This can be readily seen in the ear of the white rabbit, from the absence of coloring matter in its skin. By the removal of a portion of the nerve, so that the divided parts will not grow together again, the condition of blushing or congestion may be made permanent in the ear. When left in this condition for a few months, it is observed that the ear becomes much larger than that of the other side, the increased supply of blood having occasioned more vigorous growth, as shown on the plate. All other parts of the rabbit's body, and of the human body as well, are supplied with nerves which regulate the circulation in each part. This is true of the face, the lungs, the stomach, the liver, the brain, and all other internal and external organs. Blushing or blanching of the face are occasioned by the influence of different emotions upon these nerves. The effect of alcohol is to paralyze these nerves, and when its frequent use occasions the almost constant paralysis and engorgement of the blood-vessels of the face and nose, more particularly the latter, it, like the rabbit's ear, grows too fast, and by this means may acquire even as enormous a development as that shown on the plate.

21.—The Drunkard's Brain.

The brain, when healthy, is so soft that it would not retain its shape but for the skull. The sharpest knife is required to cut it without mangling its structure. It is necessary to immerse the organ in alcohol for weeks or months in order to harden it, when a careful examination is essential. A drunkard's brain presents a marked contrast. It is already hardened, pickled almost. In the dissecting room, it affords rare pleasure to a medical student to secure the desiccated brain of an old toper. A celebrated anatomist declared that he could tell a drunkard's brain in the dark, by the sense of touch alone. A London physician reported a case in which he found, upon making a *post-mortem* examination. so strong an odor of alcohol emanating from the brain, that he applied a match to it, when it burst into a flame. The quantity of alcohol in the brain is sometimes so great that it can be collected by distillation after death.

It must not be supposed that every drunkard's brain is as hard as a pickled one; but it may be fairly supposed that the hardening effect of alcohol has no little influence in the production of degenerations of the brain, such as result in various forms of progressive paralysis. Numerous functional disorders of the brain are also traced directly to the habitual use of alcoholic liquors. Locomotor ataxia, an almost hopeless malady involving the brain and spinal cord, is very often the result of intemperance.

22.—Alcoholic Apoplexy.

The intense congestion of the brain induced by alcohol is the very condition in which apoplexy, or rupture of a blood-vessel, is most likely to occur. When the walls of the arteries have been weakened by fatty degeneration, as already explained, the danger is increased many fold. A peculiar condition of the eye, known as the *arcus senilis*, is often observed in drunkards. This condition acquires its name from the fact that it is often present in elderly people, in consequence of the degeneration which naturally occurs in old age. The ring is occasioned by a deposit of fat which is within the upper edge of the cornea, and can be seen, when present, by a careful examination of the eye. This ring is often present in persons addicted to the use of alcohol at a much earlier period than it should naturally make its appearance, and although it does not in the least injure the eye, its significance is very great, since it indicates that the deposit of fat by which it is produced, is taking place in other parts of the body, as the brain, the heart, the blood-vessels, the liver, and other important vital organs. It is a sign hung out in the drunkard's eye to warn others of the havoc which is being made within.

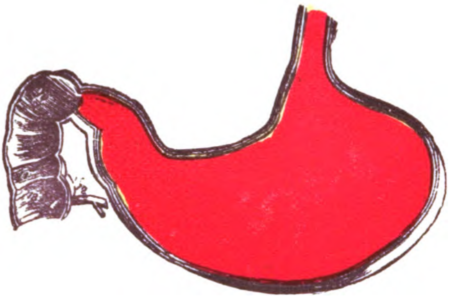
It has been claimed that old persons require alcohol on account of the diminished activity of their vital functions. The facts above stated show clearly that in old age the danger of injury from the use of alcoholic drinks is very greatly increased.

23.—Alcoholized Nerves.

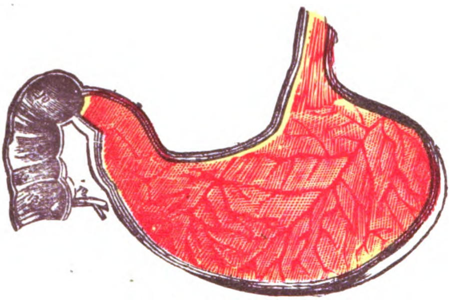
Who has not observed the trembling, unsteady hand of the man who has long been accustomed to the use of alcoholic liquors? Often his shaking hand deposits a share of the poisonous dram upon the ground. If he is a mechanic, he cannot resume his work without a strong toddy to steady his hand; if an accountant, he must have a glass to clear his head. The condition, at first temporary, finally becomes permanent, and thus hopeless disease may originate.

Alcoholic insomnia is a frequent form of nervous disturbance induced by drink. While alcohol at first acts in many persons as a soporific, its final effects are to produce inability to sleep; or, if sleep is not wholly broken, a disturbed, unnatural, unrefreshing state of unconsciousness, hardly worthy of being called sleep, is induced. In natural sleep the supply of blood to the brain is greatly diminished, only a sufficient amount of the nutritive fluid circulating in the arteries to carry on the reparative work of the brain. Unconsciousness is due to this fact. A state of unconsciousness may also be produced by extreme congestion of the brain, a condition closely allied to that which just precedes apoplexy. This is the sleep of the drunkard. If he is not kept awake, through morbid, disordered action of the brain, due to an increased blood supply in its paralyzed arteries, he falls into an apoplectic slumber, in which he is haunted by horrid nightmares, goblins, ghosts, and frightful imagery, and awakes unrefreshed, unrecuperated. This unrefreshing sleep is produced by chloral and other narcotics, as well as by alcohol, a fact which shows the folly of attempting to remedy the alcoholic disease by dosing the patient with other drugs equally bad if not worse. The only proper remedy is total abstinence, and this will usually effect a cure, unless the condition of paralysis of the cerebral blood-vessels has been so long continued that the power of contraction cannot be restored to them.

No class of persons are so subject to nervous diseases due to degeneration of nerves and nerve-centers as drinkers. The constant congestion of the brain and spinal cord occasions thickening of the membranes which inclose and protect these delicate parts, and gives rise to fatty degeneration and



HEALTHY STOMACH.



CONGESTED STOMACH OF A MODERATE DRINKER.

PLATE I.

hardening, which causes loss of function. The paralytic condition, which is at first temporary, existing only while the person is under the influence of alcohol, and manifested as partial or complete loss of muscular power, according to the dose, by degrees becomes permanent, as does also the loss of power to regulate or co-ordinate muscular effort, shown in the staggering steps of the drunkard. Partial or general paralysis, locomotor ataxia, epilepsy, and a host of other nervous disorders, are directly traceable to the use of alcohol.

24.—The Drunkard's Stomach.

We have endeavored to illustrate by colored plates the contrast between a stomach affected by alcoholic disease and a healthy stomach.

Fig. 1, Plate I., represents the healthy stomach. By the removal of the anterior wall of the stomach, the mucous membrane lining its interior is also shown. We would direct especial attention to the uniform rosy tint characteristic of the healthy state of this organ, in which digestion, one of the most important of the vital processes, is performed. A microscopical examination of the membrane shows it to be traversed by a dense net-work of blood-vessels, which are wholly invisible so long as the organ remains in a healthy condition. Little pockets are also found in which are located the peptic glands which form the gastric juice, the essential agent in the process of stomach digestion.

In the small intestine below the stomach we have a similar arrangement of blood-vessels and glands. The condition of the stomach in health and disease is better understood than that of almost any other internal organ. This is true for two reasons : First, the stomach has been studied more than any other internal organ ; Second, the study of its condition has been carried on under more favorable circumstances than that of any other internal organ. The stomach is a hollow organ, and physiologists and physicians have succeeded in making a permanent opening into its interior in some lower animals, through which they could watch the organ at work and study the effects of the various substances which were introduced through the mouth of the animal, or through the artificial opening. Accident has, in several cases, made the same observation possible in human beings. One of the most notable cases was that of Alexis St. Martin, an employe of the Hudson Bay Fur Company, who, in the early part of this century, received a gun-shot wound which carried away a considerable portion of the abdominal wall, and perforated the stomach. The wound healed in such a way as to leave a permanent opening into the stomach through which the process of digestion and the effects of various substances upon the stomach and digestion could be accurately observed for many years. Dr. Beaumont kept this man in his employ, making hundreds of observations upon his stomach, the results of which were published, and are considered among the most reliable and conclusive of all the observations which have been made upon this organ. Dr. Beaumont made a careful study of the effects of alcohol upon the stomach of Alexis St. Martin, who enjoyed a remarkable degree of health and vigor even after his accident, which seemed not to have interfered in the least with his general health after his recovery, as he lived to a great age in the enjoyment of almost uninterrupted health, his death occurring only a few years ago.

STOMACH OF A MODERATE DRINKER.

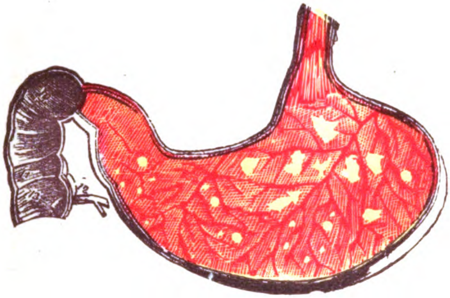
Fig. 2, Plate I., represents the condition of the stomach of a person accustomed to use alcoholic drinks in what is termed "moderation;" as, for example, a man who takes regularly his glass of grog before breakfast, or at dinner, or a bowl of sling as a "night-cap." The mucous membrane of the stomach is in a state of congestion. This congested condition was observed by Dr. Beaumont in the stomach of Alexis St. Martin whenever he was allowed to take alcoholic drinks, of which he was very fond, even in a moderate quantity. The effect of alcohol, as well as that of mustard, pepper, pepper-sauce, spices, and condiments, is to produce a state of excitement and irritation in the stomach, the result of which, when frequently repeated, is permanent congestion, and is the cause of numerous forms of dyspepsia. But alcohol does more than simply irritate the stomach. By its antiseptic influence it prevents the digestion of the food, and by its chemical properties it destroys the activity of the gastric juice, and so does triple mischief.

STOMACH OF A HARD DRINKER.

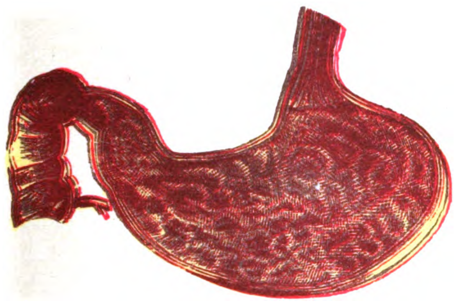
Fig. 1, Plate II., represents the actual state of things which has been found existing in the stomachs of persons accustomed to use alcoholic drinks daily in large quantities. The blood-vessels are dilated, as in the case of the moderate drinker, and in addition small ulcers are seen scattered over the diseased surface. The stomach of an old toper might be in the condition shown by this plate without his being conscious of the fact, as the nerves of the stomach are so paralyzed by alcohol that their normal sensibility is quite lost.

THE STOMACH IN DELIRIUM TREMENS.

Fig. 2, Plate II., represents in a very faint degree the terrible condition present in the stomach of a victim of alcoholic poisoning, suffering with what is generally known as "delirium tremens," or acute alcoholism. The mucous lining of the stomach is in a state of intense inflammation, so that its functions are wholly suspended. In a case which we had under treatment a few years ago, we found the patient at our first visit suffering most intense nausea. He had been vomiting incessantly for more than two days. The smallest sip of water could not be retained upon the stomach. Great quantities of mucus were vomited, together with blood. During this attack the patient generally feels little pain,



ULCERATED STOMACH OF A HARD DRINKER.



STOMACH IN DELIRIUM TREMENS.

PLATE II.

and often refers his symptoms to his stomach, since his sensibilities are so benumbed that he is unconscious of his real condition. Dr. Beaumont observed on one occasion when Alexis St. Martin had been drinking heavily for a few days, that although his stomach was in a state of inflammation and ulceration, he was insensible of pain and felt no inconvenience, only suffering from a severe headache. Post-mortem examination of persons who have died of delirium tremens usually discloses the stomach black with mortification.

25.—Drunkard's Dyspepsia.

A drunkard is certain to become a dyspeptic. Alcohol tans the stomach, rendering it inactive, and causing atrophy of the glands which form the gastric juice. The supply of this digestive fluid is thus diminished. Alcohol precipitates the pepsin from the gastric juice, and so renders useless that which is secreted. Digestion cannot progress while alcohol is in the stomach, being delayed until the poison can be absorbed.

St. Martin had been addicted to the use of liquor, and sometimes broke away from the restraints imposed upon him by the doctor's experiments, and indulged his appetite for alcoholic drink. After these occasions, Dr. Beaumont always noticed that the mucous membrane of the stomach was greatly congested. Even the use of a small quantity of alcoholic drink was sufficient to produce an inflamed appearance, while greater excess caused the stomach to present a surface swollen and roughened with inflammation, with ulcers and numerous black patches of deadened tissue.

Notwithstanding this terrible condition of his stomach, St. Martin was scarcely conscious of any disturbance, and thought himself as well as usual! Why was this? Because the stomach has few nerves of general sensibility, and suffers long before it remonstrates.

When long continued, alcohol produces worse effects; it causes inflammation of the stomach, foul ulcers, and cancerous disease of the organ. Not long since, we saw in Bellevue Hospital, New York, a case of most violent gastritis produced by taking a small quantity of alcoholic drink. The patient was a woman, and for several days she was unable to retain any food in the stomach. Nutrition was maintained by nutritive enemata. The most obstinate cases of gastric ulcer are found in drunkards.

26.—Alcoholic Insanity.

The condition of a man under the influence of liquor is precisely that of an insane man as regards his mind. When the act of getting drunk is frequently repeated, the condition of the mind induced by drink may become permanent, when the individual is a fit subject for an insane asylum.

Intemperance, more than any other cause, fills our lunatic and idiotic asylums. According to the statistics of insanity in France, thirty-four per cent of the cases of lunacy among males were due to intemperance. One-half of the inmates of the

Dublin insane asylum owe their disease to the use of liquor.

Lord Shaftesbury, chairman of the English Commission on Lunacy, in his report to parliament, stated that six out of every ten lunatics in the asylums were made such by alcohol.

27.—A Drunkard's Liver.

The appearance of a drunkard's liver is characteristic. "Hob-nailed liver" is another name for the diseased organ as found in spirit-drinkers. It is shrunken, hard, and almost totally useless, insensible alike to pain and to proper sensibility. Externally it looks like the hob-nailed sole of an English cartman's shoe, from which resemblance it received its name.

This kind of liver is found in those who have indulged in drink for several years. The livers of more moderate drinkers are found filled with fat.

These derangements of the liver give rise to numerous other disturbances, of which abdominal dropsy is one common form.

Diabetes, a very fatal malady, especially in spirit-drinkers, is a peculiar disease which is generally caused by some of these derangements of the liver.

Fatty liver, in which the organ sometimes becomes enormously enlarged and changed to fat, and nutmeg degeneration, in which it comes to resemble the smooth surface of a half-grated nutmeg, are also among the common effects of alcohol upon habitual users of the poison.

28.—"Bitters" and "Biliousness."

An immense quantity of filthy compounds of bitter extracts and bad whisky or crude alcohol is annually consumed, much being swallowed even by people who profess to be total abstainers. The chief active ingredient in most of these nostrums is alcohol. Without this important ingredient, they would soon cease to be popular. They are supposed to possess some occult property by which the liver is persuaded to perform its functions more actively, when as a matter of fact they only increase its torpidity, finally bringing the deluded patient into a condition in which no sort of stimulation will produce even temporary relief from the many unpleasant symptoms supposed to originate in a torpid liver. "Bitters" may be set down as a very active cause of "biliousness."

29.—Beer and Bright's Disease.

The idea that beer is harmless because it contains but a small proportion of alcohol, has been wholly refuted by the observation that Bright's disease and other maladies of the kidneys are far more frequent among beer drinkers than among any other class of persons. The excessive amount of work imposed upon the kidneys by the use of the large quantities of beer generally indulged in by those addicted to its use, sooner or later results in congestion, from which there is but a slight step to acute or chronic inflammation, needing nothing more than a little extra fatigue or a severe cold to precipitate the impending and almost invariably fatal malady. Fatty degeneration of the kidneys is frequent among the users of beer, ale, and similar liquors; while those who habitually use stronger liquors, as gin, rum, whisky, or brandy, suffer with atrophy of the kidneys.

30.—Drunkards' Dropsy.

The bloated features of the sot indicate too plainly for mistake the dropsical tendency of the alcohol habit; and the ultimate effects of the poison upon the liver and kidneys, as already described, lay the foundation for one of the most incurable of all the forms of dropsy. We have seen many cases of dropsy induced in this way, and recovery, even under the most favorable circumstances, has been very rare indeed.

31.—Alcoholic Consumption.

Dr. Richardson points out the fact that alcohol, instead of preventing, actually produces consumption, and of a most fatal type. He states that a person suffering from alcoholic phthisis shows no improvement under treatment. The disease, steadily, surely, and usually quite rapidly, progresses to a fatal termination. The disease is most liable to attack those who seem to be almost invincible to the effects of alcohol, and who are often pointed to as examples of the harmlessness of alcoholic drinks. The disease often makes its appearance just when the drinker, alas! too late, is making up his mind that the poison is really hurting him, and is thinking of reforming.

32.—Alcohol vs. Strength.

The laborer, the traveler, and the soldier use alcohol under the delusion that it strengthens. When fatigued, the laborer takes a glass of grog and *feels* better, or thinks he does. He imagines himself stronger. His increased strength, however, is wholly a matter of the imagination.

The use of alcohol makes a man *feel* stronger—makes him believe that he can do more work, endure more fatigue and hardship, and withstand a greater degree of cold than he could do without it; but when an actual trial is made, it soon becomes apparent that the ability is lacking. Feeling and doing are two wholly different things; and here is where alcohol is so deceptive. It is a narcotic, and paralyzes the nerves so that they lose their normal sensibility. The weary man takes a glass of brandy, and continues his toil,—not because he has been strengthened, not because his vital forces have been re-inforced, but because he no longer *knows* that he is tired. Weariness is an appeal for rest on the part of the tissues. They have become worn and broken by action, and they require time to repair themselves. Alcohol has the same effect upon the nerves which control the building up of the body that chloroform has upon the nerves of general sensibility, and it allays the sense of weariness in the same way that chloroform allays pain during a surgical operation,—by paralysis. A person whose hand has been rendered insensible to pain by intense cold may place his fingers in the fire without suffering at the time, but he is not thereby prevented from being burned, any more than though his sensibility was unimpaired; and the effects of the destructive action of heat will ultimately become painfully apparent.

When a man has labored until his tissues are so broken down that they demand time for reconstruction, alcohol will so paralyze his sensibilities that he may continue laboring for a time, but he does so at a terrible cost; for he is all the time continuing the process of breaking down his tissues beyond the point at which nature warned him to desist. Not infrequently this reckless expenditure is continued so long that the life forces become so completely exhausted that the individual becomes a victim of delirium tremens, or perhaps dies from exhaustion.

Numerous experiments have shown that alcohol decreases muscular strength. Says Dr. Brinton, "The smallest quantity takes somewhat from the strength of the muscles." Says Dr. Edmunds, of London, "A stimulant is that which gets strength out of a man."

33.—Alcoholized Muscles.

Among the other degenerations produced by alcohol, fatty degeneration of the muscles shouid be mentioned. This degeneration consists in a change of the proper muscular tissue to fat. The process may involve all the muscles of the body, or simply a few, as those of the heart and blood-vessels. It is an injury which can be in no way repaired, and must inevitably end in death sooner or later.

34.—Stimulation Not Strength.

If by a stimulant we are to understand something which imparts force to the body when weakened by disease, then it is evident that alcohol can be of no service in this direction; for, as already shown, it is incapable of supplying force, undergoing no change in the body. All force arises from changes in matter. The forces manifested by the living system are the result of vital changes occurring in its tissues.

If by a stimulant is meant something which *excites* nervous action, which calls out the manifestation of force, then alcohol is certainly a stimulant. And it is in this sense only that it is a stimulant. The lash is a stimulant to a tired horse. It does not increase his force, or make him any less tired. It only compels him to use a little more of his already depleted strength. A goad, a spur, a red-hot iron, would have the same effect. So with alcohol. It arouses the vital instincts by its presence in contact with some of the tissues, and, in obedience to the law of self-preservation, the vital organs are excited to increased action for the purpose of expelling the poison. This increased activity is what is called stimulation. Can it benefit a person already weak with overlabor? As just quoted, "A stimulant is that which gets strength out of a man." Such a process could not be very beneficial to a person already debilitated.

But a weary man *feels* better after taking wine; why is that the case? Alcohol diminishes sensibility, as chloroform does. It is a narcotic. The man feels better after taking wine, because he does not know that he is weary, that his tissues need repair. If he continues to labor, he continues to wear out his tissues, and increases the necessity for rest, even though he may not know it. When the narcotizing influence of the alcohol is removed, he will be made painfully conscious of the fact by a degree of prostration far greater than he would have suffered if he had taken no alcohol.

35.—Alcohol vs. Animal Heat.

The sensation of warmth produced by taking a glass of wine or brandy is delusive. The circulation is unbalanced, and for a few moments there is a seeming increase of heat; but the thermometer shows that the temperature is lessened. Says Dr. Parkes, the eminent English sanitarian, "All observers condemn the use of spirits, and even of wine or beer, as a preventive against cold." The names of Dr. King, Dr. Kane, Captain Kennedy, and Dr. Hayes, may be cited as holding to this opinion. In the last expedition in search of Sir John Franklin, the whole crew were teetotalers.

Prof. Miller states that the Russian military authorities "interdict its use absolutely in the army, *when troops are about to move under extreme cold;* part of the duty of the corporals being to smell carefully the breath of each man on the morning parade, and to turn back from the march those who have indulged in spirits, it having been found that such men are peculiarly subject to be frost-bitten and otherwise injured."

"The Hudson Bay Company have for many years entirely excluded spirits from the fur countries to the north, over which they have exclusive control, 'to the great improvement,' as Sir John Richardson states, 'of the health and morals of their Canadian servants, and of the Indian tribes.'"—*Dr. Carpenter.*

36.—Alcohol vs. Mental Power.

Thousands of editors, lawyers, students, authors, and even clergymen, keep beside their midnight lamps a bottle of wine or brandy, and consider one as indispensable as the other. They imagine that with the frequent drams they quaff from that green bottle, they imbibe an increase of mental vigor. Thousands of lecturers, orators, and ministers, sip a glass of sparkling poison just before they step upon the platform. The first imagines that alcohol is necessary to enliven his energies and sharpen his memory. The second relies upon alcohol to burnish his eloquence. The third depends upon the poisonous beverage to quicken his pious zeal, intensify his fervor, and lend him inspiration for the duties of his office.

We might justly dwell upon the absurdity of such practices, and well question the efficiency of a gospel shrouded with the fumes of alcohol; but we will only quote the words of Dr. James Edmunds, of London, Eng. He says, in speaking of the narcotic influence of alcohol:—

"That is the effect when a minister, who cannot preach without a glass of wine, has a glass in him. He finds his tongue will run on a little faster than his brains would be able to drive it if he had not got the alcohol in him. I submit to you broadly that if you take a man with a single glass of wine or spirits in him—if you test that man's mental accuracy and real debating power, you will find that the man who has spirit in him won't do it as well as the man who does not use it."

37.—Alcohol a General Disturber in the Vital Economy.

Close upon the derangement of the stomach, which is certain to come sooner or later with all drinkers, follows nearly every other functional disease possible to the human system. Every organ is disturbed. The whole vital machinery is deranged. Strange noises are heard in the head, occasioned by the rushing of the hot torrent of poisoned blood through the distended blood-vessels of the head, which pass near the ear. Black spots and cobweb appearances annoy the sight. Alcoholic amaurosis or amblyopia comes on, and sight becomes impaired; sometimes blindness follows. The dilated blood-vessels of the skin become permanently enlarged, especially in the face and nose, and the drinker gets a rum blossom. Skin diseases of various sorts are likely to appear, particularly eczema of the fingers or toes, or on the shins. An unquenchable thirst seems to be ever consuming the blood, and nothing but alcohol will even temporarily assuage the desire for drink. Notwithstanding, large quantities of fluids will be taken, often amounting to several quarts a day, which overworks the excretory organs.

The liver and kidneys are disturbed in their functions, one day being almost totally inactive through congestion, and the next rallying to their work and doing double duty.

Every organ feels the effect of the abuse through indulgence in alcohol, and no function is left undisturbed. By degrees, disordered function, through long continuance of the disturbance, induces tissue change. The imperfectly repaired organs suffer more and more in structure until the most extensive and disastrous changes have taken place.

38.—Alcohol vs. Longevity.

It is very easy to prove that the influence of alcohol, as of every other poison, is to shorten life. Dr. Willard Parker, of New York, shows from statistics that for every ten temperate persons who die between the ages of twenty-one and thirty, fifty-one intemperate persons die. Thus it appears that the mortality of liquor-users is *five hundred per cent greater* than that of temperate persons. These statements were based on the tables used by life insurance companies.

Notwithstanding the constant protest of both moderate and immoderate drinkers that alcohol does not harm them, that it is a necessary stimulus, a preventive of fevers, colds, consumption, etc., and the assertion of certain scientists that it is a conservative agent, preventing waste and so prolonging life, the distinguished English actuary, Mr. Neison, has shown from statistical data which cannot be controverted, that while the temperate man has at twenty years of age an average chance of living forty-four and one-fifth years, the drinking man has a prospect of only fifteen and one-half years of life. At thirty years of age the temperate man may expect to live thirty-six and one-half years, while the dram-drinker will be pretty certain to die in less than fourteen years.

39.—Moderate Drinking, Mild Poisoning.

Moderate drinkers do not escape. "Chronic alcoholism" is the disease which fastens upon them, and its symptoms are as distinct as those of any other disease. Gout and rheumatism are the special patrons of the moderate topers, the wine-bibbers. Neuralgia is another comforter of small tipplers. General nervous debility and dyspepsia also find a great proportion of this class among their victims.

It is quite useless for moderate drinkers to suppose that by using alcohol in small quantities they escape its evil effects. It is a poison in all doses. As Dr. Smith says, "In whatever dose, the direction of the action of the alcohol must be the same."

Says Dr. Chambers, "The action of frequent divided drams is to produce the *greatest amount of harm* of which alcohol is capable, with the least amount of good."

The effect of the constant action of a small quantity of the poison is far greater than that of excessive, but only occasional, quantities. Hence the habitual moderate drinker, even of wine, beer, or hard cider, is much more subject to chronic nervous disorders and degenerations of various sorts than the man who goes on a spree once in two or three months.

40.—The Entailments of Alcohol.

The drinker himself is not the only sufferer from his vice. Indeed, it seems in many cases that he is not the greatest sufferer. He may even live out his threescore years and ten, in apparent defiance of the laws of nature and the warnings of friends; but look at his children. Are they as strong and robust as he? Oh! no; instead, we often see them frail, nervous, imbecile, idiotic,—poor specimens of the race. The iniquities of the father are visited upon the children.

Dr. S. G. Howe attributed one-half of the cases of idiocy in the State of Massachusetts to intemperance, and he is sustained in his opinion by the most reliable authorities. Dr. Howe states that there were seven idiots in one family where both parents were drunkards. One-half of the idiots in England are of drunken parentage, and the same is true of Sweden, and probably of most European countries. It is said that in St. Petersburg most of the idiots come from drunken parents.

Ten Scientific Arguments Against Tobacco-Using.

1.—The Custom is a Barbarous One.

This statement is true, both as regards its character and its origin. In the month of November, 1492, when Columbus discovered the island of Cuba, he sent two sailors to explore it, who reported, when they returned, among many other strange and curious discoveries, that the natives carried with them lighted fire-brands, and puffed smoke from their mouths and noses, which they supposed to be the way the savages had of perfuming themselves. They afterward declared that they "saw the naked savages twist large leaves together, and smoke like devils."

Tobacco-using, together with the implements for its use and all the different modes of taking it, originated wholly with the heathen barbarians who roamed like wild beasts over the plains and through the dense forests of this continent four centuries ago. Civilized men have made no improvements or discoveries of any account in connection with its use; they have simply followed the example of those naked savages whom the discoverers of America saw chewing, snuffing, and smoking "like devils" almost four hundred years ago. It is evident, then, that tobacco-using is a barbarous custom in the fullest sense.

It must not be supposed, however, that the world was conquered by this most pernicious and tyrannical of vices without a struggle. The good, the wise, and the prudent everywhere opposed it. In most instances, kings and others in authority placed every obstacle in the way of its introduction and propagation, and even imposed severe penalties upon those who used the weed.

2.—It is a Deadly Poison.

The active principle of tobacco, that is, that to which its narcotic and poisonous properties are due, is *nicotine*, a heavy, oily substance which may be separated from the dried leaf of the plant by distillation or infusion. The proportion of nicotine varies from two to eight per cent, Kentucky and Virginia tobacco usually containing six or seven per cent. A pound of tobacco contains, on an average, three hundred and eighty grains of this deadly poison, of which one-tenth of a grain will kill a dog in three minutes. A case is on record in which a man was killed in thirty seconds by this poison.

The poison contained in a single pound of tobacco is sufficient to kill three hundred men if taken in such a way as to secure its full effect. A single cigar contains poison enough to extinguish two human lives if taken at once.

Very few users of the weed need to have a description of the effects of a moderate degree of poisoning with tobacco. The giddiness, nausea, and deathly sickness which follow the first attempt to use the poisonous drug, are indubitable evidence of the poisonous character of tobacco, which evidence is confirmed by the difficulty—in many cases very great—experienced in becoming accustomed to its use. In severe cases of poisoning, violent vomiting and purging, vertigo, deathly pallor, dilatation of the pupil, a staggering gait, disturbed action of the heart, interference with respiration, and in extreme cases insensibility and syncope, are commonly observed.

Dr. Richardson thus describes the condition of a person learning to smoke :—

"The brain is pale and empty of blood ; the stomach is reddened in round spots, so raised and pile-like, that they resemble patches of dark Utrecht velvet ; the blood is preternaturally fluid ; the lungs are pale as the lungs of a calf, when we see them suspended in the shambles ; while the heart, overburdened with blood, and having little power left for its forcing action, is scarcely contracting, but is feebly trembling, as if, like a conscious thing, it knew its own responsibility and its own weakness. It is not a beating, it is a fluttering heart ; its mechanism is perfect, but each fibre of it to its minutest part is impregnated with a substance which holds it in bondage and will not let it go."

3.—Effects of Tobacco on the Blood.

When taken in any form, tobacco very readily finds its way into the blood, and, according to Dr. B. W. Richardson, it produces in the vital fluid very serious changes. He describes these changes in the following graphic words :—

"On the blood the prolonged inhalation of tobacco produces changes which are very marked in character. The fluid is thinner than is natural, and in extreme cases paler. In some instances the deficient color of the blood is communicated to the body altogether, rendering the external surface yellowish white and puffy. The blood, being thin, also exudes too freely, and a cut surface bleeds for a long time, and may continue to bleed inconveniently, even in opposition to remedies. But the most important influence is exerted over those little bodies which float in myriads in the blood and are known as the red corpuscles. These bodies have naturally a double concave surface, and at their edges a perfectly smooth outline. The absorption of fumes of tobacco necessarily leads to rapid changes in them; they lose their round shape, becoming oval and irregular; and instead of having a mutual attraction for each other and running together, a good sign of physical health, they lie loosely scattered before the eye, and indicate to the learned observer, as clearly as though they spoke to him and said the words, that the man from whom they were taken is physically depressed and deplorably deficient both in muscular and mental power."

4.—Smokers' Sore Throat.

The redness and dryness of the mucous lining of the mouth and throat so common with smokers, is the result of the direct irritation of the hot fumes of the poisonous weed which are drawn in through the pipe or cigar. This cause of chronic disease of the throat is so very common that "smokers' sore throat" has come to be recognized as a distinct malady. Some smokers pretend to smoke for the cure of throat difficulties; but the excuse is a mere pretense in most cases. Tobacco never cures sore throat. It may temporarily relieve local irritation, but can do no more, and always increases the disease.

5.—Smoker's Heart.

The effect of tobacco upon the heart is indicated by the pulse, which is a most accurate index to the condition of the heart. The pulse of a tobacco-user says, in terms as plain as any words could, that his heart is partly paralyzed, that its force and vigor are diminished, that it is, in fact, poisoned. Old smokers, and not a few of those who have indulged but a few years, often suffer with palpitation of the heart, intermittent pulse, *angina pectoris*, and other symptoms of derangement of this most important organ. There is, in fact, a diseased condition of the heart which is so characteristic of chronic tobacco-poisoning that it has been very appropriately termed "narcotism of the heart." Medical statistics show that about one in every four smokers has this condition. There is good evidence for believing that not only functional but organic disease of the heart may be occasioned by the use of tobacco.

6.—Smokers' Cancer.

There is no chance to doubt that tobacco-using is often a cause of this terrible disease. All eminent surgeons testify that they frequently meet cases of cancer of the lip and tongue which have been occasioned by smoking. In the great hospitals of this country and Europe we have seen many cases of smokers' cancer, besides a number which we have met in our own practice.

7.—Tobacco-Users' Dyspepsia.

Notwithstanding the fact that tobacco is very frequently recommended as a sovereign remedy for dyspepsia, we have become convinced by careful observation in hundreds of cases, that it is never a cure, and is in hundreds of instances a cause of dyspepsia. Tobacco is a narcotic. The effect of narcotics generally is to lessen the secretion of gastric juice, and to decrease the activity of the stomach. Tobacco does this in a very marked degree. A man who is hungry may appease his desire for food by using tobacco if he is accustomed to it, or by the employment of some other narcotic. The desire is appeased, although the want still exists. It is through this same paralyzing influence that tobacco impairs digestion. Snuff-taking occasions dyspepsia by producing irritation of the nasal mucous membrane, which affects the stomach through sympathy.

8.—Nicotinized Nerves.

Tobacco-users suffer much from nervousness, which is manifested in a great variety of ways. One person is easily startled, another is unnaturally irritable, is cross and irascible; another cannot sleep at night; still another suffers with trembling of the hands, which greatly discommodes him in writing.

In scores of cases we have seen these symptoms all disappear when the use of tobacco was discontinued. Temporarily, tobacco seems to give tone and strength and steadiness to the nerves, but the seeming strength is deceptive. It is purely artificial, and the ultimate effect is to increase the very difficulty which it seems to cure.

We have often known wives and young children to suffer very severely from various nervous disorders which were wholly due to the effect upon their delicate organizations of the poisonous fumes of tobacco which they received through the poison-laden exhalations of their smoking husbands and fathers.

9.—Tobacco Paralysis.

In the last thirty years there has been a great increase in the frequency of the occurrence of a peculiar form of paralysis which seems to affect especially the nerves that supply the muscles, causing gradual wasting and loss of muscular power, which is fairly attributable to the increasing use of tobacco, as it most often occurs in tobacco-users.

A form of progressive paralysis of the optic nerve, causing "tobacco amaurosis," or blindness, is well recognized by oculists. These cases generally recover when the tobacco is discontinued, and will not get well so long as it is used.

Tobacco-blindness is very common in Ireland, where very strong tobacco is used. It is caused both by smoking and chewing.

Color-blindness, an affection which is increasing to an alarming extent, especially in Belgium and Germany where smoking is more extensively practiced even than in this country, has been found to be largely attributable to the use of tobacco. This fact was first made known by an eminent Belgian physician who made extensive investigations upon the subject at the request of the Belgian government.

10.—The Tobacco Legacy.

There is no vice or habit to which men are addicted the results of which are more certainly transmitted to posterity than are those of tobacco-using. A vigorous man may use tobacco all his life, and be able to convince himself all the time that he is receiving no injury; but the children of that man, who ought to inherit from him a vigorous constitution and high health, are instead robbed of their rightful patrimony, and enter upon life with a weakly vital organism, with a system predisposed to disease and destined to premature decay. The sons of an inveterate tobacco-user are never as robust as their father; and the grandchildren, in case the children are tobacco-users, are certain to be nervous, weakly, sickly creatures. This fact we have verified in so large a number of cases that we make the statement fully prepared to maintain it by indisputable facts.

HOW TO CURE THE TOBACCO HABIT.

We have been asked hundreds of times if there is not some antidote for the tobacco habit,—some substance which can be taken or chewed in place of the narcotic drug, which will satisfy the craving of the user for his accustomed weed, and at the same time produce no injurious results? We are obliged to reply to this oft-repeated question, that there is no antidote for tobacco which is not fully as bad as the drug itself. Anything competent to take its place must be, like it, a narcotic, and consequently injurious. In fact, the only really satisfactory antidote is a firm resolution to abandon its use at once and forever. Much can be done, however, to render the task of escaping from the toils of this narcotic tyrant much less distressing than it sometimes is in cases of persons who have been long addicted to its use. The following simple directions will be found of great value if carefully carried out:—

1. Go about the matter of getting rid of the vicious habit resolutely and thoroughly.

2. The majority of persons will be much more successful by abandoning the drug entirely from the start, and the sum total of suffering involved in this plan will be much less than if the attempt is made to gradually lessen the amount, as the last taste of the poisonous drug will be relinquished with as great reluctance as the much greater amount which was employed at first.

3. A person who wishes to get a complete and rapid mastery over the tobacco-using habit should make up his mind to devote a week or two to the business, if he has long been addicted to the weed, as in such cases the individual is quite unfitted for his regular business when the drug is first dispensed with. It is

also desirable that he should place himself under favorable circumstances. He should avoid the society of persons addicted to the use of the drug, and avoid places where it is used or exhibited. This would not of course be necessary in all cases, only in cases of those who have become tobacco drunkards. A trip into the country, an excursion to the mountains, or some similar diversion affords a favorable opportunity for the relaxation and diversion sometimes essential to the success of the effort.

4. The diet should be plain, simple, and unstimulating, but palatable and nourishing, during the trying ordeal. Indeed, this is just the sort of diet which should be taken at all times. The use of hot water is useful as a means of washing out the poisonous nicotine from the system, and so getting the tissues into a condition of freedom from the influence of the drug as quickly as possible. Two glasses of water should be taken one or two hours before each meal, and just before retiring at night.

5. A hot-air bath, wet-sheet pack, Turkish bath, alcoholic sweat, or some other form of eliminative treatment, is also useful for the purpose mentioned in the preceding paragraph.

6. When the patient is very nervous, he should drink two or three glasses of hot water, and have an application of hot water made to the spine, by means of flannel wrung out of water as hot as can be borne. Alternate hot and cold applications will be found of special benefit in relieving the nervousness produced in these cases.

PRACTICAL HINTS

ABOUT HEALTH.

"HEALTH is wealth" is a trite maxim, the truth of which every one appreciates best after having suffered from disease. Indeed, health is a most priceless treasure. When deprived of it, we are willing to exchange for it everything else we possess; yet when well, we squander it ruthlessly, disregarding the plainest rules of health, regardless of consequences. It is only when sick, and suffering the result of transgression of Nature's laws, that we begin to appreciate the value of health, and the importance of regarding carefully the conditions upon which health depends.

State and National Health Boards and Committees certainly do excellent work for communities and nations; but the real influence which they exercise over the health of individuals is insignificant when compared with that which may be, and indeed is, exercised by the matrons of the various households which make up villages, cities, and nations. City authorities may exercise a rigid surveillance over all the avenues through which disease is known to enter; they may keep the public streets cleanly, introduce costly means of supplying water, and cause the removal beyond the suburbs of slaughter-houses, tanneries, soap-boiling establishments, and noisome chemical works; but if the seeds of death and disease are allowed to germinate and flourish in each separate dwelling, and around each fireside, what favorable results can be expected?

All reforms must begin at home, to be effective; and we would urge upon all parents the importance of careful attention to the simple suggestions which are herein offered, by means of which they may be able to save themselves and their families from numerous illnesses, with their attendant inconveniences, expense, and suffering.

Fresh Air.—From the first quick gasp of infancy to the last feeble sigh of old age, the prime necessity of life is air. Air is food for the lungs, as bread is food for the stomach. Millions more people die from want of lung food than from a deficiency of other aliment. The Creator has provided the necessary article in generous abundance, fresh, pure, and free to all. If we do not get enough, it is our own fault, for when we close our doors and windows the closest, this vitalizing, invigorating element is whizzing and howling close around outside, seeking to find an entrance.

People who nail up their windows, stop every crack and crevice in the walls, line the door casing with felt, and fix a patent thing under the door as a sort of air-trap to catch the occasional whiffs of pure air which might otherwise get in, are barricading themselves against their best friend. A man who should so studiously and deliberately deprive himself of the means of procuring ordinary food, would be pronounced a suicide. Is he any less a transgressor—though ignorantly so—who deprives himself and his family of a still greater necessity, pure air?

The demand for pure air is the most imperative of all the wants of the system. When deprived of air, an individual will die sooner than from deprivation of any other of the essentials of life. A person may live several weeks without solid food of any kind, several such cases having been noted by eminent authorities. When deprived entirely of drink, life sooner becomes extinct. But if an individual be deprived of air, death occurs in a few minutes.

Sources of Impure Air.—The sources from which the air may become contaminated are so very numerous that we cannot dwell at length upon all of them in so concise a treatise as this. We can only notice some of the more common.

Poisonous Gases.—Of the numerous poisonous gases which mingle with the air we breathe, *carbonic acid,* or, more properly, *carbon di-oxide,* is the most common and abundant of all. This gas is heavier than air, and, consequently, it collects in such low places as deep wells, old cellars, caves, and deep valleys. It is produced by combustion and decay in vast quantities, and would soon accumulate to a fatal extent were it not for the fact that while it is a fatal poison to man, it constitutes a necessary food for plants.

One important fact to be remembered respecting the properties of this gas is its want of odor when pure, so that its presence cannot always be detected by the sense of smell as can most poisonous gases.

In Italy there is a curious cave, the bottom of which is covered with carbon di-oxide to a depth of about two feet. Travelers can explore the cavern with perfect impunity; but dogs or other small animals which accompany them, are quickly suffocated.

This gas is produced in great volumes in the burning of lime, being driven off by the excessive heat. Cases of poisoning by this gas have occurred, in which persons have lain down to sleep beside the warm kiln and have been suffocated by the escaping gas.

Amount of Carbonic-Acid Gas Produced.—This gas is formed within the body, and finds its way out through the lungs. An adult man produces about seven gallons of the gas per hour. A gas-light produces several times as much. An ordinary candle produces quite a considerable quantity. Large quantities are produced in a stove or fireplace; but that which is generated in this manner is usually carried away with the smoke, and does not escape into the room.

Carbonous Oxide is an exceedingly poisonous gas which is formed by imperfect oxidation of the fuel, which is frequently the result of deficient draught. The gas is often found in air-tight stoves furnished with close dampers. One remarkable property of the gas is its penetrating power. It will pass directly through cast-iron, especially when it is heated. A few years ago a whole school were poisoned by this gas, several nearly to a fatal extent. It paralyzes the blood corpuscles, and thus renders respiration impossible. It is a much more poisonous gas than carbonic acid, and is fatal in much more minute doses. In the case of the school referred to, the teacher had turned the damper of the stove so as to cut off the draught while the stove was hot, and in a short time discovered that a large share of the students were falling into a state of stupefaction. This is a good illustration of the importance of always leaving sufficient draught to carry off the products of combustion. As this gas, like carbonic-acid gas, has no odor, it will only be detected by its effects.

Sulphureted Hydrogen is a still more poisonous gas which frequently finds its way into the air which human beings breathe. Fortunately it has a very bad smell, the characteristic odor of rotten eggs, in which it is always present. This gas is developed wherever animal matter is undergoing decomposition. It is poured forth in volumes from cess-pools, sewers, gutters, drains, privy vaults, neglected cellars and cisterns, and every other place where animal substances are allowed to putrefy. It is this gas which gives to most decaying substances their offensive character. In the gutters of back streets and alleys in our large cities, this gas is sometimes produced in such enormous quantities that its active chemical properties become very perceptible, as will be shown by the following anecdote related by a professor of chemistry in one of our State Universities:—

"A young lady who was entirely innocent of any knowledge of chemistry or chemical facts, emerged from an elegant mansion in New York City, fully equipped for an afternoon promenade, with face artistically painted *a la mode.* Her course, unfortunately, lay for a little distance through a portion of the city where the drainage was imperfect, and the air was consequently redolent with that wonderfully pungent and active gas which is so characteristic of rotten eggs—sulphureted hydrogen. Of course the lady could not be unconscious of the presence of some noxious element in the atmosphere; but she was nevertheless wholly ignorant of its chemical properties. Her ignorance did not, however, deter the gas from manifesting its most vigorous affinities for the lead paint upon her cheeks, of which she had abundant evidence as she stood before a mirror, upon her return home, and viewed the swarthy appearance of her countenance, which would have been very becoming to a representative member of the African race."

Ammonia, *Sulphurous Oxide*, with various other noxious gases, find their way into the air in numerous ways, and exert a deleterious influence upon the health.

Germs.—Some of the most active and powerful enemies of human life are those which are the most insignificant in size, and hence the most likely to escape detection. Wherever decay of either animal or vegetable matter is taking place, myriads of microscopic plants flourish in great luxuriance. These numerous species of fungi are generated by spores which float about in the air, and, finding lodgment in favorable places, develop in plants which, in turn, produce countless numbers of other spores which quickly find their way into the air to repeat the same process elsewhere.

It is the presence of these little germs which causes the fermentation of yeast and the "rising" of bread, together with the "working" of wine and cider, the "spoiling" of canned fruits and other preserved products, the souring of milk, and all kinds of decay and decomposition.

The conditions required for the growth and development of these minute organisms are warmth and moisture. In the winter they are paralyzed by the cold; but so soon as the vernal sun appears, they spring quickly into life and activity. As before remarked, these little living particles fill the air. Sometimes, and in some places, the air is heavily laden with them; again, they are present in much more limited numbers. They are, of course, taken into the lungs with the air which is breathed, and thus they find entrance into the system, and under certain circumstances produce dangerous and fatal diseases. Beware of germs!

Dust.—It is next to impossible to obtain air wholly free from dust. Its constant motion lifts and holds suspended little particles of various substances which are more or less injurious to health, unless the quantity is very small indeed. Some trades, as stone-cutting, coal-heaving, rag-picking, cotton and wool spinning and weaving, and other avocations which involve the producduction of considerable quantities of dust, expose the workmen to an atmosphere loaded with fine particles which are drawn into the lungs with every breath, and, finding lodgment there, may induce irritation and still more serious disease of those organs. By a wonderful provision of nature, the finer particles of dust, if in small quantity, may be wholly removed so that they will not pass down into the more delicate air-cells of the lungs. But if the quantity of dust is great, this provision fails to afford protection.

The inhalation of dust is one of the causes of consumption. Post-mortem examination of the lungs of persons who had died from this cause showed the lungs to have acquired the color of the particles inhaled; and, in some cases, they contained so large a quantity of sand that they felt gritty to the touch.

Great care should always be taken to avoid dust as much as possible. In sweeping carpets and dirty floors, a person is exposed to injury unless some precaution, such as sprinkling the floor or moistening the broom, is taken to prevent filling the air with dirt. There are very few people who would not turn with disgust from food which was filled with particles of coal or sand, covered with dust, and gritty to the teeth. Yet the same persons will take their gaseous food in precisely the same condition without remonstrance.

Organic Poison.—Gases, germs, and dust are most prolific sources of disease and death which attack man from the air; but there is yet another enemy of life more potent still, which lurks, too often unsuspected, in the air we breathe. Very little, indeed, is known of the real nature of this poison, since it has, in considerable degree, eluded the efforts of the chemist to submit it to analysis; but it is of organic origin, and hence is known by the term *organic poison.* This poisonous element is introduced into the air chiefly by means of respiration, together with exhalations from the skin. It is one of the most noxious poisons ever present in air. It will produce death much sooner than most other impurities found in the air. Experiments upon animals have shown that a mouse will die in a few minutes when confined in air heavily charged with this poison.

The moisture which condenses on the inside of the windows of an occupied room in a cold day contains the poison in solution. If a little is collected in a vial and set away, it will soon become intensely fetid and offensive. It is this poison which gives to an unventilated room the close, fusty odor with which every one is familiar. One who has been long in the room will not observe it; but it is very distinct to a person coming in directly from the pure air outside.

Malaria.—The great curse of large areas of the most beautiful portions of our country is malaria. With reference to the exact nature of this cause of disease there has been a great amount of discussion. The most plausible theory is that advanced by Dr. Salisbury, of the Ohio Medical College, who claims to have demonstrated that the exciting cause of malarial disease is the spores of a certain species of fungi. According to this authority, the ague-plant flourishes in low grounds which are frequently submerged, but are covered with water but a portion of the time. It is well known that malarial diseases, as ague or intermittent fever, remittent or bilious fever, and typho-malarial fever, are most prevalent in just such localities as are favorable for the production of the so-called ague-plant. An unusually dry season is almost certain to be followed by an unusual number of cases of remittent fever and ague in the vicinity of marshes, mill-ponds, and shallow streams, the beds of which are exposed during the drouth.

The malarial miasm is often carried several miles from its source, so that immediate proximity to the latter is not necessary for contraction of malarial disease. Nevertheless, the observance of a few precautions will greatly lessen the liability to the disease. The following hints will be found of service:—

1. Avoid the vicinity of malarious districts during the evening and early morning, as the malaria settles nearer the surface of the ground at those times.

2. Secure, if possible, a dense growth of trees between a malarious district and the residence, as the foliage of trees affords a very efficient barrier to the miasm.

3. In case the above is impracticable, the same purpose may be accomplished, in considerable degree, at least, by planting between the house and the source of malaria a large area of sunflowers, which are said to possess the power to destroy the malarial poison by the production of ozone.

4. The liability to the disease may also be very greatly lessened by keeping the system in as free a condition as possible by avoiding such habits and such articles of food as will impair the function of the liver, skin, kidneys, and other depu-

rating organs. By this means the system may be enabled to eliminate the poison without occasioning disease.

How to Ventilate.—The only way to get fresh air is to obtain it from out-of-doors, by exchanging the foul air within for pure air without.

How much fresh air do we need? Every man needs enough to dilute the poison which he exhales sufficiently to render it harmless. To effect this, a quantity of air 5,000 times as great as the amount of carbon di-oxide produced, is required. In other words, 5,000 gallons of pure air are necessary to render harmless one gallon of carbon di-oxide. A man produces a gallon of this poison every twelve minutes, or five gallons an hour; hence, he requires 5,000 gallons of pure air every twelve minutes, or 25,000 gallons each hour—more than 3,000 cubic feet.

To ventilate well, there must be two openings; one at the bottom, and the other at the top of a room. What! shall we open the windows at top and bottom on a cold, wintry day? Certainly. Cold air is not poison. Plenty of air and a rousing fire are cheaper in the long run than foul air and less fire.

But will not cold air produce colds, and lung fevers, and pleurisies, and consumptions? People don't catch cold in open sleighs nor when walking in the wind. Draughts of cold air upon a small portion of the body only, will occasion cold; but there need be no draughts. Avoid them in this way:—

Make a strip of board, three or four inches wide, just the length of the window casing. Fit it beneath the lower sash. This makes an opening between the two sashes where they overlap. Here the air can enter, and being thrown upward toward the ceiling, it will be productive of no harm to any one.

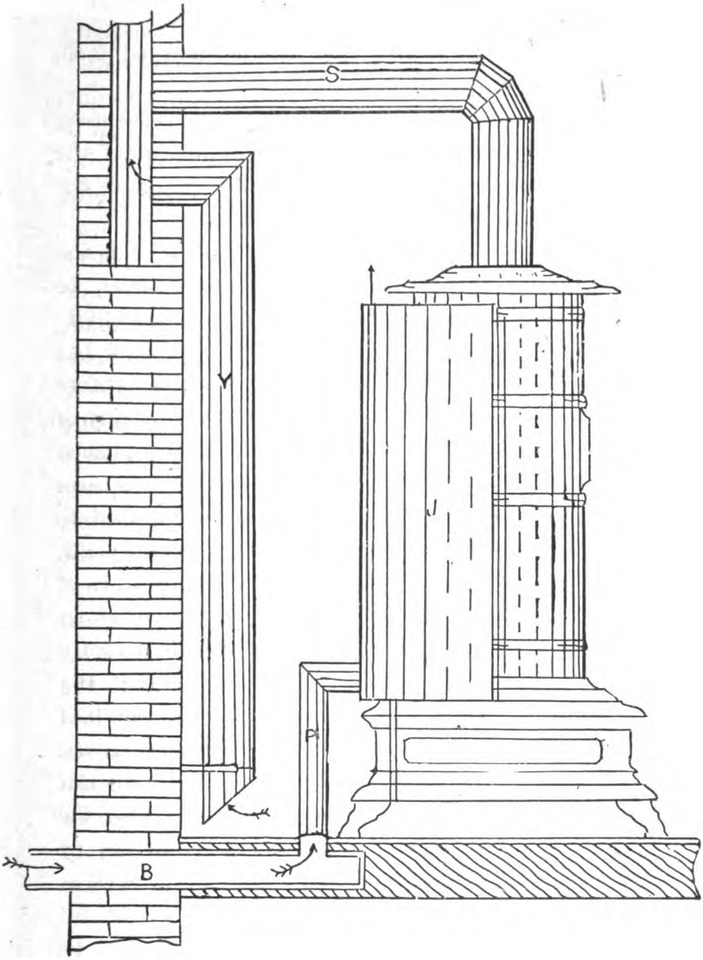
Another way: Lower a window at the top on one side of the room, and on the opposite side raise another a little at the bottom. Place a screen of fine netting in front of each, and the room will be pretty well ventilated without draughts.

Unless a strong wind is blowing, the window should be lowered one inch for each occupant of the room. A window should be raised an equal amount upon the opposite side to allow a circulation of the air.

The old-fashioned fire-place was a most efficient ventilator. It is a good omen that fire-places are again coming into use. The most fashionable parlors in the large cities are now heated by them.

If flues are used in ventilating rooms, it is absolutely necessary that the air in them should be heated several degrees higher than that in the rooms, to secure a draught. There should be two openings into the flue; one near the ceiling to be used when necessary to change the air rapidly, and the other at the floor to be open constantly.

Simple Method of Ventilating Common Dwellings.—No expensive apparatus is necessary to supply an abundance of pure air to any dwelling. If a house is not quite completed, ventilating shafts for conveying away the foul air can be provided by building the chimney of extra size, and with a partition, making two compartments, one to be used for ventilation, the other for conveying away the smoke from stoves or fire-places. If a house is finished, which is the case in the majority of homes, another provision has been made for ventilation. An arrangement may be made like that shown in the accompanying cut, which, though less elegant than more expensive ventilating arrangement, is none the less effective, if properly constructed. The figure represents a stove, one side of which is encased in a sheet iron envelope, J, which communicates by the pipe, P, with the outer air through the duct, B. Through this tunnel the fresh air will enter freely, being warmed by contact with the heated surface of the stove; then, rising to the hot ceiling and passing to the outer sides of the room where it becomes cool, it is drawn up into the pipe, Y, through which it passes into the chimney, just below the opening for the stove-pipe. An arrangement of this kind can be put into any house, at an expense of from ten to twenty dollars, and will secure an ample supply of fresh air at all times.



SIMPLE VENTILATING APPARATUS.

Tests for Bad Air.—1. Air with a bad odor is unfit to breathe.

2. Air with a fusty odor is surcharged with organic matter, and dangerous.

3. Carbonic acid, or carbon di-oxide, is the most easily detected of the ordinary impurities of the atmosphere, and is a pretty accurate gauge of the condition of the air as regards health.

The most reliable authorities all agree that the proportion of carbonic acid should never be allowed to become greater than 6 parts in 10,000; hence it is important to be able to detect the presence of this gas, especially since, as before remarked, it cannot be readily detected by any of the senses. Fortunately, this may be accomplished by very simple means, the use of which requires only ordinary care. The materials required to perform the test are, a supply of perfectly clear, saturated lime-water, and four bottles or jars of different sizes, the sizes required being the following: one jar or bottle capable of holding exactly 16 ounces, or one pint; a second holding 10½ ounces; a third holding 8 ounces, or one-half pint; and a fourth capable of holding 6½ ounces. The jars should have necks large enough to admit of perfect cleaning of the whole inside, and the greatest pains should be taken to remove every particle of dirt or dust from the inside as well as the outside, with water. To apply the test, fill the jar with the air to be tested. This may be done either by drawing the air out of the bottle through a straw or tube, or by filling it with pure water and letting the water escape. Great care should be taken in sucking the air out of the bottle that the breath be not allowed to enter. To determine the amount of carbonic acid present, use the smallest jar first. After filling it in the manner described, pour in a large table-spoonful of clear lime-water. Close the mouth with a clean stopper, and shake vigorously for a minute or two. If the lime-water becomes cloudy, carbonic acid is present in the air in the proportion of 10 parts to 10,000. If it does not become cloudy, repeat the experiment with the next sized jar, or the half-pint jar. If the lime-water becomes cloudy in this, the proportion of carbonic acid is 8 parts in 10,000. This proportion may often be found in the rooms of dwelling-houses, and sometimes in crowded streets and narrow alleys. If the lime-water does not become cloudy in the jar of this size, the next size should be used in the same manner. The cloudiness appearing in this jar indicates the presence of 6 parts in 10,000. This is the largest proportion which may exist without actual danger to life. If no cloudiness appears without the employment of the largest jar, the proportion is only 4 parts of carbonic acid to 10,000 of pure air.

6

To Destroy Foul Odors.—Abundance of fresh air is the best deodorizer. There is no substitute for ventilation. Pure air washes away foul smells as water washes away dirt. One removes solid filth, the other gaseous filth. If the offensive body is movable, be sure to remove it. If not, apply something to destroy it. Several agents will effect this.

If it can be safely done, set fire to the foul mass; or, if this is undesirable, heat it almost to the burning point.

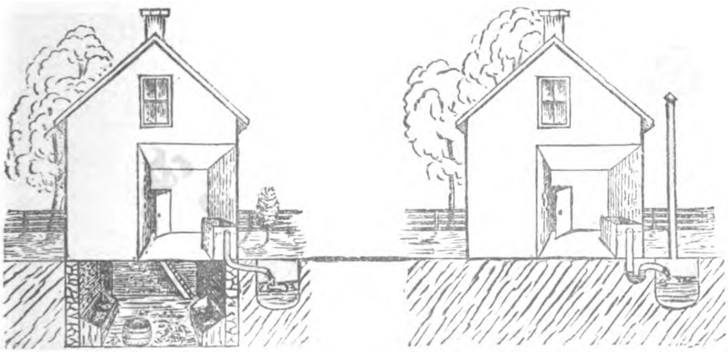
Apply very dry, finely pulverized earth. Clay is the best material. Finely powdered charcoal which has been freshly burned, is quite as good as earth. Dry coal or wood ashes are most excellent for disinfecting purposes.

Make a solution of permanganate of potash, dissolving one ounce in a gallon of water. Add this to the offensive solid or fluid until it is colored like the solution. This is an excellent deodorizer. It is needed in every household. A supply of the solution should be kept constantly on hand, ready for use.

Copperas dissolved in water in proportion of one pound to the gallon of water is cheaper, and may be used when large quantities are needed. Apply it freely.

Bromo-chloralum is a very good deodorizing agent, but is rather expensive.

Chlorine gas, chloride of lime, ozone, and nu-



The above cut is an illustration of a very common source of disease. At the left hand is shown a house, the inmates of which are being poisoned by destructive gases (shown in blue) laden with disease germs which emanate from the cellar in which may be seen bins and barrels of decomposing vegetables, and the cesspool, filled with the accumulations of years. The foul gases and germs from the cellar find ready access to the rooms above through the open cellar door, and from the seething cesspool they ascend to the house through the untrapped drain pipe which communicates with the sink. At the right hand may be seen a house which is protected from cesspool contamination by means of a trap in the drain pipe. As will be seen, the foul gases, represented by the blue color, pass up through the ventilating pipe into the open air, instead of being drawn up into the house through the kitchen sink.

Plate III.

merous other agents, are effective when rightly used.

Disinfecting Fluid.—The following is a recipe for one of the cheapest and most efficient disinfecting fluids known:—

Heat two pounds of copperas in an old kettle for half an hour, stirring frequently. When cold, dissolve the copperas in two gallons of water. Add two ounces of carbolic acid, and mix well together. A pint of this solution poured into the kitcken sink every few days will keep it free from odors. It will also be found very useful for disinfecting the discharges of typhoid-fever patients, for which purpose a little should be kept in the vessel constantly. Even privy vaults can be kept in a comparatively harmless condition by the liberal use of this solution.

Cess-pools.—Drains, sewers, and cess-pools, connected with a house, are often sources of serious disease. The kitchen sink is not unfrequently the door through which the germs of disease silently creep into a household and develop into disease and death, the cause of which remains a mystery, and is attributed to the inscrutable dealings of Providence.

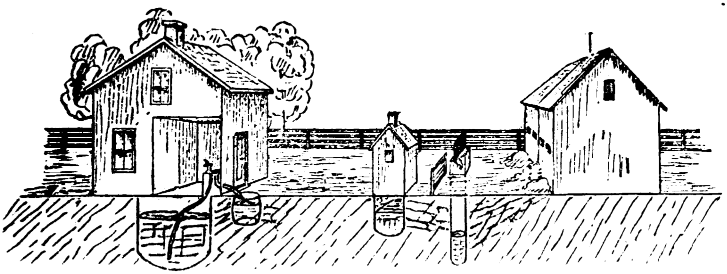
In the summer, draughts are produced in the room, which suck up the filthy gases which are formed in the cess-pool or sewer, through the drain-pipe—unless it is furnished with an efficient water-trap, which is not usually the case.

In the winter, the gases of the cess-pool are naturally warmer than the air above, and so they rise and find their way into the house, filling it with invisible poison, which is breathed, and thus taken into the blood, by every occupant of the dwelling. Thousands of valuable lives are annually sacrificed in this way.

How shall this evil be remedied? In cities, the problem is a difficult one, unless sewers can be replaced by the dry-earth system. In the country and in small towns, it is easily cured thus:—

Make the cess-pool some little distance from the house. Place in communication with it a wooden ventilating flue sixteen or eighteen feet in height, and four to six inches square inside. This will carry off the foul gases under ordinary circumstances, but it will sometimes be found inefficient; hence, a water-trap should be formed in the drain-pipe, just beneath the sink, by bending the pipe so that it will retain constantly three or four inches of water.

A still better way is to connect the drain-pipe with the chimney or stove-pipe, by means of a pipe of suitable size. This will secure ventilation of the drain; and if the connecting pipe joins the drain-pipe just beneath the sink, the protection will be perfect. All joints should be air-tight, and the outlet from the sink should be plugged tightly when there is no fire in stoves communicating with the chimney.



Showing a not infrequent condition of affairs. The cesspool in close proximity to the cistern, contaminates it by the drainage of its foul contents through the porous soil, so that both become sources of disease and death. The well, located in the barn-yard for convenience, and near the privy vault, receives the foul drainage from both; while from the same foul source poisonous gases arise and carry disease and death to the unsuspecting inmates of the house close by.

Plate IV.

Another valuable precaution is this: Pour into the sink, two or three times a week, a gallon of water in which a pound of copperas has been dissolved. A few crystals of copperas kept constantly in the sink could do no harm. It is very cheap when bought by the quantity.

A new cess-pool should be made at least once a year, or the old one should be thoroughly cleaned.

Under the House.—Many families who wonder why "some of the children are sick all of the time," can find the cause underneath the floor. Nearly all houses have cellars. Here are stored all sorts of things for winter use—dead things and live things, articles to eat and fuel to burn, old boxes and barrels, heaps of coal, bins of vegetables, etc., etc. The coal and wood are continually sending up foul gases and germs. Many of the vegetables undergo decay, and add greatly to the production of disease elements.

Besides the cellar there is usually an open space under the other portions of the house, between the foundation walls. This space is large enough to admit chickens, dogs, cats, rats, even pigs, and other small animals, but not sufficiently large to allow room for clearing it. Here various small animals find a hiding-place, and often die. Being out of sight and reach, they are not discovered even when the stench of their decaying bodies becomes distinctly manifest.

All the foul gases engendered in these various ways pass upward into the house, filling every room, condensing in fetid moisture upon the walls, and poisoning all who breathe in the house. What shall be done?

Cellars under a house are rather prejudicial to health, even at best. As they are commonly used, they are very greatly so. If there must be cellars beneath the house, they should be large, light, and well ventilated. Every week, at least, the cellar windows should be opened wide to allow free change of air. A good way to ventilate a cellar is to extend from it a pipe to the kitchen chimney. The draught in the chimney will carry away the gases which would otherwise find their way into the rooms above.

Cellars should be kept clear of decaying vegetables, wood, wet coal, and mold. The walls should be frequently whitewashed, or washed with a strong solution of copperas. The importance of some of these simple measures cannot well be overestimated.

Houses should be built so high above the ground that the space beneath can be easily cleared every few months.

Moldy Walls.—Many people who do not appreciate the importance of sunshine as they should, allow mold and mildew to accumulate upon their walls in damp weather, especially in nooks and corners that will be unobserved, never thinking that any harm will come from so doing. Such are ignorant of the fact that each patch of mold is a forest of myriads of little plants which are constantly throwing off into the air myriads of germs to be inhaled by the occupants of the house. In ancient times, collections of fungi of this sort were looked upon as matters of such serious import as to render a house wholly unfit for habitation until it had been thoroughly cleansed. A house with moldy walls was said to be affected with the plague of leprosy, and if the discolored, moldy spots recurred after having been thoroughly cleansed away, the house was abandoned and torn down. No one was allowed to occupy it unless every trace of the mold could be wholly removed. A tithe of the same care now would save thousands of deaths annually.

Privies.—As ordinarily constructed and managed, these necessary institutions are most prolific sources of disease. The animal excretions which are left to accumulate in them undergo still further putrefactive changes, which result in the development of the most pestilential germs and gases. Here is where the terrible typhoid poison originates. Deep vaults should never be allowed under any circumstances.

The best way to manage a privy is this: Early in the spring fill up the old vault, if there is one, even with the surface. Raise the building a little. Have made at the tin-shop a sufficient number of pans of thick sheet-iron. The pans should be about two feet square, and two inches and a half deep. Each should be furnished with a long bail, and a strong handle at one side about a foot in length. In using these pans, fill each half full of fine, dry dirt—not sand—or ashes, and shove it into position, allowing the bail to fall back upon the handle behind. By the addition of a little dry dirt several times a day, all foul odors will be prevented. The contents of the pans ought to be removed every night in the warmest weather of summer, the pans being replaced with a fresh supply of dry earth. During cooler weather, if little used, the pans will require emptying but once a week, if they are kept well supplied with dry earth. The contents of the pans may be buried or removed to a proper place at a distance from any dwelling.

For convenience, it is found to be an excellent plan to hire a scavenger to attend to the pans at regular, stated times. Fifteen or twenty in a community can unite on the same plan, and thus make the expense very slight for each.

About the first of December, the pans may be removed and a shallow vault dug. The vault should not exceed two feet in depth, and it should not be tightly inclosed. This will allow the contents of the vault to freeze. They may be removed several times during the winter, and should be kept covered with dry dirt, which should be procured in sufficient quantity in the fall.

Sunshine.—In caves, mines, and other places which are excluded from the light, plants do not grow, or, at most, they attain only a sickly development. The same is true of animals. In the deep valleys among the Alps of Switzerland, the sun shines only a few hours each day. In consequence, the inhabitants suffer terribly from scrofula and other diseases indicative of poor nutrition. The women, almost without exception, are deformed by huge goiters, which hang pendant from their necks unless suspended by a sling. A considerable portion of the males are idiots. Higher up on the sides of the mountains, the inhabitants are remarkably hardy, and are well developed, physically and mentally. The only difference in their modes of life is the greater amount of sunshine higher up the mountain side. When the poor unfortunates below are carried up the mountain, they rapidly improve.

Throw open the blinds and draw aside the window curtains. Never mind if the carpets do fade a little sooner. The pale cheeks will acquire a deeper hue, and the sallow skins will become of a more healthy color.

A sitting-room ought to be on the east or south side of a house, so that sunlight will be plentiful. House plants will not thrive in a north room. Women and children, who live mostly in the house, thrive no better in such a situation than plants. Sleeping-rooms should be aired and sunned every day.

House Plants in Sleeping-Rooms.—The supposition that house plants are injurious in sleeping and sick-rooms is a popular error. It is commonly supposed that plants draw the vitality of the patient, or poison the atmosphere in some way. This is wholly an error, if we except a few of the more strongly scented plants, which emit a somewhat poisonous odor, or which might in some cases be unpleasant to the senses of a nervous patient. Plants cannot draw vitality from animals. Indeed, they are the one great means which make human life possible; for if they did not purify the air, all animals would quickly perish.

Plants inhale carbon di-oxide during the day, and exhale oxygen. During the night, they inhale carbon di-oxide the same as in the daytime, but exhale a part of it again, along with the oxygen. They purify the air, then, during the night, but less than during the day.

A mouse and a growing plant can live together in an air-tight box. Alone, either one would die; together, they both thrive. Plants purify the air for human beings as well as for mice.

Plants also remove impurities from the air by means of the *ozone* which they produce, which is one of the most powerful disinfectants known. The laurel, hyacinth, mint, mignonette, lemon-tree, and fever-few are among the best ozone-producing flowers.

The cheerful aspect which flowers give to a room, and the pleasant recreation which their care affords, are not the least of the advantages to be derived from them.

Beds and Bedding.—A cold, damp, musty bed has cost the world many a valuable life. The "spare bed" is a genuine terror to traveling ministers, and school-teachers who board around. A night spent in one of them is a certain cause of cold, headache, sore lungs, sore muscles, and stiff joints the next day. Never sleep in a room which has been unused for weeks, unaired, unwarmed, and secluded from sunlight, until the bedding, at least, has been thoroughly aired and dried, and the air of the room thoroughly changed by ventilation. Never offer such a room for the accommodation of a guest without treating it in the same way, unless it is desired to make him sick.

Feather-beds are very unhealthful. They not only undergo a slow decomposition themselves, thus evolving foul and poisonous gases, but they absorb the fetid exhalations from the body which are thrown off during sleep. By constant absorption, the accumulation soon becomes very great, and the feather-bed becomes a hot-bed of disease. Hair, cotton, straw, or husk mattresses are greatly superior to feathers from the standpoint of health.

Do n't cling to the old feather-bed because it is an heir-loom. The older it is, the worse it is. Only think of the amount of diseased germs which must be stowed away in a sack of feathers which has done service during a hundred years or more! Subject to all the accidents and emergencies of domestic life it has, perhaps, carried a half-dozen patients through typhoid fever, and pillowed the last months of the gradual dissolution of a consumptive, besides being in constant use the balance of the time.

Barnyards.—The close proximity of barnyards, hen-coops, and hog-pens to human dwellings is a frequent cause of serious and fatal disease. The germs which are developed in the filth abounding in those places, together with the noxious gases constantly arising from the decomposing excreta, are productive of disease when received into the system. Often, indeed, the well from which the family supply of water is obtained, will be located only a few feet from a reeking barnyard, or, as we have more than once seen, the well will, for convenience, be located within the yard itself. In consequence of the proximity, the water of the well will be contaminated by the soluble filth which percolates down through the porous earth and finds its way into the underground veins of water by which the well is fed.

Notwithstanding all these dangers, there are people who, incredible as it may seem, still hold to the absurd idea generated in the Dark Ages, when the streets of every city were one immense reeking cess-pool, that foul smells originating in the filthy ordure of horses and cows possess some healing properties. Not long ago when we appealed to a man to clear his barnyard, which had become a positive nuisance, being not more than half a dozen feet from the threshold of a dwelling-house, he retorted that he had always been informed, and as he thought by good authority, that a barnyard smell was the "healthiest kind of a smell," and was "especially good for consumptives." If there is such an absurd error prevalent, it ought certainly to be corrected. No foul, noxious odor can be of any possible advantage to the health. Barnyards should be located at least forty or fifty rods away from the dwelling, and wells should be located nearly as far removed from such sources of poisoning, to insure against water contamination, which is one of the most common causes of typhoid fever.

Cleansing Sick-Rooms.—A room which has been long occupied by a person suffering from chronic disease, or by a fever patient, or a case of small-pox or other contagious disease, ought to be very thoroughly cleansed before being occupied by others. The means by which this may be most efficiently done are these:—

1. Take out the windows, and give the greatest possible freedom to ventilation.

2. Remove the old paper from the walls, and burn it. Wash the bare walls with a solution of copperas, and then apply whitewash to the ceil-

ing. Cleanse the wood-work with a solution of chloride of lime.

3. Remove the carpet from the floor, the bedding from the beds, and every other fabric in the room, and thoroughly disinfect them before replacing.

4. If still more thorough disinfection is desired, remove from the room such furniture as will be injured by corrosive gases, close the windows tightly, and place in the center of the room a shallow stone or earthen vessel containing the following mixture: 4 oz. each of salt and black oxide of manganese, 3 fl. oz. of water, and 3½ fl. oz. of sulphuric acid, or oil of vitriol. Mix the acid and the water first, let it cool, and then add it to the salt and oxide of manganese, which should be previously intimately mixed in the earthen vessel. Stir well with a stick, and then close the room as tightly as possible, stopping up the crevices. Chlorine gas will be slowly formed by this means, and it will destroy whatever organic matter there may be in the room. It will even penetrate the plaster on the walls.

In two or three days the room should be opened and thoroughly ventilated.

Disinfecting Clothing.—Clothing which has been exposed to contamination by contagion, if of little value, should be destroyed. If more valuable, it may be disinfected in any one of several ways.

1. Heat in an oven as hot as possible without

scorching, for an hour or two. A temperature of 250° will do no harm.

2. If the clothing is uncolored, or colored with mineral dyes, soak a few minutes in a solution of fresh chloride of lime of the strength of one pound of the chloride to a pailful of water. Afterward boil.

3. Soak for half an hour in boiling water to which carbolic acid has been added in proportion of an ounce to the gallon of water. Boil again in pure soft water, to remove the smell of the acid.

4. Expose for several hours in a close box to the fumes of burning sulphur. Air thoroughly afterward and wash.

Sick-Room Disinfection.—In such diseases as typhoid fever, dysentery, cholera, yellow fever, and diarrhea, the bowel discharges should be instantly disinfected and then removed as soon as possible. To do this readily and promptly, a strong solution of permanganate of potash or copperas should be kept constantly in the chamber vessel. Large vessels of water kept in the room and daily changed will absorb much of the gaseous poison. Carbolic acid, chloride of lime, and other odorous disinfectants, are offensive to the patient, and should not be used. Most thorough ventilation should be secured constantly. A little management will protect the patient from cold draughts, and there will be no danger of exposing him to cold, if he has the care of an attentive nurse, even if the ventilation is the most thorough.

House-Cleaning.—The semi-annual house-cleaning, although not a pleasant experience, is just as necessary as the original building of the house. Some important things are often overlooked in the general hurry and confusion.

The closets, garrets, clothes-rooms, stairways, and similar places need thorough renovation as

ing bark and chips, decaying apple cores, moldy leather, and similar elements which usually occupy a considerable portion of wood-boxes, contribute largely to the production of many febrile diseases.

New wall-paper should never be put on over old. The fresh paste, by its moisture, causes the fermentation of the old paste and the production of foul gases from the colors of the paper and the impurities which have been absorbed. If the old paper contained arsenic, the danger is increased tenfold, as arseniureted hydrogen is formed, one of the most fatal gases known. House-cleaning is one of the most important parts of domestic labor, and should not be trusted wholly to ignorant servants. It should be done under the constant supervision of an intelligent and thorough-going person. A little neglect to examine and thoroughly cleanse every nook and corner may result in the sacrifice of a human life. Too much importance cannot be attached to the necessity of care and painstaking in this matter.

Every dwelling should be thoroughly cleansed at least twice a year. Old carpets with their accumulated dust should be taken up and thoroughly beaten and cleansed, bed-ticks should be refilled if straw is used, every bed should be carefully examined for vermin, and a general renovation should take place.

Poisonous Paper.—Many cases of poisoning, some of which were fatal, have been traced to the arsenic contained in several of the colors of wall-paper. The most dangerous color is green. It is almost impossible to find a green paper which does not contain arsenic. Green window curtains are especially dangerous. The green dust which can be rubbed off from them is deadly poison. In rolling and unrolling the curtain it is thrown into the air and is breathed. The same poison is brushed off the surface of arsenical wall-paper into the air by the rubbing of pictures, garments, etc., which come in contact with it.

It is very easy to test papers of this kind before buying, and it would be wise always to take this precaution. Take a piece of the paper and pour upon it strong aqua ammonia over a saucer. If there is any arsenic present, this will dissolve it. Collect the liquid in a vial or tube, and drop in a crystal of nitrate of silver. If there is arsenic present, little yellow crystals will make their appearance about the nitrate of silver. Arsenical green, when washed with aqua ammonia, either changes to blue, or fades.

Poisonous Aniline Colors.—Red flannel, stockings, and hat linings, and the striped stockings which have recently become fashionable, have occasioned serious poisoning in numerous cases. The aniline dyes with which they are colored are used in connection with arsenic, which is not wholly removed by the manufacturers.

Hair Dyes and Cosmetics.—Any number of "Hair Dyes," "Hair Vigors," "Hair Renewers," "Hair Tonics," and various other compounds for application to the hair with the object of restoring its color or promoting its growth, have been invented during the last ten years. Many of these mixtures claim to be purely vegetable, and harmless. This is untrue of any of them. They contain, almost without exception, a very large amount of mineral poison. Lead, silver, and sulphur are the most common ingredients. The effects of applying such articles to the head are very serious. A few of the more prominent are the following:—

Headache, vertigo, irritation of the scalp, apoplexy, congestion of the brain, nervousness, sleeplessness, paralysis, and insanity. Numerous instances of all of these maladies have occurred as the result of using "hair dyes."

Gray hair is no disgrace. The healthful growth of the hair can be promoted by daily friction with cool soft water much better than by any quack lotion.

Cosmetics are equally dangerous. We have seen hopeless paralysis of the extensor muscles of the fore-arm, causing wrist-drop, produced by the use of paints for improving the complexion. Young ladies have destroyed their usefulness for life by this foolish practice. Lead colic is another result of the use of paints, many of which contain lead. Beware of them.

Hygiene of the Eyes.—These, the most delicate of the organs of sense, are often ruined by abuse. With good usage they will "last a lifetime." It is necessary to observe the following rules, to preserve the health of the eyes:—

1. Never use the eyes when they are tired or

painful, nor with an insufficient or a dazzling light. Lamps should be shaded.

2. The light should fall upon the object viewed from over the left shoulder, if possible; it should never come from in front.

3. The room should be moderately cool, and the feet should be warm. There should be nothing tight about the neck.

4. Hold the object squarely before the eyes, and at just the proper distance. Holding it too near produces near-sightedness. Fifteen inches is the usual distance.

5. Never read on the cars, when riding in a wagon or street-car, or when lying down. Serious disease is produced by these practices.

6. Do not use the eyes for any delicate work, reading, or writing, by candlelight, before breakfast.

7. Avoid using the eyes in reading when just recovering from illness.

8. Never play tricks with the eyes, as squinting or rolling them.

9. If the eyes are near-sighted or far-sighted, procure proper glasses at once. If common print must be held nearer than fifteen inches to the eye for distinct vision, the person is near-sighted. If it is required to be held two or three feet from the eye for clear sight, the person is far-sighted.

10. A near-sighted person should not read with

the glasses which enable him to see distant objects clearly.

11. Colored glasses (blue are the best) may be worn when the eye is pained by snow or sunlight, or by a dazzling fire or lamplight. Avoid their continued use.

12. Never patronize traveling vendors of spectacles.

13. Rest the eyes at short intervals when severely taxing them, exercising the lungs vigorously at the same time.

Keep Clean.—The skin, the superficial covering of the whole body, everywhere abounds in little mouths, or openings, called pores. There are more than 2,000,000 of these openings upon the surface of the body. Each one is the external orifice of a capillary tube which acts as a kind of sewer to convey away dead, effete, and decomposing matter from the body. Each of these purifying organs is constantly at work unless its mouth gets obstructed in some way. They are especially active in the summer season when the weather is warm, pouring out large quantities of perspiration in which the offensive matters are held in solution.

Now let us see what takes place if we pay no attention to the natural clothing with which we have been kindly provided. The sweat or insensible perspiration, with a load of impurities, is poured out of 2,000,000 little sewers, upon the surface of the body. The watery portion evaporates, leaving behind all the foul matter which it contained, which adheres to the skin. This is what occurs the first day. The next day an equal quantity is deposited in the same way, making, with the previous deposit, a thin film of dirt covering the skin. The third day the quantity has augmented to the consistency of varnish. The fourth day the person becomes completely encased in a quadruple layer of organic filth. By the fifth day, fermentation begins, and an unsavory and pungent odor is developed. The sixth day adds new material to the accumulating pollution, and still further increases the intensity of the escaping effluvia. Upon the seventh day a climax of dirtiness is reached. The penetrating, pungent fetor becomes intolerable. The person feels as though he had been bathed in mucilage or molasses. When he approaches his more cleanly friends, they look around to see if there is not some fragment of carrion adhering to his boot. But the individual himself is unconscious of any unpleasant odor, his nose having become accustomed to the stench; or if he recognizes it, he flatters himself that as no one can *see* the condition of his cuticle, he will escape detection. Vain delusion. Every person whose organ of smell is not wholly obliterated by snuff or catarrh, will single him out as quickly as a dog detects the exact locality of a weasel.

In the winter, one or two general baths each week will usually be sufficient to keep a person decently clean. But during the hot weeks of summer, a daily bath is indispensable. Two or three times a week, plenty of soap and water should be employed. On other days, a light sponge or towel bath will answer. A large quantity of water is not always absolutely necessary. A person can take a very refreshing and useful bath with a soft sponge and a pint of water. Such a bath can be taken anywhere without the slightest danger of soiling even the finest carpet. A simple air bath is better than none.

Cold bathing is not recommended. Robust persons may stand it very well, but it is injurious to invalids, and to any one if long continued. The best temperature for most persons is about blood heat.

Are not baths weakening? The weakening effect of a simple application of a little water to the surface of the body is not one-tenth as great as that from carrying about constantly a load of dirt upon the skin which not only prevents the elimination of impurities from the blood, but is actually absorbed into the system again. A bath is refreshing, soothing, and strengthening, if properly taken.

Tight-Laced Fissure of the Liver.—We once found in Bellvue Hospital, New York City, a woman who was suffering under a complication of maladies which evidently had their origin in the foolish practice of tight-lacing to which she had been addicted. On making an examination of the internal organs, we were amazed to find the liver presenting itself just above the hip bone, its normal position being entirely above the lower border of the ribs. Further examination revealed the fact that in about the middle of the organ there was a constriction, or fissure, nearly dividing it in two, which had been produced by habitual lacing. The function of the organ had been so greatly interfered with that it had failed to remove the biliary elements from the blood, and they had been largely deposited in the skin, making the latter anything but beautiful, although the woman was not advanced in years, and was naturally fair. Thousands of young ladies have cut their livers nearly in two in the same way. No wonder that they require rouge and French chalk to hide their tawny skins.

Thin Shoes.—Illy-clad feet are not infrequently the cause of very serious disease. A tight shoe prevents the proper circulation of the blood in the foot, causing it to become cold. If the shoe or boot is thin, the foot is still further chilled, and the blood which circulates with difficulty through it is sent back to the internal organs with a temperature much below that required for health. Exposure to cold causes the blood-vessels to contract so that less blood can circulate through them. Thus, one evil creates another. Thin soles, being insufficient protection against wet, allow the moisture of damp walks to reach the feet, making them wet as well as cold. When the extremities are chilled, the internal organs and the brain become congested, too great a quantity of blood being crowded into them. This is the chief origin of the headaches from which school girls suffer so much, but which are usually attributed to study.

Keep Warm.—Fashionable dress totally disregards every consideration but novelty and display. Fashion loads the shoulders and chests of ladies and girls with warm shawls, cloaks, and furs, surrounds the abdomen with ten to fourteen thicknesses of cloth, and imprisons the hands in an enormous muff, but leaves the limbs and ankles exposed to chilling blasts almost without protection, while they actually need more clothing than any other part of the body.

The whole body should be clad in soft flannel from neck to wrists and ankles nearly the year round. It is better to have the under-clothing for the upper part of the body and that for the limbs combined in one garment. If arranged in two garments, they should only meet, and not overlap, as this gives too much additional heat over the abdominal organs. A woman's limbs require as many thicknesses as a man's; and a garment which fits the limb closely will afford four times the protection given by a loose skirt. Thick shoes or boots with high tops, and heavy woolen stockings which are drawn up outside the under-garments clothing the limbs, complete the provision for warmth. Leggins should be worn in cold weather.

Squeezed to Death.—Not long ago a young lady went to bed without removing her corset, as she wished to grow small. When morning came, her friends found her a lifeless corpse. Thousands of young ladies are killing themselves in the same way. They may not die as suddenly, but they are dying as surely.

If any young lady who wears a corset could see the terrible havoc which it makes among her internal organs, she would be ready to desist from so foolish and harmful a practice. If the opportunity were afforded her, she would see her stomach squeezed out of shape and position so as to resemble much more a dog's than a human stomach. She would find her lungs compressed so that the blood could circulate with freedom through only a small portion, while the heart must struggle to its utmost to secure even a partial circulation. The large and small intestines she would find all jammed down into a heap in the lower part of the abdomen, where they do not belong, crowding upon the most delicate organs of her whole body, displacing and otherwise injuring them.

Any young woman who can deliberately commit all of these assaults against her physical frame while knowing the consequences, is guilty of a crime different from that of the suicide only in degree.

Night Air.—A general prejudice exists in the world against night air. In part it is justifiable; but much of it is unfounded. There is only one kind of air in the night, and that is night air. The air in the house is night air as much as that out of doors. All the air we breathe comes from the outside. If the windows and doors are shut, it crowds in through the cracks and chinks. It makes very little odds, then, whether we breathe night air in-doors, or out-of-doors, except that it is rather purer in the latter situation. In many localities night air is purer than day air.

Hygienic Agencies.—Nature has not provided agents by the use of which the penalty of transgression of her laws may be evaded; but there are certain natural agents, the proper employment of which will preserve health. If a person becomes diseased by neglecting to thus use these health-promoting agents, the only proper, and most efficient, way in which to recover from disease is to commence at once to do that which has been neglected. Thus it is that those agencies which are promotive of health and life become remedies for disease.

As might be supposed, from the foregoing, the most potent remedies must be those agents which are the most essential to the maintenance of life and health. Among these, the following are the chief:—

Air, water, food, clothing, exercise, rest, cheerfulness, sunlight, and electricity.

Air.—Pure air is the first and the last desideratum of human life. Individual life begins with the first breath, and ends with the last act of respiration. A human being lives largely in proportion as he breathes. Frogs and lizards are sluggish because they breathe little. Birds are more vigorous in their movements because of the wondrous capacity and activity of their lungs. So with human beings. Need we suggest that those feeble-minded creatures who emulate each other in compression of the waist—thus curtailing their breathing power—are like frogs and lizards in their capacity for appreciating the "joy of living"? or that their organs of cerebration may be as small as their waists? Has a man consumption? Let him live in the open air; he cannot breathe enough. Thousands of patients die in hospitals for want of fresh air. God's oxygen is the best tonic known. Fill the sick-room with it; the patient's chances for recovery will be thereby increased fourfold. Its disinfectant and deodorizing properties are unsurpassed. All it requires is unrestrained action.

Water.—This limpid fluid constitutes three-fourths of the whole weight of the human body. The brain, the organ of thought, contains a still larger proportion. Its value as a curative agent is in direct ratio to its importance in the structure of the body. Water is valuable, 1. To dilute the blood, being the *only* drink; 2. To cleanse the body from impurities within and without; 3. As the most efficient means of applying heat and cold in the various forms of baths. Nothing relieves thirst like water. Nothing will regulate the temperature of a fever patient so effectually as water applied in the form of a cool pack. In relieving the coma of narcotic poisoning, apoplexy, sun-stroke, and lightning stroke, cold affusion is more potent than all other remedies combined. No salve, liniment, plaster, ointment, or medicated lotion is equal to pure soft water as a dressing for wounds. Water—hot, warm, tepid, cool, cold, or iced—is useful at the proper time.

Food.—"As a man eateth, so is he." A loaf of bread, eaten, digested, assimilated, becomes flesh. A pound of pork, treated in the same way, also becomes flesh. The first becomes pure, healthy flesh; the second becomes gross, diseased flesh. Lord Byron appreciated this fact when he declared that he "felt himself grow savage" whenever he partook largely of animal food. If a man has filled himself with grossness, so that his liver is clogged, his stomach and bowels torpid, all his vitals congested, and his life-current sluggish, the best and only remedy is to "mend his ways" at once and adopt the diet which nature indicates is best. In this way thousands of wretched dyspeptics and hypochondriacs have sought and found their squandered health. Try it, reader.

Clothing.—The absurdities of fashionable dress are too glaring to require exposure. All admit the need of reform, but few have moral courage to break Dame Fashion's shackles. To the pinioned, corseted, panniered, fettered, dragged-down, tied-back, gasping, dying daughter of Fashion, who would scarcely be conscious of living except for the aches, pains, nerves, neuralgias, stifled sighs, palpitations, and hysterics which make up her wretched existence, what an emancipation is offered in a dress which clothes the body equably from head to toe! gives perfect liberty of action to every muscle! allows room for a deep inspiration and a vigorous heart-beat! removes from the hips those cumbrous, dragging weights, and unties the lower extremities!

Exercise.—Life is activity. Stagnation is death. This is true everywhere. It is this alone that makes the difference between the sparkling brook, and the slimy pool; the blooming flower, and the withered shrub; the laborer's brawny arm, and the student's flaccid muscle. Few men die of excessive brain-work; many die from lack of muscle-work. Proper exercise is a powerful remedial agent.

Rest.—During sleep is the time when nature converts her work-shop into a repair-shop, mending broken nerve fibers, replenishing wasted muscles, repairing tissue cells, and renovating worn-out particles. When the body is wasted by disease, how much of this work there must be to be done! and how important that sleep be afforded as a prerequisite for its accomplishment!

Cheerfulness.—"Laugh and grow fat" is an old adage. *Laugh and get well* would be just as true. Indeed, the remedial power of a hearty laugh is sometimes greater than that of any drug in the *materia medica;* and its salutary effects have often saved the life of a failing patient. "A merry heart doeth good like a medicine" is good "Bible hygiene."

Sunlight.—Sunshine paints the skies, colors the leaves, and tints the flowers. Under its genial influence all nature thrives. It surpasses all other agents in restoring a natural color to the blanched and ghostlike faces of long-housed invalids. Sun-baths are powerful remedies for disease if rightly used.

Electricity.—This subtle agent, which flashes in the thunder cloud, and quivers in a drop of dew, is equally potent for good or evil. When rightly used, its curative value is immense; but it has fallen, unfortunately, almost entirely into the hands of quacks, who not only do much injury by injudicious applications, but bring disrepute upon it by claiming for it that which is palpably absurd, as that it is the "nervous fluid," "vital force," "life force," etc.

FOOD AND DIET.

A MAN is made of what he eats. Good food and drink make good blood; and good blood is manufactured into healthy brains and strong bones and muscles. Poor food and improper drinks make poor and foul blood, which, in turn, is made into equally poor brains, bones, and muscles.

Those who pay no attention to the character of their food, but hurry into their stomachs, indiscriminately, food which is good, bad, and indifferent, are sooner or later admonished by disease and suffering that the way of the transgressor is hard, and that nature's laws are inexorable. America is known abroad as a nation of dyspeptics. This unfortunate condition is the result of the universal disregard of dietetic rules for which our countrymen are notorious. Attention to a few plain principles would save many thousands of lives annually. A large number of the most fatal acute diseases have their chief cause in errors of diet.

Poor Food.—Impoverished food is that which does not contain all the elements of which the body is built up in proper proportion. Perhaps the poorest article of food in common use in this country is fine-flour bread. The miller removes the very best and most nutritious portion of the wheat by the process of bolting; for the gluten which nourishes brain and muscle is deposited around the outside of the grain, just beneath the horny covering, or bran. In the center of the grain is found almost nothing but pure starch, which is so incapable of sustaining life that even a dog will starve to death in a short time if fed upon it exclusively.

Of such material nearly all American bread is made. Most other nations are wiser in this respect than we. The sturdy German eats his black bread made of the whole grain with a keen appetite, and it makes his muscles firm and his sinews strong in spite of the pernicious influence of his favorite lager beer.

Wheat-meal or graham bread is incomparably sweeter, richer, cheaper, and healthier than that made of the superfine, bolted, impoverished article.

Condiments.—Every day a hundred thousand dyspeptics sigh and groan in consequence of condiments. Pepper, spice, salt, vinegar, mustard, and all kinds of fats belong to the list of dyspepsia-producing articles known as condiments. All the works on diet define a condiment as an article which adds nothing to the real nutritive value of food. It is simply something which is added to make food taste better. Whether the food does taste better or not does not depend upon the condiment, but upon the taste of the eater. If his taste is unperverted, he likes food best without condiments. If his taste is perverted, he may like almost any kind of unnatural combination. A Frenchman is as fond of assafœtida in his food as an American is of salt, or an East Indian of curry powder.

Condiments are innutritious and irritating. They induce a heated condition of the system which is very unfavorable to health. They clog the liver, imposing upon it a great addition to its rightful task. Worst of all, they irritate the digestive organs, impairing their tone and deranging their function. A little practice soon accustoms a person to the disuse of condiments, and he learns to relish his food better without than with them.

Facts about Salt.—It is a general supposition that salt is indispensable as an article of diet. Many people suppose that life cannot be sustained without it: nevertheless there are numerous facts which indicate that this popular supposition is erroneous. The following are a few of the many that might be presented:—

1. *Salt is a mineral.* It is a well-established fact that animal life cannot be sustained by the use of inorganic or mineral substances as food. Vegetables subsist upon inorganic matter, while animals require organized matter for their food.

2. *Salt is an irritant.* And when taken into the system it produces irritating effects. This is indicated by dryness of the throat, and acceleration of the pulse.

3. *When taken into the system it is not used,* being expelled, unchanged, by the liver, kidneys, skin, and other depurating organs.

4. *It is an antiseptic.* And when taken in any considerable quantities it greatly interferes with digestion.

5. *It is not necessary to support animal life,* as shown by the fact that its use is confined to a very small minority of the animal kingdom.

6. *It is not necessary to sustain human life,* as is conclusively shown by several facts: *a.* Scores of people who have been accustomed to its use have wholly discarded it, not only without detriment to their health, but with positive improvement. *b.* Millions of human beings in Central and Southern Africa, in South America, in some portions of North America, in Siberia, and in other parts of the world, subsist entirely without salt. *c.* This is not altogether because

salt cannot be obtained; for in Southern Africa, where salt abounds, neither human beings nor lower animals make any use of it whatever.

We would not recommend that salt should be wholly discarded in all cases; but there can be no doubt that many cases of diseases of the stomach and liver originate in the excessive use of salt. Persons suffering with torpid livers will find great benefit by abstaining almost wholly from its use, together with that of other condiments.

A gentleman who has just returned from a visit to England, states that many of the English stock-raisers who are noted for producing the finest cattle in the world, never think of feeding their cattle salt, as is so commonly practiced in this country.

Vegetable vs. Animal Food.—It is a mistaken opinion that flesh food is necessary to maintain human life. This is abundantly proven by numerous facts which are drawn from the anatomy of man and the lower animals, human and comparative physiology, and the experience of the human race from Adam's time to our own.

Flesh food is not necessary to sustain either mental and physical vigor, or animal heat. It contains no nutrient element not found in vegetables. In fact, eating flesh is only taking vegetables at second hand for all animals subsist upon vegetables.

On the other hand, the use of meat is unfavorable to longevity. Flesh food is stimulating. It contains venous blood, which is filled with such poisons as urea, uric acid, and cholesterine, with many others which would have been removed by the kidneys and liver of the animal had it lived. It is also liable to contain the products and germs of disease; for few animals are perfectly healthy when killed, and many are in a condition of gross disease, being only hindered from dying a natural death by the intervention of the butcher's knife.

Animal food will sustain life, it will nourish the body; but it is not the best food. Science shows that it is not the natural food of man, and history testifies that the bravest and noblest nations of antiquity subsisted for ages without it.

Thousands of people have investigated this subject during the last twenty years, have become convinced that animal food is inferior to vegetable food, and have renounced the use of the former with the most excellent results.

Persons quite advanced in years, or in feeble health, unless they have special morbid conditions which demand such a change, should not attempt to discard animal food altogether. In such cases, if any change in dietary is made, it should be very gradual, and should be made to occupy a considerable period of time. Much harm has been done by extremists in advising consumptives and other chronic invalids to abstain totally from the use of meat. When the system is in a debilitated condition it is not prepared to adapt itself to radical changes in diet unless there exists an imperative demand for it.

A Live Hog Examined.—Look at that object in a filthy mud-hole by the roadside. At first you distinguish nothing but a pile of black, slimy mud. The dirty mass moves! You think of a reptile, a turtle, some uncouth monster reveling in his Stygian filth. A grunt! The mystery is solved. The sound betrays a hog. You hasten by, avert your face, and sicken with disgust. Stop, friend, admire your savory ham, your souse, your tripe, your toothsome sausage, in its native element. A dainty beast, is n't he?

Gaze over into that sty, our pork-eating friend. Have you done so before? and would you prefer to be excused? Quite likely; but we will show you a dozen things you did not observe before. See that contented brute quietly reposing in the augmented filth of his own ordure! He seems to feel quite at home, does n't he? Look a little sharper and scrutinize his skin. Is it smooth and healthy? Not exactly so. So obscured is it with tetter, and scurf, and mange, that you almost expect to see the rotten mass drop off, as the grunting creature rubs it against any projecting corner which may furnish him a convenient scratching-place. As you glance around the pen, you observe that all such conveniences have been utilized until they are worn so smooth as to be almost inefficient.

Stir up the beast and make him show his gait. See how he rolls along, a mountain of fat. If he were human, he would be advised to chew tobacco for his obesity, and would be expected to drop off any day of heart disease. And so he *will* do, unless the butcher forestalls nature by a day or two. Indeed, only a few days ago a stout neighbor of his was quietly taking his breakfast from his trough, and grunting his infinite satisfaction, when, without a moment's warning, or a single premonitory symptom, his swinish heart ceased to beat, and he instantly expired without finishing his meal, much to the disappointment of the butcher who was anticipating the pleasure of quietly executing him a few hours later and serving him up to his pork-loving patrons. Suppose his death had been delayed a few hours, as is the case with the majority of hogs? or rather, suppose the butcher had got the start of nature a *little*, as he generally contrives to do?

But we have not half examined our hog yet. If you can possibly prevail upon yourself to sacrifice your taste, in the cause of science, pork-loving friend, just clamber over into the reeking sty and take a nearer view of the animal that is destined to delight the palates of some of your friends, perhaps your own. Make him straighten out his fore leg. Now observe closely. Do you see an open sore or issue a few inches above his foot, on the inner side? and do you say it is a mere accidental abrasion? Find the same on the other leg; it is a wise and wonderful provision of nature. But what are they? Grasp the leg high up, and press downward. Now you see, as a mass of corruption pours out. That opening is the outlet of a sewer. Yes, a scrofulous sewer; and hence the offensive, scrofulous matter which discharges from it. Should you fill a syringe with mercury, or some colored injecting-fluid, and drive the contents into this same opening, you would be able to trace all through the body of the animal little pipes communicating with it.

What must be the condition of the body of an animal so foul as to require a regular system of drainage to convey away its teeming filth? Sometimes the outlets get closed by the accumulation of external filth. Then the scrofulous, ichorous stream ceases to flow, and the animal quickly sickens and dies unless the owner speedily cleanses the parts, and so opens anew the feculent fountain, and allows the festering poison to escape.

What dainty morsels those same feet and legs make! What a delicate flavor they have, as every epicure asserts! Do you suppose the corruption with which they are saturated has any influence upon their taste and healthfulness?

The hog is a scavenger by nature. His organization indicates it, for he has a regular system of sewers running all through his body and discharging on the inside of his fore legs, the express object of which is to convey away the filth with which his body teems.

The process of fattening hogs is one of disease. A fat hog is one which is grossly diseased. That this is the case is shown by the condition of the liver. The livers of all fat hogs are masses of disease. Every butcher will tell you that he finds not more than one liver in twenty among fat hogs which is not crowded with abscesses.

Tape-Worm.—This loathsome creature, which sometimes gets into a human stomach and intestines, and grows there to the enormous length of several rods, is communicated to man by eating pork. The occurrence of tape-worm is becoming much more frequent in this country than formerly, owing to the free use of pork.

Trichinæ.—Still more to be dreaded by pork-eaters are the terrible trichinæ, which are also communicated by the eating of pork. Each worm is so small that several hundred thousand of them may occupy a single cubic inch of pork. When taken into the body, a single worm produces ten young, which at once commence boring into the body in every direction, lodging at last in the muscles. The pain and general disturbance of the system is so great that few constitutions can survive the terrible ordeal. If life is not destroyed at once, the individual lingers along, a sufferer for life, his body filled with disgusting worms for which there is no remedy. No cure for the disease has been discovered. About one hog in every ten is affected by the disease. No more than one in ten of the deaths from this cause are attributed to it, as the disease may appear like many others, resembling cholera, dysentery, typhoid fever, cerebro-spinal meningitis, and rheumatism. No pork is safe.

Poisonous Water.—Whole communities have been stricken with disease at once by what seemed a very mysterious cause. Investigation traced the origin to the water supply. Further investigation proved that the original source was some sewer or privy which communicated with the water supply. This is known to be one of the greatest causes of typhoid fever.

The water of wells is often rendered poisonous by receiving the drainage of barnyards and vaults. Sometimes matter of this character will be conducted many feet under ground in a pervious soil, by percolation.

Water from a barnyard well or cistern should never be used. No vault or cess-pool should be within fifty feet of a well.

Milk from Stabled Cows.—Milk is not the best food, because it contains the impurities of the blood of the animal from which it is taken. If the animal's blood be pure, the milk is proportionately good; if it is impure, the milk must be likewise affected.

When cows are confined in a close stall, they breathe over and over the same foul air, which is always loaded with filthy vapors from their own excreta. These vapors enter the blood and poison every tissue and every secretion. The inhaled impurities make their appearance in the milk also, which thus becomes a means of excretion. If it is eaten, the filthy impurities of the stable are taken with it.

A writer of note truly says that "fully one-

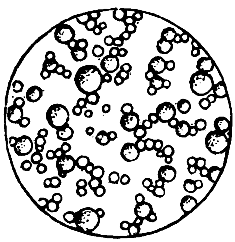


Fig. 1.

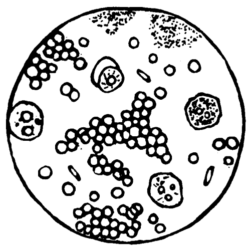


Fig. 2.

half of the deaths among the young are directly traceable to poisonous milk;" and yet thousands of people, especially in our large cities, are daily exposing themselves and their children to the possibility of fatal poisoning.

The taste is not always a reliable means for testing the quality of the milk, neither can the poisonous elements be detected by the closest scrutiny of the chemist; but the microscope reveals the presence of disease, although it may escape all other means of detection.

Fig. 1 is an accurate illustration of the appearance of pure milk when examined by means of a good microscope. It will be seen that it contains nothing but rounded globules of various sizes, which are the so-called butter cells of milk.

Fig. 2 is an exact representation of the appearance of diseased milk under the microscope. This specimen was taken from a cow that was fed upon swill and confined in a filthy stable. The difference between these two specimens will be readily observed. In Fig. 2, in addition to the rounded globules which are alone found in Fig. 1, we have great numbers of minute organisms which are indicative of disease. Milk of this kind cannot be habitually used without producing serious disturbances in the system.

Catching Consumption.—French experimenters have ascertained that cows are very liable to consumption, and that the tubercle of this disease may be communicated by eating either the flesh or the milk of affected animals. This will account in part for some of the cases of "quick consumption;" for it is observed that when the disease is communicated in this way its progress is much more rapid than under other circumstances. When milk is used, the greatest care should be taken to obtain it from healthy animals.

Poisonous Sirups.—For a number of years the people of this country have been abused by the manufacture and sale of villainous compounds which were labeled with such enticing names as, "golden drip," "silver drip," and similar phrases. These so-called sirups, instead of being made from sugar or the sugar-cane, are manufactured by chemical processes, being made from starch, cotton rags, saw-dust, and similar materials.

It has long been known to chemists that a sweet substance, known as grape-sugar, could be produced by boiling starch for a long time with sulphuric acid. Saw-dust, cotton, and woody fiber in any other form, furnish the same product when treated in a similar manner. Unscrupulous knaves have taken advantage of this scientific fact to impose upon the people a spurious kind of sirup. These unrighteous practices have become so extensive that it is next to impossible to find a specimen of sirup that is wholly free from contamination.

The effects of using this chemical preparation are very serious. It contains sulphuric acid, or oil of vitriol, iron, and various other unwholesome constituents. When freely used, it produces irritation of the stomach, and it has, no doubt, been the cause of numberless cases of chronic dyspepsia. In one instance which occurred under our observation, more than a dozen people suffered at once with slight symptoms of poisoning, the consequence of eating candy made of this wretched stuff. It was observed that the teeth and tongues of those who ate of the candy were made very black; and without doubt the blackened teeth were permanently and seriously damaged.

It is important to know how to distinguish these adulterated and poisonous sirups from those which are pure. A convenient method, which is sufficiently accurate for practical purposes, is to add a teaspoonful of the suspected sirup to a half cup of strong tea. If the solution becomes black, like ink, the sirup is unfit for use and contains poisonous elements. It should certainly be discarded. If every family would adopt the plan of testing sirup before buying, and refuse to purchase that which would not stand the test, the market for the vile compound would soon be destroyed, and its manufacture would necessarily cease.

Tea and Coffee.—One of the most common causes of dyspepsia, "liver complaint," and nervousness, is the use of tea and coffee. The injury resulting from the use of the beverages is attributable to several evils.

1. The active principle of both tea and coffee is theine, or caffeine, a narcotic poison, which is fatal in other than small doses. Although not fatal in small doses, it produces, nevertheless, a decidedly injurious effect. The full injury is not seen at once, neither does it appear in a few months; but the integrity of the digestive and nervous systems is steadily, though slowly, un-

dermined. Chocolate and cocoa occasion precisely the same effects, though they are less powerful.

2. The tannin contained in an infusion of tea or coffee disturbs digestion by rendering inert the gastric juice, one of the most essential digestive agents.

3. The use of hot liquid of any kind at meals is very damaging to the stomach. The organ is not only over-stimulated by the abnormal heat, but its function is impaired by excess of fluid. The gastric juice is diluted so much as to be rendered incapable of performing its function, and the stomach is wearied with the task of absorbing the superabundant fluid. Meanwhile, the food undergoes fermentative changes, and becomes unfit for nourishing the body.

Hundreds have found a cure for dyspepsia, sick-headache, nervousness and wakefulness at night, in discarding tea and coffee with all their substitutes.

Hard Water.—Water containing lime and other mineral matters is productive of several very painful diseases. Avoid its use. Soft water can always be obtained at certain times, and preserved in cisterns. Such water is only fit for use after filtering. (See directions for making a filter.) Boiling hard water removes a portion of the lime. Filtration does not purify it.

It is a mistaken notion that hard water is necessary for the maintenance of health. Nothing could be more absurd. The softest, purest water is the best for all the purposes for which water is needed in the human body.

Iced Water.—Copious draughts of iced water are very injurious. In the summer time especially, iced water is harmful on account of the sudden cooling of the internal organs which it induces. If drank at all, it should only be in small sips and very slowly.

The injudicious use of iced water in summer is a most common cause of dysentery and other bowel troubles. It also frequently produces a weakened condition of the digestive organs which results in dyspepsia.

Iced cream, iced tea, and iced milk, together with all other varieties of ices, should be avoided by those who have any anxiety to preserve the health of their digestive organs.

Eating Between Meals.—The stomach requires rest as well as the brain or the muscles. If food is eaten at other times than at meals, it is kept constantly at work. From three to six hours are required to digest most articles of food; hence, if food is taken again within five or six hours after eating, the stomach is kept incessantly employed, and becomes exhausted. When the next meal is taken, it is unprepared to receive it, and indigestion with its myriad train of ills results. Late suppers are suicidal. Never eat within five hours of retiring.

Hasty Eating.—Americans are proverbial for hasty eating. The student swallows his food unmasticated, and hastens back to his books. The merchant bolts his meal to save time for business. The glutton eats as fast as ever he can to keep pace with his neighbors and get his full share.

It is not enough to fill the stomach with food. Digestion begins in the mouth; and unless the mouth does its share of the work, the stomach is required to do a double portion. When the food is sent down into the stomach in lumps, the abused organ does its best to digest it, but fails, because it has no means for grinding food. The mill is in the mouth, and mastication, if done at all, must be done there. The gastric juice cannot act upon solid food, and allows it to go undigested. Fermentation ensues, and dyspepsia, dysentery, cholera morbus, and a dozen other diseases result.

Eight ounces of food, well masticated, will afford as much nourishment to the body as a pound hastily bolted.

Alcoholic Drinks.—No well man can habitually use wine, beer, brandy, or any other alcoholic drink, without becoming diseased. It is good for nothing as a food, and is useful as a medicine only when used with great discretion. Old people do not require it any more than young persons. Indeed, it is far more dangerous for old than young, because it renders them liable to apoplexy.

Moderate drinking is a skillful trick of the old serpent to lead men to drunkards' graves.

Any quantity of alcohol intoxicates. Intoxication is poisoning. A little alcohol intoxicates a little; a larger quantity intoxicates a good deal. The moderate drinker, no matter how small his libations, only differs from the gutter toper in degree.

The following "Facts about Alcohol" are well worth the consideration of those who need to be warned of the consequences of becoming addicted to its use:—

Facts about Alcohol.—1. Alcohol is a poison. When pure, it will produce death as certainly and almost as quickly as prussic acid.

2. Alcohol is a product of fermentation, or decay. The Creator never made it. No plant produces it. No bubbling spring affords it.

3. Alcohol is an irritant. It will blister the skin, and produce inflammation of the stomach.

4. Alcohol is a narcotic. It paralyzes the nerves, and benumbs the sensibilities.

5. Alcohol destroys the blood. It dissolves the blood corpuscles, and thus impoverishes the vital fluid.

6. Alcohol causes heart disease, by changing the heart tissue for fat.

7. Alcohol causes apoplexy. It weakens the

blood-vessels, and causes congestion of the brain. Alcohol weakens the muscles. It has been proven by experiment that a man can lift less after taking a glass of whisky than before.

8. Alcohol wastes vital force.

9. Alcohol causes consumption.

10. Alcohol lessens bodily heat. Travelers in the Arctic regions are obliged to be teetotalers.

11. Alcohol causes paralysis of the brain. A man who is dead drunk is temporarily paralyzed.

12. Alcohol hardens the brain.

13. Alcohol produces congestion of every organ of the body.

14. Alcohol hardens the liver, and renders it useless.

15. Alcohol produces its worst effects when taken in small doses.

16. Alcohol produces all kinds of nervous disorders.

17. Alcohol occasions cancer, ulcer, dyspepsia and other diseases of the stomach.

18. Alcohol is the cause of more than two-thirds of the cases of disease found in the hospitals in large cities.

19. Alcohol is one of the greatest causes of pauperism.

20. Alcohol is one of the most active causes of crime. In Scotland it increased the frequency of crime 400 per cent.

21. Alcohol is a great cause of insanity.

22. Alcohol shortens life 500 per cent., accord-

ing to the statistics of life insurance companies.

23. Alcohol annually kills one hundred thousand American citizens.

24. Alcohol costs more than bread.

25. Alcohol serves no useful purpose in the human system, and does inestimable harm.

Effect of Diet on the Liver.—Almost every other man we meet is complaining about his liver. One has a "torpid" liver; another has "congestion" of the liver; another has a pain in his side, which he is confident is due to disturbance of his liver. Complaints are loud and general against the liver, but no one thinks of entering a complaint against the diet, which is the real source of difficulty. Careful investigation and examination of the liver, after death, have proven the deleterious effect which certain articles of food have upon the liver.

The drunkard's liver becomes hardened by the alcohol which he imbibes. The liquid poison has the same damaging effect upon his brain.

The livers of people who use a great deal of fat—fat meat, butter, lard, rich cakes, pies, etc. —become infiltrated with fat. They undergo a process called fatty degeneration, in which there is an actual change of the tissue to fat. This change is favored by sedentary habits. The liver of the domestic cat is almost always fatty.

The natives of the East Indies, as well as of Central and Southern Africa, together with Mexico and other warm climates, make great use of pepper, mustard, turmeric, and other irritating spices. The result of this practice is not only derangement of the stomach, but the production of induration of the liver, a disease which was formerly attributed to the climate of those regions, on account of its prevalence, but is now well known to be the result of the use of the deleterious articles named. Lovers of pepper and mustard should look out for their livers.

It has been observed that cattle that have been overfed, or fed on warm slops, have badly diseased livers. The organ is found enlarged, in some cases very greatly, and its surface is covered with red spots and ragged, ulcerated patches, indicating the presence of disease of so extensive a character as to render the organ almost wholly useless.

The same causes which produce these grave effects in savage and semi-civilized human beings, and in lower animals, will produce the same results in civilized beings. Pepper and mustard are no better for a New York City gormand than for a Hottentot or a Mexican Indian. Slop food—highly seasoned soups, gravies, and "rich" sauces—will work for human livers the same mischievous results that follow its use by lower animals.

Two Meals a Day.—According to Hippocrates, a very noted Grecian physician who lived a few centuries before Christ, the Grecians of that age ate but one meal a day. He advised, however, that two meals should be eaten, as by so doing there would be less liability to overeating. Thus it is evident that the "two-meal system," as the custom of eating two meals a day is called, is not by any means a modern innovation, but has the sanction of antiquity. It is also a fact worthy of mention in this connection, that the ancient Grecians were among the most hardy, energetic, and courageous, as well as learned, of all the nations of whom we have any historical record. Their feats of physical prowess astonish the world; and their rank as thinkers was in no way inferior to that of any other people who have ever lived. The advantages of two meals instead of three are very numerous; and there are no substantial objections to the practice in any but a few exceptional cases. This is a favorable season of the year in which to begin the omission of the third meal. The change may be made at once, or gradually. Perhaps the latter plan is the better one for most persons. If breakfast is taken at 7½ or 8 A. M., and dinner at 2 P. M., the supper will not be missed, or very little at most, especially if the individual retires early.

Of course there are cases in which three meals a day, if the supper be light and early, are preferable to a less number, and for such two meals are not recommended.

It would have been infinitely better for human stomachs if the ancient custom of eating but twice in a day had been maintained. There are a great many other directions as well in which modern practices are no improvement over ancient ones, and which call for reform by a return to the customs of our predecessors.

Tender Meat.—Those who use animal food are always desirous of obtaining "tender" meat. In order to satisfy the demand for such food, the butcher and the producer resort to all sorts of devices. The former keeps the flesh of slaughtered animals after they are killed until decay has begun, in order that the natural firmness and elasticity of the tissues may be overcome by processes of decomposition. The latter treats his animals in such a manner previous to their death that their tissues become softened and disintegrated by disease. There are several means employed to effect this; chief among them are confinement and overfeeding. An exchange gives the following translation of a description of how young pigeons are fattened in Germany, as given in the North German *Allgemeine Zeitung*:—

"In order to fatten young pigeons quickly, put them, on the twentieth day, or when they commence to get feathers, into a basket with a soft layer of moss or hay on the bottom, in a place which freely admits the air, but excludes the light. Feed the birds three times daily, at intervals of five hours each, with cooked maize, opening their beaks and making them swallow successively thirty to forty grains each. The maize should be warm, but not hot. By continuing this treatment ten or twelve days, the birds will become most tender and delicate."

Such meat would doubtless be "tender" enough to suit the most fastidious epicure. In this respect the plan suggested would certainly be perfectly successful; but great care would be necessary lest nature should succumb and actual dissolution of the poor birds occur before their heads were chopped off. Mr. Bergh would arrest the perpetrators of such cruelty.

Lager Beer as Food.—After such repeated refutations of the idea, it is strange that people should still cling to the notion that lager beer is nourishing. If a man has lost his appetite, and seems to be failing in strength, or losing weight, his next-door neighbor advises him to drink daily a few glasses of lager beer. If a nursing mother has insufficient food for her infant, wise old ladies prescribe lager beer or ale.

Although it is being constantly reiterated in the ears of the people that alcohol is not food, and that beer and ale are only dirty mixtures of alcohol and water, still they refuse to believe that these pernicious beverages cannot, in some way, impart nourishment and strength. Perhaps the testimony of one of the greatest of European savants will correct the opinions of a few.

Said Prof. Baron Liebig, a German chemist of great renown, "We can prove with mathematical certainty that as much flour or meal as would lie on the point of a table-knife is more nutritious than five measures [ten quarts] of the best Bavarian beer." Powerful nutriment, indeed!

A Barbarous Practice. — The practice of smoking, which has now become so universal among a large proportion of our male population, has a curious and interesting history—curious, on account of the novel origin of the habit, and interesting, from the insight which it gives into the depravity of human nature.

For a long time, the origin of smoking was obscure; but history has come to the rescue, and now we learn that "in 1492, as Columbus lay with his ships beside the island of Cuba, he sent two men to search the land and report what they might see. On their return, among other things, they said they saw the naked savages twist large leaves together, and smoke like devils." Since that time, a large share of the men and boys of civilized nations have been following the filthy example of those naked savages.

It was not, however, without meeting with vigorous opposition that tobacco obtained despotic tyranny over human beings. In Russia, the use of tobacco was prohibited under the penalty of the bastinado for the first offense, loss of the nose for the second, and deprivation of life for the third.

In Italy, the pope fulminated a bull against the filthy weed, and excommunicated all who used it in church.

In Switzerland, tobacco-users were treated as criminals.

The Shah of Persia made tobacco-using a capital crime, and many of its devotees were executed.

In Constantinople, a Turk was led through the streets with his nose slit and transfixed by a pipe-stem, as a warning to smokers.

King James I., of England, expressed his opposition to the weed in a powerful "Counterblaste," which stigmatized the drug in most decided terms.

Even in this country, the native home of tobacco, at a somewhat later period its use was interdicted to all who had not previously acquired the habit, unless prescribed by a physician as a medicine.

But the devotees of this fascinating drug steadily increased in spite of all opposition, until tobacco-using has become an almost universal vice; in which fact we see a striking illustration of the readiness of human nature to seize upon anything which promises gratification of the senses, no matter how filthy, how disgusting, how pernicious, or how fatal in its ultimate consequences.

Diet and Mental Labor.—Isaac Newton performed his most severe intellectual labor while subsisting upon a diet of bread and water. Pythagoras, one of the most acute philosophers of antiquity, was a rigid vegetarian, and educated his followers in the same regimen.

Cheerfulness at Meals.—The benefit derived from food taken, depends very much upon the condition of the body while eating. If taken in a moody, cross, or despairing condition of mind, digestion is slower and much less perfect than when taken with a cheerful disposition. The very rapid and silent eating too common among Americans, should be avoided, and some topic of interest introduced at meals, in which all may participate; and if a hearty laugh is occasionally indulged in, it will be all the better.

Spices.—The almost universal fondness for spices is a curious illustration of the readiness with which the simplicity of the natural taste may become depraved. Pepper was used before B. C. 400. Pliny speaks of its use in his day, and expresses his astonishment that men should esteem it so highly when it has not a sweet taste, nor attractive appearance, nor any other desirable quality. We can heartily sympathize with Pliny in his astonishment.

Nutmegs and mace are quite extensively used as spices in this country and in Europe; but neither one is ever used as a condiment in the country from which they were first brought, the Isles of Banda.

SIMPLE REMEDIES

FOR COMMON DISEASES.

A LARGE share of the cases of illness which are constantly occurring in nearly every family are of such a character that they can be treated by any intelligent mother quite as well as, or even better than, by the doctor. Again, the necessary trouble of going for a physician for every trifling ailment, besides the useless expense in fees which it occasions, is a weighty consideration. Important cases demand medical advice; but every parent ought to be sufficiently well informed to be able to attend promptly and efficiently to the great majority of the ailments to which all families are liable.

If children are properly clothed and fed, allowed plenty of exercise, fresh air, and sleep, they will be seldom ill. The same is equally true of grown people. Accidents, exposures, and indiscretions will occur, however, resulting in various ailments. If the simple directions given for treating some of the more common diseases are carefully followed, much trouble, expense, and suffering may be avoided. Few drugs are recommended for internal use, because the cases in which they are really needed are such as require the personal attention of a physician.

Colds.—Tommy, or Mary, or baby, or some other one of the children, or the family, has "caught a hard cold;" what shall we do? Do nothing, and let it wear off?

No; perhaps he will get well, may be his cold will become something worse.

Shall we give him ginger tea, red pepper, brandy sling, onion sirup, honey and lard, fat pork, castor-oil, licorice, hoarhound, molasses candy, boneset, catnip, mullen tea, or pennyroyal? or shall we apply a mustard plaster to his chest, a blister to the bottom of each foot, and fat pork with salt and pepper to his throat?

Do no such thing. Such trash put into his stomach, with such irritating applications outside, would make a well person sick. Now do this:—

In the first place, prevent the cold, if possible, by beginning in season. Perhaps the feet have been wet, and are damp and cold. Pull off the shoes or boots and stockings, and put the feet into a pail of water as hot as can well be borne, after first wetting the head with cool water. After fifteen minutes' soaking, pour a little cold water into the pail. Allow the feet to remain two or three minutes longer, then take out, wipe dry every part, between the toes and around the ankles, and then rub them until they glow with warmth. Put on dry, warm stockings, and send the patient to bed for an hour, or all night if it is evening. Instead of waking up in the morning with a headache, a sore throat, and a voice like a cracked fiddle, he will be quite well.

If a person has really got a cold, and is sneezing, and wheezing, and coughing, and expectorating, more thorough measures must be taken.

1. Eat little or nothing for a day or two. The popular adage, "Stuff a cold and starve a fever," is without foundation. A cold is a fever—a *heat*, really, rather than a *cold*, if temperature be considered.

2. Rest. Sleep all that is possible. No time is lost in such a course. Timely rest may save serious illness.

3. Take some kind of hot bath, which will start the perspiration freely. Long sweating is debilitating, only start the action of the skin. The foot-bath combined with the sitz-bath, the wet-sheet pack, the vapor-bath, and the hot-air bath are alike suitable. These are severally described in this work. After the bath, go to bed.

Drink freely of water, the purer the better.

A day or two of such treatment will usually "break" the hardest cold, saving the patient several weeks of pain and annoyance, if not from chronic disease. Try it. The trouble is less than you think, and the results are splendid.

Frequent bathing in tepid water makes a person less liable to colds.

Sore Throat.—There are many remedies for sore throat, some of which are harmless, being simply worthless—like goose-oil applied externally—while others are quite injurious. The remedy used by the Germans—and many sensible Americans—is the best. If it is a case of simple sore throat, make, alternately, hot and cold applications, according to directions given elsewhere. If there is fever, cool the skin with sponge-baths. Keep the feet warm. If there are symptoms of diphtheria, apply ice in a bag to the outside of the neck, and give the patient little pieces of ice to swallow. Lemon juice applied to the pharynx with a swab is sometimes a good remedy.

Hoarseness.—All the sirups, expectorants, cough mixtures, anodynes, and inhalations ever invented or advertised will not cure hoarseness. They may sometimes destroy the sensibility of the nerves of the diseased part, and so relieve the cough, but they cannot remove the disease. Honey, loaf-sugar, and all such articles are very deceptive remedies. Cough lozenges and candy, troches, etc., are equally useless. They do not come in contact with the diseased surfaces, as many suppose. They pass directly down into the stomach, where they occasion much disturbance, disordering digestion, and so producing a disease really worse than the one they were intended to cure.

If the disease has not become chronic, it may usually be relieved by bathing the throat and neck in cool water, applying heat and cold alternately, and wearing a wet bandage around the neck nights. If the difficulty is of long standing a physician's care is needed.

Headache.—Pain in the head is caused by either too much or too little blood. If the pulse is high and the head hot, while the feet are cold, apply cold to the head and put the feet in a hot bath. A sitz-bath and foot-bath combined will be necessary in severe cases. If the cold application does not give speedy relief, apply hot fomentations for a half hour, unless relief is sooner obtained, renewing the application every four or five minutes. Apply a tepid compress last.

Sometimes headache is caused by undigested food in the stomach. In such cases a warm-water emetic is needed. If accompanied by cramp in the stomach, apply fomentations over that organ also. Sick headache nearly always requires hot applications.

Burns and Scalds.—Apply at once light cloths dipped in cool or tepid water, or immerse the part in water. When the pain is somewhat relieved, apply pure lard or sweet-oil. One of the best preparations is sweet-oil to which carbolic acid has been added in proportion of one part to twenty. It may be applied by means of a saturated cotton or linen cloth laid over the part. If the burn has not destroyed much of the skin, prompt relief will usually be obtained by covering the part with the white of egg applied with a soft brush. Apply a second coat when the first dries. Deep burns should be poulticed after the pain has been somewhat relieved by the application of cool wet cloths, as they will be attended with sloughing and discharge of pus.

Alum-water and carron-oil (a mixture of lime-water and linseed-oil in equal parts) are favorite remedies with some. A saturated solution of bicarbonate of soda, applied by means of a thin compress, is recommended as a most excellent remedy.

Chilblains.—This troublesome affection, though seemingly insignificant, often makes existence almost a burden by its constant irritation. It is easily cured, but not by the application of any sort of salve, ointment, liniment, or quack nostrum, no matter how highly recommended.

Just before retiring, prepare two vessels for foot-bath. Place in one, water as hot as can be borne, and in the other, very cold water. Place the feet first in the hot water for two minutes, then in the cold water for the same time. Alternate thus four or five times, merely dipping the feet in the cold water the last time, and then wiping them dry. Repeat this treatment every night until the cure is effected. Improvement will usually begin at once.

Wear thin cotton stockings inside the woolen ones and avoid exposing the feet to severe cold until they are well. A general bath twice a week is necessary. (See article on freezing, for prevention of chilblain.)

Pain.—Acute pain is usually due either to inflammation or neuralgia. Hot applications are nearly always the most grateful and the most successful of any local remedy. Plasters, liniment, and leeches are seldom if ever useful. Blisters are wholly unnecessary, and are always harmful. The most judicious physicians have wholly discarded them. Sometimes cold applications are the most grateful and efficient. The patient's feelings will determine which is to be employed. The hot foot-bath, or the foot-bath and sitz-bath combined, is sometimes necessary in addition to local measures.

Face-ache.—Pain in the face is generally of a neuralgiac character. Frequently it originates in a diseased tooth. Make hot applications in any of the several ways described in the article on "Hot Applications." Cold applications are occasionally best. The foot-bath, sitz-bath, and abstinence from food are useful auxiliaries of treatment. When due to constitutional causes, as the use of tea, coffee, tobacco, or liquor, or to an impoverished condition of the blood and general derangement of the nerves, the disease is very obstinate and requires constitutional treatment.

Toothache.—This painful affection is often closely connected with face-ache. It may be due to a decayed or ulcerated tooth, or to disease of the dental nerve. Apply the same remedies as directed for face-ache. In addition, apply half of a steamed fig (hot) to the diseased tooth. A bit of cotton saturated with laudanum or creosote, and crowded into the cavity of a carious tooth, will often give speedy relief. The only proper and permanent remedy when the tooth is decayed, is to have it filled or extracted. It should be filled, if possible.

Earache.—Hot applications, or the prolonged hot douche, applied with the fountain syringe, will often give relief. A hot poultice, continually applied, and frequently changed, is a good remedy. Half a boiled or roasted onion, bound upon the ear, will sometimes give relief. No remedy is infallible. The hot foot-bath and sitz-bath are excellent remedies. If an abscess is forming in the outer ear, the pain will continue until it opens, or is lanced. A few drops of laudanum placed in the ear give relief in some cases, and can do no harm. A still better application is obtained by evaporating the alcohol from a teaspoonful of laudanum and mixing the residue with half a teaspoonful of sweet-oil or glycerine. Incline the head and pour a few drops of this into the ear. Such applications give relief only by deadening the sensibility of the nerves, and not by removing the cause of the difficulty. Hence, they should be employed, if at all, only in connection with other remedies.

Rheumatism.—Inflammatory rheumatism requires the attendance of an experienced person. The wandering pains from which many people suffer, which are commonly called rheumatism, can be relieved by proper attention.

1. Avoid the use of irritating condiments, tea, coffee, tobacco, and alcoholic liquors, including wine, beer, etc. Avoid, also, gross food, and the use of food or drink containing saline matters. Be temperate in all things.

2. Dress warmly and uniformly. Silk or buckskin under-suits, worn next the cotton under-clothing, give great relief to many. Wear flannel the whole year.

3. Apply heat to the painful parts as in neuralgia. The hot-air and vapor-baths are good. Keep the skin clean. Exercise freely.

Colic.—The usual causes are indigestion and constipation. Administer a copious enema to secure a free passage from the bowels. Apply dry, hot cloths or hot fomentations over the abdomen. Percuss and knead the abdomen gently, to promote action of the bowels. Hot drinks do very little good, and usually as little harm. For an infant, fold a thick woolen blanket, wet one end in as hot water as can be borne, wring it so that it will not drip, and apply the wet end over the abdomen of the child, wrapping the remainder around its body. It is often surprising to mark the almost instantaneous relief which follows. The applications must be *hot*, not simply warm, and must be renewed every five or ten minutes until relief is obtained.

Nearly all abdominal pains may be relieved in the same way.

Convulsions.—The convulsions of children—commonly called spasms, or fits—are usually due either to worms or indigestion, unless they occur in the course of some acute disease. Place the child at once in a hot bath, disturbing it as little as possible. It will usually recover in a few minutes. When sufficiently recovered, administer an enema to free the bowels, and keep it perfectly quiet. Some advise the cold bath, and practice it with good success. The patient should be rubbed vigorously during the cold bath.

Epileptic convulsions require more than simple domestic treatment. The most that can be done for the patient during the fit is to prevent him from injuring himself or others. The lips and tongue are often severely bitten by the spasmodic action of the muscles of the jaws closing the teeth together upon them. This may be prevented by placing a piece of soft wood or other material between the teeth at the beginning of the fit. As the patient usually sleeps some time after the fit, the brief interval of consciousness which immediately follows it should be occupied in getting him into a comfortable position.

Hysterics.—This peculiar disease is most common in women, though sometimes observed in men. It is a real disease, and should be treated as such. The symptoms are almost as various as the cases. It may simulate any disease. Place the patient upon a sofa, beside which a large vessel is placed. Hold the head of the patient over the vessel, and pour cold water upon it from a pitcher held a few feet above. Apply at the same time cold to the chest and spine, and hot bricks or bottles to the feet. This treatment may be continued for an hour or two without injury if the patient does not recover sooner. Speedy relief is usually secured. If the patient becomes quite chilly, apply warm cloths to the chest and shoulders.

Apoplexy.—If a person falls suddenly and is found with a full pulse, throbbing temples, flushed face, and breathing hard, he has apoplexy. Loosen every constriction about the throat at once, elevate the head, secure fresh air, bare the chest, and pour cold water upon the head. See that the extremities are warm. Call a physician as soon as possible. Do not bleed, nor give brandy, ammonia, nor any other stimulant. Apoplectic convulsions are quite rare. They generally occur in sedentary people of full habit, in advanced life.

Fainting.—When a person faints, the heart nearly ceases its action, the action of the lungs is nearly or quite suspended, the face becomes pale, and partial or complete unconsciousness ensues. If the person has fallen, do not elevate the head, but be careful to keep it as low as, or lower than, the rest of the body. If the patient is sitting in a chair, step behind him, grasp the chair at the sides, and carefully tip it back until the head touches the floor. This alone will suffice in many cases. If the patient does not immediately revive, loosen the clothing about the neck, chest, and abdomen; sprinkle cold water in the face; slap the surface of the body with the hand or a slipper; apply an ammonia bottle, camphor, or any other pungent odor to the nostrils; secure abundant cool, fresh air, and use artificial respiration. If the patient can swallow, give very hot or very cold drinks.

A person who is subject to syncope should lie down at once when he first feels faint.

Croup.—If the child can speak aloud, the disease is of the spasmodic variety, and he will probably recover with a little attention; but if he can only whisper, and the disease has come on somewhat gradually, it is a much more serious variety—true croup—and a physician should be called at once.

Apply, alternately, hot and cold cloths to the throat and neck for a half hour, then apply cold continuously for half an hour, then foment again. Give a hot bath, and keep the limbs and extremities warm. Give no emetics, expectorants, stimulants, nor anodynes; all are harmful. Goose-oil on the outside does no more good than ipecac inside. Give the child an abundance of fresh air. If the case is one of true croup, the inhalation of steam is one of the best remedies.

Measles.—Ordinary cases require little more than care and good nursing. The comfort of the patient is greatly increased by frequent tepid sponge-baths or packs. If the eruption does not appear promptly, or is repelled, put the patient into a hot pack, with a woolen sheet, for thirty minutes. Keep the head constantly wet with cool water, and bathe the face every few minutes when there is considerable fever. If the throat is sore, give treatment for sore throat as already described. Give the patient abundance of fresh air, but do not expose him to draughts. The diet should be as simple as possible, and very light. Slings, teas, sirups, and other medicinal agents are not required in this disease.

Scarlet Fever.—This disease may be treated essentially in the same manner as measles. The sponge-bath should be administered several times a day. Keep the bowels free by enemas.

Fevers.—Simple fevers may be treated in accordance with the directions for measles and scarlet fever. If complications occur, as pleurisy, lung fever, or other affections, a physician should be consulted.

Mumps.—This common affection needs little more than careful nursing. A spare diet, rest, and a daily warm bath facilitate recovery. If the diseased parts are very painful, treat as for sore throat. Keep the feet warm. If the breasts or testicles become inflamed, apply ice or alternate hot and cold cloths.

Dysentery.—This disease consists of an inflammation of the large intestine, or colon. In mild cases, the disease is limited to the rectum. The local inflammation is accompanied by general fever, together with the discharge of mucus, with more or less blood. The cause of the disease is sometimes obscure; improper diet, bad water, foul air, or exposure to wet and cold, during the hot months, may be mentioned as the most common causes of the disease.

In the treatment of this malady, energetic measures should be used to diminish the local inflammation, and to subdue the general fever. This may be done best by the use of fomentations and compresses over the bowels and abdomen, together with the wet-hand rub and wet-sheet pack, as frequently as the severity of the case demands. Great care should be taken to keep the extremities thoroughly warmed. If the head is unnaturally hot, cold applications may be made to it. If spasms occur, great relief may be obtained in an application of ice or very cold water to the head and upper portion of the spine. Local pain may be greatly relieved by the use of warm or cool enemas. Great care should be exercised to keep the patient quiet. His food should be such as will be easily digested, while it is of such a character that it will not be a source of irritation to the mucous membrane.

It is a mistaken notion that fruit is a cause of this disease. It may be occasioned by eating unripe fruit; but the immaturity of the fruit is the cause of the disturbance, being a source of irritation to the intestinal canal on account of its indigestibility. Ripe fruit not only does not occasion dysentery, but some kinds of fruit, as blackberries, raspberries, and grapes, are conducive to recovery when freely used. Fruit is rarely harmful if eaten properly, being taken at meals only, in moderate quantity, and thoroughly masticated.

Diphtheria.—As soon as the first symptoms of the disease appear, begin treatment in a very energetic manner. If the patient is an adult, give him a warm sitz-bath for about twenty minutes. Surround him with blankets during the bath, so as to favor perspiration. The feet should be placed in a hot foot-bath in the meantime, and the head should be frequently wet with cool water. After the bath, quickly sponge the whole body with water a little cooler than that of the bath. Then put the patient to bed and cover him up warm. Keep the feet warm, cool the head by frequent bathing, and sponge the whole body every hour or two with tepid water if the patient is very feverish.

If the patient is a child, a warm pack will be preferable to a sitz-bath. Wring a woolen sheet out of water a little more than blood-warm. Spread it quickly upon the bed, place the patient upon it, and quickly envelop him. Then wrap him snugly with dry blankets, and let him sleep for half an hour if he feels so inclined, as he usually will. Follow the pack by tepid sponging, as directed after the sitz-bath.

After putting the patient to bed, apply, alternately, hot fomentations and cold compresses. Fold a flannel cloth twice, so as to give four thicknesses, wring it out of water as hot as can be borne dry enough so that it will not drip, and apply at once to the throat. After a lapse of three to five minutes, apply a cold compress for the same length of time. Then re-apply the fomentation, and continue to alternate until each has been applied four or five times. Then apply a cool compress, and change it as often as it becomes warm.

In ordinary cases, it will be sufficient to wet the cool compress in the coldest well water that can be obtained; but in cases in which there is great irritation of the throat, snow or pounded ice should be applied, being placed between the folds of the compress.

By all means avoid the use of all of those caustic applications which are so commonly employed in this disease. When white patches appear in the back part of the mouth, touch them every two or three hours with pure lemon juice, using a swab of soft linen or sponge attached to the end of a lead pencil or a small stick.

If the patient is old enough, some relief will be given by using a gargle of water acidulated with vinegar. Another excellent gargle which destroys the vegetable parasites always present in this disease, is a solution of permanganate of potash. The crystals can be obtained of any druggist. Place two or three in a glass of water, and stir until they are dissolved. The fluid should not be taken into the stomach, though no harm will result if a few drops are swallowed.

A very favorite remedy with many physicians, is the inhalation of the vapor of warm vinegar. The vinegar may be heated in a coffee-pot, and inhaled from the nozzle. A plan highly recommended is the inhalation of the vapor which arises when lime is slaked in a vessel. These measures will often give great relief.

The sick-room should be well ventilated, in order to carry away as rapidly as possible the foul germs which result from the disease, and thus prevent their re-absorption into the blood. The diet should be plain and light, though enough should be given to sustain the nutrition of the patient. Oatmeal gruel and mild fruits are usually well received. Milk may be employed when the patient has been accustomed to its use. The same regularity in meals should be observed as in health.

Ague.—Ague, or intermittent fever, is one of the most common of all diseases in malarious districts. It prevails especially in the spring and autumn months. The exciting cause of the disease is a certain poisonous miasm which rises from low lands which are alternately flooded and dried during the warm season.

Bilious or remittent fever is produced by the same cause. These diseases are so common that we need not describe their symptoms.

Prevention.—The following suggestions respecting prevention will be found useful:—

1. Unless compelled by dire necessity to do otherwise, do not live in a malarious district; in other words, seek a residence that is as remote as possible from localities where malaria is known to be produced.

2. If your residence is already fixed in a malarious district, employ every means possible to prevent the reception of the poison into the system and to counteract its effects. Avoid being in the vicinity of the malarious localities during the evening and early morning, since at these times the miasm settles near the ground. Secure, if possible, a dense growth of trees between the source of malaria and the residence; if this is impracticable, plant, every year, in the same place,

a large area of sunflowers, which serve the purpose of destroying the miasm.

3. Keep the system in as free and clear a condition as possible by avoiding such habits and such articles of diet as will impair the integrity of the liver, skin, kidneys, lungs, and other eliminating organs. This will enable the system to eliminate the poison without its occasioning disease.

Treatment.—At the beginning of the disease, give the patient a vapor-bath on the well day, and in case the chill occurs every other day, repeat the treatment on each well day for a week. During the chill, surround the patient with warm blankets, hot bricks, bed-warmers, a jug of hot water, or any other means of imparting artificial heat; but be careful to avoid applying water to the surface of the body, unless it be to the head. Care should be exercised to remove the hot applications as soon as the fever begins to appear. When the fever is at its height, sponge the body with tepid water. The sponging may be repeated at intervals while the fever continues. During the sweating stage, frequently wipe the skin with a soft cloth; and when the sweating ceases, change the patient's clothing after a thorough sponging of the body. If there is a tendency to sweat at night, administer the wet rubbing-sheet at bedtime. If the vapor-bath cannot be given, the wet-sheet pack is a very good substitute.

The diet should be very simple. Oatmeal or graham gruel, with ripe fruit and dry toast or graham crackers, constitutes an admirable dietary for a person suffering with ague.

In case the chill occurs every day, the vapor-bath or pack should be given in the afternoon or every other day after the paroxysm is past. If the severity of the disease is unabated after this treatment has been thoroughly applied for a week or ten days, it would be well to resort to direct means for breaking the periodicity of the disease. A very efficient means of doing this is to get the patient into a profuse sweat by surrounding him with hot bricks, warm blankets, and other hot applications, twenty minutes before the time for the chill to begin. The patient should be kept very warm for an hour or two, or until all danger of chilling is past. Care should be exercised not to press this means to such a degree as to produce violent congestion of the head. If this plan fails after two or three thorough trials, the use of a very small dose of an antiperiodic medicine will break the chills, and then the patient will make a rapid recovery; but the use of drugs will be very rarely required if treatment is applied efficiently and discreetly. The treatment described has proven successful in a large number of cases. When the cause of the disease is removed from the system, it will usually cease. But in case the paroxysms are not interrupted after the lapse of a reasonable amount of time, a small dose of medicine will do the system less harm than the prolongation of the disease; for the popular theory that it is better to wear out the disease than to check it in any way, is a great error. The long continuance of the disease is exceedingly damaging to the system, while it is in no way beneficial. In many instances, consumption, dropsy, and other grave and fatal diseases, are produced by allowing ague to continue until the vital forces of the patient are exhausted.

Whooping Cough.—No method of treatment will *cure* this disease. The patient gets well of himself in due time in ordinary cases, if he is not dosed with sickening compounds, drugs, teas, sirups, expectorants, cough mixtures, and emetics. Good care, plenty of fresh air, a warm bath three or four times a week, and a plain, nourishing diet, are the best means to secure a speedy recovery.

Worms.—Various kinds of worms infest the human body. Children are particularly liable to them. For the small worms which are found in the rectum, perfect cleanliness, regularity of the bowels; daily enemas of salt water, and anointing the anus with sweet-oil, are the best remedies. Indigestion and constipation are the chief causes.

Tape-worm and the large round worm require more energetic measures of treatment. For the first, the best remedy known is the seed of the common pumpkin. Take two ounces of *fresh seeds*, remove the shells, and beat them to a paste with an equal quantity of finely pulverized white sugar. Add a little milk or water, and take at one dose after fasting twenty-four hours. After three hours, take a table-spoonful of castor-oil. If this does not dislodge the worm, there probably is none. Many people imagine they have tape-worm when they have not. For a child, the dose should be about one-half that for an adult. The fluid extract of the seeds can be obtained at the stores, the dose of which is half a fluid ounce.

For the round worms, worm seed, *chenopodium*, is one of the best remedies. To a child two or three years old give half a dram of the seed in sirup or honey, night and morning, for three or four days in succession. After the last dose, give a tea-spoonful of castor-oil. Five or ten drops of the oil may be given with sugar in place of the seed.

Constipation.—Torpidity of the large intestine is a condition very common among sedentary people, especially women. It is the result, in part, of eating fine-flour bread and irritating condiments. One of the greatest causes—the chief, perhaps—is neglect to attend promptly to the calls of nature. When the feces are retained in the rectum, they become hard and dry through the absorption of their fluid portion. Thus a considerable part of this foul matter is taken into the system, permeating every fluid and tainting every tissue. The dry, hard residue becomes packed in the intestine, and makes defecation difficult, and is productive of several serious diseases of the bowels and other abdominal organs.

Nothing could be more injurious than the use of purgatives as remedies for this difficulty. No matter under what form or name they are taken, they always aggravate the disease in the end, though they seem to give temporary relief. Besides, these "aperients," "laxatives," "purgative pellets," and "cathartics" are the most potent causes of dyspepsia. To cure the difficulty do this :—

1. Exercise plentifully and regularly in the open air.

2. Eat no bolted flour. Instead, eat wheat meal, or graham flour, oatmeal, rye, barley, crushed wheat, etc. Eat plenty of fruit, sparingly of milk, sugar, and condiments. Discard hot drinks at meals. Knead and percuss the abdomen gently for half an hour each day, or five minutes at a time, and several times a day. By regularity in habits, accustom the bowels to move at a certain hour each day. Secure an action of the bowels at least once each day, if possible, but do not resort to the continued use of the enema to effect it. Drink a glass of cold water half an hour before breakfast, if it does not disagree with the stomach.

Piles.—This malady is simply a result of the preceding one. It usually disappears when its cause is removed. Sometimes, however, the tumors which are formed have to be removed. Ointments seldom do any good. The numerous "infallible cures" advertised, are frauds. Cool bathing of the parts, cleanliness, and the injection of cool water, are among the best remedies.

A horde of quacks are just now infesting the country as "pile doctors." They profess to cure by a secret and painless remedy. They should never be employed.

Cold Feet.—Cold feet are due to deficient circulation. Administer the alternate hot-and-cold foot-bath as directed for chilblains, several times a day, if possible; at least, twice a day. Wear large, thick boots or shoes, and thick woolen stockings. Keep the feet dry. Exercise. Allow no constriction about the limbs, as garters or elastics. Clothe the upper portions of the limbs warmly. Do not wear rubbers except for a little while at a time when necessary. Electric or galvanic soles are of no use whatever. The feet should be kept perfectly clean, and the stockings should be changed every day, being allowed to air one day, when they may be worn again. Three changes a week are none too many for cleanliness and warmth. Cork soles are useful.

Heart-Burn.—This unpleasant affection has nothing to do with the heart. It is the result of fermentation of the food, which produces irritating acids. These are thrown up into the mouth, producing a burning sensation. A few sips of hot or cold water will commonly give relief.

Sometimes a warm-water emetic is required. Soda and magnesia, which are so often used, are productive of a vast amount of mischief. They never cure, but increase the real disease, and sometimes cause fatal injury to the stomach and intestines.

Crick in the Back.—This curious malady is sometimes relieved as quickly as produced, by stretching the back by bending backward across a log or fence. Hot fomentations, with vigorous rubbing, usually give relief quite readily.

Stitch in the Side.—This difficulty is of the same character as the preceding. Hot applications usually give prompt relief. A tight flannel bandage should be worn about the trunk after the fomentation has been given.

Lumbago.—Alternate hot and cold applications followed by thorough rubbing and percussion are the best local applications. Systematic treatment, and attention to the general health, are also required.

Biliousness.—Every spring the regular doctors, and the quack doctors, and all the drug fraternity, reap a rich harvest from the numerous multitudes who seek to be cured of biliousness by purgatives, alteratives, "blood-purifiers," and "anti-bilious pills." This is one of the great popular delusions upon which charlatans and druggists fatten. The ill feelings which are interpreted to mean too much bile, really mean too much fat pork, too much sugar, too much grease, too much mince-pie, too much cake and preserves, too much fried sausage; in fact, too much of all kinds of food, whether good or bad. April and May bring the penalty of the transgressions of the winter months. Flagrant outrages against Nature in the matter of food and drink are often seemingly borne with impunity during the cold months; but if the same line of conduct is extended into the warmer months, all the symptoms of "biliousness" appear.

The proper cure for "biliousness" is, first, Abstinence for a day or two until Nature can get rid of a little of the grossness which clogs her machinery; second, Avoidance of the cause; third, A few packs, fomentations over the liver, and the daily dry-hand rub, with a wholesome diet. Lemons and other acid fruit seem to have a favorable influence upon this condition of the system.

Bitters are filthy compounds of various nauseous drugs and poisons, and bad whisky. *All* of them contain alcohol. "Temperance Bitters" and "Vinegar Bitters" are no exceptions. Some contain more alcohol and fusel-oil than do brandy, gin, or rum. The various "blood tonics," "purifiers," "invigorators," etc., are of the same character. Their manufacturers are deserving of a place in the deepest part of the bottomless pit; for they lay snares for the unwary, making drunkards of the best and most promising men and youth. Their pretensions are all falsehoods, and their testimonials are either fraudulent or the result of bribery. Can bitters purify the blood? Never. As well talk of cleansing a delicate fabric with slime from a cess-pool.

Cramps.—Relief is given by the hot or cold douche, hot fomentations, rubbing with cold water, and by pressing the affected muscle against some hard body, or grasping it firmly with the hand. Cramp in the stomach may require an emetic of warm water, with a hot sitz-bath and foot-bath in addition to fomentations.

Palpitation of the Heart.—Indigestion is the usual cause. It will cease when the cause is removed. It need not be a cause of alarm in ordinary cases. If the patient has had rheumatism he should have his heart examined by a physician. A sudden attack of palpitation may often be relieved by warming the feet and limbs, and applying hot fomentations over the stomach and bowels.

Indigestion.—Proper food, eaten in proper quantity, and at the proper times, ought to be properly digested. In rare cases, only, it may not be. When it is discovered that an article of food is really injurious to digestion, discard it at once. Eat few kinds at a meal. Avoid eating fruits and vegetables together. Do not drink at meals. Eat slowly. Eat mostly dry food. Do not sleep soon after eating. If the stomach is slow in its action, hot fomentations and gentle kneading soon after eating will promote digestion. Salt and other condiments are often the cause of indigestion.

Sometimes oatmeal gruel, eaten with dry crackers, will be retained and digested when nothing else will be. Other cases will not tolerate any kind of farinaceous food.

A young infant which is for any reason deprived of its natural food, and rejects everything else, will thrive upon a mixture of raw white of egg in water—the white of one egg to a half pint of tepid water. The water should not be hot enough to coagulate the egg. Thoroughly mix, and feed with a spoon.

Softening of the Brain.—So-called softening of the brain is not softening of the brain at all. It is simply congestion of the brain from bad food, bad air, late hours, dissipation, lack of exercise, and sundry other causes. Healthy food, a daily bath, abundant sleep, and plenty of exercise in the open air, will cure nearly every case in a short time.

Consumption.—Is consumption curable? It is, if taken in time. The following hints, if carefully followed, will arrest the disease in its early stages:—

1. Avoid all the causes of the disease, chief among which are breathing air which has been previously breathed, sedentary habits, late hours, and exposure to extremes of temperature.

2. Live in the open air at least seven hours a day. Exercise sufficiently to produce moderate fatigue, but not exhaustion. Walking and horseback riding are good exercises.

3. Fill the lungs to their utmost capacity several times in succession, every hour of the day at least; and cultivate the habit of deep breathing. Do not strain the lungs by holding the breath long. Keep the shoulders well thrown back.

4. Avoid all kinds of stimulants and stimulating food. Eat the most nourishing kinds of food. The chance for recovery largely depends upon the amount of nutriment which can be well digested and assimilated.

5. Take a thorough tepid sponge-bath, followed by a dry-hand rub, three times a week. The whole body should be thoroughly rubbed with the dry hand each morning.

6. Wear flannel the year round; thick in winter, thin in summer. A silk under-suit is an excellent protective.

7. Avoid every form of cough sirup, balsam, cough mixtures, lozenges, expectorants, etc., etc., no matter how strongly recommended. Cod-liver oil, fat pork, bullock's blood, and similar remedies are as useless as absurd and disgusting.

Be sure to begin in season. A few months' delay has often sacrificed the last chance. "Throw physic to the dogs," obey the laws of Nature, and trust in Nature's God.

Vomiting.—If the patient evidently has something in his stomach which ought not to be there, as indigested food, or something obnoxious which has been swallowed, administer a warm-water emetic to assist in the removal of the cause of the difficulty. If there is no evidence of anything in the stomach which needs expulsion, apply either very cold or very hot cloths over the stomach, place the feet in hot water, and give sips of either *hot* or cold water, or little bits of ice to swallow. The attempt should not be made to check the vomiting unless it is clear that the stomach has been freed from its irritating contents, if this was the cause which induced it at first.

Cough.—Coughing, like vomiting, should be encouraged rather than restrained when there is anything which needs expulsion in that manner. Many consumptives have been suffocated by the sudden stopping of a cough which was merely an effort of Nature to get rid of foul matter in the lungs. If there is no cause for the cough but irritation in the throat, it may be cured, in most cases, by the application of the wet bandage. Wear night and day, and change frequently. If the cough seems to have no sufficient cause, it may be concluded that it is of a purely nervous character. The force of will power is the best remedy. Resolve not to cough, engage the attention with something else, and forget it. This method will sometimes succeed even when there is a little irritation present. Continuous coughing will produce irritation of itself. Frequent sips of cold water, and gargling cold water or a mixture of water and lemon juice, will often relieve a cough when it is due to irritation of the upper part of the windpipe. Wearing the wet bandage about the throat is an excellent remedy.

Do not eat honey, lozenges, loaf-sugar, licorice, hoarhound, cough candy, or anything of the kind. They are worthless as remedies, and do the stomach a vast deal of damage.

Hiccough [hickup].—This troublesome affection is usually caused by a disordered stomach. Get the stomach in good condition, and it will disappear. A few sips of cold water will often relieve it. Perhaps the best remedy is holding the breath and fixing the attention intently upon some object.

Sneezing.—When suddenly seized with a desire to sneeze, place the finger upon the upper lip and press hard. Rubbing the nose vigorously will also suppress the paroxysm when it is desirable to do so. When the affection is caused by disease of the nasal cavity, it will not be so easily controlled. The inhalation of steam, and the warm or cold nasal douche, or gently drawing water into the nose, will frequently give material relief.

Bad Breath.—The chief causes are catarrh, decayed teeth, foul teeth, disordered stomach, and constipation. The remedy is to remove the cause. If there are foul and decaying accumulations in the nose, remove them by syringing the nose with a weak solution of permanganate of potash, common salt, or tepid water. Simply snuffing the fluid gently into the nose is quite effective. The fluid should not be thrown violently into the nose, as injury may result therefrom.

Decayed teeth should be either filled or drawn their presence in the mouth is not only a cause of offense, but is productive of disease of the stomach, besides being a source of impurities which find their way into the blood through the lungs.

Uncleanly teeth are quite certain to decay sooner than those which are kept free from impurities. If the food which adheres to the teeth and lodges between them is allowed to remain, it speedily undergoes putrefaction and becomes very offensive. The teeth should be cleansed with a brush and pure water after each meal, and soon after rising in the morning. Once a day, at least, they should be thoroughly brushed with fine soap and pulverized chalk. Artificial teeth need especial attention. They should be daily washed with fine soap and a solution of carbolic acid and water, in proportion of a teaspoonful of the acid to a pint of soft water. Shake well before using. Do not wear artificial teeth during the night.

A solution of chlorinated soda, which can be procured of any druggist, is a most excellent article for cleansing the mouth and the teeth. It should be used freely.

When disorder of the stomach is the cause, it must be cured, to purify the breath.

If the contents of the bowels are retained, instead of being promptly voided, their fluid portion will be absorbed into the blood with all their noxious and disgusting properties. The characteristic odor can be easily detected in the breath of persons whose bowels are constipated or irregular. Few things are more offensive than the breath of a costive child.

The proper remedies for foul breath from this cause are pointed out under the head, "Constipation." No amount of good looks can atone for a foul breath. Cleanliness and wholesome diet are all that are necessary to remove it. It is a very disgusting thought that the breath may contain what ought to have been voided from the bowels some time before.

Sleeplessness.—Eat an early and light supper of easily digested food; or, better, eat no supper at all. Do not engage in exciting conversation or amusements during the evening. At an early hour prepare to retire, determined to sleep. Just before going to bed, soak the feet for ten minutes in a pail of hot water. Cool the water a little just before taking them out. This will relieve the brain of a little of its surplus blood. Go to bed at peace with all the world, close the eyes, and fix the mind steadily upon some familiar object until sleep comes. Do n't allow the mind to wander if possible to prevent it. If unsuccessful, in addition to the above have hot wet cloths applied to the head after going to bed. A dripping-sheet bath just before retiring sometimes affords excellent results. Gently rubbing the temples with the hand, and rubbing the spine from above downward and the feet and limbs in the same direction, have a very soothing effect. The warm full-bath is an excellent soporific.

Ulcers.—Old ulcers on various parts of the body are frequently very offensive as well as painful. To remove the odor emitted by the discharges, wash them thoroughly twice a day in a weak solution of carbolic acid or permanganate of potash. The application will also do something toward healing it. The water-dressing and a strict diet are the best remedial agents.

Chafing.—Fleshy persons and children are often seriously troubled by chafing in hot weather. Daily cleansing of the affected parts with cool water and fine soap, and local tepid bathing, repeated several times a day, will prove the most efficient remedies. Anointing the parts with sweet cream or a little unsalted butter, and applying dry, powdered starch, are useful measures. Cleanliness is the most important remedy.

Canker.—The small white ulcers which sometimes occur in the mouths of both children and adults are commonly known by this name, which really belongs to a much more serious affection. They indicate derangement of the stomach. The proper remedies are, improvement of the digestion, washing the mouth frequently with cold water, and touching the cankers with nitric acid, lunar caustic, or some other caustic application. Various astringent washes are used with some benefit.

Chapped Hands, Feet, and Lips.—Wet, cold, and dirt are the chief causes. The use of poor soap, and imperfectly drying the hands before exposure to cold, are the exciting causes of chapped hands in most cases. To cure, keep them scrupulously clean. Wash them with castile soap and soft water. After wiping them nearly dry, rub them with finely powdered starch.

Washing the hands with water to which a handful of bran or corn meal has been added, is a good remedy.

Another remedy: After thorough washing and drying, at night, apply glycerine, adding a few drops of soft water, and rubbing in well. Wear gloves during the night.

Sweet cream is another common remedy. Honey is warmly recommended by some. The wet bandage is one of the best of all.

The same remedies are to be used for the lips and feet as for the hands. When fissures, or cracks, occur, keep the edges together by means of adhesive plaster.

Stammering.—Stammering is a real disease. It is sometimes induced, by imitation of others, in those who have no natural impediment of speech. It is rather difficult to cure, but perseverance and firmness will master it. Speak very slowly and deliberately, uttering no sound until the vocal organs are well under control. Open the mouth widely in speaking, speak loudly, and breathe deeply. One of the causes of stammering is attempting to speak with the lungs only partially filled. Stop speaking instantly when the slightest embarrassment is felt, and keep the lungs well filled.

Dandruff.—Cleanse the scalp daily with pure soft water and fine soap, and brush it with a soft brush. Do not use any of the patent nostrums advertised.

Sore Eyes.—Ordinary inflammation of the eyes is greatly relieved by laying upon them one or two thicknesses of linen cloth wet in tepid water. Smarting of the eyes when reading will usually be relieved by moistening them often with water. Never use eye-water or caustic unless under the advice of a skillful oculist.

Near-sightedness.—If the eyes are near-sighted, they should be at once provided with suitable glasses, or they will suffer injury. The glasses should be adapted to the eye by an experienced oculist.

Far-sightedness.—Like the preceding, this disease needs immediate attention, although less injury will result from some neglect in this case.

Baldness.—Cut the hair short, and bathe the head twice a day in cool water, adding considerable friction with a brush of medium stiffness. Keep the feet warm, and maintain good digestion. If the hair follicles are not destroyed, the hair will grow again; otherwise it will not. The various lotions sold for this purpose are poisonous, and produce diseases which are sometimes fatal.

Itch.—The disease is caused by a parasite which burrows under the skin. The object of treatment is to kill the insect. It is perhaps possible to do this by means of water alone; but as the only applications necessary are made to the skin only, no harm can result from the careful use of more speedy and effective remedies. Sulphur is the most reliable remedy. Take two ounces of lard, one ounce of sulphur, and one-eighth ounce of powdered sal-ammoniac. Mix well and apply at night after thoroughly washing the affected parts in strong soap-suds. Allow the ointment to remain on over night. Wash it off thoroughly in the morning, and put on clean clothes. Repeat the same treatment three or four times in succession. An ointment of storax and lard, one part of the former to four of the latter, is quite efficient. Perfect cleanliness is essential to successful treatment. The application of oil and lard alone is said to cure by half a dozen applications. Mercurial preparations should be avoided, as they sometimes poison the system.

Lice.—Animal parasites of various kinds which infest the body, abound only when their presence is encouraged by filth. They usually disappear very quickly when absolute cleanliness is preserved. If they do not at once vanish, the application of an ointment made of one part of Scotch snuff to two of lard will speedily destroy them. This ointment is quite poisonous, and should be quickly removed after thorough application.

Warts.—If the wart is small, it may be cured by touching it with the end of a stick which has been dipped in strong acetic acid. The application should be made several times a day until it is destroyed. If large and old, apply nitric acid in the same way. Lunar caustic and caustic potash may also be used.

Corns.—These are excrescences produced by a morbid growth of the skin. They are caused either by friction or by pressure, and are usually the result of wearing a tight and otherwise ill-fitting boot or shoe. Corns are not always produced by tight shoes or boots, being often occasioned by the friction of loosely fitting foot-gear.

There are two varieties of corns, hard and soft. Hard corns are formed upon the outside of the toes; soft corns are produced between the toes.

To cure a corn, the first thing to be done is to soften it. To accomplish this, soak the foot in hot water for one hour every night, and then apply a cloth saturated with a strong solution of saleratus. Continue this treatment for three or four days; then remove the corn with a thin, sharp-bladed knife, carefully working the instrument between the corn and the healthy skin beneath. If the whole corn has been removed, all that now remains to be done is to protect the part from pressure. This may be very easily accomplished by placing over it a piece of soft buckskin, in which an opening has been made of the exact size of the corn, which should be placed exactly over the seat of the disease. By this simple means, the diseased surface will be wholly protected from pressure. Any tendency to harden will be prevented by keeping the buckskin saturated with sweet-oil. This simple treatment, if thoroughly applied, will rarely fail to cure any corn.

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When the boil is ripe, that is, when a little white vesicle appears near the surface, its cure may be hastened by lancing with a sharp knife. The discharge may be encouraged by gentle pressure; but squeezing boils is a very harmful process, and greatly retards their cure. If they do not discharge freely after opening, poultice or apply fomentations. Applications for the treatment of boils should be made to the surrounding tissues as well as to the boil itself, to be effective.

A carbuncle is simply a large boil. A sty is a small one upon the eyelid. Treatment for each is the same as for ordinary boils.

It is a mistaken notion that the purulent matters discharged from boils are concentrated impurities which previously existed in the blood. The pus itself is made up of the white blood corpuscles, the most precious part of the blood. The discharge contains impurities, but most of them are the result of the death of the tissues which have suffered in the inflammation. It is yet an undeniable fact that many persons experience an improvement in health after having several boils, whatever may be the explanation. The contents of a boil are very poisonous to the system when absorbed into the blood.

Stone-Bruise.—This disease, usually the result of accident, is of a nature similar to felon. The intense pain often present is relieved by placing the part in very cold water. It may be treated nearly like a felon.

Felon.—The real disease is an abscess formed beneath the periosteum, or skin of the bone. It may sometimes be dispersed by the application of turpentine or other strong irritants, or by holding the finger in strong lye as hot as can be borne for half an hour, several times a day. Keeping the hand constantly in ice-cold water gives great relief, and sometimes prevents the further progress of the disease if employed in time. Relief is also afforded by the cold douche, arm-bath, and wearing the cold compress upon the arm and hand. When the disease is manifestly settled, the quickest remedy is found in lancing the finger to the bone. Warm fomentations and poultices may afterward be applied, to encourage the discharge.

Hang-Nail.—If the toe is greatly inflamed, it should be placed in a warm foot-bath, an hour at a time, three times a day. During the intervals, it should be covered with a poultice made of bread and milk, linseed, or slippery elm. By this means, the inflammation and tenderness will be greatly reduced. The next step in treatment should be to scrape the center of the nail with a sharp knife until it becomes as thin as possible without exposing the flesh. Then slightly elevate the outer edge of the hang-nail for the purpose, and place underneath it delicate pledgets of cotton. If the nail penetrates the flesh so deeply as to make this impossible, it may be necessary to remove a very small portion by splitting it off with a sharp knife. A still better way is to crowd underneath the diseased portion of the nail delicate filaments of floss-silk, drawing in one portion after another until the nail is elevated out of the tender flesh. The nail may be still farther elevated by the employment of the same means, while the poultices are continued, till a complete and permanent cure is effected.

Diseases of Women.—The declining health and strength of American women has come to be a very common observation. Very few young ladies of the present day can compare with their grandmothers of the last generation in powers of physical endurance. Physicians generally acknowledge that at least three-fourths of their practice is derived from diseases of women. The causes of this general and notable decline are well worth consideration. We will briefly hint at a few.

Fashionable Dress.—No one cause has done more to undermine woman's physical health than her devotion to dress. Whatever fashion dictated, she has felt in duty bound to follow, no matter if in so doing she committed the grossest violations of the laws of health. In thus doing, she has compelled her poor body to undergo the most inhuman tortures. She has heaped upon her sensitive, nervous head, a cruel load of artificial hair; nearly choked herself to death with belts and corsets, and squeezed her vital organs into most unnatural shapes; contorted her tender feet into misshapen masses with tight shoes and high heels; and disturbed her whole vital economy by surrounding her vital organs with a superabundance of clothing while suffering her limbs to go almost unclad, no matter how cold and damp the weather. With such abuse is it strange that she complains of headaches, lung troubles, weak back, and general debility?

Sedentary Habits are another prolific cause of woman's decline. Confinement within doors, without a proper amount of physical exercise, results in deficient development of the muscular system, and various weaknesses follow which render her feeble and inefficient. Too much novel reading, piano thrumming, parlor lounging, and day-dreaming are ruining the constitutions of thousands of the young ladies of the present day.

Late Hours.—Fashionable dissipation at any time is bad enough; but when continued to a late hour of the night, or even until early morning, when the system is exhausted for want of rest, it becomes doubly enervating. Sleep is Nature's opportunity for repairing the wastes which occur during the hours of wakefulness. The nervous system wears out faster than any other part of the body; hence it suffers more severely than any other part when deprived of proper opportunity for repair. Is it any wonder, then, that so many ladies are nervous and hysterical, and constantly complaining of headaches, neuralgias, and weak nerves?

Bad Diet.—Improper dress, with deficient exercise and late hours, with the usual accompaniments of dancing and feasting, so enervate the system as to create a demand for artificial stimulation, in the form of strong tea and coffee, mustard, pepper, spices, animal food, and all sorts of highly seasoned dishes. The certain result of this abuse of the digestive organs is dyspepsia in some one of its myriad forms. Torpidity of the liver and skin are accompanying evils which may properly be traced to the same cause. The loss of that clearness and brilliancy of complexion which exist only in health, leads to the use of cosmetics of various sorts, which, in many cases, still further undermine the health and injure the skin.

Sexual Sins.—One of the most potent though usually obscure causes of woman's physical decline, is that referred to in the heading of this paragraph. Transgressions of Nature's laws in this regard are attended with results the most fearful that humanity can suffer. Sexual excesses, for which she is usually only in small degree responsible, not only occasion their own sad results, but lead to the perpetration of such horrible crimes against Nature as prevention of conception, and fœticide or abortion. Thousands of women have by some form of sexual transgression brought upon themselves diseases and weaknesses which entail life-long suffering. These evils are becoming so prevalent that unless checked they threaten to exterminate the race.

Too Much Drugging.—Last, but not least, in the list of enemies to woman's health, we mention drugs. Medicines of this class undoubtedly have their legitimate place; but they are subject to great abuse. The general tendency of most of the other causes mentioned is to produce obstinate constipation of the bowels. For this evil a remedy is sought in laxatives of various sorts, after-dinner pills, and purgatives. These give temporary relief, only to exaggerate the difficulty which they are expected to remove. Tonics are demanded to support the waning strength, which is not replenished by proper rest and well-digested food. Nervines and opiates are required to quiet the weak and irritable nervous system. Chloral and morphia become indispensable to procure sleep. Headaches and neuralgias necessitate fresh doses of narcotic drugs. Hysterical attacks call for antispasmodics. General debility is an indication for stimulants, while torpor of the liver, skin, and system generally, suggests the need of alteratives. Thus the life becomes a daily round of dosing. One after another various drugs lose their effect, and are replaced by others more powerful. Meanwhile the system grows daily weaker, more torpid, and more diseased.

Such trifling with Nature is in the highest degree reprehensible, and will prove fatal to the strongest constitution. Drugs never cure such maladies. No remedy is of any value which does not reach the causes of the diseased conditions to be removed. If the women of America value health, if they covet physical strength, if they aspire after the endurance of their grandmothers, let them abandon the ruinous habits which are dragging them down, and enervating their mental and physical forces. Let them shake off the shackles of fashion and conventionality, and conform to the God-implanted laws which govern their sensitive bodies.

Care of the Sick.—Every physician knows that in the majority of cases much more depends upon the care which the patient receives from his nurse, than from himself. A careless nurse has often turned the scale, which hung nearly evenly balanced between life and death, adverse to recovery. The following are some of the more essential matters which demand attention, though nothing can supply the native tact and grace which are necessary to make a good nurse:—

1. Secure a constant supply of pure air from out-of-doors. It is not sufficient to open a door leading into another room. Cold air may be very impure. Be careful to exclude the air from the kitchen and wash-room as perfectly as possible.

2. Admit the light and sunshine freely. Direct sunlight is sometimes unpleasant to the patient; then shade the windows with white curtains, which will admit the light. In a few diseases it may be necessary to keep the patient in a darkened room for a few days.

3. Maintain equable temperature. More fire is needed in the morning and evening than at noon. Regulate the heat by a thermometer hung near the bed. The mercury should never be above 70°. Old people especially need attention in this particular. A fall of a few degrees in temperature is often fatal to them. Avoid draughts.

4. The linen of the patient and his bedding should be changed every day at least. Daily washing will not be demanded in all cases, but the clothing should hang for several hours near a heated stove to air and dry.

5. Food for sick people should always be simply and neatly prepared. Light food is usually the best. Condiments should be very sparingly added, if at all. Oatmeal gruel is one of the best articles of food for sick persons. Fruit may be freely allowed if of good quality and ripe. Beef tea and broth will not sustain life. A dog starved sooner on a diet of beef tea than he would have done with nothing at all. Give food regularly, as in health. Continual dosing with milk or any other food is harmful.

6. The patient himself should be kept scrupulously clean. The whole body should be washed several times a week at least. The mouth and teeth should be daily cleansed.

7. All discharges should be kept in covered vessels, and should be removed from the room at the earliest moment possible.

8. The sick chamber should be made pleasant by tasteful arrangement of its contents, by flowers, simple pictures, etc. Frequent change in the aspect of the room is desirable.

9. The patient should never be kept in a state of expectancy. When a promise is made him, fulfill it promptly.

10. Whispering or low talking in the sick-room

or adjoining rooms will arouse the patient's fears unnecessarily. Avoid it.

11. Hasty movements in the sick-room are always annoying to a patient. A calm, deliberate air on the part of the nurse inspires confidence.

12. Arrangements for the night should be made before the patient becomes sleepy, so that he may not be disturbed. Otherwise, the movements necessary in making preparations for the night may cause him to become so restless that sleep will be impossible.

13. All avoidable noises should be prevented. Creaking doors, squeaking boots or shoes, a swinging blind or a flapping curtain, are intolerable to the sensitive ears of invalids. Coal should never be poured from the scuttle upon the fire. Bring it into the room in small parcels wrapped in damp paper. These can be laid upon the fire noiselessly.

14. If the patient can sleep, let him sleep. Never think of waking a sick person out of a sound sleep. Refreshing sleep will do him more good than all the medicines and baths in the world.

15. The covering of the patient in bed should be several light, porous blankets, rather than one or two heavy ones.

16. Strangers and visitors should be prohibited from entering the sick-room of a feeble patient. Visiting will often determine a fatal issue of the disease.

17. Water kept in a sick-room should be often

changed. Never drink that which has been in the room more than a few minutes.

18. Always wear a cheerful face. Do not look solemn and anxious, even though the case is grave.

19. Never annoy the patient by questions or too much conversation.

20. Always recollect that Nature must cure. All you can do is to make the conditions as favorable as possible.

Signs of Real Death.—It has sometimes happened that people have been buried alive when they were seemingly dead. Such a sad mistake can be prevented by the following tests:—

1. The loss of sensibility and warmth, and cessation of the pulse and the breathing, are the signs which at first indicate death; but these are not always reliable.

2. Rigidity of the muscles is another better evidence, but this is not wholly decisive; yet if the muscles remain soft after death, interment should be delayed.

3. The most reliable sign of death, perhaps the only decisive one, is putrefaction. This usually begins first in the lower part of the abdomen.

4. Another test of some value in doubtful cases is tying a cord tightly around a finger. If death has taken place, the color will remain unchanged. If the heart still beats, the end of the finger will become of a deeper color.

5. The application of a hot iron or other caustic appliance will not produce a blister on a corpse.

ACCIDENTS AND EMERGENCIES.

THE injuries resulting from accidents usually demand instantaneous action. A little delay or confusion, or misdirected effort, in a case of severe burning, drowning, or hemorrhage, will often sacrifice a human life. The following simple directions should be carefully studied so that they can readily be made available at any moment:—

Drowning and Suffocation.—The chief remedy to be used in all cases is *artificial respiration.* There are several methods which are very serviceable. The following, which is the most approved method for restoring drowned persons, we copy from a publication issued by the Michigan State Board of Health, the Secretary of which, Dr. H. B. Baker, has kindly furnished us with cuts for illustration:—

TREATMENT OF THE DROWNED.—"Two things to be done: 1. Restore breathing; 2. Restore animal heat.

"RULE 1.—*Remove all obstructions to breathing.* Instantly loosen or cut apart all neck and waist bands; turn the patient on his face, with the head down hill; stand astride the hips with your face toward his head, and, locking your fingers together under his belly, raise the body as high as you can without lifting the forehead off the ground (Fig. 1), and give the body a smart jerk to remove mucus from the throat and water from the windpipe; hold the body suspended long enough to slowly count *one*, *two*, *three*, *four*, *five*, repeating the jerk more gently two or three times.

"RULE 2.—Place the patient on the ground, face downward, and, maintaining all the while your position astride the body, grasp the points of the shoulders by the clothing, or, if the body is naked, thrust your fingers into the armpits, clasping your thumbs over the points of the shoulders, and *raise the chest as high as you can* (Fig. 2) without lifting the head quite off the ground, and hold it long enough to *slowly* count one two, three. Replace him on the ground, with his forehead on his flexed arm, the neck straightened out, and the mouth and nose free. Place your elbows against your knees, and your hands upon the sides of his chest (Fig. 3)

over the lower ribs, and press downward and inward with increasing force long enough to slowly

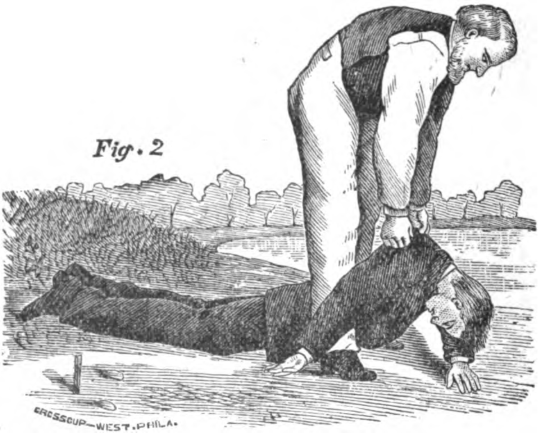

Fig. 2

count one, two. Then suddenly let go, grasp the

Fig. 3.

shoulders as before and raise the chest (Fig. 2); then press upon the ribs, etc. (Fig. 3). These alternate movements should be repeated ten to fifteen times a minute for an hour at least, unless breathing is restored sooner. Use the same regularity as in natural breathing.

"RULE 3.—After breathing has commenced, RESTORE THE ANIMAL HEAT. Wrap him in warm blankets, apply bottles of hot water, hot bricks, or anything to restore heat. *Warm the head nearly as fast as the body, lest convulsions come on.* Rubbing the body with warm cloths or the hand, and slapping the fleshy parts may assist to restore warmth, and the breathing also. If the patient can SURELY swallow, give hot coffee, tea, milk, or a little hot sling. Give spirits sparingly, lest they produce depression. Place the patient in a warm bed, and give him plenty of fresh air; keep him quiet.

"*Avoid Delay.* A MOMENT may turn the scale for life or death. Dry ground, shelter, warmth, stimulants, etc., at this moment are nothing—ARTIFICIAL BREATHING IS EVERYTHING—is the ONE REMEDY—all others are secondary.

"*Do not stop to remove wet clothing before efforts are made to restore breathing.* Precious time is wasted, and the patient may be fatally chilled by exposure of the naked body, even in summer. Give all your attention and effort to restore breathing by forcing air into, and out of, the lungs. If the breathing has just ceased, a smart slap on the face, or a vigorous twist of the hair will sometimes start it again, and may be tried incidentally, as may, also, pressing the finger on the root of the tongue.

"Before natural breathing is fully restored, do not let the patient lie on his back unless some person holds the tongue forward. The tongue by falling back may close the windpipe, and cause fatal choking.

"If several persons are present, one may hold the head steady, keeping the neck nearly straight; others may remove wet clothing, replacing at once clothing which is dry and warm; they may also chafe the limbs, and thus promote the circulation.

"*Prevent friends from crowding around the patient and excluding fresh air;* also from trying to give stimulants before the patient can swallow. The first causes suffocation; the second, fatal choking.

"*Do not give up too soon.* You are working for life. Any time within two hours you may be on the very threshold of success without there being any sign of it."

MARSHALL HALL'S READY METHOD.—This famous method consists, briefly, in laying the patient with his face downward, his arms folded beneath his forehead, and then slowly rolling him upon his side, restoring him again to his former position. By this means, the chest is alternately compressed and expanded, thus imitating the movements of respiration. This method has been variously modified.

SYLVESTER'S METHOD.—This method, which has been proposed more recently, is highly recommended by many physicians. Raise the arms from the sides until they meet above the head; then bring them slowly back to the sides again, pressing them against the sides of the chest. Repeat this sixteen or eighteen times a minute. It is a very efficient means when skillfully applied.

Upon submersion in the water, the epiglottis, a little valve at the top of the windpipe, closes, shutting out the water from the lungs. After a time, the muscles relax, and the valve opens. Water then enters the lungs. After this occurs, there is no longer any possible chance for recovery; but as there is no ready means for determining accurately the condition of the lungs, every effort should be made to resuscitate the patient by the means already described. The length of time a person can live under water will depend very much upon the amount of pure air in his lungs at the time of submergence.

Poisonous Gases.—Carbonic acid (more properly carbon di-oxide) is the most common cause of suffocation. Chlorine gas, illuminating gas, the vapor of burning sulphur, ether, and nitrous oxide, or laughing gas, with other poisonous gases, produce death in the same way, though some of them are active irritants in addition.

Carbonic acid is heavier than air, and, in consequence, it accumulates in old wells, caves, deep valleys, and other low places. It is formed in mines in large quantities, at times, and is known to miners as "choke damp." It is also formed in the vats of breweries by fermentation. In the burning of limestone it is also produced in enormous quantities. When the kilns are opened, it sometimes pours out so rapidly as to suffocate the workmen before they can escape. Miners are often destroyed by a sudden gust of "choke damp."

Old wells should never be entered without first testing the air at the bottom. Do this by lowering a burning candle. If it is extinguished, or burns feebly, carbonic acid is present, and descent would be extremely perilous. If it burns brightly, no fears need be entertained. If gas is found to be present, it can be dislodged by throwing into the well burning fagots or paper. Old cellars and cisterns are sometimes dangerous on the same account; they may be tested in the same way.

Upon the inhalation of the first breath of carbonic acid, the person usually falls, and thus remains exposed to the poisonous effects of the gas. Under such circumstances, speedy and well-directed efforts are necessary to prevent death.

In a burning building, the purest air is near the floor, as the smoke containing the carbonic acid is hotter than the air when first formed, and rises. In escaping from a burning building, it is sometimes advantageous to go upon all-fours so as to breathe the best air.

Charcoal burning in a room in an open vessel will produce large quantities of carbonic-acid gas in a short time. In France, suicide is often committed by this means.

Illuminating Gas often escapes into sleeping-rooms through leakage of the gas pipes, or by reason of failure to completely shut off the supply to the burner upon extinguishing the flame.

People unaccustomed to the use of gas are sometimes so thoughtless as to blow out the flame as they would that of a lamp or candle, leaving the gas to find unobstructed entrance. Many lives have been lost in this way.

Hanging is another means by which the supply of air to the lungs is cut off, causing asphyxia. A red line around the neck is usually indicative of this manner of producing suffocation.

The remedies in all cases of suffocation are essentially the same. Remove the patient from the cause, or, *vice versa*, as quickly as possible. Draw the tongue forward, clear the mouth, dash cold water upon the face and chest, rub the body vigorously, and apply artificial respiration. If chlorine has been accidentally breathed, inhale, as quickly as possible, ammonia gas.

Choking.—When a particle of food, or any other body, becomes lodged in the throat, go upon all-fours, and cough. If it is not expelled, the patient should be seized by the heels and suspended head downward, while his back is percussed by another person. If the body can be seen by drawing the tongue well forward, seize it with a pair of forceps, or a hook made by bending the end of a wire or a hair-pin which has been straightened.

Sometimes it may be elevated from its position by means of a spoon handle. If it is out of sight, and all efforts to expel it are unavailing, press it down with the finger or a smooth rod with a rounded end, throwing the head back as far as possible while doing so. A body which has lodged part way down the esophagus, may sometimes be pressed down into the stomach by pressing hard upon each side of the neck close to the windpipe.

Lightning Stroke.—Dr. Fothergill remarks as follows on this subject:—

"Persons struck by lightning are not always dead when they appear to be so. There are few recoveries from this state, because no means are tried to restore the sufferer. In the tropics there are many instances of persons, struck down by lightning, recovering after a heavy thunder shower; and it would appear that cold affusion to the body has a decided action in such cases. The injured cannot be harmed by the free use of cold water, and if only an occasional recovery took place, it would be well worth the pains bestowed. The persons so injured should have cold water poured or even dashed freely over them."

Artificial respiration should also be employed.

Sun-Stroke.—Carry the patient at once to a cool, shady place, remove his clothing, and dash cold water upon his body, especially the head and chest. Rubbing the spine with ice is an excellent remedy. Continue the cold application until the unnatural heat is materially decreased. Artificial respiration should be practiced at the same time. No stimulants should be given to the patient.

Hemorrhage.—If an artery is wounded, the blood will flow in jets, sometimes being thrown several feet, and will be of a bright red color. If the wounded vessel is a vein, the blood will be of a dark color, and will flow in a steady stream. Slight hemorrhage will be easily controlled by pressure over a little pad of folded linen applied directly to the wound

When large vessels are injured, greater care is necessary. If the vessel is an artery, apply the pressure between the wound and the heart. If it is a vein, apply the pressure upon the opposite side.

The application of cold, by means of cloths wet in iced water, snow, or pounded ice, is a verv effective means of stopping hemorrhage.

In case the hand, forearm, or foot is severely wounded, it should be elevated above the rest of the body and bound in towels in which pounded ice is folded. Hemorrhage from the end of a finger or toe may be stonned by the application of pressure to the sides.

When a very large artery of the arm or leg is wounded, resulting in hemorrhage which cannot be quickly controlled by any of the means mentioned, proceed as follows:—

Take a handkerchief or a strip of cloth of sufficient length to reach around the limb. Tie a large knot in the center. Apply the knot just over the course of the wounded vessel, above the wound. Now pass a stout ruler or rod beneath the bandage upon the opposite side from the knot. Twist it around so as to tighten the bandage and thus compress the artery beneath the knot. Increase the compression until the hemorrhage is controlled. A tight bandage of this kind should not be retained too long, as it may destroy the life of the parts below. Its object is to control the hemorrhage only until the wounded vessel can be secured and tied by a surgeon or other competent person.

Bleeding from wounds of the scalp is easily controlled by pressure upon the seat of injury.

Nose-Bleed.—Remove all constrictions from the throat, so that the return of blood from the head will be unobstructed. Hold the head erect for the same reason. Inclining it forward encourages the hemorrhage. Twist the corner of a handkerchief or piece of old linen and press it tightly into the bleeding nostril. Hold it in place until the bleeding ceases, unless it passes backward into the throat, when other measures will be required. Blowing the nose, and bathing it in water, increase the hemorrhage rather than check it.

Pressure upon the facial artery upon the side on which the hemorrhage occurs, will sometimes check it. Apply firm pressure upon the notch on the lower border of the lower jaw just in front of the angle.

When the bleeding has once stopped, do not disturb the clot that has formed in the nose, as it may be induced again by so doing. In very severe cases the posterior opening from the nasal cavity into the mouth will require plugging; surgical assistance will be required for this.

Hemorrhage from the nose is seldom fatal. When scattered upon the floor or clothing, a few ounces of blood look like a quart. A very few spoonfuls will color a large quantity of water very red.

Bleeding from Lungs.—Blood which is expectorated by coughing often comes from the throat or nasal cavity, trickling down into the air passages and being coughed out. This is nearly always of a dark color, and is commonly clotted. Blood which comes from the lungs is of a bright red color, and is frothy from the admixture of air. The amount of blood lost is much less than usually thought, and is seldom the cause of death.

Keep the patient as quiet as possible, with his head elevated a little. Instruct him to restrain his cough as much as he can, and to avoid all violent efforts at coughing. Make cold applications to the chest and spine, and hot to the feet and limbs. For applying cold to the chest, rubber ice-bags are very convenient, as they do not wet the clothing. When they are not at hand, employ compresses of snow or pounded ice large enough to cover the entire chest, or the affected side if the exact origin of the hemorrhage is known. Salt and other drugs are often employed; but it is exceedingly doubtful whether they are of much value, since they pass at once to the stomach, not entering the lungs at all.

Cuts.—Cuts should be dressed in such a way that the severed edges may unite properly. Firm clots of blood lying in the wound should be carefully removed, with any other foreign body. If the bleeding has ceased, the edges may be brought together and secured by stitches or adhesive straps, according to the size and position of the wound. Small wounds sometimes require only that the edges be thus brought together to stop the bleeding. The strips of plaster used should be narrow, and there should be narrow spaces left between them, to allow room for the escape of the discharge, should any occur.

Care should be taken not to close a wound when vessels of any size have been ruptured without either ligating the bleeding vessel or closing it by torsion. Much injury has often resulted from a neglect of this rule.

If the end of a finger or toe has been accidentally cut off, it should be at once replaced, even though it was entirely severed. Being kept in place, it will be quite likely to adhere and prevent an ugly scar. If the severed piece is frozen or badly bruised, the attempt will be useless.

Dressing for Wounds.—As a dressing to be applied to all wounds, nothing is equal to water. While swollen and painful, cold applications should be made by means of thin compresses, which should be changed every few minutes. After the pain and inflammation have subsided, apply thin compresses kept constantly wet with tepid water. In some cases submersion of the part in water is serviceable.

The various "pain-killers," liniments, and washes have no healing virtue whatever. Opium and arnica relieve the pain only by paralyzing the nerves. They simply hide the condition of the wound from the patient. Both are poisons which retard healing.

Bruises.—Apply as quickly as possible a hot fomentation. Renew the application every five minutes for an hour or two. Apply afterward the tepid compress. This will prevent soreness, and much of the swelling and discoloration which would otherwise result. This is the way to treat a black eye, a broken nose, or a foot which has been pierced by a rusty nail.

How to Cure a Sprain.—A sprain is an injury to a joint, produced by straining or lacerating one or more of the ligaments connected with a joint. The first thing to be done after the receipt of the injury is to apply hot fomentations to the injured joint; and the sooner the better. After applying hot fomentations for one or two hours or longer, if the pain continues, apply cold compresses and keep the joint entirely at rest. When there is much swelling, alternating it with cold pouring, continued for an hour at a time, will often give great relief. Rest is one of the most essential features of treatment, since the injured ligaments cannot be repaired while disturbed by the motion of the joint. Cases are numerous in which an injury which was at first a slight sprain, has resulted in the total loss of the use of the limb, from neglect to give the joint the required rest while Nature was effecting a repair. The various liniments which have a reputation for the cure of sprains are useful only as a means of inducing the patient to rub and manipulate the joint. Rubbing is a very useful means of treatment, especially if the limb is considerably swollen. Violent manipulation of the joint should be carefully avoided, as it would only serve to increase inflammation.

Fractures and Dislocations.—These accidents usually require the attention of a skillful surgeon, who should be called at once.

Burns and Scalds.—If a person's clothes catch on fire, wrap about him at once a blanket, cloak, rug, or similar article, bringing it tight about the neck to protect the head and face. Remove the burned clothing as quickly as possible, and apply wet linen cloths to the burned surfaces. Change every five minutes, applying another cloth instantly after one is removed. (For further treatment see page 82.)

To burns produced by lye, caustic potash, or other alkalies, apply vinegar or some other weak acid as quickly as possible. To a burn produced by an acid, apply an alkali, as soda, ashes, or simple earth.

Freezing.—In cases of freezing, the great danger is in thawing out too quickly, the result of which is inflammation and death of the frosted parts; or, in milder cases, chilblain. Keep the patient away from the fire. Place him in a cool room, and rub the frozen parts with snow or cold wet cloths until the circulation is re-established. If the patient is apparently dead, artificial respiration should be practiced as long as there is a particle of hope of recovery; and the effort should not be abandoned for several hours.

Those who are exposed to severe cold should remember that one of the symptoms of freezing is an uncontrollable desire to sleep. Resist it.

Bite of Mad Dog.—Remove the clothing from the part at once, and apply suction to the wound with the mouth. As quickly as possible, remove the injured flesh with a sharp knife or destroy it with an iron at white heat, afterward applying the water-dressing or a poultice.

Few persons that are bitten by rabid animals ever have the disease. Hydrophobia is more common among dogs in the winter than in the summer, contrary to the common supposition. The skunk or polecat is liable to the same disease. Its bite is more dangerous than that of the dog.

Rattlesnake Bite.—Destroy the poison virus in the same manner as described in the preceding article. As with the bites of mad dogs, few of those bitten are poisoned, and fewer still fatally so. Artificial respiration and rubbing the spine with ice have been highly recommended. Whisky is entirely worthless as an antidote. It does more harm than good when administered.

Insect Stings.—The pain caused by the sting of an insect is the result of an acid poison injected into the tissues. The first thing to be done is to press the tube of a small key firmly on the wound, moving the key from side to side to favor the expulsion of the sting with its accompanying poison. The sting, if left in the wound by the insect, should be carefully extracted, as it will greatly increase the local irritation. The poison of the virus being acid, common sense points to the alkalies as the proper antidote. Among the most easily procured remedies may be mentioned soft soap, liquor of ammonia (spirits of hartshorn), smelling salts, washing soda, quicklime made into a paste with water, lime-water, the juice of an onion, bruised dock leaves, tomato juice, wood-ashes, and carbonate of soda. A solution of borax in proportion of one ounce to a pint of water is also a most excellent remedy.

The same remedies should be applied to the bites of gnats, mosquitoes, spiders, fleas, and other insects.

Dirt in the Eye.—Particles of dirt or other foreign bodies in the eye should be removed at once. If the object is upon the visible portion of the eyeball, remove it with the corner of a handkerchief. If concealed beneath the lid, roll the lid over upon a pencil or turn it outward with the finger, and remove the speck in the same way. Dirt beneath the upper eyelid can often be removed by drawing it outward and downward over the under lid. Then press it upon the under lid and open the eye. Blowing the nose while the eye is closed will assist in the removal of small particles of dirt. Particles of iron which have become imbedded in the tissue of the eye may be loosened and removed by a needle mounted in the end of a pencil; but such an instrument must be used with extreme care.

Lime in the Eye.—Lime is a powerfully caustic alkali, and in numerous instances a small quantity thrown into the eye has resulted in total destruction of sight. A strong solution of sugar or diluted vinegar should be applied as quickly as possible after the accident, in case a particle has been thrown into the eye. While the lotion is in preparation, the eye should be thoroughly washed.

Foreign Bodies in the Ear.—Never use a sharp instrument about the ear in any way. Insects can generally be dislodged very speedily by dropping into the ear a little oil or warm water. Solid bodies, like peas, beans, or pieces of stone, can usually be removed by the diligent application of warm water and soap by means of a syringe. The head should be inclined to one side, so that the object may readily drop out. If this is unsuccessful after thorough trial, use a loop of fine wire or horsehair, a small scoop, or a pair of delicate forceps. Hardened ear-wax should be softened by warm water and soap, and then removed with great care by means of the scoop.

Foreign Bodies in the Nose.—Blow through the nose with as much force as possible, at the same time closing the mouth and the unobstructed nostril. Sneezing will sometimes expel the cause of obstruction. A loop of wire or a blunt hook may be successfully used; but care must be taken to avoid crowding the object farther in. If it is not tightly imbedded, it may be driven out by making the water from a syringe pass up the unobstructed nostril and out at the one containing the foreign body.

Another plan is to blow the patient's nose for him by closing the empty nostril with the finger, and then blowing suddenly and strongly into the mouth. The glottis closes spasmodically, and the whole force of the breath goes to expel the button or bean, which commonly flies out at the first effort. This plan has the great advantages of exciting no terror in children, and of being capable of being at once employed, before delay has given rise to swelling and impaction.

Chimney on Fire.—Throw into the stove, or upon the coals in the fire-place, a handful of salt or sulphur. Close the stove-draught, or hold a board or blanket before the fire-place.

What to do in Poisoning.—Give an emetic at once, which may consist simply of tepid water in large quantities, or the same with the addition of mustard or common salt. After drinking several cupfuls, tickle the throat with the finger or a feather. Continue taking a cupful every two or three minutes until vomiting occurs. Individual poisons require special remedies. The following lists comprise the most common poisons and their antidotes :—

Vegetable Poisons.—Opium, Morphia, Camphor, Aconite, Laudanum, Paregoric, Strychnia, Tobacco, lobelia, Arnica, and other vegetable poisons require the emetic and the application of a stomach-pump if possible. Milk and mucilaginous drinks should be given freely after thorough vomiting. Artificial respiration should be employed in poisoning by strychnia and opium. The cold douche is also excellent in poisoning by the latter drug. Keep the patient awake, if possible, by making him walk about.

Acids.—Sulphuric (oil of vitriol), Nitric (aqua fortis), Hydrochloric (muriatic), and Oxalic Acids are the more common. Drink largely of water at once. Acids are neutralized by alkalies. Calcined magnesia is the best antidote. Chalk (powdered), whiting, lime, weak lye, and strong soap-suds are the best substitutes. Something must be done quickly in case of poisoning by acids.

Mineral Poisons.—For Corrosive Sublimate, White Precipitate, Red Precipitate, and Vermilion, take the whites of several eggs in a quart of tepid water. Soap-suds thickened a little with wheat flour is the best substitute for eggs. No other emetic is necessary.

Arsenic, Cobalt (fly powder), Ratsbane, Paris Green, and other compounds containing Arsenic, should be expelled by vomiting as soon as possible. Then administer quite large doses of calcined magnesia.

Acetate of Lead, White Lead, Litharge, and Saltpeter require an emetic followed by oil or mucilage.

For Lunar Caustic (nitrate of silver), administer half a table-spoonful of salt in a pint of water.

The antidote for Matches or Phosphorus is calcined magnesia, followed by soothing fluids.

Antidotes for Verdigris and Blue Vitriol (sulphate of copper), are eggs, milk, and soda.

Alkalies.—The most common which are sources of poisoning are Ammonia, Potash, Soda, Pearlash, Lye (from wood-ashes), and Salts of Tartar. Drink copiously of weak vinegar or lemon juice. Afterward take some mucilaginous drink, or oil.

Alcoholic Poisoning.—A man found "dead drunk" should be treated like any other case of narcotic poisoning, as from opium.

Chronic Poisoning by Lead, Opium, Tobacco, or any other drug which has been received into the system for a long time, requires, first, that the cause be wholly removed at once; second, attention to the general health. In the case of Opium and Tobacco, the disuse of the drugs is attended with a good deal of unpleasant feeling on the part of the patient. He feels as though he will certainly die. His fears are groundless. He is in much less danger of dying than before.

Poisonous Candies and Food.—The paints used in the manufacture of candies are poisonous, and often sicken those who eat the candies, sometimes fatally in the case of children.

Fish and meat, either fresh or canned, are frequently sources of poisoning. Decayed fruit or other food, shellfish, and mushrooms are often productive of injury in the same way. Such cases should be treated on the general principles relating to poisoning.

Soda-Water.—The water nearly always contains lead. The sirups are most wretched imitations of natural flavors, and are made from such things as old cheese, tar, and mineral acids.

Dangerous Kerosene.—The kerosene oil sold or used in the majority of our cities is almost as dangerous a commodity as gunpowder or nitro-glycerine. Millions of dollars' worth of property has been destroyed, and hundreds of lives have been sacrificed, by the use of cheap illuminating oil. Crude kerosene contains benzine, naphtha, and other highly volatile and explosive compounds. These dangerous agents should be wholly removed by the refiner in preparing the oil for use ; but the manufacturer finds it to his pecuniary advantage to allow them to remain in the oil in greater or lesser proportions. This kind of oil will burn at a much lower temperature than that which is pure, and it is to this fact that its dangerous properties are due, since it is thereby rendered explosive when used in the ordinary kerosene lamp.

It is very important to be able to distinguish dangerous oil from that which may be used without danger. The following is an excellent method for testing oil :—

Place upon the stove a pan or tin pail containing water. Float in this vessel a deep saucer or small, deep cup containing a portion of the oil to be tested. Place in the oil a thermometer, and observe the gradual increase of temperature. When the temperature reaches 70° or 80°, bring a burning match or taper near to the surface of the oil. If a flash is produced, the article is highly dangerous. Continue the observations as the temperature rises, and if a flash is observed at the temperature less than 140°, the oil is utterly unfit for use, and should not be employed for illuminating purposes.

The lower the temperature at which the flash occurs, the greater the danger.

The State Legislature of Michigan has passed an act prohibiting the use or sale of kerosene oil which will flash below 140°.

Hydropathic Appliances.

WATER, applied in the various modes in which it may be, is one of the most potent of remedies. Wrongly applied, it may be productive of great harm. The following are a few general rules which should always govern its use:—

1. Never bathe when exhausted or within three hours after eating, unless the bath be confined to a very small portion of the body.
2. Never bathe when cooling off after profuse sweating, as reaction will then often be deficient.
3. Always wet the head before taking any form of bath, to prevent determination of blood to the head.
4. If the bath be a warm one, always conclude it with an application of water which is a few degrees cooler than the bodily temperature.
5. Be careful to thoroughly dry the patient after his bath, rubbing vigorously to prevent chilling.
6. The most favorable time for taking a bath is between the hours of ten and twelve in the forenoon.
7. The temperature of the room should be at about 80° or 85°.

8. Baths should usually be of a temperature which will be the most agreeable to the patient. Cold baths are seldom required. Too much hot bathing is debilitating.

The following are brief descriptions of the more important baths applicable in the home treatment of disease :—

Sponge-Bath.—This bath consists in rubbing the whole body with a sponge or towel wet in water of an agreeable temperature; is most useful for a general ablution.

Sitz-Bath.—A tub made especially for the purpose, or a common wash-tub, may be employed. Place in the vessel sufficient water to cover the hips and lower part of the abdomen. The patient or an attendant should rub and knead the abdomen during the bath. The water should be of a temperature ranging from 85° to 98°, according to the condition of the patient. Cover the patient during the bath.

Wet-Sheet Pack.—Spread two or three comfortables upon a bed or mattress. Spread over the whole a woolen sheet. Wring out of water of the desired temperature a linen or cotton sheet. Spread it quickly upon the bed, and let the patient immediately lie down in the middle. Then quickly envelop him in the wet sheet, wrapping him snugly from head to foot. Then cover him with the comfortables, and let him remain quiet as long as required. Elevate the head a little, and use care to have the feet warm. Half-packs may be taken in a similar manner. confining the application to the trunk of the body.

Fomentations.—Wring out of water as hot as can well be borne, a folded flannel cloth, and apply it quickly to the part to be treated. Cover with a dry cloth, and change once in five minutes.

Pail-Douche.—This consists in pouring water over the shoulders of the patient with a pail. It is often employed to tone up the surface after a hot bath.

Chest-Wrapper.—The wrapper should be made of coarse cloth, and should be shaped so as to fit the chest. Apply it after wringing just sufficiently to prevent dripping. Cover with a light, dry flannel wrapper. Change three or four times a day.

Half-Bath.—For this bath is required a vessel of sufficient size to allow the patient to sit upright with his limbs extended. Enough water to cover the limbs, thighs, and lower part of the abdomen, is necessary. During the bath, the attendant should rub vigorously the limbs, back, chest, and abdomen of the patient.

Compresses.—Apply wet cloths in the same manner as in fomentations, wetting them in either cold, cool, or tepid water, according to the effect desired.

Rubbing-Wet-Sheet.—This bath consists in enveloping the patient in a wet sheet, and rubbing him briskly with the hand outside the sheet.

Hot Applications.—Besides fomentations, heat may be applied in several other ways. Bottles filled with hot water, hot bricks or stones wrapped in papers or cloths, hot cloths, bags filled with hot sand, salt, or corn meal, and rubber bags filled with hot water, are convenient methods of applying dry heat.

Moisture and heat may be applied in a variety of ways also. Instead of wringing cloths out of hot water, put them into a steamer for a few minutes. This saves the trouble of wringing them. When there is no water hot, and a fomentation is wanted quickly, wring a cloth out of cold water, spread it between the folds of a newspaper, and lay the paper upon the top of the stove, or press it against the side. In a minute it will be hot. Wrap stones or bricks in a moist cloth. Poultices of various sorts answer the same purpose.

All hot applications should be renewed every few minutes until the desired effect is obtained.

Vapor-Bath.—Place the patient in a chair which has a wooden bottom, beneath which place a pail half filled with water. Surround the patient completely, chair and all, with a woolen blanket, leaving only his head visible; even this may be covered a little while at a time in cases of neuralgia, if desired. Add other blankets sufficient for warmth. Now raise the blankets a little, behind, and place in the pail a stone or brick which has been heated sufficiently hot to hiss when it touches the water. Do not drop it into the water at once, but let it in gradually. As this becomes cool, add another in the same way. The bath should not usually be continued more than twenty minutes. Wash off quickly with tepid water upon coming out of the bath. The head should be wet from the first.

Hot-Air Bath.—Prepare the patient in the same manner as directed for the vapor-bath. Instead of the pail of water, place beneath the chair a cup containing a small quantity of alcohol. Wet the head well, and then light the alcohol. Wash with tepid water after the bath, and be careful to avoid taking cold.

Enemas.—An enema is a small portion of water thrown into the rectum by means of a syringe. The water may be either cool, tepid, or warm, as occasion may require.

Inunction.—Pure olive oil, or fresh butter, may be used, but vaseline, a fine unguent which can be procured of the druggist, is the best. After giving the patient a short bath of some kind, to cleanse the skin, dry him carefully, and then apply with the hand a very small quantity of the oil or unguent. Rub in very thoroughly, with much kneading and friction. Conclude by carefully wiping the skin with a soft flannel to remove all superfluous oil.

TESTS FOR ADULTERATIONS.

The following tests for various adulterations of food or articles used in the preparation of food, are condensed from the Home Hand-Book of Hygiene and Rational Medicine. A neat case containing all the materials required for the use of the different tests, will be furnished for $3.00. See advertisement of *The Sanitary Detective.*

Detection of Alum in Bread.—The simplest method is to dip a slice of the suspected bread in a solution of logwood in water (either the extract or fresh chips may be employed). If alum is present, the bread will become a claret color. A more precise method is the following: Macerate in three or four tablespoonfuls of water a half slice of bread; strain off the water, and add to it twenty drops of a strong solution of logwood. Then add a large teaspoonful of a strong solution of carbonate of ammonium. If alum is present, the mixture will be changed from pink to a lavender-bluc. This test will discover a grain of alum in a pound of bread.

To Detect Blue Vitriol in Bread. — Dissolve some of the bread in warm water. Add a strong solution of prussiate of potash. If copper is present, a chocolate color will appear.

Adulterations of Butter.—The presence of annatto is shown by the unnaturally deep color of the butter. Other adulterants are easily detected by melting the butter with a gentle heat, which causes them to separate.

Test for Glucose.—The presence of glucose in sugar can easily be detected by the following method: Dissolve in a test-tube half a teaspoonful of the suspected sugar, in two teaspoonfuls of warm water. Add six or eight drops of a strong solution of blue vitriol. This will give to the solution a faint blue tinge. Now add a solution of caustic potash. This will deepen the blue color greatly, and produce a curdy appearance. Continue to add the potash until the solution becomes clear, shaking the test-tube frequently so as to mix the contents well, and then heat to boiling in the flame of a spirit-lamp. If grape-sugar is present, as the liquid approaches the boiling point a yellowish color will appear, which will soon deepen to orange, then orange red, and deep red. The changes in color are due to the precipitation of red oxide of copper, which is the chemical test for grape-sugar.

Inorganic adulterants of sugar can be readily detected by dissolving the sugar, when they will appear as a sediment.

Adulteration of Sirups.—This fraud is not always easy to detect, but it may generally be discovered through the action of well-known chemical re-agents upon the sulphuric acid and iron which "corn sirup" is almost certain to contain. These substances may be detected by the following means:—

It is well known that iron with tannic acid forms a black compound. It is by this means that ink is made from oak-bark or logwood and salts of iron. Hence by adding a little of the sirup to a solution of tannin, it will become black. Common tea contains tannin in sufficient quantity to make a good test. Into half a cup of moderately strong, clear tea put a teaspoonful of the sirup. If the tea becomes black, iron is present in the sirup. It is true that the iron itself in very small quantities may not be productive of great injury, though in the quantities in which we have found it we think it might do harm; but a knowledge of its presence is of value as indicating the probable presence of sulphuric acid and of glucose. Sirup or sugar which will blacken tea may well be suspected and avoided.

Procure at a drug store a dram of nitrate or chloride of barium. Dissolve in a few spoonfuls of water. Dissolve some of the sirup in warm water in a test-tube or clear, clean vial. Add some of the barium solution, and shake. Set aside for half an hour. If a white powder appears at the bottom of the vial as a sediment, the sirup undoubtedly contains sulphuric acid, and should be rejected.

The adulteration of sirup is so common that it is entirely unsafe to purchase or use the article, no matter how alluring its name or fine its appearance, without ascertaining its purity by careful testing.

Adulterated and Artificial Honey.—A large share of the strained honey in market is adulterated with glucose, as well as are sirups. In some cases, so-called honey contains not a particle of the genuine article, being simply a flavored sirup of glucose. We have examined specimens in which considerable quantities of sulphuric acid were present.

It is stated that another very ingenious form of adulteration of honey has been quite extensively practiced. What is termed the foundation of the comb is made of paraffine, a wax-like substance made from petroleum. This saves the bees much labor, as they have but to build up the cells on the foundation furnished them. Then, to still further economize their time and labor, they are abundantly supplied with glucose in solution, which they have but to transfer to the comb, thus avoiding the trouble of gathering sweets from distant fields. Of course no transformation takes place in the artificial sugar, it being simply transferred from the feeding vessel to the comb. Thus we have honey which is wholly artificial with the exception of a portion of the wax. This certainly caps the climax of adulterations.

The tests for artificial and adulterated honey are the same as those for glucose in sirups.

Adulteration of Baking-Powders.—Baking-powders are preferable to soda, saleratus, cream of tartar, and sour milk, in the way these substances are commonly used. and yet they may be dispensed with, and with benefit to the health. The alum powders are the worst of all compounds used for raising bread. They should never be employed. The presence of alum in baking-powders may be detected by testing for alum the bread made from it, as already directed.

Canned Fruits and Vegetables.—Canned fruits and vegetables are often adulterated with coloring and flavoring substances of an unwholesome character. The most common are red coloring matters in tomatoes (not very common in this country), fuchsine and aniline in fruits, and salts of copper in peas and other green vegetables. It occasionally happens, also, that the solder with which the cans are closed causes contamination of fruits with lead. Sometimes the cans themselves are a still greater source of danger, being made of lead-tin.

When the coloring matter is of an earthy character, some portions may be found in the bottom of the can as sediment. When fuchsine or aniline is present, it may be detected by placing in the juice of the fruit, as found in the can, a few threads of white woolen yarn or worsted. After half an hour remove the threads, and if the coloring matters mentioned are present they will be colored red, as will not be the case if only the fruit juices are present.

Adulteration with copper may be strongly suspected if such vegetables as peas have a bright green appearance. The presence of copper will be proven if a bright strip of iron or a sewing-needle placed in the can over night, after adding a few drops of sulphuric acid, is found to be coated with a coppery colored film in the morning. A very small proportion of copper may be detected in this way.

Preserves, Marmalade, etc.—In many cases, preserves are colored with fuchsine and aniline, as are some canned fruits. Marmalade often consists chiefly of apples flavored with orange essence. Copper is also sometimes found, as in canned fruits. It is usually accidental, however, its presence being due to the fact that preserves are generally made in copper kettles, some of the copper being dissolved by the juices of the fruits, the solution of the copper being facilitated by the heat and the stirring. On this account, preserves should never be made in copper kettles.

How to Detect Bad Water.—Dissolve in an ounce of water twelve grains of caustic potash and three grains of permanganate-of-potash crystals. Keep in a glass-stoppered bottle. Add a drop or two of this solution to a gill of the water to be examined, placed in a perfectly clean and clear bottle. The permanganate solution has a beautiful pink or purple color. If this is changed to brown, or disappears after standing a few hours, the water is impure and unfit for use. The permanganate alone is found to be unreliable, as it sometimes fails to detect the presence of some kinds of organic poisons.

Vinegar and Pickles.—Vinegar is very often adulterated with mineral acids, sulphuric acid being the most commonly used. Many specimens of vinegar offered for sale as cider vinegar have not a drop of apple juice in them. Vinegar is itself an unwholesome article; but it becomes tenfold more injurious when adulterated with strong acids, injuring not only the stomach but the teeth. The presence of sulphuric acid, or oil of vitriol, may be detected by the test given for this acid in sirups. It is said that it may also be detected in the following manner: Add to the vinegar a small quantity of sugar. Then put a drop or two on a clean plate and evaporate at a low heat. If the acid is present, the spot will become black, through its action on the sugar.

Tea and Coffee.—These substances, used as beverages in infusion, are largely adulterated, though in the case of coffee the adulterants employed are not worse than the original substance. Tea is, however, rendered even more unwholesome than it naturally is, by the addition to it of Prussian blue, and various other harmful substances. It is a fact worth remarking, that Chinamen in this country will not drink the tea which is imported from their country for American consumers.

Prussian blue, indigo, black-lead, gypsum, turmeric, and various other substances used as facing, may be easily detected by either one of the following methods:—

Place two or three ounces of the tea in a piece of thin muslin, and shake well over a piece of white paper. Examine the dust thus collected with a magnifying glass, capable of enlarging ten or fifteen diameters. An ordinary botanizing glass answers the purpose admirably. Prussian blue appears as brilliantly blue, transparent, angular particles. Indigo particles are greenish blue and opaque.

Another method is to wash a few ounces of tea with cold water, placing the washings in a glass to settle. Examine the sediment in the manner directed.

Nearly all the substances used in the adulteration of coffee may be detected by means of the microscope. The following simple means are also usually sufficient to determine the character of any specimen of coffee:—

1. Notice if the ground coffee cakes in the paper or package containing it, or when pressed between the fingers. If it does, it is spurious.

2. Place a few pinches upon water in a goblet. If part floats while another portion sinks, it is adulterated. Pure coffee absorbs water slowly, and so floats for some time; while the substances used to adulterate it absorb water quickly, and sink. The amount of adulteration can be readily estimated by observing what proportion sinks readily.

Adulteration of Tin.—On account of the increased cheapness and convenience of manufacture, a large share of the tin plate made at the present time contains in it a large proportion of lead. This kind of tin may be detected by a simple test which any one can apply. Place upon the metal a drop of nitric acid, spreading it to the size of a dime. Dry over a gentle heat, apply a drop of water, and then add a small crystal of iodide of potash. If lead is present, a yellow color will make its appearance vary quickly after the addition of the crystal of iodide of potash.

USEFUL HINTS AND RECIPES.

Soap to Remove Grease Spots.—Take equal parts of soft soap and fuller's-earth. After beating well together, form into cakes. Moisten the spot, and rub the soap upon it. Allow it to dry, then rub it well with warm water, rinse, and dry.

To Remove Grease from Silk.—Grease may be removed from silk and other delicate fabrics, thus: Upon a smooth surface spread a woolen cloth. Lay upon this the silk with the right side down. Over the grease spot lay a piece of coarse brown paper. Place upon this a flat-iron sufficiently hot to just scorch the paper. A very few seconds will suffice. Remove the flat-iron and paper and rub the spot briskly with a piece of paper.

If this is not quite successful, apply a little powdered chalk or magnesia to the spot, under the brown paper, before applying the flat-iron.

To Restore Color.—When the color has been destroyed by acids, apply a little ammonia (hartshorn). The restoration will be the more perfect, the more recent the application of the acid.

To Remove Stains from the Hands.—For fruit stains, apply a solution of oxalic acid, and wash quickly. Another way: Light a sulphur match and clasp the hand about it while the sulphur is burning.

To Remove Paint from Cloth.—Apply spirits of turpentine with a sponge. After an hour or two, rub the spot as in washing, and the paint will crumble off.

Calcimining Fluid.—The following is well recommended for walls: White glue, 1 lb.; white zinc, 10 lbs.; Paris white, 5 lbs. Soak the glue over night in

3 qts. of water. Add an equal quantity of water, and heat on a water bath until the glue is dissolved. Put the two powders into another vessel. Pour on hot water while stirring, until of the consistency of thick milk. Mix the two liquids thoroughly, and apply to the walls with a whitewash brush.

To Remove Mildew.—Wet the linen, apply soap to the spot, and then apply fuller's-earth or salt and lemon juice to both sides. Air for a few hours. Or, soap the spot, and then apply finely powdered chalk, rubbing it in very thoroughly.

Chloride of lime will remove mildew. Dissolve one ounce in two quarts of water. Steep the linen in the solution all day.

To Remove Paint from Wood.—Apply to it a strong solution of oxalic acid, when it will easily crumble off. It may be removed from glass or metal in the same way.

Cements for Glass and China.—1. Mix thoroughly an ounce of pure white lead in oil with ten grains of finely powdered acetate of lead. Apply at once, and allow the mended article to dry two weeks before it is used.

2. Rub old cheese to a fine thick paste with a little water. Add one-fourth pulverized lime. One of the best cements for glass, porcelain, stone, and wood.

3. Burn oyster shells, pulverize fine, and mix to a thick paste with white of egg. Apply at once to the edges of the glass. Secure them tightly together until dry. Freshly burned lime will do, but is not so good. The cement must be made when used.

4. Soak Russian isinglass in water over night, to soften. Then heat until it is dissolved.

Liquid Glue.—Fill a bottle two-thirds full of common glue. Fill the bottle with whisky. It will dissolve in a few days, when it will be ready for use. Must be kept tightly corked.

Cements for Iron.—Take equal parts of sulphur and white lead, with about a sixth of borax, mixing them so as to form a homogeneous mass. When about to apply it, wet it with sulphuric acid and place a thin layer of it between the two pieces of iron, which should then be pressed together. In a week it will be perfectly solid, and no traces of the cement will be apparent. This cement is said to be so strong that it will resist the blows of a sledge hammer.

2. Mix to a paste with vinegar 5 parts clay, 1 part salt, and 15 parts of iron filings. It will stand heat.

Cement for Stone-ware.—To a cold solution of alum add plaster of Paris sufficient to make a rather thick paste. Use at once. It sets rather slowly, but is an excellent cement for mending broken crockery, eventually becoming as hard as stone.

How to Remove Rust from Clothing.—Oxalic acid will take rust or any other stain out of white goods. Dissolve a small quantity in boiling water and dip the spots in. The acid can be got at any drug store. Another way is to saturate the spots with lemon juice and spread the cloth in the sun; if it do n't take out all the rust the first time, repeat the application.

To Clean Looking-Glasses.—Wash with a sponge wet in lukewarm soap-suds. Wipe dry, and rub with buckskin or a newspaper and finely powdered chalk. Polish windows in the same way.

To Cleanse the Hair.—Rub thoroughly into the hair the white of an egg. Wash with soft water until the egg is entirely removed. This leaves the hair soft and pliable. Never use alkalies or coarse soap on the hair.

Fire-Proof Paint for Roofs. Slack stone-lime in a covered vessel. Take 6 qts. of the slacked lime, after it has been passed through a sieve, add 1 qt. of salt, and 1 gal. of water. Boil and skim. Add ½ lb. powdered alum, ¼ lb. pulverized copperas. Then slowly add 6 ozs.

of powdered potash. Finish by the addition of 2 lbs. of fine sand. Apply to the roof with a brush. It may be colored as desired; is very durable, and stops leaks in the roof.

Lotion for Fetid Perspiration.—Permanganate of potash, 1 dr., dissolved in half a pint of water. Wash the part twice a day. A wash of weak vinegar is quite as efficient in some cases.

Cement for Wood.—Dissolve a pound of glue in three pints of water. Add 2 ozs. of powdered chalk and ½ oz. of borax.

To Preserve Steel from Rust.—Cover the surface with finely powdered unslacked lime. The surface may first be smeared with melted tallow before the lime is sprinkled on, to cause it to adhere.

To Clean Leather.—Leather which is uncolored may be easily cleaned by wiping it with a sponge moistened in a solution of oxalic acid.

To Make Cloth Uninflammable.—1. To a quart of boiling water add 1 lb chloride of calcium, and 1 lb. acetate of lime. Moisten the fabric in the solution, and dry.

2. Moisten the goods in a solution of phosphate of ammonia. Dry with a warm flat-iron.

Ink Stains.—Apply a solution of oxalic acid to the spot, and wash quickly. If a reddish stain is left, apply a solution of chloride of lime.

Removing Fruit Stains.—Pour boiling water upon the stained spot, and it will usually disappear. This should be done before the spot has been wet with anything else.

Coal-Tar for Fence-Posts.—Coal-tar is an excellent preservative for fence-posts, if properly used. It should not be used alone, since it contains acids which are destructive to the wood; but when combined with quick-

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lime it becomes a most effective preservative. Mix half a bushel of quicklime with a few gallons of water, and thoroughly mingle it with a barrel of coal-tar. Apply freely to the portion of the post which is to be in contact with the earth.

Carron-Oil.—Mix equal parts of linseed-oil and lime-water. Shake well. Good for burns.

To Determine the Capacity of a Round Cistern.—Square the average diameter. Multiply three-fourths of this amount by the height. This will give the number of cubic feet. Divide by four, and the result will be the number of barrels which the cistern will hold. The following table will be found useful for reference :—

Contents of a round cistern for every foot in depth of

4 feet in diameter,	93	gallons.
6 " " "	212	"
8 " " "	375	"
10 " " "	588	"
12 " " "	848	"
16 " " "	1500	"

To Ascertain the Weight of Hay.—It is often necessary for the farmer to estimate a quantity of hay without the aid of scales. Here is a convenient method: Find the cubic contents of the stack in feet. Divide by 27, to find the number of cubic yards. A cubic yard of old hay in the stack weighs about 200 lbs. New hay weighs about two-thirds as much. The weight is readily ascertained by multiplying the number of cubic yards by the weight of a single yard.

Remedy for Mosquitoes.—Pour kerosene into the stagnant pools where mosquitoes are generated. This will prevent their hatching, and will be found to be the most efficient means of getting rid of them.

Adhesive Cloth.—Dissolve five ounces of gum arabic in a half pint of hot water. Add glycerine in sufficient quantity to make the mixture about the thickness of sirup. Stretch on a frame, fine muslin or linen cloth. Apply a coat of thin mucilage. When this is nearly dry, apply the mixture as rapidly as possible. Several coats will usually be required.

To Take off Paint.—Slack three pounds of good lime in water. Mix with one pound of pearlash to the thickness of paint. Lay it on the paint to be removed with an old brush and allow it to remain twelve or fifteen hours, after which the paint can be scraped off very easily.

Plant Wash.—An excellent wash for shrubs and large plants is made by dissolving two ounces of pulverized borax in one quart of hot water. Apply with a brush to the stems. It will destroy the green fungi which sometimes infest plants.

Starch Polish.—1. Melt together at a gentle heat 1 oz. white wax and 2 ozs. spermaceti. Add a piece the size of a pea to starch sufficient for a dozen pieces.

2. Dissolve 2 ozs. of gum arabic in a pint of hot water; bottle and cork. Add a table-spoonful to each pint of starch.

Paste.—Mix 8 parts of flour and 1 part of powdered alum with a little water. Beat out the lumps, and pour on boiling water until of the proper consistency, stirring briskly all the time. This is more adhesive than ordinary paste, and will last much longer.

To Color Black.—For 10 lbs. of goods, dissolve and boil ¾ lb. blue vitriol in sufficient water to cover the goods. Dip them three quarters of an hour, airing often. Then remove to another dye made by boiling 6 lbs. of logwood in a sufficient quantity of water for half an hour. Dip three quarters of an hour, air, and then dip three quarters of an hour more. Wash in strong suds.

To Color Scarlet.—For two lbs. of goods, mix together and dissolve in sufficient water 1 oz. cream of tartar; 1

oz. cochineal, well pulverized; 5 ozs. muriate of tin. Boil the dye and place the goods in it. Work them briskly for a quarter of an hour, after which boil an hour and a half, stirring slowly while boiling. Wash in clear soft water, and dry in the shade.

To Color Blue.—For five lbs. of goods, dissolve ¾ lb. alum, ½ lb. cream tartar. Boil the goods in the solution for half an hour. Throw them into warm water.

To Color Green.—1. First, color yellow by soaking the goods in a solution made by steeping together 1 lb. fustic and ¼ lb. alum for 1 lb. of the goods. Remove the chips and add indigo, a table-spoonful at a time, until the desired color is obtained.

2. Make a yellow dye with yellow-oak and hickory bark in equal quantities. Add indigo until the desired shade is obtained.

Tooth Powder.—To make a most excellent and perfectly harmless tooth powder, mix eight parts of precipitated chalk with one part of calcined magnesia. Flavor with a few drops of wintergreen or cinnamon oil if desired. Apply this to the teeth twice a day with a soft brush and pure soft water, or water and fine soap, and they will always glisten like ivory.

Washing Fluid.—Boil together 1 lb. of sal-soda, ½ lb. of stone-lime, and 5 qts. of water, stirring while boiling. Let it settle, pour off the clear fluid, and preserve for use in a stone jug.

Soak the clothes an hour or two in warm suds. Wring out, and soap the most dirty places. Add a tea-cupful of the fluid to a boiler half full of boiling water, and then add the clothes. It will save half the labor of washing, and will not injure the texture of the goods.

To Get Rid of Rats.—Scatter potash freely in their holes and runways. It will make their feet and mouths sore, and they will leave in disgust. Several varieties of traps are quite successful in catching them. Poisoning is not a very good plan, as the dead bodies of those which happen to eat the poison are usually left in some unobserved or inaccessible place, where they undergo decay.

Liquid Bluing.—Pulverized Prussian-blue, 1 oz.; oxalic acid, pulverized, ½ oz.; dissolve in 1 qt. of soft water. Use one or two table-spoonfuls to a tub, according to its size. Will not speck.

To Kill Ants.—Pour into their nests hot water, lime-water, or a strong solution of alum. A little turpentine applied about the sugar barrel will drive every ant away from it.

Wash for the Teeth.—1. Dissolve 1 dr. of carbolic acid with 2 ozs. of alcohol. Add this to half a pint of water. Use freely with a tooth-brush. Is excellent as an application to cleanse artificial teeth.

2. Dissolve 1 dr. of permanganate of potash or soda in ½ pt. of water. Place in a bottle and cork tightly.

Black Ink.—2 ozs. extract of logwood; 2 drs. bichromate of potash; 1 dr. prussiate of potash. Dissolve the logwood in 2 qts. of soft water, soaking it over night and then boiling. Then add the bichromate and prussiate of potash after pulverizing. When the solution is complete, filter, and it will be ready for use. This is a very excellent ink.

Red Ink.—Mix 1 dr. of aqua ammonia, a bit of gum arabic as large as a hazel nut, equal parts of No. 40 and No. 6 carmine, as much as will dissolve, and 7 drs. of soft water. It will be ready for use in a day or two.

Indelible Ink.—Dissolve ½ sc. of nitrate of silver in a teaspoonful of aqua ammonia. In 2½ teaspoonfuls of soft water dissolve 1 sc. of gum arabic. When the gum arabic is dissolved, add an equal weight of carbonate of soda. Mix the two solutions and boil in a bottle placed in a basin of boiling water. When it becomes black, it is ready for use.

Soft Soap.—Cut fine 4 lbs. white soap in bars, and dissolve in 4 gals. of soft water by heating. Add 1 lb. of sal-soda, dissolve and mix

Bug Poison.—Mix 2 ozs. alcohol, ¼ oz. camphor, ½ oz. turpentine, and 1 dr. corrosive sublimate. Apply to infested places with a feather.

To Etch on Metal.—Mix two parts of muriatic acid with one of nitric acid. Cover the surface of the metal with melted wax. When the wax is cold, write or draw upon it the desired name or design, with a sharp-pointed instrument. Be careful to remove the wax quite down to the surface of the metal. Apply the acid with a brush or feather, carefully filling the outlines of the design. In a few minutes wash the acids away with water, and wipe the surface with oil after removing the wax.

Borax Wash.—Dissolve 1 oz. of borax in 5 qts. of water. This is a good cleansing wash for the hands, and is also an excellent washing fluid. Many use it for the hair. It is rather severe for the latter purpose.

Plant-Lice.—Shower the plant with a solution of carbolic acid in water, a dram to a pint; or fumigate with tobacco smoke.

Mending Tin-Ware.—Every house-keeper can save many dollars by mending her own pans, dippers, and basins. If a hole in a basin is to be stopped, scrape the inside of the basin just around the hole until it is bright. Dip the end of a little wooden rod in the fluid, and rub it upon the scraped surface. Now place a small bit of solder over the hole, and heat the under surface over a candle flame until the solder melts. In a minute it cools, and the hole is stopped.

To Dry Boots.—Fill them with oats at night after removing them from the feet. Set them in a warm room. In the morning, shake out the oats and the boots will be found to be dry, and will not be shrunken and stiff as they would otherwise have been.

Blue Ink.—Dissolve sufficient indigo in soft water to give the desired color; is very good for ordinary use but will fade.

Soldering Fluid.—Dissolve in 1 oz. of muriatic acid as much zinc as possible. Add ½ dr. of sal-ammoniac.

Solder for Tin.—Melt together 5 ozs. of lead and 3½ ozs. of tin.

Solder for Lead.—Melt together 1 oz. tin and 2 ozs. lead.

Freezing Mixture.—The following are a few of the best known means for producing artificial cold:—

1. Mix 4 ozs. of saltpeter and 4 ozs. of sal-ammoniac, each finely pulverized, with half a pint of water.
2. Mix equal parts of powdered nitrate of ammonium, carbonate of sodium, and water.
3. Mix quickly together two parts of finely powdered ice or snow with one part of salt. This mixture will produce a temperature of 4° below zero.

The article to be frozen should be surrounded by the freezing mixture as quickly as possible after the preparation of the latter. When it is a liquid, it may be contained in a bottle, which can be broken after the freezing is effected, if necessary.

To Extract Grease Stains from Wall-Paper.—Oil marks can be taken from the paper on drawing-room walls, and marks where people have rested their heads, by mixing pipeclay with water to the consistency of cream, laying it on the spot and letting it remain till the following day, when it may be easily removed with a pen-knife or brush.

Disinfecting Fluid.—The following is a recipe for one of the cheapest and most efficient disinfecting fluids known:—

Heat two pounds of copperas in an old kettle for half an hour, stirring frequently. When cold, dissolve the copperas in two gallons of water. Add two ounces of carbolic acid, and mix well together. A pint of this solution poured into the kitchen sink every few days will keep it free from odors. It will also be found very useful for disinfecting the discharges of typhoid-fever patients, for which purpose a little should be kept in the vessel constantly. Even privy vaults can be kept in a comparatively harmless condition by the liberal use of this solution.

To Remove Potato Sprouts.—Place the potatoes in barrels, about one bushel in each barrel. Tilt the barrel upon its edge, and roll it about with sufficient vigor to give the potatoes a thorough shaking. By this means the sprouts will be broken off; and by the repetition of the process once in a week or two, the potatoes may be kept free from young shoots.

To Make Cloth Water-Proof.—Into a bucket of soft water put ½ lb. sugar of lead and ½ lb. powdered alum. Stir occasionally until the solution becomes clear, then pour it off into another bucket, and immerse the garment in it. Allow the garment to remain in the solution twenty-four hours. Scotch tweed is the best material for a water-proof cloak.

There are several other methods: 1. Moisten the cloth on the wrong side with a weak solution of isinglass. When this is dry, apply a solution of nut-galls. 2 Moisten with a strong solution of soap, and then with a solution of alum. 3. Spread the cloth on a smooth surface with the wrong side up. Rub it with pure bees-wax until it is gray. Pass a hot iron over it, and brush it while still warm.

How to Make a Filter.—Take a large flower pot or earthen vessel, make a hole one-half inch in diameter in the bottom, and insert in it a sponge. Place in the bottom of the vessel a number of clean stones of sizes varying from that of an egg to an apple. Place upon this a layer of much smaller stones and coarse gravel. Then fill the jar within two inches of the top, with equal parts of pulverized charcoal and sharp sand, well mixed. Place loosely over the top of the jar, white flannel cloth, allowing it to form a hollow in the middle of the jar, into which the water can be poured. Secure the edges by tying a stout cord around the outside of the jar. By keeping a suitable vessel under the filter thus made, and supplying rain-water when needed, very pure water can be obtained. It can be kept in a cool place in the summer. It will require to be renewed occasionally by exchanging the old sand and charcoal for fresh. The flannel and sponge must be frequently cleansed.

Durable Whitewash.—Slack, with abundance of hot water, half a bushel of lime, stirring briskly meanwhile. When completely slacked, add sufficient water to dissolve. To this add two pounds of sulphate of zinc (white vitriol) and one pound of common salt. The last-named ingredients cause the wash to harden, and prevent cracking. If a cream color is desired, add yellow ochre. For stone color, add raw umber and lampblack.

Cleaning Bottles.—Small shot, pebbles, or broken charcoal, placed in a dirty bottle and shaken about with warm water and soap, will remove almost any kind of dirt. Charcoal is especially serviceable in removing unpleasant odors from bottles.

To Keep Water Cool.—Ice is almost universally depended upon as a means of cooling drinking water in summer. The free use of iced water is harmful. By making use of the following means, the water may be kept sufficiently cool to answer all the real demands of nature; in fact it may be kept nearly at freezing temperature:—

Place between two sheets of thick brown paper, a layer of cotton half an inch thick. Fasten the ends of the sheets together so as to form a roll. Sew in a bottom made of similar material, making it nearly air-tight, if possible. Fill a pitcher with cold water, and cover it with the cylindrical box by inverting it over the pitcher.

If the box is kept constantly wet with water, evaporation will go on so rapidly that the water in the pitcher will be kept very cool for a long time.

Water may also be kept cool by placing it in jugs and wrapping them with wet cloths.

Preserving Grapes.—Pick carefully the later kinds of grapes. Select such bunches as are perfect, rejecting all upon which there are any bruised grapes, or from which a grape has fallen. Spread them upon shelves in a cool place for a week or two. Then pack them in boxes in sawdust which has recently been thoroughly dried in an oven. Bran which has been well dried may also be used. Dry cotton is employed by some. Keep in a cool place. In this way, grapes may be kept until long after New Year's with ease.

Another method still more efficient is to select perfect bunches, as already directed, and dip the broken end of the stem of each bunch in melted sealing-wax. The bunches may then be wrapped in tissue paper and placed in layers, or hung in a cool place, or they may be packed in sawdust.

Japanese Method of Cooking Rice.—Put the rice into a kettle with just enough water to prevent its burning to the bottom. Put on a close-fitting cover, and set over a moderate fire. The rice is thus steamed, rather than boiled. When it is nearly done, remove the cover and allow the surplus steam and moisture to escape.

Rice cooked in this manner turns out a mass of snow-white kernels, each separate from the other, and as much superior to the soggy mass usually produced, as a fine mealy potato is to one which is water-soaked.

Beef Tea.—Although not to be recommended as an article of diet, beef tea is frequently a valuable article of food for the sick, especially if properly made. Pound and cut the beef until it is reduced to a pulp, then place it in a dish and cover it with a very little cold water. Allow it to steep gently for two hours, then strain off the juice, and it is ready for use. Some tastes will require the addition of a minute quantity of salt. One-half pound of beef is required for a pint of tea. A very excellent plan is to place the beef in a bottle with the water, and then place the bottle in a kettle of cold water, which should be gradually brought to the boiling point.

The Bushel.—Weight is the only proper standard for the bushel, being the only accurate one. The following are the weights per bushel for the most common articles of commercial exchange:—

	Pounds.		Pounds.
Wheat,	60	Dried apples,	57
Shelled corn,	56	Dried peaches,	28
Ear corn,	70	Coarse salt,	50
Oats,	32	Fine salt,	56
Rye,	56	Lime (unslacked),	80
Buckwheat,	50	Irish potatoes,	60
Barley,	48	Sweet potatoes,	55
Corn-meal,	48	White beans,	60
Bran,	20	Castor beans,	46
Clover seed,	60	Beets,	50
Timothy seed,	45	Parsnips,	44
Flax seed.	56	Carrots,	50
Hemp seed,	44	Onions,	50
Blue-grass seed,	14	Turnips,	42
Green apples,	57	Rutabagas,	56

Uses for Ashes.—There is no more valuable fertilizer than common wood-ashes; but in order that they should retain their virtue, they should be kept under cover. Ashes which have been leached have very little value.

Ashes are also valuable for disinfecting purposes. They are even better than dry earth for deodorizing animal excreta. A privy may be kept entirely free from foul odors by their liberal use. When employed in this way, their disinfecting and fertilizing properties are both utilized.

Another use for ashes which the farmers would do well to take advantage of, is due to their power of destroying various kinds of insects. Turnips and cabbages may be protected from the ravages of various insects which feed upon them, by sprinkling upon and around them a few ashes daily, for a short time. A practical farmer also asserts that unleached wood-ashes will permanently destroy potato bugs, if sprinkled upon the vines while they are moist with dew, or immediately after a rain.

Cheap Paint for Barns and Sheds.—A very cheap paint may be made by mixing unslaked water-lime with milk to the proper consistency. It adheres well to wood, brick, mortar, or stone when no oil or paint has been previously applied. It makes a very durable coating, and its cheapness leaves nothing to be desired. Skim-milk is even better than new milk. Many farmers could greatly improve the appearance of their premises by covering with this simple paint their barns, sheds, fences, and out-buildings.

To Preserve Shoes and Boots.—Do not expose them to extreme heat by warming them too near the stove. The smell of leather indicates that they are already injured. The wearing of rubbers is very injurious to leather. Rubbers should be worn as little as possible, and should be removed from the feet as soon as their use is not absolutely necessary. Every two or three weeks, wash the leather with a cloth moistened in warm water, and when nearly dry, apply a warm mixture of equal parts of neat's foot oil and tallow. Ordinary blacking contains oil of vitriol, and this removes the oil from the leather and causes it to become dry and brittle.

INDEX.

THE COOKING SCHOOL.

THE COOKING SCHOOL.

BY MRS E E. K.

[The following pages will constitute a part of a large work on FOOD AND COOKERY, by Mrs. E. E. Kellogg, now nearly completed.]

WHAT shall we eat, and how shall it be cooked? is a question of the greatest importance; not that we wish to intimate that the compounding of rich viands and epicurean dishes ought to engross more attention than it does; but in the truest sense of the adage that "man eats to live," the proper selection and preparation of such foods as can be most easily converted into healthy blood and tissue, is a matter of vital import. Men and women are the masterpieces of the infinite Artist, and are designed for the highest type of life and action; but unless the conditions governing health are complied with, and the materials required to keep the body in working order are prepared with care, it will be impossible for them to fulfill the purpose of existence in the best and truest manner. However excellent be the material selected, it may, by the manner in which it is prepared, be converted into something totally unfit to nourish the system; and vice versa, the most excellent culinary preparation cannot convert unwholesome or innutritious substances into wholesome and nutritious ones. The real object of cooking food is to render it more digestible; in fact, cooking ought to be a sort of partial preliminary digestion of the food elements; but the numerous inventions and devices of our modern *cuisine* quite as often render it indigestible as otherwise. Doubtless the reason why healthful cookery is the exception, is ignorance respecting the qualifications necessary to constitute a substance a fit food to supply the wants of the human system, together with the custom of catering to please the palate without regard to dietetic value. Very few persons, having once learned the value of a simple, healthful diet, would be willing to exchange it for one whose only merit is that of gratifying the taste. Many others would perhaps gladly adopt a more healthful regimen were they sufficiently conversant with the ways and means for doing so. It is with the hope of assisting those who may desire to become more intelligent on this all-important subject, that we are led to offer, in the following pages, some suggestions, which we trust will be found of practical value in the various branches of the culinary art.

SOUPS.

Soup is justly entitled to a prominent place in the science of cookery as a convenient, economical, and, when properly prepared of healthful and nutritious material, a wholesome article of diet. The weak, sloppy, greasy compounds often served under that title, however, cannot be too greatly condemned. Pepper, salt, and flavorings may make them palatable, but only add to their indigestibility. Soup, to fulfill its true mission, should contain as small a proportion of water, and as large an amount of nutritive material, as possible. Soups containing a large amount of water are not so quickly digested as solid foods, since the fluid portion must be absorbed by the stomach before the process of digestion can be carried on. Scientifically prepared, however, the solid matter which enters into the composition of soups is so broken up in the process of preparation that it is readily dissolved by the digestive juices. Especially is this the case with soups made from dried peas and beans, both of which are very nutritious foods, and much more easily digested in a well-prepared soup than in any other form. Taken hot at the beginning of a meal, soup stimulates the flow of the digestive juices, and on account of its bulk brings the sense of satisfaction before an excessive quantity of food has been taken into the stomach.

The nutritive value of soup depends of course upon its ingredients, and these should always be chosen with reference to the maintenance of health. Great care should also be exercised in selecting for the remaining bill of fare such articles as will combine with the soup to supply the proper proportion of nutritive elements, provided the soup is one lacking in nitrogenous elements. For example, if the soup selected be one composed of potato, tomato, or any like ingredient largely composed of starch and water, the remaining bill of fare should include some article especially rich in nitrogenous elements, as whole-wheat bread, cracked wheat, oatmeal, and similar grains.

Beef, mutton, or chicken, well prepared, make wholesome soups, especially with the addition of the grains; but soups made from animal food are not more nutritious than those made from the grains only, or from some of the legumes, as peas, beans, or lentils. Indeed, if we compare the relative values of the two classes of food, as given by various eminent authors on food, we shall find that the legumes contain a larger proportion of nutritious elements and fewer objectionable features than flesh foods, while they have the added advantage of being less expensive.

Milk is a factor of no small importance in the preparation of vegetable or grain soups, and should be used largely in the place of water when available. It is in itself a perfect food, and consequently adds to the nutritive value of the soup, and serves the purpose of a fluid at the same time. In the preparation of soups from such vegetables as potatoes, parsnips, and others of the class composed largely of starch, and containing but a small proportion of nitrogenous food elements, it should enter largely into their composition, as an addition to their food value, as well as to their palatable qualities.

For the preparation of soup, a soup pot which rests on standards, and in which a soup can cook for a long time on the top of the stove without burning, is the most serviceable utensil; but an ordinary kettle can be used. It is best, however, to devote it entirely to soup making, not using it for any other purpose. Soups are far better, as a rule, to simmer gently than to boil rapidly and hard. In preparing vegetable soups, it is best to use but a small quantity of water, and if it evaporates before the vegetables are done, that which it is necessary to add should be of a boiling temperature, in order that the boiling may not cease, as otherwise the vegetables are likely to become watery. In the preparation of soups from animal substances, the proper proportion of water to be used is about one quart to every pound of meat and bones. Both meats and vegetables for soups are better to be put to cook in cold water, and allowed to soak until the water reaches the boiling point, since the object is to extract as much of the flavor and juices as possible. When milk is added to soup just previous to serving, it is better to use hot milk rather than cold.

Soups should be of an equal consistency throughout, and in the preparation of simple vegetable soups, the ingredients should be rubbed through a wire sieve or colander when tender, otherwise the mixture will be a sort of mushy hodge podge instead of soup. Good soups should be attractive in appearance, as well as agreeable to the taste, and must contain no broken fragments of the material of which they are composed. Shredded vegetables and grains, when used in soups, should be cooked only until tender, not till they are dissolved. In making soups of dried beans, peas, etc., the sifting is absolutely essential, since the skins are not easily digested, and should be removed.

If a soup is too thick, it should be diluted with milk or water; if too thin, it may be thickened with a little flour braided with milk. Whole-wheat cut into dice and browned in the oven, makes excellent *croutons* to serve with soup. Put a spoonful or two of them into each soup plate, and dish the hot soup over them when serving. Most soups are much nicer to turn through the colander a second time in pouring from the kettle into the tureen, as that will remove any lumpy substance that may have formed in them. Grain and vegetable soups are very easily made, and are among the most palatable of all soups. The following are a few of the many excellent ways in which they may be prepared:—

Cream Pea Soup.—Put three-fourths of a pint of dried peas to soak over night in a quart of water. In the morning, drain and put to cook in cold water. As soon as the water boils, skim carefully, cover closely, and let simmer gently four or five hours, or until the peas are very tender; when done, rub through a colander to remove the skins. If the peas are very dry, add a little water occasionally to moisten them and facilitate the sifting Just before the peas are done, prepare potatoes, cut in thin slices, enough to make a pint and a half, and put them to cook in a small amount of cold water. Let them simmer until dissolved, and then rub through a colander. Add the potato thus prepared to the sifted peas, and add water or milk enough to make three and one-half pints in all. Return the soup to the fire, and add a small head of celery, or half a large one cut in pieces about a finger in length, and let the whole simmer together ten or fifteen minutes, until the flavor of the celery is extracted. Remove the pieces of celery with a skimmer, and add a cup of thin cream, and salt to taste. This should make about two quarts of soup.

Brown Soup.—Simmer together two pints of sliced potatoes and one-third as much of the thin brown shavings (not thicker than a silver dime) from the top crust of a whole-wheat loaf of bread, in two quarts of water. The crust must not be burned nor blackened, and must not include any of the soft portion of the loaf. When the potatoes are tender, mash all through a colander. Flavor with a cup of strained, stewed tomatoes, a little salt, and return to the fire; when hot, add a half cup of cream, and serve at once. If care has been taken to prepare the crust as directed, this soup will have a brown color, and a fine pungent flavor exceedingly pleasant to the taste.

Tomato and Macaroni Soup.—Break a half dozen sticks of macaroni into small pieces, and drop into boiling salted water. Let it boil for an hour, or until perfectly tender. Strain two quarts of stewed or canned tomatoes, to remove all seeds and fragments. When the macaroni is done, cut each piece into tiny rings, and add to the strained tomatoes. Season with salt, and boil for a few minutes. Put a little cream into each soup plate, and turn the soup onto it to serve.

Potato Soup.—To each quart of soup required, boil a pint of sliced potatoes and a slice or two of white onion, in sufficient water to cover them. When tender, turn into a colander, and rub through with a wooden spoon or potato masher. Return to the fire, and add a quart of rich, sweet milk, part cream if it can be afforded, and a little salt. Let the soup come to a boil, and add a teaspoonful of flour, rubbed to a paste with a little cream; boil a few minutes, and serve. Instead of the onion, a stalk or two of celery or a little parsley may be minced and added for flavoring, thus making an entirely different soup.

Potato and Bean Soup.—Soak a half pint of dry white beans over night; in the morning, drain and put to cook in cold water. When tender, rub through a colander. Prepare sliced potato sufficient to make one quart, cook until tender in as small a quantity of water as possible, and when done, sift through a colander, and add to the beans. Add milk or water sufficient to make two quarts, and as much prepared thyme as can be taken on the point of a penknife, with salt to taste. Boil for a few minutes, add a teacup of thin cream, and serve.

Scotch Broth.—Soak over night two tablespoonfuls of pearl barley and one of coarse oatmeal in water sufficient to cover them. In the morning, put the grains, together with the water in which they were soaked, into two quarts of water, and simmer for several hours, adding boiling water as needed. About an hour before the soup is required, add a turnip cut into small dice, a grated carrot, and one-half cup of fine pieces of the brown portion of the crust of a loaf of whole-wheat bread. Just before serving, rub all through a colander, and add salt and a cup of milk, and a half cup of cream. This should make about three pints of soup.

Vegetable Oyster Soup.—Scrape all the outer covering and small rootlets from the vegetable oysters, and lay them in a pan of cold water to prevent discoloration. The scraping can be done much easier if the roots are allowed to stand in cold water for an hour or so before they are needed. Slice enough of the prepared roots to make one quart, and put them to cook in a quart of water. Let them boil slowly for two hours, or until very tender. If it is desired to make the soup with an especial oyster flavor, a piece of salt codfish about an inch square may be boiled with the vegetable oysters, and removed as soon as the roots are tender. (We do not especially recommend this, however, and persons whose tastes are unperverted will prefer the soup without this addition.) When tender, add a pint of milk, a cup of thin cream, salt if desired, and, when boiling, a tablespoonful or two of flour, rubbed to a paste with a little milk. Let the soup boil a few minutes until thickened, and serve.

BREAD.

Bread is one of the products of the *cuisine* which, if palatable, most people consume without stopping to marvel at it; yet if made in a proper manner, and from nutritive material, it is, with the exception of milk, the article best fitted for nourishment of the body, and can, if need be, supply the place of all other foods. In nearly all the ancient languages the etymology of the word "bread" signifies *all*, showing that the article was intended to be what it has been most fittingly termed, the "staff of life," though much that in these days is called bread might more properly be styled a "broken reed."

Bread of some kind has been the food of mankind from the earliest times, though it is probable that the earliest form of the article was simply whole grain moistened and then heated. Afterward, the grains were roasted, and ground or pounded between stones, and unleavened bread was made by mixing the flour thus made with water, and baking it in an oven or pan. Among the many ingenious arrangements used by the ancients for baking this bread, was an oven in shape something like a pitcher, in the inside of which they made a fire, and when it was well heated, applied to the outside the paste made of flour and water. Such bread was baked almost instantly, and was taken off in small, thin sheets like wafers. Flat cakes of some kind was the common form in which most of the bread of olden times was baked; and being too brittle to be cut with a knife, the common mode of dividing it was by breaking, hence the expression so common in Scripture of "breaking bread."

Various substances have been and are employed for making this needful article. Until the last few decades, barley was the grain most universally used for this purpose. The Thracians make bread from the flour of the water-coltron, a prickly root of triangular form. Chestnuts, mulberries, and rice are used by different nationalities in the preparation of bread. In many parts of Sweden, bread is made from dried fish, using half fish flour and half barley flour; and in winter, flour made from the bark of trees is added. But the substances in most universal use among civilized nations at the present time are barley, rye, oats, maize, buckwheat, rice, and wheat, of which the latter has acquired a preference, and become an almost exclusive article for bread-making purposes.

Chemical analysis shows that wheat contains just the required amount of each of the food elements necessary for perfect nutrition. These elements are found, however, in different parts of the wheat berry, and not uniformly distributed through its structure. The central portion is chiefly starch, while the gluten or nitrogenous portion is found just inside the outer husk; consequently, flour from which the outer portion of the grain has been removed does not contain the requisite bone-and-muscle-building material needed for the maintenance of the body in perfect health. The fine white flour in most common use is made of the inner part of the grain, and is composed almost entirely of starch, which, alone, will not sustain life.

Notwithstanding the important part bread was designed to play in the economy of life, it is a fact that the article which will answer all the requirements of good, wholesome bread, is seldom found. Besides being palatable, good bread must contain as many as possible of the elements of nutrition; it must be light and porous, so that it can be easily insalivated and digested, and it should contain no ingredient which will be in any way injurious if taken into the system.

For general use, the most convenient kind of bread is doubtless that made of wheat flour, leavened or raised by fermentation, though in point of nutritive value and healthfulness it does not equal light, unfermented bread made without soda or baking-powder. Fermentation is a decomposing process, so that the best yeast bread is deprived of a part of its nutritive qualities. To make good fermented bread, three things are absolutely necessary; viz., good flour, good yeast, and good care. Without these, good bread cannot be produced by any effort of art.

Good flour will be sweet, dry, and free from acidity or musty flavor. To secure these requisites, the flour should be prepared from grain which has been fully matured, and which has suffered no deterioration from rust, mold, or exposure, and has been thoroughly cleansed before grinding. It should not be deprived of any of its nutrient elements, nor be too coarsely ground.

YEAST AND FERMENTATION.

Yeast is a plant belonging to the order of fungi which, when surrounded by the proper material for food, and aided by warmth and moisture, begins to grow and multiply itself by sending out millions of minute spores, each of which, under proper conditions, in turn becomes a parent plant to assist in propagating the yeast family. This process of growth excites fermentation. Such fermentation occurring in a mass of dough made of flour and water or milk, causes the starch of the flour to be converted into sugar, and then into carbonic acid and alcohol. If the dough is baked at this stage, a light, porous loaf will result; but if the fermentation is allowed to proceed still farther, acetic acid is formed, and the whole mass becomes sour. If, however, when the fermentation has reached the carbonic acid stage, new material be added, the yeast will continue its activity, and the fermentation proceed as before. A combination of flour, water, and salt, without the introduction of yeast, if left by itself in a temperature between 70° and 90°, will ferment. This fact is often utilized by house-wives in making what is termed salt-rising bread. Scientists assure us that the fermentation, even in this case, is occasioned by a certain species of the yeast family, the spores of which are continually flying about in the atmosphere and getting into the flour, so that upon the proper conditions of warmth and moisture being supplied, they at once begin to grow and multiply and excite fermentation. This process of fermentation is more lengthy and uncertain than when yeast is added to the mixture. Doubtless the most convenient yeast for bread-making purposes, when it can be obtained fresh, is the compressed yeast; but this is not always obtainable, and unless fresh it is not reliable, so that it is often necessary for the house-wife to prepare yeast herself.

The following are two excellent and simple methods of preparing home-made yeast:—

No. 1. Put a small handful of dried hop blossoms, or an eighth of an ounce of the pressed hops (put up by the Shakers and sold by druggists), into a stew-pan; pour over them a quart of boiling water, and let them simmer about five minutes. Meanwhile stir to a smooth paste in a tin basin or another saucepan, a cup of flour and a little cold water. Line a colander with a thin cloth, and strain the boiling infusion of hops through it on to the paste, stirring continually. Boil this thin starch a few minutes, until it thickens, stirring constantly that no lumps be formed, and that all portions may be of the same consistency. Turn it into a large earthen bowl, add a tablespoonful of salt and two spoonfuls of white sugar, and when it has cooled to blood heat, add a half tea-cup of lively yeast, stirring all well together. Place it in a moderately warm temperature, or cover very closely with several folds of flannel blanket, and leave it to ferment. Examine it every few hours, and as it becomes light, give it a good stirring. Continue to do this for twenty-four hours, when it should be "quiet" enough to cover and put away in a cool place till needed.

No. 2. Peel four large potatoes, and put them to boil in two quarts of cold water. Tie two handfuls of hops securely in a piece of muslin, and place in the water to boil with the potatoes. When the potatoes are tender, remove them with a perforated skimmer, leaving the water still boiling. Mash them, and work in four tablespoonfuls of flour and two of sugar. Over this mixture pour gradually the boiling hop infusion, stirring constantly that it may form a smooth paste, and set it aside to cool. When lukewarm, add a gill of lively yeast, and proceed as in the preceding recipe.

If started with good yeast, that made by either of the above recipes should keep good for a fortnight in summer, and longer in winter. Compressed yeast, a half cake dissolved in a little warm water, is sometimes recommended for use in starting a new yeast; but we have found in our own experience that yeast thus started does not retain its activity so long as when other yeast is used.

Yeast should always be kept in a clean, tightly-covered jar; glass is best, since it is less porous than stone and more easily cleansed. The jar should always be cleansed and scalded with scrupulous care every time new yeast is put in it, since even the smallest particle of sour or spoiled yeast will destroy good yeast. Yeast should be kept in a cool place—the cellar or refrigerator is best. Even a half hour in a hot kitchen may spoil it.

The first step in the process of bread-making is the preparation of a "rising," or "ferment." For all bread-making purposes a large earthen bowl is much preferable to either tin or wooden utensils, since it protects the sponge from the cold air much more effectually than tin, and is much more easily kept clean and fresh than wooden ware. The bowl should be kept exclusively for the purpose of bread-making, and should never be allowed to contain any sour substance, and must be thoroughly scalded and aired after each using.

For preparing a ferment, scald a quart of whole-wheat flour with an equal quantity of boiling water, pouring the water on very gradually that no lumps be formed. When this has cooled to lukewarm, add a half-cup of home-made yeast, or a half-cake of compressed yeast dissolved in a little lukewarm water, and leave it to rise. The time required for it to grow light will vary according to the strength of the yeast and the amount of warmth supplied. Great care must be taken to keep it of an equable temperature, not lower than 70° nor higher than 90°, F. An occasional chill followed by a warming up process will be quite as depressing to bread as are chills and fever to a person's health. For this reason the bowl should be wrapped very closely in several folds of woolen blanket, and left in a warm room or placed in a warming oven of equable temperature. The more elevated the temperature between the limits named, the more rapid the fermentation. At a temperature below 30° fermentation will be arrested, and will proceed slowly at 50°. These facts are very important ones for the housewife, since by arranging to keep her ferment at a temperature of about 50°, she can set her bread in the evening, and find it light and ready for further attention in the morning.

When the ferment is light, which will be shown by its being a mass of white substance like sea-foam, rather than by its having greatly risen, add to it sufficient warm sifted flour to make a very thick batter; and having beaten it well, leave it to rise again. Some cooks recommend adding only small quantities of flour at a time, and allowing the sponge to rise several times, beating it back and adding new flour each time till it becomes thick enough to be molded. Flour should always be warm when added to bread, in order that it may not arrest the fermentation.

When thick batter or sponge is well risen and cracked over the top like "crazed" china, sufficient flour to make it of the proper consistency must be added, and the dough thoroughly kneaded. The exact amount of flour necessary cannot be stated, since the quantity varies with the quality of the flour; but three quarts of flour to one of wetting will usually be sufficient for the entire process of bread-making. When the dough clings together, and works away from the side of the bowl, enough flour has been added. Bread should always be kneaded as soft as it can be handled, and only sufficient flour added to prevent its sticking to the board. Stiff bread is close in texture, and after a day or two becomes dry and hard. Bread should be kneaded till it works clean of the board and will rebound like India-rubber after a smart blow with the fist in the center of the mass. If it will not thus resent the blow, it is not sufficiently kneaded. Its elasticity is the surest test of its goodness; and when perfectly developed, it can be molded into any shape, rolled, twisted, or braided with perfect ease. When molded, it should be divided into loaves, and placed in sheet-iron bread-pans,—those about twice the size of a brick are the most desirable,—and put in a warm place to rise. It rises much more evenly, and does not have a stiff, dried surface, if covered closely with a blanket to keep it of the necessary temperature, rather than if placed in a warming oven, or some other warm place where it will be exposed to air.

The most important point in the whole preparation of the bread is to decide when it is sufficiently light after having been placed in the pans. The length of time cannot be given, because it will vary with the temperature, the quality of the flour, and the quantity added during the kneading. At a temperature of 75° an hour or an hour and a half is about the average length of time. A loaf should nearly double its size after being placed in the pan before being put in the oven, although it is better to begin the baking before it has perfectly risen than to wait until it has become so light as to have begun to fall. Lightness is by no means the only property required in good bread; and if the fermentation proceeds too far, the sweetness of the grain will be destroyed, and the bread will be tasteless and innutritious.

For the baking of the bread the oven should not be too hot. If the bare arm cannot be held inside it with comfort while thirty is being counted, it is too quick. It should be hot enough to arrest fermentation, but not hot enough to brown the crust within ten or fifteen minutes.

The rising of bread is the result of the attempt of the carbonic acid, formed during the process of fermentation, to disengage itself and escape; and in the struggle upward it lifts the elastic mass of dough, which is thus raised, and at the same time filled full of little air-cells formed by the escaping gases. The heat of the oven at first causes the further expansion of the gases, but it soon checks the process of fermentation altogether. The sooner, after the arrest of the fermentation, the air-cells are fixed by the heat, the more light and porous will be the bread. Consequently, though the heat should not be greatest when the bread is first put in the oven, it should increase for the first fifteen minutes. After the bread is half baked it may gradually decrease during the remainder of the baking. If the heat is too great, the bread will bake on the outside before it has risen properly, and consequently the center will be heavy. Be careful that no draught reaches the bread while baking; open the oven door very seldom, and not at all for the first ten minutes. From three-fourths to an hour is usually a sufficient length of time for an ordinary-sized loaf to bake. The common test for well-baked bread is to tap it on the bottom with the finger; if it sounds hollow, it is well done. A thoroughly baked loaf, when removed from the pan and lifted in the hand, will not burn it.

When done, remove the loaves from the tins, and tilt them upon their edge so that the air may reach all sides of them and prevent "sweating." When perfectly cold, wrap in a clean, thick cloth, and put into a tin bread-box.

Whole-Wheat Muffins.—Dissolve a half cake of compressed yeast in half a pint of milk, and add a sufficient quantity of rich milk to make a pint. Stir into it three cups of whole-wheat flour, and set in a warm place to rise. When light as a foam, stir in two well beaten eggs, and turn into gem irons or muffin rings, filling them only half full. Let them rise till very light, and bake in a quick oven.

Currant Muffins.—Prepare the muffins in accordance with the above recipe, and when well risen, add with the eggs two tablespoonfuls sugar and a handful of zante currants. Turn into the irons to rise, and when light, bake in a quick oven.

UNFERMENTED BREAD.

Unfermented bread, made without soda, saleratus, or baking-powder, is not, as is apt to be supposed, synonymous with tough, heavy bread, nor need the making of it be an over-difficult operation. It certainly is a much quicker process than the preparation of yeast bread, and has the added advantage of retaining all the nutritive properties of the grain from which it is made; while fermented bread, however skillfully made, is, through the destructive process of fermentation, robbed of a portion of its sweetness and natural flavor. It is vastly superior to breads compounded with soda or baking-powder in point of healthfulness, and when well prepared, will equal them in lightness and palatableness. Soda, saleratus, and the whole tribe of baking-powders—whose name is legion—should never be tolerated. They lighten bread only by adding to it something injurious.

The chemical process of bread-raising originally consisted in adding to the dough definite proportions of muriatic acid and carbonate of soda, by the union of which carbonic acid and common salt were produced. This process was soon abandoned, however, on account of the propensity exhibited by the acid for eating holes in the fingers of the bakers as well as in their bread-pans; and the more convenient one—for hands and pans—of using soda or saleratus with cream of tartar or sour milk, was substituted. Soda and saleratus are in themselves inorganic, indigestible substances. The soda, when used with cream of tartar, forms a chemical salt, which remains in the bread, and which is exactly the same as the Rochelle salts used in medicine. It is the carbonic acid gas that escapes during the process of the combination, that puffs up the loaf. When there is an excess of soda, a portion of it remains in the loaf, uncombined, giving to the bread a yellow color and an alkaline taste, and doing an abundance of mischief to the delicate coating of the stomach into which it is taken.

Soda and pure baking-powder are essentially the same substances, bicarbonate of soda and cream of tartar, mixed in the proper proportions to exactly neutralize each other, and if they were always pure, would certainly be as good as soda and cream of tartar in any form, and possess the added advantage of perfect proportions; but as was demonstrated not long ago, by the government chemist, nearly every variety of baking-powder in the market is largely adulterated with such cheap and harmful substances as chalk, alum, terra alba, etc. Out of several hundred brands of baking-powder examined, only one was found pure. Nor is the adulteration confined to baking-powder alone; much that is sold as soda and cream of tartar is largely adulterated with injurious and foreign substances. Even in their purest possible state, these substances are harmful; but when we add the adulterations, they may become exceedingly pernicious to health.

Fortunately, it is not necessary to manufacture carbonic acid gas, either by fermentation or by a chemical process, in order to make light bread. Pure, fresh air, so abundant and free to all, can be made to do it quite as effectually. Aërated bread, however, requires quite as much skill to make as yeast bread; but when once familiar with the details, a little practice will enable one to obtain most satisfactory results.

Quite as much depends on the conditions and material as in the making of yeast bread. The flour *must* be good; if water is used as wetting, it should be pure and soft; if milk is used, it must be fresh and sweet; and both should be cold, ice cold, if possible. Neither poor flour, hard water, nor sour milk will make good unfermented bread. The oven, too, must be quite as hot as for yeast bread, and the fire so arranged as to keep a steady but not greatly increasing heat. If the oven is too hot or too cold, the bread will not be a success, however carefully made. If twenty cannot be counted with the hand held inside, the oven is too hot. A little experience will enable the cook to regulate the heat just right.

The lightness of unfermented bread depends upon the amount of air incorporated during the process of making; then when heat is applied, the air expands, and in expanding, raises the bread. Hence it is evident that the oven must be quick enough to form a slight crust before the air escapes, thus confining it within the loaf. For this reason, unfermented bread is best baked in the form of rolls or small biscuit, placed sufficiently far apart for the heat to at once have access to all sides of them, or baked in small iron cups previously heated. The following are a few of the many good ways of making unfermented bread:—

Breakfast Rolls.—Sift a pint and a half of good whole-wheat flour into a bowl, and mix with it a cup of rich milk which has been set on ice for half an hour, or made very cool in some other way. Pour the milk into the flour very slowly, a few spoonfuls at a time, mixing it with the flour as fast as poured in, allowing no pools to form to make the dough sticky. A little salt may be added to the milk before mixing it with the flour, if the bread cannot be relished without it. Mix the dough stiff enough so that it will not adhere to the kneading-board, and knead it very thoroughly for at least a half hour, or until it becomes sufficiently elastic to resent a poke of the fist, and readily springs back to its original shape. The dough should be mixed quite stiff, if too soft, it will be moist and clammy. The amount of flour necessary will vary with the quality, but three times the amount of liquid used will usually be quite sufficient for mixing and dusting the board. When thoroughly kneaded, divide into two pieces, and roll each over and over with the hands, until a long roll is formed of about one inch in diameter; cut this into two-inch lengths, prick with a fork, and place at once in tins far enough apart so they will not touch each other when baking. Each roll should be as smooth and perfect as possible, and with no dry flour adhering. The rolls must not be allowed to stand after being molded, but as a tinful is formed they should be placed at once in the oven, which should be all ready and of the proper temperature. About twenty-five minutes will be required to bake well. When done, spread on the table to cool, but do not pile one on top of another.

Very nice rolls are made in the same manner, using ice-cold water instead of milk. They are more crisp than milk rolls, and are preferred by some. Soft water only should be used in making them, as hard water is apt to make them tough.

Beaten Biscuit.—Into a quart of whole-wheat flour mix a large cup of thin sweet cream in the same manner as for breakfast rolls. The dough must be very stiff, and rendered soft and pliable by thorough kneading and pounding with a mallet for at least a half hour. When well worked, the dough will appear flaky and brittle, and pulling a piece off the dough quickly will cause a sharp, snapping sound. Mold into small biscuits, making an indenture in the center of each with the finger, prick them well with a fork, and place in tins with quite a space between them, and put at once into the oven. The oven should be of the same temperature as for rolls. If either the biscuits or rolls are "sad" inside when cold, they were not well baked, as they should be light and tender. Both the rolls and beaten biscuit may be made of graham flour if preferred, instead of whole-wheat.

Breakfast Puffs, or Gems.—To one and a half cups of cold milk, add one well-beaten egg, salt if desired, and two cups of whole-wheat or graham flour, or sufficient to make a batter thick enough not to settle flat when put in the irons. The lightness of the puffs depends upon the quantity of air incorporated into them, and in order to get in as large an amount as possible, the flour should be added very slowly, only a little at a time, and the mixture beaten very thoroughly and continuously, not by stirring round and round, but by dipping the spoon in and partially lifting it out very swiftly and quickly, making as many bubbles of air as possible. It should take from five to ten minutes' constant beating thus before the last of the flour is added, then the mixture should be turned at once into hot gem-irons, and baked in a quick oven. The beating must be continuous from the beginning in order not to allow any of the air to escape, and the flour should be measured, the egg well beaten, the oven hot, and the gem-irons heating before commencing to put the mixture together Unless the irons are hot, so much air will escape before they are heated enough to form a crust on the bottom and sides of the cakes that they will not be light, but the irons should not be hot enough to burn the batter.

Plainer gems may be made in the same manner, with water only, instead of the milk and egg, using one part water to about two of flour.

In making these puffs, the irons should not be smeared with grease ; if necessary to oil them at all, they should only be wiped out with an oiled cloth very carefully Irons well cared for, carefully washed and kept smooth, need no oiling whatever. We have used a set daily for the last three months without once oiling.

Corn Puffs.—One cup of cold mashed potatoes and one cup of milk, rubbed through a colander or sieve to work out all lumps , add the yolk of a well-beaten egg, and then stir in slowly, beating well as for breakfast puffs, one cup of corn meal ; add lastly the white of the egg beaten to a stiff froth, and bake at once in heated gem-irons. A little salt may be added to the batter if desired. Wheat flour may be substituted for potato if preferred, in which case it should be mixed with the corn meal before it is added to the mixture.

Cream Cake.—Excellent plain cake, lightened with air, can be made by using one cup of sweet cream, three-fourths of a cup of sugar, into which a little grated lemon-peel has been mixed, and the well-beaten yolk of one egg. Into this stir slowly, beating vigorously so as to get in as much air as possible, from one and a half to two cups of flour. The exact amount will vary with the grade of flour and the size of the egg used. Lastly, add the white of the egg, previously whipped to a stiff froth, just stirring it in well, but not beating the mixture afterward. Bake at once in hot gem-cups. This cake can be varied by different flavoring, or by adding currants or raisins. It can be baked in layers if shallow sheet-iron pans are used and previously heated.

GRAINS AND MUSHES.

The grains, rice, barley, oatmeal, and the various preparations of corn and wheat are among the most nutritious articles of diet. Of the combined nutritive elements, they contain, according to the best authorities on foods, more than double the amount to be found in the same quantity of beef, mutton, or poultry. In the proper proportion of food elements necessary to meet the requirements of the system, which scientific investigation has shown to be about one part albumen to seven of carbonaceous elements, they approach more nearly the given standard than most other foods; indeed, wheat contains exactly the correct proportion of the food elements. Being thus, in themselves, so nearly perfect foods, and when well prepared, exceedingly palatable, they are the cheapest and most wholesome articles of diet.

The only objection to be urged against their use is that they are not always thoroughly cooked, and are apt to be eaten without any attempt at mastication, which renders digestion difficult and often imperfect. Being soft and already in fine particles, mastication is not necessary to render the mouthful fit for swallowing; but the simple breaking up of food is not the only necessity for mastication. It is especially important that every particle of food entering the stomach should be thoroughly mixed with the saliva, the first of the digestive juices, which, by its action, converts the starchy portion into sugar, and also stimulates the secretion of the gastric juice when taken into the stomach. If the food, then, is imperfectly salivated, the first process of digestion is imperfect, and, in consequence, the stomach digestion will also be imperfect. This difficulty is easily obviated by eating slowly, or by using some dry food with the small grains, which will necessitate a thorough mastication.

Grains and their preparations are usually served in the form of mushes or puddings, and too often in an under-done state. Grains and mushes of all kinds require several hours' cooking, and slow cooking is always preferable. Soft water is preferable to hard in their preparation; and if salt is to be used at all, it should be added to the water before stirring in the grain or meal. The most convenient utensil for cooking either grains or meals is a double boiler, consisting of one vessel set inside another, the inner one containing the grain, the outer one filled with boiling water. An ordinary bowl-shaped iron kettle will, however, do very well, if smooth, and by greasing the inside with a little butter or oil before putting in the water, the tendency of the mush or grain to adhere to the kettle will be greatly obviated.

If one does not possess a double boiler, a very fair substitute may be improvised by using a covered tin pail for the grain, and hanging it in a kettle of boiling water by means of a stick laid across the top of the kettle. A weight may be laid on the top of the pail to keep it upright, and care must be taken that the water does not come up high enough to boil into the grain, although there should be sufficient to cover the pail to the depth of the grain on the inside. A covered pail set in a pan of boiling water will also do very well for a double boiler.

The water in the outer boiler should be kept at a steady boiling heat; and if it becomes low, should be replenished with boiling water, never with cold, as that will check the cooking of the grain, and tend to make it water-soaked. The water should never be allowed to dry entirely out of the vessel, or the grain will burn on the bottom.

After the grain or meal has set, or become thickened and ceased to settle to the bottom, it should be stirred but very little or none at all. Much stirring breaks up the particles, and frees the starchy portion, thus rendering the food pasty, and much more liable to stick to the bottom of the cooking utensil.

All grains and meals should be put into boiling water, and allowed to boil hard until they set, or cease sinking to the bottom; and till then should be stirred constantly, lest they burn on the bottom of the dish. If the double boiler is used, allow the grain to boil in the inner cup standing on the stove until it sets, then cover, and place in the outer boiler, the water in which must also be boiling in order that the cooking process be not checked, and leave to cook slowly until done. If it is desired to have the grain dry, leave the cover off for the last half hour of the cooking. If a kettle is used for the cooking, as soon as the grain has thickened, set it on the back of the stove where it can only simmer, cover closely, and leave till done.

The following recipes give the amount of water and the approximate length of time required for cooking some of the various grain products:—

Pearl Wheat.—Put half a pint of pearl wheat to soak over night in a quart of soft water. In the morning, drain off the water into the inner cup of a double boiler, and heat it to boiling temperature, then add the wheat slowly so as not to stop the boiling. Let the wheat boil rapidly ten or fifteen minutes, stirring often; then place with the same, in the outer cup, the water in which should be boiling, and leave it to steam about three hours. Remove the cover the last twenty or thirty minutes of the cooking. Pearl wheat may be cooked in the same manner and quantity of water without soaking, but must be steamed a longer time by one-third, and the grains are more apt to be crushed and pasty from long-continued cooking.

Crushed Wheat.—Crushed or cracked wheat may be cooked in the same manner as pearl wheat by using four and one-half parts of water to one of grain. The length of time required to thoroughly cook it is about the same as for pearl wheat. If either the cracked or pearl wheat is desired for breakfast, it should be cooked the afternoon previous. In the morning, warm it by putting it into the inner cup of the double boiler, and placing that in the outer boiler of boiling water, where it will warm in a short time. Very little stirring will be required, and the grain will be as nice when thoroughly warmed as when first cooked. If the double boiler is porcelain lined, or of pure granite ware, the grain can be cooked and left in it over night.

Cracked Wheat Dessert.—Cracked wheat, cooked according to the foregoing recipe, and turned into molds till cold, makes a very palatable dessert, and may be served with sugar and cream or with fruit juice. Bits of jelly placed on top of the molds in stars or crosses, give it a very pleasing appearance. The same is very nice served with fresh berries in their season.

Cracked Wheat Pudding.—A very simple pudding may be made with two cups of cold, well-cooked cracked wheat, two and a half cups of milk, and one-half cup of sugar. Let the wheat soak in the milk till thoroughly mixed and free from lumps, then add the sugar and a little grated lemon peel, and bake about three-fourths of an hour in a moderate oven. If the oven is very slow, a longer time will be required. The pudding should be of a creamy consistency when cold, but will appear quite thin when taken from the oven. It is best served cold. By flavoring the milk with cocoa-nut, a quite different pudding may be produced. Pearl wheat is quite as good for this pudding, and many prefer it.

Pearl Barley.—Pearl barley may be steamed the same as pearl wheat. It should be soaked over night. Most people, however, prefer that it should be cooked in fresh water instead of that used to soak it in, as in the case of pearl wheat. Three parts water to one of barley should be used, and a half hour's more steaming than for pearl wheat, is required.

Baked Barley.—Soak six tablespoonfuls of barley over night in cold water. In the morning, turn off the water, and put the barley in an earthen pudding dish, and pour three and one-half pints of boiling water over it; add salt if desired, and bake in a moderately quick oven about two and a half hours, or till perfectly soft, and all the water is absorbed. When about half done, add four or five tablespoonfuls of sugar mixed with grated lemon peel. This may be eaten warm, but is very nice poured into cups, and molded to be served cold with cream.

Rice.—Rice requires a much less time for cooking than most other grains. A very good way to cook it, when one does not possess a double boiler, is to soak a cupful in a cup and a half of warm water for an hour, then add a cup and a half of milk to the rice and water, turn all into an earthen dish, and set into a covered steamer over a kettle of boiling water, and steam for an hour. It should be stirred with a fork occasionally, for the first ten or fifteen minutes. (Let us here remark that a silver fork is also much better for stirring wheat and barley than a spoon.)

If the double boiler is used to cook rice in, the soaking may may be dispensed with. The same proportions should be used; *viz.*, one cup of rice to three of water. After being carefully picked over and washed, put the rice into the water, which should be boiling, and let it boil rapidly, stirring frequently, for ten or fifteen minutes, till the rice has well swelled; then place in the outer boiler, and steam uncovered, without stirring, till tender.

Cooked by either of the above methods, rice will be white and dry, with each grain separate and distinct, though soft and tender.

Rice may be cooked just as nicely in an ordinary stewpan, but requires much more care to keep it from adhering to the bottom of the pan. The same quantity of water, or of water and milk, should be used. The rice should be allowed to cook rapidly until well swelled, when it must be placed where it can only simmer till tender, and the water is absorbed.

If it is desired to cook rice very quickly, the best method is to put a cupful into five times as much boiling water, and boil rapidly twenty or thirty minutes till tender. Turn all into a colander, and thoroughly drain the rice, then place it in a dish in a warm oven, where it will keep hot, and dry off. Picking and lifting occasionally with a fork will make it more flaky and dry.

Oatmeal.—Wet one cup of coarse oatmeal with water just sufficient to moisten it, and pour over it a quart of boiling water. Turn into the inner cup of a double boiler, and boil rapidly, stirring continuously, until it sets; then place the cup in the outer boiler, and cook three hours longer.

Farina.—Put one pint of milk and one of water, or, if preferred, a quart of milk, to boil in the inner cup of a double boiler; add salt if desired; and when boiling, stir in five tablespoonfuls of farina, wet with just enough milk to moisten it. Let it boil rapidly until well set, which will be in about five or eight minutes; put into the outer boiler, and steam an hour. It may be eaten hot or cold as preferred.

Molded Farina.—A very nice and simple dessert may be made of farina by cooking in the same manner as described, using a little cream instead of milk to moisten the farina, and adding about four tablespoonfuls of sugar at the same time with the farina. When done, turn into cups previously wet with a little cold water, and let cool. Turn from the mold when cold, and serve with whipped cream flavored with vanilla or lemon.

Graham Grits.—This is a granulated meal, a little finer than farina, which as yet is quite new in the market. We know of but one place where it is manufactured, but it can be obtained from the Sanitarium Food Co. It is the material par excellence for mushes. For its preparation, use a teacupful of grits to the quart of boiling water; pour the grits slowly into the water, stirring it rapidly with a spoon or spatula that no lumps be formed; or, if preferred, a teacup of water may be retained, and the grits mixed with it to a paste, before putting into the boiling water. Boil rapidly with continuous stirring until well thickened, then place in the outer boiler to steam two or three hours.

Beaten biscuits made of graham grits according to the recipe already given are very nice.

LEGUMINOUS SEEDS.

This group of foods, which includes peas, beans, and lentiles, is usually classed among vegetables, but in composition they differ greatly from other vegetable foods, being characterized by a much larger proportion of nitrogenous elements, by virtue of which they possess a much higher nutritive value. Indeed, when mature, they contain a larger proportion of nitrogenous matter than *any other* foods, either animal or vegetable, although in their combined nutritive elements they do not exceed the grains. On account of the excess of nitrogenous elements in their composition, they are well adapted as a substitute for animal foods, and for use in association with articles in which starch is the predominating principle.

The leguminous seeds, when mature and dried, all require prolonged cooking to render them tender and digestible; when young, they are easily cooked, but are, like other vegetables, less nourishing. All the legumes are excellent for use in the preparation of soups, recipes for which were given on pages 2–8; but there are many other wholesome and palatable ways of preparing them for the table, which are a great convenience to the housewife at this season of the year, during the interval between the exhausted supply of winter vegetables, and the appearance of the early summer varieties. The following are a few of the recipes we have found most appetizing:—

Mashed Peas.—Soak a quart of dried peas over night in cold water. In the morning put them to cook in boiling water, and boil till perfectly tender, allowing them to simmer gently toward the last, so they may cook as dry as possible. Rub them through a colander to remove the skins, and season with salt and half a cup of sweet cream.

Scalloped Beans.—Soak a pint of white beans over night; in the morning put into an earthen baking dish, cover well with new milk, and bake in a slow oven for eight or nine hours, refilling the dish with milk as it boils away, and taking care that the beans do not at any time get dry enough to brown over the top till they are tender. When nearly done, add salt to taste, and a half cup of cream. They may be allowed to bake till the milk is quite absorbed, and the beans dry, or may be served when rich with juice, according to the taste. The beans may be parboiled in water for half an hour before beginning to bake, and the length of time thereby lessened. They should be well drained before adding the milk, however.

Stewed Beans.—Soak a quart of white beans in water over night. In the morning drain off the water, turn boiling water over them an inch deep or more, cover, and place in a range where they will only simmer, adding boiling water as it is needed. When nearly tender, add salt to taste, a tablespoonful of sugar, and half a cup of good sweet cream. Cook slowly an hour or more longer, but let them be full of juice when taken up, never cooked down dry and mealy.

Mashed Beans.—Look over carefully and soak over night in cold water, a quart of nice white beans; put into cold water, and boil till perfectly tender, and the water nearly evaporated. Take up, mash through a colander to remove the skins, season with salt, put in a shallow pudding dish, and brown in the oven.

Baked Beans.—Pick over, and soak over night in cold water a quart of best beans. Put them to cook in fresh water, and simmer gently till very soft and the skins broken. Let them be quite juicy when taken from the pot. Season with salt and a teaspoonful of molasses. Put them in a deep crock, and place in a slow oven. Let them bake two or three hours, or until they assume a reddish brown tinge, adding boiling water occasionally to prevent their becoming dry. Turn into a shallow dish, and brown nicely before sending to the table.

Stewed Lima Beans.—Put the beans into boiling water, and cook until tender, but not till they fall to pieces. The length of time required will depend upon whether the beans are fresh or dry. Fresh beans should cook an hour or more, and dry ones require from two to three hours' cooking. They are much better to simmer slowly than to boil hard during the latter part of the time. They should be cooked nearly dry, and a cup of thin cream to each pint of beans.

added. Season with salt, and let them simmer for a few minutes after the cream is turned in. Should it happen that the beans become tender before the water is sufficiently evaporated, do not drain off the water, but add a little thicker cream, and thicken the whole with a little flour, stirred in as for white sauce. A little flour stirred in with the cream, even when the water is nearly evaporated, may be preferred by some.

Succotash.—Boil one part dry Lima beans and two parts dried sweet-corn separately until both are nearly tender. Put them together, and simmer gently till done. Season with salt and sweet cream. Fresh corn and beans may be combined in the same proportions, but as the beans will be likely to require the most time for cooking, they should be put to boil first, and the corn added when the beans are about half done, unless it is exceptionally hard, in which case it must be added sooner.

Stewed Dried Peas.—If the peas were gathered and dried while young and tender, put them into cold water, and let them just come to the boiling point, but not boil. Keep them on the range where they will just simmer, not bubble at all, till they are tender. Season with salt and a little sweet cream. They will be quite as nice as fresh green peas. More mature peas may be cooked in the same way, though it will require a longer time, but the flavor is much finer than when boiled in the ordinary way.

Stewed Green Peas.—Shell and look over carefully a quart of fresh peas, being careful not to get any dirt in them, as they are better not to be washed; add to them a cupful of boiling water, cover closely, and simmer gently until very tender, by which time the water will be nearly evaporated; season with salt and enough sweet cream to make them as juicy as desired; simmer together for a few moments, and serve.

Baked Beans No. 2.—Soak a quart of white beans over night. In the morning boil till the skins begin to crack. Turn off the water, and add a half cup of sweet cream, and salt if desired. Place in a deep earthern dish, cover with boiling water about an inch above them, and bake till the water is level with the beans.

Lentils.—These legumes are somewhat superior in point of nutritive value to either peas or beans. The skin, however, is tough and indigestible and the seeds being so much smaller than peas, when served without rejecting the skins, they appear to be almost wholly tough, fibrous material, and hence they are of little value except for soup, for which purpose they are most excellent.

Lentils are prepared and cooked in the same manner as dried peas, though they usually require somewhat less time for cooking. Lentils well cooked, and rubbed through a colander and seasoned, are sometimes used with toast, and make a very palatable dish. (See recipe on page 60.)

VEGETABLES.

Food, in order to perfectly supply the needs of the vital economy, must contain a certain amount of fluid matter, as well as nutritive elements; and while the vegetables are generally lacking in a high percentage of nutritive material, they are dietetically of great value, because they furnish a large amount of organic fluids. They are also of much use to the system in supplying bulk to our food, which is a matter of no little importance. However, an exclusive diet of vegetables would give too great a bulk of food, and at the same time fail to supply the proper amount of nutrition; hence, the only wise arrangement is to use them in combination with such other articles of diet —grains, whole-wheat bread, etc.—as shall supplement the qualities lacking in the vegetables.

Vegetables admit of a variety of methods in their preparation for the table, and are usually considered as requiring the least culinary skill of any article of diet. This we believe to be a great mistake. Though the processes generally employed for rendering vegetables palatable are very simple, yet a great many cooks convert some of the most nutritious of them into dishes almost worthless as food, and next to imfine flavors are

more easily retained, and because their food value suffers less diminution.

In preparing potatoes and similar tubers, it should be known that the most nutritious part of the vegetable lies next the outer covering, and consequently much care should be taken to pare very thinly, that as little as possible of this best portion be wasted.

All vegetables are best cooked in soft or filtered water, and they should be put in at the first boil of the water. Water that has boiled long has lost much of its goodness.

The length of time required for cooking will depend much upon the age and freshness of the vegetable.

Creamed Potatoes.—Take small, new potatoes, wash well; taking each one in a coarse cloth, rub off all the skin; cut in halves only, unless quite large, when they should be quartered. Put a pint of divided potatoes into a broad-bottomed, shallow sauce-pan, pour over them a cup of thin sweet cream, add salt if desired. Heat just to the boiling point, then only allow them to simmer gently till perfectly tender, tossing them occasionally in the stew-pan to prevent their burning on the bottom. Serve hot.

Scalloped Potatoes.—Pare the potatoes, and slice thin; put them into an earthen pudding dish, dredged very lightly with flour, add salt, and pour over just enough good rich milk to cover them. Fit a cover over the dish, and bake in the oven till the potatoes are tender, removing the cover just long enough before the potatoes are done to brown them nicely over the top. If preferred, a little less milk may be used, and a cup of thin cream added when the potatoes are nearly done.

Mashed Potatoes.—Peel and slice two quarts of potatoes, and drop into boiling water. When tender, drain, add salt to taste, turn into an earthen dish, and set in the oven for a few moments to dry. Break up the potatoes with a silver fork, add nearly a cup of cream, and beat hard five minutes or more with the fork, till light and creamy. Serve at once, or they will become heavy.

Asparagus with Cream Sauce.—Put the asparagus into cold water for an hour before boiling. Then tie in small bunches with a soft tape, and throw into boiling water. Boil till perfectly tender, which will take about thirty minutes if the stalks are of ordinary size. Drain thoroughly, untie the bunches, place the stalks all the same way upon a hot plate, and send to the table at once, to be served with a dressing prepared as follows: Let a pint of thin, sweet cream (that about six hours old is preferable), come just to the boiling point, and stir into it salt to taste, and a level tablespoonful of flour braided with a little of the cream. Boil till the flour is perfectly cooked, and then strain through a fine wire strainer.

Asparagus on Toast.—Prepare the asparagus as for the preceding, and when tender, drain and place on slices of nicely-browned toast moistened in the asparagus liquor, and turn over all a cream sauce prepared as above.

Asparagus with Egg Sauce.—Prepare and tie the asparagus into bunches, and drop it in at the first boil of the water, which may be slightly salted. When tender, drain thoroughly, and serve on a hot dish, or on slices of nicely browned toast, with a sauce prepared in the following manner: Heat a half-cup of cream to boiling, add salt, and turn into it very gradually, stirring constantly at the same time, the well-beaten yolk of an egg. Let the whole just thicken, and remove from the fire at once.

Stewed Cabbage.—Chop nice cabbage quite fine, and put it into boiling water. Let it boil twenty minutes. Turn into a colander, and drain thoroughly. Return to the kettle, cover with milk, and let it boil till perfectly tender. Add salt if desired, and season to taste with cream.

Cabbage Salad.—Take one pint of finely chopped cabbage, turn over it a dressing made of three tablespoonfuls of lemon juice, two tablespoonfuls of sugar, and a half-cup of whipped cream, thoroughly beaten together.

Cabbage Hash.—Chop fine equal parts of cold boiled potatoes and boiled cabbage, salt to taste. To each quart of the mixture add one-half or three-fourths of a cup of cream. Mix well, and boil all together for a few minutes till well heated.

Scalloped Vegetable Oysters.—Boil two quarts of sliced oysters, well washed and scraped, in two quarts of water until very tender. If desired to give an especial oyster flavor, boil a piece of salt codfish about two inches square with the oysters, and remove it when they are done. Skim out the oysters when tender, and put a layer of them in the bottom of a pudding dish, and cover with a layer of bread crumbs; then add another layer of oysters. Fill the dish with alternate layers of oysters and bread crumbs, having a layer of crumbs for the top. To the water in which the oysters were boiled add a pint and a half of thin cream, salt to taste, boil up, and thicken with a heaping tablespoonful or two of flour rubbed smooth in a little cream Turn this over the oysters and crumbs, and bake a half-hour. If there is not enough juice thus prepared to cover all well, add more cream or milk. Stewed tomatoes is a very nice accompaniment for scalloped vegetable oysters.

Stewed Corn and Tomatoes.—Boil dried or fresh corn until perfectly tender, add to each cup of corn two cups of stewed, strained tomatoes, either canned or freshly cooked. Salt to taste, boil together for five or ten minutes, and serve either plain or with a little cream added.

Parsnips with Egg Sauce.—Scrape, wash, and slice thinly, enough parsnips for three pints. Either steam or boil them until very tender. If boiled, when tender, turn into a colander and drain well. Have ready an egg sauce prepared in the following manner: Heat a pint of very rich milk, or thin cream, to boiling, and stir into it a level tablespoonful of flour, rubbed smooth with a little milk. Let this boil a few minutes, stirring constantly until the flour is well cooked and the sauce thickened; then add the well-beaten yolk of one egg, turning the egg in slowly, and stirring rapidly so that it shall be well mingled with the whole; add salt to taste; let it boil up once only, turn over the parsnips, and serve at once. The sauce should be of the consistency of thick cream.

Carrots with Egg Sauce.—Wash and scrape the carrots well. Slice and throw into salted boiling water. When tender, drain thoroughly, and pour over them a sauce prepared the same as for parsnips, with the addition of a tablespoonful of sugar. Let them boil up once, and serve.

Baked Parsnips.—Wash thoroughly, but do not scrape the roots. Bake the same as potatoes. When tender, remove the skins, slice, and serve with egg sauce or cream. They are also very nice mashed and seasoned with cream. Baked and steamed parsnips are far sweeter than when boiled.

Parsnips with Cream Sauce.—Bake the parsnips as in the foregoing recipe. When tender, slice and turn over them a cream sauce, made according to the recipe given for asparagus with cream sauce. Let all boil up together once, and serve.

Mashed Parsnips.—Scrape the parsnips, and put at once into cold water to prevent discoloration. Slice them into quite thin pieces, and steam in a steamer over a kettle of boiling water until very tender. When done, mash very thoroughly, add salt to taste, and a few spoonfuls of thick, sweet cream, and serve.

Beets.—Wash clean, and boil until tender, skin and slice them, and serve hot with lemon juice poured over them.

Baked Beets.—Beets are far better baked than boiled, though they require a long time to bake properly. French cooks bake them slowly six hours in a covered dish the bottom of which is covered with well-moistened rye straw. They are very nice served with a sauce made with equal quantities of lemon juice and whipped cream, and a little salt.

Beet Salad.—Cold boiled or baked beets chopped fine make a nice salad when served with a dressing of lemon juice and whipped cream.

SIMPLE PUDDINGS.

Custom has so long since established the usage of finishing the meal with a dessert of some kind, that our dinner would be quite incomplete, in the eyes of culinary critics, did we omit this item from our list; and so we shall devote the next two or three courses to the various articles which are usually deemed appropriate desserts, not because we consider the dessert itself of paramount importance, but because we hope the hints and suggestions which our space will permit us to give may be of some assistance to the housewife in preparing wholesome, inexpensive dishes in lieu of the indigestible viands almost universally used for this purpose.

We see no objection to the use of a dessert if the articles offered are of a simple, wholesome character, and are presented before an abundance has already been taken. As generally served, the dessert is but a "snare and delusion" to the digestive organs; compounded of substances "rich," not in food elements, but in fats, sweets, and spices; and presented in addition to the meal when enough has already been eaten, they become a great temptation to overeat, while the elements of which they are largely composed serve to clog the liver, and work general mischief to the system. At the same time their preparation requires an outlay of time and strength better, by far, expended in some other manner, and quite unnecessary in the preparation of a good, healthful, nutritious dietary.

The various nuts and delicious fruits with which nature has so abundantly supplied us, furnish a most desirable dessert, with no expenditure of time or strength in their preparation, and at no greater cost than their more harmful substitutes; but if other forms of dessert are desired, they can be prepared in a pleasing and appetizing manner from wholesome material. We present below a few recipes for simple puddings, inexpensive and easily made.

Strawberry and Rice Dessert.—Soak a cupful of well-picked rice in one and a half cups of warm water for one hour, then add to it one and a half cups of new milk; place all in an earthen dish, and set in a covered steamer over a kettle of boiling water. Steam for one hour, or until dry and tender, stirring occasionally with a silver fork for the first fifteen minutes. When the rice is done, place in the bottom of some cups previously moistened with cold water, five nice, hulled strawberries in the shape of a star. Fill the interstices between the berries carefully with the boiled rice, and then cover the berries with a layer of rice. Add next a layer of strawberries and then another layer of rice. Press it firmly into the cup and set away to cool. When well molded, turn into saucers, and pile whipped cream around each; sprinkle with sugar and serve. A little care in forming the stars and filling the molds make this a delicious and pretty dessert. If preferred, the dessert may be prepared in one large mold, and a larger number of strawberries arranged in the form of a cross in the bottom of the dish, covering with rice, and adding as many alternate layers of strawberries and rice as desired.

Steamed Fig Pudding.—Moisten two cupfuls of finely grated graham bread crumbs with half a cup of thin, sweet cream. Mix into it a heaping cupful of finely-chopped fresh figs, and a quarter of a cup of sugar. Add lastly a cup of sweet milk. Turn all into a pudding dish, and steam about two and a half hours over a kettle of boiling water. Serve as soon as done with a little cream for dressing. Care must be taken that the process of steaming is not interrupted in any way. Do not allow the fire to slacken, and on no account replenish the water with anything but that of a boiling temperature. Do not open the steamer, and let the cold air on the top of the pudding, if you wish it to be a success.

May Pudding.—One pint of well-steamed pearl barley, two cups of finely-chopped best figs, one-half cup of sugar, one-half cup of nice, sweet cream, and one and one-half cups of fresh milk. Mix all together thoroughly, turn into an earthen pudding dish, place the dish in the oven in a pan half full of boiling water, and bake slowly till the milk is nearly absorbed. The pudding should be stirred once or twice during the baking so that the figs will be distributed equally through the pudding, instead of rising to the top. The pudding, when done, should be moist and homogeneous. It requires no dressing.

Rice and Fig Dessert.—Steam a cupful of best rice in two cups of milk and one of water until perfectly tender and dry. Have ready a cup of chopped figs, which have been stewed in a pint of water, to which was added one tablespoonful of sugar, until they are one homogeneous mass. Arrange the rice on a hot dish, place the stewed figs in the center, and serve hot with cream or without dressing.

Sago Pudding.—Soak a cupful of sago for twenty minutes in a cup of cold water; then turn over it a quart and a cupful of boiling water, and add a cup of sugar and one-half cup of raisins. Cook till the sago is perfectly transparent, flavor with vanilla, and set away to cool. Serve with whipped cream.

Farina Blanc Mange.—Heat a quart of milk, reserving one-half cupful, to boiling. When boiling, add a little salt, two tablespoonfuls of sugar, and four heaping tablespoonfuls of farina, previously moistened with the reserved half cup of milk. Let all boil rapidly for a few minutes, till the farina has well set, then place in a double boiler, or a dish set in a pan of boiling water, to cook an hour longer. Turn into cups previously wet with cold water to cool. Serve with sugar and cream, flavored with vanilla or a little grated lemon rind. Much variety may be given this simple dessert by serving it with a dressing of fruit juices. Red raspberry, strawberry, grape, currant, cranberry, cherry, and plum are all very good. If desired, the milk with which the blanc mange is prepared may be first flavored with cocoanut, thus making another variety.

Apple Tart.—Pare and slice some quick cooking, tart apples, and place them in the bottom of a pudding dish with a tablespoonful of water. Cover with a crust prepared in the following manner: Into a cup of thin cream stir a gill of yeast and two cups of flour; let this become very light, and then add sufficient flour to mix soft. Knead for fifteen or twenty minutes very thoroughly, roll evenly, and cover the apples; put all in a warm place until the crust has become very light, then bake. If the apples do not bake easily, they may be partially cooked before putting on the crust. Dish so that the fruit will be uppermost, and serve with cream and sugar.

Gooseberry Tart.—Fill a pudding dish with well prepared green gooseberries, adding a tablespoonful or two of water. Cover with a crust as for apple tart, and when light, bake in a moderately quick oven. Cut the crust into the required number of pieces, and dish with gooseberries heaped on top. Serve with sugar and cream.

Cherry Tart.—Prepare the same as for apple tart, with seeded cherries, only omitting the water, as the cherries will be sufficiently juicy of themselves. If the fruit is very juicy, sprinkle a tablespoonful of flour over it before putting on the crust. Plum and peach tart may be made in the same manner, and are both very nice.

Prune and Tapioca Pudding.—Soak one-half cup of tapioca over night. In the morning boil until transparent in just sufficient water to cook it and prevent burning. Stew two cups of well-washed prunes in a quart of water till perfectly tender, then add the juice of a good lemon, and two tablespoonfuls of sugar, and boil till the syrup, of which there should remain but a spoonful or two, becomes thick and rich. Turn the prunes into a pudding dish, and cover with cooked tapioca, with which should be mixed a little grated lemon rind. Bake lightly in the oven. Serve without dressing, or with sugar and cream.

Stewed Fruit Pudding.—Canned fruit, whortleberries, strawberries, plums, cherries, or raspberries are best for this pudding. Sweeten the fruit to taste, and heat to boiling. Have some pieces of whole-wheat or graham bread cut in slices an inch thick, and wide and long enough to fit around in the bottom of a pudding dish, in the form of spokes to a wheel with an open space between each and in the center. Fill up the interstices with the hot fruit, using just as little juice as possible. Cover this with another layer of slices of bread cut in the same manner, this time placing the strips of bread over the fruit in the first layer, and leaving the spaces for fruit over the first layer of bread. Fill the interstices with fruit as before. Fill the dish with these layers of fruit and bread, and when full, turn the hot juice over all. Put a plate or tin with a weight on it on the top to press it firmly. Dip off any juice that may be pressed out. Set the pudding away in the refrigerator to cool, and press until perfectly cold, when it will turn out perfect, and can be cut in slices and served with cream.

Sago Fruit Pudding.—Soak a small cupful of sago an hour in just enough water to cover it. Drain off any water that may not be absorbed, mix two-thirds of a cup of sugar with the sago, and stir all into a quart of boiling water. Let it boil until the sago is perfectly transparent, and then turn into it a pint of nicely-hulled strawberries. Pour into molds to cool, or serve warm with cream, as preferred. Tapioca can be used instead of sago, but needs longer soaking. Raspberries, seeded cherries, and currants can be used in place of strawberries.

Fruit Corn-Starch Pudding.—Heat a quart of strawberry, raspberry, or currant juice sweetened to the taste, to boiling. If the fresh juice of berries is used, it may be diluted with one cup of water to each pint and a half of juice, if a sufficient quantity of pure juice cannot be afforded. Stir into it four tablespoonfuls of corn starch well braided with a little of the juice reserved for this purpose. Boil until the starch is well cooked, stirring constantly. Turn into molds previously wet with cold water, and cool. This makes a very pretty and palatable dessert.

Picnic Pudding.—Thicken a pint of strawberry or raspberry juice, sweetened to the taste, with two tablespoonfuls of corn-starch, as for fruit pudding. Turn into the bottom of cups previously wet with cold water or a large mold as preferred. Then heat a pint of milk flavored with cocoanut, to which a tablespoonful of sugar has been added, and salt if desired, to boiling. Stir in two tablespoonfuls of corn starch rubbed smooth in a little milk, and cook thoroughly. When done, cool a little, and turn into the molds on the top of the pink portion, which should be sufficiently cool so that it will not mix. A third layer may be added by cooking two tablespoonfuls of corn starch and one of sugar, rubbed smooth in a little milk, in a pint of boiling milk, and stirring in just as it is taken from the stove the well-beaten yolks of two eggs.

Banana Dessert.—Dissolve a half-box of gelatine in a half-cup of warm water. Heat three cups of rich milk to boiling, and add to it one cup of sugar and the well-dissolved gelatine; boil all together ten or twelve minutes. Let it partly cool, and mix in three or four bananas sliced thin or chopped fine. Turn all into a mold previously wet with cold water, and leave till hardened, which may require several hours unless the mold be placed on ice. When well molded, turn into a glass dish, and cover with whipped cream flavored with vanilla or lemon, and serve.

Cream Rice Pudding.—One cupful of best rice carefully looked over, one cup of sugar, and eight cups of new milk, with a little grated lemon rind for flavor. Put all in an earthen pudding dish, and place on the top of the range. Heat until the milk is boiling hot, stirring frequently, so that the rice shall not adhere to the bottom of the dish; then place in the oven, and bake till the rice is tender only, which can be ascertained by dipping a spoon into one side and taking out a few grains. Do not stir after placing in the oven. This pudding is very nice made with one-half rice and one-half tapioca which has been soaked over night, instead of all rice. Cracked wheat steamed and used in the proportion of two cups of wheat to two and a half of milk, and one-half cup of sugar, also makes a delicious and wholesome pudding. The milk used may be first flavored with cocoanut, according to the recipe given on page 49 if desired.

PIES AND CAKE.

So much has been said and written about the dietetic evils of these articles that the very names, cake and pie, have almost come to be regarded as synonymous with indigestion and dyspepsia. That they are a prolific cause of this dire malady cannot be denied, and it is doubtless due to two reasons: first, because they are so generally compounded of ingredients which are in themselves unwholesome, and rendered doubly so by their combination; and secondly, because tastes have become so perverted that an excess of these delicacies is consumed in preference to more simple and nutritious viands.

We do not wish to be understood as being in sympathy with that class of people who maintain that dyspepsia is a disciplinary means of grace, when, after having made the previous statement, we proceed to present our readers with recipes for preparing the very articles we have condemned. Pie and cake need not necessarily be utterly unwholesome articles, and when prepared in a simple manner, may be partaken of in moderation by persons with good digestion, with quite as little detriment as many another article of food. Nevertheless, we shall not pretend to claim for them the wholesomeness of more simple foods, and believe with a lady instructor in cooking, whom we met last year at Chautauqua, that if women would supply their families with perfectly light, sweet, nutritious bread and plenty of fruits, the continual demand for cakes and pies would cease. However, if pies and cakes must needs be, let them be as simple in character as possible. We offer the following recipes as suggestions for articles of this class, which, while not to be recommended for dyspeptics, can scarcely be condemned as unwholesome for persons with average digestive ability:—

Paste for Pies.—Sift together equal parts of graham grits and white flour (graham flour will do if the grits are not obtainable, but the grits will produce a more crisp and tender crust), and wet with *very cold*, thin sweet cream or rich milk. Have the cream and flour both as cold as possible,—the colder the material the more crisp the paste,—and mix together very quickly and lightly into a stiff dough. Do not knead at all, but gather the fragments lightly together, roll out at once, fill and bake as quickly as possible, since much of the lightness of the crust depends upon the dispatch with which the pie is gotten into the oven after the materials for the crust are thrown together. The filling should always be in readiness before beginning the preparation of the crust. If for any reason it is necessary to defer the baking after the crust is made, place it at once in the ice chest till needed.

Fruit Pies.—Apples, peaches, and all small fruits and berries may be made into simple pies. The objectionable features of such pies are usually the rich crust, the excess of sugar used, and the addition of unwholesome spices and flavorings. For fruit pies, prepare a simple crust, fill with the fruit, using only sufficient sugar to sweeten the fruit, add no spices, and bake quickly. If any flavor other than that of the fruit is desired, let it be the flavor of some other fruit; strong spices, such as nutmeg, cinnamon, and all-spice, form a most unsuitable addition to delicately flavored fruits.

For apple pies, a teaspoonful or two of pineapple juice, a little grated lemon or orange peel, or a little strawberry or quince syrup may be used for flavoring. For pies made of apples, peaches, and fruits that are not very juicy, add a tablespoonful or so of water or fruit juice; but for very juicy fruits and berries dredge the under crust with a tablespoonful of sugar and a little flour mixed together, before filling. The heat necessary for baking will cause the flour and sugar, which will melt, to adhere together, and thus keep the fruit juice from coming in contact with the crust, and saturating it.

Granola Crust.—For pies requiring an under-crust only. the prepared granola manufactured by the Sanitarium Food Co. makes a superior crust. To prepare, moisten with thin sweet cream or rich milk,—one-half cup of cream for every two-thirds cup of granola is about the right proportion, and will make sufficient crust for one pie. Flour the board thickly, and lift the moistened granola on to it, spreading it as much as possible with the hands. Dredge flour over the top, and roll out gently, without turning, to the required size. The material, being coarse and granular, will break apart easily, but may be as easily pressed together with the fingers. Change the position of the rolling pin often in order to shape the crust without moving. When well rolled, carefully slip a stiff paper under the whole, first loosening from the board with a knife if necessary, and lift it gently onto the pan. Press together any cracks formed, trim around the edges, fill, and bake at once. Use just the least flour possible in preparing this crust, and bake as soon as made, before the moisture has become absorbed.

Orange Pie.—Rub smooth a heaping tablespoonful of corn starch in three tablespoonfuls of water; turn over it a cup of boiling water, and cook until clear, stirring frequently that no lumps be formed. Add one cupful of orange juice, a little grated rind, and the juice of one lemon, with sugar to taste. Lastly, when quite cool, stir in the well-beaten yolks of two eggs. Bake with under-crust only. Meringue the top when baked, with the whites of the eggs well beaten with a tablespoonful of sugar, and a very little grated orange peel sprinkled over it.

Lemon Pie.—Take four tablespoonfuls of lemon juice (one large one or two small ones will yield about this quantity) and two-thirds of a cup of sugar. Beat lemon juice and sugar together. Braid a slightly heaping tablespoonful of corn starch with as little water as possible, and pour over it, stirring constantly, one-half pint of boiling water—the water must be boiling so that it will sufficiently cook the starch to prevent it from settling. Add the lemon and sugar to the starch, and let it cool, then stir in the yolks of two eggs and half the white of one well beaten together. Beat the mixture thoroughly, pour into a deep crust, and bake. When done, cover with the remaining whites of the eggs, beaten with one and a half tablespoonfuls of sugar, and brown lightly in the oven.

Prune Pie.—Wash the prunes thoroughly, and remove the stones. Add to them three times as much water as prunes, then place them in a porcelain kettle, cover closely, and simmer until perfectly tender and the juice thick. When cold, rub through a colander. Fill an under-crust with the sifted prunes, and bake. This pie requires no sugar. The top may be ornamented with strips of crust or pastry leaves, or, if desired, may be meringued with the whites of two eggs beaten to a stiff froth with two tablespoonfuls of sugar and a little grated lemon peel.

Fruit Short Cakes.—Beat together one cup of thin cream, slightly warmed, a tablespoonful of yeast, and two small cups of flour. Set in a warm place till very light. Add sufficient warm flour to mix soft. Knead thoroughly for fifteen or twenty minutes. Divide into two equal portions, and roll into two sheets about one-half inch in thickness, making the centers a very little thinner than the outside, so that when risen they will not be highest in the center. Place in tins, and set in a warm place until perfectly risen, or until they have doubled their first thickness. Bake quickly. Spread one cake with fruit, and cover with the other. If the fruit is large, it may be chopped fine with a knife, or mashed with a spoon.

Plain Buns.—These are the simplest of all cakes. Dissolve half a small cake of compressed yeast in a cupful of thin cream which has been previously warmed to blood heat, add two cupfuls of warm flour, and beat thoroughly together. Put in a warm place, and let it rise till very light. Add three tablespoonfuls of sugar mixed well with a half cup of warm flour, one-half cup of zante currants, and sufficient flour to make of the consistency of dough. Buns should be kneaded just as soft as possible, and from fifteen to twenty minutes. Shape into biscuits a little larger than a walnut, place them on tins far enough apart so they will not touch each other when risen. Put in a warm place till they have risen to twice their first size, then bake in a moderately quick oven. If desired, the currants may be omitted, and a little grated lemon rind added for flavoring at the same time with the sugar, or a bit of citron may be placed in the top of each bun when shaping. When taken from the oven, sprinkle the top of each with moist sugar, if desired.

Delicate Cake.—Beat together the yolk of one egg, one cup of sugar, and one cup of thin sweet cream, until all of a foam; add a little grated lemon rind for flavoring; stir in slowly, beating briskly all the time, two cups of gluten flour. This cake contains no soda or baking-powder, and to make it light it requires the incorporation of as much air as possible. In order to do this, the beating must be continuous (any cessation will be likely to spoil the cake), not stirring round and round, but lifting the spoon in and out swiftly so as to make as many bubbles of air as possible. When all the flour is added, add lastly the well-beaten whites of two eggs, stirring only just sufficiently to mix them thoroughly through the whole, no more; turn at once into small sheet-iron tins, which have been previously oiled and warmed, and bake in a moderately quick oven. This cake, if made according to directions, will be very light and delicate. It will not puff up much above its first proportions, but will be light throughout.

A nice cake may be prepared in the same manner with common graham or even white flour by the addition of a heaping tablespoonful of corn starch sifted into the flour in the way in which baking-powder is ordinarily mixed with flour before using. This may be baked in a loaf, but is best baked in hot gem irons.

Raised Jelly Cake.—Warm a cup of thin cream to blood heat, add one and a half cups of flour, a little salt if desired, one-fourth of a cup of sugar, and one-half a small cake of compressed yeast dissolved in a gill of thin cream, or a gill of liquid yeast. Set in a warm place, and let it rise till perfectly light. When well risen, add one-half cup of sugar, mixed with one-half cup of warm flour. Beat well, and set in a warm place to rise again. When risen a second time, add two eggs, whites and yolks beaten separately, and about one tablespoonful of flour. Turn the whole into three round baking tins which have been previously oiled and warmed, and place where it will rise again for an hour or until it is all of a foam. Bake quickly in a moderately hot oven. Spread with fruit jelly.

This cake may be varied in innumerable ways. A gold and silver cake may be made of it by taking out one-third of it when risen the second time, adding the yolks of the eggs to the one-third, and the whites with some pulverized cocoanut to the other two-thirds. Make two sheets of the white and one of the yellow. Allow them to become perfectly light before baking. When baked, place the yellow portion between the two white sheets, binding them together with a little frosting. This cake may be varied also by adding a half cup of zante currants to the yellow portion, with the yolks of the eggs.

Apple Cake.—Beat together the whites of two eggs, one-half cup of sugar, the juice of one lemon, and two large, tart apples well grated. Heat in a farina-kettle until all are hot. Cool, and spread between layers of raised cake made as above. This should be eaten the day it is prepared.

Cocoanut Custard Cake.—Prepare a soft custard by heating just to the boiling point one pint of rich milk, previously flavored with cocoanut. Stir into it a tablespoonful of corn starch braided with a little milk, and let it boil until thickened. Beat together an egg and one-third of a cup of sugar, turn slowly into the hot mixture, and stir constantly till the whole thickens. Remove from the fire, and when cold, spread between layers of raised cake.

Cocoanut Flavor.—Cocoanut, whether fresh grated or disiccated, unless in extremely fine particles, is a very indigestible substance, and it is always better, when its flavor is desired for custards, puddings, etc., to steep or simmer a few tablespoonfuls of the cocoanut in a pint of milk for twenty minutes or a half hour, and then strain out the particles. One tablespoonful of freshly-grated cocoanut, or two of desiccated thus steeped, will give a very pleasant and delicate flavor to the milk. If a more intense flavor is desired, a larger quantity can be used. Allow the milk to just simmer, never to bubble or boil, as it will be likely to curdle. Orange and lemon flavor may be obtained by steeping in the same way a few pieces of orange or lemon rind in milk.

FRUIT FOR DESSERTS AND SAUCES.

Of all the articles which enter the list of desserts, none are so wholesome and inexpensive as the luscious fruits with which nature so abundantly provides us. Their delicately tinted hues, and perfect outlines appeal to our sense of beauty, while their delicious flavors gratify our appetites. Our markets are bountifully supplied with an almost unlimited variety of the fruits of both temperate and tropical climates, and one might suppose that they would always appear upon the daily bill of fare; yet they are rarely found upon the family board in the majority of homes. People are inclined to consider fruit, unless the product of their own land, a luxury too expensive for common use; while butter, eggs, sugar, and other materials for making pies and cakes are from long custom deemed a necessity. Many who keep a plentiful supply of fruit in store, never think of placing it upon their tables at meals, but eat it at all other times. Fruit is a most healthful article of diet when partaken of at seasonable times; but to eat it, or any other substance, between meals, is a gross breach of the requirements of good digestion. A simple course of fruit is all that is needed after a dinner; and much time, labor, and health will be saved when housekeepers shall be content to serve the dessert which nature supplies all ready for use, instead of those more harmful combinations, in the preparation of which they spend hours of tedious and tiresome toil.

For serving, all fruits should be sound, and as fresh and cool as possible. Fruit that has stood day after day in a dish upon the table in a warm room may serve for ornament, but it is far less wholesome and tempting than that brought fresh from the storeroom or cellar.

Apples.—In serving these, the "queen of all fruits," much opportunity is afforded for a display of taste in their arrangement. They should be first wiped clean with a damp towel, and may then be piled in a fruit basket, with a few sprigs of green leaves mingled here and there amid their rosy cheeks. The feathery green tops of carrots and celery are very pretty for this purpose. A combination of oranges and apples interspersed with bits of green makes a very ornamental dish.

Peaches and Pears.—Pick out the finest, and wipe the wool from the peaches. Edge a plate with uniform sized leaves of foliage plant of the same tints as the fruit, and pile the fruit artistically upon it, tucking sprays or tips of the foliage plant in the interstices between the fruit. Bits of ice may also be placed between the fruit to keep it cool. Yellow Bartlett pears and rosy-cheeked peaches arranged in this way make a most ornamental dish.

Oranges.—Cut the skins in eighths half way down, separating it from the fruit, and curling it inward, thus showing half the orange white and the other half yellow ; or cut the skins in eighths two-thirds down, and after loosening from the fruit, leave them spread open like the petals of a lily.

Peaches and Cream.—Pare the peaches just as late as practicable before needed, since they discolor by standing. Always use a silver knife for paring, as steel soon blackens and discolors them. Do not add the sugar until the time for serving, as it will start the juices, and likewise turn them brown, and destroy much of their rich flavor. Keep on ice after paring until needed for the table. Serve with cream.

Grapes.—Grapes from the market are usually so covered with dust that they need washing before serving. Drop the bunches into ice water, let them remain ten or fifteen minutes, then drain and serve.

Melons.—Watermelons should be served very cold, and for this purpose should be kept on ice until needed for the table. Cut off a slice at each end, that each half may stand upright on the plate, and then cut around in even slices. Instead of cutting through the center into even halves, the melon may be cut in points back and forth through the center around the entire circumference, so that when separated, each half will appear like a crown. Another very pretty way to serve watermelon is to take out the central portion with a spoon in cone-shaped pieces, and arrange on a plate, with a few bits of ice to keep it cool, if necessary. Other melons should be cut in halves, and the seeds removed before serving, and a lump of ice placed in each.

Frosted Fruit.—Prepare a mixture of the frothed white of egg and a very little cold water. Dip nice bunches of clean currants, cherries, or grapes into the mixture, drain nearly dry, and roll lightly in powered sugar. Lay them on white paper to dry. Plums, apricots, and peaches may be dipped in the mixture, gently sprinkled with sugar, then allowed to dry.

Baked Apples.—Moderately tart apples, or very juicy sweet ones are best for baking. Select good, ripe apples free from imperfections, and of nearly equal size. Wipe carefully to remove all dirt, and bake. Water sufficient to cover the bottom of the baking dish should be added if the fruit is not very juicy. Sour apples are excellent pared and baked with the centers, from which the core has been removed, filled with sugar mixed with grated lemon rind. They should be put into a shallow earthen dish with water sufficient to cover the bottom, and baked in a quick oven, basting often with the syrup. Baked apples are usually served as a relish, but with a dressing of cream they make a most delicious dessert.

Baked Pears.—Hard pears make a nice dessert when baked. Pare, halve, remove seeds, and place in a shallow earthen dish, with a cup of water to each two quarts of fruit. If the pears are sour, a little sugar may be added. Bake, closely covered, in a moderate oven until tender. Serve with sugar and cream.

Stewed Fruit.—The simplest method of cooking fruit is stewing. In cooking, always use porcelain or granite-ware kettles. Fruit cooked in tin loses much of its delicate flavor; while if the fruit is acid, and the tin is of poor quality, there is always a liability of the acid of the fruit acting upon the metal and forming a poisonous compound. Use only silver knives for preparing the fruit, and silver or wooden spoons for stirring if required. Prepare just before cooking if you would preserve the fruit perfect in flavor, and unimpaired by discoloration. Cook in a small quantity of water, and do not add sugar until the fruit is done. Sugar boiled with an acid will in a very few minutes be converted into glucose, two and one-half pounds of which only equal one pound of cane sugar in sweetening properties. It will require more than double the amount of sugar to sweeten fruit if added before the cooking process is completed, than will be necessary afterward.

Apple Meringue Dessert.—Prepare and stew some tart white apples with half a lemon rind in a very small quantity of water until tender. A good way is to use a shallow, broad-bottomed stew-pan, on which the apples may be spread out over the entire surface, having only one or two layers. Add but a small quantity of water, and cover closely, that the steam may cook those on top uniformly with those at the bottom. Watch closely, that they do not burn. When tender, remove the lemon rind, and rub the apples through a colander. If juicy, return to the fire, and simmer slowly until all the juice is evaporated, or place in a moderate oven until the sauce is dry. Sweeten, place in a glass dish, and pile a meringue made with the whites of two eggs and two tablespoonfuls of sugar over the top. Brown slightly in the oven, and ornament with bits of colored jelly or sugar.

Apple Custard.—Peel, halve, and core eight or ten medium-sized sour apples. Have prepared a syrup made with a teacupful of water, the juice of one lemon, a little grated rind, and a half teacup of sugar. When the sugar is dissolved, add the fruit, and simmer till tender, but not fallen to pieces. Take out the apples with a skimmer, draining thoroughly, and lay them in a nice glass dish. Boil up the syrup until thick, and pour it over the apples. Make a soft custard with a pint of milk, yolks of three eggs, and two tablespoonfuls of sugar. When cold, spread over the apples; whip the whites to a stiff froth, flavor with lemon rind, and pile irregularly upon the top. Brown lightly in the oven.

Citron Apples.—Select some nice, tart apples of about the same degree of hardness, so that they will cook alike, and dig out the cores. Unless the skins are very tender, it is better to remove them also. Stuff the cavities with sugar, first placing in each apple a few bits of chopped citron. If the skins have been removed, place the stuffed apples around on a flat earthen dish, with a tablespoonful of water on the bottom; cover closely, and bake till perfectly tender, but not till they have fallen to pieces. If the skins are left on, they may be baked without covering. When cold, serve in separate dishes, with a spoonful or two of whipped cream on each apple.

Lemon Apples.—Prepare nice tart apples the same as for citron apples. Fill the cavities made by removing the cores with a mixture of grated lemon and sugar, squeeze a few drops of lemon juice over each apple, and bake. Serve with whipped cream and sugar.

Canning Fruit.—This is the most efficient means for preserving fruit in a wholesome condition; but in order to insure success, two things must be carefully attended to:—

1. The fruit must be sufficiently cooked.

2. All air must be excluded, and the can hermetically sealed.

The best fruit should be selected, and that which is not overripe. It should be kept as clean as possible, so that little or no washing will be required, as this is injurious to many fruits. Pick over carefully, and wash quickly, if washing is necessary. Either steam or stew, adding as little water as possible, and as little sugar as will suffice to make the sauce palatable.

While the fruit is cooking, prepare the cans in which it is to be placed. Thoroughly scald them that there may be in them nothing which will induce decay. To prevent breaking when the hot fruit is placed in the can, it may be heated by pouring into it hot water, and quickly shaking it, so that all parts may be heated equally; or the can may be placed in cool water and gradually heated to the requisite degree. Dry heat is equally efficient, and may be applied by keeping the cans in a moderately hot oven while the fruit is cooking. Some place the cold can upon a folded towel wet in cold water, which cools the bottom, and so prevents cracking. This method is very convenient.

When the fruit is properly cooked, and the cans are in readiness, first place in the can a quantity of juice, so that as the fruit is put in, no vacant places will be left for air, which is sometimes quite troublesome when this precaution is not taken. Then add the fruit itself. If any bubbles of air chance to be left still, work them out with a fork, spoon handle, or straw. Fill the can full to overflowing, using boiling water when there is not enough juice, and immediately put on the cover, and screw tightly on. As the fruit cools, the cover can be tightened, and this should be promptly done, so that no air may be allowed to enter. Sometimes the fruit will settle so that a little space will appear at the top. If you are sure the can is tight, do not open to refill, as you will be unable to make the can quite as tight again, unless you reheat the fruit, in which case you would be liable to have the same thing occur again.

To Cook Prunes without Sugar.—Put the prunes in warm water to clean them. Remove the stones if desired, then put them to cook in three quarts of water for one of prunes. Cover them closely, and let them simmer for several hours. Cooked in this way, they will be soft and sweet, with a thick juice, and need no sugar whatever. Many persons who cannot eat fruit cooked with sugar, can safely partake of prunes cooked in this way

To Keep Grapes.—Select such bunches as are perfect, rejecting all upon which there are any bruised grapes, or from which a grape has fallen. Spread them upon shelves in a cool place for a week or two. Then pack them in boxes in sawdust which has recently been thoroughly dried in an oven. Bran which has been well dried may also be used. Dry cotton is employed by some. Keep in a cool place.

To Can Apples.—A can of nice fresh apple-sauce will be a luxury in the early summer, before fresh fruit ripens. But apples in the spring are generally rather tasteless, and need some flavor added to make them relishable. A nice way to can them is to prepare a syrup in the following proportions: The juice of four large or six small lemons, with several slices of the lemon, and four cups of sugar. Pour over this when well mixed three pints of boiling water, and let all simmer together for eight or ten minutes, or till as thick as desired. Prepare the apples, quarter them, or if small, only halve them, and cook them gently in a broad-bottomed, closely-covered sauce-pan, with as little water as possible, till tender, but not broken; then pour the syrup over them, heat all to boiling, and can at once. The apples may be cooked by steaming over a kettle of hot water, if preferred. Care must be taken to cook those of the same degree of hardness together as much as possible, and for that reason it is better to sort the apples before preparing them, cooking the tenderest ones separate from the hard and tough ones. The slices of lemon should be removed from the syrup before using.

BREAKFAST DISHES.

A good breakfast is the very best capital upon which people who have real work to do in the world can begin the day. If the food is well selected and well cooked, it furnishes both cheer and strength for their daily task. Poor food, or good food poorly prepared, taxes the digestive powers more than is their due, and consequently robs brain and nerves of their vigor. Good food is not *rich* food, in the common acceptation of the term; it is such food as furnishes the requisite nutriment with the least fatigue to the digestive powers. It is the best of material prepared in the best possible manner, and with pleasant variety. It may be very simple in character; but if it be bread, it will be of the very best quality; if potato, it will be the dryest and most mealy, with as much as possible of its nutritious elements retained.

What to get for breakfast is one of the most puzzling problems with which the majority of housewives have to deal. The usually limited time for its preparation requires that it be something easily and quickly prepared, and besides this, health demands that the bill of fare be composed of such articles of diet as require but a minimum length of time for digestion, in order that the stomach may have chance for rest, after the process of digestion is complete, before the dinner hour. The habit of using fried potatoes, fried mushes, salt fish, salted meats, and other similar foods of almost impossible digestibility for breakfast dishes, is a most pernicious one. Scarcely any other articles of food would so completely set at variance the laws of breakfast hygiene. Besides being exceedingly difficult of digestion, the thirst-provoking character of salted foods makes them an important auxiliary to the acquirement of a love of intoxicating drinks. We feel very sure that, as a prominent temperance writer says, it "very often happens that women who send out their loved ones with an agony of prayer that they may be kept from drink for the day, also send them with a breakfast that will make them almost frantic with thirst before they get to the first tavern."

The breakfast should be as simple as possible, but the food should be as delicately cooked and neatly served as the most elaborate bill of fare would demand. Fruit, which is always an acceptable article of diet, should have a place upon the breakfast-table. Nice, mellow apples and oranges are obtainable most of the year round, and can be varied by peaches, grapes, and other fruits in their season. The fruit can be arranged and left in some cool place over night.

The grains form one of the most healthful, appropriate, and convenient of breakfast dishes. Wheat, oatmeal, or barley, because of their especial nutritive properties, are excellent for use as the principal dish for breakfast.

Grains for Breakfast.—Hasty preparation will not suffice for the cereals, as nearly all require several hours' cooking to render them wholesome. This difficulty in the way of their use on the breakfast table may be obviated by cooking them the afternoon before in a double boiler or in one dish set inside another filled with boiling water. (Recipes for cooking the various grains were given on pages 23–29.) When the grain is done, turn it into a large earthen or china dish. In the morning all that is necessary to do is to set the dish into a steamer over a kettle of boiling water, and heat through to make it ready for the table. If cooked in a porcelain-lined or pure granite-ware double boiler, it can be re-heated in the same dish by filling the outer cup with boiling water, and placing the inner cup containing the grain in it until well warmed through. But unless one is very certain that the boiler is made of perfectly pure material, it is far better to turn it into an earthen dish, and steam over boiling water, and is certainly no more trouble.

Some one of the grains well cooked and served with cream and sugar with nice ripe fruit, whole-wheat bread, and some simple relishes, are quite sufficient for a healthful and palatable breakfast. If, however, a more extensive bill of fare is desired, we would suggest, as suitable articles for breakfast, radishes, raw, sliced tomatoes, and celery in their season, steamed figs, dates, baked apples, and some of the various unfermented breads for which recipes were given on pages 21, 22. Of vegetables, none but the potato is especially serviceable as a breakfast food. And it is much more readily digested when baked than when prepared in any other manner. Stewing requires less time for preparation, but about one hour longer for digestion. But in whatever manner they are cooked, they should not be prepared over night, and left in a pan full of water to dissolve out the little nutritive elements they contain. If they are to be baked, thoroughly wipe their skins with a wet cloth, then put them in a cool place over night; if they are to be pared, it is far better to do it in the morning.

As dressings for baked potatoes, we suggest the following:—

Cream Sauce.—Heat a pint of rich milk, part cream if it can be afforded, to boiling, and stir into it one tablespoonful of flour previously rubbed perfectly smooth in a little milk. Season with salt if desired, and boil up two or three minutes till the flour is well cooked, stirring continually that no lumps be formed. Gravy full of lumps is unpalatable. If, however, it happens that with all the care, lumps are found in the sauce, turn it quickly through a fine, hot colander into the dish in which it is to be served.

Celery Sauce.—Cut a half dozen stalks of celery into finger lengths, and simmer in milk for ten or fifteen minutes, or until the milk is well flavored. Skim out the celery, add a little cream to the milk, salt if desired, and thicken with flour as for cream sauce.

Egg Sauce.—Heat a pint of milk to boiling, and stir in a dessert spoonful of flour rubbed smooth in a little milk. Let it boil, stirring constantly, until the sauce is well thickened, then add the well-beaten yolk of an egg, turning it in very slowly and stirring rapidly so that it shall be well mingled with the whole. Boil up once only, add a very little salt if desired, and serve. The egg thus added makes an excellent substitute for cream when the latter cannot be had for cream sauce.

The following various kinds of toast are also quite suitable for breakfast dishes:—

Strawberry Toast.—Brown nicely some slices of graham bread. Turn a can of well-kept strawberries into a colander over an earthen dish to separate the juice and berries. Place the juice in a porcelain vessel on the stove, and heat to boiling. When boiling, thicken to consistency of cream with flour rubbed smooth in a little water. A teaspoonful of flour to the pint of juice will be about the right proportion. Add the berries, and boil up once or twice, just sufficiently to cook the flour and heat the berries; then dish over the slices of hot toast. If the toast is very dry, a little of the juice may be reserved without thickening, and heated in another dish to first moisten the toast. Or, if preferred, the fruit may be poured hot over the toast without being thickened. Canned blueberries, raspberries, peaches, and cherries also make excellent fruit toast.

Prune Toast.—Pour tepid water over some prunes, and let them stand a few minutes to soak and soften. Rub well between the hands to clean; rinse in clean water, and then remove the stones, which can easily be done by this time. For every quart of prunes when stoned, add three of water, and place in a porcelain kettle on the stove; cover tightly, and simmer gently till done. Then turn into a colander, and rub through to remove the skins. If the toast is desired for breakfast, the prunes should be prepared the afternoon before. When needed, heat to boiling, and pour over nicely browned slices of toast, previously moistened with hot water or hot cream as preferred.

Vegetable Oyster Toast.—Cook a quart of cleaned and sliced vegetable oysters in a quart of water until very tender, then add a pint of milk, a cup of cream, salt to taste, and thicken the whole with two tablespoonfuls of flour rubbed to a smooth paste with a little milk. Let it boil for a few minutes, and turn over slices of well-browned toast previously moistened with hot milk.

Lentil Toast.—A sauce made of stewed lentils, rubbed through a colander as for soup, and seasoned with salt and cream to taste, turned over slices of well-browned graham bread, makes a very palatable toast. If needed for breakfast, the lentils should be stewed the day previous.

Celery Toast.—Cut the tender, white portion of celery into inch pieces, simmer until tender (twenty minutes or half an hour will usually be sufficient) in a very little water, add sweet cream, season to taste, and pour over slices of toasted bread. Serve hot.

Dry Toast.—Cut thinly and evenly some slices of graham bread, and brown nicely over the hot coals or on the top grate of a hot oven. The latter method is far more preferable when it is desired for dyspeptics, as the entire thickness of the slice is toasted.

Milk Toast.—Prepare some bread as for dry toast, moisten with a little hot milk, and then turn over each piece a sauce made by thickening a pint of thin cream with a teaspoonful of flour in the same manner as for cream sauce.

Tomato Toast.—Pour hot, strained, stewed tomatoes, seasoned with salt and a little cream if desired, over slices of nicely browned toast. The tomato sauce is much better to be first thickened to the consistency of cream with a little flour, the same as for milk toast.

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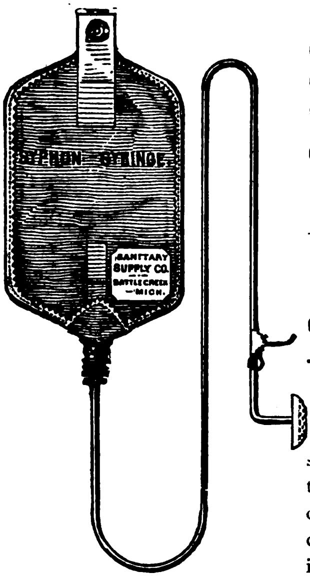

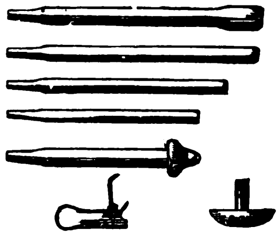

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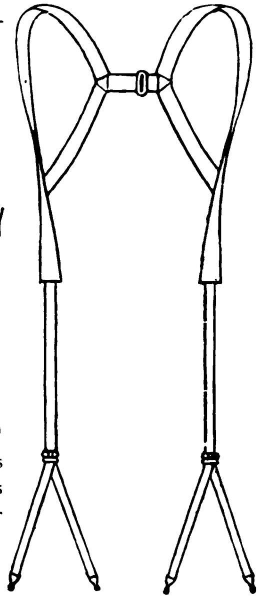

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