

**SOME SANITARY ASPECTS OF BREAD MAKING.**

BY CTRUS EDISON, M. D.,  
Health Commissioner, New York City.

It is necessary, if one would understand the sanitary aspects of bread making, to fully comprehend the present theory held by scientists of germs and the part played by them in disease. The theory of disease germs is merely the name given to the knowledge had of those germs by medical men, a knowledge which is the result of innumerable experiments. Being this, the old term of a "theory" has become a misnomer. A germ of a disease is a plant, so small that I do not know how to express intelligibly to the general reader its lack of size. When this germ is introduced into the blood or tissues of the body, its action appears to be analogous to that which takes place when yeast is added to dough. It attacks certain elements of the blood or tissues, and destroys them, at the same time producing new substances.

stance to be eaten is exposed to the air, the greater the chance that germs will be deposited on it. Bread raised with yeast is worked down or kneaded twice before being baked and this process may take anywhere from four hours to ten. If, then, the chance of collecting disease germs during this process of raising and it has two periods of working down or kneading during each of which it may gather the dirt containing the germs from the baker's hands. As no bread save that raised with yeast, goes through this long process of raising and kneading so no bread save that raised with yeast has so good a chance of gathering germs.

What is meant by "raising" bread is worth a few words. The introduction of the yeast into the moist dough and the addition of heat when the pan is placed near the fire produces an enormous growth of the yeast fungi—the yeast "germ," in other words. These fungi effect a destructive fermentation of a portion of the starchy matter of the flour—one of the most valuable nutrient elements in the flour.

produce carbonic acid gas, and having done this, disappear. Its leavening strength has been found superior to other baking powders, and as far as I know, it is the only powder which will raise large bread perfectly. Its use avoids the long period during which the yeast made dough must stand in order that the starch may ferment and there is also no kneading necessary.

The two materials used in the Royal, cream of tartar and soda, are perfectly harmless, even when eaten. But they are combined in exact compensating weights, so that when chemical action begins between them they practically disappear, the substance of both having been taken up to form the carbonic acid gas. More than this, the proper method of using the powder insures the most thorough mixing with the flour. The proper quantity being taken, it is mixed with the flour and stirred around in it. The mixture is then sifted several times and this insures that in every part of the flour there shall be a few particles of the powder. The salt and alkali or water being added, the dough is made up as quickly as possible and moulded into the loaves.

These are placed in the oven and baked. But the very moment the warmth and moisture attack the mixture of cream of tartar and soda, these two ingredients chemically combine and carbonic acid or leavening gas is evolved. The consequence may be seen at a glance, the bread is raised during the time it is baking in the oven, and this is the most perfect of all conceivable methods of raising it.

Here, then, there is no chance for germs of disease to get into the dough and thence into the stomach, more than that the bread is necessarily as sweet as possible, there having been no time during which it could sour. This involves the fact that the bread so made will keep longer, as it is less likely to be contaminated by the germs that affect the souring process.

It will be strange if the crowds of visitors to the World's Fair do not greatly increase the number of contagious diseases, which we will have to treat. Under these circumstances it is not folly or follies to open a single channel through which these germs may reach us? Is it not the part of wisdom to watch with the greatest care all that we eat and drink, and to see that none but the safest and best methods are employed in the preparation of our food? To me it seems as though there could be but one answer to questions like these.

I have shown the danger of using the yeast raised bread, and with this I have shown how that danger may be avoided. The ounce of prevention which in this case is neither difficult nor expensive is certainly worth many pounds of cure, and the best thing about it is that it may be relied on almost absolutely. Those who eat bread or biscuits or rolls made at home with Royal baking powder may be sure they

**LATE TELEGRAPHIC JOTTINGS**

**NOTE FROM HOME AND ABROAD.**

What is Going On the World Over. Important Events Briefly Chronicled.

**Capital, Labor and Industry.**  
RUBBERING WAGERS—It is announced that the Camden lumber plant at Alexander, W. Va., known as the Alexander Boom Lumber Company, the Burns mills at Burnsville and Sutton, and also Camden's several plants along the West Virginia & Pittsburgh railroad have decided to follow the example of the Buckhannon Boom Lumber Company, in reducing the wages of employees 10 to 15 per cent, commencing next week. The reasons given are the companies' inability to dispose of their product for cash or its equivalent and the impossibility of obtaining money to conduct their business on a high scale of wages. They say they must either reduce wages or shut down their mills. The reduction effects several thousand men.

The fire in the Pennsylvania colliery at Shamokin has been extinguished. Work has been resumed, giving employment to 2,000 hands after one month's idleness.

Three Youngstown firms have given notice that the men will be expected after Monday to work 10 hours for 9 hours' pay.

Swift & Co., the Chicago pork packers, have discharged 600 employes on account of dullness in trade.

At Zurich, Switzerland, the international socialist congress approved the establishment of an eight hour working day. The delegates agreed to agitate for the holding of an interstate congress to settle the question.

At Pueblo, the steel plant of the Colorado Fuel and Iron Company has resumed operations with a full force of 1,600 men, after a shut down of three weeks for repairs. The company has large orders ahead.

The 20 sewer pipe plants of Toronto, O., will cut wages about 10 per cent. If the reduction is not accepted the works will shut down.

The New York Lake Erie and Western Railway Company has suspended all unmarried employes on the Honesdale, Pa. division.

The works of the Salem, O., Wire Nail Company have resumed after a shut-down of several weeks.

**CRIMINAL STATISTICS.**

How It is Divided Among the Races in New York City.

New York City has a foreign born population of 647,000 out of a total of 1,800,000. The foreigners are: Germany, 230,000; Ireland, 200,000; Russia, 55,000; Italy, 50,000; Great Britain, 49,000; Austria, 20,000; France, 11,000; Canada and Newfoundland, 9,000; other nationalities, 14,000.

In arriving at the important point as to the number in each race who commit murder and felonious assault as gathered from the police records of eight months past we find that:

One Italian in 574 commits a felonious assault and one in 12,222 a murder.

One Irishman in 3,636 commits a felonious assault and one in 13,333 a murder.

One German in 5,476 commits a felonious assault and one in 32,857 a murder.

One Russian in 3,235 commits a felonious assault and one in 55,000 a murder.

One Frenchman in 3,666 commits a felonious assault and one in 11,000 a murder.

One Englishman in 3,266 commits a felonious assault and one in 49,000 a murder.

One Austrian in 3,625 commits a felonious assault and there were no murders among 20,000.

One North American-Britisher in 9,000 commits a felonious assault. No murder recorded among 9,000.

One Spaniard in 600 commits a felonious assault, while one Hungarian in 4,333 is guilty of this offense. Neither race furnishes a murder.

One American in 7,185 commits a felonious assault and one in 35,294 a murder.

**China Is Ashamed of Them.**

Yung How Son, a mandarin and an attendant of the Imperial Court of Peking, is traveling in this country. In San Francisco, where he made a short stay, he spoke to a reporter concerning the Chinese residents in that city. "There is a low, a vicious class here," he said, "which has made our people despise all of my nation, and that I felt as I walked along the streets. The class of Chinese you have here have disgraced your people, and no wonder. No doubt there are some good Chinese here. The Vice Consul told me so today, but the rest are not fair representatives of our country. If they are sent back to China all good Chinese will be sorry that their people have not proved acceptable in America, but that can do nothing."

WITH reference to these shows it may be said a dog's ancestral tree cannot be told by its bark.

**How's This!**

We offer One Hundred Dollars Reward for any case of Catarrh that cannot be cured by the best Catarrh Cure.

J. C. CHERRY & CO., Props., Toledo, O.

We, the undersigned, have known J. C. Cherry for the last 15 years, and believe him perfectly honorable in all business transactions and financially able to carry out any obligations made by him.

WATKINS & TRACY, Wholesale Druggists, Toledo, Ohio.

WALDRING, KINMAN & MARVIN, Wholesale Druggists, Toledo, Ohio.

The Catarrh Cure is taken internally, acting directly upon the blood and mucous surfaces of the system. Price, 50c per bottle. Sold by all Druggists. Testimonials free.

An average of five feet of water is estimated to fall annually over this whole earth.

**Shooting Pains**

All over my body and swelling of my limbs have caused me great suffering. In the spring I was completely worn out and at last hardly enough to keep me a live. I have been taking Hood's Sarsaparilla, and the swelling has subsided, the shooting pains are gone, I am good again, and am better every way.—Miss A. G. OREN.

24 Newmarket St., Boston. Hood's Cures Head's Pills Cure Sick Headaches. 20c a box.

**"August Flower"**

I had been troubled five months with Dyspepsia. I had a fullness after eating, and a heavy load in the pit of my stomach. Sometimes a deadly sickness would overtake me. I was working for Thomas McHenry, Druggist, Allegheny City, Pa., in whose employ I had been for seven years. I used August Flower for two weeks. I was relieved of all trouble. I can now eat things I dared not touch before. I have gained twenty pounds since my recovery.—J. D. COX, Allegheny, Pa.

**KARL'S GLOVER ROOT EXTRACT**

IT GIVES FRESHNESS AND CLEAR SKIN.

CURES CONSTIPATION, INDIGESTION, DIZZINESS, ERUPTIONS ON THE SKIN, BEAUTIFUL COMPLEXION.

AN agreeable Laxative and Nervine Tonic. Sold by Druggists or sent by mail, 50c, 50c, and \$1.00 per package. Samples free.

**NO NO**

The Favorite TOOTH POWDER for the Teeth and Gums, 25c.

**TOWER'S FISH BRAND WATERPROOF COAT**

This Trade Mark is on the best in the World!

A. J. TOWER, BOSTON, MASS.

so Cure Itself. No matter of how long standing. Write for free treatise, testimonials, etc., to S. J. Hollenworth & Co., Owego, Tioga Co., N. Y. Price \$1 by mail, \$1.15.

Enough spitters' spits to go around the world would weigh one-half pound.

For pneumonia, no other cough syrup equals Hatch's Universal. 25 cents at druggists.

A 12-year-old Ann Arbor boy killed and dressed a calf in 20 minutes.

A wonderful stomach corrector—Beckham's Pills. Beckham's no others. 25 cents a box.

Denmark makes the best butter.



**KNOWLEDGE**

Brings comfort and improvement and tends to personal enjoyment when rightly used. The many, who live better than others and enjoy life more, with less expenditure, by more promptly adapting the world's best products to the needs of physical being, will attest the value to health of the pure liquid laxative principles embraced in the remedy, Syrup of Figs.

Its excellence is due to its presenting in the form most acceptable and pleasant to the taste, the refreshing and truly beneficial properties of a perfect laxative; effectually cleansing the system, dispelling colds, headaches and fevers and permanently curing constipation. It has given satisfaction to millions and met with the approval of the medical profession, because it acts on the Kidneys, Liver and Bowels without weakening them and it is perfectly free from every objectionable substance.

Syrup of Figs is for sale by all druggists in 50c and \$1 bottles, but it is manufactured by the California Fig Syrup Co. only, whose name is printed on every package, also the name, Syrup of Figs, and being well informed, you will not accept any substitute if offered.

**THE WALL PAPER MERCHANT SMITH SELLS THE BEST, WALL PAPER**

Good Papers, 3c. and 5c. Gold Papers 5c., No. and 10c. Send for samples, 541 Wood Street, Pittsburgh, Pa.

**THE KIND THAT CURES**



**JEROME BALL, Torturing "Headache for 10 Years!"**

**Dana's Sarsaparilla "I WAS CURED!"**

MR. BALL WAS THE FIRST MAN TO PUBLISH DANA'S IN COLLEGE. LISTEN AS HE TELLS YOU THE RESULT.

DANA'S SARSAPARILLA CO., Proprietors.

GENTLEMEN:—I have been a sufferer from Headache for the last ten years. Last fall I saw in one of our local papers an advertisement of your medicine, and testimonials of its wonderful cures.

I decided to try one bottle. The first bottle greatly relieved me, and by the time I had taken two more bottles I WAS CURED. I can recommend

**DANA'S SARSAPARILLA**

as a safe and reliable medicine.

Waterford, N. Y. JEROME BALL.

The truth of Mr. Ball's statement is certified to by Col. W. S. MOOREHEAD, Pharmacist, Colburn, N. Y.

Dana Sarsaparilla Co., Belfast, Maine.

**RISE SUN STOVE POLISH**

Do Not Be Deceived with Imitations. Examines and Burns which stains the brass, injures the iron and turns red.

The Rise Sun Stove Polish is Brilliant, Odorless, Durable, and the consumer pays for no tin or glass package with every purchase.

**HARD RUBBER RUPTURE TRUSSES**

Send for book of particulars. L. B. SHELLEY & CO., 25 S. 11th St., Philadelphia.

**PENSION JOHN W. MORRIS, Washington, D. C.**

Successfully Prosecutes Claims. Late Private Examination U. S. Pension Bureau. 25 years last war, 1846-1861, 1862-1865, 1866-1868.

**PATENTS TRADEMARKS**

Examination of invention. Send for Inventors Guide, or how to get a patent. PATRICK O'FARRELL, Washington, D. C.

**WANTED—Good men everywhere advertising**

novelty: \$20 a week; outfit free. R. SIMS & CO., WASHINGTON, D. C.

GRAHAM'S STORHARDT COLLEGE, 333 Smithfield Street, Pittsburgh, Pa. Open all year, day and evening; catalog free.

**MARRIAGE PAPER FREE**, 500 ladies and gentlemen correspondents. GUNNELL'S MONTHLY, TOLEDO, OHIO.

**GOITRE CURED** SEND FOR FREE Circular. Franklin College, New Athens, O. Total cost, \$2.50 per week. Catalog free. W. A. WILLIAMS, Pres.

Plan's Remedy for Catarrh in the Nose, Throat, Lungs, and Chest.

**CATARRH**

Sold by druggists or sent by mail, to R. T. HANCOCK, Warren, Pa.



"DISEASE GERMS FOUND THEIR WAY INTO THE YEAST BREAD."

But the germs of the greater part of the germ diseases, that is, of the infectious and contagious diseases, will develop or increase in number without being in the body of a human being, provided always you give them the proper conditions. These conditions are to be found in dough which is being raised with yeast. They are warmth, moisture and the organic matter of the flour on which the germs, after certain changes, feed.

It is necessary to remember at this point that yeast is germ growth, and when introduced into a mixture of glucose or starch, in the presence of warmth and moisture sets up a fermentation. If the mixture be a starchy dough the yeast first changes a portion of the starch into glucose and then decomposes the glucose by changing it into two new substances, viz., carbonic acid gas and alcohol.

Now the gluten, which is also a constituent of dough and moist starch, affords, with the latter, an excellent nidus for the development of germs of disease as well as for the yeast germs. The germs of cholera, as of typhoid fever, would, if introduced into dough, find very favorable conditions for their growth.

I do not wish to "pose" as an alarmist, nor am I willing to say there is very much chance of the germs of typhus and of cholera reaching the stomachs of the people who eat bread which has been raised with yeast. But I have not the slightest cause to doubt that other diseases have been and will be carried about in the bread.

I have met journeymen bakers, suffering from cutaneous diseases, working the dough in the bread trough with naked hands and arms. I have no reason to suppose bakers are less liable to cutaneous diseases than any other men, and I know, as every housewife knows, yeast-raised bread must be worked a long time. This is an exceedingly objectionable thing from the standpoint of a physician for the reason that the germs of disease which are in the air and dust and on stairways and straps in street cars, are most often collected on the hands.

Any person who has ever kneaded dough understands the way in which the dough cleans the hands. This means that any germs which may have found a lodging place on the hands of the baker before he makes up his batch of bread are sure to find their way into the dough, and once there, to find all the conditions necessary for subdivision and growth. This is equivalent to saying that we must rely on heat to kill these germs, because it is almost certain that they will be there. Now, underdone or doughy bread is a form which every man and woman has seen.

It is a belief as old as the hills that underdone bread is unhealthful. This reputation has been earned for it by the experience of countless generations, and no careful mother will wish her children to eat bread that has not been thoroughly cooked. The reason given for this recognized unhealthfulness has been that the uncooked yeast dough is very difficult to digest. No one but a physician would be apt to think of disease germs which have not been killed during the process of baking as a cause of the sickness following the use of uncooked yeast bread. Yet this result from this cause is more than probable. I have not the slightest doubt that could we trace back some of the cases of illness which we meet in our practice we would find that germs collected by the baker have found their way into the yeast bread, that the heat has not been sufficient to destroy them, that the uncooked yeast bread has been eaten and with it the colonies of germs, that they have found their way into the blood and that the call for our services which followed, has rounded off this sequence of events.

I have already pointed out that the germs of disease are to be found in the air and dust. The longer any substance to be eaten is exposed to the air, the greater the chance that germs will be deposited on it. Bread raised with yeast is worked down or kneaded twice before being baked and this process may take anywhere from four hours to ten. If, then, the chance of collecting disease germs during this process of raising and it has two periods of working down or kneading during each of which it may gather the dirt containing the germs from the baker's hands. As no bread save that raised with yeast, goes through this long process of raising and kneading so no bread save that raised with yeast has so good a chance of gathering germs.

What is meant by "raising" bread is worth a few words. The introduction of the yeast into the moist dough and the addition of heat when the pan is placed near the fire produces an enormous growth of the yeast fungi—the yeast "germ," in other words. These fungi effect a destructive fermentation of a portion of the starchy matter of the flour—one of the most valuable nutrient elements in the flour.

produce carbonic acid gas, and having done this, disappear. Its leavening strength has been found superior to other baking powders, and as far as I know, it is the only powder which will raise large bread perfectly. Its use avoids the long period during which the yeast made dough must stand in order that the starch may ferment and there is also no kneading necessary.

The two materials used in the Royal, cream of tartar and soda, are perfectly harmless, even when eaten. But they are combined in exact compensating weights, so that when chemical action begins between them they practically disappear, the substance of both having been taken up to form the carbonic acid gas. More than this, the proper method of using the powder insures the most thorough mixing with the flour. The proper quantity being taken, it is mixed with the flour and stirred around in it. The mixture is then sifted several times and this insures that in every part of the flour there shall be a few particles of the powder. The salt and alkali or water being added, the dough is made up as quickly as possible and moulded into the loaves.

These are placed in the oven and baked. But the very moment the warmth and moisture attack the mixture of cream of tartar and soda, these two ingredients chemically combine and carbonic acid or leavening gas is evolved. The consequence may be seen at a glance, the bread is raised during the time it is baking in the oven, and this is the most perfect of all conceivable methods of raising it.

Here, then, there is no chance for germs of disease to get into the dough and thence into the stomach, more than that the bread is necessarily as sweet as possible, there having been no time during which it could sour. This involves the fact that the bread so made will keep longer, as it is less likely to be contaminated by the germs that affect the souring process.

It will be strange if the crowds of visitors to the World's Fair do not greatly increase the number of contagious diseases, which we will have to treat. Under these circumstances it is not folly or follies to open a single channel through which these germs may reach us? Is it not the part of wisdom to watch with the greatest care all that we eat and drink, and to see that none but the safest and best methods are employed in the preparation of our food? To me it seems as though there could be but one answer to questions like these.

I have shown the danger of using the yeast raised bread, and with this I have shown how that danger may be avoided. The ounce of prevention which in this case is neither difficult nor expensive is certainly worth many pounds of cure, and the best thing about it is that it may be relied on almost absolutely. Those who eat bread or biscuits or rolls made at home with Royal baking powder may be sure they

The fermentation produces carbonic acid gas, and this, having its origin in every little particle of the starch which is itself everywhere in the flour, pushes aside the particles of the dough to give itself room. This is what is called "raising the bread."

It needs but a glance to see that it is, in its effects on the dough, purely mechanical. The dough, which was before a close-grained mass, is now full of little holes, and when cooked in this condition is what we ordinarily call light. This porous quality of bread enables the stomach to rapidly and easily digest it, for the gastric juices quickly soak into and attack it from all sides. The fermentation of the dough, however, uses up a portion of the nutrient elements of the loaf. If it is possible, therefore, to produce a light porous loaf without this destruction and without the "kneading" process, which fills the dough with germs and filth, and without the long

period during which the raising process goes on, the gain in food and the gain in the avoidance of the germs is exceedingly plain.

But while we can easily see the dangers which attend the use of yeast it is certain that the vesiculating effect produced by it on the dough is to the last degree perfect. It is apparent that if we are to substitute any other system of bread making we must have one which will give us, first, mechanical results equally as good, that is, that will produce minute bubbles of carbonic acid gas throughout the mass of dough. Now it is in no way difficult to produce carbonic acid gas chemically, but when we are working at bread we must use such chemicals as are perfectly healthful. Fortunately these are not hard to find.

The evils which attend the yeast-made bread are obviated by the use of a properly made, pure and wholesome baking powder in lieu of yeast. Baking powders are composed of an acid and an alkali which, if properly combined, should when they unite at once destroy themselves and produce carbonic acid gas. A good baking powder does its work while the loaf is in the oven, and having done it, disappears.

But care is imperative in selecting the brand of baking powder to be certain that it is composed of non-injurious chemicals. Powders containing alum or those which are compounded from impure ingredients, or those which are not combined in proper proportion or carefully mixed and which will leave either an acid or an alkali in the bread, must not be used.

It is well to sound a note of warning in this direction or the change from the objectionable yeast to an impure baking powder will be a case of jumping from the frying pan into the fire.

The best baking powder made is, as shown by analysis, the "Royal." It contains absolutely nothing but cream of tartar and soda, refined to a chemical purity, which when combined under the influence of heat and moisture



BREAD WITHOUT YEAST—"THE MOST PERFECT OF ALL CONCEIVABLE WAYS OF RAISING IT."

have absolutely stopped one channel through which disease may reach them.

NOTE.—Housekeepers desiring information in regard to the preparation of the bread which, for sanitary reasons, Dr. Edison so strongly urges for general use, should write to the Royal Baking Powder Company, New York.

**THE LABOR WORLD.**

New York cigar factories employ 20,000 persons.

NATIONAL shoe workers met recently at Lynn, Mass.

BOSTON hotel porters get eighty-three cents a day.

TORONTO (Canada) unemployed teamsters held a parade.

BUILDING trades workers in Michigan average \$1.50 per day.

IN Germany during 1892 there were 830 men killed in the mines.

ITALIAN laborers at Portland, Me., got from \$1.40 to \$1.75 a day.

A NEWARK (N. J.) millage and ink house has adopted profit sharing.

CINCINNATI tin roofers say the slaters are crowding them out of work.

READING (Penn.) bricklayers have been granted \$2.25 and ten hours.

A YOUNG woman printer is State organizer of the Federation in Indiana.

AN Indianapolis brakeman got \$1003 from the union for a lost arm.

ST. PAUL (Minn.) tailors will be assessed fifty cents per capita to aid strikers in other cities.

AT Lowell, Mass., men who did not join a strike were granted seven per cent. in wages.

PITTSBURGH organizations have called a conference to discuss a proposition to build a labor temple.

ENGLISH coal miners to the number of 350,000 are striking against a twenty-five per cent. cut in their wages.

STRIKING bricklayers at Lowell, Mass., have organized a stock company with \$5000, and are ready to take contracts.

The Mount Pleasant Working Girls' Association in Rhode Island has a membership of 250. It also owns a \$8000 club house.

AT the help bureaus it is asserted that there are over 80,000 unemployed men in New York who are willing to work at almost anything.

THE Attorney-General of Montana has decided in favor of the City Council of Butte City, which ordered city employes to boycott Chinamen.