Nutritious Baking Powders.

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The public has been educated in the last few years to regard the quality of bread from other standpoints than that of whiteness solely. Greater perfection in the cooking of breadstuffs is now demanded than any other single article of diet.

Next to a fine flour, the quality of a loaf depends more upon the method adopted to give the bread a porous nature than upon any other single element in its manufacture.

The lightness or porosity of bread, as well as that of all varieties of crackers, biscuits, pastry, and the like, is the result of the expansion of one or more gases in the dough. This expansion is generally effected by heat, but may be the result of relieving the gas or gases of the atmospheric or artificial pressure to which the dough is subjected.

In 1856, we have the first suggestion of a solid inorganic acid or acid salt to take the place of the tartaric or citric acid hitherto employed. The suggestion came after a mature consideration of the subject, and was based upon an extensive experimental research. It marked a new departure in the art of bread making. It opened a series of investigations on the whole subject of bread making, which, though controversial in their character, added greatly to our knowledge of this art in all its details, and was the cause of extensive researches being made in cognate fields of science.

On April 22, 1856, Prof. E. N. Horsford secured his letters patent for the manufacture and use of an acid phosphate of lime to be incorporated with starch and bicarbonate of soda, and thus serve as a baking powder. This is the first instance in which, besides acting as an aerating agent, a baking powder was to add nutritive elements to the bread. Phosphatic powders are to-day the sole exemplification of this important principle. The natural phosphates removed from the grain in the process of bolting the flour are, by Horsford's method, restored through the baking powder. While the residues which all baking powders leave, except those which consist of salts which volatilize completely under the heat of the baking oven, are of a nature which makes it a matter of doubt whether they should be introduced into the system, in the case of the phosphatic powders the residue is of positive value, and is not foreign to the flour, but composed of the same salts, practically, which form the ash of the cereal grains.

It is a serious problem for the physiological chemist to discover the best method of supplying the human system, especially an exhausted one, with the requisite amount of phosphatic food for the organism to remain in health. The phosphatic salts are never wanting in the most nourishing varieties of food, whether vegetable or animal. They are closely allied to all the vital functions, are constantly being eliminated from the body, and must be replaced by a fresh supply. The testimony of thousands goes to show that under the prevalent conditions and habits of American life, there are few who are not greatly benefited when they partake of these same phosphates as restorative agents. The sales of phosphatic preparations for medicinal use, or as a mild tonic, have assumed enormous proportions.

In this connection it may not be amiss to mention the high favor with which the Austrian officials regarded the use of the phosphatic powder for bread making for the army. It was my good fortune to be one of the witnesses of the experiments made by Prof. Horsford before the commission detailed by the Austrian Minister of War, at the Vienna Exhibition of 1873, in which he demonstrated the possibility and great usefulness of phosphatic baking powders for an army in the field. A brief account of these experiments, which proved most successful, was incorporated by Prof. Horsford in his elaborate report to the United States Government, and published by it under the title of "Vienna Bread," but the modesty of the author prevented his giving this part of the subject the notice it deserved.

Elaborate experiments on the effect of the residue left by certain baking powders on gastric digestion showed that the digestion of albumen by gastric juice was greatly retarded by the residue which would be left in biscuit made by cream of tartar baking powders. Besides retarding the digestion of albumen, it was observed that the tartrate residue rendered the mass liable to fermentative changes.

That the phosphates can have any detrimental influence on either gastric or intestinal digestion is improbable, since the juices of the digestive organs contain these salts in relatively large proportion. Indeed, at one time, the acidity of the gastric juice was considered by many to be due to the presence of phosphoric acid in combination. Practically, the "acid phosphate," as prepared by Professor Horsford, has been found to act with great benefit in some types of dyspepsia. While there are many baking powder mixtures of quite dissimilar composition, yet they have essentially but one office, that of raising bread. Their action may take place at the time of kneading or subsequently. They may possess some advantage in regard to cost or quantity to be used; in the residue, if there is any, being either smaller or less injurious than some other; but in all cases, save one, the element of adding a nutritive character to the bread is entirely lacking.

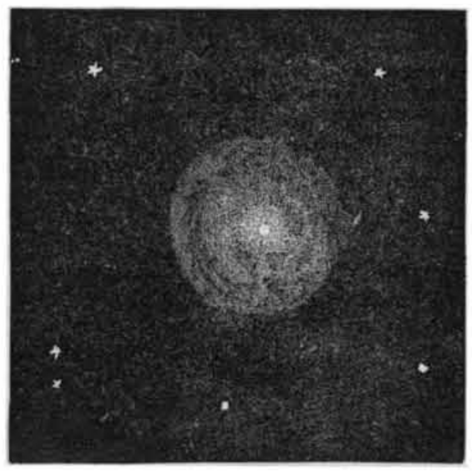
Unless a phosphate form one of the ingredients of a baking powder, there is no residue left of nutritive value.

We are in the position to-day to select from among many of approximately equal value in other respects, a powder which shall, through the foresight of one versed in science, surpass all competitors in possessing the additional quality of restoring or adding to the flour nutritive elements.

DISCOVERY OF TWO NEW COMETS.

On the evening of April 27, 1886, it was my good fortune to discover the first comet of the present year. It was situated in the constellation Cassiopeia, and in the same low-power field with the star Kappa. Its appearance was that of a large round nebulous body, with slight central condensation and no tail. Its motion was about one degree daily in a southeasterly direction.

Again, on the Saturday morning following, or on May 1, it was my privilege to discover still another comet. This one was situated in the great square of Pegasus, in the eastern sky. The comet's position at discovery was 23 hours; north declination 21 degrees, with a northerly motion.



BROOKS' COMET No. 1.—1886.

BROOKS' COMET No. 2.—1886.

TELESCOPIC VIEW ERECTED.

It has a small though bright star-like head and a fine tail, indeed, a most beautiful telescopic comet. It very much resembles the great comet of 1858—Donati's—when telescopic. It cannot be that comet, however, for it has a period of 3,000 years.

As a matter of interest and record, and showing the different characteristics of these two comets, which have visited our heavens together, I append drawings of the same. Comet No. 1 is visible the entire night, in the northern heavens, being circumpolar; while No. 2 is visible in the early morning sky. Both comets were discovered with the 9 inch reflector of this observatory, and may be observed with telescopes of half that aperture. WILLIAM R. BROOKS.

Red House Observatory, Phelps, N. Y., May 5, 1886.

THE ALADDIN COOKER.

The Honorable Edward Atkinson, of Boston, whose interesting article, entitled "The Price of Life," appeared in the SCIENTIFIC AMERICAN of April 10, writes us that he has received a large number of letters of inquiry concerning the cooker mentioned in the article, and in answer to his correspondents he would like an engraving and description of its construction to appear in these columns. We are glad to oblige Mr. Atkinson, and at the same time we believe the subject will interest many of our readers. The engraving will be found on another page. Mr. Atkinson disclaims any intention of patenting the invention, and wishes the public to have the benefit of it.

Cost of Different Kinds of Walls.

The following, from the *National Builder*, shows the comparative cost of frame, brick, and stone walls.

The first idea that naturally suggests itself, after the general plan of arrangement has been perfected, is what material shall mainly enter into the construction of a building, brick, stone, or wood. In nearly every portion of the Eastern, Middle, and Western States, these three building materials can readily be had, and the cost of production does not vary much in any locality. Assuming, therefore, that the first cost is the same in the above localities, we may easily arrive at the ultimate cost of construction. For the purposes of this article we may assume the cost of good common brick, during the summer to be $8.00 per thousand; cost of labor and mortar to lay the same in the wall, $4.00 per thousand, wall measure. The cost of good quarry stone, assumed at $10 per cord; the cost of labor and mortar to lay the same in the wall, $8 per cord of one hundred feet. The cost of framing lumber $12.00 per thousand feet; labor and nails to put the same up, $6.00 per thousand. With these prices as a basis it is a matter of computation only to arrive at the proportionate cost of each material after it has been worked into the walls. As an example, suppose we have ten feet square of plain wall to build, what will be the comparative cost? Ten feet square equals one hundred superficial feet. If to be built of brick twelve inches thick, estimating 22½ brick to the superficial foot, would take 2,250 brick; cost in wall per thousand, $12.00, equals $27.00.

To lay a good rubble stone wall, it should be 18 inches thick; therefore, 10 feet square, or 100 superficial feet, of stone wall 18 inches thick, at $18 per cord of 100 feet, would cost $27.00. In estimating a frame or studded wall there should be included first, the studding, say, 2 x 8, 12 inch centers; second, the outside sheathing of 1 inch surfaced boards; third, the siding of clear pine. For this example we have placed the cost of rough lumber at $18.00 per thousand, put up. We will assume the cost of the inch surfaced boards for sheathing to be $25.00 per thousand, including labor, nails, and material. Siding at $40.00 per thousand, including lumber, labor, nails, and waste. Ten feet square, or 100 superficial feet, of 2 × 8 studding, at $18.00 per thousand, equals $2.43. The same surface, covered with surfaced boards at $25.00 per thousand, costs $2.50; 125 superficial feet of siding, at $40.00 per thousand, equals $5.00, allowing one-quarter for lap and waste. Thus we find the total cost of the frame wall to be $9.93. Add to this the cost of painting the same, one square, at $3.00, we find the cost to be $12.93. Comparatively, therefore, we find the cost of 100 superficial feet of wall built of the three leading building materials of the country as follows:

Common brick	$27.00
Rubble stone	27.00
Frame	12.93

The cost of window and door frames, cornices, etc., may be estimated about the same in either building. In brick and stone buildings we find the additional cost of cut stone window and door sills, water table, etc., but the cost of these adjuncts does not enter into the first cost of the walls, and should rather be estimated on separately or considered as additional items of cost that may be dispensed with if necessary.

The May Comets.

Early in December two comets were recorded, which were named from their discoverers Comet Fabry and Comet Barnard, and which gave promise of becoming much brighter than the ordinary telescopic comet.

From the tables of position published by the Berlin Observatory, it seemed probable that at the time of greatest brilliancy, during the first week in May, both comets would be visible to the naked eye, high up in the northwest and early in the evening. They have, however, failed to realize these anticipations; they certainly have not become the promised "conspicuous objects," and it is, indeed, extremely doubtful whether they have anywhere been seen without the aid of a telescope. Unless there should be some sudden and unexpected increase of brilliancy during the coming week, both Comet Fabry and Comet Barnard will simply add two new names to the long list of telescopic comets.

The two other comets which have been recently discovered in the same general quarter of the sky are as yet remote and undeveloped, and, therefore, of small general interest.

CLEAR SHELLAC VARNISH.—To get an absolutely clear solution of shellac has long been a desideratum, not only with microscopists, but with all others who have occasional need of the medium for cements, etc. It may be prepared by first making an alcoholic solution of shellac in the usual way; a little benzole is then added, and the mixture well shaken. In the course of from twenty-four to forty-eight hours, the fluid will have separated into two distinct layers, an upper alcoholic stratum, perfectly clear, and of a dark red color, while under it is a turbid mixture containing the impurities. The clear solution may be decanted or drawn off with a pipette.—*National Druggist.*