CHAP. VI.

ON THE PREPARATION OF BREAD.

SECT. I.

MAN, who appears to be designed by nature to eat of all substances that are capable of nourishing him, and still more of the vegetable than the animal kind, has, from time immemorial, and in all parts of the earth, used farinaceous grains as the principal basis of his food; but as these grains cannot be eaten by him without difficulty in their natural state, this active and intelligent being has gradually found means not only to extract the farinaceous part, which is the only nutritive property they contain, but also to prepare it in such a manner as to render it a very agreeable and wholesome aliment: such is the bread we now generally use.

Nothing appears so easy at first sight as to grind corn, to make a paste with the flour and water, and bake this paste in an oven. Those who are accustomed to enjoy all the advantages of the finest human inventions, without reflecting on the labour it has cost to complete them, think all these operations common and trivial.

It is however very certain, that for a long time men no otherwise prepared their corn than by boiling it in water, and forming viscous cakes, of neither an agreeable taste or easy digestion, before they were able to make good bread; for, to accomplish that, it was necessary to invent machines for grinding corn, and for separating the pure flour with little labour and trouble; and that inquiries, or rather accident, which some observing person availed himself of, should discover that wheat flour, mixed with a certain quantity of water and moderate heat, was susceptible of fermentation, which almost destroys its viscidity, heightens its taste, and renders it proper to make a light bread, agreeable to the palate, and of easy digestion.

It is observeable, that there are but few nations who do not use bread, or a substitute for it, as an article of their food. Thus the Laplanders having no corn of their own, make a kind of bread of their dried fishes and of the inner rind of the pine, which seems to be used not merely as a nutriment, but also for supplying a dry food, for which mankind seem to have an universal appetite, in preference to that of a bland, slippery, and mucilaginous nature.

This is not commonly accounted for, but it seems to depend upon very simple principles. The digestion of our food requires the mixture of the animal fluids in every stage; among others, the saliva is necessary, which

requires dry food as a stimulus to bring it forth; bland, slippery, and fluid aliments, are too inert, and make too short a stay in the mouth to produce this effect, or to cause a sufficient degree of manducation to emulge that liquor, for which reason we commonly use dry bread along with our food, as nothing is so fit as bread, assisted by a previous manducation.

Bread is of like necessity in the stomach, as it is proper that a substance of a solid consistence should be long retained there. Now, as the animal fluids must be mixed with our aliments, liquids would not attain this end; whereas the solid stimulates the glands of the stomach, and causes a flow of the gastric juice. Bread thus appears to be proper, independent of the nourishment it affords, to attain this end, being bulky without too much solidity, and firm without difficulty of solution.

The period when bread was first introduced is very uncertain; it is probable, however, that it was made use of in the earliest ages of the world. The first obvious method of reducing corn to flour for bread would be by the simple expedient of pounding, and that was for ages the only one practised by the various descendants of Adam. But even before this simple contrivance was effected, or men knew the use of corn, they made a bread of acorns, which, as mentioned by Virgil, were deprived of their covers by boiling, and then made into a paste by pressure. In this way their astringency being destroyed, they were dried in the sun or baked over embers, and this kind of bread is made use of to this day in some countries. There is reason to believe, from several passages in Homer and Herodotus, that the process of pounding corn was early improved by the application of a grinding power, and the introduction of mill-stones; these, like most of the common refinements in domestic life, were probably the invention of the antediluvian world, and were certainly practised in some of the earliest ages after it. Like most of them, they were equally known in the east and the west, and the Gauls and the Britons appeared familiarly acquainted with the use of hand-mills before their submission to the Normans, but it was not till more modern times that wind and water mills were invented.

In order to prepare bread, flour and water are kneaded together into a tough paste: this contains the principles of the flour, but very little altered, and not easily digested by the stomach. The action of heat produces a considerable change, it renders the compound more easy to masticate as well as to digest. Bread made in this manner is called unleavened, and is used for shipping in considerable quantities. But most of the bread used in France, Germany, and other European countries, is made to undergo, previous to baking, a kind of ferment. The effect of this fermentation is found to be, that the mass is rendered more digestible and light, by which expression it is to be understood that it is more porous by the disengagement of an elastic fluid that separates its parts from each other, as before explained, and greatly increases its bulk.

The operation of baking puts a stop to this process, by evaporating great part of the moisture, and probably also by still farther changing the

nature of the component parts. Bread made according to the preceding method will not possess that uniformity which is requisite, because some parts may be mouldy, while others are not sufficiently changed from dough. The same means have been used in this case as have been found effectual in promoting the fermentation of large masses: this consists in the use of a leaven or ferment, which is a small portion of some matter of the same kind, but in a more advanced state of fermentation. After this leaven has been well incorporated, by kneading it into fresh dough, it not only brings on the fermentation with greater speed, but causes it to take place in the whole mass at the same time; and as soon as the dough has, by this means, acquired a due increase of bulk from the air which endeavours to escape, it is judged to be sufficiently fermented, and ready for the oven.

The bread principally used in this country is fermented with yeast, or the froth which rises on the surface of beer in the first stage of fermentation. When it is mixed with the dough, it produces a much more speedy fermentation than that obtained from leaven, and the bread is accordingly much lighter, and unless it is improperly prepared is never sour.

Having thus briefly touched upon the different kinds of bread, I now pass on to its preparation, which I shall divide into three kinds:

1. Unleavened bread.
2. Leavened bread.
3. Carbonic bread.

FIRST,

OF UNLEAVENED BREAD.

THIS is the bread that the Jews eat during their passover: the usage was introduced in memory of their hasty departure from Egypt, when they had not leisure to bake leavened, but took the dough before it was fermented, and baked unleavened cakes. In Roman Catholic countries it is still used, and prepared with the finest wheaten flour, moistened with water, and pressed between two plates graven like wafer moulds, being first rubbed with wax to prevent the paste from sticking, and when dry it is used.

TO MAKE UNLEAVENED BREAD.

Put a peck of flour into a kneading trough, three ounces of salt and a sufficient quantity of warm water; knead them well together till intimately blended, then roll the dough out into thin cakes, and bake them in a quick oven, in order to render them more porous, taking care to turn them during baking.

TO MAKE ARABIAN BREAD.

From M. Neibuhr's Travels through Arabia.

The modes of making bread are different in different parts of Arabia; but the following manner of pounding the grain, however troublesome, is in most general practice, and considered pleasanter to the taste than meal that has been ground in a mill. In the first place, two stones are procured, one convex and the other concave; the grain is then placed on the lower one, and a man bruises it till it is reduced to a meal; it is then mixed up with water, and divided into small cakes. In the mean time, an earthen pot, glazed on the inside, is filled with charcoal and set on fire, and when the pot is sufficiently heated, the cakes are laid on the outside of it, without removing the coals, and in a few minutes the bread is taken off, half roasted, and eaten hot.

The wandering Arabs of the desert, when they have not this convenience, use a heated plate of iron, or a gridiron, to bake their cakes; and when these are wanting, they roll the dough into balls, and put it into a fire of camel's dung, where it remains covered up till it is sufficiently penetrated by the heat. Bad as this bread is, it is better than the durra bread, which is in general use among the common people: it is made of coarse millet, kneaded up with camel's milk, oil, butter, or grease, pounded together, and then baked in the embers. M. Niebuhr observes, that he could not eat this bread at first, but the people of the country being accustomed to its use, prefer it to barley bread, which they think too light.

SECONDLY,

OF LEAVENED BREAD.

This operation consists in keeping some paste or dough till the acetous fermentation takes place, when it swells, rarifies and acquires a taste somewhat sour, and rather disagreeable. This fermented dough is then well worked up with some fresh dough, which is, by that mixture and moderate heat, disposed to a similar but less advanced fermentation than that above mentioned.

By this fermentation the dough is attenuated and divided, air is introduced, which being incapable of disengaging itself from the tenaceous and solid paste, forms it into small cavities, raises and swells it; hence the small quantity of fermented paste which disposes the rest to ferment is called the little leaven.

When the dough is thus raised, it is in a proper state to be put into the oven; where, while it is baking, it dilates itself still farther by the rarefaction of the air, and forms a bread full of eyes or cavities, consequently light, entirely different from the heavy, compact, viscous, and indigestible masses made by baking unfermented dough.

It often happens that bread made with leavened dough acquires a sourish and often disagreeable taste, which is said to proceed from too

great a quantity of leaven, or from leaven in which the fermentation has advanced too far. This circumstance was explained in the last chapter, where it was stated, that unless the principle of acidity is generated, that it will not ferment at all. However, as it is a subject that deserves particular investigation, I propose, in the following experiments, to enquire if this disagreeable flavour, when it does occur, can be counteracted.

EXPERIMENT.

I took one pound of wheat flour and put it into a kneading trough, and mixed it up into a paste with eight ounces of water at the temperature of 65° of Farenheit's thermometer. This mixture was placed in 76 degrees of heat. In twelve hours no apparent change had taken place; but on examining it at the end of four-and-twenty hours, I observed several bubbles of air, which increased in number on kneading the dough, and on introducing the thermometer it stood at 70 1/4, an increase of 5 1/40 in the heat, in consequence of the fermentation.

At the expiration of thirty-six hours, I found this little leaven in a complete state of fermentation, and much thinner than on the preceding day; it was also of a sourish taste. I now added three pounds more flour, one ounce of salt, and a pound and a half of water by weight; the whole was now kneaded for about half an hour, and left to ferment again for six hours longer.

It was then made up into a proper consistence for baking, which required eight ounces more flour; and on weighing the whole, it turned out exactly six pounds, the quantity used in the experiment. My reason for determining its weight was, to ascertain whether, during fermentation, any sensible quantity of air was absorbed.

It was now divided into six equal portions, and made up into as many loaves. These were now placed in the oven, and after remaining in that situation half an hour, I found they were sufficiently baked.

The loaves were now removed from the oven, taken off the tins, and placed on a board; one of them was wrapped in flannel, while the others were exposed to the air. When cold, they were all weighed, and turned out five pounds two ounces, fourteen ounces less than when put in the oven, and ten ounces more than the flour used in the experiment.

I now weighed the loaf that was covered with the flannel, and one of the others that had been exposed to the air; and, although they were of equal weights when taken out of the oven, yet now the one that was covered up proved to be four scruples heavier than the other, making a difference of three quarters of an ounce in the quartern loaf.

I now cut them both asunder, and the bread looked porous, was tolerably light, and absorbed moisture readily; but the taste was sourish: it seemed as if a small quantity of vinegar had been mixed up with the dough, but still it was palatable.

On tasting the crusts, that which had been covered up was crisp and

easily masticated, while the other was tough, dense, and in every respect disagreeable.

I now wished to try if I could make leavened bread without this sour taste, for in every other respect it was very palatable, for which purpose I made the following experiment.

EXPERIMENT.

I took one pound of flour, and mixed it up with eight ounces of water at the temperature of 68°. This was covered up, and set in a warm place for six-and-thirty hours, at the expiration of which time I found it in a state of fermentation, and quite sour. A quart of warm water was now added, and suffered to stand for twelve hours more; the clear liquor was then decanted off, which had a taste similar to diluted vinegar, and a smell not unlike that emitted from an old pickle jar.

Twenty grains of prepared kali was then added to this liquor, which occasioned an effervescence similar to that observed in preparing saline draughts. When subsided, I again tasted it, but still continuing sour, twenty grains more were added, which destroyed the acidity completely; but to be convinced, by a chemical test, I introduced a paper dipped in tincture of turnsole, which it no longer turned red.

It was now evaporated to the consistence of honey, and put by for the night; in the morning, by the help of a glass, I could observe crystals of acetated kali.

From the result of these experiments, it may, with probability, be concluded, that, in making leavened bread, one ounce of vinegar is generated from a pound of flour during the fermentation of the little leaven; but as this acid is not necessary, and indeed ought not to be present in good bread, it will be worth while to enquire by what means it may be destroyed, without impeding fermentation.

EXPERIMENT.

I took one pound of flour, and added a sufficient quantity of warm water: this was suffered to ferment as the last (having ascertained what quantity of vinegar is generated in a pound of flour), I mixed up forty grains of prepared kali with a little warm water, and added it to the leaven; on kneading it together an instant increase of bulk was observable, during which time the carbonic acid gas, or the principle of yeast, was extricated; to prevent its escape, the dough was sprinkled with a little flour, and covered up with a cloth.

On examining it two hours after, I found it had increased in bulk amazingly, and was much more porous than common leaven. A pound more flour, and a quarter of an ounce of salt, were now added, and after standing two hours to prove, I divided it into two loaves, and put them in the oven.

When baked, I compared one of them with a loaf of leavened bread, which had the same quantity of flour in it, when it appeared considerably larger; and on cutting it open, was much lighter and more spongy than the common leavened bread, and had not the least taste of acidity.

From the results of these experiments it will evidently appear that if bakers, in those countries where yeast is scarce or unknown, were to add a certain proportion of prepared kali to their little leaven, a bread would be produced nearly similar to that produced in this country with yeast.

TO MAKE LEAVENED BREAD.

By the Hon. Capt. Cochrane.

Take a piece of dough, of about a pound weight, and keep it for use—it will keep several days very well. Mix the dough with some warm water, not very hot, and knead it up with some flour to ferment and sponge; then take half a bushel of flour, and divide it into four parts; mix a quarter of the flour with the leaven, and a sufficient quantity of water to make it into dough, and knead it well. Let this remain in a corner of your trough, covered with flannel, until it ferments and rises properly; then dilute it with more water, and add another quarter of the flour, and let it remain and rise. Do the same with the other two quarters of the flour, one quarter after another, taking particular care never to mix more flour till the last has risen properly. When finished, add six ounces of salt; then knead it again, and divide it into eight loaves, making them broad, and not so thick and high as is usually done, by which means they will be better soaked. Let them remain on the board to rise, in order to overcome the pressure of the hand in forming them; then put them in the oven, and reserve a piece of dough for the next baking. The dough thus kept may, with proper care, be prevented from spoiling, by mixing from time to time small quantities of fresh flour with it.

THIRDLY,

OF CARBONIC BREAD.

The invention of beer, or the wine of grains, furnishes a new matter useful in making bread, this matter is the froth or yeast formed upon the surface of these liquors during fermentation When it is mixed with the dough, it rises better and more quickly than ordinary leaven, and by means of this the finest and lightest bread is made

Bread well raised with yeast and baked differs from the preceding kinds, not only in being less compact, lighter, and of a more agreeable taste, but also in being more miscible in water, with which it does not form a viscous mass, which is of the greatest importance in the process of digestion, as already observed

There are several preparations of this kind of bread, made not

only with wheat flour, but also with barley, rye, oats, buckwheat, maize, rice, beans, and potatoes, the principal preparations of which will be detailed in their proper order.

THE COMMON FAMILY WAY OF MAKING BREAD.

To half a bushel of flour add six ounces of salt, a pint of yeast, and six quarts of water that has boiled, in warm weather; put the water in nearly cold, but in winter, when the weather is very cold, let it be as warm as the hand can be endured in it without causing pain, and in temperate weather, observe a mean between the two extremes. This is deemed a proper proportionate mixture, and the mode of proceeding is as follows:

Put the flour into a kneading trough, or other vessel used for the purpose, and make a hole in the middle of the flour, put the water into it; to which add the yeast and salt, stir them together, and mix up the flour with it till the dough becomes of a very thick consistence. Cover the whole up warm to ferment and rise (particularly in cold weather). This is called setting the sponge, and on a due management of this part of the business depends the goodness of the bread.

After letting it lie a proper time in this state—an hour and a half, more or less, according to the state of the weather, knead it well together, be not sparing of labour, and afterwards lay the whole thick at one end of the kneading-trough, and let it lie some time longer covered up. During this part of the process, the oven must be heated; when that is effected, and properly cleansed from ashes, cinders, &c. make the bread into eight loaves, and place them in the oven as expeditiously as possible, observing to leave a little fire on one side of the mouth of the oven to give light while setting, and also to prevent the external air from cooling it. Stop the oven up close and draw the bread out when baked. The proof of its being well fermented and baked will appear on putting a slice in water; if it is good bread, it will dissolve entirely into a pap in the course of a few hours, without rendering the water turbid or mucilaginous.

TO MAKE FRENCH BREAD.

Put a pint of milk into three quarts of water; in winter let it be scalding hot, but in summer only a little more than milk warm. Then take a quarter of a pound of salt and a pint and a half of good ale yeast; stir them into your milk and water, and then with your hand…