

The Chemistry and Economy of Soup-Making

Stock being the basis of all meat soups, and, also, of all the principal sauces, it is essential to the success of these culinary operations, to know the most complete and economical method of extracting, from a certain quantity of meat, the best possible stock or broth. The theory and philosophy of this process we will, therefore, explain, and then proceed to show the practical course to be adopted.

As all meat is principally composed of fibres, fat, gelatine, osmazome, and albumen, it is requisite to know that the fibres are inseparable, constituting almost all that remains of the meat after it has undergone a long boiling. Fat is dissolved by boiling; but as it is contained in cells covered by a very fine membrane, which never dissolves, a portion of it always adheres to the fibres. The other portion rises to the surface of the stock, and is that which has escaped from the cells which were not whole, or which have burst by boiling. Gelatine is soluble: it is the basis and the nutritious portion of the stock. When there is an abundance of it, it causes the stock, when cold, to become a jelly. Osmazome is soluble even when cold, and is that part of the meat which gives flavour and perfume to the stock. The flesh of old animals contains more osmazome than that of young ones. Brown meats contain more than white, and the former make the stock more fragrant. By roasting meat, the osmazome appears to acquire higher properties; so, by putting the remains of roast meats into your stock-pot, you obtain a better flavour.

Albumen is of the nature of the white of eggs; it can be dissolved in cold or tepid water, but coagulates when it is put into water not quite at the boiling-point. From this property in albumen, it is evident that if the meat is put into the stock-pot when the water boils, or after this is made to boil up quickly, the albumen, in both cases, hardens. In the first it rises to the surface, in the second it remains in the meat, but in both it prevents the gelatine and osmazome from dissolving; and hence a thin and tasteless stock will be obtained. It ought to be known, too, that the coagulation of the albumen in the meat, always takes place, more or less, according to the size of the piece, as the parts farthest from the surface always acquire that degree of heat which congeals it before entirely dissolving it.

Bones ought always to form a component part of the stock-pot. They are composed of an earthy substance, to which they owe their solidity, of gelatine, and a fatty fluid, something like marrow. Two ounces of them contain as much gelatine as one pound of meat; but in them, this is so incased in the earthy substance, that boiling water can dissolve only the surface of whole bones. By breaking them, however, you can dissolve more, because you multiply their surfaces; and by reducing them to powder or paste, you can dissolve them entirely; but you must not grind them dry. Gelatine forms the basis of stock; but this, though very nourishing, is entirely without taste; and to make the stock savoury, it must contain osmazome. Of this, bones do not contain a particle; and that is the reason why stock made entirely of them, is not liked; but when you add meat to the broken or pulverized bones, the osmazome contained in it makes the stock sufficiently savoury.

In concluding this part of our subject, the following condensed hints and directions should be attended to in the economy of soup-making:

Beef makes the best stock. Veal stock has less colour and taste; whilst mutton sometimes gives it a tallowy smell, far from agreeable, unless the meat has been previously roasted or broiled. Fowls add very little to the flavour of stock, unless they be old and fat. Pigeons, when they are old, add the most flavour to it; and a rabbit or partridge is also a great improvement. From the freshest meat the best stock is obtained.

If the meat be boiled solely to make stock, it must be cut up into the smallest possible pieces; but, generally speaking, if it is desired to have good stock and a piece of savoury meat as well, it is necessary to put a rather large piece into the stock-pot, say sufficient for two or three days, during which time the stock will keep well in all weathers. Choose the freshest meat, and have it cut as thick as possible; for if it is a thin, flat piece, it will not look well, and will be very soon spoiled by the boiling.

Never wash meat, as it deprives its surface of all its juices; separate it from the bones, and tie it round with tape, so that its shape may be preserved, then put it into the stock-pot, and for each pound of meat, let there be one pint of water; press it down with the hand, to allow the air, which it contains, to escape, and which often raises it to the top of the water.

Put the stock-pot on a gentle fire, so that it may heat gradually. The albumen will first dissolve, afterwards coagulate; and as it is in this state lighter than the liquid, it will rise to the surface; bringing with it all its impurities. It is this which makes the scum. The rising of the hardened albumen has the same effect in clarifying stock as the white of eggs; and, as a rule, it may be said that the more scum there is, the clearer will be the stock. Always take care that the fire is very regular.

Remove the scum when it rises thickly, and do not let the stock boil, because then one portion of the scum will be dissolved, and the other go to the bottom of the pot; thus rendering it very difficult to obtain a clear broth. If the fire is regular, it will not be necessary to add cold water in order to make the scum rise; but if the fire is too large at first, it will then be necessary to do so.

When the stock is well skimmed, and begins to boil, put in salt and vegetables, which may be two or three carrots, two turnips, one parsnip, a bunch of leeks and celery tied together. You can add, according to taste, a piece of cabbage, two or three cloves stuck in an onion, and a tomato. The latter gives a very agreeable flavour to the stock. If fried onion be added, it ought, according to the advice of a famous French chef, to be tied in a little bag: without this precaution, the colour of the stock is liable to be clouded.

By this time we will now suppose that you have chopped the bones which were separated from the meat, and those which were left from the roast meat of the day before. Remember, as was before pointed out, that the more these are broken, the more gelatine you will have. The best way to break them up is to pound them roughly in an iron mortar, adding, from time to time, a little water, to prevent them getting heated. In their broken state tie them up in a bag, and put them in the stock-pot; adding the gristly parts of cold meat, and trimmings, which can be used for no other purpose. If, to make up the weight, you have purchased a piece of mutton or veal, broil it slightly over a clear fire before putting it in the stock-pot, and be very careful that it does not contract the least taste of being smoked or burnt.

Add now the vegetables, which, to a certain extent, will stop the boiling of the stock. Wait, therefore, till it simmers well up again, then draw it to the side of the fire, and keep it gently simmering till it is served, preserving, as before said, your fire always the same. Cover the stock-pot well, to prevent evaporation; do not fill it up, even if you take out a little stock, unless the meat is exposed; in which case a little boiling water may be added, but only enough to cover it. After six hours' slow and gentle simmering, the stock is done; and it should not be continued on the fire, longer than is necessary, or it will tend to insipidity.

Note. It is on a good stock, or first good broth and sauce, that excellence in cookery depends. If the preparation of this basis of the culinary art is intrusted to negligent or ignorant persons, and the stock is not well skimmed, but indifferent results will be obtained. The stock will never be clear; and when it is obliged to be clarified, it is deteriorated both in quality and flavour. In the proper management of the stock-pot an immense deal of trouble is saved, inasmuch as one stock, in a small dinner, serves for all purposes. Above all things, the greatest economy, consistent with excellence, should be practised, and the price of everything which enters the kitchen correctly ascertained. The theory of this part of Household Management may appear trifling; but its practice is extensive, and therefore it requires the best attention.

About the Author

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