

years; but such is the modern idea, as we have stated, and perhaps the truth lies somewhere in the rather wide interval between forty days and seven years. But although flesh-forming food is thus indispensable, fuel-yielding food is no less indispensable, as the natural heat of the system is kept up by the latter, and not by the former.

Fuel-yielding or heat-giving food must consist essentially of three of the four elements of flesh-yielding food, namely, carbon, hydrogen and oxygen, the nitrogen not being essential to it as a heat-giver, though often still contained to some extent, in heat giving food; and indeed, neither is the oxygen of use as a heat-giver in the composition of the food, although it is essential as the evolver of heat when it combines, from the breathed air, with the elaborated heat giving food of the blood, in the lungs, or burns that food as fuel, in so combining with its hydrogen and carbon or its hydro-carbonaceous forms, thus converting these into carbonic acid gas and watery vapor, which are sent up the windpipe by the expiratory act of breathing, and so expelled, like so much smoke from a furnace, through a locomotive funnel or a chimney.

The proximate elements or ingredients of heat-giving food are mainly starch, gum, sugar, and fat, each of these containing more or less of the three elements of heat-giving food. Thus, fat, sugar, gum and starch are of little or no use in building up the structure of the body, or in repairing its waste. The natural heat of the body is 98° Fah. This must be kept up by the heat giving food—easy work for such food in tropical climes or in summer, but somewhat hard labor in the arctic regions, and in winter of the temperate climates.

Among heat-giving food are potatoes, carrots and other vegetables, rice, sugar and the fat of animal food, the butter of milk, the oils of vegetables, &c.

Five ounces of flesh-formers, being the amount required to restore the daily waste of the body, are contained in the quantities of each of the following vegetable substances:—

	lbs	oz		lbs	oz
Wheat flour.....	2	1	Potatoes.....	20	13
Barley meal.....	1	6	Carrots.....	31	4
Oatmeal.....	1	13	Parsnips.....	15	10
Maize.....	2	9	Turnips.....	17	13
Rye.....	2	3	Cabbage.....	10	6
Rice.....	4	13	Tea (dry).....	1	11
Buckwheat.....	3	10	Coffee (dry).....	2	1
Lentils.....	1	3	Cocoa (nibs).....	3	2
Peas (dry).....	1	5	Bread.....	3	13
Beans (dry).....	1	5			

WHY WE EAT, AND WHAT.

Now that the fruits of the earth are well nigh gathered in, and the labours of the husbandman have brought him to the completion of his harvest, it may not be out of place to enter into a critical examination of his principal crops, and to enquire whether or not all he has toiled for is "bread."

In coming to conclusions upon this point, we must first enquire what is "bread?" that is, what is the nature of those substances which an animal, in a healthy condition of body, requires for the daily sustentation of that *body*, and the due development of its structure and powers?

If we first inquire into the nature of the materials out of which the animal machine is made, we shall find that they may be summed up in the following catalogue:—

**WATER.**—The mestruium in which certain matters are dissolved; one of the conditions of the softness and flexibility of animal substances.

**MINERAL MATTER.**—Forming the skeleton or solid framework, on which the softer parts are built. Ingredients, in small quantities, of certain tissues and fluids.

**FLESH (nitrogenous).**—Forming the muscles, and nearly identical in composition with the solid portion of the blood.

**FAT (carbonaceous)**—acts as a protecting cushion to the bones and to the muscles that move them—is a kind of fuel destined to be burnt in the animal economy to develop heat.