

heat on persons in the room. Let us note the difference: It will not have occurred to many of us to enquire just how it is that we are warmed by heat, and more will be surprised when I say we are ordinarily not warmed by a furnace, *but are only kept from getting cold or chilled*. How, I am asked? We shall see. As all know, our bodies in health are maintained at a temperature of 98.4 F., some 30 degrees higher than the ordinary air of the room, so that clearly the air of the room cools us by abstracting heat from us, rather than by warming us. But we know that we have no sensation of cold and are warm, which simply means that we have not lost our body heat to the air of the room, so fast as to give us a sensation of cold. This is due to the non-conducting clothing which we wear and to the enveloping air being not too heated or too cold.

It is, however, quite manifest that what *too hot* or *too cold* means depends directly, other things being equal, upon the amount of fuel and upon the free circulation of the results of vital combustion in the human organism. The old person, the anæmic person, the person with poor circulation will be cold when the healthy are warm and so such must put more clothing on. But, moreover, there are in the air of the room say at from 60° to 70° F. some other differences depending upon the kind of indoor heating so great as to create very material differences in the effect of air at different temperatures upon the same person. I would recall to you the three ways by which all bodies lose their heat: (a) by radiation, (b) by conduction, (c) by evaporation. If we sit in front of a grate fire the air between the fire and us may be no higher than 70° F., but the side of our face towards the fire may actually be over 100° F. This is due to radiation and means that heat waves penetrate into the tissues and warm the body, penetrating indeed deeper than the skin as well as into the walls opposite the fire. The same result, but less apparent, is obtained by the radiation from hot-water pipes, while in addition these warm the air in contact with them and this, ascending, again warms the particles of air it comes in contact with by convection. Now it will be apparent that if air comes into a room from a hot-air furnace, it in no way fulfils the first principle of heating by radiation; hence, it is found by experience that the air of a room at 60° F. receiving radiant heat from a radiator often gives a sensation of comfort as great as hot-air at 70° to 75°. There is, however, another equally important cause affecting the loss of body heat, viz., degree of moisture in a room or its *relative humidity*. You will remember I spoke of the fact last year that air at 0° F. holds less than 1 grain of water vapour and that with every 20 degrees increase, say, to 70°, such increase of its