

below freezing is introduced in a room heated to  $66^{\circ}$ , its relative humidity must thereby be reduced to a point much below the average. We thus see what are the common variations in house atmospheres. It is generally stated that a normal house atmosphere stands at  $66^{\circ}$ : but whether this is compatible with agreeable sensations will depend largely upon the two factors of equable distribution and normal humidity. We may ask ourselves, Why? All bodies lose or gain heat by radiation, by evaporation and conduction. If air have a temperature too low, body heat is radiated too rapidly, in proportion to the number of degrees of difference; evaporation is, however, lessened both from the body and lungs, since the cold air is more damp. Conduction, however, will be more rapid, since the damper the air the better as a conductor. Again, if the air of a room be too dry, evaporation is so rapid as to produce a chilly sensation, and this doubtless, is the reason why in many houses heated with furnaces, hot water or steam a temperature of  $66^{\circ}$  seems too low for comfort. Practical tests with cold air introduced, warmed, into a room at  $67^{\circ}$  have shown its relative humidity to be less than  $50^{\circ}$ . Let any one observe the facts in his own rooms and he will find how true these statements are. Statistics are not necessary for us to appreciate the effects of such conditions upon a population who live at least six months within doors; what we want is to know how to apply the remedy.

Clearly, ordinary stoves are in every way objectionable; but, if they must be used in the meantime, it will be well if we urge that the females and young children, so much indoors, do, when not actively engaged, live up stairs as much as possible. The upper floors are warmed from the ceilings below, and outer cold air will come in by the doors of the ground floor and be warmed in its ascent. For the same reason, and especially to prevent draughts, we should have our sick-room upstairs. For purity of air in such rooms an outer sash with opening, with the inner window drawn down, will greatly facilitate its even distribution. Regarding moisture, evaporating pans placed on the stove are clearly a necessity. But in this age, with the marvellous application of scientific discoveries to the practical business of life, we cannot expect so crude a thing as a stove to be long the solution of the problem. What we need after a good economical heater, is warm air of proper moisture regularly and sufficiently introduced into rooms, and as systematically extracted, along the outer walls and floors with hollow spaces in which warmed air will at once remove in large measure the difficulties of variable room temperatures, caused from radiation and conducting away of heat by outer walls.

We shall return to the subject, hoping that, in the meantime, we have said enough to arouse interest and promote the discussion of the subject, and shall be glad to publish practical articles regarding it.

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### SURGERY

#### The Development and Repair of Bone.

A very able article on the subject of the "Osteogenic factors in the development and repair of the bone" appears in the *Annals of Surgery* for October, from the pen of W. Macewen, M. D., Surgeon, Glasgow Royal Infirmary. The writer begins his paper by stating that although the periosteum has long been regarded the chief factor in the development of bone, and that more recently the medulla is considered to have something to do with its regeneration, yet observation and experimental enquiry prove that neither of these is the potent factor in bone development and repair.

The periosteum is the medium through which

the bone receives a portion of its blood supply. The free inoculation of the nutrient arteries from the periosteum will allow of considerable portions of bone to be denuded without causing its death. The author asserts, however, that the soft tissues enclosed in the osseous tissue play the chief role in the development and reproduction of bone, and follows up this assertion with the enunciation of of several propositions and demonstrates each by the selection of cases from the numerous observations he has made.

"*Proposition A.*—When the periosteum has been mechanically detached from an extensive area of an adult healthy bone and replaced after the lapse of some hours, union between the bone and the periosteum can take place without sloughing or observable augmentation."