

before or after a meal ; but if a larger dose than 5 grains is used, it may prevent some people from sleeping if taken at night.

By the intelligent use of these two measures of prevention, the mosquito net and quinine, anyone can protect themselves effectually from malaria, even in the most unhealthy climates. Every nurse in India should see that her equipment includes

- (1) a good mosquito net ;
- (2) a supply of quinine ;

and if she is anxious to make even more certain of her own comfort and safety she should also be provided with a pair of Gilgit boots, a pair of loose gloves or gauntlets, a bee-net for use at night and a little hand net for catching mosquitoes inside a mosquito net.

HEAT.

IT is commonly assumed that muscular energy produces heat, but as a matter of fact, heat produces muscular energy. It has been ascertained that only a fairly warm muscle contracts readily, and that the temperature of one at its greatest activity is 104 degrees ; muscular activity and heat increase simultaneously ; then the accelerated heart-beats and increased blood pressure send the blood to the surface of the body to be cooled far more quickly than when the body is at rest, and so in all normal muscular exertions, heating of the body to the point of danger is prevented. The simple exercise of walking raises the temperature of a normal man from 1-2 degrees according to the length and speed of the walk ; a hard game of tennis will raise it 3 or 3½ degrees,—but with rest comes immediate re-action, and in 20-40 minutes, the temperature is at its usual again. Residence in a hot climate will permanently raise it about 1 degree. Heat increases the activity of the muscles—anger raises the temperature too, hence the terms ‘warming to the job,’ ‘preliminary canter’ or ‘boiling with rage :’ anger gives the muscles a sufficiency of heat to begin a fight, no one fights in cool blood unless he is made to, and that is a very half-hearted affair, either he is angry or works himself up to the point of rage, or he makes a few preliminary passes before the fight to warm his muscles enough for their full exercise. A race-horse should have his preliminary canter to warm his muscles and a preliminary small game is commonly played before a big match. But this heating of muscle has a limit or there will ensue destruction of muscle and then death of the animal, that is one reason why a *driven* animal dies, the limit of heat a muscle in activity can stand is 113° in man and all mamalia, after that it becomes incapable of contraction, and it is impossible for the mechanism to evaporate a

sufficiency of this temporary heat to keep the body in life, and death may be caused in a similar manner to that by sunstroke, the overheated blood poisoning the nerve-centres. Warm weather pre-disposes to muscular energy—excessive cold paralysis the limbs for instance plunging the hand in ice-cold water it no longer responds to the will; and hybernating animals' temperatures fall to about 83 degrees and the contractility of their muscles is diminished in proportion and not until spring weather warms them up again do they begin to contract in response to volition.

The heat of the body is derived from chemical re-actions setting free latent heat in the tissues of the body and in the food which nourishes the tissues. When food is taken in abundance there may be a residue of vital force—this may be noted in the case of a reddish deposit in the urine passed; again, this apparently same result may take place after violent exercise on too little food, here the man has caused excessive combustion of his own tissues, the results being apparently the same, but the causes exactly the opposite. Now if this drain were to be made continually on the vital organs of the body, we can easily see that they would quickly be worn out, but instead of this happening, where the supply of food is not regularly equal to the demand made upon it, the body has the power of storing up substances containing this latent heat ready to be called upon at any time: fat is the principal substance so in use, a form of sugar deposited in the muscles is another, and some nitrogenous substances as well. When all these reserve forces are used up, the body begins to live and perform its muscular actions upon itself, at the intimate expense of its own vital organs, hence follows debility and ultimately death from starvation. Oxygen enters largely into the chemical compositions which produce bodily heat; hence the absolute necessity of an abundant supply of fresh air during violent exercise although of this too the body keeps for itself a reserve force for emergencies.

S. M.

THE PREVENTION OF FLATFOOT.

SOME rules for the prevention of flatfoot are formulated in the *London Hospital Gazette*, by Dr. Paul Roth. Shoes should be worn, not slippers; they should have soles 1-6 in. to $\frac{1}{4}$ in. in thickness, and broad heels 1 in. or less in height. The inner side of the shoe, where the big toe lies, must be kept almost straight; there must also be plenty of room for the other toes, but the big toe is the most important. When standing turn both toes slightly in and the heels