and there is no reason to believe that during the time of quiescence any reparative processes go on, as during the sleeping period of animals. Naturalists have observed many of the lower animals apparently in a state of sleep. Insects, crustaceans, fishes, reptiles, may all be observed occasionally to be almost motionless for considerable periods of time. The sleeping of birds is familiar to all, and in these there are anatomical arrangements by which the bird may, like the crane, sleep perched on one leg, or grasping a branch with both feet, like perching birds generally, without any muscular effort and consequently without fatigue.

The amount of sleep required by man varies according to age, sex, and habit. The popular notion that a child sleeps half its time, an adult one-third, whilst an old person may do little except eat and sleep is not far wrong. In early life the cerebral faculties appear to be easily exhausted and during the frequent and prolonged sleeps of infancy the brain rests and the vegetative changes connected with nutrition and growth go on actively. As life advances, less sleep is required, until in adult life a period of seven or eight hours is sufficient. As a rule, women require more sleep than men ; but much depends on habit. Thus most women bear the loss of sleep in the first instance better than men, because they have been accustomed more to loss or irregularity of sleep. The effect of habit is well seen in nurses, both male and female, who will often be able to work for weeks continuously with snatches of sleep, not amounting to more than two or three hours daily. Sooner or later, however, even in these cases nature asserts her demands, and prolonged sleep is necessary to maintain health and vigour.

Wakefulness during the time when one ought to be asleep is fre­quently a distressing condition, undermining the strength and incapacitating for active and efficient work. Insomnia or sleepless­ness often afflicts those of active mental habits and lays the founda­tion of premature decay. From what has been stated as to the cause of sleep it is evident that whatever tends to augment unduly the circulation through the brain may cause wakefulness. Thus long-continued or excessive intellectual action, or any powerful emotion, may be injurious. Moderate intellectual work is favour­able to sleep. The remedy in such cases is to avoid as far as possible the exciting causes or to counteract them by bodily exercise and attention to the general health. When sleeplessness overtakes a brain-worker it is a sure indication that less intellectual work must be done, and that he ought to betake himself, if possible, to out- of-door exercise in the pure air of the country. It is dangerous to persist, and still more to induce sleep artificially by drugs, as the overworked organ may become the seat of permanent disease or pernicious habits may be formed. The posture of the body in bed may influence sleep. Thus such positions as impede the flow of blood from the brain without affecting the supply of blood to it by the arteries may cause sleeplessness. Sometimes in cases of insomnia from excessive mental work there is the distressing con­dition that sleep disappears when the person lies down in bed, although before lying down he felt drowsy. In such a case resting with the head high may produce the desired result. Insomnia may also be caused by various functional diseases, whereby the amount of blood in the brain is increased. Thus in young females derangement of the menstrual functions may cause a hyperæsthesia or increased sensibility to such an extent that the sufferer cannot sleep, or, if sleep be obtained, it is so light as to be dispelled by weak sensory impressions that would fail to arouse a healthy person. Again, an irregular or deficient action of the heart may cause wake­fulness, especially if associated with coldness of the extremities. In such cases the application of heat to the feet and attention to the digestive organs may produce refreshing sleep. Lastly, the excessive use of various drugs, such as alcohol, opium, belladonna, Indian hemp, tea, and coffee, may cause sleeplessness. In these cases a moderate dose usually acts as a hypnotic, whilst frequently repeated doses have the reverse effect. Thus sleeplessness is one of the most distressing symptoms of delirium tremens, and it occurs also in those in the habit of indulging in opium, morphia, chloral, or Indian hemp. The general correctives of sleeplessness are active work, a moderate amount of bodily exercise, freedom from worry and anxiety, the use of the warm bath in some cases to allay irri­tability before going to bed, and such a posture in bed as the indi­vidual has found in his own case to be favourable. Sometimes a light but nutritious meal about an hour before retiring may con­

duce to sleep, but as a rule late suppers are unfavourable. The use of drugs should be indulged in only with medical advice. It is not too much to say that the injudicious use of bromide of potassium, chloral, opium, morphia, and stimulants by literary persons to procure sleep has often been productive of sad results, such as shattered health, an incurable habit of self-indulgence, and even accidental death (see Hammond, *On Wakefulness).*

It is a matter of common observation not only that certain per­sons require more sleep than others but that they have less power of resisting its onset and of awaking. This condition may become morbid, constituting a veritable nervous disease, to which the name “maladie du sommeil” or *hypnosia* may be given. It may be described as invincible sleep, and it may continue for weeks and for months, terminating in convulsive seizures, and even death. A persistent drooping of the upper eyelid has been observed even during waking hours. Dr W. Ogle has observed in such cases an engorgement of the cervical ganglia of the sympathetic ; but this may have nothing to do with the condition. Cases of very pro­longed sleep are not uncommon, especially amongst hysterical females, lasting four, seven, or ten days. On awaking the patient is exhausted and pale, with cold extremities, and not unfrequently, after a brief interval of waking, passes off into another lethargic sleep. Something similar to this may be seen in very aged persons towards the close of life.

Dreams (cf. Dream, vol. vii. p. 452 *sq.)* only occur when sleep is light, and they indicate that consciousness is still continued. The characteristic feature of dreaming is that the mind has no control over the groups of images that crowd upon it. These images are either revivals of old sensory impressions that have been stored up in the brain or they are the result of an untrammelled imagination. The will has lost the power of direction and control ; ideas, often grotesque, always confused, rise apparently spontaneously, are vivid for an instant, and then disappear. Dreaming may be described as a kind of physiological delirium. A consideration of the state in­dicates that the cerebral hemispheres are partially active and that it is the inhibitory power that is deficient (see Physiology, “Nervous System”). A further explanation cannot be given in the present state of our knowledge of cerebral physiology, but some of the more evident conditions or laws of the dreaming state may be indicated. (1) The character of dreams is often determined by a predominant thought or train of ideas that has occupied the mind before going to sleep. Thus the events of the preceding day may produce a particular kind of dream, and not unfrequently when a person attempts on waking to unravel his dream he may find the connect­ing thread in an occurrence or in a conversation or in the thoughts suggested by a book on the previous day. It would thus seem that the memory of recent things (and physiologically there must be an organic basis for memory) may revivify old and apparently forgotten impressions. (2) In dreaming, the train of thought may be influenced by impressions made on the senses of the sleeper, sufficiently intense to produce this result, but not intense enough to awake him. Thus a sudden sensory impression, such as a loud sound, a current of cold air, a restrained position of one of the limbs, a word or sentence uttered by a familiar voice, may arouse a dream or turn the disordered throng of fancies in a new direction. In some instances, the dreamer is peculiarly susceptible to such external impressions, so that the same stimulus will always give rise to the same kind of dream. (3) It has frequently been observed that in dreaming there may be memories of old impressions, scenes, faces, words, that have long since faded from the recollection during waking hours, showing that many impressions that are supposed to be lost are only forgotten and require but the appropriate stimulus to cause them to start vividly into mental life. (4) In rare in­stances there may be consecutive thought in dreams, so that the dreamer may write verse, frame speeches, or even work out mathe­matical problems. Most persons have had experience of this strange kind of power and have regretted, in the partially conscious state before awaking, that they could not preserve some of the results, feeling assured that the sober reality of waking life would dispel the vision. (5) Dreams make only a feeble impression on the memory, so that on awaking what is at first vivid and distinct fades insensibly and rapidly away. This may be accounted for by the evanescent character of the mental “ stuff” of dreams. In the waking state an act of attention is required to fix anything in the memory, and, as this is absent in dreaming, the impressions do not leave a permanent effect. For this reason also in dreams we have no memory of former dreams. (6) All have observed that there is no feeling of time or of space in dreams. We live in an ideal world. This probably arises from the absence of fixity of thought, so that there is no apparent connexion between the successive pictures of the imagination. (7) In some dreams the activity of the cerebrum is such that the train of thoughts prompts to movement, and the sleeper may be heard muttering in his sleep or tossing the arms or making gestures. There are gradations between this condition of a “troubled” dream and that of true somnambulism.

*Somnambulism.—*Some persons rise during sleep, walk about, apparently unconscious of all external impressions, after a time