territories. He is best known for his suppression of the Thugs or religious murderers in India, becoming superintendent of the operations against them in 1835, and commissioner for the suppression of Thuggi and Dacoity in 1839. During these operations more than 1400 Thugs were hanged or transported for life, one of whom confessed to having committed over 700 murders. Detection was only possible by means of informers, for whose protection from the vengeance of their associates a special gaol was established at Jubbulpore. Sleeman was resident at Gwalior 1843-1849, and at Lucknow 1849-1856. He was opposed to the annexation of Oudh by Lord Dalhousie, but his advice was disregarded. He died at sea on his way home on the 10th of February 1856.

See Sir H. Sleeman, *Rambles and Recollections of an Indian Official* (1844; 2nd edition, 1893), and *A Journey through Oudh* (1858).

**SLEEP** (O. Eng. *sloepan;* Ger. *schlafen;* cf. Lat. *labi,* to glide, and "slip”), a normal condition of the body, occurring periodic­ally, in which there is a greater or less degree of unconsciousness due to inactivity of the nervous system and more especially of the brain and spinal cord. It may be regarded as the condition of rest of the nervous system during which there is a renewal of the energy that has been expended in the hours of wakefulness; for in the nervous system the general law holds good that periods of physiological rest must alternate with periods of physiological activity, and, as the nervous system is the dominating mechanism in the body, when it reposes all the other systems enjoy the same condition to a greater or less extent. Rest alternates with work in all vital phenomena. After a muscle has contracted frequently at short intervals, a period of relaxation is necessary for the removal of waste products and the restitution of energy; the pulsating heart, apparently working without intermission, is in reality not doing so, as there are short intervals of relaxation between individual beats in which there is no expenditure of energy; the cells in a secreting gland do not always elaborate, but have periods when the protoplasm is comparatively at rest. Nervous action also involves physico-chemical changes of matter and the expenditure of energy. This is true even of the activity of the brain associated with sensation, perception, emotion, volition and other psychical phenomena, and therefore the higher nervous centres require rest, during which they are protected from the stream of impressions flowing in from the sense-organs, and in which waste matters are removed and the cerebral material is recuperated for another time of wakeful activity. (See also Hypnotism, and the physiological sections of the articles Brain, and Muscle and Nerve.)

The coincidence of the time of sleep with the occurrence of the great terrestrial phenomena that cause night is more apparent than real. The oscillations of vital activity are not correlated to the terrestrial revolutions as effect and cause, but the occurrence of sleep, in the majority of cases, on the advent of night is largely the result of habit. Whilst the darkness and stillness of night are favourable to sleep, the state of physiological repose is deter­mined more by the condition of the body itself. Fatigue will normally cause sleep at any time of the twenty-four hours. Thus many of the lower animals habitually sleep during the day and prowl in search of food in the night; some hibernate during the winter season, passing into long periods of sleep during both day and night; and men whose avocations require them to work during the night find that they can maintain health and activity by sleeping the requisite time during the day.

The approach of sleep is usually marked by a desire for sleep, or sleepiness, embracing an obscure and complicated group of sensations, resembling such bodily states of feeling as hunger, thirst, the necessity of breathing, &c. All of these bodily states, although on the whole ill-defined, are referred with some precision to special organs. Thus hunger, although due to a general bodily want, is referred to the stomach, thirst to the fauces, and breath­ing to the chest; and in like manner the desire for sleep is referred chiefly to the region of the head and neck. There is a sensation of weight in the upper eyelids, intermittent spasm of the sub-hyoid muscles causing yawning, and drooping of the head. Along with these signs there is obscuration of the intelligence, depression both of general sensibility and of the special senses, and relaxation of the muscular system. The half­closed eyelids tend more and more to close; the inspirations become slower and deeper; the muscles supporting the lower jaw become relaxed, so that the mouth opens; the muscles of the back of the neck that tend to support the head also relax and the chin droops on the breast; and the limbs relax and tend to fall into a line with the body. At the same time the hesitating utterances of the sleepy man indicate vagueness of thought, and external objects gradually cease to make an impression on the senses. These are the chief phenomena of the advent of sleep. After it has supervened there are many gradations in its depth and character. In some cases the sleep may be so light that the individual is partially conscious of external impressions and of the disordered trains of thought and feeling that pass through his mind, constituting dreams, and these may be more or less vivid, according to the degree of consciousness remaining. On the other hand, the sleep may be so profound as to abolish all psychical phenomena: there are no dreams, and when the sleeper awakes the time passed in this unconscious state is a blank. The first period of sleep is the most profound. After a variable period, usually from five to six hours of deep sleep, the faculties awaken, not simultaneously but often fitfully, so' that there are transient periods of consciousness. This is the time of dreaming. As the period of waking approaches the sensibility becomes more acute, so that external impressions are faintly perceived. These impressions may influence and mould the flow of images in the mind of the sleeper, frequently altering the nature of his dreams or making them more vivid. The moment of waking is usually not instantaneous, but is preceded by an intermediate state of partial consciousness, and a strange play of the mental faculties that has more of the character of an “ intellectual mirage" than of consecutive thought.

The intensity of sleep has been measured by Kohlschütter by the intensity of the sound necessary to awaken the sleeper. This intensity increases rapidly during the first hour, then decreases, sometimes rapidly, sometimes slowly, during the next two or three hours, and then very slowly until the time of waking. This statement agrees generally with experience. As a rule the deeper the sleep the longer it lasts.

Various physiological changes have been observed during sleep, but much remains to be done in this direction. The pulse becomes less frequent; the respiratory movements are fewer in number and are almost wholly thoracic, not abdominal; all the secretions are reduced in quantity; the gastric and intestinal peristaltic movements are less rapid; the pupils of the eye are contracted and during profound sleep are not affected by light; and the eyeballs arc rotated upwards. The pupils dilate slightly when strong sensory or auditory stimuli are applied, and they dilate the more the lighter the sleep; at the moment of waking they become widely dilated. Whilst muscular relaxation is general, there seems to be increased contraction of certain sphincter muscles, as the circular fibres of the iris and the fibres concerned in closing the eyelids. The state of the circulation of the brain has been frequently investigated. The older view was that there was a degree of plethora or congestion of the vessels of the brain, as is the state of matters in coma, to which the state of sleep has a superficial resemblance. Coma, however, is not sleep, but a condition of inactivity of the cerebral matter owing to the accumulation of dark venous blood in its vessels. This has been actually observed in cases where it was possible to see the brain. During sleep the surface of the exposed brain has been observed to become pale and to shrink somewhat from the sides of the opening (Johann Blumenbach, 1752-1840). A careful experimental research was conducted by Arthur E. Durham in i860, in which he trephined a portion of bone as large as a shilling from the parietal region of a dog, and, to obviate the effects of atmospheric pressure, inserted a watch glass into the aperture so that the surface of the brain could be seen. His results are summarized thus:—

" (1) Pressure of distended veins on the brain is not the cause of sleep, for during sleep the veins are not distended; and, when they