basal ganglia, or internal capsule) cause complete anæsthesia—cutaneous, mucous, muscular—of the opposite side of the body, without motor paralysis.

The degree of impairment of tactile sensibility in those cases where it was not entirely abolished, is in proportion to the amount of destruction of the hippocampal region.

Lesions of the cornu ammonis alone, or gyrus hippocampi alone, do not cause permanent impairment of tactile sensibility. The duration of the effects of total destruction of the hippocampal region has not been determined.

No impairment of tactile sensibility has been observed in connexion with any of the other cerebral lesions described.

A. DE WATTEVILLE.

Abstract of an Essay upon the Limitations in Time of Conscious Sensations. Read before the Royal Society, Edinburgh, December 1883. By JOHN B. HAYCRAFT, M.B., F.R.S. (Edin.) &c., Professor of Physiology at Mason and Queen's Colleges, Birmingham.—If any sensory surface be stimulated for a given period, a sensation will be produced, which will not exactly correspond with this stimulation in point of time. The sensation will be produced a certain interval after the first movement of application of the stimulus, and will remain a certain time after the withdrawal of the stimulus. It follows from this, that two stimuli follow the one another sufficiently rapidly will give rise to a single sensation. The correspondence in time between the stimulus and sensation varies in the case of the different senses.

In experimenting with tactile impressions rapidly following one another, it was found that if the stimuli are at first applied slowly (1 to 40 per second), they give rise each to a distinct and separate feeling. Stimulate more rapidly, and they are fused, and a feeling or sensation is produced which is termed "roughness." If the impacts follow one another faster than 1400 per second, the sense of "roughness" disappears and a sensation of single impact is produced. It is to be remarked that the knowledge of the cause of the roughness is gained by experience only, and could not be learned by the tactile sense alone. The same sensation called "tickling" is produced, whether an impact stimulates a number of sensory areas one after the other, as in drawing a feather over the skin, or if the impacts follow one another on the same sensory area; for impacts of from 50 to 1400 per second, if applied to the

same sensory area produce "roughness" if forcible enough, but when lightly applied, they produce "tickling."

Different areas of the skin vary in sensibility. In more sensitive parts localisation in space is more precise than in those parts less sensitive. The experiments of the author, however, show that in the least sensitive parts, i.e. skin of the back and chest, stimuli following one another rapidly are as easily distinguished in consciousness as when applied to the more sensitive parts, i.e. skin of lip and finger-tip. A study of thermal sensation shows that the correspondence in time between the stimulus and produced sensation varies with the thinness of the epidermis at that part. In no case is the correspondence very exact, an appreciable interval intervening between the application of a cold body and a sensation of cold. The difference in the exact limits of the feelings seen in the different sensations was then shown by the author to be due not to any difference in the centrally produced feelings, but to the differences seen in the translation of the external energy into nerve energy through the end organs. Thus a sensation of touch follows almost immediately the application of the stimulus, which directly affects the end organs; on the other hand, some time elapses before a cold body is felt; the withdrawal of heat from the end organs having to take place through a more or less thick layer of epidermis.

In the sensations of sound and sight, as well as in the tactile sensibility, when stimuli are repeated more and more rapidly, a period preceding complete fusion is reached when the sensation produced is disagreeable in its nature. In the case of sound, the irritation is produced by "beats;" the cause of "dissonance" in music is due to recurring stimuli not to be separated in consciousness, and yet not rapid enough to give rise to a simple sensation of sound. The flickering of a flame is also irritating in its nature, and tickling in the case of tactile sensibility may give rise to excruciating agony. We may compare, therefore, roughness or tickling—tactile sensations—to dissonance in music.

J. B. HAYCRAFT.

Adamkiewicz on Cerebral Pressure (*Sitzungsber. der Akad. d. Wissensch. zu Wien*, 1883).—The author has had the opportunity of observing a tumour of the cord which occupied the greater portion of the left lateral column between the 5th and 7th cervical roots, and compressed the anterior horn to a marked degree. No symptoms had been noted during life, however, which gave a clue to such a lesion. This case formed the starting-point of investigations by