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285. Significance of motor maps of the sensorimotor cortex in the conscious monkey.

JOHN C. LILLY. *E. R. Johnson Fdn., Univ. of Pennsylvania, Philadelphia.*

We have determined with 25 implanted electrodes parts of the pre- and postcentral motor maps and have recorded the electrical figures (LILLY, 1952) of this region in unanesthetized macacas. We find in the quiet but alert monkey, a precentral map which is closely similar to that obtained in the anesthetized animal (C. N. WOOLSEY *et al.* 1952); in addition, we find a postcentral motor representation, which is a mirror-image of the precentral one. Our resulting motor map agrees with a map showing where the peaks of electrical figures are seen during abrupt voluntary movements either of upper or of lower extremity. For an accidental cortical lesion giving thumb oscillations, the known cortical site and the locus of pathological electrical oscillations coincide and fall within the thumb area on the motor map; a seizure starting in thumb and spreading to the arm and the leg of the same side has associated electrical waves which spread from the thumb area (lesion) of the motor map to the arm and the leg areas of this map. In sleep, the spontaneous electrical figures delineate the areas for upper and for lower extremity. These results show that the overlapping representations of muscle groups shown in motor maps obtained on unanesthetized animals *a*) are relatively invariant in changes due to anesthesia, *b*) have a role in voluntary movement, *c*) maintain their relations despite a cortical lesion, and *d*) determine the loci of the figures of cortical activity during sleep. (Supported in part by USPHS Natl. Inst. of Neurological Diseases.)