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46

LILLY, J. C., HUGHES, J. R. and Thelma W. GALKIN
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gradients of motor function in the whole cerebral
cortex of the unanesthetized monkey.**

192

A study of the literature on motor mapping of the *anesthetized* cerebral cortex of the monkey shows that electrical stimulation of a large fraction of the cortex can produce movements (SCHÄFER, W. K. SMITH, LIVINGSTON, WALKER and WEAVER, von BECHTEREV). The extent of the responsive areas varies with anesthetic level; the area most resistant to anesthesia is the classical precentral "motor area". In each of 6 monkeys, we implanted one or two 1-cm.² arrays containing 25 to 121 electrodes over various cortical areas, from occipital to frontal. In the unanesthetized state, motor responses were elicited from every such area. In order to see if there were any "silent gaps" in the motor map, we stimulated cortex at each of 610 electrodes implanted over a large fraction of a single hemisphere in one monkey (SUSIE). Movements were elicitable at each electrode, from frontal pole to those in area 17, and from near the midline to those over temporal cortex. No gaps were found. These results confirm those of the above workers: in areas 6 and 8 (eyes and head); 4, 3, 1, 2, 5, and 7 (face, arm, back, and leg); 19, 18, and 17 (eyes and head); and 21 and 22 (ear). In addition, eyes, head, and ear movements were found in area 9 all the way to the frontal pole; and eye-head movements in the lateral part of 22. Threshold values are lowest in areas adjacent to central sulcus, and increase with distance anteriorly and posteriorly from this region. These results suggest that motor functions are distributed throughout the *unanesthetized* cerebral cortex in the *normal state*, and, imply, when correlated with sensory maps, that each small area of cortex is truly "sensorimotor" with a preponderance of one or the other function.

Several parameters of the electrical stimuli were explored: the above maps were obtained at 60 pulse-pairs per second at 2 pulse-pairs per second another map is found resembling that of LIDDELL and PHILLIPS.

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