away from the light). The catfish, which was called "White Whiskers" because the four "chin" barbels were white, was seen every day circling this spray. It always moved over the spray, then under, always proceeded from the left to the right of the tank, and showed a preference for making the swing an even number of times before coming to rest.

Often it was observed at play when there was not time to count its motions, but on five different days its circuits in this peculiar game of solitaire were counted. On one day it played fifteen games, during which it recorded in all 115 swings around the spray. On the five days it played forty games and traced the circle 263 times!

In these forty games the fish came to rest thirteen times after completing the circle an odd number of times (from one to nineteen), but on twenty-seven occasions it recorded an even number of swings(two to sixteen).

Was it merely a matter of chance, or did the catfish derive some conscious physical satisfaction from encircling the spray an even number of times?

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

RECORDING CEREBRAL ACTION CURRENTS

ACTION currents from the cerebral cortex of the dog have been obtained by using five stages of vacuum tube amplification recording with an oscillograph. The operation which exposed the surface of the cortex was performed under both general and local anesthesias. Records were taken after recovery of the dog from the general anesthesia. Precautions were developed which have insured the minimal operative shock. Records were made with a film speed of twenty-one inches per second.

We have succeeded in recording from at least three distinct parts of the cortex, namely, portions of the occipital lobe, areas on the boundary of the temporal and parietal lobes and from the motor areas in the frontal lobe. These action currents appear to be of the same general nature as those obtained from the peripheral nerves. There would appear to be no very essential difference between different parts of the cortex in the form or frequency of the impulses themselves. At any one point one may obtain a wide variety of temporal and intensity relationships between the impulses.

From the degree of simplicity of patterns obtained with relatively large electrodes, it is inferred that a high degree of localization of function is not the case. Our largest electrodes covered about one four-hundredth of the brain surface. It may be readily seen that this is not at all sufficient to give spatial reference to nearly all the discriminable functions that the psychologist knows. We must fall back upon temporal factors within these areas, qualitative factors there, or functional patterns involving perhaps large portions of the cortex.

In general, we get records from the so-called motor and somesthetic areas with active movements of the dog, from the somesthetic and not from the motor in passive movements and slight effects in the visual area with a change from light to dark in the room. In certain cases we obtained records from the so-called visual area during active movement of the dog. This may indicate that this so-called sensory area was in this case an integral part of the dynamic pattern which gave rise to the movement. It would appear, however, that there must be a spatial factor in this dynamic pattern in order to give a sufficiently differentiated reaction here to correspond with our experimental data. The limited complexity of the records which we obtained makes it impossible to account for all the differences in the reactions of the animal in terms simply of the type of patterns on the records. Specialization of function, that is, the existence of a spatial element in the functioning of the cortex, is a fact, but we do not know as yet the degree to which this specialization is true or its constancy over a period of time.

Further work is in progress along all the lines suggested.

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A CONVENIENT AID IN BALANCING CENTRIFUGE TUBES

A 15-CM dental chip blower syringe of about 50 cc capacity with right-angled delivery tube has been found to be very convenient in balancing centrifuge tubes. With this syringe the rate of delivery of water is much more easily controlled than with the commonly used large dropping pipette, and it has the distinct advantage of being unbreakable. It is convenient to place it in a wide-mouthed bottle, the bulb serving to keep the water clean. The syringe is stocked by dental supply houses and retails for about seventy cents.

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