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MEMORY DISTURBANCES IN LOCAL BRAIN LESIONS*

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Abstract—Neuropsychological study of memory disturbances associated with local brain lesions has shown that such disturbances seldom result from simple trace decay. In general, they are due to interference effects resulting from activity interpolated between presentation and retrieval. This is well shown by simple experiments in which retrieval of a short series of words, designs or actions is required with or without interpolated activity. Interference effects are found to be particularly marked if the interpolated material or activity closely resembles the original material or activity ("homogenous" interference). Memory disturbances of this kind, which may vary greatly in severity, are seen particularly in deep-seated lesions involving the medial portions of the hemispheres and the upper brain stem. They are quite general in nature and may or may not be associated with a confusional state, depending on whether or not the frontal lobes and upper brain stem are involved.

Partial (modality specific) disturbances of memory may be associated only with lesions of the convexity of the hemispheres (in particular the left) and are never associated with confusional states or confabulation.

In cases of lesions within the speech area, a specific type of verbal memory disorder (amnesic aphasia or misnaming) is not uncommonly observed. A neurodynamic explanation of this disorder is advanced.

In cases with massive frontal lobe involvement a defect of memory secondary to defect in programming actions and a pathological "inertia" of nervous processes (shown in difficulty in shifting attention and in perseveration) is described.

It is claimed that careful neuropsychological analysis of memory defects is essential if we are to understand the basic factors upon which they depend and the role of the brain in the memory process.

MEMORY disturbances associated with local brain lesions are often mentioned but seldom described carefully and never analysed in terms of the basic physiological mechanisms upon which they depend. Only during the last two decades have attempts been made to bring a more scientific approach to bear upon the problems of memory disorder (see e.g. [1, 2]). We shall try in this paper to review some basic principles governing our clinical studies and to interpret the results where possible in terms of general psychological principles.

FACTORS IN MEMORY DISORDER

Two hypotheses have been proposed to explain defects of memory of the kind so common with local brain lesions. The first attributes forgetting to "trace decay" (see e.g. [3]). Neurologists suppose that in pathological states of the brain the rate of this decay is increased, traces become unstable and their consolidation difficult. The second hypothesis

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