the personality, and also in regard to the cell findings and pathological changes. To carry out these studies successfully a clear clinical differentiation is a preliminary necessity. H. DEVINE.

The Rôle of Hallucinations in the Psychoses. (*Journal of Nervous and Mental Disease, March*, 1916, *pp.* 231–250, *vol. xliii, No.* 3.) *Harrison, Forrest M., M.D.*

Dr. Harrison prefaces his remarks on the subject in particular by a summary of historical instances of hallucinosis as exemplified in certain Biblical stories, and as in the cases of Mohammed, Luther, Jeanne d'Arc, Socrates, Swedenborg, and others; and he notes the influence which those suffering from hallucinations have had in the making of history.

The number of hypotheses advanced as explanations of the mechanism of hallucinations is an indication of the speculative nature of our knowledge of cerebral function. Two main points were considered in the elucidation of the problem—the sensory character of the phenomena and the part played by the mental state in determining what the hallucinatory object should be. The ideational centres were assumed to be locally separated from the sensory centres, and, this being the case, it was but natural to relegate the imaginative factors of fallacious perception to the higher elements of the cortex, and to assign the sensory part to those cells where incoming impressions are transformed into sensations. Ideas of sensation can, however, never rise to the level of true sensation; the ideational image lacks the feeling of objectivity, of externality. The centrifugal sensorial theories sought to explain this by assuming that the sensorial channels become the seat of a centrifugal nerve current, originating in the higher ideational cortical centres, passing to the sensorium, and in some cases to the sense organ, where the condition present indicated a local disturbance. As this was found to be inconsistent with accepted physiological beliefs, a reverse, or centripetal, process was assumed. Once the conclusion is reached, however, that the centres of sensation and of imagination are not separated, these beliefs become untenable. James held that in the cortex the sensory and ideational elements are the same, and that the difference in the process depends on the intensity of the stimulus; that from the periphery is usually more intense than that from the neighbouring regions of the cortex, and because of the difference in intensity, we tell reality from phantasy. If, however, for any reason the stimulation of these centres becomes as intense as that from the periphery the mind can see no difference, and an hallucination results.

In regard to the frequency of hallucinations among the 514 cases studied, Dr. Harrison found that they were present in 44·74 *per cent.*; and he notes that this figure would have been higher had he excluded readmissions and those diagnosed as not insane. Comparing the statistics of various observers (and including his own) he arrives at a percentage of 40·7; this is for a total of 3,160 cases. Of 230 cases which were subject to hallucinations, auditory fallacious perceptions, either separately or combined, were present in 210, or 91·3 *per cent.* Next in frequency came auditory and visual combined, 23.91 *per cent.* Then visual alone, 6·08 *per cent.*

Tabulation of the "content of the various hallucinatory percepts" was almost impossible on account of their diversity. It was difficult to isolate hallucinations of taste from those of smell in some cases. Hallucinations of smell were rare, and were generally of an unpleasant character. The most frequent hallucinations of touch were the various paræsthesias and electric shocks.

"No two cases were alike, each presenting its own individual characteristics and peculiarities, and the content of the hallucinations seemed to point to no form of psychosis in particular."

In the alcoholic psychosis hallucinations were present in 80 *per cent.* of the cases; but the total number of cases (5) was too small to render this figure any value from a statistical standpoint. Of 170 cases of dementia præcox 70·58 *per cent.* were hallucinated. Of 50 cases which were not apparently hallucinated, 10 were catatonic in type; but in only 30 cases of the entire number studied could it be stated, with any degree of certainty, that hallucinations did not exist. It is noted that these conclusions are in conformity with those arrived at by such authorities as White, Tanzi, and Bleuler. In the largest number of cases there were auditory hallucinations. Six cases in which the hallucinations were visual were all of the catatonic type.

Of 13 cases diagnosed as prison psychosis, 9, or 69·23 *per cent.*, were hallucinated; auditory hallucinations were again the most prevalent. Of 15 cases of epilepsy, 46·66 *per cent.* experienced auditory and visual hallucinations. In the cases of general paralysis of the insane 45·28 *per cent.* were hallucinated, auditory hallucinations again predominating. In the manic-depressive group only 21·50 *per cent.* were hallucinated; 17·85 *per cent.* of these were auditory. This conforms to the finding of others.

Their rarity in the manic-depressive group is suggested as an important diagnostic factor in helping to differentiate between the maniacal phase of this psychosis and the excitement of dementia præcox.

Hallucinations were found to be rare in imbecility, in senile dementia, and in cases of psychosis associated with arterio-sclerosis.

The following conclusions are deduced:

(1) Hallucinations are among the commonest symptoms met with in the insane, occurring in approximately 40 *per cent.* of the cases.

(2) Of the various types, those of hearing are most frequent, occurring either separately or combined in 90 *per cent.* of the cases hallucinated.

(3) The content of the hallucinatory percepts is not characteristic for any particular psychosis.

(4) Visual disturbances seem extremely common in the catatonic variety of dementia præcox.

(5) Hallucinations are common in dementia præcox, occurring in practically all the cases. On the other hand, they are rare in the manic-depressive group, seldom if ever occurring typically.

(6) Hallucinations are rare in arterio-sclerotic dementia and senile dementia.

(7) Hallucinations are rare in sane persons, even though they be of a psychopathic make-up.

HUBERT J. NORMAN.