quarries. Few hoes occur west of the Mississippi River. The gradation of notched hoes into axes, hammers and other artifacts was demonstrated. This paper was based on the study of several hundred specimens in the collection of the author.

Notes on the sitting height in man: R. B. BEAN. (By title.)

Clinical study as a type of experimental education: F. N. FREEMAN. Psychological research in the field of learning has in recent years consisted largely of mass studies or studies of groups of individuals. For example, a common method is to compare the effectiveness of two methods of learning by comparing the average score made by a group which pursues one method with the average score obtained by the other method. These averages often conceal important variations from the rule in the case of individuals. It is necessary to make analysis of the factors involved in such cases if the laws of learning are to be completely understood. The clinical study of a child afflicted with congenital word-blindness illustrates such an analy-The case was diagnosed as hopeless by a ais. well-known oculist. Difficulty with reading was reported in the case of two near relatives. The Binet test and several specialized tests revealed no defect other than the inability to read. Photographs of the eye movements in reading showed serious lack of coordination. In spite of four years of schooling the child had less than median first-grade reading ability. Forty minutes training a day, in which phonics were abandoned and direct practise in comprehension together with the prevention of attention wandering and eye wandering were emphasized, resulted at the end of ten weeks in better than third-grade reading ability and in much better coordinated eye movements.

The concept of feeble-minded, especially the moron: J. E. W. WALLIN. Feeble-mindedness is not primarily a medical or psychological concept, but a socio-legal concept, referring to a condition of social and industrial dependency due to intelligence defectiveness dating from birth or from early life, and should only be used in this sense. The practise has been very widely followed of considering that the highest grade of feeble-minded persons develops to an intelligence level of twelve years. The writer's conclusion, based on the individual examination of thousands of subjects, is in complete agreement with the finding of the division of psychology in the army that the highest grades of mental defectives, the so-called morons, do not develop beyond an intelligence level of nine years, and that some persons who stagnate at the ninth-year level can not be considered feebleminded. On the basis of the 70 I.Q. standard of feeble-mindedness, and the average intelligence age of the selective service men, the highest intelligence level reached by the feeble-minded would be 9.2 years. These findings necessitate the complete rejection of the concept of the "middle" and "high-grade morons," and a considerable lowering of the borderland region. The borderland region probably must be placed between the upper limit of age seven and the upper limit of age nine or at most ten (by the Stanford scale), instead of between ages ten and twelve. In other words, persons who reach an intelligence level of ten years should be classified as borderland, backward or dull. The gradual appreciation of the above facts has recently led to the proposal that the concept of feeble-mindedness be extended beyond its traditional connotation of intelligence deficiency, so as to include individuals who are emotionally, temperamentally or volitionally defective or unstable. even though they may be normal in intelligence. This extension is unacceptable. Such individuals can not be considered feeble-minded unless they are sufficiently intellectually deficient to be so regarded, but must be classified otherwise. The term defective delinquents is suggested for emotionally or temperamentally unstable delinquents who are in need of restraint or special care and who are of borderline, backward or normal intelligence-and thus not feeble-minded-and who can not be placed in a definite, clear-cut classification, such as psvchotic, psychopathic, neurotic, hysterical, choreic or epileptic.

> (To be concluded) EDWARD K. STRONG, Secretary

## SCIENCE

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