EDUCATION

Superior Student Rare

Tests, including a psychological examination, designed to measure an individual's various abilities show that all around, superior and inferior students are unusual.

➤ COLLEGE students who are generally superior in ability are very scarce. But so also are college students who are generally inferior.

The wide distribution of specific abilities was revealed in a study of the upper and lower 10% of students who entered the University of Kansas in the fall of 1954. The study was reported to the American Association for the Advancement of Science meeting in Indianapolis, Ind., by Drs. Dale M. Yocum and Kenneth E. Anderson of the University of Kansas.

Four tests were given these "exceptional" students—a psychological examination, a test of mathematics, and two English tests including vocabulary, reading, usage and spelling.

Out of 1,210 individuals studied, only two were in the top 10% of all the test scores. A considerable number of the students who were in the top 10% of one or more test scores were in the bottom 10% of other scores and were in the bottom 10% of the average grade-point distributions for one or more semesters.

The college student who may be considered as generally inferior is also a rare individual. In this study, out of the entire 1,210 studied, only six individuals were in the bottom 10% of all the test scores. There were 135 who were in the bottom 10% of only one set of scores. Ten individuals who were in the bottom 10% of at least one set of scores were also in the top 10% of from one to four distributions of grade-point averages.

A smaller percentage of women than men were found in the low-achievement groups and a larger percentage in the high-achievement groups. This may be explained, the scientists believe, by a difference in motivation to attend college between men and women.

The only significant relationship between the level of parental education and college achievement involved the educational levels of the fathers. And this relationship held only for achievement in the first two semesters.

The implication of the study for education, the scientists conclude, is that there is much more need for considering exceptional talent in specific abilities than in general ability.

The major problem, they said, is to locate specific abilities and to guide the students into courses and curricula suited to their particular abilities.

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BIOLOGY

Human Brain Unique

Electronic "brains," with all their powers for handling information and computing, are still not the equal of the living human brain and its unique memory abilities.

➤ ALTHOUGH the complex modern electronic computers are commonly referred to as electronic "brains," scientists are not yet able to duplicate the human brain or memory.

By comparison, man-made memories are dead and unexciting.

Computer memories and such "brains" as airport traffic control devices are what might be called set memories, Dr. F. Joachim Weyl, of the Office of Naval Research, explained. The totality of all information that could ever be stored in them is fixed and fully known.

It is important, moreover, he said, that complete certainty prevail at all times as to what part of this totality is stored where. Whimsical changes of the information or transfers from one place to another degrade the usefulness of such memories.

Libraries or filing systems are what Dr. Weyl calls "open-ended memories." The insistence on complete certainty as to the nature and place of everything stored continues, but we do not count on knowing the totality of information that is to be stored. The organization of this kind of memory must be adaptable to what comes in for storage and "only in rare instances should such successive adaptation lead to pathological results."

Contrasted to these "dead and unexciting" memories are the memories developed by nature. These are the memories that grow. By performing their functions they become bigger and better.

Two such living, growing memories were cited by Dr. Weyl. They are the gene, mechanism of heredity, and the brain.

The gene, he says, represents the memory of the race. It grows in two ways. Sudden random changes in the stored information, called mutations, produce new patterns. And then those new patterns which are better for survival than the old ones are selected in various, quite slowly working ways. This memory mechanism is not perfect, but it is sufficiently perfect to stabilize a competitive pattern. It is a self-improving memory.

Neither is the brain a perfect memory mechanism. It experiences some of the difficulties of the librarian in retrieving at the proper moment the material that is stored. But, like the gene, it is self-improving. The use of your brain makes it a better instrument for storing memories.

It cannot be duplicated by man and is not understood by him. Dr. Weyl raises the question: Is there a "roulette wheel in the brain's memory" that injects the element of chance into what is recalled?

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