NOT ACCORDING TO EDISON

By Arthur Chapman

IF THOMAS A. EDISON'S widely discussed questionnaires for employees have achieved no other results, at least they have roused public interest in the what and why of psychology.

"What is the use of such tests, anyway?" is a question that has been asked by many persons after reading the crisp and widely varied queries in the list sent out from Mr. Edison's business establishment.

In this instance the question is legitimate enough, for experts are agreed that Mr. Edison's questionnaires do not constitute a real intelligence test.

"Perhaps the questions given out in the newspapers achieved the results Mr. Edison was after," said Professor Samuel B. Heckman, director of the educational clinic at the College of the City of New York, where thousands of psychological tests are given to school children and to groups and individuals sent by the welfare organizations of the city. "The questions given by Mr. Edison were not along standard psychological lines, however. They called for a retentive memory for dissociated facts, which may be useful to some and totally useless to anybody else. It is greater to know where to find such facts than to remember them. It is like the faculty for quotation. One man may be able to quote freely from his reading. A better educated man, perhaps, will not be able to quote at all, but will know where to find the quotations needed. The high grade man cannot burden his mind with a great mass of facts, but must know when to apply such facts. It is true that we must have a knowledge of a certain number of facts on which to base our knowledge, but many facts in Mr. Edison's tests were not fundamental. It may be, of course, that his questionnaires achieved the results that were sought, but they should not be confused with psychological tests."

In the opinion of Dr. Heckman a more general application of the principles of psychology in the grammar schools and in high school will do much to reduce the number of collegians whose inability to answer certain questions caused Mr. Edison to allude to them as "amazingly ignorant."

Under the present system of education it is pointed out that too many young people are allowed to wander along wrong paths in hit-or-miss fashion. Psychology seems to offer at least a partial relief to the age-old problem of the square peg and the round hole. Psychological examinations of students in groups and singly and carried out by experts, it is said, will effect a readjustment which is bound to help the student who is "amazingly ignorant" merely because he has been plugging away at the things for which nature never fitted him.

Education is tending that way. There are vocational aids in many public schools to-day. Dr. Heckman has a class of undergraduates who are studying the application of psychology and next year the College of the City of New York will offer a course in psychological tests for the benefit of teachers.

"The aim is to put students on the right path," said Dr Heckman. "Intelligence tests can be practically applied in suggestions for further education and for vocational guidance after one gets out of school. It should be emphasized that such tests are not perfect. No one claims that, but they do show general tendencies much better than anything else yet devised."

Dr. Heckman quoted two examples showing the application of intelligence tests in a vocational way.

In one of these instances a man, probably twenty-five years old, came to the attention of those conducting the educational clinic at City College. He was determined to be a court reporter and had struggled determinedly through his school years with that goal in view. An intelligence test convinced Dr. Heckman that the man belonged in the general grade that does well in a subordinate capacity. He might have struggled on a few more years and wound up as a second-rate stenographer, but he could hope for nothing better. An opportunity arose for him to take a civil service examination for a clerkship in a branch of the government service—a post that carried moderate responsibilities and that was within his mental range. The man was asked if he would not rather have such a position and get through life without constant struggle and worry, rather than go on battling for something for which nature had not fitted him. He saw the matter in its right light and took the examination, and is convinced now that he did the sensible thing.

"In another case," said Dr. Heckman, "a father brought his boy to me. The boy had been through the eighth grade and the father wanted to send him to a manual training school. I found that the boy was of exceptionally high-grade intelligence. I told the father that there was no question about the boy succeeding in manual training, but that such work would not satisfy him. He would not be happy and constantly stimulated in such work, and I advised the father to allow him to enter college and prepare for a professional career. Just what that career might be would be determined by the boy's own choice and by opportunity, but it was clear that he belonged in the general professional class. This was done, and the father has thanked me for the advice.

"I believe all boys and girls should be examined to find if they have the level of intelligence necessary to success in general high school work," said Dr. Heckman. "We may not be able to catalogue them absolutely, but we can say with a pretty high degree of accuracy where they belong. It is not argued that any of them should be kept out of school altogether. Our system of education should provide courses to fit all needs. In fact, the schools are providing these now, in part. For example, we have our domestic science courses and manual training and commercial courses. Manual training courses require a different kind of intelligence. Boys do splendidly there who would fail, perhaps, in an academic course. They can work with their hands, but cannot work with symbols and ideas. We must provide courses to meet the needs of different types of children. The big problem is the general direction of children in education and occupation.

"Psychology helps also in the question of behavior, although that is a secondary problem," continued Dr. Heckman. "For instance, we may get a fourteen-year-old boy in school who in reality has the intellect of a nine-year-old. Yet he is expected to behave like a fourteen-year-old. He should be in the sixth grade but has a fourth-grade mentality. The teacher complains that he is restless and gets others into trouble. He plays truant and is generally something of a problem for all concerned. An intelligence test soon shows that such a boy belongs in the fourth grade, where he will be taught something that he can comprehend and where his interest will be challenged. In the upper grade he does not know what he is being taught. Everything is hazy in his mind, and he seeks other outlets for his activity.

"Or take the reverse of such a case. We find a boy who has a mentality that fits him for a grade much in advance of the one in which he has been placed. He, too, is restless and dissatisfied in school. Nothing interests him, and he finds relief in making mischief. We suggest in such a case that the student be advanced to the class to which his mentality entitles him. Generally it will be found that when the student is rightly placed the complaints will be heard no more."

The educational clinic at the College of the City of New York has been called a service station for the city's school children. The children who are sent there are not subnormal. In general, they are children who furnish school problems, because, like the cases that have been outlined, they have not been placed in the proper paths. Last year more than 1,100 children were examined at the clinic.

In the case of a very young child a test is completed in about 30 minutes. In the case of older children probably forty-five minutes is the average. Toys and mechanical apparatus are used in getting the child at ease in his surroundings. Replacing the parts of a picture puzzle may get the child's confidence restored. Some one of the standard scales for establishing the mental age is used—usually the Binet intelligence scale, or in the case of children of eleven or more years of age, the Yerkes point scale or the Stanford revision scale. Various supplementary tests are always used in order to make a diagnosis of the child's mental status.

Not only are children sent from all the city's schools—children who, under old conditions, would simply flounder into worse conditions—but the welfare organizations of New York are finding the clinic at City College an indispensable aid. These organizations may even send family groups for examination. A family may prove to be the problem of some charitable society. Before any effort is made to provide work for such a family the children are sent to the clinic for intelligence tests. Positions are found in accordance with the intelligence test ratings, and much effort and money are saved to the institutions.

The educational clinic of the College of the City of New York was established by the city in 1913, and its development and expansion have been materially aided by the Junior League and the New York Foundation. Very few adults are examined at the clinic, the chief aim being the social and educational adjustment of children .

"In the application of these intelligence tests to school children," Dr. Heckman was asked: "Have you found any difference in the mentality of boys and girls?"

"Not in the slightest, contrary to the old notion that boys are smarter than girls," replied Dr. Heckman emphatically. "If there is any reason to educate boys and girls separately it must come from another reason than any difference in mentality."

It is not generally understood how much the World War did for the advance of psychology in general. In this country little was known of intelligence tests until the application of psychology to the grading of men who had entered the army. The nation was confronted with a huge problem in the sudden mobilizing of millions of men of all grades of education and intelligence. The psychologists of the country came to the rescue, and what is known as the "army test" is the result. This test, with all its additions and improvements, soon established some facts that were pleasant and some that were not so agreeable. It placed the men in groups, where they belonged, and it did so quickly. It showed that nearly 30 per cent of the 1,556,011 men for whom statistics are available were unable to "read and to understand newspapers and to write letters home." Such men had to be given a special examination prepared for illiterates.

The psychological testing as carried out in the army, aided in segregating the mentally incompetent, classified men according to their mental capacity, and assisted in selecting competent men for responsible positions.

These are the things which psychologists say can be done in a general way. The same tests which proved so efficient in the army are being used to-day by examiners who deal with adults. Such tests differ from the Edison questionnaire in that their questions usually are not direct, but aim to get results in a different way than by out-and-out query and answer.

Thus, instead of asking, in Edisonian form: "Where do we get pearls?" the questionnaire that is prepared along army lines will say: "Do pearls come from trees, mines, oysters or sand?" The person of average intelligence will answer such a question readily and easily, but the person whose intelligence is low will be apt to make a mistake. At the same time he has been helped along a bit, mentally, and is not left with his mind utterly blank, as in the case of a straightforward question demanding a similar answer.

The names of persons prove especially confusing in such questionnaires. Thus, when an individual is asked: "Is Irvin Cobb an author, lawyer, baseball player or politician?" he is quite apt to get Cobb the author and Cobb the baseball player confused, to the author's detriment.

The aim of those who prepared the methods for intelligence tests in the army was to provide something that would fit every grade of intellect. It was intended to provide examinations that would indicate the men who were of too low grade mentally to make any progress whatsoever in the army, and also to pick out exceptional types of men who could be used for the special tasks that demanded the highest degree of intelligence. The mere fact that the war did not last long enough was all that prevented this goal from being attained. But the psychologists came near enough to their goal for all practical purposes. Also they established a formula for intelligence testing which is serving as the basis of examinations in colleges and business establishments to-day.

What these psychologists sought to do in the army they are now trying to do in educational and business life. They are applying the principles of psychology to school and the factory. It is no longer necessary to use group testing in large numbers, as in war days. Individual psychological tests are recognized as the most practical. In fact group methods of mental testing had no extensive use before 1917. In the Students' Army Training Corps the intelligence tests were applied to the highest grade of men, mentally, in the country. Such remarkable results were achieved that Lieutenant Colonel W. V. Bingham, in the Proceedings of the American Association of College Registrars for 1918, wrote:

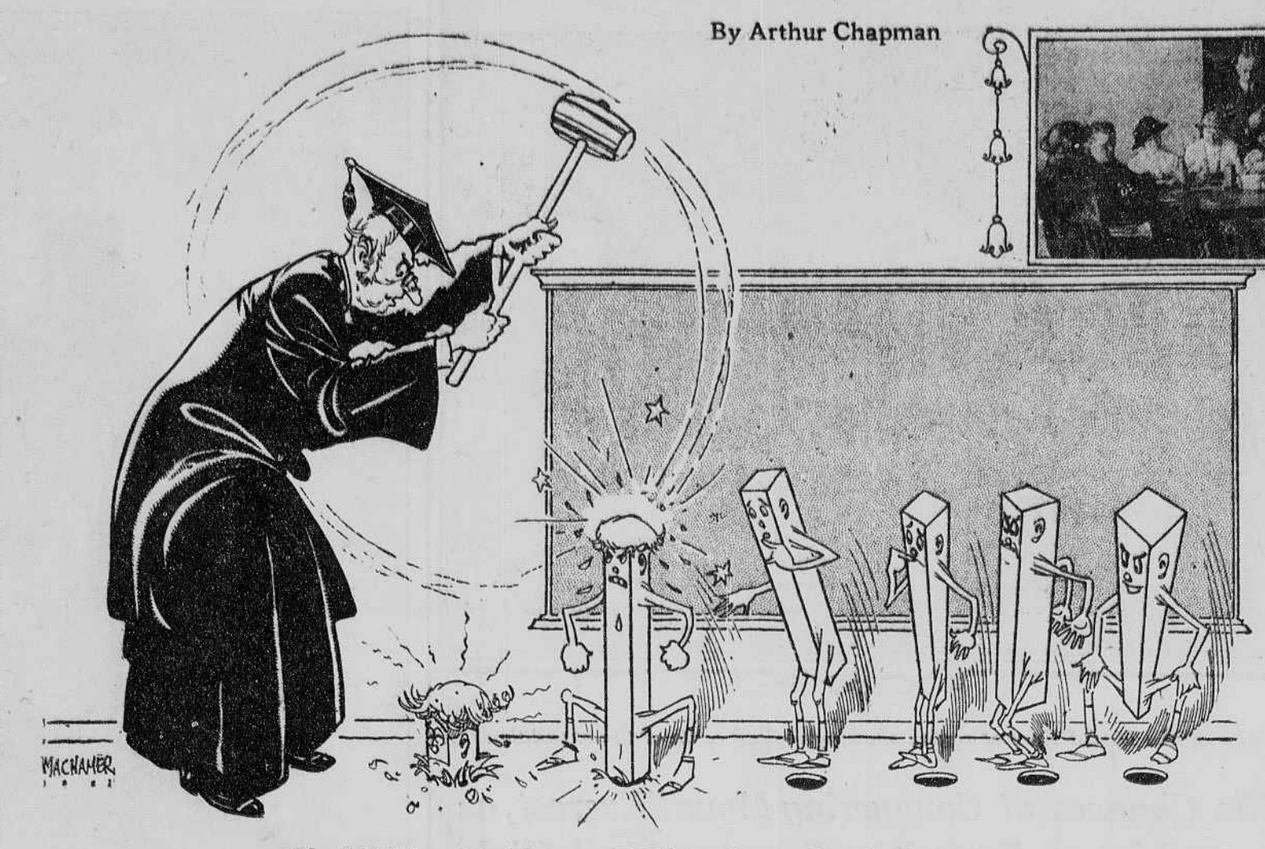
"Information obtained by psychological methods will undoubtedly have its value in connection with problems of admission to college. This question of admission is one that suggests the desirability of making improvements in two directions. Is it not possible to admit a larger number of students who are now excluded, but who could profit by the college course? Is it not possible to exclude from college a larger proportion of the students who now come to college and fail, and who leave with the brand of failure upon them, having wasted their own time and their fathers' money? The use of psychological methods should help in solving both of these problems. It should make possible more elasticity in the administration of entrance requirements. These tests are not 100 per cent perfect, but they are reliable up to a certain point, and to that extent I am confident that they are going to find a useful place in university administration, not only with reference to the administration of admissions, but also in the guidance of students in the problems they are to face throughout their academic career."

Men who passed the intelligence test in the army and who were struck with the ease of its working and the readiness with which great masses of soldiers were given reasonably correct mental classification have paid serious consideration to the application of some such plan in business. It is once more the question of getting the individual properly placed, as in the army. The manufacturer who shifts his men from one department to another until he finds where they do the best is merely working out the principles of psychology, though perhaps he is taking a long and expensive plan. An hour's examination at the hands of a trained psychologist could show pretty thoroughly the general field in which the individual belonged.

Since Alfred Binet brought out his early work on general intelligence tests in 1905 much material has appeared. The Goddard revision of the Binet scale and the Yerkes-Bridges point scale and the Stanford revision of the Binet scale represent three of the most important steps in individual testing.

The war gave an unequaled opportunity for wholesale testing in groups. It established an excellent scale for testing the mental capacity of the average adult. The manufacturer, whether it is Mr. Edison in his East Orange laboratory or Mr. Jones in his beet sugar factory out in California, who applies an intelligence test to new employees is simply trying to do what Uncle Sam had to do in the war—keep the square pegs out of the round holes.

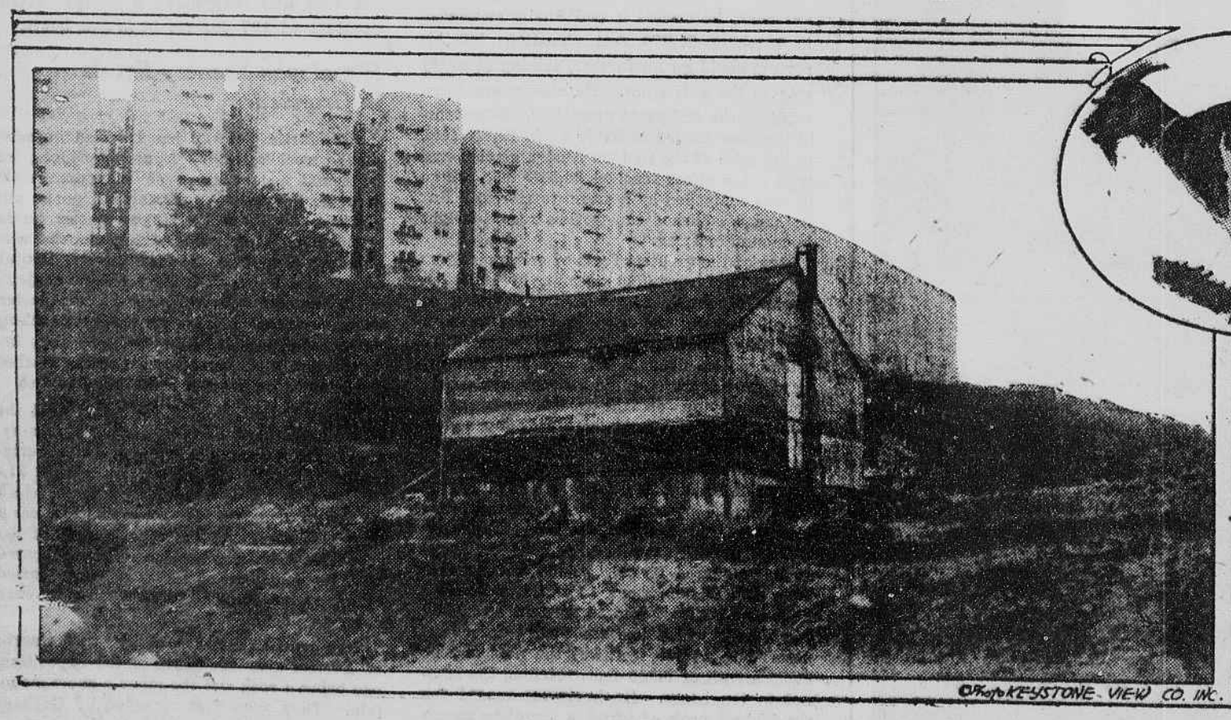
With the same system applied to the schools, from the kindergarten through the grammar school, high school and college, perhaps Mr. Edison and Mr. Jones, the beet sugar magnate, will not complain about the "amazing ignorance" of so many of the applicants at their doors. Psychology promises to put such men in the general paths which they should follow. It does not promise that all will perform equally well on those paths. Some will advance rapidly and others will lag—but the mere fact that much blundering, stumbling and groping have been saved will be psychology's victory.

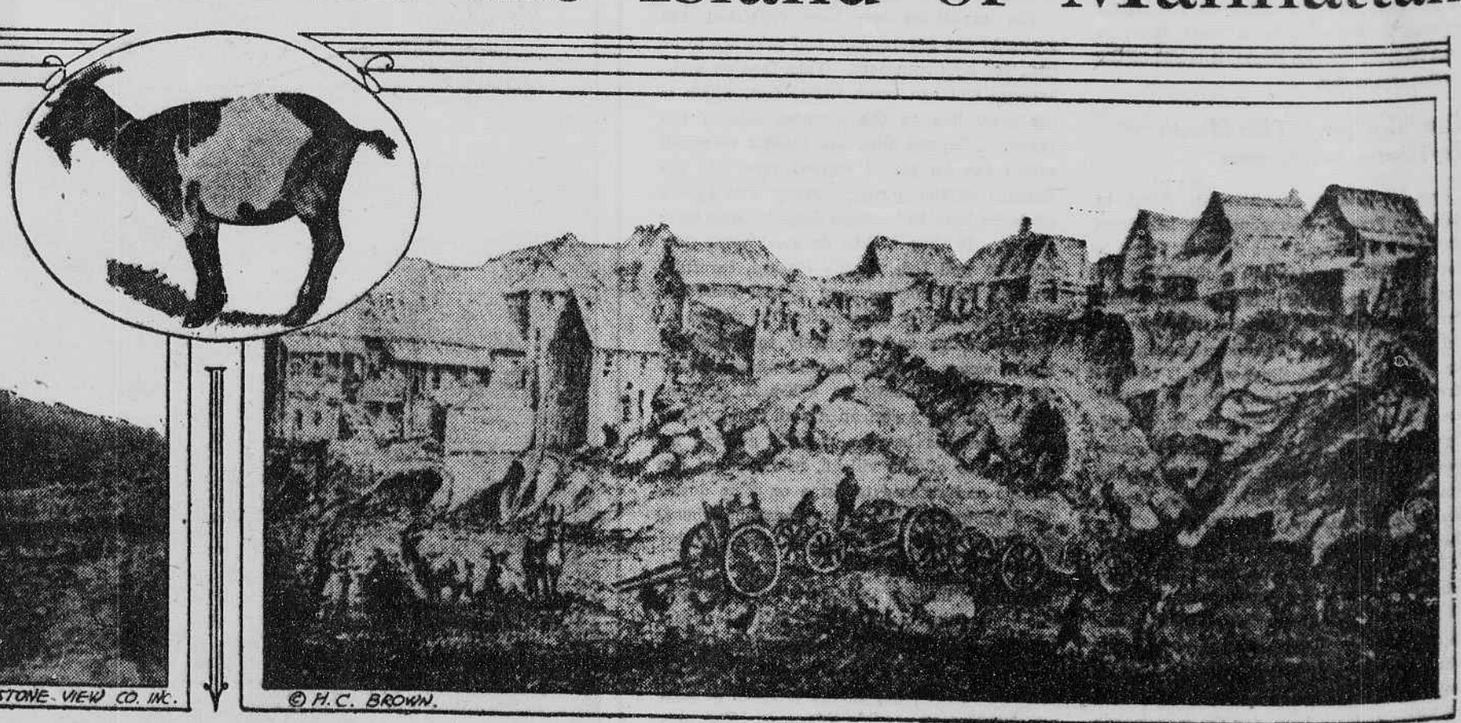


The Old Educational Process of Driving Square Pegs in Round Holes

A group of school teachers at the Educational Clinic of the College of the City of New York, learning how to give questionnaires to public school children from kindergarten to high school grades

The Passing of the Squatter From the Island of Manhattan





THESE pictures are printed for the contrast which they show. That at the left, a view at Broadway and Hillside Avenue, Manhattan, combines a squatter's shack with a colosseum-like line of apartment houses. One squatter's shack—one—was considered news, the other day; its picture was worth taking; and the story of its occupant, an old man with a claim on the adjacent property, was considered worth telling. Both story and picture were of interest to modern New York, but in a bygone age, and not so long ago, squatters' shacks in the upper districts of the city were the rule and not the newsy exception. Instead of one shanty and a row of modern dwellings, the camera or the artist's pencil caught a chaos of shanties and a solitary pioneer of brick or stone. The picture on the right shows the squatter period in its heyday, with not even a two-story edifice in sight. Not uptown was this, as we now know uptown, but Forty-second Street, looking west from Second Avenue. The time, 1869. It might be the outskirts of Camelot, as described by Mark Twain in "A Connecticut Yankee at King Arthur's Court." New York has swallowed this type of community life. It was no pleasant morsel to swallow, and it took a long time to digest. For years the mansion and the hovel were neighbors. A census of goats and pigs would have filled many pages. Plays were built around the shack-dwellers, notably those of Ned Harrigan, whose "Squatter Sovereignty" will be remembered by all old-timers. New Yorkers not yet in the old-timer class will recall Billy Barry's "The Rising Generation," which also reflected the life of the squatter. The setting of the first act showed a mansion high on one side of the stage and on the other a shanty with steps leading up to it.