

## PSYCHOLOGY

# Mind is Just a Machine Psychologist Concludes

Not So Simple as Engine in Your Automobile  
But Nevertheless Mechanical, Embryo Study Reveals

**T**HE MIND is a machine. This is what Dr. Leonard Carmichael, president of Tufts College, told members of the American Psychological Association in his address as their president.

Your mind is not so simple a machine as the one that runs your automobile or any other that you are used to working with. What the mind can do changes with its growth and development.

But from the time, long before normal birth, when a puff of air against the nose will make the tiny unborn creature try to brush it away, the mental machine is at work. Behavior even then is just as purposeful as any behavior not involving language ever is throughout life.

The mental machine, after birth and during the lifetime, becomes more complex. What it can do is also more complex. But it does not become in any sense non-mechanical, Dr. Carmichael said. This is still true, he declared, when the individual acts in a manner that any observer would call "purposeful" or when his behavior is changed by his learning.

Dr. Carmichael's conclusion, which seems a blow to one form of "free-will" theory which holds that man is in every

way "the captain of his soul," is based on his study of mental development of animals at very early ages before birth. He did point out, however, that other approaches to the study of man's mind might well be phrased in non-mechanistic terms.

With growth, these tiny bodies are able to adapt themselves more and more effectively to changes in their environment. But this growth in ability to behave appropriately under changing circumstances is as natural and independent of learning as is the lengthening of the hair.

The zero point of mind, he said, may be placed at the point when the living organism first responds to such outside circumstances.

That is when mental life begins. It is at a different age for different animals. In the human baby, the first response is probably a movement of an arm or leg, not the whole body.

The first sense to develop in the unborn is the skin sense of pressure. At first there are mere twitches in response. Before birth the response is coordinated and adaptive.

Latest senses to develop are vision and hearing. The cat, for example, cannot see until a number of days after birth, but the guinea pig eye has real acuity-vision before birth.

*Science News Letter, September 21, 1940*

## DENTISTRY

Army Expects Many Draftees  
Will Require New Teeth

**F**ALSE teeth appeared as a national defense preparedness item in a report to the American Dental Association meeting in Cleveland.

Army officials expect that a large percentage of the men who would be inducted into the Army under a compulsory draft law will need "extensive dental replacements," Brig. Gen. Leigh C. Fairbank, U. S. Army Dental Corps, told the meeting.

"The men of military age today," he said, "will certainly show the lack of dental care during the depression years. This condition must not be permitted to contribute a disqualifying factor to the extent which conditions indicate."

The Army is ready to meet the need of draftees for new teeth and other dental treatment, the entire plan for dental service in time of mobilization having been revised "to meet conditions which we are certain will exist in every Army camp."

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Gum Disease Takes Half

**H**ALF of the "world's lost teeth are lost because disease of the gums makes their extraction necessary," Dr. Olin Kirkland, Montgomery, Ala., charged. Dental decay or caries, he said, is responsible for only one-half of the cases of tooth extraction, instead of all of them as is commonly supposed.

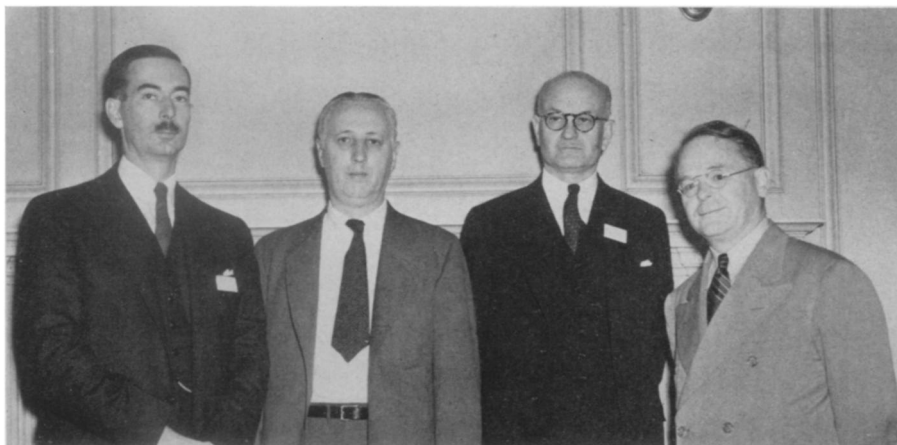
*Science News Letter, September 21, 1940*

## PHYSICS

One-Sided Gauge Measures  
Thickness of Enamel

**A**N ELECTRIC gauge has recently been developed which will measure the thickness of porcelain enamel on surfaces and indicate a difference of as little as 1/10,000 of an inch. It tells the thickness simply by applying it to one side of the piece, and no computations, considering the thickness of the metal base, are required. (General Electric Company.)

*Science News Letter, September 21, 1940*



FOUR PRESIDENTS

Meeting together recently at Pennsylvania State College, were four national psychological associations. Here are shown their four presiding officers: Dr. Leonard Carmichael, Tufts College, of the American Psychological Association; Dr. Karl J. Holzinger, University of Chicago, of the Psychometric Society; Dr. Edward C. Tolman, University of California, Society for the Psychological Study of Social Issues and Dr. Horace B. English, Ohio State University, American Association for Applied Psychology.