pected alterations, which are, of course, opposite in sign to those affecting extensors of the same joints.

These various studies on postural tonus are best observed by the subject himself, for he alone can be certain that they are involuntary phenomena. However, they have been tried on numerous persons who were not aware of the responses to be expected, and the results, so far, have been concordant.

The evidence for the effects of light on muscle tonus, which has been obtained in the course of these studies, indicates that man possesses latent positive heliotropism. As demonstrated by Garrey[2] for the robber fly, the alterations of tonus are directed in such a way as to assist in turning the body toward the light.

Observations on these reflexes have proved very useful for the teaching of neurophysiology. It is hoped that they may also be of assistance in evaluating the degree of excessive or diminished tone of muscles in neurological examinations or in tests of fitness or fatigue.

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CHOLINESTERASE

IN SCIENCE (November 19, 1943) an attempt has been made by de Laubenfels[1] to claim for Alles and Hawes the priority of our discovery that two distinct cholinesterases exist in the animal body: a specific or true cholinesterase and a non-specific or pseudo-cholinesterase.[2]

Alles and Hawes,[3, 4] to whose work we referred in our first communication,[2] consider the cholinesterase activity of whole blood as due to the activities of a serum and a cell enzyme. This classification is based on a misconception. Experiments reported by us[5] show that the cholinesterase activity of serum is due to the presence of two distinct enzymes, one of which is specific like the enzyme in red blood cells[2] and brain,[6] the other being a non-specific catalyst. Consequently, any statement regarding the properties of the so-called serum enzyme would always refer to the properties of a mixture of these two enzymes. De Laubenfels' assertion that Alles and Hawes, who moreover were unaware of the existence of a specific and a non-specific enzyme, have "thoroughly demonstrated" the existence of the true and pseudo-cholinesterase is therefore invalid.

Regarding de Laubenfels' suggestion that the authors select more suitable names for discriminating between the two enzymes, we feel that the prefix "pseudo" emphasizes the non-specificity of the enzyme to which the name cholinesterase, suggestive of substrate specificity, has hitherto been applied. As we mentioned in the article in SCIENCE, the term "pseudo-cholinesterase" has been provisionally chosen until such time as the physiological function of this enzyme has been determined.

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APPARENT TIME ACCELERATION WITH AGE

I HAVE read the letters to SCIENCE on the apparent time acceleration with age, and I should like to add a comment that is based on a study of numbers I made several years ago. My thought is that our sensations of elapsed time is strongly influenced by the number of remembered and half-remembmered things that have occurred. Thus at age ten a single day may bring to a boy a number of new events, sensations and thoughts, while at 50 a considerably greater time must elapse before an equal increase is accumulated. These things that fix themselves in our memories are our units of time, and if at 50 a week passes without a remembered event that week is telescoped toward the vanishing point.

An astonishingly large number of natural phenomena are arranged on a logarithmic scale. Thus we may say that an eleven-pound dog is slightly larger than a ten-pound dog, but an 801-pound horse is the same size as an 800-pound animal. Here we would require an 880-pound horse (+10 per cent. as in the case of the dog) before we would admit a perceptible difference. This mode of thought, which sets up a logarithmic scale of measurement, is inherent, I believe, and it has strongly influenced our factual literature, of which memory of past events is a part.

Returning to our sense of elapsed time, I believe that we must add a fixed fraction to our accumulated sense of time before we admit the addition of a new unit, and this makes our elapsed time sense follow the same law that governs our sense of brightness, loudness, weight, etc.

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I HAVE been interested in the discussion of the apparent acceleration of time with the age of the

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[5] B. Mendel, D. B. Mundell and H. Rudney, *Biochem. Jour.*, 37: 4, 473, 1943.
[6] B. Mendel and H. Rudney, SCIENCE, 98: 2539, 201, 1943.