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NEW ENZYME PREPARATIONS by



1. ALKALINE PHOSPHATASE (BACTERIAL)

A phosphomonoesterase with a pH optimum of 8.0 and an unusual thermal stability. This highly purified enzyme is prepared by methods based on the following work:

1. Torriani, A. *Biochimica et Biophysica Acta*. (In press)
2. Garen, A. and Levinthal, C. (Ibid)

2. γ AMINO BUTYRATE GLUTAMATE TRANSAMINASE SUCCINIC SEMIALDEHYDE DEHYDROGENASE

A coupled enzyme preparation for the rapid spectro-photometric assay of γ amino butyrate (GABA), a compound of considerable current interest in the field of brain metabolism.

The preparation and method of γ amino butyrate analysis are based on the following work:

1. Scott, E.M. and Jacoby, W. B., National Institute of Arthritis and Metabolic Diseases. *Journal of Biological Chemistry*, 234, No. 4, 932 (1959)
2. Jacoby, W. B. and Scott, E. M., *Journal of Biological Chemistry*, 234, No. 4, 937 (1959)

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Letters

On the Origin of Life

Many papers have appeared in recent years, several in *Science*, on the topic of the origin of life. I have been somewhat disturbed to note the ever-increasing tendency, especially among biochemists, to identify the event of the origin of life with that of the origin of enzymes or of deoxyribonucleic acid. It appears to me that our greatly increased rate of discovery of facts pertaining to the chemistry of hereditary mechanisms and the relationship of enzyme constitution to genotype has led to a distortion of the basic problem and misled many into this identification.

I do not propose to enter here into a discussion of the problem of the origin of living systems and the possible importance of cyclic factors, which I have treated elsewhere [*Am. Naturalist* 81, 161 (1947)], but should like, rather, to present an analogy which may serve to make my point.

Consider the problem of the origin of far-flung industrial corporations. To the untrained observer the problem of the origin of such structures might perhaps resolve itself into that of the origin of corporation buildings, machinery, raw materials, capital, workers, sales outlets, and so on. The trained observer would seek his answer in a study of the history of corporations. He would correctly conclude that the corporate giant often derives from the humble garage or basement workshop in which the inventor experiments in his off hours to develop a new product or process. He would then trace the slow process of corporate evolution through the small shop of two or three employees, to the modest factory, to the giant factory, to many factories, and so on and on to the industrial complex with its directing board and many stockholders.

Let us suppose that we can no more trace the history of corporations than we can directly trace the history of life. The trained observer might instead insinuate himself into the inner workings of the corporation until he breached the inner sanctum—the board of directors. He would then discover that the board of directors is the keystone of corporate policy and action, varying the company program, product emphasis, and even the corporate structure in response to changing economic conditions and opportunities, electing the officers who see to the fine details of operation, and so on, and, indeed, that every action of the corporate enterprise traces directly or indirectly to the make-up and actions of the board—to

the corporate DNA. In his new familiarity with the manifold operations of the all-powerful board and the consequences of these operations, the solution to the problem of the origin of corporations might suddenly come upon him; dazzled by his suddenly acquired knowledge, he might conclude hastily that the problem of the origin of corporations was to be identified with the problem of the origin of boards of directors!

J. LEE KAVANAU

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Linear and Higher-Order Curves

In Fig. 1 of the article "Investigations of natural environmental radiation" [*Science* 131, 903 (1960)] by L. R. Solon *et al.*, there is presented a straight-line regression on the relationship between barometric pressure and the log of radiation level. Even a casual inspection of this graph indicates that a better empirical description would be given by a second-degree curve. This may be inferred from the systematic deviation of the observed points from the fitted line.

As a simple description of the relationship within the range of observations, it would make little difference, but since this line is used for extrapolation, considerable error may result. For example, the 3.8 $\mu\text{r/hr}$ extrapolation for cosmic-ray ionization intensity at sea level for New York City might result in an estimate of 5 $\mu\text{r/hr}$ (or a difference of about 33 percent) if a curved line were used.

MARVIN GLASSER

44 Buswell Street,
Boston, Massachusetts

In his letter Marvin Glasser suggests that a better fit to the data in Fig. 1 of our article could have been achieved by using a higher-order polynomial than the linear regression exhibited.

I agree that a quadratic or higher-degree polynomial would constitute a closer fit to the empirical data. (In fact, since the curve is based on 19 experimental points, an 18-degree polynomial exists which would fit the data perfectly).

I disagree that using a higher-degree polynomial would result in a curve that would be better for extrapolation.

Further, I submit that if a set of empirical points actually obey a linear law, any higher-degree curves—whether they fit the data better or not—almost certainly would be worse for extrapolation. Extrapolation of such a linear relationship depends simply on the slope

of the regression line. If extrapolation from the higher-degree curve outside the empirical range gave the same numerical result as a linear least-squares fit, it would merely be fortuitous.

The linear fit is especially suitable for our airplane data. It corresponds physically to an exponential attenuation mechanism well established in cosmic radiation-absorption processes. A quadratic (or higher-degree) fit would not be justified by the physics of the situation.

LEONARD R. SOLON

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Energy Commission, New York, N.Y.

Types and Name-Bearers

Shenefelt [*Science* 130, 331 (1959)] has suggested that proposal of a new species should be primarily by description of a single specimen, the type ("holotype"). Schopf [*Science* 131, 1043 (1960)] has objected, mainly on these grounds: types are not typical; description of a specimen does not describe or define a species; and the proper function of a type ("holotype") is solely that of name-bearing. I entirely agree with Schopf, and I made the same points at greater length 20 years

ago [*Am. J. Sci.* 238, 413 (1940)]. Since then this attitude has become widespread but, as Shenefelt's note shows, not universal.

Schopf proposes that a type as name-bearer be called "nomenifer." The combining form of *nomen* is *nomin-*, and the word should therefore be *nominifer*. I long since proposed the Greek-derived equivalent *onomatophore*. There is no particular reason to prefer Greek or Latin derivation, but current type terminology is derived from Greek.

I do not myself regularly use the term *onomatophore*, and I do not know of anyone who does. *Nominifer* is not likely to fare better. The term *type*, with all its confusing connotations, is too strongly entrenched in taxonomy. Codes of nomenclature require designation of types, under that name, and there is little or no chance of eradicating that usage.

The onomatophore or *nominifer* is the type of modern taxonomy. Additional designations such as holotype and paratype only perpetuate the idea that types can serve other than nomenclatural functions and hence can be of more than one kind.

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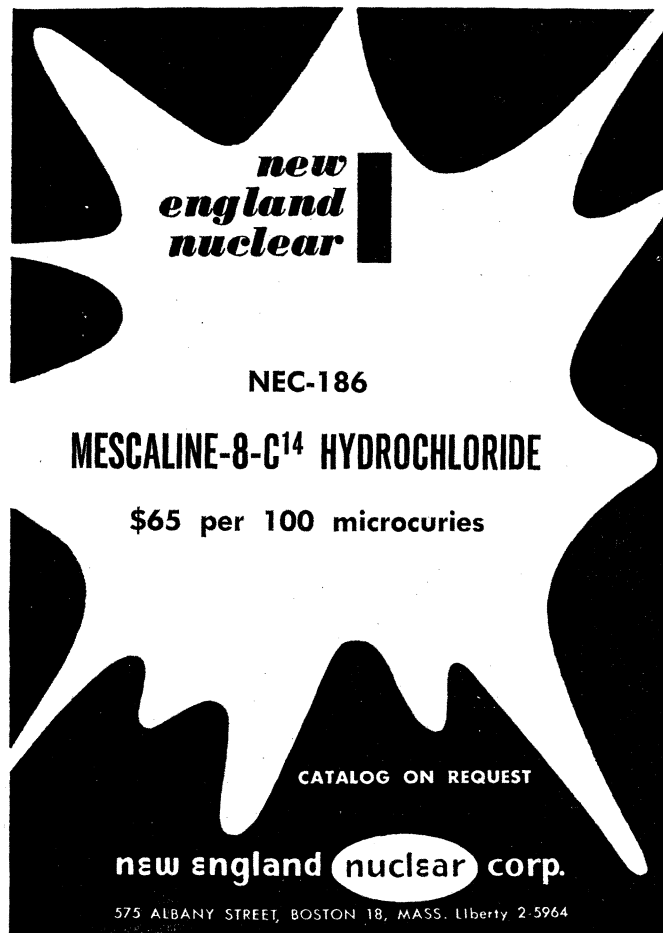
Meetings

Neuropathology

The Commission for Neuropathology was founded by invitation in the Salpêtrière Hospital in Paris on 24 October 1959. At this meeting were present Ludo van Bogaert and Pearce Bailey, president and secretary-general, respectively, of the World Federation of Neurology.

The following neuropathologists had been invited and became charter members of this commission: J. Bertrand (France); E. Christensen (Denmark); P. B. Diezel (Germany); W. Girard (France); W. Haymaker (United States); A. C. Løken (Norway); F. Lüthy (Switzerland); W. H. McMenemy (Great Britain); E. Osetowska (Poland); G. Peters (Germany), who was unable to attend the meeting; F. Seitelberger (Austria); P. Sourander (Sweden); J. O. Trelles (Peru); and W. J. C. Verhaart (Netherlands).

F. Seitelberger was elected secretary of the commission. The permanent secretariat has its headquarters at the Institute of Neurology of the University of Vienna (Obersteiner Institut), Schwarzspanierstrasse 17, Vienna 9, Austria.



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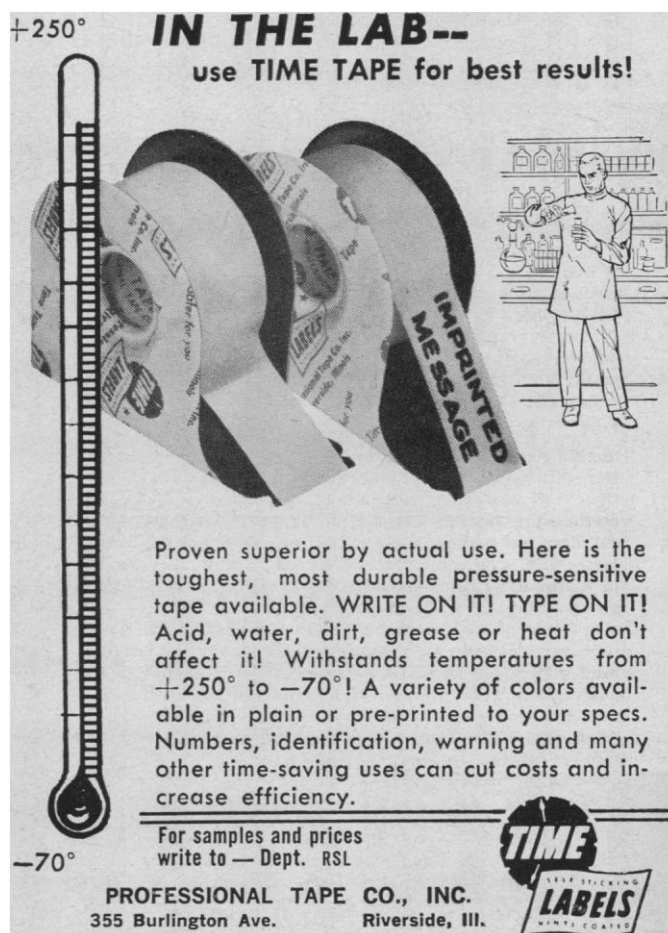
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