

reagents. Moreover, the small amount of oxygen evolved from hydrogen peroxide even under these conditions was rapidly eliminated from the solution by shaking it vigorously in a thin layer.

Our results have been challenged, however, by Johnson and Schouvenburg<sup>3</sup>, who claim to have been able to demonstrate that the catalytic decomposition of hydrogen peroxide by catalase may take place in the complete absence of molecular oxygen. Their evidence is derived from a qualitative experiment showing that hydrogen peroxide added under strictly anaerobic conditions to luminous bacteria is decomposed by the catalase of these bacteria. The liberation of oxygen is shown by the appearance of luminescence in these bacteria, which was previously extinguished owing to the complete absence of oxygen. These experiments have been carried out with catalase of living and lysed bacteria, naturally in the presence of a great many of other intra- and extra-cellular catalysts and in strong buffer solutions at pH 7.3; in other words, under experimental conditions, which, as we have clearly shown in our paper<sup>1</sup>, would reveal only a partial or even no inhibition at all of the activity of catalase.

On the other hand, if we assume that the catalase in their experiments was strongly (90 per cent) inhibited, which is very improbable, the remaining catalytic activity would liberate a sufficient amount of oxygen to induce luminescence in their bacteria.

We can say in conclusion that their experiments,

far from disproving our results, show only that the qualitative tests with luminescent bacteria are of very little use in the study of this problem, for which reliable and strictly quantitative methods are already available.

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<sup>1</sup> Keilin, D., and Hartree, E. F., *Proc. Roy. Soc.*, B, 124, 397 (1938).

<sup>2</sup> Keilin, D., and Hartree, E. F., *Proc. Roy. Soc.*, B, 121, 173 (1936).

<sup>3</sup> Johnson, F. H., and van Schouvenburg, *NATURE*, 144, 634 (1939).

#### Tables for Statisticians

IN my review of "Statistical Tables", by Fisher and Yates (*NATURE*, September 23, p. 533), I referred to the "interesting innovation of providing mean differences for half the interval only". Dr. L. J. Comrie has pointed out to me that this practice is followed in E. V. Huntington's "Four Place Tables of Logarithms and Trigonometric Functions", and I gladly take the opportunity of acknowledging this fact.

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#### Points from Foregoing Letters

THE intensity of vertically directed mesotrons at different heights in the atmosphere has been measured by E. G. Dymond in a series of balloon flights. It is found that the intensity rises to a maximum of nine times the ground level value at an air pressure of about 80 mm. mercury. In order to bring the theoretical intensity variations, derived by Euler and Heisenberg, into agreement with these experimental results, it is suggested that there is a minimum energy of formation of mesotrons in the upper atmosphere, of about  $8 \times 10^8$  ev.

H. R. Nettleton records the conclusion of a series of researches on the absolute measurement of electrical resistance by the development of a method which utilizes the average E.M.F. of a commutating generator. He describes how difficulties associated with the method have been overcome, and states that resistances of approximately an ohm can be measured rapidly with an accuracy of a few parts in a hundred thousand.

C. C. Addison finds some interesting differences in interfacial activity between short-chain isomeric compounds of classes not previously regarded as surface active. Interfacial tension measurements may be used to differentiate between such structural or stereoisomeric compounds.

A. B. Wildman and H. B. Carter indicate the present confusion in the terminology of fibre-follicles in the Mammalia. They suggest a new terminology which recognizes clearly two main growth phases and which should make possible a more intelligible co-ordination of research on the development of the mammalian coat.

E. Lowe Pierce and J. H. Orton find that *Sagitta elegans* is predominant or exclusively present at Port Erin and *S. setosa* in Liverpool Bay, except during equinoctial tides when interchange of species occurs. It is inferred that extensive mixing of inshore and offshore waters occurs at equinoctial tides and that at other periods a relatively stable body of water exists in Liverpool Bay.

Mortality among sponges off the coast of British Honduras is reported by F. G. Walton Smith. Evidence is given to show that the probable cause is identical with that of the recent Bahamas mortality; the time and place of appearance support the suggestion that the disease has been transmitted by ocean currents.

The aphid *Myzus ornatus* is found by J. B. Loughnane to be a vector of certain potato viruses. In view of this ability and of its wide host range, it is suggested that this species may act as a vector of viruses of plants other than the potato.

S. Ochoa and R. J. Rossiter report a decrease of the flavin-adenine-dinucleotide of Warburg and Christian in the heart and liver of rats fed on a flavin-deficient diet, providing another instance of a deficiency of the vitamin B complex affecting a biological oxidation system.

D. Keilin and E. F. Hartree find that the decomposition of hydrogen peroxide by catalase is brought about by the successive reduction of the catalase iron by the peroxide and its reoxidation by the molecular oxygen. This is in contradiction to the view of Johnson and Schouvenberg, which was based on qualitative tests with luminous bacteria.