

to a large percentage (50–100 per cent) of abortive pollen. The viable pollen grains are equal in size, containing unequal chromosome numbers. They can give rise to plants with aberrant chromosome numbers.

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Decomposition Reactions of Organic Compounds in the Gaseous State

PERHAPS Prof. Hinshelwood will excuse me if I suggest that no useful purpose is effected by discussing the treatment of isolated sets of experimental data on the lines indicated in his letter in NATURE of June 4, p. 1010. Space would not permit me to go into the question in detail; and to counter with similar illustrations from his own work would be waste

of time. Doubtless our methods are very far from perfect, and I may say that after, not merely twelve, but forty-two years' experience of work with gases, I find that the difficulties are such that the greater part of the work of most labourers in this fascinating field washes out.

That we hold differences of opinion as to the way in which problems in kinetics of gas reactions should be handled is well known. I do not suppose that anyone who is not interested in the subject reads my papers, or those of Prof. Hinshelwood; but it is scarcely reasonable to imagine that anyone criticize his work on the basis of hearsay information regarding mine. If anyone does so, or *vice versa*, does it matter?

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June 9.

Points from Foregoing Letters

FROM his measurements of intensities in the Balmer emission spectrum due to recombining protons and electrons in the gaseous nebulae and in an electrodeless discharge tube, T. L. Page concludes that Kramers' absorption law is invalid for hydrogen. The use of this law in astrophysical problems is therefore unjustified.

Prof. R. G. W. Norrish enumerates several objections to the theory put forward by Bergmann and Samuel to account for the photo-decomposition of organic molecules by the simultaneous fissure of two bonds, that is, by a reduction of valency of the central atom.

Prof. K. H. Meyer and W. Hohenemser find that the two peptides glycyl *l*-leucine and *l*-leucyl glycine do not interchange their constituent groups in solution. From this they infer that, under the conditions of the experiment, no molecules of the cyclol type are formed.

Further studies of the high-pressure nitrogen afterglow leads Prof. J. Kaplan to the view that the new 3471 line is closely related in its intensity variations with the Vegard-Kaplan bands. The spectrum reproduced is a good laboratory reproduction of the night sky spectrum and suggests the hypothesis that the light of the night sky originates low in the upper atmosphere.

Photographs of spectra of bright and diffuse auroras are submitted by R. Bernard. The spectrum of the diffuse aurora shows an intense sharp line at 3470 Å. This may be ascribed to atomic nitrogen ($^3P \rightarrow ^4S$), and the author concludes that the mechanism of excitation in the aurora probably includes two stages: an electronic bombardment producing the permanent radiations of the spectrum; and an afterglow giving rise to the nitrogen bands.

The chemical assay of vitamin B₁ gives lower values than the biological assay, according to results obtained by Dr. M. Pyke. The author ascribes this to incomplete extraction.

Using data of Hecht and Williams on the absorption of visual purple, and taking into consideration the absorption spectrum of the ocular media, Ludvigh

and McCarthy have obtained the retinal luminosity curve for scotopic (twilight) vision. Comparison of this curve with that for the absorption spectrum of visual purple of the frog (Lythgoe) leads E. Ludvigh to revise some of the previously accepted views and to conclude that the retinal sensitivity for blue is much greater than has been previously assumed.

From the initial assumption that a planetary or pendulum clock measures time at a different rate than does an atomic clock (as explained by Milne), also accepting the principle of the conservation of energy and assuming that the measure of a distance is the same on both time-scales, Dr. F. L. Arnot deduces that for an observer measuring time by an atomic clock the number of particles in the universe varies as the square of the age of the universe (2×10^9 years). On the other hand, using the pendulum time scale, the number of particles in the universe appears constant, but the age of the universe becomes infinite.

Dr. R. Eisenschitz announces that he has calculated the specific heat of brass at constant pressure, and that the 'specific heat - temperature' curve obtained can be adjusted so as to give good agreement with experiments. The assumed dependence of the energy of a copper-zinc pair on volume is compatible with the energy as calculated from the compressibility of brass and the observed expansion.

The presence of *Zelleriella*, a minute parasite of certain toads and amphibians of South America and Australia, is reported by Dr. H. Sandon from South Africa. This parasite is not found in North Africa or Asia, and its presence in South African frogs lends support to the hypothesis of former land connexions between the southern continents.

Germinating seeds of dry barley and other cereals, etc., covered with crystals of acenaphthene for a few days, show changes in the type of their growth, according to Prof. D. Kostoff. These changes are found to correspond to abnormal behaviour of the chromosomes during the process of division of the cells. The activity of some factors responsible for the arrangement of the chromosomes during mitosis and meiosis is apparently inhibited.