

and I tried to perform the calculation, but I saw that refraction would have a considerable effect, and I did not see how to make a quantitative allowance for it. By a curious coincidence, I have just received a copy of a paper by Prof. H. Dember, of the University of Istanbul, which includes a diagram almost identical with one which I sketched in my pocket-book a couple of days ago after discussing the matter with a scientific friend, who agreed that allowance must be made for refraction.

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A PHENOMENON similar to that described by Dr. John J. Hopfield was well seen by a colleague (Mr. H. F. Finch, then of Abinger Magnetic Observatory)

and myself from the summit of Leith Hill, Surrey, in September 1926. My recollection is that the clouds casting the apparently converging shadows were a little to the east of the zenith, and the beams were no doubt brought into prominence by a slight dust haze.

The rarity of the phenomenon must be attributed to the rather precise nature of the conditions necessary; namely, a clear western sky with the sun on the point of setting and a broken line of low cloud lying approximately at right angles to the direction of the sun. The beams passing through the interstices, being practically horizontal, will then appear to converge on the eastern horizon by perspective.

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Points from Foregoing Letters

By means of an improved canal ray tube of Dempster type which gives sharp displaced lines, and with a diffraction grating of 15,000 lines to the inch, Dr. H. E. Ives has observed a displacement of hydrogen lines of approximately 0.05 Å. towards the red, independent of the orientation of the apparatus. This positive effect confirms the Larmor and Lorentz theory of the relation between matter and the luminiferous ether, according to which a moving clock (in this case the hydrogen molecules emitting the light waves) has its rate decreased in the ratio

$$v = v_0 \sqrt{1 - v^2/c^2}.$$

A table showing the effect of various solvents (alcohol, cyclo-hexane, hexane, ether, chloroform) on the intensity of absorption in the region 328 mμ by substances containing vitamin A (halibut and fish oils and concentrates) is given by E. L. Smith, B. E. Stern and F. E. Young. The variation is about 20 per cent in the various solvents; chloroform shows a shift in the maximum absorption to approximately 330 mμ. The effect of the solvents is not the same on all the oils investigated and this, as well as the effect of irradiation and storage upon the oils, is tentatively ascribed to the presence of *cis-trans* isomers of vitamin A.

Dr. R. A. Morton, commenting on the above, states that after molecular distillation of halibut intestinal oils, different fractions show a variation in the ratio of the ultra-violet absorption to the antimony chloride colour test maximum, and this also could be plausibly explained by a partial separation of the *cis-trans* forms.

According to Dr. J. Leibowitz and S. Hestrin, certain taka-diastase preparations lose their hydrolytic activity towards sucrose and their slight hydrolytic activity towards alpha-methyl-glucosides, but retain or regenerate most of their hydrolytic ability towards maltose when heated in boiling water. By incubation with taka-diastase, a complete inhibition of yeast maltase may be obtained. Hence yeast-maltase and taka-maltase, the authors conclude, are essentially different in character.

The deleterious effects which herbage grown on the so-called 'teart' areas of Somerset has on milking cattle is due, according to experiments by W. S. Ferguson, Dr. A. H. Lewis and Dr. S. J. Watson, to the presence of excess of molybdenum in the soil and in the herbage therefrom.

Prof. E. D. Adrian reports that, as in the case of the mammals, the cochlea in the ears of reptiles and fishes behaves like a microphone; sound waves give rise in them to electrical potential changes.

Activity in bed-bugs increases the metabolic rate and causes death in a fraction of the time in which resting bugs die. Dr. Kenneth Mellanby directs attention to the importance of considering activity as one of the principal factors in laboratory experiments made to study insect biology.

The occurrence of the young of the brittle star, *Ophiothrix fragilis*, in the genital bursa of the adult is, according to Dr. J. E. Smith, an accidental occurrence, and the bursa may be regarded as a convenient habitation rather than a nursery for the post-metamorphic stage.

According to H. Kersten and H. Branson, irradiation of the first three to five somites of a chaetopod usually resulted in the formation of protuberances of various sizes. The heart region was much more resistant; the majority of the animals showed no ill-effects. Irradiation of the somites approximately in the middle of the animals generally resulted in a cleavage at the point, with the death within 24 hours of the posterior section.

Details of the band spectrum of indium hydride, observed in the region 5600-8500 Å., are given by Dr. B. Grundström. The spectrum was obtained from an arc between electrodes of indium and carbon in hydrogen at high pressure.

Commenting on Prof. Dingle's dilemma that modern physics with its assumption that *only that which is logically or physically observable is significant*, leads one either to assume omniscience, or to deny the existence of the external universe, S. Van Mierlo points out that, by using reason in addition to sense perception, one always reaches the physically unobservable. He suggests that, in the statement of the principle, the word *physically* should be replaced by *essentially*. Prof. E. H. Kennard would avoid the dilemma by admitting that the limits of the observable are being continuously extended and that, for example, if a signal travelling with infinite speed were one day discovered, simultaneity would become observable (to observers moving relatively to one another). Prof. Dingle, in reply, considers that neither of these views solves the problem.