

## Volume-Rectification of Crystals

It has been shown by Khastgir and Das-Gupta<sup>1</sup> that crystals like carborundum, silicon and zincite, which have no centres of symmetry, give volume-rectification when placed between mercury electrodes; whereas with symmetrical crystals, for example, galena and iron pyrites, they did not find this rectifying effect when the crystals were similarly placed with large area of contact between mercury electrodes. Experiments conducted in our laboratory have, however, shown the existence of the so-called volume-rectification in galena, iron pyrites and pyrolusite placed between mercury electrodes.

While it is further expected that all rectifying crystals should show the same effect, our investigation has also given indications which tend to show that either both surface-rectification and volume-rectification (if there be really any volume-rectification) must be coexistent in all rectifying crystals, or the whole phenomenon of rectification is only a surface effect.

Rajshahi College, Rajshahi,  
Bengal. Nov. 10.

<sup>1</sup> *Ind. J. Phys.*, 9, 258 (1935).

B. K. SEN.

## Bright Meteor of November 9

WITH reference to the note in NATURE of December 11, p. 1009, on the meteor observed on November 9, I observed this object at 21h. 26m. G.M.T. while engaged on meteorological work at Hastings. My attention was first directed to a reddish light in a direction west by south of my observation point; this suddenly burst into a brilliant metallic blue head which continued for one or two seconds before vanishing. The light was quite brilliant and resembled a magnesium flare. An interesting feature was that the meteor was of sufficient size to leave a very distinct streak; this was of an ashy grey colour and persisted for 7-10 seconds, growing gradually fainter.

The meteor became visible at an elevation of about 60° and vanished at about 30°. Its deviation from a vertical line from zenith to horizon was in the region of 10° towards the north.

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Dec. 13.

## Points from Foregoing Letters

PHOTOGRAPHS showing a 'divided' aurora with the upper part of the rays in the sunlit and the lower part in the dark atmosphere, with a dark space occurring at the boundary, are sent by Prof. C. Störmer. The photographs were taken simultaneously in different localities. It appears that the aurora is extinguished at the boundary of the sunlit atmosphere but recovers farther down.

Graphs giving the number of silver atoms liberated from silver halides by the action of light, for each molecule of a 'sensitizing' dye present, are submitted by Dr. S. E. Sheppard, Dr. R. H. Lambert and R. D. Walker. The new results confirm those of previous investigators in showing that a single molecule of adsorbed dye gives rise to a large number of silver atoms, but differ in that they indicate that only a portion of the dye molecules are active.

A new oxidation catalyst is announced by J. G. Dewan and D. E. Green. Its presence was detected in the centrifuged insoluble sediment from a phosphate extract of washed and ground muscle, which increased the rate of oxidation of reduced coenzyme I (in the presence of methylene blue, flavin, etc.). The new 'coenzyme factor' is destroyed by heating for 15 min. at 52° C. It is not identical with flavo-protein or any known 'carrier'. Practically every dehydrogenase known in animal tissues can be resolved into two catalytic components, one soluble and the other insoluble. The insoluble 'coenzyme factor' may be considered as a dehydrogenase which specifically catalyses the oxidation of reduced coenzyme by 'carriers'.

Tables showing that the presence of hydrogen (1-5 per cent) or of water vapour (1-2 per cent) increases by several per cent the flame temperature of (25 per cent) carbon monoxide-air mixtures, are submitted by Prof. W. T. David and B. Pugh.

Dr. D. Brown points out that if sound-film is prepared under certain specified conditions, and the striations on the sound track used as a diffraction grating with monochromatic light, a Fourier analysis is achieved resulting in an acoustic spectrum of

the original sound. One of the applications which is suggested refers to the study of transient sounds.

The compressibility of heavy water is found by Prof. S. Bhagavantam and B. S. R. Rao to be very nearly the same as that of ordinary water, and the ratio of the isothermal to the adiabatic compressibility very close to unity, as in the case of water.

The time drift of net assimilation rate in plants is discussed by R. F. Williams. His results show a fall in the rate during vegetative growth; this fall is independent of the drift in mean maximum temperature. These results are not in agreement with recent findings of Heath and of Gregory.

The polarizations and dipole moments of various organic (alkyl) compounds of bromine and iodine have been redetermined by E. G. Cowley and Prof. J. R. Partington, who discuss the influence of the lengthening of the carbon chain and of the surrounding solvent molecules. It appears that the polarizability of the polar group is a more important factor than the magnitude of the principal dipole in determining the change of moment in these series. The polarizability and size of the iodine atom exceed those of the bromine atom.

From an examination of non-flowering and flowering potato varieties, Dr. G. Cockerham has found no direct relationship between the absence of flowers and freedom from potato viruses.

The effect of colchicine (an alkaloid obtainable from meadow saffron) upon nuclei in process of division in plant cells is briefly described by B. R. Nebel. The drug slows down chromosome changes, inhibits spindle formation and prevents the anaphase stage, so that polyploid nuclei (containing a larger number of chromosomes) are formed.

The existence of the so-called volume-rectification has been found by B. K. Sen in crystals other than those having no centre of symmetry. In the course of his investigation, indications have also been found suggesting that the phenomenon of rectification is only a surface effect.