Bright Nebulosity in the 'Coalsack'

A PROGRAMME on the dark patch in the Milky Way, known as the 'Coalsack', taken when at the Boyden Station of the Harvard Observatory, Bloemfontein, included a number of red plates on that region. On one of these, a three-hour exposure taken with the Bruce telescope with an Eastman *I–C* Special plate and Ciné red filter, a small patch of bright nebulosity was observed within the region of the 'Coalsack'.

Dr. Bok has confirmed for me the existence of this nebulosity on a long-exposure blue Bruce plate in the Harvard collection. There is no suspicion of nebulosity on two-hour exposure plates, but a six-hour exposure plate leaves no doubt of the reality of the nebula.

A detailed investigation will be published later.

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Mechanism of the Primary Photodissociation Processes of Organic Molecules

IN his comments on our communication[1] under this title, Prof. R. G. W. Norrish[2] has raised certain questions which we naturally would like to answer. But as this discussion would certainly require more space than NATURE can devote to these questions, we prefer to deal with the matter in the detailed paper which is now in course of completion.

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[1] NATURE, **141**, 832 (1938).
[2] NATURE, **141**, 1138 (1938).

Points from Foregoing Letters

PALÆOLITHIC implements belonging to a hitherto unrecognized type, apparently of early Acheulean date, have been found by J. Reid Moir and D. F. W. Baden-Powell near Cromer, in the marine sands at Corton, classified as 'Middle Glacial'. The implements are of black flint, usually with a thin cortex and mostly exhibiting a certain amount of gloss. Scrapers (side-, hollow-, square-ended and round-ended) and flakes modified by secondary flaking into knives, are among the implements found.

The liberation of small amounts of carbon dioxide from cellulose and from certain starches by aqueous hydrochloric acid has been shown by W. G. Campbell, Prof. E. L. Hirst, and G. T. Young to be due to decomposition of their constituent hexoses, and not to the presence of uronic anhydride residues. The yield of carbon dioxide from a number of typical carbohydrates is reported. Mannitol, which contains no potential aldehydic group, gives no carbon dioxide. These results do not vitiate the claim by W. G. Campbell that certain wood starch preparations contain uronic anhydride residues.

Prof. W. D. Harkins and R. T. Florence find that on compressing surface films containing oleic acid and stearic acid (or some other straight chain saturated compounds) the oleic acid separates out in the form of ultramicroscopic droplets due, the authors consider, to the fact that the bending of the chain at the double bond causes the molecule to require a greater surface and is consequently less firmly bound. Elaidic acid shows the phenomenon to a lesser extent and these findings together with those recently reported by Rideal and Marsden indicate also that the bend at the double bond causes the *cis*-compounds to be less firmly bound to the other molecules in the film than is the case with *trans*-compounds.

Prof. S. K. Mitra discusses some of the new work on the ionization of the upper atmosphere and suggests that the *E* layer (80–120 km. high) is a region of transition from molecular to atomic oxygen, and its ionization is due to photo-ionization of molecular oxygen by absorption commencing at a wave-length of 744 A.

The effect of temperature on the intensity of reflection of X-rays from copper (which possesses a face-centred cubic structure) shows, according to Prof. E. A. Owen and R. W. Williams, that throughout the range 290–840° Abs., the decline in intensity with increase in temperature is greater than that predicted by the Debye-Waller formula.

Dr. D. S. Kothari calculates the minimum energy evolved at different hydrogen concentrations by the combination of two protons to form a deuteron, which reaction is considered by Bethe and Critchfield to be the main source of energy for stars lighter than the sun. The minimum energy is obtained by averaging the probability of reaction for a velocity distribution corresponding to that of a completely degenerate proton gas.

Records of elastic ground waves produced by the explosion of charges of T.N.T. laid on the sea-floor and fired from a motor-boat indicate, according to Dr. E. C. Bullard and T. F. Gaskell, that off the coast of the Lizard a surface layer 1,000 ft. thick, in which the velocity of the elastic waves is 11,000 ft./sec., is underlain by rocks (probably igneous) in which the velocity is 23,000 ft./sec.

Experiments by Dr. J. N. E. Day and P. Sheel, in which rats were allowed to inspire oxygen containing the heavier isotope of mass eighteen and the expired carbon dioxide afterwards analysed for the heavier isotope, indicate that the inspired oxygen mainly enters directly into carbon oxidation and is exhaled as carbon dioxide.

M. Westergaard reports that tetraploids induced in *Melandrium album* by the method of Randolph and by colchicine treatment differ little from diploid plants in appearance. They show the same clear-cut diœcism. The most frequent conjugation type of the sex chromosomes in tetraploid males is autosyndesis.

G. Howard Jones and Seif el Nasr have discovered that the amount of four cereal smut diseases in Egypt differs greatly according to the method of planting. They have analysed this effect into a large factor of depth of sowing and a smaller factor of soil moisture. They have thence developed a 'mud sowing' method of sowing seed on the surface of soaked soil, which is practicable under irrigation, and almost eliminates disease.