

Both of us have been privileged to examine the actual spot where the skull fragment was found, and we can record that at the horizon in question unbraided Clactonian flakes and tools are almost as common as Acheulean ones.

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Recrystallisation accompanying an Allotropic Change

DR. W. G. BURGERS and Dr. van Amstel are to be congratulated on their success in obtaining a cinematograph record of the $\alpha \rightleftharpoons \gamma$ change in iron by the very beautiful method they describe in NATURE of November 2 (136, 721). Their photographs show

that recrystallisation at an allotropic change point is similar to that occurring on heating coldworked metal. Some years ago, in order to settle this same point, I examined a number of salts which undergo allotropic changes of a similar character. Ammonium, potassium and silver nitrates are particularly suitable as they can be melted on a slide and, if crossed Nicol prisms are used, the whole process can be studied. In every case the change began at the crystal boundaries or round an inclusion or blow-hole, by the appearance of new crystal nuclei which rapidly spread across the field. I then found that the rate of change could be slowed down by the presence of a cover-slip and by regulating the thickness of the fused salt, and obtained a series of photographs—some of them in colour—illustrating the change over.

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Points from Foregoing Letters

Mass spectrograms of platinum and platinum-iridium alloy obtained by means of a high-frequency spark are submitted by Prof. A. J. Dempster. They confirm the existence of two iridium isotopes of mass numbers 191 and 193, the existence of which was recently deduced by Venkatesachar and Sibaiya from the arc spectrum of iridium. These two isotopes fill the only gaps in the mass number scale in this region.

Prof. M. W. Travers discusses the processes involved in the thermal decomposition of acetaldehyde and of ethylene oxide, concerning the mechanism of which a divergence of opinion exists. Prof. Travers claims that additional experiments support his view that the reactions depend upon the surface of the system and that they involve a 'chain' mechanism.

The detection by Dr. J. Bell of small amounts of methyl alcohol (0.13 per cent) and of formaldehyde (0.03 per cent) in the suddenly cooled products of the explosion of a methane-oxygen mixture is reported by Prof. W. A. Bone.

The radioactivity of oil-waters from Czechoslovakia has been measured by Prof. F. Böhounek, V. Santolzer and Prof. F. Ulrich. The highest content of radium found is 7.25×10^{-10} gm. in one litre of water, from a depth of 262 metres. This is much lower than the radioactivity reported by Vernadsky from oil-waters in the Northern Caucasus (1.46×10^{-7} gm. per litre).

In order to account for the production of electrons of different energies by radioactive elements, some physicists have been led to postulate the simultaneous emission of neutrinos, which are uncharged particles of mass comparable with that of the electron. Drs. F. Bloch and C. Møller discuss the probable relation between the direction of emission of the electron and that of the neutrino.

The electrolytic separation coefficient for the isotopes of oxygen is found by Geoffrey Ogden to lie between 0.86 and 1.0, depending on the width and height of the energy barrier, and taking into account the possibility of 'tunnelling' of the barrier by the $O^{16}H$ or $O^{18}H$ complex. This range of values is in good agreement with the available experimental results.

Further experiments on the chemical changes taking place in the retina, connected with the visual purple system, are reported by G. Wald. He finds that in the retina of fishes, as in that of frogs, the

following cycle occurs: visual purple \rightarrow retinene \rightarrow vitamin A \rightarrow visual purple.

In connexion with fermentations that may affect the glycogen \rightarrow lactic acid fermentation (Pasteur reaction), Dr. F. Lipmann reports that an inhibition of fermentation takes place when yeast macerate is mixed with a milk preparation containing xanthine oxidase (Schardinger enzyme), in the presence of oxygen. Fermentation recommences upon addition of boiled yeast macerate or purified co-enzyme.

A. E. Gillam and M. S. El Ridi present evidence to show that, when pure β -carotene from grass is twice adsorbed on alumina, it changes partially into a substance similar to α -carotene. The process is reversible, as this substance on re-adsorption reverts in part to the original β form. Genuine α -carotene is also changed under these conditions, and it is therefore important to recognise that surface adsorption can itself change certain pigments as well as separate them (chromatographic adsorption).

Applying the method of Andrade and Roscoe for growing metal crystals under atmospheric pressure or *in vacuo*, leaving all other factors constant, Dr. W. F. Berg and L. Sandler show that bismuth crystals, which slip in tensile tests at room temperature, can be obtained in gas and *in vacuo*. The hypothesis that gas was responsible for the softness of bismuth crystals, put forward by Dr. Berg in an earlier letter, is now withdrawn. The hardness of bismuth crystals obtained by Bridgman's method is tentatively explained as strain hardening.

A diagram showing the order in which the various constituents of the egg of the earthworm (*Lumbricus*) arrange themselves under the influence of a strong centrifugal force is given by Miss Gertrude Norminton and Prof. J. Bronté Gatenby. No protein yolk could be found, though yolk formation is believed by some to be one of the simplest of life processes.

Dr. J. A. and Mr. B. Chalmers claim that the discrepancy between the age of the universe deduced from the 'reddening' of the light from nebulae (10^{10} years) and that computed from observations of binary stars (which indicate a period a thousand times greater) may be simply explained by a change in the time standard at different epochs, since the standard may depend upon gravitational and electrical factors.