trichloride test, since alcohol is a good solvent for vitamin A.

The physiological significance of the presence of considerable quantities of vitamin A in the eye tissues will be discussed in detail in a more complete communication elsewhere. Most interesting is the relation of the presence of the vitamin in the eye to the optic disorders which are the specific symptoms of its absence from the diet: xerophthalmia, keratomalacia and—most pertinent to the present work—night-blindness.

GEORGE WALD
(National Research Fellow in Biology).
Chemical Institute, University of Zurich.
Aug. 6.

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A Reaction in the Skin occurring during the Latent Period following X-Radiation

THE latent period between the application of X-rays to living tissues and recognisable changes in them, is a mystery which has so far all but defied investigators.

The reaction here described is, therefore, of special interest since it occurs within twenty-four hours after the application of X-rays.

If, during the afternoon the skin of a rat be exposed through a small hole in a lead screen to approximately a U.S.D. of X-rays, and immediately afterwards a solution of pyrrol blue be inoculated into the circulation, then the next morning there will be seen a blue mark on the skin precisely corresponding to the hole in the lead screen.

This appears to indicate that the radiated capillaries have been altered so that the dye passes through them more readily than through normal capillaries.

So far as I am aware, only three other biological changes have been observed within a few hours after exposure to X-rays, namely: (1) the inhibition of mitosis when dividing cells are radiated; (2) the disappearance of lymphocytes from the circulation when small rodents are given a generalised exposure to X-rays; and (3) the sticking of lymphocytes to the walls of the capillaries in radiated areas of skin.

It is to be hoped that this new reaction with pyrrol blue, when fully exploited, will elucidate some of the hidden changes which occur during the latent period.

J. C. MOTTRAM.
Mount Vernon Hospital
and Radium Institute,
London, W.1.

Method of Preparation of Radium E

IT is well known that the preparation of sources of radium E presents considerable difficulties, particularly if it is required to separate this element from large quantities of radio-lead. The purpose of this communication is to indicate a new method of preparation.

The radium E is precipitated from a very slightly acid solution of the nitrate of radio-lead by means of pyrogallol in the presence of a suitable quantity of antimony. This reaction is very sensitive and is specific for the elements antimony[1], bismuth[2], the isotope of radium E, and polonium[3]. Under suitable operative conditions radium E and polonium are practically completely precipitated with the antimony. The precipitate is collected on a filter of fritted Jena glass G4, washed thoroughly, dissolved in warm nitric acid (1 part in 3), and evaporated to dryness.

Separation from the antimony is effected by electrolysing the nitrates in presence of tartaric acid and ammonium tartrate[4] using platinum electrodes and a tension of 1·9–2·0 volts. The yields obtained in the electrolysis up to the present vary from 47 to 80 per cent (52–88 per cent allowing for the decay of the radium E during the electrolysis).

The quantities of radio-lead employed varied between 10 gm. and 300 gm. containing 9·4 and 350 microcuries, respectively, of radium E ($7{\cdot}5 \times 10^{-11}$ gm. and $2{\cdot}8 \times 10^{-9}$ gm.).

The investigation is being continued with the view of improving the yield and applying the method to larger quantities of radio-lead.

M. HAÏSSINSKY.
Institut du Radium, Paris.
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Interaction between Soot Films and Oil

I HAVE investigated some of the phenomena mentioned by Mr. J. H. Coste[1] and Dr. S. C. Blacktin[2] under this heading. There appear to be two distinct actions concerned: (*a*) The 'Blacktin effect'[3], consisting of periodic concentric light and dark zones, produced by 'posing' the drop of oil on the film, due possibly to the advancing surface of the oil carrying particles from the light zones and banking them up in the dark zones. (*b*) When the drop of oil is allowed to fall from a height of 2 or 3 cm., the above effect is swamped by a different phenomenon, which is due to a liberation of gas from the film, as Mr. Coste has shown.

Briefly, the figure formed consists of a central zone, from which scarcely any soot has been removed, surrounded by a circle of very small clear spaces, which are in turn surrounded by the intermediate zone. Each of the spaces in this resembles the central zone, but is smaller (half the diameter), and has more carbon removed. Some of the intermediate zone spaces show an orbital ring of small bare spaces, as does the central zone. The outer, or peripheral, zone consists of one to three circles, each concentric with the other zones, composed of small bare circular patches, about twice the diameter of those surrounding the central zone. Outside this, the remains of an (*a*) effect may be seen. These details are taken from a figure formed by a drop of cedarwood oil falling from 3 cm.

Low power observation after the oil has fallen shows one large bubble arising from the central zone, and rising to the surface much more quickly than do those arising from the intermediate zone spaces. These latter in turn rise faster than the small bubbles from the outer zone bare spaces. The reason for this is seen on letting the preparation stand for two or three minutes, when the bubbles reach the surface and burst. The large ones, from the intermediate zone, leave a circular area of coarse carbon granules.