

Fig. 1

ten observers to date) in the first few seconds after exposure of the ray-pattern in a single 120-Joule flash lasting less than $1\frac{1}{2}$ msec.

Finally, when the retinal image is deliberately moved in such a way that no moiré figures are generated (for example, by slightly rocking the ray figure about its centre several times per second), the complementary after-image is strengthened (presumably because 'on' and 'off' receptors are stimulated), whereas with other types of artificial motion it is not.

The foregoing evidence would appear to dispose also of a confusion in some early literature³ between these complementary after-effects and the after-effects of seen movement, caused by the use of striped curtains and the like as moving stimuli. This work, to which my attention has been directed since my earlier communications were published, includes unmistakable reports of complementary images; but writers usually assimilate them to the 'streaming' after-image of movement which they were studying. If one uses a random dot pattern (for example, a photograph of sandpaper) as the moving stimulus, the two effects can be clearly separated.

One interesting side-effect which we are studying is an apparent disturbance of the accommodation reflex by the circular pattern. A hair laid obliquely across its central region may sometimes defy all efforts to bring it into sharp focus, although against a plain background at the same distance it becomes perfectly sharp. It is hoped that experiments in this connexion may yield some clues to the organization of the detector-system which normally enables an out-of-focus image to be corrected.

A fuller account of investigations using these regular stimulus-patterns will be published elsewhere.

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¹ MacKay, D. M., *Nature*, **180**, 849 (1957).

² MacKay, D. M., *Nature*, **180**, 1145 (1957).

³ See, for example, Hunter, W. S., *Psych. Rev.*, **22**, 479 (1915).

Coffinite in Cornwall

COFFINITE, $U(SiO_4)_{1-x}(OH)_{4x}$, a rare mineral previously reported only from the Colorado Plateau, United States¹, and the Buller Gorge area of South Island, New Zealand², has been identified in ore samples from Roskrow United Mine, Ponsanooth, Cornwall.

Here coffinite occurs as a replacement of colloform pitchblende. All stages of replacement occur from incipient alteration along radial fractures and concentric growth bands to complete colloform pseudomorphs measuring up to 5 mm. across.

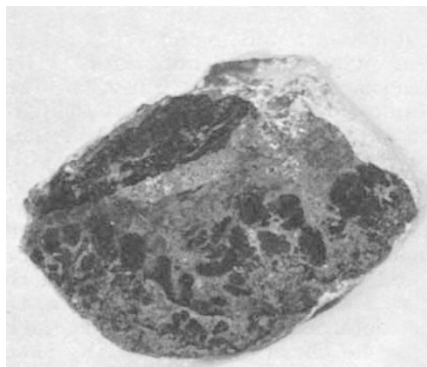


Fig. 1. Colloform aggregates of coffinite (black, lower part of specimen) pseudomorphous after pitchblende. $\times 0.85$

The identification was based on X-ray powder photographs with the strongest lines at 3.49 (v.s.), 4.66 (s.), 2.64 (m.s.) and 1.80 (m.s.) Å. A spectrographic analysis showed major uranium and silicon with vanadium and lanthanum among the minor elements.

A full description of the physical properties with a complete chemical analysis will be published elsewhere. The present communication is published by permission of the Director of the Geological Survey.

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¹ Steff, L. R., Stern, T. W., and Sherwood, A. M., *Amer. Min.*, **41**, 675 (1956).

² Reed, J. J., and Claridge, G. G., *Nature*, **179**, 546 (1957).

Subjective Probability, Gambling and Intelligence

It is well known that subjective ideas of probability differ from predictions made using statistical laws. This has been shown in temporal predictions by Jarvik¹, Cohen and Hansel² and others. It has also been shown by me³ to be the case for predictions about spatial ordering.

It is also well known that persons in general like to gamble. If they have the choice of a number of different courses of action which, on the average, will yield the same benefit, they will prefer to risk some loss in order to chance some gain, rather than to choose a course which has a certain outcome. This preference has been shown in laboratory studies by Edwards⁴.