The reference to the Witwatersrand may be misleading without further knowledge of the conditions prevailing there. Earthquakes do not occur on the Witwatersrand, but local tremors are of frequent occurrence. These tremors were unknown before 1908; they began then to attract attention and their numbers increased very rapidly for some years and then more slowly. The frequency of their occurrence has kept pace closely with the increase of mining activity. A statistical study of the Witwatersrand local tremors covering a period of twenty-seven years has recently been undertaken by Dr. P. G. Gane of the Bernard Price Institute of Geophysical Research, Johannesburg².

Dr. Gane accepts the idea that the primary cause of these tremors is the local instability due to mining operations and has attempted to find 'trigger-forces' which might affect their actual occurrence. He concludes that blasting in the mines is likely to be by far the most effective trigger.

During the year 1939, 2927 local tremors were recorded by the seismograph at the Union Observatory, Johannesburg. Of this number, 286 were strong enough to be felt. There appears to be a tendency for the tremors to occur in groups. Such a group was experienced on December 27-28, but the occurrence of a large number of tremors in one day is not a particularly outstanding event, and should not be considered as having any bearing on the question of sympathetic earthquakes without further investigation.

Union Observatory,
Johannesburg.
Feb. 3.

W. S. FINSEN.
H. E. WOOD.

¹ NATURE, 145, 13 (January 6, 1940).

² J. Chem. Metall. Mining Soc. S. Africa, October 1939.

Mutarotation of Gelatin

SUBSTANCES which exhibit optical activity in solution do so as a result of molecular dissymmetry, the most common cause of which is the presence of an asymmetric atom in the molecule. In the crystalline condition, optical activity may be exhibited by substances which do not contain dissymmetric molecules. In this case, the optical activity is due to a dissymmetric arrangement of the units which make up the crystal and disappears when the crystal is dissolved, because the structural dissymmetry is thus destroyed. Certain substances with dissymmetric molecules show a combination of these two effects, structural dissymmetry being superposed on the molecular dissymmetry in the crystalline condition.

These well-known facts have a bearing on the mutarotation of gelatin, that is, the change in optical rotatory power which is associated with the sol $\rightleftharpoons$ gel transformation. The optical activity of the sol is derived from the asymmetric carbon atoms of the protein molecules. In the gel, optical activity due to a dissymmetric arrangement of the protein molecules is superposed. The mutarotation therefore adds to the evidence that the protein molecules form an ordered, rather than a random, structure in the gel.

These views may have been implied by previous authors but they do not appear to have been explicitly stated.

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Feb. 26.

Points from Foregoing Letters

FROM combined X-ray and chemical evidence, W. T. Astbury and Florence O. Bell put forward a model for the molecular structure of the fibres of the collagen group. The average length per amino-acid residue in the direction of the fibre axis is about 2.85 Å., and the intramolecular pattern requires no fewer than 288 residues in a row. Owing to the high content of proline and hydroxyproline the polypeptide chains are partly in a *cis*-configuration, as opposed to the rather longer *trans*-configuration of the β -proteins.

Experiments are described by L. Meitner which give the capture cross-sections for thermal neutrons in thorium and lead. Using the thorium capture cross-section and the ratio of β -ray activities of ²³⁵U and ²³³Th (under identical experimental conditions) due to thermal neutrons, the capture cross-section for thermal neutrons in ²³⁸U is obtained as well.

A new conception concerning the effect of substrate polarity on the velocity of enzymatic catalysis is pointed out by D. B. Taylor. Substrate polarity is suggested as a factor influencing enzyme specificity. The significance of substrate polarity is discussed.

S. H. Clarke and C. B. Pettifor find that the equilibrium moisture content, the shrinkage during drying, and the strength-density ratio in hardwood timbers are apparently dependent on the degree of lignification as revealed by histological reagents;

moreover, the influence of the degree of lignification on strength is itself dependent on the moisture content of the wood.

Two carotinoid pigments, echinenone and γ -carotene, have been isolated from the red sponge *Hymeniacidon Sanguineum* by P. J. Drumm and W. F. O'Connor. The Crustacean pigment astacene, hitherto the only carotinoid isolated from a member of the Porifera, was not present.

R. A. R. Gresson finds that during fertilization the sperm middle-piece, and in some cases at least, the entire tail, is carried into the egg of the mouse. The mitochondria of the sheath of the axial filament become distributed through the ooplasm, and are presumably transmitted, in approximately equal numbers, to the first two blastomeres. There is evidence that the Golgi material of the sperm is also introduced into the egg; it undergoes fragmentation and becomes distributed through the cytoplasm.

G. W. Scott Blair and Miss F. M. V. Coppen find that direct subjective comparisons of 'firmness' can be made between elastic and fluid materials where the dimensions of 'firmness' vary by T^{-1} , but that a reversal of judgment is obtained over a wide range by varying the time of testing. The range is about the same whether the viscosity or the compression modulus is varied.