

The two reproductions show the beginning and end of a run at 1,010° K., with barium on molybdenum. It will be noted that the appearance of the migrated layer is similar to that which we have already shown for thorium.

M. BENJAMIN.  
R. O. JENKINS.

Research Staff of the M-O. Valve Co., Ltd.  
G.E.C. Research Laboratories,  
Wembley.  
Jan. 11.

<sup>1</sup> NATURE, 140, 152 (1937).

<sup>2</sup> Phil. Mag., 26, Dec. 1938.

### Structure of Proteins

WE have naturally followed with much interest recent developments in the 'cyclol' hypothesis and the structure of the globular proteins<sup>1</sup>; but among other things we find difficulty in correlating the following two statements, presumably arrived at by applying the same theory to the same facts: (1) "The properties of proteins shown by our experiments seem to be in accord with the view that the protein monolayer is a two-dimensional network held together by strong elastic springs and are not in accord with a structure consisting of polypeptide chains"<sup>2</sup>; (2) "This we interpret to mean that, in the formation of monolayers, some or all of the cyclol bonds are opened, few or none of the peptide links being broken, so that protein monolayers consist of polypeptide chains partially or wholly decyclized. . . . This type of structure explains many of their striking characteristics: for example, viscosity, elasticity, etc."<sup>3</sup>

We ourselves, in view of so much evidence to the contrary, have all along felt that inference (1) was scarcely justified; and in fact we have demonstrated experimentally, by direct measurement and X-ray and optical examination<sup>4</sup>, that egg albumin monolayers deposited by the Blodgett-Langmuir technique do indeed consist of polypeptide chains; but since no references are given and no reason for the change of view from statement (1) to statement (2), it would be helpful to be informed more fully.

W. T. ASTBURY.  
FLORENCE O. BELL.

Textile Physics Laboratory,  
University of Leeds.  
Jan. 21.

<sup>1</sup> Wrinch, D. M., NATURE, 137, 411 (1936), *et seq.*; Wrinch, D. M., and Langmuir, I., J. Amer. Chem. Soc., 60, 2274 (1938); Langmuir, I., and Wrinch, D. M., NATURE, 142, 581 (1938); Bragg, W. L., NATURE, 143, 73 (1939); Bernal, J. D., NATURE, 143, 74 (1939); Robertson, J. M., NATURE, 143, 75 (1939).

<sup>2</sup> Langmuir, I., Schaefer, V. J., and Wrinch, D. M., Science, 85, 76 (1937).

<sup>3</sup> Langmuir, I., and Wrinch, D. M., NATURE, 143, 49 (1939).

<sup>4</sup> Astbury, W. T., Bell, F. O., Gorter, E., and Van Ormondt, J., NATURE, 142, 33 (1938).

THE facts, which Astbury and Bell ask for, that have led me to believe that the spreading of a globular protein on water involves the breakdown of a cyclol cage molecule into polypeptide chains without open ends, were given by me in detail in a lecture on July 1, 1938, at the Cold Spring Harbor Symposium on Proteins, in the ensuing discussion, and in the discussion of Dr. Wrinch's paper on June 30. Dr. Astbury attended these lectures. The lectures and discussions have been published in the Cold

Spring Harbor Symposia on Quantitative Biology, vol. 6.

The reasons for the opinion were based upon studies of the viscosities, mechanical properties and solubilities of protein monolayers and a comparison with results obtained with monolayers of several well-recognized long-chain polymers. The fibrous structure that can be developed by shear or by unilateral compression in monolayers of egg albumin, edestin and urease were described and given as additional evidence of the presence of chains in the monolayers. These facts were obtained and the lecture was delivered long after the publication of the "first statement" which Astbury and Bell object to, but before the publication of the paper by Astbury, Bell, Gorter and Van Ormondt.

IRVING LANGMUIR.

### Bluffing by Eclipse Prediction

THE communication by Prof. W. A. Osborne<sup>1</sup> has the effect of opening up the question whether the eclipse of the sun mentioned by Anna Comnena may be included in 'historical eclipses'. It is interesting to be able to state that her record seems to be quite sound. There was a total eclipse visible at Constantinople on February 16, 1086.

Most of us have obtained the small amount of knowledge we have about the Emperor and his daughter from the Waverley novel, "Count Robert of Paris". Scott for some reason chooses to describe the lady as being twenty-seven years of age, but he must have known that really her age was only fourteen years, at the time of the story, when the crusaders passed through Constantinople. He gives us a very delightful picture of the daughter reading a newly written chapter of her book to her father for his advice and approval; but here again he must have been equally well informed of the fact that she wrote the work after the emperor's death, when she had taken up her residence in a convent. Now we can all say that she must have had access to reliable records, which enabled her to state with assurance that "the whole [of the sun's] disk was darkened". Usually when a solar eclipse is mentioned by these early writers, the words used are so vague that it is impossible to say whether the eclipse was central or partial at any given locality. In the circumstances, some words of congratulation seem to be due to Anna Comnena and to the authorities who compiled the records from which she derived her information.

The total phase occurred at Constantinople about 4.12 p.m. local mean time. The track of the shadow from the Ægean to the Black Sea seems to be as follows:

Longitude	Latitude
24° 22' E.	39° 34' N.
27° 17' E.	41° 5' N.
30° 17' E.	42° 0' N.
34° 6' E.	43° 8' N.

I obtained the date from the catalogue of eclipses in "L'Art de Vérifier les Dates", vol. 1. The calculations are my own.

C. J. WESTLAND.

116 Western Road,  
Christchurch, N.I.,  
New Zealand.  
Dec. 30.

<sup>1</sup> NATURE, 142, 837 (1938).