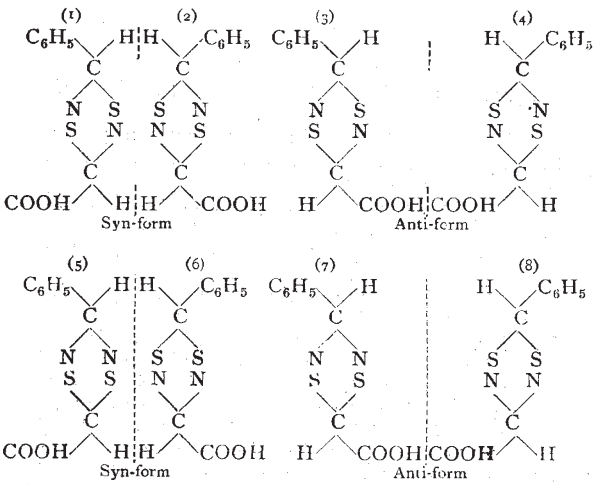
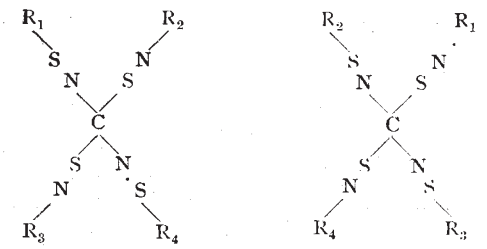
compounds. The electrons rotating in pairs around the four carbon valencies may possess either clockwise or anti-clockwise rotation with respect to the central carbon atom (Ramsay, Proc. Roy. Soc., xcii., A, p. 451, 1915–16). On the assumption that two of these pairs of electrons rotate in a clockwise and two in an anti-clockwise direction, it is possible to deduce that eight isomerides of cinnamic acid may exist. It has long been known that four isomerides of cinnamic acid exist, whereas only two are possible on the ordinary structural formulæ.

Erlenmeyer has recently shown (*Biochem. Zeitsch.*, 1919, xcvii., pp. 198–245) that ordinary cinnamic acid can be obtained in two optically active isomerides. If the clockwise rotation of the electron gives a north-seeking character to the valency, and the anti-clockwise rotation a south-seeking character, it is possible to represent eight isomeric cinnamic acids as follows:



The formulæ are grouped in pairs, and only two of these pairs are mirror images, (5) being the mirror image of (6), and (7) of (8). None of the isomerides 1 to 4 are superposable, as can be readily seen from the solid models. (A north-seeking valency will be the mirror image of a south-seeking valency.) The new type of optical activity is due not to the asymmetry of the radicles, but to an asymmetric arrangement of the pairs of rotating electrons.

It may be that the dextro- and lævo-rotatory forms of an organic compound are not structural isomerides, but owe their optical activity to this asymmetric arrangement of the electrons:



There is thus possible a large number of such isomerides in organic chemistry which are, however, stable only in very few types of organic compounds. The case of the cinnamic acids is not an isolated one for it appears from the work of Erlenmeyer that benzaldehyde is capable of occurring in the dextro- and lævo-forms (*Biochem. Zeitsch.* 1914, lxiv., pp. 382–92), and also, according to Marckwald, methyl-ethyl-malonic acid occurs in optically active forms.

This theory differentiates between two kinds of valency, according to whether the rotation of the electrons with respect to the valency is clockwise or anti-clockwise, and may explain the peculiar characteristics of the physical properties of the homologous series, where those compounds containing an even number of carbon atoms appear to belong to one series, and those with an uneven number to another series.

All the isomerides which are obtained on this theory, except the optical pairs, should possess different free energies according to the arrangement of the rotating electrons. W. E. GARNER.

University College, London, February 2.

The Sociological Society.

MAY I beg the hospitality of your columns for two announcements? First, the Sociological Society is moving from the London School of Economics and Political Science to a house of its own at 65 Belgrave Road, Westminster, S.W.1. The society hopes to get installed there by the beginning of March.

The second is that the society's new house affords more accommodation than the society itself can use, and we should be glad, therefore, to hear from congruent societies or organisations which might desire to rent one or more rooms. The present housing pressure is, we understand, putting not a few societies into a considerable difficulty as regards accommodation.

As to the situation, the new house of the Sociological Society is about five minutes' walk south-east from Victoria Station. It is just over a mile in a direct line from Charing Cross, and two 'bus routes (24 and 24A) cross Belgrave Road, within a couple of minutes' walk of the house. T. J. C. FRASER DAVIES,

February 16. Secretary.

Mirage Effects.

WHILE a patient at the Red Cross Hospital for Officers, Brighton, the phenomenon described by various correspondents was observed by me on numerous occasions last autumn. It was particularly noticeable on hot, sunny days along the Marine Parade, Kemptown. From a point opposite the Hotel Bristol, the road a quarter of a mile distant, *in either direction*, appeared as if flooded by a water-cart. Indeed, the illusion was so complete that the first time I witnessed it, being confined to a spinal chair, I instructed my attendant to make a detour.

ROBERT ROSS.

3 Sudeley Terrace, Brighton.

AN excellent place to observe mirage round our coasts is Morecambe Bay on a sunny afternoon when the tide is out and a fresh breeze is blowing in from the sea. Viewed from the low shore by Hest Bank, the Furness shore is clearly reflected in detail, even the steam of trains on the Furness Railway. Also, the bay towards Carnforth appears to be full of water where there is only dry sand.

Mirage effect on an asphalted pavement may be seen on the North Road between Newcastle-upon-Tyne and Gosforth when the sun is shining warmly and at the same time a cool wind from the north-east is blowing across it. The effect is observable to anyone walking up the road and approaching a level portion or slight depression. ALBERT TARN.

Barrow Hedges, Carshalton February 15.