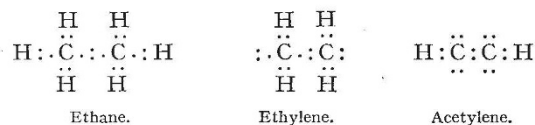


A Modified Octet Theory.

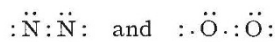
IN an interesting paper on electronic structures in unsaturated molecules, published in the *Journal of the American Chemical Society* for March, Mr. E. D. Eastman discusses multiple bonds in relation to the octet theory of atomic structure due to G. N. Lewis. It is assumed that the pair of electrons possessed by elements of the first period (except hydrogen), although usually not acting as valency electrons, and forming a shell persisting throughout the entire period of elements, may take part in the formation of outer groups of octets when it is otherwise difficult for these to be formed. The double bond is then pictured as one atom in which the central electrons have been drawn into the outer octet, joined by two electrons to another atom in which the normal arrangement is preserved. In cases of triple bonding the two inner electrons are assumed to have been drawn into the outer shell of two adjacent atoms, there being again two electrons held in common.

The arrangements are illustrated by the formulæ of ethane, ethylene, and acetylene, in which the symbols indicate nuclei and all outer electrons are shown as dots:—



Multiple bonds are apparently formed only by elements of the first period.

To meet the requirements of facts relating to stability, reactivity, and free rotation, the electrons of unsaturated octets are assumed to be held in equilibrium positions at greater distances from the nucleus than in the ordinary case, the transfer from the extended position to the usual ones liberating energy. No attractive force between electrons is assumed, and the electronic arrangement is taken as cubic, though subject to distortion. The structure of carbon dioxide is probably unsymmetrical, rather than the arrangement of three nuclei in line commonly assumed. The structures of the nitrogen and oxygen molecules are represented by the following symbols:—



Many chemical facts discussed in the paper should prove of interest to chemists, who cannot ignore the undoubted difficulties introduced by multiple bonds in the present theory of molecular structure.

University and Educational Intelligence.

BRISTOL.—The Vincent Stuckey-Lean scholarship in botany, tenable for one year and value 36*l.* with free access to the department of botany, is offered. Further information may be obtained from the Registrar, the University, Bristol. Applications for the scholarship must be received not later than Saturday, May 20.

LONDON.—The following lectures, which will be open to the public free and without ticket, have been arranged:—At King's College, a course of three lectures on Tertiary Igneous Action in Britain, by Dr. Alfred Harker, on May 17 and 31 at 5 o'clock, and on May 24 at 4 o'clock, a course of four lectures on The Development of the Head Muscles of Vertebrates, by Prof. F. H. Edgeworth, at 5.30 P.M., on May 22-25, and one lecture by Prof. J. F. Van Bemmelen, of the University of Groningen, on The Morphological Character of the Skin Pattern in Insects and Mammals,

on May 17 at 5.30 P.M. At Birkbeck College, a course of three lectures on Recent Work with regard to the Influence of Soil Conditions on Agriculture, by Dr. E. J. Russell, on Fridays, commencing May 12 at 6 o'clock, and one lecture on Whorled Phyllotaxis, by Prof. J. C. Schoute of the University of Groningen, on May 11 at 5.30 P.M. At the School of Oriental Studies, a course of three lectures on The Idea of Personality in Sufism, by Dr. R. A. Nicholson, on Wednesdays, commencing May 17 at 5 o'clock. At the London School of Economics two lectures on Modern Views of Indo-European Origin, by Dr. Peter Giles, on Fridays, commencing May 12 at 5 o'clock.

THE following advanced lectures in medicine will be given in French at the Rooms of the Royal Society of Medicine, 1 Wimpole Street, W.1, at 5 P.M.: on May 22, "Anti-anaphylaxie," by Prof. F. Widal; on May 25, "De l'Érythémie, (Maladie de Vaquez-Osler)," by Prof. H. Vaquez; and on May 31, "Des reflexes de défense," by Prof. J. Babinski.

MR. W. H. REED, a former mayor of the city of Exeter, has purchased and presented to the Governors of the University College, Exeter, the mansion house of Streatham Hall and part of the Streatham Hall estate, to be used as the site of the University College of the South-west of England. The Governors have purchased the adjoining farm and lands so that the new College will enter into possession of a site of 120 acres. It is expected that the incorporation of the new University College, the establishment of which has been approved by the University Grants Committee, will be effected this summer. Streatham Hall is placed on rising ground to the north-west of the city. It is near the stations and conveniently situated in every respect. The estate is admirably laid out and commands a prospect over the Exe valley to Dartmoor. It is intended to place on the new site not only the College buildings but also the hostels and playing fields.

A CONFERENCE of representatives of universities of Great Britain and Ireland will (as we announced last week) be held at University College, London, on Saturday, May 13. The holding of such annual conference was resolved upon at the First Congress of the Universities of the British Empire, but, owing to the war, the realisation of this project was postponed although conferences for special purposes were held in the years 1917-1920. At the Second Congress of Universities of the Empire in 1921 the resolution in favour of annual conferences was re-affirmed and it was decided that the month of May would be a convenient time for holding them. All the home universities were invited to suggest agenda and from these suggestions the Standing Committee of Vice-Chancellors selected the subjects which appeared to be most suitable for discussion at the present time, namely, the urgent need for the provision of enlarged opportunities for advanced study and research in British universities, the increase of residential accommodation for students, specialisation in certain subjects by certain universities, and organisation of adult education as an integral part of the work of the universities.

THE Report of its Principal Officer on the work of the University of London during 1921-22 gives the following among other statistics for the three years 1913-14, 1920-21, 1921-22: total admissions of students, 3852, 6728, 7092; candidates for examinations (final) for degrees—1807, 1746, 2455 (external candidates only—907, 710, 912); names on the roll of internal students on May 1, 4888, 7870, 8758.