cases. The opposite was true in three cases. There was no discernible difference in one case. The differences were small—perhaps trivial. Five of them lay between two and seven per cent of the total number of barbs cut in the section used. One specimen, however, showed nineteen per cent excess of barbs on the non-reacting side—the opposite of what Lillie and Juhn would seem to require. The differences in length between the two sides followed closely the differences in number of barbs. In each case the œstrone mark was on the side of the feather directed towards the site of injection.

These results do not appear to afford support to the theories of Lillie and Juhn, but seem to agree rather with the results of Greenwood and Blyth. It is hoped shortly to publish a fuller account elsewhere of this and similar work from this Department.

PAUL G. 'ESPINASSE.
Department of Zoology and Oceanography,
University College, Hull.
Sept. 17.

[1] F. R. Lillie and M. Juhn, *Physiol. Zool.*, **5** (1) (1932)
[2] P. G. 'Espinasse, NATURE, **133**, 330 (1934).
[3] A. Hosker, NATURE, **133**, 382 (1934); *Phil. Trans. Roy. Soc.*, B, **226**, 143 (1936).
[4] R. M. Fraps and M. Juhn, *Physiol. Zool.*, **9** (3) (1936).
[5] A. W. Greenwood and J. S. S. Blyth, *Proc. Roy. Soc.*, B, **118**, 122 (1935).

Origin of the Word 'Solute'

IN view of the recent discussion as to the first use of the word 'solute'[1], it may perhaps be of interest to notice that the word is used in 1732 in the modern sense by Boerhaave[2], in the Latin form *solutum*. In discussing the action of solvents, he states that the effect is the division of the dissolved substance into particles which are thoroughly mixed with the particles of solvent: "ut particulae solventis inter partes divisas soluti", which Shaw[3] translates: "so that the particles of the solvent remain thoroughly intermixed among those of the solvend". The name is used by Boerhaave throughout his long discussion of solutions, although he sometimes speaks of *partes solvendi* as an alternative. Whether the name is used before Boerhaave I cannot say.

J. R. PARTINGTON.
81 Barn Hill,
Wembley,
Middlesex.

[1] NATURE, **137**, 831 (1936).
[2] "Elementa Chemiæ", Leyden (1732), vol. 1, p. 669.
[3] "A New Method of Chemistry . . . translated from the Original Latin of Dr. Boerhaave's Elementa Chemiae", London (1741), vol. 1, p. 489.

Points from Foregoing Letters

SIR C. V. RAMAN and N. S. Nagendra Nath give a brief outline of the several stages by which the theory dealing with the diffraction of light by high-frequency sound waves was developed, and state that its latest extension explains several additional facts, including the reason why supersonic waves can be seen directly through a microscope focused on a plane to the rear of a sound-wave cell.

A photomicrograph of a (111) face of diamond showing triangular markings of the size predicted by the 'mosaic' hypothesis of crystal structure is submitted by Dr. W. H. George. According to that hypothesis, even in a perfect crystal the uniform lattice structure is interrupted over narrow regions distributed periodically throughout the crystal.

Experiments with liquid helium by L. W. Shubnikov and A. K. Kikoin show that it does not form liquid crystals at 2·19° K. The anomaly in the specific heat of liquid helium observed at that temperature cannot therefore be ascribed to a transition to the liquid crystalline state.

The infra-red spectrum of heavy phosphine (PD_3) has been investigated by Dr. G. B. B. M. Sutherland and G. K. T. Conn. Their results (which agree quite well with those on the Raman spectrum of the molecule), do not agree so well with the frequencies predicted from the spectrum of ordinary phosphine (PH_3), thus indicating that a simple valence force field is not very satisfactory for correlating the vibration frequencies of a molecule of this type.

C. L. Pekeris points out that when the increase of temperature in the atmosphere between the levels of 30 km. and 50 km. is taken into account, the atmosphere is found to possess two modes of free oscillations of periods of 10½ hours and 12 hours respectively. In the 12-hourly oscillation there is a nodal surface at about 30 km., the atmospheres below and above it swinging in opposite directions. Various observed facts from the oscillations of the barometer, the propagation of waves of explosion and the diurnal variation of the magnetic field are thereby explained. It is also suggested that the anomalous behaviour of the F_2 layer might be associated with the semi-diurnal oscillations of the atmosphere.

Dr. L. S. B. Leakey, commenting upon Prof. Boswell's report on fossil human remains from Kenya, describes the events which led to the inadequate location of the sites.

A method of determining by means of a photo-electric cell the colour changes produced by chemical reagents, enabling the chemical reaction to be followed continuously, is described by Dr. H. L. Brose and E. B. Jones. Graphs are submitted showing the change with time in the intensity of the blue colour produced in the microchemical estimation of phosphorus by the method of Fiske and Subbarow.

The surface tensions of solutions of various alcohols in aniline have been measured by R. Aschaffenburg. As in aqueous solutions, the surface activity increases regularly with the molecular weight, but the regularity was found to be different from Traube's rule.

Stirring the interior of a solution of sodium sulphite (without disturbing the surface) *decreases* the rate at which it absorbs oxygen by 48 per cent, according to W. S. E. Hickson.

Dr. V. A. Petrow states that acetylation of 7-ketocholesterol leads to the removal of the C_3-hydroxyl and the formation of the acetate of 7-hydroxycholestatriene.

P. G. 'Espinasse reports that in six regenerating feathers examined there was no clear relation between the lengths of the two halves of the collar and the reactivity to œstrone of the two sides of the feather produced by them. As the feathers were substantially straight, it appears unlikely therefore that growth-rate determines this reactivity.