Chairman's opening remarks

BY SIR ROBERT ROBINSON, F.R.S.

First I would like to express some doubt about the suitability of the adjective 'anomalous', which in the present context can only mean 'unusual'. Nothing in Nature can be truly anomalous in the broad scheme of things. Furthermore, the programme shows that what we are looking for is indication from known terrestrial biochemistry of directions in which we may find possible extensions to other biological systems of a novel type, even to some in which the role of chemical elements may be modified or more drastically changed.

Recent progress in organic chemistry offers many suggestions such as the boron-nitrogen and boron-carbon and phosphorus-nitrogen combinations. Silicon has often been suggested as a basis for life chemistry under non-terrestrial conditions. All these ideas have to be entertained as possibilities, but my own belief is that the carbon-oxygen-nitrogen-hydrogen structures would always be preferred as the basis of life in a range of conditions approximating to those of the Earth. This view is based on the fundamental properties of compounds of these elements and the nature of the chemical links between their atoms. Phosphorus, sulphur and various metals have essential parts to play, mainly in the promotion of biochemical transformations.

It is unfortunate that studies of the meteorites have not yet given decisive results bearing on the biochemical nature of their organic content. Interpretation of work in this region is still sub judice. However, it may well be thought that the balance of evidence points to the occurrence of life forms, or their residues, in some carbonaceous chondrites. This is one of the most exciting fields of current investigation and its progress will be followed with the greatest interest.

If it can be confirmed that 'bions' (a new and self-explanatory term that I now suggest) exist in certain meteorites, the further problems that arise are highly intriguing.

Kelvin was apparently the first to suggest that life may not have originated on Earth but come in from outside; the same idea in different forms has been proposed by Arrhenius and contemplated in many later speculations, e.g. by J. B. S. Haldane, A. I. Oparin, J. D. Bernal and N. W. Pirie. But usually the notion was mentioned and then dismissed as improbable. If it is found that the meteorites do indeed afford evidence of bions in their interior, then the fact that they are coeval with the Earth becomes highly significant.