(c) the occurrence of 33% of glycine and a large proportion of proline and hydroxyproline.

The one-bonded structure cannot explain any of these properties except (c) since a wide range is possible for it. The infra-red data also completely support the occurrence of long hydrogen bonds 3·0–3·05 A, found in the two bonded structure.

Even when the sequence gly-pro-hypro occurs in one of the three chains, or locally in all the three chains, the standard structure can be slightly modified to incorporate these. The co-ordinates of the atoms in the three chains in the former case are given in Table II and the structure is shown in Fig. 2. Five hydrogen

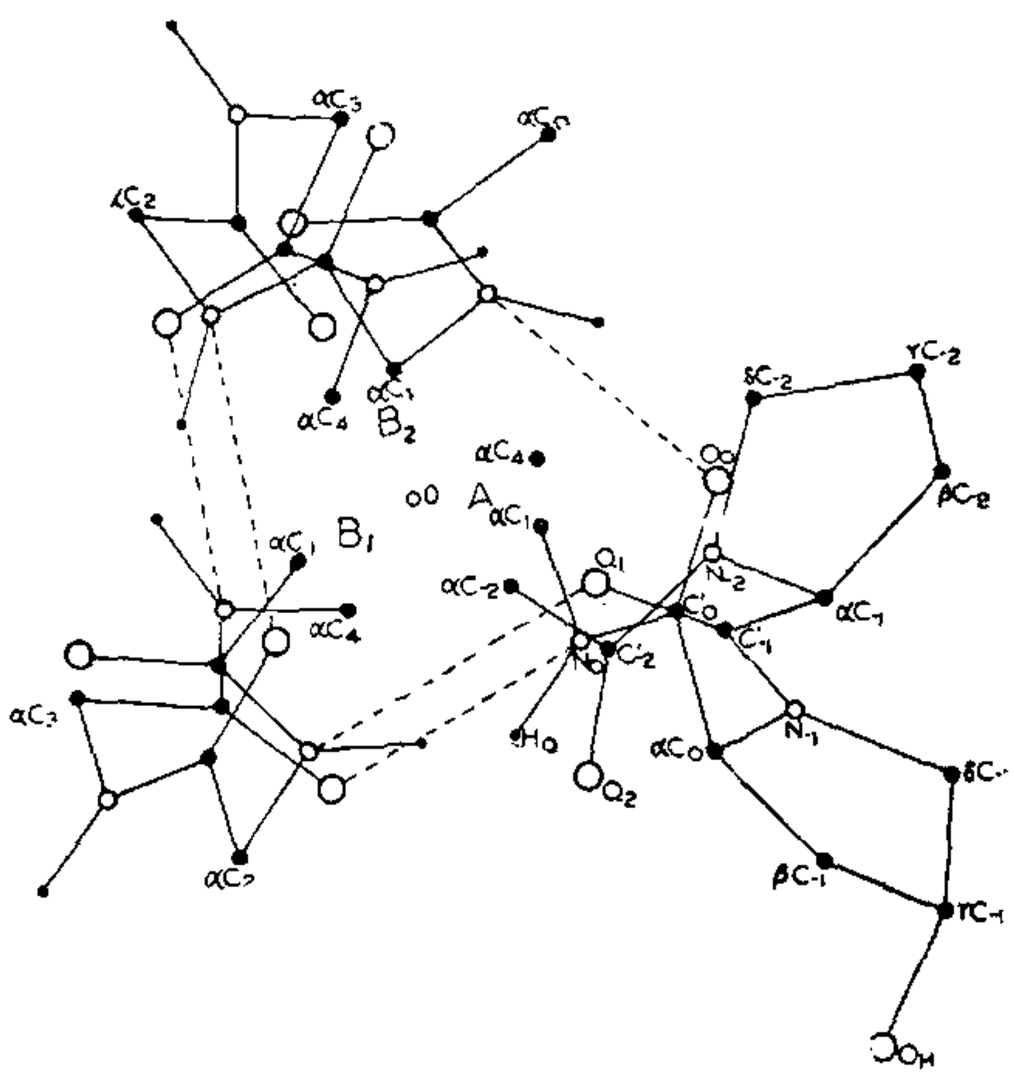

FIG. 2. Projection along the fibre axis of the structure of collagen with five hydrogen bonds for nine residues. For the chain 'A' which accommodates the sequence gly-pro-hypro, the positions of all the atoms of the proline and hydroxyproline residues in the projection are also shown.

bonds are formed for every nine residues. The atoms in two backbones of the chains are practically in the same positions as in the standard structure, while in the third chain none of them are displaced by more than 0·5 A. If all the three chains have the sequence gly-pro-hypro, then only an one-bonded structure is possible, but even in this case, the shifts of individual atoms are less than 0·5 A.

Finally it may be mentioned that the calculated Fourier transform (F.T.) of the standard two-bonded structure is in good agreement with observation. Also, the two-bonded structure is distinctly in better agreement with the observed X-ray pattern than the one-bonded structure. Thus, its F.T. has a broad belt of intensity centred at $\xi = 0{\cdot}35$, as actually observed, while this belt is distinctly nearer the meridian ($\xi = 0{\cdot}30$) for the one-bonded structure. So also, the first maximum on the third layer is much stronger with the two-bonded structure, as actually observed. The position of the first maximum on the fourth layer is closer to the meridian for the two-bonded structure and occurs close to the observed position. In the sixth layer, there is a clear maximum in the F.T. at $\xi = 0{\cdot}66$, as observed for this structure, while there is no such maximum in the F.T. of the one-bonded structure. Lastly, the strong blob of intensity observed on the equator corresponding to $d = 4{\cdot}4$ A is explained by the occurrence of nearly parallel planar residues in the backbones of neighbouring chains at this distance apart. The corresponding distance in the one-bonded structure is 4·8 to 4·9 A, and does not agree with observation.

Details of these studies are given in a series of papers in the Report of the Collagen Symposium held at Madras in November 1960 (under publication). We wish to acknowledge the assistance of Messrs. Y. T. Thathachari, B. R. Lakshmanan and C. Ramakrishnan in part of this work.

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LONG WAVELENGTH SPECTRUM OF SOLAR CORONA

A SPECTRUM of the solar corona in the near infra-red region 1 μ, was obtained by the staff members of the Sternberg Institute of Astronomy, USSR, during the solar eclipse of February 15, 1961. A detailed study of the emission line of wavelength 1·0747 micron (10747 A) has been made in this region. This line is emitted by strongly ionized atoms of iron which have 12 electrons knocked out of them under extremely high temperature. It is reported that the obtained information warrants definite conclusions concerning the physical conditions of matter in the outer envelope of the solar atmosphere.—(*USSR News*).