



FIG. 2. Projection of structure on (010) plane.

oxygen atoms O_3 of different molecules; (iii) the molecule has its chain length nearly parallel to the long axis (c) and two molecules in a line are linked together mutually by means of hydrogen bonds formed between their carboxyl groups.

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THE PHOTOSYNTHETIC CYCLE

IN a paper presented before the International Conference on the Peaceful Uses of Atomic Energy, Professor Calvin of the University of California, Berkeley, U.S.A., has described the theory of a "photosynthesis battery" which has resulted from the researches of his group. The use of radioactive carbon to trace the source of chemical reactions in the plant has given insight into the order in which the plant makes chemicals and the way in which it takes energy from the sun and uses it for the chemical reactions.

By developing precise and delicate methods for separating and measuring the radioactive compounds formed by the plant, Prof. Calvin's group have isolated some fifteen compounds and traced the reactions needed for the complete process from CO_2 to sucrose. Compounds made by the plant in the first few seconds, sometimes in amounts less than a fraction of a microgram, were isolated and measured.

led to a new theory as to how the energy absorbed by the chlorophyll from the sun is used to split the water molecule. This theory proposes an arrangement like a tiny battery, made of layers of chlorophyll between the microscopically thin layers of fat and protein. The battery absorbs sunlight and uses the energy of the sunlight to split the water molecule. The electrons freed from the water are held by a compound believed to contain sulfur until they are used by the enzymes in the carbon reduction cycle.

With this detailed knowledge it is claimed that it should be possible not only to increase crop growth but also to vary the kind of products obtained and to use small plants as factories for the production of concentrated fat, protein or sugar, as desired. With more knowledge of the "photo-synthetic battery" it should also be possible to devise more efficient means of converting solar energy to a form which can be used for power or fuel.