

## PLANT PHYSIOLOGY

**Progress Toward Synthesis Of Chlorophyll Is Reported**

**T**HE mystery of plants' ability to capture sunlight and use its energy in forming food for all the world has been brought several steps closer to final solution by a German holder of the Nobel prize, Prof. Hans Fischer of the Munich Technical College.

At the meeting of the Harvard Tercentenary Conference, Prof. Fischer reviewed his long researches on chlorophyll, the green synthesizer in plant leaves and stems, and told of its recent progress.

The ultimate aim is the synthesis of this complex molecule, which will enable scientists the better to understand and control the vital processes of plants. Chlorophyll synthesis has not yet been accomplished, but Prof. Fischer intimated that he hopes to get it done in the not too far distant future.

Of perennial interest to physiologists and chemists is the relationship between the green pigment of plant leaves, chlorophyll, and the red pigment of blood, hemoglobin. A hemoglobin molecule consists of a huge lump of a protein molecule with four porphyrin rings attached, each with a single atom of iron at its center instead of the chlorophyll's single magnesium.

The chemical basis of chlorophyll is a four-sided arrangement of carbon and nitrogen atoms, called the porphyrin ring. With some extra groups of atoms attached around the outside, one long atomic chain called the phytol alcohol group tacked onto one corner, and a single atom of magnesium stuck squarely in the center, the porphyrin ring becomes the chlorophyll molecule.

Prof. Fischer's award of the Nobel prize was a recognition of his monumental researches on the chlorophyll problem.

A quite different group of physiological compounds, also built around rings of atoms, was discussed by Prof. Leopold Ruzicka of the Zurich Technical College, Switzerland. Prof. Ruzicka has succeeded in making artificially several male sex hormones, including compounds never produced in nature. Some of these are very much more powerful than the natural substances when used on experimental animals but this is no indication that they would have favorable results if used on human beings. They have not yet been tried clinically.

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**FOR CANDID PHOTOGRAPHY OF THE SKY**

*Prof. Charles H. Smiley of Brown University's Ladd Observatory (right), is directing the grinding of an f/1 lens-mirror system for the Schmidt type camera by his assistant, Donald S. Reed. It was with a Schmidt camera that astronomers of the University of Chicago and the University of Texas recently discovered the "coldest" star known to science. It has a wide field of view and a great light-gathering power. (See SNL, Sept. 12, p. 164.)*

## ASTRONOMY

**"Coldest" Star In Universe Found By Chicago Astronomer**

**W**HAT is probably the "coldest" star yet discovered by astronomers has been found by Dr. Charles Hetzler of Yerkes Observatory of the University of Chicago, it was announced by Dr. Otto Struve, director of the Observatory.

The phrase "red hot" to most folks means high temperature but in stars redness is associated with relative coolness, pointed out Dr. Struve. The stars discovered by Dr. Hetzler are redder than any previously known, and cannot be photographed in ordinary blue light.

While most stars have temperatures between 3,000 and 30,000 degrees, with a few "hot" ones at 50,000 degrees Centigrade, the new Hetzler stars have temperatures estimated at 1,000 degrees and below.

Use of special new infra-red sensitive photographic plates made possible the discovery. Five-hour exposures on the

24-inch Yerkes reflecting telescope were necessary to obtain the newest astronomical finding.

The discovery of very faint stars closer to the earth and sun than any now known was predicted, following Dr. Hetzler's report.

At present the known star closest to the earth is Alpha Centauri whose light takes four and one third years to reach the earth. An immediate search for small faint stars that may be closer is planned by Dr. Hetzler.

The new "heat-seeing" photographs are also expected to result in the discovery of more comets and asteroids, the small fry of the solar system which escape the astronomers' eyes and ordinary photographic observation.

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In Switzerland, over three-fourths of the railroad mileage has been electrified.