ASTRONOMY

Star Positions Computed

➤ NEW ASTRONOMICAL researches will become possible with development of electronic computer techniques for measuring star positions.

A computer-linked measuring system is now being developed at the University of California's Lick Observatory, Mt. Hamilton, Calif., with a grant of $67,200 from the National Science Foundation. A unit is expected to be operating about 1960.

The equipment is designed to analyze data gathered in a sky-mapping project started ten years ago by Dr. C. D. Shane, director at Lick.

The project's main objective is to determine the internal rotation of the Milky Way Galaxy and the galaxy's rotation relative to other galaxies, which are not now known. The Milky Way is the giant pinwheel of uncounted millions of stars in which the sun and its planets are located.

For the study, one complete sky map has already been taken. It consists of some 1,250 plates, each 17 inches square, photographed between 1947 and 1954. A duplicate set of plates will be taken, beginning about 1960.

When the two sets are compared, it is expected that nearby stellar objects will have changed position relative to galaxies far beyond the Milky Way. These galaxies are so far away that their positions will remain relatively fixed on both sets of plates, and stars in the Milky Way can then be seen rotating in front of them.

Measuring and recording data by conventional methods would be so monumental a job as to be virtually hopeless. On each plate approximately 125 objects must be painstakingly measured, each one four to eight times.

In the new system, preliminary approximate measurements of coordinates will be made by conventional means on each plate. With these coordinates, the objects can be located and precise meaurements made automatically. Data thus recorded will later be fed into a computing machine for analysis, using only a fraction of the time otherwise required.

Dr. Stanislaus Vasilevskis, astrometry expert, is supervising design of the measuring system.

Science News Letter, February 8, 1958

GEOPHYSICS

"Triple Play" Is Key To Atmosphere on Mars

➤ ONE OF the keys to future explorations of the atmosphere of Mars and Venus may lie in a scientific "triple play" of laboratory-to-rocket-to-laboratory research.

The triple play has been perfected through experiments in a basement laboratory at the University of California at Los Angeles by Dr. Joseph Kaplan, professor of physics and chairman of the U. S. National Committee for the International Geophysical Year, and Charles A. Barth, a graduate student.

Mainly because of the sun's radiation on gases, the upper atmosphere from 20 to 100 miles up is the scene of turbulent chemical activity, dubbed a "huge chemical kitchen" or, more scientifically, the "chemosphere" by Dr. Kaplan.

Primary evidence of this chemical activity is the night airglow, too faint to be detected by the unaided eye.

The airglow has been studied, however, by scientists using spectrographs and analyzed by duplicating the conditions of the upper atmosphere in the laboratory.

As rockets became available to the Air Force, the next step was to expand the field of study from the laboratory directly to the chemosphere through rocket seeding the upper atmosphere with nitric oxide gas, ethylene gas and sodium, thus creating artificial airglows.

To interpret the rocket experiments properly and design future ones, Dr. Kaplan and Mr. Barth returned to the laboratory to investigate other chemosphere seeding processes. Through this method, they discovered the possibility of measuring the temperature of the upper atmosphere by analyzing the light from the artificially created clouds.

Science News Letter, February 8, 1958

EXPLOSION SURVIVOR—Klystron oscillator, retrieved after a mid-air explosion in a long-range missile and a one and one-half mile free fall impact against the sea, is examined by Drs. Vincent E. Learned (left), Sperry Gyroscope Company director of klystron research, and Jack T. Muller, shock and vibration analyst for the company. The precision instrument was found to work "perfectly."

ENGINEERING

Aircraft Turbine Would Power Better Racing Car

➤ A SAFER, less nerve-wracking racing car designed especially to win the Memorial Day 500-mile Indianapolis Speedway event could be built around an airplane gas turbine engine.

A "hot rod" version of a standard production aircraft turbine placed in a racing car especially designed for it would be a "combination pretty hard to beat," Leonard H. Williams, Boeing Airplane Co., Seattle, Wash., predicts.

The fire hazard in a crash would be greatly reduced, because the turbine burns diesel oil instead of the highly inflammable gasoline or wood alcohol burned by present racing cars.

A turbine produces less vibration than a piston engine, which could reduce nerve strain and worry about parts shaking loose, and would allow some parts to be made of lighter materials. The number of stops for fuel, oil and tire changing could be reduced because of the lower weight and the turbine's small oil consumption.

The only drawback to using a modified aircraft turbine engine is price. Mr. Williams says today's turbines are selling for around $14,000, more than twice the cost of Offenhauser engines commonly used in the large racers. However, he adds, turbine prices are being reduced as production increases.

Mr. Williams describes his "winning" car in the *Journal of the Society of Automotive Engineers* (Jan.).

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