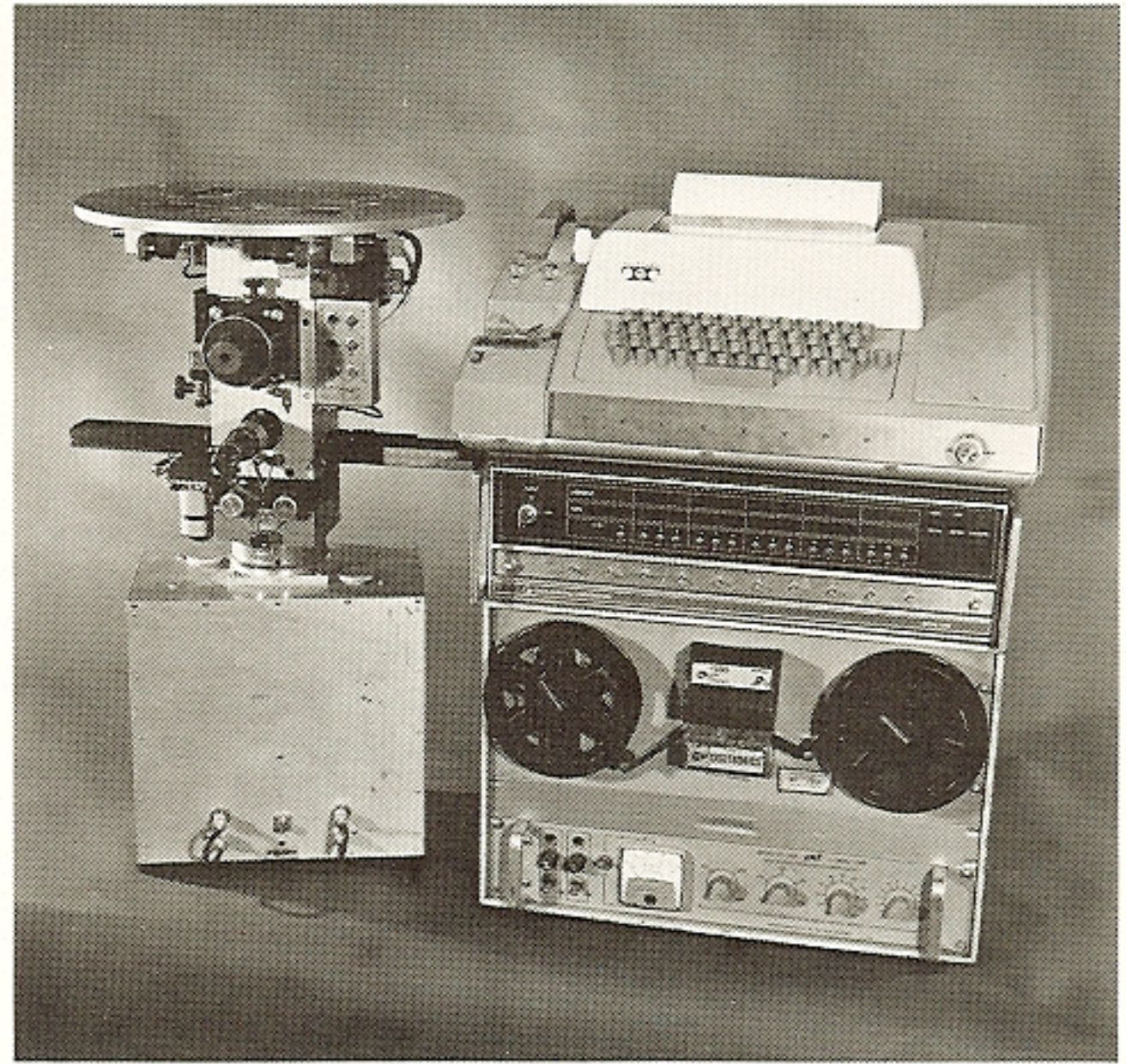


PHOTOMETRY AND POLARIMETRY

Dr. Tom Gehrels is the principal investigator of the imaging photopolarimeter (IPP) on NASA's first reconnaissance missions to Jupiter and Saturn. A large amount of photometric, polarimetric and imaging data for Jupiter, the Galilean satellites, Saturn and its satellites are being processed and analyzed. The IPP design was developed in Gehrels' Polariscope Laboratory, and development of photopolarimetric equipment continues. LPL-developed photometers and photopolarimeters are also being used for the study of stars and interstellar grains, in addition to solar system objects, at telescopes in Arizona and Chile. Statistical studies based on plates taken with the 122-cm Schmidt camera at the Palomar Observatory investigate asteroids, comets, outer satellites and Trojans of Jupiter.

Dr. Martin Tomasko is studying the structure of planetary atmospheres through a range of observational and theoretical programs spanning the spectral region from the ultraviolet to the infrared. The observational programs include photometry, polarimetry and spectroscopy carried out from planetary fly-by missions (Pioneers 10 and 11 to Jupiter and Saturn), entry probes (Pioneer Venus), and earth satellites (International Ultraviolet Explorer), as well as groundbased observations and laboratory experiments.



In addition, an extensive set of computer programs has been developed to model the intensity and polarization of sunlight scattered from and thermal radiation emitted by vertically inhomogeneous cloudy planetary atmospheres. These radiative transfer codes are being used to analyze the observational material at hand, a task that will occupy the next several years. Problems of interest include the composition, cloud structure and thermal balance of Venus and the outer planets.

