11. Recent Observations of the Sun with a 3840 A Filter. G. A. CHAPMAN, San Fernando Observatory. The timeaveraging effect of the filter on the observations tends to decrease visibility of the short wave-length region, but may be compensated for with proper selection of the observing time and with the addition of a small magnetic oscillator. The observations show a prominent feature in the 3840 A region that is not present in the 3500 A region.

12. Internal Time Scales in Stratified Spin-Down. ALFRED CLARK, JR., Univ. of Rochester. The spin-down of a stratified fluid is a complexity that is characterized by a number of distinct internal time scales. These time scales are associated with the complex layer structure of the fluid. In addition to the fast time scales - the rotation period, the Kelvin-Helmholtz time and the Eddington-Sweet time - there are others that are not associated with the disappearance of the rotational shear layer. For the type discussed by Holton, 1965, J. Atmos. Sci. 22, 402, the time scale of the container velocity, t_c, however, the response depends only on the time scales which are at least as long as the time scale t_c defined by the container variation. The transient spatial gradients in angular velocity associated with a given x, depend strongly on the relation between t_c and the internal time scales, and this is important for questions of stability. Calculations have been carried out for the linear spin-down of a Boussinesq fluid in a circular cylinder. Previous work (Sakurai, Clark and Clark, 1972 J. Fluid Mech. 49, 753) dealt with the flow on the longest time scale (the Eddington-Sweet time), whereas the present work emphasizes the role of the shorter time scale. The results are applied qualitatively to the solar spin-down problem.

13. Radiative Damping of Internal Gravity Waves. PATRICIA ANDRE CLARK and ALFRED CLARK, JR., University of Rochester - Uchida (1965 Astron. J. 147, 135: 1967 Astrophys. J. 147, 181) and Thomas, Clark and Clark (1971 SOLARPhys. 16, 51) have proposed the existence of internal gravity waves trapped in the low chromosphere as an explanation for the short time scales. The question of the radiative damping of such waves is still unresolved. Arguments based on the work of Souffrin (1966 Ann. Astrophys. 29, 55) for the case of a constant radiative relaxation time τ suggest that internal gravity waves cannot exist in the high photosphere and low chromosphere. However, in the solar atmosphere τ varies by three orders of magnitude, making radiation trapping a more serious consideration. A more realistic analysis of the damping rates of atmospheric eigenmodes suggests that damping is an important factor in the behavior of solar gravity waves. The model of Boussinesq (1903) and concentrations entirely on gravity waves. The results show that if the radiative relaxation time is long compared with the wave period over some finite fraction of the U region, then eigenmodes of long lifetime can exist. In order to suppress the gravity waves, it is necessary that the relaxation time be short over the entire trapping region.

This work was supported in part by the National Aeronautics and Space Administration (NCSR 31-019-12). Acknowledgement is made to the National Center for Atmospheric Research, which is sponsored by the National Science Foundation, for computer time in this research.

14. Evidence for thin-target x-ray emission in a small solar flare on 26 February 1972. D. DATLOWE, Dept. Phys. UCSD, La Jolla, Cal. and R.P. LIN, Space Sciences Lab., UC, Berkeley, Cal. We compare solar x-ray observations from the UCSD experiment aboard OSO-7 with high energy resolution electron observations from the UCAL experiment on IMP-6 for a small solar flare on 26 February 1972. A proportional counter and NaI scintillator covered the x-ray energy range 5-300 keV, while a semi-conductor detector covered electrons from 18 to ~400 keV. A series of three non-thermal x-ray spikes were observed from 1809 to 1814 UT with average spectrum dJ/dE(x) ~ hE ~ 3 over the 14-64 keV range. The energetic electrons were observed at 1 AU beginning 1840 UT with a spectrum dJ/dE ~ E^-1.1. If the electrons which produce the x-ray emission and those observed at 1AU are assumed to originate in a common source then these observations are consistent with this target x-ray production at the sun and inconsistent with thick target production. Under a model consistent with the observed soft x-ray emission, we obtain quantitative estimates of the total energy, height of acceleration, total number, escape efficiency, and energy lost in collision for the energetic electrons.

15. X-ray Observations from the August 2, 1972 flare. D. W. DATLOWE, L. E. PETERSON, K. TANAKA, W. STRIN, UNIVERSITY OF CALIF., SAN DIEGO, *BIG BEAR SOLAR OBSERVATORY, HALE OBSERVATORIES, CALIF. INST. OF TECHN., CARNegie INS., OF WASH. We report on the x-ray observations of the two solar flares which occurred at 1840 and 20:00 U.T. on August 2, 1972, taken by the UCSD solar x-ray instruments aboard the satellite OSO-7. The observations cover both thermal (5-10 keV) and non-thermal (10-300 keV) x-ray regions. The first burst had a duration of 10 minutes, and at the hard x-ray maximum at 18:39:48 the flu in the 20-30 keV region was 110 photons/cm²/sec keV. Photons above 150 keV were observed. The second hard x-ray burst also lasted approximately 10 minutes and at the maximum at 20:02:55 the 20-30 keV x-ray flux was six photons/cm²/sec keV. From the x-ray spectra we determine the spectra of electrons at the sun and the energy dissipated by these electrons in collision with the solar atmosphere.

16. Fast Transient Events Observed in the Green Coronal Emission Line. H. L. DEMASTUS, W. J. WAGNER, Sacramento Peak Observatory, APERL, and R.D. ROBINSON, Astro-Geophysics Department, Colorado University, Boulder, CO. Time lapse movies acquired with the Sacramento Peak Observatory 6-inch filter coronograph often show dramatic transient events. The results of a study of these transients observed through a complete solar cycle are reported. Most of the events (at 1.04 < r/T < 1.20) are correlated to Hα activity at the solar limb. We find that a small C2 or larger flare will produce a coronal disturbance, most coronal