tational Constant, G. The latest analysis gives the rate $\dot{G}/G=-(1.2\pm0.3)\times10^{-10}$ per year. Consequences of this result are numerous, but apparently in accord with other theoretical and observational data. The new results of Muller and Stephensen for the tidal decelerations of the Earth and Moon from ancient eclipses tend to support it. The consequences for the Ephemeris Time scale are severe (even if the observed decelerations have been incorrectly interpreted). The implied correction to ΔT=Ephemeris Time minus Universal Time is +55 T^2 seconds of time (T in centuries from 1960). The most interesting consequences are cosmological, since this result is in excellent agreement with the conjecture of Dirac. The observed rate is about the expected size in the Hoyle-Narlikar cosmological theory, but is larger than the rate expected by the Brans-Dicke theory. Assuming a 1/T variation of G, the observed rate implies a Hubble constant of (59±15) km/s/Mpc.

04.02.10 Gravitational Deflection of Polarized Radiation Passing by the Sun. BRIAN DENNISON, JOHN DICKEY, and DAVID L. JAUNCEY, Center for Radiophysics and Space Research, Cornell University and National Astronomy and Ionosphere Center, JOHN BRODERICK, National Astronomy and Ionosphere Center, RICHARD V. E. LOVELACE, and MARTIN HARWIT, Center for Radiophysics and Space Research, Cornell University - We have measured the differential deflection of orthogonally polarized radio waves passing near the sun, with three different techniques: Very Long Baseline Interferometry, Phase Stable Medium Baseline Interferometry, and Polarization Measurements on the carrier wave of a Solar Orbiting Spacecraft. Upper limits are presented for both circularly and linearly polarized radio waves. Our best upper limits are in the range of one part in 10^5 to 10^6 of the total deflection. This work was supported by the Research Corporation.

04.03.10 The Redshift Hypothesis and the Plasma-Laser Star Model for Quasi-Stellar Objects. Y.P. VARSHNI, Univ. of Ottawa. -The reality of redshifts in the emission and absorption spectra of QSOs is questioned. Investigations in the spirit of the paper of Russell and Bowen (1929 Ap.J. 69, 196) are carried out to examine the question whether the numerical coincidences found between the ratios of wavelengths of lines observed in the QSOs and those of the wavelengths of lines in search list are significantly more than would be expected from chance coincidences. QSOs having $z \geqslant 0.2$ are considered. Computer experiment to simulate the spectra of two-emission-line QSOs is described; about 85% of these nonsense spectra can be assigned reasonable redshifts. The redshift distribution of QSOs is calculated on the chance coincidence hypothesis and is found to be in broad accord with the observed one. Large discrepancies between the observed and calculated emission-line wavelengths (on the redshift hypothesis) for a number of QSOs are pointed out. Distribution of absorption-line redshifts of 4C 05.34 is shown to be nearly the same as that expected from the chance coincidence hypothesis. The performances of the redshift hypothesis and the plasma-laser star (PLS) model of Varshni (1974 B.A.A.S. 6, 213) in explaining the following points are compared: (1) Redshift-apparent magnitude diagram, (2) Coincidences in redshifts, (3) Relative intensities of lines, (4) Profiles of lines, (5) Energy generation mechanism, (6) Optical Variability, (7) Lyman -α absorption, and (8) Radio data. It is found that the PLS model provides satisfactory answers on all scores, while the redshift hypothesis leads to enigmas, mysteries and paradoxes.

04.04.10 The Hypothesis of Gravitational Redshift Revisited. R. C. Barnes & Y. Y. Wang, U. of Mo., Columbia - Bell and Fort (1973 Ap.J., 186, 1) have considered the possibility of a non-cosmological redshift component in quasars. Assuming that $M_v=-20.4 + 1.67\,Z_x$, they showed that most of the m_v,z data is consistent with the idea of composite redshift.

It can be shown that gravitational theory predicts a similar equation if quasars radiate according to $F_\nu = F\,\nu^{-n}$, n≅1. Motivated by this result, the possibility that Z_x is gravitational was investigated by constructing the potential well inside a Hoyle-Fowler object using models like those of Fackerell (1970 Ap.J., 160, 859). Using the technique of Greenstein and Schmidt (1964 Ap.J., 140, 1) it was possible to find models which are in accord with the Hβ line width and strength observed in several quasars listed by Oke, et.al. (1970 Ap.J., 159, 341). Within the context of the model employed, gravitational redshift predicts masses of 10^{10}-10^{13}☉. These are large enough to rule out gravitational redshift as an explanation for the quasar-