as 0.7 and the absolute magnitudes as -5.2 and -4.7 . The expected masses, from the mass-luminosity relation, are more than $20M_{\odot}$, so there is no chance of an eclipse. The observed mass ratio of 2.0 and the observed light ratio of 0.7 are inconsistent with the mass-luminosity relation.

Chemical Composition of the Outer Solar Atmosphere. STUART R. POTTASCH, *Institute for Advanced Study and Princeton University Observatory.*

—The observations of the resonance lines of 9 elements in 27 stages of ionization in the far-ultraviolet region of the spectrum permits the deduction of the relative abundance of these elements in the upper solar atmosphere (roughly between 3000 and 40 000 km above the solar limb). The determination of the composition can be made without a detailed knowledge of the temperature-density distribution in this region of the atmosphere. The observations also give an indication of the structure of the atmosphere. This indication is sufficient, however, to enable the prediction of the radio frequency continuum, which provides a check of the correctness of the assumptions which have been made. The accuracy of the relative abundances is believed to be about a factor of 2. The abundances, which follow, show a marked discrepancy with a recent photospheric determination (Goldberg, Muller, and Aller).

Oxygen	100	Neon	10
Nitrogen	30	Magnesium	20
Carbon	350	Iron	12
Sulfur	8	Helium	25 000
Silicon	50	Hydrogen	150 000

On the Carbon, Oxygen, and Neon Burning Stages. HUBERT REEVES, *Département de Physique, Université de Montréal.*

—The conditions under which subsequent nuclear burning stages would follow the hydrogen and helium stages in a stellar core are investigated. Taking as a lower limit to the total energy output of a star its neutrino luminosity, regions of the density temperature plane are determined in which a core can stop its contraction by burning one of these fuels. Upper limits to the lifetime of these stages can then be calculated.

Estimating the photon luminosity to lie in the neighborhood of 10^4 to 10^5 ergs per gram per second, the carbon burning stage would take place at temperatures of about 0.6°BK for densities of 10^5 g/cm³ or more, the lifetime being some 30 000 years or so. Only for densities below 3×10^4 g/cm³ is the burning postponed till later temperature. At $\rho=10^4$ it would take place at $T=0.9$ with lifetime of a few years.

For the next stages the photon luminosity can be

entirely disregarded in view of the very large neutrino luminosity.

For densities around 10^7 the *O* and *Ne* stages would be roughly simultaneous at $T=1.3$ to 1.5 and lifetime 1 to 10 years. At lower densities ($\rho < 10^6$) the *Ne* burning would markedly precede the oxygen burning with T from 1.5 to 1.7, lifetime hours; compared with oxygen, T 1.5 to 2.0, lifetime days.

Correlation of Jupiter Decimeter Radiation with Solar Activity.—MORTON S. ROBERTS, *Harvard College Observatory.*

—The variability of the decimeter radiation from Jupiter has been a characteristic feature found in previous studies. In a number of instances the suggestion of a relation of this variability to solar activity has been made. However, attempts to correlate these variations with solar activity have been inconclusive or unsuccessful. The present study is based on 90 observations of Jupiter made on 48 nights during the period April 25–November 30, 1961. A maser radiometer operating at 1423 Mc attached to the George R. Agassiz 60-foot radio telescope was used. The individual observations after correction to a standard distance of 5 a.u. show a variation in flux of a factor of $2\frac{1}{2}$ times the minimum value.

A series of solutions for correlation coefficients and least-square determinations of the regression of Jupiter flux density on solar activity were made; a positive and significant correlation was found. Sunspot number, 10.7 and 20 cm solar flux values were used as indices of solar activity. Allowance was made for the difference in synodic rotation periods of the sun as observed from the earth and from Jupiter. The solutions were made for phase lags of -6 to $+16$ days between the Jupiter observations and solar activity. The correlation is strongest for phase lags of between 0 and 6 days. The correlation is still significant at phase lags up to 10 days. These calculations were made with an IBM 7090 by Robert Chapman.

To test the stability of the above 90-point solutions, calculations were made using only 60 and 30 of the observations. A third test was based on solutions using the original set of observations less the five highest and five lowest values of Jupiter flux. These three sets of calculations gave results that were quite similar to the original solutions.

A detailed discussion of these results and their interpretation is being prepared. It should be noted that these data were obtained during a period of relatively low solar activity, lower than during periods of previous decimeter observations of Jupiter.

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