TABLE I.

El.	Z	68 Tau	HD 73666	63 Tau	64 Tau	γ Gem	α Lyr
C	6		-0.27		-0.19		-0.49 $\pm$ 0.20
Na	11	+0.54			+0.44 $\pm$ 0.09		1.13 $\pm$ 0.40
Mg	12	+0.63	+0.50 $\pm$ 0.45	+0.49 $\pm$ 0.43	+0.27 $\pm$ 0.60	-0.48 $\pm$ 0.40	-0.17 $\pm$ 0.40
Al	13	+1.17 $\pm$ 0.43	+0.40 $\pm$ 0.17		-0.22 $\pm$ 0.23		
Si	14	+1.34 $\pm$ 0.25	+1.06 $\pm$ 0.44		+0.25 $\pm$ 0.46	+0.66 $\pm$ 0.10	+0.44 $\pm$ 0.30
Ca	20	+0.06 $\pm$ 0.39	+0.32 $\pm$ 0.55	-0.97 $\pm$ 0.45	-0.14 $\pm$ 0.25	-0.77 $\pm$ 0.18	-0.25 $\pm$ 0.40
Sc	21	-0.06 $\pm$ 0.63	+0.38 $\pm$ 0.24	-0.73 $\pm$ 0.08	+0.43 $\pm$ 0.05	-0.05 $\pm$ 0.24	+0.17 $\pm$ 0.40
Ti	22	+0.47 $\pm$ 0.59	+0.54 $\pm$ 0.63	-0.25 $\pm$ 0.60	+0.09 $\pm$ 0.35	-0.25 $\pm$ 0.27	+0.16 $\pm$ 0.40
V	23	+0.60 $\pm$ 0.30	+0.45 $\pm$ 0.30	+0.32 $\pm$ 0.35	-0.08 $\pm$ 0.23	-0.08 $\pm$ 0.23	+0.01 $\pm$ 0.30
Cr	24	+0.56 $\pm$ 0.65	+0.47 $\pm$ 0.50	+0.47 $\pm$ 0.50		-0.08 $\pm$ 0.70	+0.08 $\pm$ 0.50
Mn	25		+0.60 $\pm$ 0.33	+0.07 $\pm$ 0.48	+0.76 $\pm$ 0.55	+0.09 $\pm$ 0.60	-0.33 $\pm$ 0.50
Fe	26	+0.70 $\pm$ 0.50	+0.64 $\pm$ 0.55	+0.65 $\pm$ 0.55	+0.17 $\pm$ 0.50	-0.05 $\pm$ 0.55	+0.05 $\pm$ 0.45
Co	27			-0.09 $\pm$ 0.42			
Ni	28	-0.37 $\pm$ 0.11	-0.78 $\pm$ 0.30	+0.01 $\pm$ 0.40		-0.97 $\pm$ 0.15	+0.48 $\pm$ 0.30
Zn	30		+1.09	-0.33			
Sr	38	+1.54 $\pm$ 1.00	+1.89	1.14 $\pm$ 0.59		-0.09 $\pm$ 0.11	+0.44 $\pm$ 0.30
Y	39	+0.45 $\pm$ 0.39	+0.23 $\pm$ 0.58	+0.76 $\pm$ 0.42	+0.29 $\pm$ 0.66	-1.14	-0.28 $\pm$ 0.20
Zr	40	+1.47 $\pm$ 0.23	+1.08 $\pm$ 0.26	+0.70 $\pm$ 0.62	+0.83	-0.40 $\pm$ 0.39	+0.30
Ba	56	+1.41	+1.88 $\pm$ 0.24	+1.82 $\pm$ 0.66	+0.94 $\pm$ 0.22		

within the computer program to the observed equivalent widths and the trial abundances varied until a match is achieved. This automated procedure is further facilitated by a "lookup" program which searches a table of wavelengths, gf values, and excitation potentials. The only input information required for the search and abundance determination is the wavelength, element identification and observed equivalent width.

For these analyses, the observed equivalent widths are those of Wright, K. O., Lee, E. K., Jacobson, J. V. and Greenstein, J. L. (*Publ. Dominion Astrophys. Obs.* 12, 173, 1964) and Conti (private communication). The results for the stars showing metallic-line characteristics (63 and 68 Tau) indicate that their anomalous line strengths are indicative of abundance differences and that the microturbulent velocity parameter for these stars is also higher than for normal A stars. Table I summarizes the values of $[\log(N_{\text{el}}/N_{\text{H}}) - \log(N_{\text{el}}/N_{\text{H}})_{\odot}]$ and their standard deviations.

Observations of Planetary Nebulae at Radio Wavelengths. YERVANT TERZIAN, *Cornell-Sydney University Astronomy Center, Arecibo Ionospheric Observatory*.—A survey of 130 planetary nebulae at 430 MHz was made with the Arecibo Ionospheric Observatory's 1000-ft radio telescope. Limited observations were also made at 195 and 611 MHz. The region of the sky surveyed for radio emission from planetary nebulae covered a declination range from -2° to $+38^{\circ}$. Twenty-six percent of the nebulae gave a measurable radio signal, 23% were confused with nearby sources, and the remaining 51% gave negative results. An upper limit of $0.1 \times 10^{-23} \text{ W m}^{-2} \text{ Hz}^{-1}$ for the flux density of the undetected nebulae has been deduced.

The observations indicate that most of the detected

planetary nebulae have thermal radio spectra. Typical examples are NGC 6853 and NGC 6720; both are optically thick at 195 MHz. An electron temperature of $1.03 \times 10^4 \text{ K}$ and $1.63 \times 10^4 \text{ K}$ has been deduced for these nebulae, respectively. Two other nebulae, NGC 6781 and A 48 seem to have nonthermal spectra, similar to NGC 3242 reported by Menon and Terzian (*Astrophys. J.* 141, 745).

An attempt was made to derive the interstellar extinction at $\text{H}\beta$ for some of the nebulae, by comparing the measured $\text{H}\beta$ fluxes (uncorrected for interstellar extinction) with the $\text{H}\beta$ fluxes predicted from the radio observations. The results seem to be satisfactory.

The emission measure for some of the planetary nebulae has also been calculated using the radio measurements. The range of the emission measure is from $0.06 \times 10^5 \text{ cm}^{-6} \text{ pc}$ for NGC 6853 to $45.00 \times 10^5 \text{ cm}^{-6} \text{ pc}$ for NGC 6572.

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Observations of the Strength of the Lithium Resonance Line in 34 Carbon Stars. SILVIA TORRES-PEIMBERT, *Berkeley Astronomical Department*, AND GEORGE WALLERSTEIN, *University of Washington*.—We have obtained equivalent widths of the lithium line at $\lambda 6707.8$ and the neutral calcium line at $\lambda 6572.8$ from 8 and 16 Å/mm spectrograms. Corrections for the contribution to the observed line strengths by CN features have been made from measurements of other CN features. From the corrected lithium and calcium line strengths we have formed an index of the Li/Ca abundance ratio. The Li/Ca index is found to correlate with space velocity