7e. Important Atomic Spectra

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7e-1. General. The tables and figures of this section furnish data on spectra which are often used for reference. These are chiefly the spectra of the rare gases which can easily be obtained with simple discharge tubes (a neon advertising sign, for instance, is a good source for the neon spectrum); the iron spectrum which is the best source of standard lines for a spectrograph of moderate to high dispersion; and the mercury spectrum which, like that of helium, is particularly useful for spectrographs of low dispersion.

Data on other spectra of varying degrees of accuracy and completeness can be found in the MIT tables;[1] Kayser, "Handbuch der Spectroscopie," vols. 5–8; Paschen und Götze (1922); Fowler (1922); C. E. Moore, "Multiplet Tables" (1945); and Brode, "Chemical Spectroscopy" (1943).

An atlas of spectra is Gatterer and Junkes (1937 and 1945). For the solar spectrum, Minnaert, Mulders, and Houtgast (1940) is recommended.

The various tables of spectra and figures presented in this section are as follows:

Spectrum	Table	Figure
Helium	7e-1	
Neon Ne I	7e-2	7e-1
Argon A I	7e-3	7e-2
Krypton Kr I	7e-4	7e-3
Xenon Xe I	7e-5	7e-4
Iron Fe I	7e-6	7e-5
Mercury Hg I	7e-7	7e-6, 7

The wavelengths and intensities are listed as completely as space permits. Special attention has been paid to lines which can be used as standards for wavelength measurements of high accuracy.

The figures, which are direct photoelectric traces obtained at The Johns Hopkins University, will help to orient the reader in the particular spectra. The traces were made with a logarithmic amplifier and calibrated to compensate for variations in sensitivity of spectrograph and measuring devices. Furthermore, the intensity scale is the same for all spectra so that the values indicate relative brightnesses of the light sources. Intensities as read from the charts, however, are not meant for high accuracy.

In a number of spectra numerical intensity values are given on a logarithmic scale. Also the conditions under which the spectra were produced are shown in each case.

[1] See the references on p. 7-96a.

Without the knowledge of such conditions intensity tables have little meaning because the intensities vary greatly with the discharge conditions.

In both figures and tables (except for helium) the intensities are standardized to give the energy flux from 100 cm^2 of the light source per unit solid angle in ergs per second.

In Figs. 7e-1 through 7e-5, only whole numbers are given in the wavelength designations. Values accurate to several decimal places appear for many of these lines in Tables 7e-2 through 7e-7.

7e-2. Standard Wavelengths. Since October, 1960, the international standard of length is officially defined in terms of the orange line of the krypton isotope with mass 86. The anstrom unit (Å) is exactly 10^{-10} meter. The meter is defined as exactly 1,650,763.73 wavelengths *in vacuo* of the Kr^{86} line, which has

$$\lambda_{vac} = 6{,}057.80211 \text{ Å}$$
$$\lambda_{air} = 6{,}056.12525 \text{ Å}$$

This line has the indicated wavelength when the atoms are free from interactions. If a lamp meets the following specifications, the wavelength is within 10^{-4} Å of the nominal value.

1. Purity of Kr^{86} not less than 99 percent.
2. Temperature of the coldest point of the lamp not higher than 63 K (triple point of nitrogen). The Kr pressure is then about 0.03 mm of Hg.
3. The current density must not exceed 4 ma/mm^2.
4. For a hot-cathode d-c lamp the anodes should be toward the observer.

Wavelengths of Kr^{84}, which is the predominant constituent of natural krypton, are approximately 0.001 Å larger in the visible than the Kr^{86} wavelengths.

For accurate spectroscopic wavelength measurements wavelength standards should be used as follows: (1) For interferometric measurements of the highest accuracy, the primary standard. (2) For other interferometric measurements and grating measurements of exceptional accuracy, the primary standard and secondary standards of Kr^{86} or natural Kr*, Ne*, A*, Hg^{198}*, Fe* (in a low-pressure source), and Th determined to four decimals. The values for the elements marked by an asterisk will be found in Tables 7e-2 to 7e-7 of this section. (3) For other grating measurements, in general those listed under (2) and many other lines produced by stable low-pressure light sources and measured reliability to at least three decimals.

Note. Using lines of one order of the grating as standards for different overlapping orders may or may not lead to errors, depending on the properties of the particular grating.

Helium I. The He I spectrum (Table 7e-1) consists of singlets and triplets. The latter appear as double lines except under the most favorable conditions. This is because the 2^3P_2 and 2^3P_1 levels almost coincide, whereas the 2^3P_0 level is about 1 cm^{-1} removed. The wavelengths are taken from the literature [see especially W. C. Martin, *J. Research NBS* **64**, 19 (1960)]. The intensities I_1 and I_2 are quantitative measurements at the following conditions: I_1, discharge with external electrodes, frequency 15 MHz, pressure 7.5 mm; I_2, same, pressure 0.25 mm; I_0, estimates from the literature.

TABLE 7e-1. THE SPECTRUM OF HELIUM I AND II

λ	Classification: Singlets		Classification: Triplets		He II	I_0	I_1	I_2
243.027	...	...	...	...	4 → 1			
256.317	...	...	...	...	3 → 1			
303.781	...	...	...	...	2 → 1			
522.2128	1*S*	4*P*						
537.0296	1*S*	3*P*						
584.331	1*S*	2*P*						
591.4117	1*S*	...	...	2*p*				
1,084.975	...	...	...	...	5 → 2			
1,215.171	...	...	...	...	4 → 2			
1,640.474	...	...	...	...	3 → 2			
2,696.119	...	...	2*s*	9*p*	....	1		
2,723.191	...	...	2*s*	8*p*	....	1		
2,763.804	...	...	2*s*	7*p*	....	2		
2,829.076	...	...	2*s*	6*p*	....	4		
2,945.106	...	...	2*s*	5*p*	....	6		
3,187.745	...	...	2*s*	4*p*	....	8		
3,203.14	...	...	...	...	5 → 3			
3,354.550	2*S*	7*P*	...	...	....	2		
3,447.586	2*S*	6*P*	...	...	....	2		
3,587.270	...	...	2*p*	9*d*	....	2		
3,587.405	...	...	2*p*	9*d*	....	1		
3,599.314	...	...	2*p*	9*s*	....	1		
3,599.448	...	...	2*p*	9*s*	....	1		
3,613.643	2*S*	5*P*	...	...	....	3	19	260
3,634.232	...	...	2*p*	8*d*	....	2		
3,634.369	...	...	2*p*	8*d*	....	1		
3,651.990	...	...	2*p*	8*s*	....	1		
3,652.130	...	...	2*p*	8*s*	....	1		
3,705.005	...	...	2*p*	7*d*	....	3	28	260
3,705.148	...	...	2*p*	7*d*	....	1		
3,732.865	...	...	2*p*	7*s*	....	1		
3,733.010	...	...	2*p*	7*s*	....	1		
3,819.6072	...	...	2*p*	6*d*	....	4	84	680
3,819.758	...	...	2*p*	6*d*	....	1		
3,867.475	...	...	2*p*	6*s*	....	2	23	160
3,867.630	...	...	2*p*	6*s*	....	1		
3,888.648	...	...	2*s*	3*p*	....	10	10,000	10,000
3,964.7289	2*S*	4*P*	...	...	....	4	140	2,100
4,009.268	2*P*	7*D*	...	...	....	1	5	89
4,023.973	2*P*	7*S*	...	...	....	1		
4,026.1912	...	...	2*p*	5*d*	....	5	370	1,450
4,026.359	...	...	2*p*	5*d*	....	1		
4,120.812	...	...	2*p*	5*s*	....	3	90	480
4,120.993	...	...	2*p*	5*s*	....	1		

TABLE 7e-1. THE SPECTRUM OF HELIUM I AND II (*Continued*)

λ	Classification				He II	I_0	I_1	I_2
	Singlets		Triplets					
4,143.761	2*P*	6*D*	...	...	....	2	19	210
4,168.967	2*P*	6*S*	...	...	....	1	3	36
4,387.9294	2*P*	5*D*	...	...	....	3	83	590
4,437.551	2*P*	5*S*	...	...	....	1	17	290
4,471.479	...	...	2*p*	4*d*	....	6	2,300	2,220
4,471.682	...	...	2*p*	4*d*	....	1		
4,685.75	...	...	...	...	4 → 3			
4,713.1455	...	...	2*p*	4*s*	....	3	350	370
4,713.376	...	...	2*p*	4*s*	....	1		
4,921.9310	2*P*	4*D*	...	...	....	4	57	1,800
5,015.6799	2*S*	3*P*	...	...	....	6	710	3,106
5,047.738	2*P*	4*S*	...	...	....	2	120	860
5,411.551	...	...	...	...	7 → 4			
5,875.621	...	...	2*p*	3*d*	....	10	18,200	7,100
5,875.966	...	...	2*p*	3*d*	....	1		
6,559.71	...	...	...	...	6 → 4			
6,678.151	2*P*	3*D*	...	...	....	6	2,400	1,850
7,065.190	...	...	2*p*	3*s*	....	5	7,100	1,450
7,065.707	...	...	2*p*	3*s*	....	1		
7,281.349	2*P*	3*S*	...	...	....	3*	1,450	
10,123.77	...	...	...	...	5 → 4			
10,829.088	...	...	2*s*	$2p_0$	....	500	105,000	6,950
10,830.248	...	...	2*s*	$2p_1$	....	1,500		
10,830.337	...	...	2*s*	$2p_2$	....	2,500		
12,784.79†	...	...	3*d*	5*f*	....	10†		
12,790.27	3*D*	5*F*	...	...	....	1		
17,003.11	...	...	3*p*	4*d*	....	20		
18,685.12	...	...	3*d*	4*f*	....	70		
18,697.00	3*D*	4*F*	...	...	....	10		
20,580.9	2*S*	2*P*	...	...	....	5,000		

* Change in the I_0 scale. From here on National Bureau of Standards values.
† Wavelengths and intensities from here on from Humphreys and Kostkowski, *J. Research Natl. Bur. Standards* **49**, 73 (1952).

The classification is indicated by capital letters for singlets, lower-case letters for triplets. A few of the He II lines are also listed. They have elaborate fine structures.

Neon I. The neon spectrum is moderately rich in lines and may serve, like the other rare-gas spectra, as an easily obtained comparison spectrum. Any neon-sign manufacturer can produce a satisfactory tube. The wavelengths of the strong lines have been measured with great accuracy and have been adopted as international secondary standards,[1] often replacing the primary standard for interferometric measurements. Table 7e-2 lists the principal neon lines. The wavelengths are interferometric wavelengths when followed by a capital letter.

B, Burns, Adams, Longwell, *J. Opt. Soc. Am.* **40**, 339 (1950)
H, Humphreys, *J. Research Natl. Bur. Standards* **20**, 17(1938)

[1] *Trans. Intern. Astron. Union* **5**, 86 (1935); **9**, 204 (1957); **10**, 229 (1958).

TABLE 7e-2. THE SPECTRUM OF NEON I

Wavelength	Classification				I_0	log I_1	log I_2	log I_3
	System.		Paschen					
2,647.42	$3s_{12}$	$8p_1$	$1s_5$	$7p_{6,7}$	8			
2,675.24	$3s_{11}$	$7p'_{12}$	$1s_4$	$6p_4$	8			
2,675.64	$3s_{11}$	$7p'_{11}$	$1s_4$	$6p_6$	8			
2,872.663	$3s'_{00}$	$6p'_{00}$	$1s_2$	$5p_1$	5	.....	.....	2.73
2,913.168	$3s_{12}$	$5p'_{01}$	$1s_5$	$4p_2$	8	.....	.....	3.16
2,932.721	$3s'_{01}$	$6p_{00}$	$1s_2$	$5p_1$	7	.....	.....	3.30
2,947.297	$3s_{11}$	$5p_{12}$	$1s_4$	$4p_4$	8	.....	.....	3.2?
2,974.714	$3s_{12}$	$5p_{12}$	$1s_5$	$4p_6$	9	.....	.....	3.6?
2,980.642	$3s'_{00}$	$5p'_{01}$	$1s_3$	$4p_2$	5.5	.....	.....	2.7
2,980.922	$3s'_{00}$	$5p'_{11}$	$1s_3$	$4p_5$	6	.....	.....	2.80
2,982.663	$3s_{12}$	$5p_{23}$	$1s_5$	$4p_9$	9	.....	.....	3.52
2,992.420	$3s_{11}$	$5p_{00}$	$1s_4$	$4p_3$	8 }	.....	.....	3.32
2,992.438	$3s_{12}$	$5p_{01}$	$1s_5$	$4p_{10}$	8 }			
3,012.129	$3s_{11}$	$5p_{12}$	$1s_4$	$4p_6$	6	.....	.....	2.93
3,012.955	$3s_{11}$	$5p_{11}$	$1s_4$	$4p_7$	6	.....	.....	2.98
3,017.348	$3s_{11}$	$5p_{22}$	$1s_4$	$4p_8$	6	.....	.....	3.12
3,057.388	$3s'_{01}$	$5p'_{00}$	$1s_2$	$4p_1$	9	.....	.....	2.7
3,076.971	$3s'_{01}$	$5p'_{12}$	$1s_2$	$4p_4$	8	.....	.....	2.80
3,126.1986 *B*	$3s'_{01}$	$5p_{00}$	$1s_2$	$4p_3$	8	.....	.....	3.61
3,148.6107 *B*	$3s'_{01}$	$5p_{11}$	$1s_2$	$4p_7$	7	.....	.....	2.44
3,153.4107 *B*	$3s'_{01}$	$5p_{22}$	$1s_2$	$4p_8$	6	.....	.....	2.4?
3,167.5762 *B*	$3s'_{01}$	$5p_{01}$	$1s_2$	$4p_{10}$	6	.....	.....	2.21
3,369.8076 *B*	$3s_{12}$	$4p'_{12}$	$1s_5$	$3p_4$	10	.....	.....	3.90
3,369.9060 *B*	$3s_{12}$	$4p'_{01}$	$1s_5$	$3p_2$	15	.....	.....	4.36
3,375.6489 *B*	$3s_{12}$	$4p'_{11}$	$1s_5$	$3p_5$	6	.....	.....	2.98
3,417.9031 *B*	$3s_{11}$	$4p'_{12}$	$1s_4$	$3p_4$	10	.....	.....	4.62
3,418.0066 *H*	$3s_{11}$	$4p'_{01}$	$1s_4$	$3p_2$	6	.....	.....	4.14
3,423.9120 *B*	$3s_{11}$	$4p'_{11}$	$1s_4$	$3p_5$	6	.....	.....	3.57
3,447.7022 *B*	$3s_{12}$	$4p_{12}$	$1s_5$	$3p_6$	8	.....	.....	4.91
3,450.7641 *B*	$3s_{12}$	$4p_{11}$	$1s_5$	$3p_7$	6	.....	.....	4.18
3,454.1942 *B*	$3s_{11}$	$4p_{00}$	$1s_4$	$3p_3$	7	.....	.....	4.72
3,460.5235 *B*	$3s'_{00}$	$4p'_{01}$	$1s_3$	$3p_2$	7	.....	.....	4.37
3,464.3385 *B*	$3s_{12}$	$4p_{22}$	$1s_5$	$3p_8$	7	.....	.....	4.27
3,466.5781 *B*	$3s'_{00}$	$4p'_{11}$	$1s_3$	$3p_5$	8	.....	.....	4.64
3,472.5706 *B*	$3s_{12}$	$4p_{23}$	$1s_5$	$3p_9$	10	.....	.....	4.90
3,498.0632 *B*	$3s_{11}$	$4p_{12}$	$1s_4$	$3p_6$	7	.....	.....	4.45
3,501.2154 *B*	$3s_{11}$	$4p_{11}$	$1s_4$	$3p_7$	8	.....	.....	4.53
3,510.7207 *B*	$3s_{12}$	$4p_{01}$	$1s_5$	$3p_{10}$	6	.....	.....	3.85
3,515.1900 *B*	$3s_{11}$	$4p_{22}$	$1s_4$	$3p_8$	8	.....	.....	4.55
3,520.4714 *B*	$3s'_{01}$	$4p'_{00}$	$1s_2$	$3p_1$	20	.....	.....	5.32

TABLE 7e-2. THE SPECTRUM OF NEON I (*Continued*)

Wavelength	Classification				I_0	log I_1	log I_2	log I_3
	System.		Paschen					
3,562.9551 *B*	$3s_{11}$	$4p_{01}$	$1s_4$	$3p_{10}$	3			
3,593.5263 *B*	$3s'_{01}$	$4p'_{12}$	$1s_2$	$3p_4$	10	.....	.....	4.70
3,593.639 *B*	$3s'_{01}$	$4p'_{01}$	$1s_2$	$3p_2$	9	.....	.....	4.50
3,600.1694 *B*	$3s'_{01}$	$4p'_{11}$	$1s_2$	$3p_5$	7	.....	.....	4.17
3,609.1787 *B*	$3s'_{00}$	$4p_{01}$	$1s_3$	$3p_{10}$	6	.....	.....	3.26
3,633.6643 *B*	$3s'_{01}$	$4p_{00}$	$1s_2$	$3p_3$	7	.....	.....	4.28
3,682.2421 *B*	$3s'_{01}$	$4p_{12}$	$1s_2$	$3p_6$	7	.....	.....	4.21
3,685.7351 *B*	$3s'_{01}$	$4p_{11}$	$1s_2$	$3p_7$	7	.....	.....	4.08
3,701.2247 *B*	$3s'_{01}$	$4p_{22}$	$1s_2$	$3p_8$	7	.....	.....	4.06
3,754.2148 *B*	$3s'_{01}$	$4p_{01}$	$1s_2$	$3p_{10}$	6	.....	.....	3.42
4,270.2674 *B*	$3p_{01}$	$7d_{00}$	$2p_{10}$	$7d_6$	4	2.460		
4,275.5598 *B*	$3p_{01}$	$6d'_{22}$	$2p_{10}$	$6s''''_1$	5	2.70	2.61	
4,306.2625 *B*	$3p_{01}$	$8s_{12}$	$2p_{10}$	$6s_5$	5			
4,334.1267 *B*	$3p_{01}$	$7s'_{01}$	$2p_{10}$	$5s_2$	5			
4,363.524 *M*	$3p_{23}$	$9d_{34}$	$2p_9$	$9d'_4$	5			
4,381.220 *M*	$3p_{23}$	$10s_{12}$	$2p_9$	$8s_5$	3			
4,395.556 *M*	$3p_{22}$	$9d_{33}$	$2p_8$	$9d_4$	4			
4,422.5205 *B*	$3p_{01}$	$6d_{12}$	$2p_{10}$	$6d_3$	8	2.97	2.90	
4,424.8096 *B*	$3p_{01}$	$6d_{01}$	$2p_{10}$	$6d_5$	8	2.89	2.81	
4,425.400 *M*	$3p_{01}$	$6d_{00}$	$2p_{10}$	$6d_6$	7			
4,433.7239 *B*	$3p_{23}$	$8d_{34}$	$2p_9$	$8d'_4$	5	2.34	2.19	
4,460.175 *M*	$3p_{23}$	$9s_{12}$	$2p_9$	$7s_5$	6			
4,466.8120 *B*	$3p_{22}$	$8d_{33}$	$2p_8$	$8d_4$	5	2.02	1.81	
4,475.656 *M*	$3p_{11}$	$7d'_{12}$	$2p_7$	$7s''_1$	6			
4,483.199 *B*	$3p_{01}$	$7s_{11}$	$2p_{10}$	$5s_4$	7	2.098		
4.488.0926 *B*	$3p_{01}$	$7s_{12}$	$2p_{10}$	$5s_5$	8	2.811	2.673	
4,500.182 *M*	$3p'_{11}$	$8d'_{12}$	$2p_5$	$8s''_1$	4			
4,517.736 *M*	$3p'_{12}$	$8d'_{23}$	$2p_4$	$8s'''_1$	6			
4,525.764 *M*	$3p_{11}$	$8d_{22}$	$2p_7$	$8d''_1$	5			
4,536.312	$3p_{01}$	$5d'_{11}$	$2p_{10}$	$5s'_1$	7	2.694	2.699	
4,537.7545 *B*	$3p_{01}$	$5d'_{12}$	$2p_{10}$	$5s''''_1$	10	3.3	3.4	
4,538.2927 *B*	$3p_{23}$	$7d_{23}$	$2p_9$	$7d'_1$	8			
4,540.3801 *B*	$3p_{23}$	$7d_{34}$	$2p_9$	$7d'_4$	10	2.964	2.854	
4,552.598 *M*	$3p_{11}$	$9s_{11}$	$2p_7$	$7s_4$	3			
4,565.888 *M*	$3p_{12}$	$8d_{23}$	$2p_6$	$8d'_1$	4.5			
4,575.0620 *B*	$3p_{22}$	$7d_{33}$	$2p_8$	$7d_4$	8	2.714	2.569	
4,582.035 *M*	$3p_{22}$	$6d'_{23}$	$2p_8$	$6s'''_1$	7	2.4	2.3	
4,582.4521 *B*	$3p_{23}$	$8s_{12}$	$2p_9$	$6s_5$	7	2.4	2.3	
4,609.910 *M*	$3p'_{11}$	$7d'_{12}$	$2p_5$	$7s''_1$	7	2.19		
4,614.391 *M*	$3p_{22}$	$8s_{11}$	$2p_8$	$6s_4$	6	2.204		

TABLE 7e-2. THE SPECTRUM OF NEON I (*Continued*)

Wavelength	Classification				I_0	log I_1	log I_2	log I_3
	System.		Paschen					
4,617.837 *M*	$3p_{22}$	$8s_{12}$	$2p_8$	$6s_5$	5			
4,628.3113 *B*	$3p'_{12}$	$7d'_{23}$	$2p_4$	$7s_1'''$	7	2.49	2.39	
4,636.125 *M*	$3p_{11}$	$7d_{22}$	$2p_7$	$7d_1''$	5	2.0		
4,636.630	$3p_{11}$	$7d_{11}$	$2p_7$	$7d_2$	5	2.0		
4,645.4180 *B*	$3p_{11}$	$6d'_{12}$	$2p_7$	$6s_1''$	8	2.672	2.607	
4,649.904 *M*	$3p_{22}$	$7s'_{01}$	$2p_8$	$5s_2$	5			
4,656.3936 *B*	$3p_{01}$	$6s'_{01}$	$2p_{10}$	$4s_2$	8	2.916	2.828	2.799
4,661.1054 *B*	$3p_{01}$	$6s'_{00}$	$2p_{10}$	$4s_3$	7	2.634	2.559	
4,670.884 *M*	$3p'_{12}$	$8s'_{01}$	$2p_4$	$6s_2$	5			
4,678.218 *M*	$3p_{12}$	$7d_{23}$	$2p_6$	$7d'_1$	8	2.4	2.3	
4,679.135 *M*	$3p_{12}$	$7d_{12}$	$2p_6$	$7d_3$	7	2.2	2.1	
4,687.6724 *B*	$3p_{12}$	$6d'_{23}$	$2p_6$	$6s_1'''$	6	2.410	2.340	
4,702.526	$3p_{01}$	$5d_{11}$	$2p_{10}$	$5d_2$	7	2.472	2.427	
4,704.3949 *B*	$3p_{01}$	$5d_{12}$	$2p_{10}$	$5d_3$	15	3.701	3.729	3.437
4,708.8619 *B*	$3p_{01}$	$5d_{01}$	$2p_{10}$	$5d_5$	12	3.688	3.693	3.459
4,710.0669 *B*	$3p_{01}$	$5d_{00}$	$2p_{10}$	$5d_6$	10	3.33	3.33	3.34
4,712.0661 *B*	$3p_{23}$	$6d_{23}$	$2p_9$	$6d'_1$	10	2.96	2.90	2.55
4,715.3466 *B*	$3p_{23}$	$6d_{34}$	$2p_9$	$6d'_4$	15	3.57	3.50	3.17
4,725.145 *M*	$3p_{12}$	$8s_{12}$	$2p_6$	$6s_5$	5			
4,749.5754 *B*	$3p_{22}$	$6d_{22}$	$2p_8$	$6d'_1$	8	2.78	2.68	
4,752.7320 *B*	$3p_{22}$	$6d_{33}$	$2p_8$	$6d_4$	10	3.329	3.243	2.974
4,788.9270 *B*	$3p_{23}$	$7s_{12}$	$2p_9$	$5s_5$	12	3.16	3.05	
4,790.217 *B*	$3p'_{11}$	$6d_{22}$	$2p_5$	$6s_1''$	10	2.84	2.77	
4,800.100 *B*	$3p_{12}$	$7d_{23}$	$2p_4$	$7d'_1$	5			
4,810.0640 *B*	$3p'_{12}$	$6d'_{23}$	$2p_4$	$6s_1'''$	7	3.07	3.01	2.70
4,817.6386 *B*	$3p_{11}$	$6d_{22}$	$2p_7$	$6d_1''$	8	2.861	2.775	2.597
4,818.748	$3p_{11}$	$6d_{11}$	$2p_7$	$6d_2$	7	2.599	2.499	2.335
4,821.9236 *B*	$3p_{22}$	$7s_{11}$	$2p_8$	$5s_4$	8	2.864	2.646	2.693
4,823.174	$3p_{00}$	$6d'_{11}$	$2p_3$	$6s'_1$	6	2.3	2.2	
4,827.3444 *B*	$3p_{01}$	$6s_{11}$	$2p_{10}$	$4s_4$	10	2.9	2.8	
4,827.587 *B*	$3p_{22}$	$7s_{12}$	$2p_8$	$5s_5$	8			
4,837.3139 *B*	$3p_{01}$	$6s_{12}$	$2p_{10}$	$4s_5$	9	3.442	3.402	3.177
4,852.6571 *B*	$3p'_{01}$	$6d'_{22}$	$2p_2$	$6s_1''''$	6	2.731	2.632	
4,863.0800 *B*	$3p_{12}$	$6d_{23}$	$2p_6$	$6d'_1$	6	3.131	3.064	
4,865.5009 *B*	$3p_{12}$	$6d_{12}$	$2p_6$	$6d_3$	6			
4,866.477 *B*	$3p_{12}$	$6d_{33}$	$2p_6$	$6d_4$	5 5	2.61	2.53	
4,867.010	$3p'_{11}$	$7s'_{00}$	$2p_5$	$5s_3$	5	2.4	2.3	
4,884.9170 *B*	$3p'_{12}$	$7s'_{01}$	$2p_4$	$5s_2$	10	3.2	3.2	3.0
4,892.1007 *B*	$3p_{11}$	$7s_{11}$	$2p_7$	$5s_4$	9	2.58	2.38	
4,928.241 *B*	$3p'_{01}$	$7s'_{01}$	$2p_2$	$5s_2$	5			

TABLE 7e-2. THE SPECTRUM OF NEON I (*Continued*)

Wavelength	Classification				I_0	log I_1	log I_2	log I_3
	System.		Paschen					
4,939.0457 *B*	$3p_{12}$	$7s_{12}$	$2p_6$	$5s_4$	6	2.626	2.462	
4,944.9899 *B*	$3p_{12}$	$7s_{12}$	$2p_6$	$5s_5$	6	2.641	2.517	
4,957.0335 *B*	$3p_{11}$	$5d'_{12}$	$2p_7$	$5s_1''$	10	3.3	3.4	
4,957.123 *B*	$3p_{11}$	$5d'_{22}$	$2p_7$	$5s_1''''$	7			
4,973.538	$3p'_{11}$	$6d_{22}$	$2p_5$	$6d_1''$	6	2.496	2.406	2.89
4,994.913 *B*	$3p'_{12}$	$6d_{23}$	$2p_4$	$6d'_1$	7*ur*	2.451	2.365	
5,005.1587 *B*	$3p_{12}$	$5d'_{23}$	$2p_6$	$5s_1'''$	10	3.10	3.13	3.58
5,011.003 *M*	$3p_{00}$	$6d_{11}$	$2p_3$	$6d_2$	4	2.279	2.208	
5,022.864 *B*	$3p_{22}$	$6s'_{01}$	$2p_8$	$4s_2$	4	2.592	2.506	
5,031.3504 *B*	$3p_{23}$	$5d_{23}$	$2p_9$	$5d'_1$	9	3.634	3.665	3.374
5,035.989	$3p_{23}$	$5d_{12}$	$2p_9$	$5d_3$	5	2.818	2.823	
5,037.7512 *B*	$3p_{23}$	$5d_{24}$	$2p_9$	$5d'_4$	10	4.27	4.29	4.01
5,074.2007 *B*	$3p_{22}$	$5d_{22}$	$2p_8$	$5d'_1$	5	3.53	3.54	3.27
5,080.3852 *B*	$3p_{22}$	$5d_{23}$	$2p_8$	$5d_4$	8	4.038	4.061	3.803
5,104.7011 *B*	$3p_{11}$	$6s'_{00}$	$2p_7$	$4s_3$	5	2.798	2.745	
5,113.6724 *B*	$3p_{01}$	$4d'_{11}$	$2p_{10}$	$4s'_1$	7	3.475	3.654	3.326
5,116.5032 *B*	$3p_{01}$	$4d'_{12}$	$2p_{10}$	$4s_1''$	8	4.11	4.36	3.92
5,122.2565 *B*	$3p'_{11}$	$5d'_{12}$	$2p_5$	$5s_1''$	8	3.6	3.6	
5,144.9384 *B*	$3p'_{12}$	$5d'_{23}$	$2p_4$	$5s_1'''$	10	3.9	4.0	
5,150.077	$3p_{12}$	$6s'_{01}$	$2p_6$	$4s_2$	5	2.9	2.9	
5,151.9610 *B*	$3p_{11}$	$5d_{22}$	$2p_7$	$5d_1''$	7	3.595	3.597	3.352
5,154.4271 *B*	$3p_{11}$	$5d_{11}$	$2p_7$	$5d_2$	6	3.292	3.286	
5,156.6672 *B*	$3p_{11}$	$5d_{12}$	$2p_7$	$5d_3$	6	2.5	2.5	
5,158.9018 *B*	$3p_{00}$	$5d'_{11}$	$2p_3$	$5s'_1$	6	3.087	3.094	
5,188.6122 *B*	$3p_{23}$	$6s_{12}$	$2p_9$	$4s_5$	8	3.813	3.898	3.519
5,191.3223 *B*	$3p'_{01}$	$5d'_{11}$	$2p_2$	$5s'_1$	5			
5,193.1302 *B*	$3p'_{01}$	$5d'_{12}$	$2p_2$	$5s_1''$	8	3.6	3.6	
5,193.2227 *B*	$3p'_{01}$	$5d'_{22}$	$2p_2$	$5s_1''''$	8			
5,203.8962 *B*	$3p_{12}$	$5d_{23}$	$2p_6$	$5d'_1$	8	3.837	3.884	3.515
5,208.8648 *B*	$3p_{12}$	$5d_{12}$	$2p_6$	$5d_3$	7	3.584	3.585	
5,210.5672 *B*	$3p_{12}$	$5d_{33}$	$2p_6$	$5d_4$	6	.....	.....	2.860
5,214.3389 *B*	$3p_{12}$	$5d_{01}$	$2p_6$	$5d_5$	5	2.777	2.745	
5,222.3517 *B*	$3p_{22}$	$6s_{11}$	$2p_8$	$4s_4$	6	3.549	3.431	3.592
5,234.0271 *B*	$3p_{22}$	$6s_{12}$	$2p_8$	$4s_5$	6	3.161	3.125	
5,274.0393 *B*	$3p'_{11}$	$6s'_{01}$	$2p_5$	$4s_2$	5.5	2.767	2.649	
5,280.0853 *B*	$3p'_{11}$	$6s'_{00}$	$2p_5$	$4s_3$	6	2.962	2.899	2.660
5,298.1891 *B*	$3p'_{12}$	$6s'_{01}$	$2p_4$	$4s_2$	8	3.492	3.396	3.300
5,304.7580 *B*	$3p_{11}$	$6s_{11}$	$2p_7$	$4s_4$	7	3.255	3.154	3.088
5,326.3968 *B*	$3p_{01}$	$4d_{11}$	$2p_{10}$	$4d_2$	7	3.388	3.540	
5,330.7775 *B*	$3p_{01}$	$4d_{12}$	$2p_{10}$	$4d_3$	12	4.547	4.771	4.360

TABLE 7e-2. THE SPECTRUM OF NEON I (*Continued*)

Wavelength	Classification				I_0	log I_1	log I_2	log I_3
	System.		Paschen					
5,341.0938 *B*	$3p_{01}$	$4d_{01}$	$2p_{10}$	$4d_5$	20	4.537	4.732	
5,343.2834 *B*	$3p_{01}$	$4d_{00}$	$2p_{10}$	$4d_6$	12	4.3	4.5	3.936
5,349.2038 *B*	$3p'_{01}$	$6s'_{01}$	$2p_2$	$4s_2$	8	3.072	3.004	2.810
5,360.0121 *B*	$3p_{12}$	$6s_{11}$	$2p_6$	$4s_4$	8	3.392	3.297	3.129
5,372.3110 *B*	$3p_{12}$	$6s_{12}$	$2p_6$	$4s_5$	7	3.318	3.282	2.196
5,374.9774 *B*	$3p_{00}$	$5d_{11}$	$2p_3$	$5d_2$	6	3.002	2.984	
5,383.2503 *B*	$3p_{00}$	$5d_{01}$	$2p_3$	$5d_5$	4	2.487	2.525	
5,400.5616 *B*	$3s_{11}$	$3p'_{00}$	$1s_4$	$2p_1$	50	4.735	5.079	4.832
5,412.6490 *B*	$3p'_{01}$	$5d_{12}$	$2p_2$	$5d_3$	9	2.948	3.015	
5,418.5584 *B*	$3p'_{01}$	$5d_{01}$	$2p_2$	$5d_5$	8	2.88	2.85	
5,433.6513 *B*	$3p_{01}$	$5s'_{01}$	$2p_{10}$	$3s_2$	9	3.349	3.377	3.223
5,448.5091 *B*	$3p_{01}$	$5s'_{00}$	$2p_{10}$	$3s_3$	8	3.077	3.169	
5,494.4158 *B*	$3p'_{11}$	$6s_{11}$	$2p_5$	$4s_4$	6	2.843	2.745	
5,533.6788 *B*	$3p'_{12}$	$6s_{12}$	$2p_4$	$4s_5$	7	2.738	2.720	
5,538.6510 *B*	$3p_{00}$	$6s_{11}$	$2p_3$	$4s_4$	6	2.625	2.532	
5,562.7662 *B*	$3p_{22}$	$4d'_{23}$	$2p_8$	$4s_1'''$	10	3.9	4.1	3.7
5,652.5664 *B*	$3p_{11}$	$4d'_{11}$	$2p_7$	$4s_1'$	7	3.400	3.562	3.240
5,656.6588 *B*	$3p_{11}$	$4d'_{22}$	$2p_7$	$4s_1''''$	10	4.20	4.40	3.96
5,662.5489 *B*	$3p_{01}$	$5s_{11}$	$2p_{10}$	$3s_4$	7	3.438	3.665	
5,689.8163 *B*	$3p_{01}$	$5s_{12}$	$2p_{10}$	$3s_5$	8	4.179	4.305	3.949
5,719.2248 *B*	$3p_{12}$	$4d'_{23}$	$2p_6$	$4s_1'''$	10	3.9	4.1	3.7
5,748.2985 *B*	$3p_{23}$	$4d_{23}$	$2p_9$	$4d_1'$	10	4.4	4.6	4.1
5,760.5885 *B*	$3p_{23}$	$4d_{12}$	$2p_9$	$4d_3$	7	3.603	3.800	
5,764.4188 *B*	$3p_{23}$	$4d_{24}$	$2p_9$	$4d_4'$	15	5.080	5.312	4.868
5,804.4496 *B*	$3p_{22}$	$4d_{22}$	$2p_8$	$4d_1''$	10	4.374	4.585	4.121
5,811.4066 *B*	$3p_{22}$	$4d_{11}$	$2p_8$	$4d_2$	8	3.53	3.69	
5,820.1558 *B*	$3p_{22}$	$4d_{33}$	$2p_8$	$4d_4$	10	4.870	5.080	4.638
5,852.4878 *S*	$3s'_{01}$	$3p'_{00}$	$1s_2$	$2p_1$	50	5.904	6.268	6.442
5,868.4183 *B*	$3p'_{11}$	$4d'_{11}$	$2p_5$	$4s_1$	7	3.659	4.341	
5,872.8275 *B*	$3p'_{11}$	$4d'_{22}$	$2p_5$	$4s_1''''$	10	4.47	4.74	4.27
5,881.8950 *S*	$3s_{12}$	$3p'_{01}$	$1s_5$	$2p_2$	20	5.235	6.300	5.974
5,902.4623 *B*	$3p'_{12}$	$4d'_{23}$	$2p_4$	$4s_1'''$	6	4.82	5.05	4.626
5,902.7835 *B*	$3p'_{12}$	$4d'_{22}$	$2p_4$	$4s_1''''$	1.5			
5,906.4294 *B*	$3p_{11}$	$4d_{22}$	$2p_7$	$4d_1''$	6	4.448	4.671	4.185
5,913.6327 *B*	$3p_{11}$	$4d_{11}$	$2p_7$	$4d_2$	9	4.133	4.303	3.927
5,918.9068 *B*	$3p_{00}$	$4d'_{11}$	$2p_3$	$4s_1'$	9	4.09	4.28	3.860
5,944.8342 *S*	$3s_{12}$	$3p'_{12}$	$1s_5$	$2p_4$	10	5.365	6.380	6.104
5,961.6228 *B*	$3p'_{01}$	$4d'_{11}$	$2p_2$	$4s_1'$	7	3.903	4.198	3.717
5,965.4710 *B*	$3p'_{01}$	$4d'_{12}$	$2p_2$	$4s_1''$	10	4.54	4.75	4.25
5,974.6273 *B*	$3p_{12}$	$4d_{23}$	$2p_6$	$4d_1'$	10	4.7	5.6	

TABLE 7e-2. THE SPECTRUM OF NEON I (*Continued*)

Wavelength	Classification				I_0	log I_1	log I_2	log I_3
	System.		Paschen					
5,975.5340 *S*	$3s_{12}$	$3p'_{11}$	$1s_5$	$2p_5$	*12	5.14	6.05	
5,987.9074 *B*	$3p_{12}$	$4d_{12}$	$2p_6$	$4d_5$	8	4.373	4.601	4.058
5,991.6532 *B*	$3p_{12}$	$4d_{22}$	$2p_6$	$4d_4$	7	4.049	4.237	3.729
6,000.9275 *B*	$3p_{12}$	$4d_{01}$	$2p_6$	$4d_6$	6	3.725	3.925	
6,029.9971 *S*	$3s_{11}$	$3p'_{01}$	$1s_4$	$2p_2$	10	5.200	6.266	5.748
6,046.1348 *B*	$3p_{11}$	$5s'_{01}$	$2p_7$	$3s_2$	4	3.249	3.961	
6,064.5359 *B*	$3p_{11}$	$5s'_{00}$	$2p_7$	$3s_3$	4	3.613	3.995	
6,074.3377 *S*	$3s_{11}$	$3p_{00}$	$1s_4$	$2p_3$	10	5.411	6.490	6.093
6,096.1630 *S*	$3s_{11}$	$3p_{12}$	$1s_4$	$2p_4$	8	5.428	6.550	6.161
6,128.4498 *B*	$3s_{11}$	$3p'_{11}$	$1s_4$	$2p_5$	6	4.908	5.580	5.024
6,143.0623 *S*	$3s_{12}$	$3p_{12}$	$1s_5$	$2p_6$	10	5.48	6.63	6.198
6,163.5939 *S*	$3s'_{00}$	$3p'_{01}$	$1s_3$	$2p_2$	12	5.231	6.488	6.010
6,174.3829 *B*	$3p_{12}$	$4d_{23}$	$2p_4$	$4d_1$	5	3.9	4.3	
6,182.1460 *B*	$3p_{23}$	$5s_{12}$	$2p_9$	$3s_5$	7	3.610	4.737	4.334
6,189.0649 *B*	$3p_{12}$	$4d_{12}$	$2p_4$	$4d_3$	5	3.544	3.846	
6,193.0663 *B*	$3p_{12}$	$4d_{22}$	$2p_4$	$4d_4$	4	.....	3.498	
6,205.7775 *B*	$3p_{00}$	$4d_{11}$	$2p_3$	$4d_2$	6	3.785	4.043	
6,213.8758 *B*	$3p_{22}$	$5s_{11}$	$2p_8$	$3s_4$	7	4.376	4.473	
6,217.2813 *S*	$3s_{12}$	$3p_{11}$	$1s_5$	$2p_7$	15	5.359	6.436	5.962
6,246.7294 *B*	$3p_{22}$	$5s_{12}$	$2p_8$	$3s_5$	6	3.929	4.129	
6,266.4950 *S*	$3s'_{00}$	$3p'_{11}$	$1s_3$	$2p_5$	15	5.336	6.606	6.156
6,293.7447 *B*	$3p'_{00}$	$5s'_{01}$	$2p_5$	$3s_2$	6	3.683	3.900	
6,304.7892 *S*	$3s_{11}$	$3p_{12}$	$1s_4$	$2p_6$	6	5.422	6.391	6.009
6,313.6921 *B*	$3p'_{00}$	$5s'_{00}$	$2p_5$	$3s_3$	7	3.899	4.151	
6,328.1646 *B*	$3p'_{12}$	$5s'_{01}$	$2p_4$	$3s_2$	8	4.424	4.546	
6,334.4279 *S*	$3s_{12}$	$3p_{22}$	$1s_5$	$2p_8$	10	5.567	6.679	6.281
6,351.8618 *B*	$3p_{00}$	$5s'_{01}$	$2p_3$	$3s_2$	6			
6,382.9914 *S*	$3s_{11}$	$3p_{11}$	$1s_4$	$2p_7$	12	5.503	6.684	6.221
6,402.2460 *B*	$3s_{12}$	$3p_{23}$	$1s_5$	$2p_9$	20	5.93	6.83	6.389
6,421.7108 *B*	$3p'_{01}$	$5s_{12}$	$2p_2$	$3s_5$	6	3.701	3.893	
6,444.7118 *B*	$3p_{12}$	$5s_{12}$	$2p_6$	$3s_5$	7	4.094	4.191	3.823
6,506.5279 *S*	$3s_{11}$	$3p_{22}$	$1s_4$	$2p_8$	15	5.635	6.709	6.287
6,532.8824 *S*	$3s'_{00}$	$3p_{11}$	$1s_3$	$2p_7$	6	5.381	6.531	6.094
6,598.9529 *S*	$3s'_{01}$	$3p'_{01}$	$1s_2$	$2p_2$	15	5.736	6.691	6.213
6,652.0925 *B*	$3s'_{01}$	$3p_{00}$	$1s_2$	$2p_3$	7	4.279	4.681	4.203
6,666.8967 *B*	$3p_{00}$	$5s_{11}$	$2p_3$	$3s_4$	6			
6,678.2764 *S*	$3s'_{01}$	$3p'_{12}$	$1s_2$	$2p_4$	9	5.840	6.806	6.393
6,717.0428 *S*	$3s'_{01}$	$3p'_{11}$	$1s_2$	$2p_5$	2	5.765	6.712	6.286
6,929.4672 *B*	$3s'_{01}$	$3p_{12}$	$1s_2$	$2p_6$	10	5.965	6.783	6.421
7,024.0500 *B*	$3s'_{01}$	$3p_{11}$	$1s_2$	$2p_7$	9	5.436	6.068	5.568

TABLE 7e-2. THE SPECTRUM OF NEON I (*Continued*)

Wavelength	Classification				I_0	log I_1	log I_2	log I_3
	System.		Paschen					
7,032.4127 *S*	$3s_{12}$	$3p_{01}$	$1s_5$	$2p_{10}$	10	5.732	6.917	6.362
7,051.2923 *S*	$3p_{01}$	$3d'_{11}$	$2p_{10}$	$3s'_1$	5	4.286	.....	4.281
7,059.1074 *S*	$3p_{01}$	$3d'_{12}$	$2p_{10}$	$3s''_1$	7.5	4.868	5.534	4.904
7,173.9380 *B*	$3s'_{01}$	$3p_{22}$	$1s_2$	$2p_8$	10	5.793	6.411	6.022
7,245.1665 *B*	$3s_{11}$	$3p_{01}$	$1s_4$	$2p_{10}$	10	5.751	6.756	6.289
7,438.8981 *B*	$3s'_{00}$	$3p_{01}$	$1s_3$	$2p_{10}$	8	5.510	6.424	
7,472.4386 *S*	$3p_{01}$	$3d_{11}$	$2p_{10}$	$3d_2$	4	4.432	5.021	4.441
7,488.8712 *S*	$3p_{01}$	$3d_{12}$	$2p_{10}$	$3d_3$	9	5.398	6.052	5.424
7,535.7741 *S*	$3p_{01}$	$3d_{01}$	$2p_{10}$	$3d_5$	8	5.352	5.978	5.387
7,544.0443 *S*	$3p_{01}$	$3d_{00}$	$2p_{10}$	$3d_6$	6	4.962	5.667	4.956
7,724.6281 *B*	$3p'_{00}$	$5s_{11}$	$2p_1$	$3s_4$	10			
7,839.0546 *S*	$3p_{23}$	$3d'_{23}$	$2p_9$	$3s'''_1$	30	3.303	3.939	3.19
7,927.1177 *S*	$3p_{22}$	$3d'_{11}$	$2p_8$	$3s'_1$	40	.....	.....	3.48
7,936.9961 *S*	$3p_{22}$	$3d'_{12}$	$2p_8$	$3s''_1$	70	3.487	4.043	4.040
7,943.1814 *S*	$3p_{22}$	$3d'_{23}$	$2p_8$	$3s'''_1$	200	4.718	5.412	4.725
8,082.4576 *B*	$3s'_{01}$	$3p_{01}$	$1s_2$	$2p_{10}$	200	4.676	5.203	4.629
8,118.5492 *S*	$3p_{11}$	$3d'_{11}$	$2p_7$	$3s'_1$	100	4.452	5.030	4.419
8,128.9108 *S*	$3p_{11}$	$3d'_{12}$	$2p_7$	$3s'_1$	60	3.916	4.633	3.85
8,136.4057 *S*	$3p_{11}$	$3d'_{22}$	$2p_7$	$3s''''_1$	300	5.047	5.718	5.029
8,248.6824 *S*	$3p_{12}$	$3d'_{11}$	$2p_6$	$3s'_1$	30	3.467	4.038	3.34
8,259.3790 *S*	$3p_{12}$	$3d'_{12}$	$2p_6$	$3s'_1$	150	4.327	.....	4.280
8,266.0772 *S*	$3p_{12}$	$3d'_{23}$	$2p_6$	$3s'''_1$	250	.....	5.387	4.691
8,267.1166 *S*	$3p_{12}$	$3d'_{22}$	$2p_6$	$3s''''_1$	80			
8,300.3263 *S*	$3p_{23}$	$3d_{23}$	$2p_9$	$3d'_1$	600	5.31	5.97	5.316
8,365.7486 *S*	$3p_{23}$	$3d_{12}$	$2p_9$	$3d_3$	150	4.439	.....	4.415
8,377.6065 *S*	$3p_{23}$	$3d_{34}$	$2p_9$	$3d'_4$	800	.....	.....	5.957
8,417.1591 *S*	$3p_{22}$	$3d_{23}$	$2p_8$	$3d'_1$	100	4.2	4.9	
8,418.4274 *S*	$3p_{22}$	$3d_{22}$	$2p_8$	$3d'_1$	400	5.15	5.87	5.244
8,463.3575 *S*	$3p_{22}$	$3d_{11}$	$2p_8$	$3d_2$	150	4.433	5.039	4.452
8,484.4435 *S*	$3p_{22}$	$3d_{12}$	$2p_8$	$3d_3$	80	3.930	4.678	3.90
8,495.3598 *S*	$3p_{22}$	$3d_{33}$	$2p_8$	$3d_4$	500	5.703	6.324	5.764
8,544.6959 *S*	$3p_{22}$	$3d_{01}$	$2p_8$	$3d_5$	60	4.014	4.752	3.98
8,571.3524 *S*	$3p'_{11}$	$3d'_{11}$	$2p_5$	$3s'_1$	100	4.332	5.012	4.330
8,591.2587 *S*	$3p'_{11}$	$3d'_{22}$	$2p_5$	$3s''''_1$	400	5.436	6.057	5.450
8,634.6470 *S*	$3p_{11}$	$3d_{22}$	$2p_7$	$3d'_1$	600	5.3	6.0	5.386
8,647.0411 *S*	$3p_{12}$	$3d'_{12}$	$2p_4$	$3s''_1$	300	4.709	5.235	
8,654.3831 *S*	$3p'_{12}$	$3d'_{23}$	$2p_4$	$3s'''_1$	1,500	5.56	6.26	5.747
8,655.5224 *S*	$3p'_{12}$	$3d'_{22}$	$2p_4$	$3s''''_1$	400			
8,679.4925 *S*	$3p_{00}$	$3d'_{11}$	$2p_3$	$3s'_1$	500 }	5.2	5.8	5.016
8,681.9211 *S*	$3p_{11}$	$3d_{11}$	$2p_7$	$3d_2$	500 }			5.075

TABLE 7e-2. THE SPECTRUM OF NEON I (*Continued*)

Wavelength	Classification				I_0	log I_1	log I_2	log I_3
	System.		Paschen					
8,704.1116 S	$3p_{11}$	$3d_{12}$	$2p_7$	$3d_3$	200	4.243	4.992	4.201
8,771.6563 S	$3p'_{01}$	$3d'_{11}$	$2p_2$	$3s'_1$	400	4.845	5.467	4.888
8,780.6210 S	$3p_{12}$	$3d_{23}$	$2p_6$	$3d'_1$	1,200	.....	.....	5.642
8,783.7533 S	$3p'_{01}$	$3d'_{23}$	$2p_2$	$3s'''_1$	1,000	.....	.....	5.488
8,830.9072 S	$3p_{12}$	$3d_{11}$	$2p_6$	$3d_2$	50	3.606	4.258	3.61
8,853.8669 S	$3p_{12}$	$3d_{12}$	$2p_6$	$3d_3$	700	5.233	5.805	5.246
8,865.3060 S	$3p_{12}$	$3d_{33}$	$2p_6$	$3d_4$	100 }	5.0	5.6	5.0
8,865.7552 S	$3p_{01}$	$4s'_{01}$	$2p_{10}$	$2s_2$	500 }			
8,919.5007 S	$3p_{12}$	$3d_{01}$	$2p_6$	$3d_5$	300	4.623	5.290	4.624
8,988.57	$3p_{01}$	$4s'_{00}$	$2p_{10}$	$2s_3$	200	4.310	4.712	4.12
9,148.672 S	$3p'_{11}$	$3d_{22}$	$2p_5$	$3d''_1$	600	4.809	5.501	4.808
9,201.759 S	$3p'_{11}$	$3d_{11}$	$2p_5$	$3d_2$	600	4.786	5.381	4.826
9,220.058 S	$3p'_{12}$	$3d_{23}$	$2p_4$	$3d'_1$	400	4.54	5.23	4.624
9,221.580 S	$3p'_{12}$	$3d_{22}$	$2p_4$	$3d''_1$	200	4.0	4.7	
9,226.690 S	$3p'_{11}$	$3d_{12}$	$2p_5$	$3d_3$	200	4.040	4.785	4.01
9,275.520 S	$3p'_{12}$	$3d_{11}$	$2p_4$	$3d_2$	100	.....	4.466	3.83
9,300.853 S	$3p'_{12}$	$3d_{12}$	$2p_4$	$3d_3$	600	4.650	5.261	4.639
9,310.584 S	$3p'_{11}$	$3d_{00}$	$2p_5$	$3d_6$	150	4.213	4.966	3.60
9,313.973 S	$3p'_{12}$	$3d_{33}$	$2p_4$	$3d_4$	300	4.224	4.947	4.23
9,326.507 S	$3p_{00}$	$3d_{11}$	$2p_3$	$3d_2$	600	4.682	5.285	4.710
9,373.308 S	$3p'_{12}$	$3d_{01}$	$2p_4$	$3d_5$	200	4.008	4.712	3.96
9,425.379 S	$3p_{00}$	$3d_{01}$	$2p_3$	$3d_5$	500	4.472	5.225	4.47
9,459.210 S	$3p'_{01}$	$3d_{12}$	$2p_2$	$3d_3$	300	4.211	4.969	4.15
9,486.68	$3p_{01}$	$4s_{11}$	$2p_{10}$	$2s_4$	500	4.793	5.280	4.76
9,534.163 S	$3p'_{01}$	$3d_{01}$	$2p_2$	$3d_5$	500	4.555	5.319	4.567
9,547.405 S	$3p'_{01}$	$3d_{00}$	$2p_2$	$3d_6$	300	4.241	4.986	4.15
9,665.424 S	$3p_{01}$	$4s_{12}$	$2p_{10}$	$2s_5$	1,000	5.207	5.552	5.155

TABLE 7e-2. THE SPECTRUM OF NEON I (*Continued*)

Wavelength	Classification: System.		Classification: Paschen		I_0
10,295.417	$3p_{22}$	$4s'_{01}$	$2p_8$	$2s_2$	80
562.408	$3p'_{00}$	$3d'_{11}$	$2p_1$	$3s'_1$	200
620.664	$3p_{11}$	$4s'_{01}$	$2p'_7$	$2s_2$	40
798.07	$3p_{11}$	$4s'_{00}$	$2p_7$	$2s_3$	150
844.477	$3p_{12}$	$4s'_{01}$	$2p_6$	$2s_2$	200
11,143.02	$3p_{22}$	$4s_{11}$	$2p_8$	$2s_4$	300
177.533	$3p_{22}$	$4s_{12}$	$2p_9$	$2s_5$	300
390.439	$3p_{22}$	$4s_{12}$	$2p_8$	$2s_5$	110
409.134	$3p'_{11}$	$4s_{01}$	$2p_3$	$2s_2$	100
522.745	$3p'_{12}$	$4s'_{01}$	$2p_4$	$2s_2$	150
11,525.02	$3p_{11}$	$4s_{11}$	$2p_7$	$2s_4$	90
536.345	$3p'_{00}$	$3d_{11}$	$2p$	$3d_2$	50
601.536	$3p_{00}$	$4s'_{01}$	$2p_3$	$2s_2$	25
614.11	$3p'_{11}$	$4s'_{00}$	$2p_5$	$2s_3$	80
688.002	$3p'_{00}$	$3d_{01}$	$2p_1$	$3d_6$	10
11,766.792	$3p'_{01}$	$4s'_{01}$	$2p_2$	$2s_2$	60
789.05	$3p_{12}$	$4s_{11}$	$2p_6$	$2s_4$	50
789.895	$3p_{11}$	$4s_{12}$	$2p_7$	$2s_5$	10
984.94	$3p'_{01}$	$4s'_{00}$	$2p_2$	$2s_3$	10
12,066.340	$3p_{12}$	$4s_{12}$	$2p_6$	$2s_5$	15
12,459.39	$3p'_{11}$	$4s_{11}$	$2p_5$	$2s_4$	2
595.01	$3p'_{12}$	$4s_{11}$	$2p_4$	$2s_4$	
689.21	$3p_{00}$	$4s_{11}$	$2p_3$	$2s_4$	1
769.532	$3p'_{11}$	$4s_{12}$	$2p_5$	$2s_5$	
887.16	$3p'_{01}$	$4s_{11}$	$2p_2$	$2s_4$	
12,912.021	$3p'_{12}$	$4s_{12}$	$2p_4$	$2s_5$	
13,219.248	$3p'_{01}$	$4s_{12}$	$2p_2$	$2s_5$	
15,230.713	$3p'_{00}$	$4s'_{01}$	$2p_1$	$2s_2$	
17,161.94	$3p'_{00}$	$4s_{11}$	$2p_1$	$2s_4$	

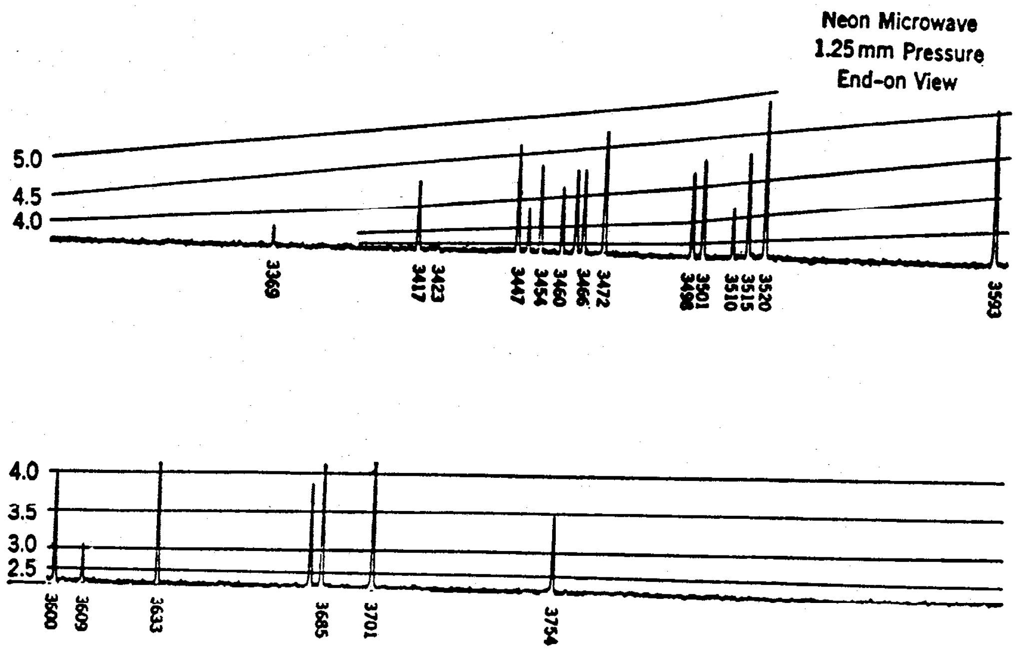


FIG. 7e-1. Photoelectric traces of the neon spectrum, microwave discharge at 1.25 mm. Wavelength range is 3,000 to 10,000 Å.

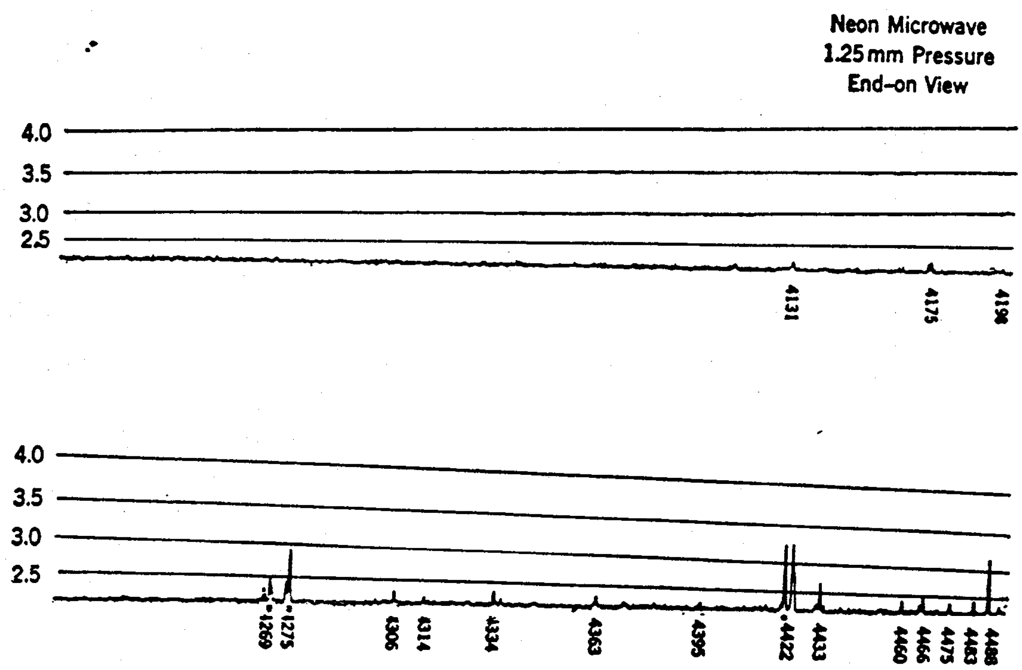


FIG. 7e-1 (*Continued*)

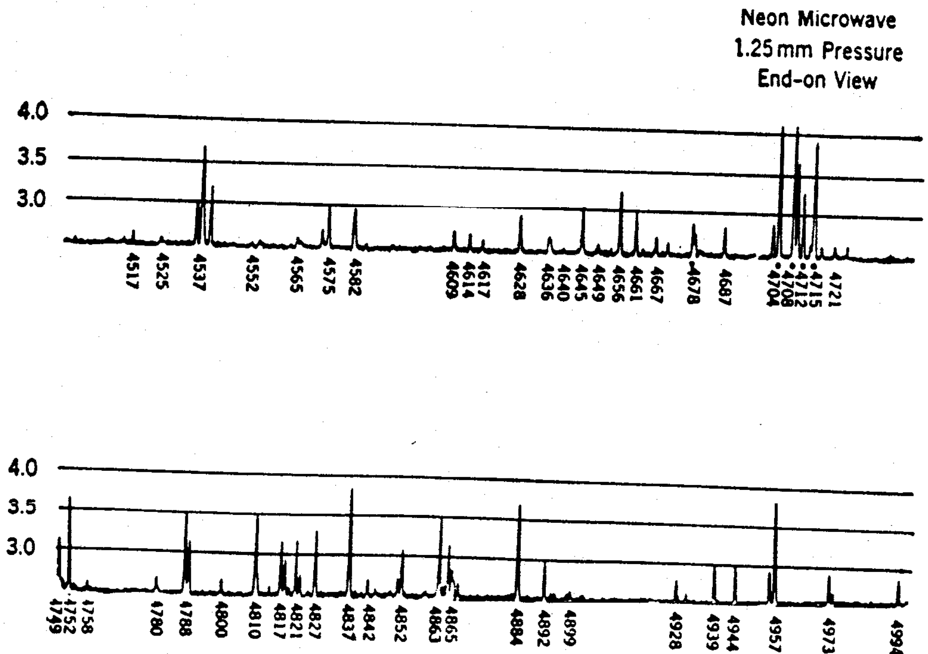


Fig. 7e-1 (*Continued*)

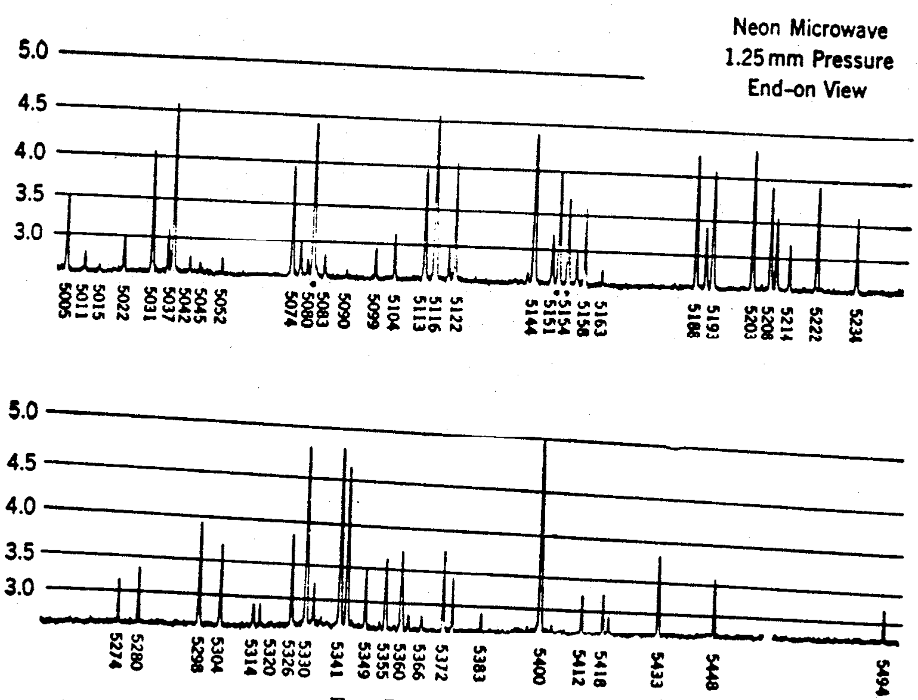


Fig. 7e-1 (*Continued*)

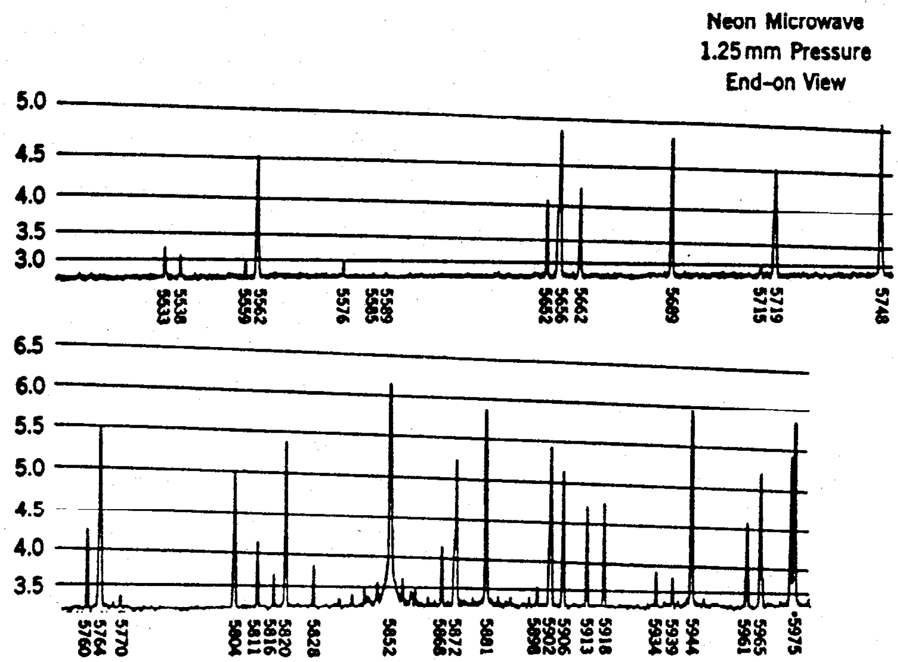


FIG. 7e-1 (*Continued*)

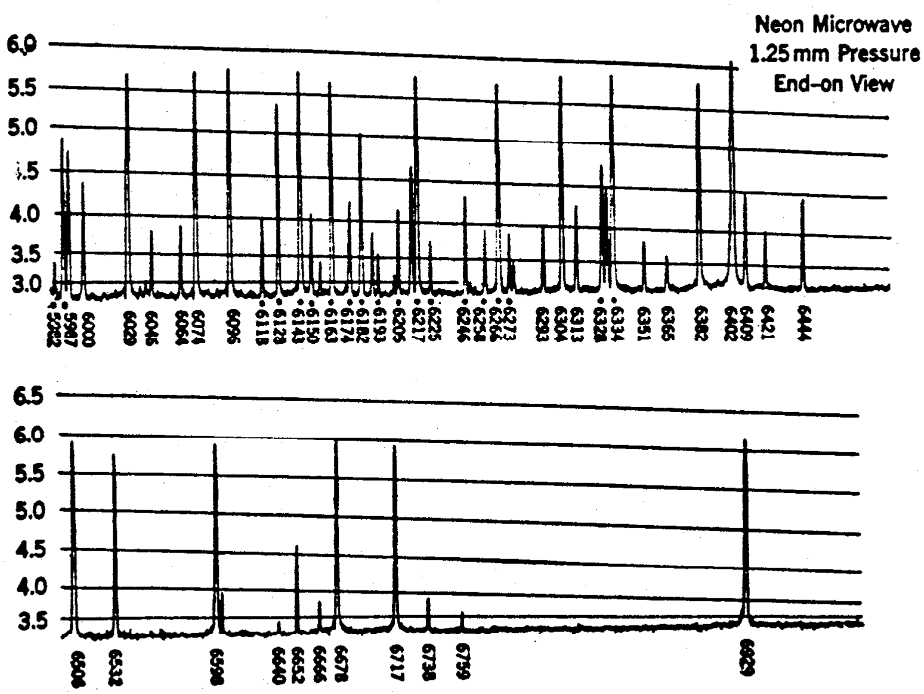


FIG. 7e-1 (*Continued*)

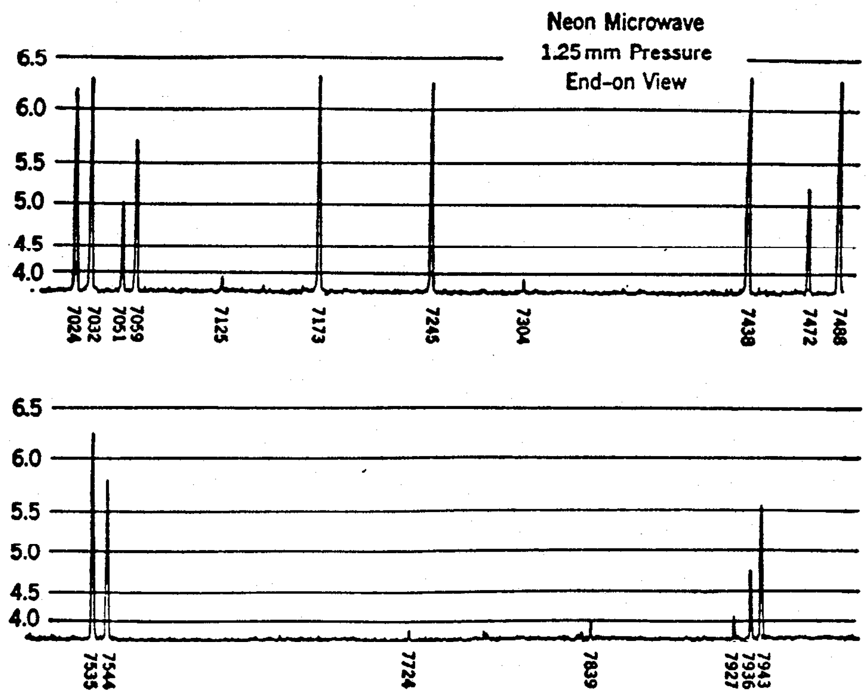


FIG. 7e-1 (*Continued*)

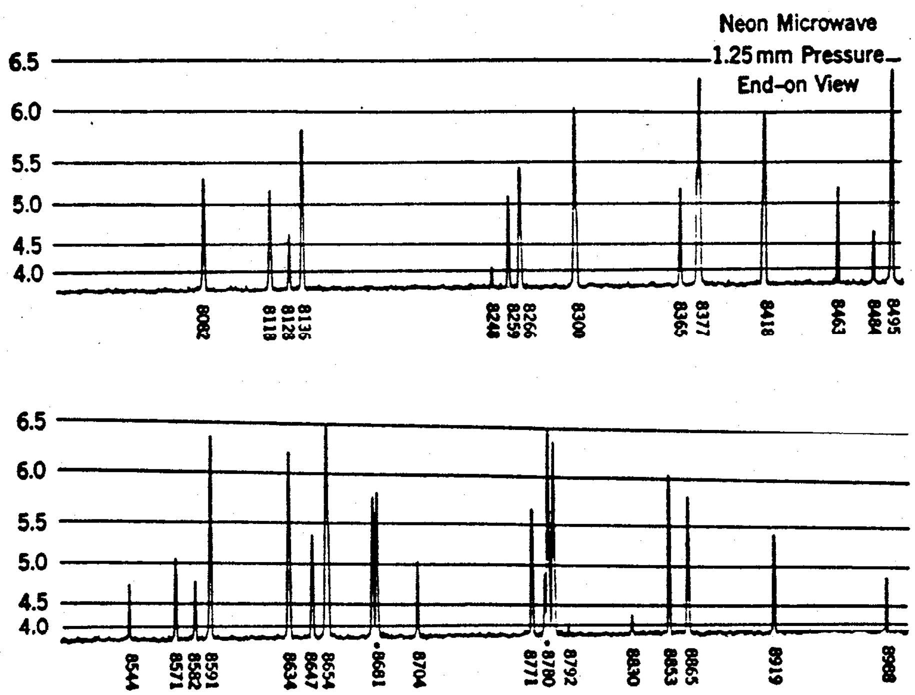
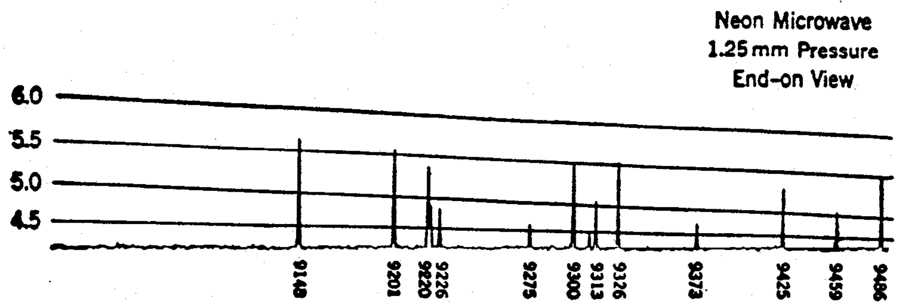


FIG. 7e-1 (*Continued*)



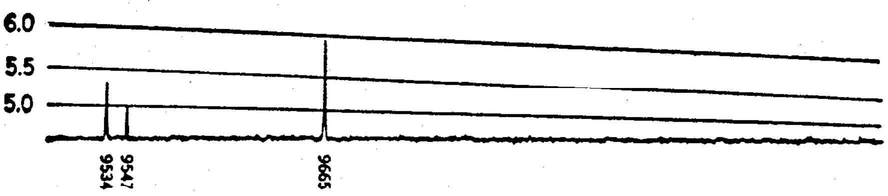


FIG. 7e-1 (*Continued*)

M, Meggers and Humphreys, *J. Research Natl. Bur. Standards* **13**, 293 (1934)
S, International secondary standard[1]

The *classification* is expressed in two notations:

Systematic (*Modified Racah*). Orbital angular momentum of the last electron (valence electron) is specified by the symbols *s*, *p*, *d*, etc. (*not* the angular momentum of the *configuration* as in *L*, *S* coupling). The first subscript is the angular momentum *K* of the atom exclusive of the spin of the valence electron minus $\frac{1}{2}$. The second index is the total angular momentum *J* of the atom ($J = K \pm \frac{1}{2}$). The levels are primed if they converge to the $^2P_{\frac{1}{2}}$ level of the ion which lies above the lowest ionization limit $^2P_{\frac{3}{2}}$.

Paschen Notation. This is a semiempirical notation first used by Paschen and extensively used in the literature for the rare-gas spectra. It is now obsolete.

The *intensities* are standardized in such a way that they give the energy flux from 100 cm² of the light source per unit solid angle in ergs per second. I_1, glow discharge, 60 cycles, pressure 1.25 mm; I_2, microwave discharge; pressure 10 mm; I_3, hollow-cathode discharge, pressure 3.5 mm, current 90 ma.

Argon I. Listed in Table 7e-3 are the strongest lines in the argon spectrum and some others for which accurate wavelength determinations have been made. Letters indicate origin of wavelengths:

B, Burns and Adams, *J. Opt. Soc. Am.* **43**, 1020 (1953)
L, Littlefield and Turnbull, *Proc. Roy. Soc.* (*London*) **A218**, 577 (1953)
M, Meggers and Humphreys, *J. Research Natl. Bur. Standards* **13**, 293 (1934)

There are systematic deviations between the wavelengths of different observers, and care should be exercised if the lines are to be used as wavelength standards.

COLUMNS 2 TO 5: Classification, systematic (modified Racah) and conventional Paschen designations (see Table 7e-2).

COLUMNS 6 AND 7: Intensities (logarithmic scale): I_1, intensity in 60-cycle a-c glow discharge; current 60 ma, argon pressure 3 mm; I_2, hollow-cathode discharge with iron electrodes, current 150 ma, argon pressure 1 mm.

[1] *Trans. Intern. Astron. Union* **5**, 86 (1935).

TABLE 7e-3. THE SPECTRUM OF ARGON I

λ	Classification				Intensities	
	System.		Paschen		log I_1	log I_2
3,319.3446 *B*	$4s_{12}$	$7p_{12}$	$1s_5$	$5p_6$		
3,373.4823 *B*	$4s_{11}$	$7p_{00}$	$1s_4$	$5p_5$		
3,554.3048 *L*	$4s_{12}$	$6p_{12}$	$1s_5$	$4p_6$		
3,567.6550 *L*	$4s_{12}$	$6p_{22}$	$1s_5$	$4p_9$		
3,572.2960 *B*	$4s'_{01}$	$7p_{00}$	$1s_2$	$5p_5$		
3,606.5207 *L*	$4s_{11}$	$6p_{00}$	$1s_4$	$4p_5$		
3,649.8310 *L*	$4s'_{01}$	$6p'_{00}$	$1s_2$	$4p_1$		
3,834.6775 *L*	$4s'_{01}$	$6p_{00}$	$1s_2$	$4p_5$	2.18	
3,894.6609 *L*	$4s'_{01}$	$6p_{01}$	$1s_2$	$4p_{10}$	1.75	
3,947.5046 *L*	$4s_{12}$	$5p'_{12}$	$1s_5$	$3p_3$	1.54	
3,948.9785 *L*	$4s_{12}$	$5p'_{01}$	$1s_5$	$3p_2$	3.09	2.65
4,044.4176 *L*	$4s_{11}$	$5p'_{12}$	$1s_4$	$3p_3$	3.16	
4,045.9645 *L*	$4s_{11}$	$5p'_{01}$	$1s_4$	$3p_2$	2.17	
4,054.5259 *L*	$4s_{11}$	$5p'_{11}$	$1s_4$	$3p_4$	1.92	
4,158.5906 *L*	$4s_{12}$	$5p_{12}$	$1s_5$	$3p_6$	3.80	3.56
4,164.1794 *L*	$4s_{12}$	$5p_{11}$	$1s_5$	$3p_7$	3.03	2.62
4,181.8833 *L*	$4s'_{00}$	$5p'_{01}$	$1s_3$	$3p_2$	3.13	2.56
4,190.7126 *L*	$4s_{12}$	$5p_{22}$	$1s_5$	$3p_8$	....	3.11
4,191.0292 *L*	$4s'_{00}$	$5p'_{11}$	$1s_3$	$3p_4$		
4,198.3174 *L*	$4s_{11}$	$5p_{00}$	$1s_4$	$3p_5$	3.53	
4,200.6745 *L*	$4s_{12}$	$5p_{22}$	$1s_5$	$3p_9$	3.83	
4,251.1848 *L*	$4s_{12}$	$5p_{01}$	$1s_5$	$3p_{10}$	2.73	
4,259.3615 *L*	$4s'_{01}$	$5p'_{00}$	$1s_2$	$3p_1$	3.40	
4,266.2865 *L*	$4s_{11}$	$5p_{12}$	$1s_4$	$3p_6$	3.29	3.11
4,272.1688 *L*	$4s_{11}$	$5p_{11}$	$1s_4$	$3p_7$	3.54	
4,300.1005 *L*	$4s_{11}$	$5p_{00}$	$1s_4$	$3p_5$	3.40	
4,333.5611 *L*	$4s'_{01}$	$5p'_{12}$	$1s_2$	$3p_3$	3.32	3.00
4,335.3374 *L*	$4s'_{01}$	$5p'_{01}$	$1s_2$	$3p_2$	2.95	2.52
4,345.1679 *L*	$4s'_{01}$	$5p'_{11}$	$1s_2$	$3p_4$	2.91	2.59
4,363.7944 *L*	$4s_{11}$	$5p_{01}$	$1s_4$	$3p_{10}$	1.89	2.30
4,510.7332 *L*	$4s'_{01}$	$5p_{00}$	$1s_2$	$3p_5$	3.13	2.92
4,522.3231 *L*	$4s'_{00}$	$5p_{01}$	$1s_3$	$3p_{10}$	2.62	2.19
4,596.0963 *L*	$4s'_{01}$	$5p_{11}$	$1s_2$	$3p_7$	2.65	2.20
4,628.4406 *L*	$4s'_{01}$	$5p_{22}$	$1s_2$	$3p_8$	2.42	
4,702.3160 *L*	$4s'_{01}$	$5p_{01}$	$1s_2$	$3p_{10}$	2.74	2.27
4,768.6750 *B*	$4p_{01}$	$6d'_{12}$	$2p_{10}$	$6s''_1$	1.63	
4,876.2610 *L*	$4p_{01}$	$7d_{12}$	$2p_{10}$	$7d_3$	1.80	
4,887.9478 *B*	$4p_{01}$	$7d_{01}$	$2p_{10}$	$7d_5$	1.77	
5,060.0793 *B*	$4p_{22}$	$8d_{34}$	$2p_9$	$8d_4$	1.65	
5,151.3943 *B*	$4p_{01}$	$6d_{00}$	$2p_{10}$	$6d_6$	2.00	

TABLE 7e-3. THE SPECTRUM OF ARGON I (*Continued*)

λ	Classification				Intensities	
	System.		Paschen		log I_1	log I_2
5,162.2847 *L*	$4p_{01}$	$6d_{01}$	$2p_{10}$	$6d_5$	2.47	
5,187.7467 *L*	$4p_{01}$	$5d'_{12}$	$2p_{10}$	$5s''_1$	2.53	2.01
5,221.2690 *L*	$4p_{23}$	$7d_{34}$	$2p_9$	$7d'_4$	2.17	
5,252.7857 *L*	$4p_{22}$	$7d_{33}$	$2p_8$	$7d_4$	1.85	
5,373.4951 *B*	$4p_{11}$	$7d_{22}$	$2p_7$	$7d''_1$	1.45	
5,410.4750 *B*	$4p_{12}$	$7d_{23}$	$2p_6$	$7d'_1$	2.49	
5,421.3492 *L*	$4p_{23}$	$8s_{12}$	$2p_9$	$5s_5$	2.00	
5,439.9903 *B*	$4p_{01}$	$7s_{11}$	$2p_{10}$	$4s_4$	1.67	
5,451.6506 *L*	$4p_{01}$	$7s_{12}$	$2p_{10}$	$4s_5$	2.42	2.00
5,457.4158 *B*	$4p_{22}$	$8s_{11}$	$2p_8$	$5s_4$	1.09	
5,467.1626 *B*	$4p_{22}$	$8s_{12}$	$2p_8$	$5s_5$	1.28	
5,473.455 *B*	$4p_{22}$	$7s'_{01}$	$2p_8$	$4s_2$	1.45	
5,495.8728 *L*	$4p_{23}$	$6d_{34}$	$2p_9$	$6d'_4$	2.72	2.39
5,506.1105 *L*	$4p_{22}$	$6d_{33}$	$2p_8$	$6d_4$	2.00	1.98
5,524.9576 *L*	$4p_{23}$	$5d'_{23}$	$2p_9$	$5s'''_1$	1.70	1.43
5,558.7015 *L*	$4p_{01}$	$5d_{12}$	$2p_{10}$	$5d_3$	2.84	2.48
5,572.5406 *L*	$4p_{22}$	$5d'_{23}$	$2p_8$	$5s'''_1$	2.35	2.09
5,588.7213 *B*	$4p_{22}$	$5d'_{22}$	$2p_8$	$5s''''_1$	1.55	
5,597.4783 *B*	$4p'_{12}$	$6d'_{23}$	$2p_3$	$6s'''_1$	1.58	
5,606.7328 *L*	$4p_{01}$	$5d_{01}$	$2p_{10}$	$5d_5$	2.84	2.56
5,650.7042 *L*	$4p_{01}$	$5d_{00}$	$2p_{10}$	$5d_6$	2.54	2.21
5,659.1278 *B*	$4p_{12}$	$8s_{12}$	$2p_6$	$5s_5$	1.61	
5,681.8976 *L*	$4p_{12}$	$6d_{23}$	$2p_6$	$6d'_1$	1.78	1.43
5,739.5191 *L*	$4p_{11}$	$5d'_{22}$	$2p_7$	$5s''''_1$	2.25	1.93
5,772.1143 *L*	$4p_{12}$	$5d'_{23}$	$2p_6$	$5s'''_1$	1.83	1.71
5,802.0802 *L*	$4p_{12}$	$6d_{01}$	$2p_6$	$6d_5$	1.69	
5,834.2640 *L*	$4p_{12}$	$5d'_{12}$	$2p_6$	$5s''_1$	2.01	1.75
5,860.3098 *L*	$4p_{01}$	$6s'_{01}$	$2p_{10}$	$3s_2$	2.19	2.05
5,882.6245 *L*	$4p_{01}$	$6s'_{00}$	$2p_{10}$	$3s_3$	2.41	1.98
5,888.5830 *L*	$4p_{23}$	$7s_{12}$	$2p_9$	$4s_5$	2.78	2.34
5,912.0848 *L*	$4p_{01}$	$4d'_{11}$	$2p_{10}$	$4s'_1$	2.82	2.62
5,928.8119 *L*	$4p_{22}$	$7s_{11}$	$2p_8$	$4s_4$	2.43	2.17
5,942.6676 *L*	$4p_{22}$	$7s_{12}$	$2p_8$	$4s_5$	1.96	1.84
5,987.3027 *B*	$4p_{23}$	$5d_{33}$	$2p_9$	$5d_4$	2.10	1.75
5,999.0004 *B*	$4p_{22}$	$5d_{22}$	$2p_8$	$5d''_1$	1.90	
6,005.7246 *B*	$4p'_{12}$	$8s_{11}$	$2p_3$	$5s_4$	1.33	
6,013.6790 *B*	$4p_{23}$	$5d_{12}$	$2p_9$	$5d_3$	1.75	
6,025.1515 *B*	$4p'_{12}$	$7s'_{01}$	$2p_3$	$4s_2$	1.97	
6,032.1273 *L*	$4p_{23}$	$5d_{34}$	$2p_9$	$5d'_4$	3.33	2.91
6,043.2232 *L*	$4p_{22}$	$5d_{33}$	$2p_8$	$5d_4$	2.88	2.46

TABLE 7e-3. THE SPECTRUM OF ARGON I (*Continued*)

λ	Classification				Intensities	
	System.		Paschen		log I_1	log I_2
6,052.7230 *L*	$4p_{01}$	$4d'_{22}$	$2p_{10}$	$4s_1''''$	2.28	1.84
6,059.3723 *L*	$4p_{01}$	$4d'_{12}$	$2p_{10}$	$4s_1''$	2.59	2.25
6,098.8046 *B*	$4p_{11}$	$7s_{11}$	$2p_7$	$4s_4$	2.10	2.05
6,105.6346 *L*	$4p'_{11}$	$5d'_{22}$	$2p_4$	$5s_1''''$	2.28	2.81
6,145.4406 *L*	$4p'_{12}$	$4d'_{23}$	$2p_3$	$5s_1'''$	2.25	1.93
6,155.2393 *B*	$4p_{12}$	$7s_{11}$	$2p_6$	$4s_4$	1.93	
	$4p'_{11}$	$5d'_{12}$	$2p_4$	$5s_1''$		
6,170.1734 *L*	$4p_{12}$	$7s_{12}$	$2p_6$	$4s_5$	2.25	
6,173.0949 *L*	$4p_{11}$	$5d_{22}$	$2p_7$	$5d_1''$	2.30	2.71
6,212.5015 *L*	$4p_{12}$	$5d_{23}$	$2p_6$	$5d_1'$	2.26	1.97
6,215.9423 *B*	$4p'_{12}$	$5d'_{12}$	$2p_3$	$5s_1''$	2.01	
6,296.8739 *L*	$4p'_{01}$	$5d'_{12}$	$2p_2$	$5s_1''$	2.18	
6,307.6561 *L*	$4p_{12}$	$5d_{12}$	$2p_6$	$5d_3$	2.36	2.09
6,364.8940 *L*	$4p_{11}$	$5d_{00}$	$2p_7$	$5d_6$	1.75	
6,369.5756 *L*	$4p_{12}$	$5d_{01}$	$2p_6$	$5d_5$	2.05	
6,384.7160 *L*	$4p_{01}$	$6s_{11}$	$2p_{10}$	$3s_4$	2.60	2.34
6,416.3064 *L*	$4p_{01}$	$6s_{12}$	$2p_{10}$	$3s_5$	3.36	2.87
6,431.5553 *L*	$4p_{22}$	$6s'_{01}$	$2p_8$	$3s_2$	1.60	
6,466.5498 *L*	$4p_{00}$	$5d_{11}$	$2p_5$	$5d_2$	1.64	
6,538.1118 *L*	$4p_{23}$	$4d'_{23}$	$2p_9$	$4s_1'''$	2.18	
6,604.8542 *B*	$4p_{22}$	$4d'_{23}$	$2p_8$	$4s_1'''$	2.43	
6,660.6784 *B*	$4p_{11}$	$6s'_{01}$	$2p_7$	$3s_3$	2 12	
6,664.0533 *B*	$4p_{22}$	$4d'_{12}$	$2p_8$	$4s_1''''$	2.16	
6,677.2812 *B*	$4s_{11}$	$4p'_{00}$	$1s_4$	$2p_1$	3.40	3.01
6,698.8752 *B*	$4p_{12}$	$6s'_{01}$	$2p_6$	$3s_2$	1.97	
6,719.2193 *B*	$4p_{00}$	$5d_{01}$	$2p_5$	$5d_5$	1.92	
6,752.8347 *B*	$4p_{01}$	$4d_{12}$	$2p_{10}$	$4d_3$	3.60	3.26
6,766.6134 *B*	$4p_{12}$	$4d'_{11}$	$2p_6$	$4s_1'$	2.27	
6,827.2529 *B*	$4p'_{12}$	$5d_{01}$	$2p_3$	$5d_5$	1.89	
6,871.2898 *B*	$4p_{01}$	$4d_{01}$	$2p_{10}$	$4d_5$	3.53	3.26
6,888.1704 *B*	$4p_{11}$	$4d'_{12}$	$2p_7$	$4s_1''$	2.45	
6,937.6658 *B*	$4p_{01}$	$4d_{00}$	$2p_{10}$	$4d_6$	3.15	2.86
6,965.4304 *B*	$4s_{12}$	$4p'_{01}$	$1s_5$	$2p_2$	5.06	4.75
7,030.2519 *B*	$4p_{23}$	$6s_{12}$	$2p_9$	$3s_5$	3.57	3.19
7,067.2175 *B*	$4s_{12}$	$4p'_{12}$	$1s_5$	$2p_3$	5.01	4.75
7,107.4777 *B*	$4p_{22}$	$6s_{12}$	$2p_8$	$3s_5$	2.79	
7,125.825 *B*	$4p'_{11}$	$6s'_{01}$	$2p_4$	$3s_2$	2.47	
7,147.0408 *B*	$4s_{12}$	$4p'_{11}$	$1s_5$	$2p_4$	4.42	3.83
7,206.9812 *B*	$4p'_{12}$	$6s'_{01}$	$2p_3$	$3s_2$	2.93	
7,272.9349 *B*	$4s_{11}$	$4p'_{01}$	$1s_4$	$2p_2$	4.71	4.23
7,311.724 *B*	$4p_{11}$	$6s_{11}$	$2p_7$	$3s_4$	2.89	

TABLE 7c-3. THE SPECTRUM OF ARGON I (*Continued*)

λ	Classification				Intensities	
	System.		Paschen		log I_1	log I_2
7,353.316	$4p_{22}$	$4d_{33}$	$2p_8$	$4d_4$	3.32	
7,372.1189 *B*	$4p_{23}$	$4d_{34}$	$2p_9$	$4d'_4$	3.76	3.44
7,383.9796 *B*	$4s_{11}$	$4p'_{12}$	$1s_4$	$2p_3$	5.02	5.03
7,412.334 *B*	$4p'_{11}$	$4d'_{22}$	$2p_4$	$4s_1''''$	2.55	
7,425.290 *B*	$4p'_{12}$	$4d'_{23}$	$2p_3$	$4s_1'''$	2.48	
7,471.1676 *B*	$4s_{11}$	$4p'_{11}$	$1s_4$	$2p_4$	2.86	
7,503.8685 *B*	$4s'_{01}$	$4p'_{00}$	$1s_2$	$2p_1$	5.35	5.28
7,514.6514 *B*	$4s_{11}$	$4p_{00}$	$1s_4$	$2p_5$	5.22	5.07
7,635.1056 *B*	$4s_{12}$	$4p_{12}$	$1s_5$	$2p_6$	5.53	5.36
7,723.7599 *B*	$4s_{12}$	$4p_{11}$	$1s_5$	$2p_7$	5.44	5.19
7,891.0777 *B*	$4p_{12}$	$4d_{12}$	$2p_6$	$4d_3$	3.60	
7,948.1755 *B*	$4s'_{00}$	$4p'_{11}$	$1s_3$	$2p_4$	5.13	5.13
8,006.1566 *B*	$4s_{11}$	$4p_{12}$	$1s_4$	$2p_6$	5.23	5.06
8,014.7853 *B*	$4s_{12}$	$4p_{22}$	$1s_5$	$2p_8$	5.30	5.29
8,103.6920 *B*	$4s_{11}$	$4p_{11}$	$1s_4$	$2p_7$	5.31	5.30
8,115.3108 *B*	$4s_{12}$	$4p_{23}$	$1s_5$	$2p_9$	5.58	5.59
8,264.5221 *B*	$4s'_{01}$	$4p'_{01}$	$1s_2$	$2p_2$	5.28	5.07
8,408.2094 *B*	$4s'_{01}$	$4p'_{12}$	$1s_2$	$2p_3$	5.36	5.35
8,424.6473 *B*	$4s_{11}$	$4p_{22}$	$1s_4$	$2p_8$	5.35	5.48
8,521.4428 *B*	$4s'_{01}$	$4p'_{11}$	$1s_2$	$2p_4$	5.18	5.09
8,605.7790 *B*	$4p'_{12}$	$4d_{12}$	$2p_3$	$4d_3$		
8,620.4602 *B*	$4p_{00}$	$4d_{01}$	$2p_5$	$4d_5$		
8,667.9438 *B*	$4s'_{00}$	$4p_{11}$	$1s_3$	$2p_7$	4.52	4.64
8,761.6907 *B*	$4p'_{01}$	$4d_{12}$	$2p_2$	$4d_3$		
8,799.082 *B*	$4p'_{12}$	$4d_{01}$	$2p_3$	$4d_5$		
9,122.9660 *B*	$4s_{12}$	$4p_{01}$	$1s_5$	$2p_{10}$	....	5.58
9,194.636 *B*	$4p_{01}$	$5s'_{00}$	$2p_{10}$	$2s_2$		
9,224.4955 *B*	$4s'_{01}$	$4p_{12}$	$1s_2$	$2p_6$	....	5.19
9,354.218 *M*	$4s'_{01}$	$4p_{11}$	$1s_2$	$2p_7$	....	4.18
9,657.7841 *M*	$4s_{11}$	$4p_{01}$	$1s_4$	$2p_{10}$	....	5.36
9,784.5010 *M*	$4s'_{01}$	$4p_{22}$	$1s_2$	$2p_8$	....	4.72
10,470.051 *M*	$4s'_{00}$	$4p_{01}$	$1s_3$	$2p_{10}$		

TABLE 7e-3. THE SPECTRUM OF ARGON I (*Continued*)
Vacuum Argon Wavelengths in the Near Infrared*

λ		Classification				I_0
		System.		Paschen		
10,676.489	*H*	$4p_{01}$	$5s_{12}$	$2p_{10}$	$2s_5$	500
684.698	*H*	$4p_{23}$	$3d'_{23}$	$2p_9$	$3s'''_1$	200
11,081.901	*H*	$4p_{22}$	$3d'_{22}$	$2p_8$	$3s''''_1$	200
671.903	*H*	$4p_{12}$	$3d'_{12}$	$2p_6$	$3s''_1$	100
12,115.639	*H*	$4p_{23}$	$3d_{23}$	$2p_9$	$3d'_1$	300
12,346.770	*H*	$4p_{22}$	$3d_{23}$	$2p_8$	$3d'_1$	150
406.2184	*R*	$4p_{11}$	$3d_{11}$	$2p_7$	$3d_2$	400
442.724	*H*	$4p_{01}$	$3d_{12}$	$2p_{10}$	$3d_3$	500
459.523	*H*	$4p_{22}$	$5s_{11}$	$2p_8$	$2s_4$	400
491.0793	*R*	$4p_{23}$	$5s_{12}$	$2p_5$	$2s_5$	700
12,705.755	*H*	$4p'_{01}$	$3d'_{11}$	$2p_2$	$3s'_1$	150
806.2474	*R*	$4p_{22}$	$3d_{22}$	$2p_8$	$3d''_1$	300
960.2029	*R*	$4p_{01}$	$3d_{01}$	$2p_{10}$	$3d_5$	250
13,011.8209	*R*	$4p'_{12}$	$5s'_{01}$	$2p_3$	$2s_2$	200
217.606	*H*	$4p_{01}$	$3d_{00}$	$2p_{10}$	$3d_6$	150
13,231.727	*H*	$4p_{23}$	$3d_{33}$	$2p_9$	$3d_4$	200
276.2656	*R*	$4p'_{12}$	$3d'_{23}$	$2p_3$	$3s'''_1$	750
316.8552	*R*	$4p'_{11}$	$3d'_{22}$	$2p_4$	$3s''''_1$	600
370.7679	*R*	$4p_{12}$	$3d_{23}$	$2p_6$	$3d'_1$	800
507.8818	*R*	$4p_{22}$	$3d_{33}$	$2p_8$	$3d_4$	850
13,603.051	*H*	$4p'_{12}$	$3d'_{22}$	$2p_3$	$3s''''_1$	55
626.3909	*R*	$4p_{11}$	$3d_{22}$	$2p_7$	$3d''_1$	500
682.2918	*R*	$4p'_{01}$	$3d'_{12}$	$2p_2$	$3s''_1$	300
722.3286	*R*	$4p_{23}$	$3d_{34}$	$2p_9$	$3d'_4$	1000
16,945.2129	*R*	$4p_{12}$	$3d_{12}$	$2p_6$	$3d_3$	100

* From Report of Commission 14 of the International Union, December, 1960. *H* measured by Humphreys and Paul, *J. phys.* **19**, 424 (1958); *R* measured by Littlefield and Rowley in the above-mentioned report.

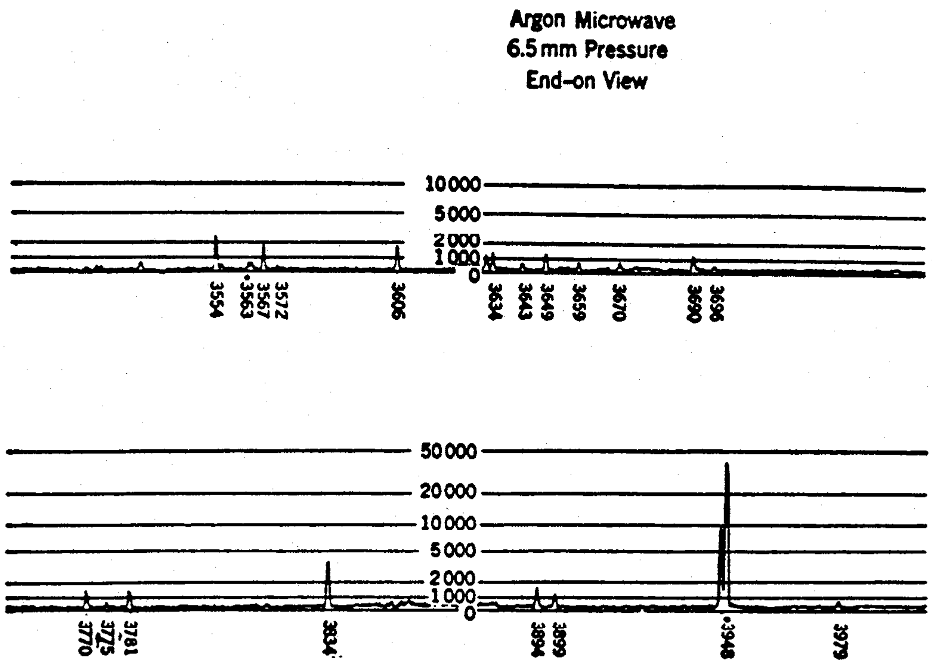


FIG. 7e-2. Photoelectric traces of the argon spectrum, microwave discharge at 6.5 mm pressure. Wavelength range is 3,500 to 10,000 Å.

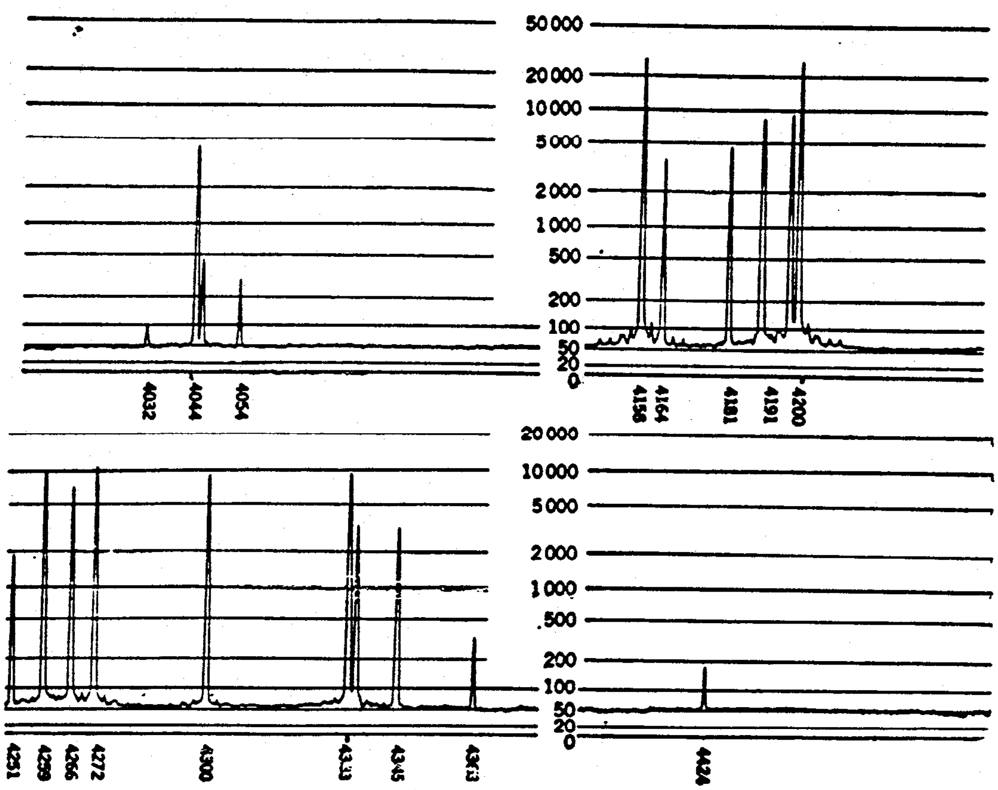


FIG. 7e-2 (*Continued*)

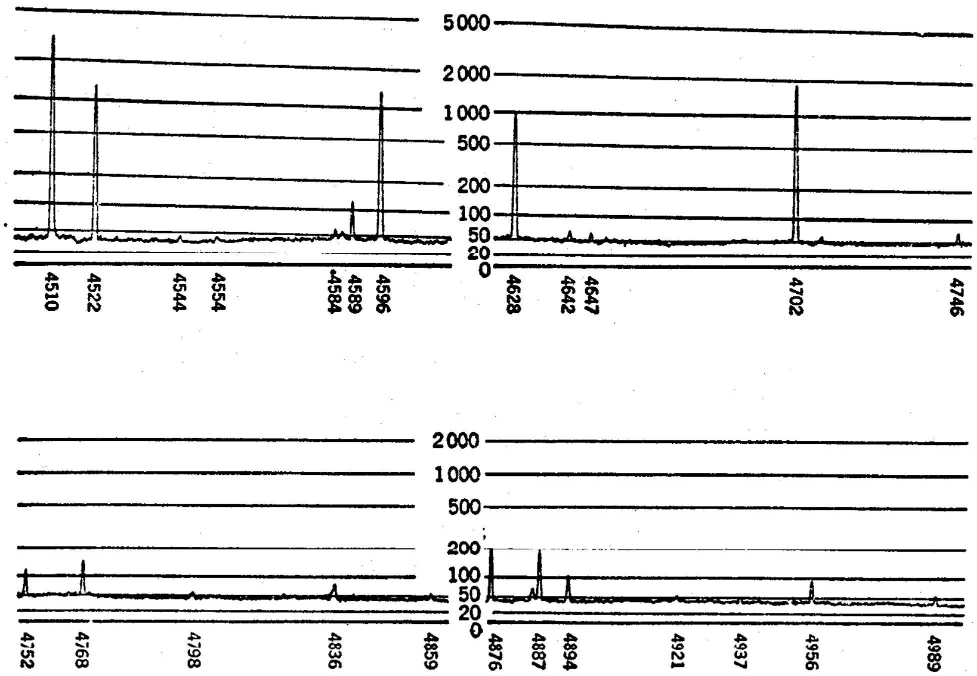


FIG. 7e-2 (*Continued*)

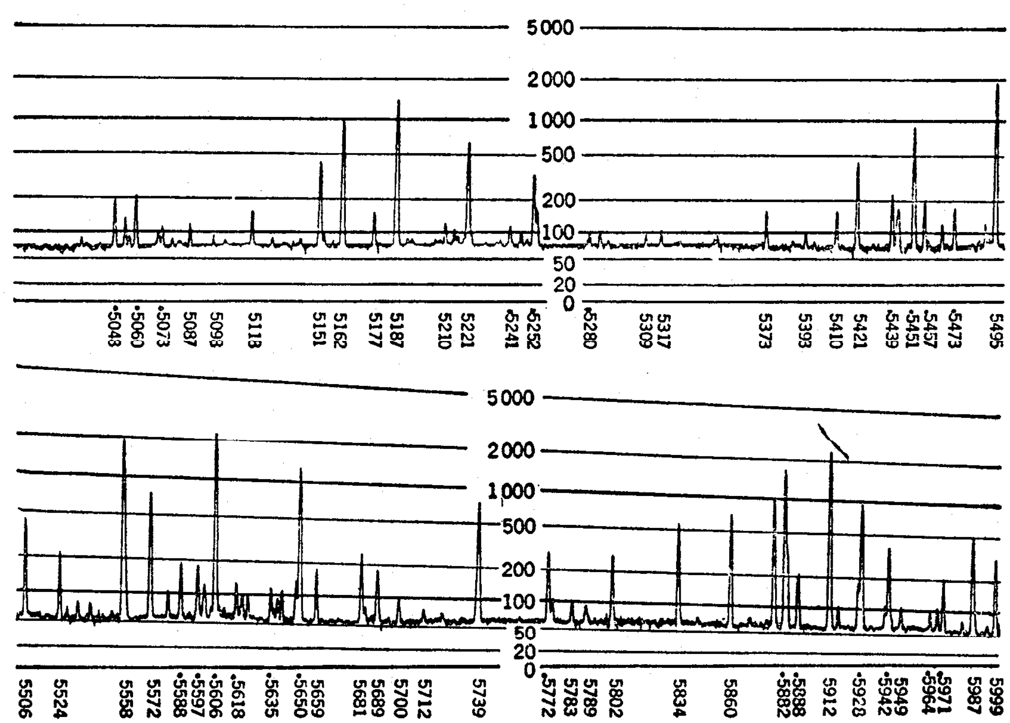


FIG. 7e-2 (*Continued*)

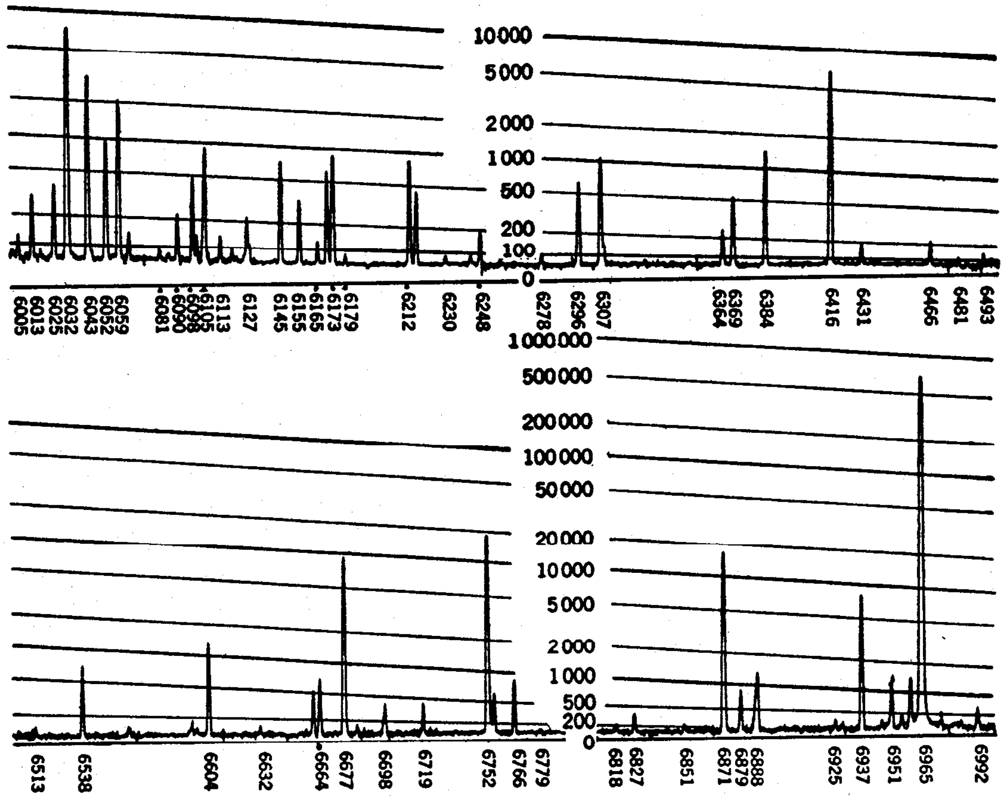


FIG. 7e-2 (*Continued*)

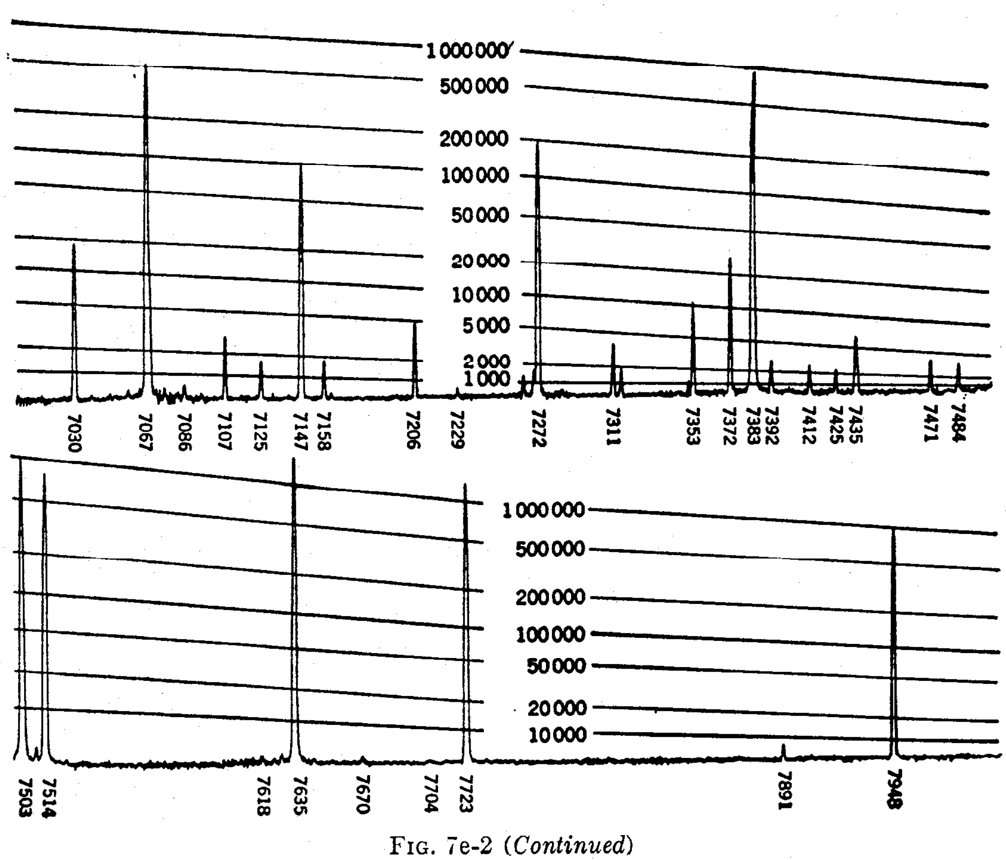


FIG. 7e-2 (*Continued*)

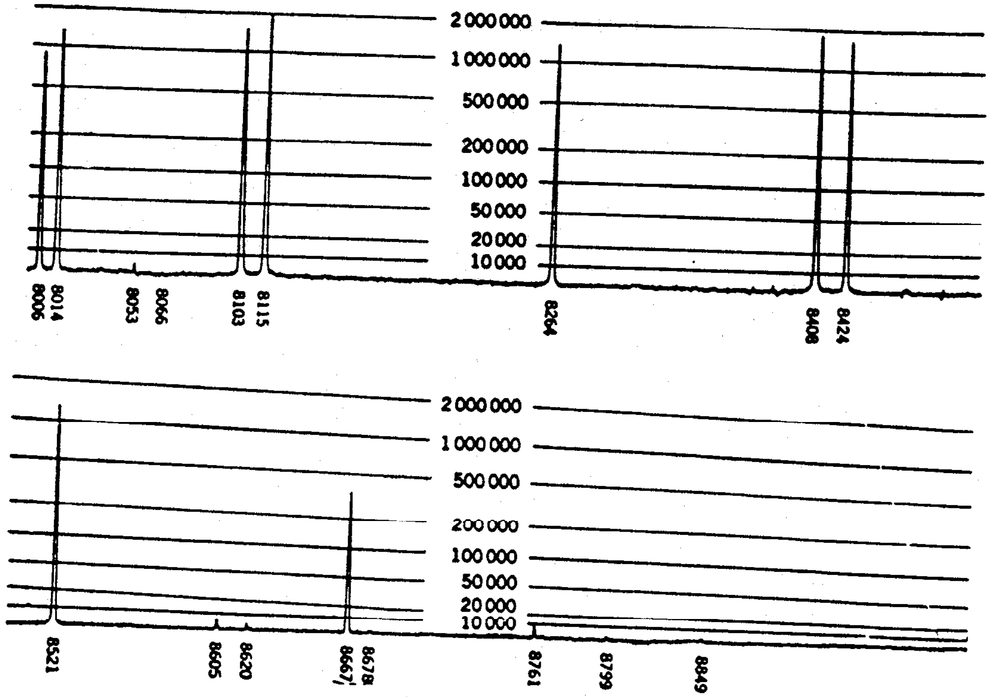


FIG. 7e-2 (*Continued*)

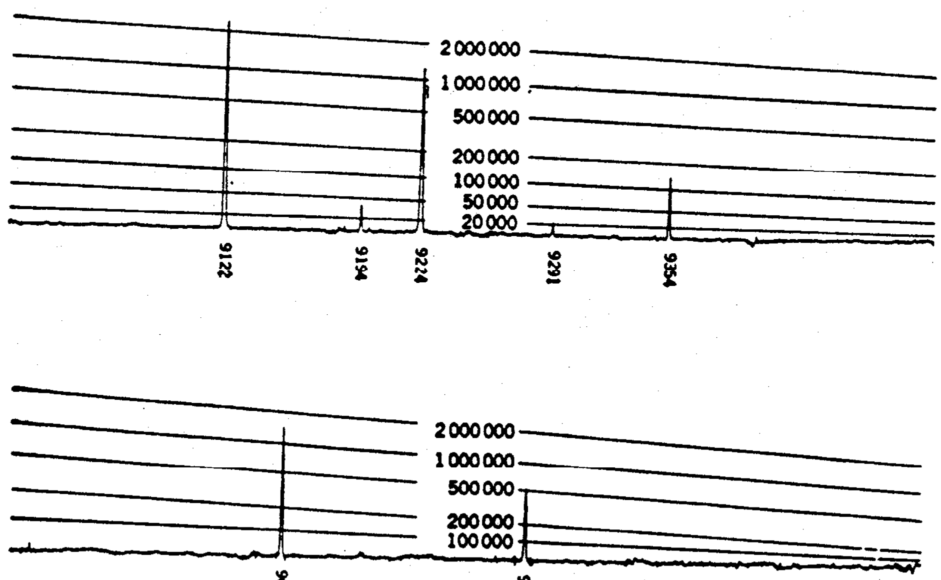


FIG. 7e-2 (*Continued*)

Krypton I. Notation and arrangement of Table 7e-4 are similar to those of the Tables 7e-2 and 7e-3.

Wavelengths

All values given to 8 significant figures are interferometric values.

S, International secondary standard[1]

L, Littlefield, *Proc. Roy. Soc.* (*London*), ser. A, **187**, 220 (1946)

[1] *Trans. Intern. Astron. Union* **5**, 87 (1935).

TABLE 7e-4. THE SPECTRUM OF KRYPTON I

λ	Classification		I_0	$\log I_1$
4,273.9700 *S*	$5s_{12}$	$6p_{12}$	1,000	5.573
4,282.9683 *S*	$5s_{12}$	$6p_{11}$	100	4.540
4,286.4873 *S*	$5s'_{00}$	$6p'_{01}$	40	4.039
4,300.4877 *S*	$5s'_{00}$	$6p'_{11}$	50	3.812
4,318.5525 *S*	$5s_{12}$	$6p_{22}$	400	
				5.66
4,319.5797 *S*	$5s_{12}$	$6p_{23}$	1,000	
4,351.3607 *S*	$5s'_{01}$	$6p'_{00}$	100	3.938
4,362.6423 *S*	$5s_{12}$	$6p_{01}$	500	4.958
4,376.1220 *S*	$5s_{11}$	$6p_{00}$	800	5.208
4,399.9670 *S*	$5s'_{01}$	$6p'_{12}$	200	4.430
4,410.369	$5s'_{01}$	$6p'_{01}$	50	3.440
4,418.769	$5s'_{01}$	$5f_{22}$	50	3.391
4,425.1909	$5s'_{01}$	$6p'_{11}$	100	3.874
4,453.9179 *S*	$5s_{11}$	$6p_{12}$	600	5.027
4,463.6902 *S*	$5s_{11}$	$6p_{11}$	800	5.252
4,502.3547 *S*	$5s_{11}$	$6p_{22}$	600	5.117
4,550.298	$5s_{11}$	$6p_{01}$	40	3.210
4,812.607	$5s'_{00}$	$4f_{11}$	40	3.611
4,969.08	$5s'_{01}$	$4f_{12}$	20	3.560
5,490.94	$5p_{01}$	$7d_{12}$	50	3.903
5,500.71	$5p_{01}$	$7d_{01}$	50	3.924
5,520.52	$5p_{23}$	$8d_{34}$	40	3.757
5,562.2257 *S*	$5s_{12}$	$5p'_{12}$	500	5.338
5,570.2895 *S*	$5s_{12}$	$5p'_{01}$	2,000	5.937
5,580.3890 *L*	$5s'_{01}$	$6p_{00}$	80	4.399
5,649.5629 *S*	$5s'_{00}$	$6p_{01}$	100	4.518
5,672.4514 *L*	$5s_{12}$	$5p'_{11}$	50	3.993
5,707.5128 *L*	$5s'_{01}$	$6p_{12}$	40	3.800
5,824.50	$5p_{22}$	$7d_{33}$	40	4.032
5,827.07	$5p_{01}$	$8s_{12}$	20	3.833
5,832.8600 *L*	$5p_{23}$	$7d_{34}$	100	4.345
5,866.7514 *L*	$5s'_{01}$	$6p_{01}$	50	
5,870.9158 *S*	$5s_{11}$	$5p'_{12}$	3,000	6.040
5,879.9004 *L*	$5s_{11}$	$5p'_{01}$	50	4.696
5,993.8503 *S*	$5s_{11}$	$5p'_{11}$	60	4.618
6,012.1570 *L*	$5p_{01}$	$6d_{12}$	50	4.550
	$5p_{12}$	$9s_{12}$		
6,035.82	$5p_{11}$	$7d_{22}$	15	3.707
6,056.1274 *L* *	$5p_{01}$	$6d_{01}$	60	4.617
6,075.24	$5p_{12}$	$7d_{23}$	20	3.780
6,082.8630 *L*	$5p_{01}$	$6d_{00}$	40	4.292

* The vacuum wavelength 6,057.80211 Å of this line of Kr^{86} defines the international standard of length.

TABLE 7e-4. THE SPECTRUM OF KRYPTON I (*Continued*)

λ	Classification		I_0	log I_1
6,151.38	$5p_{12}$	$7d_{12}$	20	3.798
6,222.71	$5p_{22}$	$8s_{11}$	20	3.865
6,236.3520 *L*	$5p_{22}$	$8s_{12}$	30	4.140
6,346.66	$5p_{22}$	$6d_{23}$	20	3.795
6,373.58	$5p_{22}$	$6d_{22}$	30	4.027
6,421.0285 *L*	$5p_{22}$	$6d_{33}$	100	4.900
6,456.2910 *L*	$5p_{23}$	$6d_{34}$	200	5.103
6,576.42	$5p_{12}$	$8s_{12}$	20	3.799
6,652.24	$5p_{11}$	$6d_{22}$	40	4.351
6,699.23	$5p_{12}$	$6d_{23}$	60	4.474
6,740.10	$5p_{11}$	$6d_{12}$	20	3.75
6,813.10	$5p_{12}$	$6d_{12}$	50	4.466
6,846.40	$5p_{01}$	$7s_{11}$	20	3.83
6,869.63	$5p_{12}$	$6d_{01}$	20	4.025
6,904.68	$5p_{01}$	$7s_{12}$	100	5.029
7,224.109	$5p_{01}$	$5d_{12}$	100	5.090
7,287.262	$5p_{01}$	$6s'_{01}$	80	4.966
7,425.54	$5p_{22}$	$7s_{11}$	60	4.707
7,486.850	$5p_{01}$	$6s'_{00}$ }	100	5.119
	$5p_{22}$	$7s_{12}$ }		
7,493.58	$5p_{22}$	$5d_{11}$	20 }	4.692
7,494.15	$5p_{22}$	$7s_{12}$	30 }	
7,587.4135	$5s_{11}$	$5p_{00}$	1,000	6.357
7,601.5465	$5s_{12}$	$5p_{12}$	2,000	6.908
7,685.2472	$5s'_{01}$	$5p'_{00}$	1,000	6.369
7,694.5401	$5s_{12}$	$5p_{11}$	1,200	6.507
7,741.39	$5p_{23}$	$5d_{23}$	40	4.340
7,746.831	$5p_{01}$	$5d_{00}$	150	5.317
7,776.28	$5p_{22}$	$5d_{22}$	40	4.509
7,806.52	$5p_{11}$	$7s_{11}$	50	4.536
7,854.823	$5s'_{00}$	$5p'_{01}$	800	6.448
7,863.91	$5p_{23}$	$5d_{12}$	20	4.250
7,881.76	$5p_{11}$	$5d_{11}$	30	4.318
7,904.62	$5p_{12}$	$7s_{11}$	30	4.17
7,913.443	$5p_{01}$	$5d_{01}$	200	5.536
7,920.47	$5p_{23}$	$5d_{33}$	40	4.38
7,928.602	$5p_{22}$	$5d_{33}$	180	5.458
7,946.99	$5p_{22}$	$6s'_{01}$	20	4.05
7,982.42	$5p_{12}$	$7s_{12}$	100	4.826
8,059.5053	$5s'_{00}$	$5p'_{11}$	1,500	6.422
8,104.3660	$5s_{12}$	$5p_{23}$	4,000	6.813

TABLE 7e-4. THE SPECTRUM OF KRYPTON I (*Continued*)

λ	Classification		I_0	log I_1
8,112.9023	$5s_{12}$	$5p_{23}$	6,000	6.994
8,190.0570	$5s_{11}$	$5p_{12}$	3,000	6.682
8,218.40	$4d_{12}$	$6f_{22}$	80	3.99
8,263.2412	$5s'_{01}$	$5p'_{12}$	3,000	6.764
8,272.36	$5p_{12}$	$5d_{23}$	100	5.171
8,281.05	$5s'_{01}$	$5p'_{01}$	1,500	6.450
8,298.1091	$5s_{11}$	$5p_{11}$	5,000	6.857
8,412.45	$5p_{10}$	$5d_{12}$	100	4.746
8,498.21	$5p_{10}$	$6s'_{01}$	30	4.16
8,508.8736	$5s'_{01}$	$5p'_{11}$	3,000	6.537
8,537.93	$4d_{00}$	$5f_{11}$	40	4.17
8,560.89	$5p_{00}$	$7s_{11}$	50	4.22
8,569.02	$4d_{00}$	$6p'_{11}$	20	3.85
8,605.85	$4d_{33}$	$6f_{45}$	40	4.16
8,697.50	$5p_{22}$	$5d_{01}$	40	4.341
8,755.20	$4d_{01}$	$5f_{22}$	30	4.13
8,764.09	$5p_{23}$	$4d'_{23}$	150	5.149
8,776.7498	$5s_{11}$	$5p_{22}$	6,000	6.941
8,805.78	$4d_{01}$	$6p'_{11}$	20	3.78
8,928.6934	$5s_{12}$	$5p_{01}$	2,000	6.893
8,967.53	$5p_{23}$	$4d'_{22}$	10	3.95
8,977.99	$5p_{22}$	$4d'_{22}$	50	4.925
8,999.19	$5p_{11}$	$5d_{00}$	30	4.528
9,094.33	$4d_{22}$	$6f_{3}$	4*h*	3.94
9,111.69	$5p_{23}$	$4d'_{12}$	20	4.27
9,122.49	$5p_{22}$	$4d'_{12}$	20	4.32
9,243.54	....	....	30	4.783
9,270.96	$4d_{12}$	$5f_{12}$	10	4.38
9,326.03	$4d_{34}$	$5f_{3}$	10	4.17
9,352.23	$4d_{34}$	$5f_{4}$	100	5.122
9,362.03	$5p_{12}$	$5d_{01}$	100	5.181
9,450.88	$5p_{12}$	$4d'_{23}$	20	4.44
9,540.89	$5p_{11}$	$4d'_{22}$	30	4.72
9,687.83	$5p_{12}$	$4d'_{22}$	10	4.06
9,704.22	$5p_{11}$	$4d'_{12}$	50	5.00
9,714.85	$4d_{33}$	$5f_{3}$	15	2.26
9,743.11	$4d_{33}$	$5f_{44}$	50	4.990
9,751.74	$5s_{11}$	$5p_{01}$	2,000	6.545
9,856.24	$5p_{12}$	$4d'_{12}$	500	5.677
11,819.43	$5p_{01}$	$6s_{12}$	2,000	

TABLE 7e-4. THE SPECTRUM OF KRYPTON I (*Continued*)

λ	Classification		I_0	log I_1
12,204.39	$4d_{34}$	$4f_{45}$	700	
12,879.00	$4d_{33}$	$4f_{44}$	500	
13,177.38	$5p_{22}$	$6s_{11}$	850	
13,622.28	$5p_{22}$	$4d_{11}$	800	
13,634.22	$5p_{23}$	$6s_{12}$	1,700	
14,426.93	$5p_{11}$	$6s_{11}$	1,100	
14,734.46	$5p_{23}$	$4d_{23}$	900	
15,239.85	$5p_{22}$	$4d_{22}$	900	
15,335.29	$5p_{01}$	$4d_{12}$	850	
16,784.65	$5p_{12}$	$4d_{23}$	950	
16,890.40	$5p_{22}$	$4d_{33}$	1,000	
16,896.58	$5p_{01}$	$4d_{01}$	700	
16,935.71	$5p_{11}$	$4d_{22}$	800	
18,167.12	$5p_{23}$	$4d_{34}$	1,500	

Wavelengths not followed by a capital letter and all I_0 values are taken from the three following sources:

4,273 to 7,601 A: Meggers, deBruin, and Humphreys, *J. Research Natl. Bur. Standards* **7**, 643 (1931)

7,685 to 9,856 A: Meggers and Humphreys, *J. Research Natl. Bur. Standards* **10**, 443 (1933)

11,819 to 18,167 A: Humphreys and Kostkowski, *J. Research Natl. Bur. Standards* **49**, 73 (1952).

I_1, intensity in a microwave discharge at 1.6 mm pressure. This is approximately the vapor pressure of krypton at the temperature of liquid nitrogen (77 K). Immersing a discharge tube with krypton at a room-temperature pressure of more than 7 mm in liquid nitrogen will keep the pressure very steady at about 1.6 mm and therefore will produce very constant intensities.

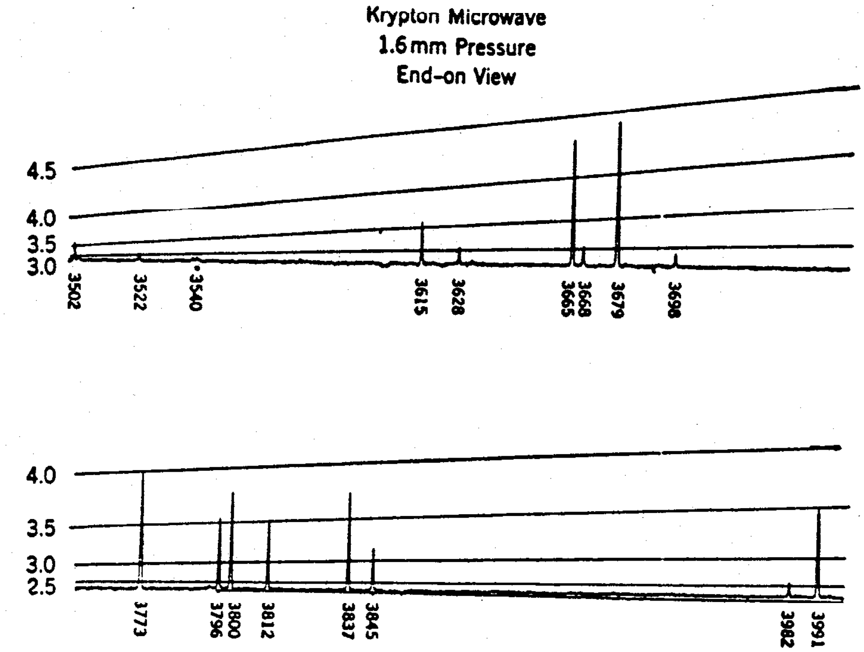


FIG. 7e-3. Photoelectric traces of the krypton spectrum, microwave discharge at 1.6 mm pressure. Wavelength range is 3,500 to 10,000 Å.

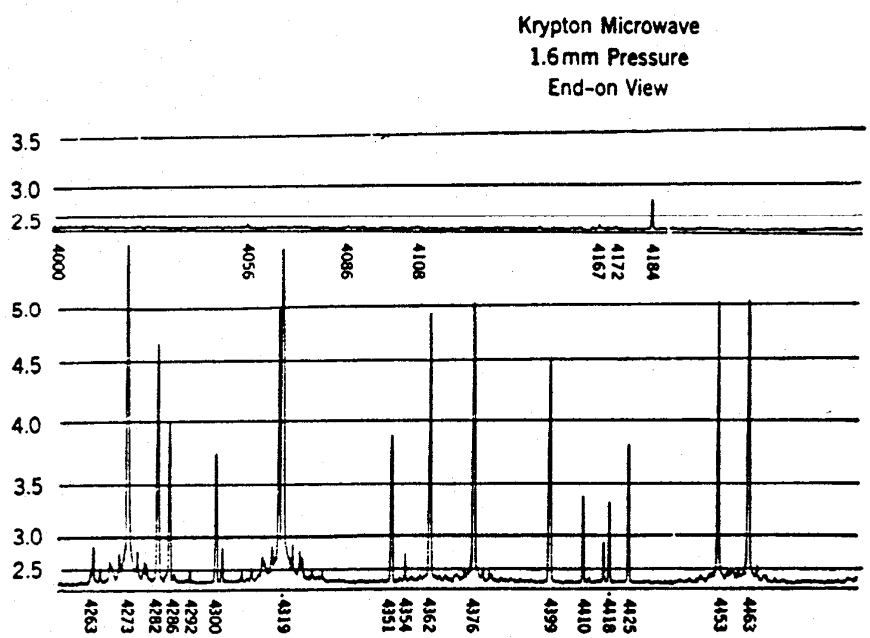


FIG. 7e-3 (*Continued*)

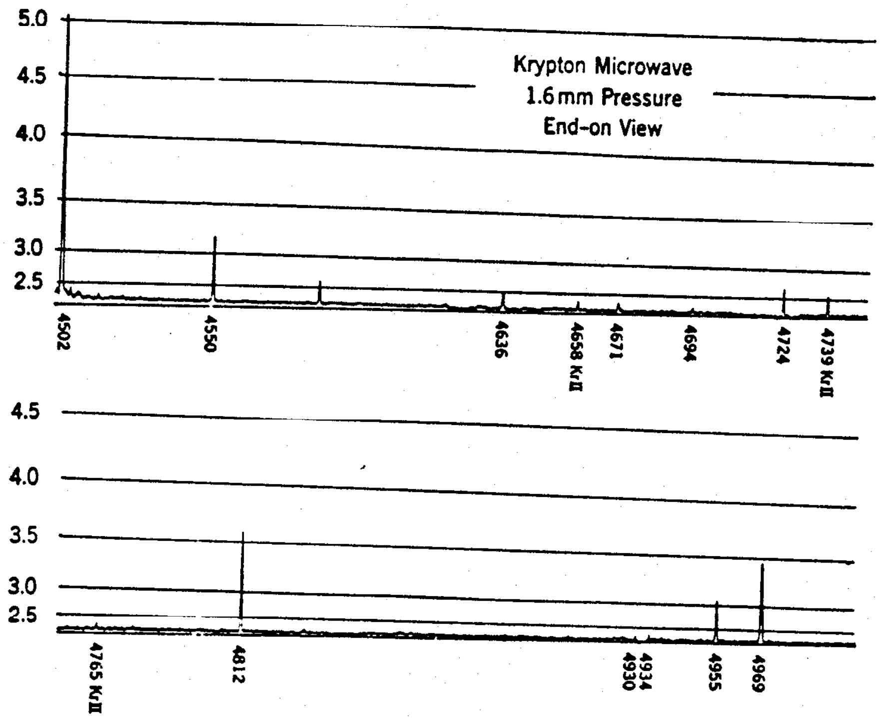


FIG. 7e-3 (*Continued*)

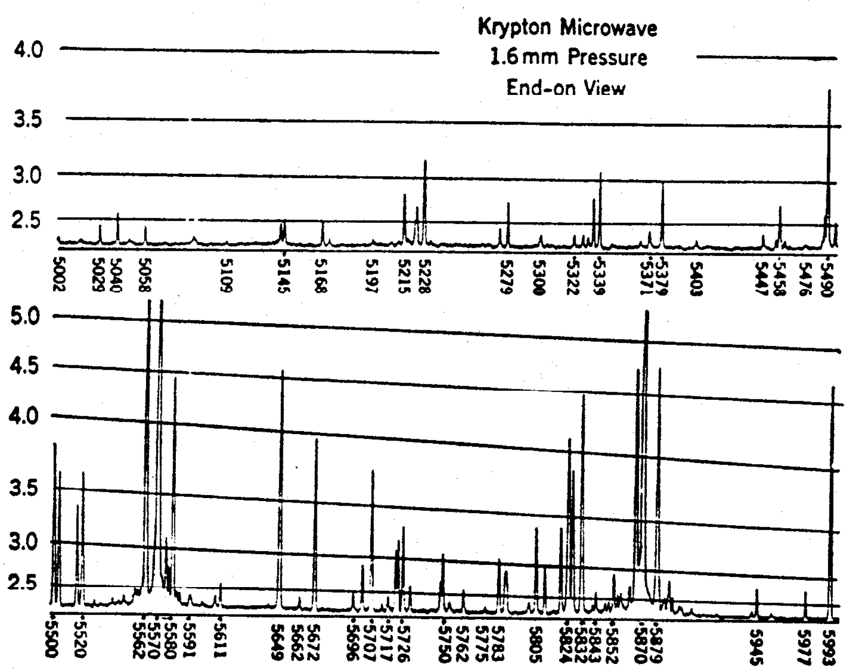


FIG. 7e-3 (*Continued*)

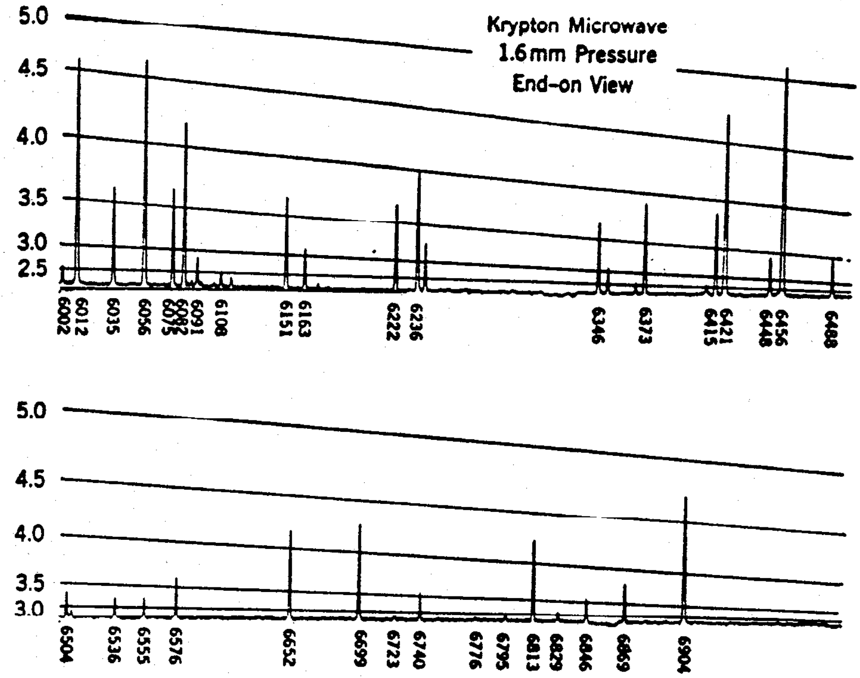


FIG. 7e-3 (*Continued*)

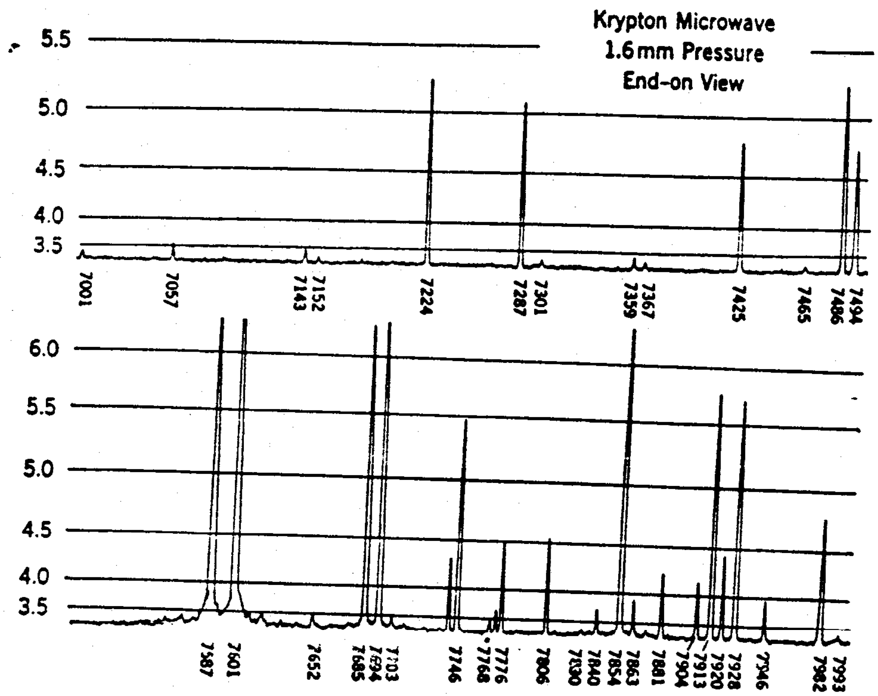


FIG. 7e-3 (*Continued*)

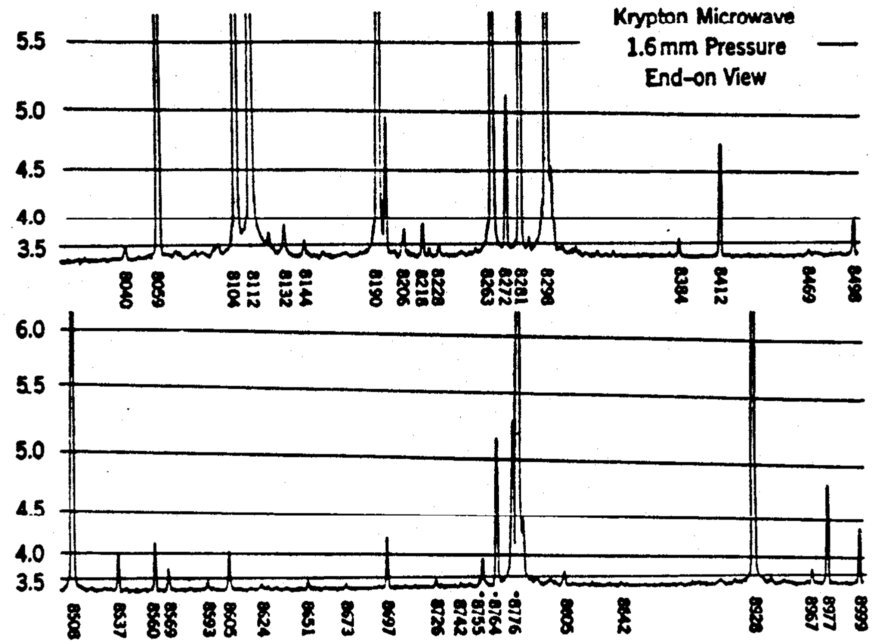


FIG. 7e-3 (*Continued*)

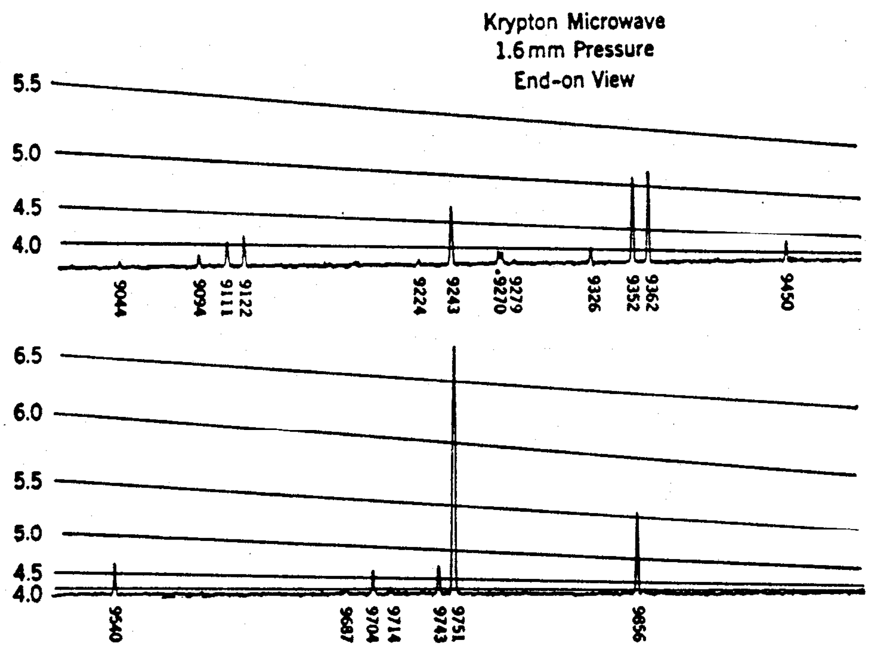


FIG. 7e-3 (*Continued*)

Xenon I. Wavelengths in Table 7e-5 are from Humphreys and Meggers[1] and Humphreys and Kostkowski[2] (above 11,000 Å). Notation is the same as for Ne I and A I.

Intensities are as follows: I_0, conventional estimates quoted from the literature; I_1, microwave discharge, pressure of 0.002 mm; I_2, same, $p = 0.07$ mm; I_3, same, $p = 16$ mm; I_4, d-c glow discharge, $p = 4.1$ mm.[3]

For significance of the intensity scale, see Table 7e-2.

[1] C. V. Humphreys and W. F. Meggers, *J. Research Natl. Bur. Standards* **10**, 139 (1933).
[2] Humphreys and Kostkowski, *J. Research Natl. Bur. Standards* **49**, 73 (1952).
[3] The I_1 to I_4 intensities were measured by M. Thekaekara, S.J.

TABLE 7e-5. THE SPECTRUM OF XENON I

Wavelength	Classification		I_0	log I_1	log I_2	log I_3	log I_4
3,685.90	$6s_{12}$	$9p_{12}$	40				
3,693.49	$6s_{12}$	$9p_{23}$	40				
3,745.38	$6s_{11}$	$6f_{12}$	10				
3,796.30	$6s_{12}$	$5f_{23}$	40				
3,948.163	$6s_{11}$	$5f_{12}$	60	3.06	3.70	2.89	2.32
3,950.925	$6s_{12}$	$8p_{12}$	120	3.86	4.55	3.62	3.21
3,967.541	$6s_{12}$	$8p_{23}$	200	3.94	4.66	3.74	3.34
3,974.417	$6s_{12}$	$8p_{22}$	40	3.02	3.70	2.71	2.34
3,985.202	$6s_{12}$	$8p_{01}$	30	2.91	3.60	2.65	2.26
4,078.8207	$6s_{11}$	$8p_{00}$	100	4.06	4.32	3.40	2.76
4,109.7093	$6s_{11}$	$8p_{12}$	60	3.33	4.00	3.05	2.66
4,116.1151	$6s_{11}$	$8p_{11}$	80	3.56	4.17	3.23	2.71
4,135.1337	$6s_{11}$	$8p_{22}$	20	2.66	3.31		
4,193.5296	$6s_{12}$	$4f_{23}$	150	3.62	4.51	3.54	3.25
4,203.6945	$6s_{12}$	$4f_{12}$	50	2.91	4.01		
4,205.404	$6s_{12}$	$4f_{11}$	10	....	3.02		
4,372.287	$6s_{11}$	$4f_{22}$	20				
4,383.9092	$6s_{11}$	$4f_{12}$	100	3.08	4.13	3.12	2.83
4,385.7693	$6s_{11}$	$4f_{11}$	70	....	2.80	2.82	2.55
4,500.9772	$6s_{12}$	$6p'_{01}$	500	4.06	5.13	4.23	2.98
4,524.6805	$6s_{12}$	$6p'_{12}$	400	3.97	4.85	3.96	3.64
4,582.7474	$6s_{11}$	$6p'_{00}$	300	4.16	4.66	3.68	3.42
4,611.8896	$6s_{12}$	$7p_{11}$	100	2.86	3.86	2.84	2.61
4,624.2757	$6s_{12}$	$7p_{12}$	1,000	4.76	5.61	4.72	4.44
4,671.226	$6s_{12}$	$7p_{23}$	2,000	4.98	5.81	4.99	4.70
4,690.9711	$6s_{12}$	$6p'_{11}$	100	3.29	4.46	3.43	3.25
4,697.020	$6s_{12}$	$7p_{22}$	300	4.21	5.17	4.13	3.92
4,734.1524	$6s_{11}$	$6p'_{12}$	600	4.25	5.27	4.39	4.10
4,792.6192	$6s_{12}$	$7p_{01}$	150	3.48	4.32	3.29	3.12
4,807.019	$6s_{11}$	$7p_{00}$	500	4.52	5.31	4.35	4.12
4,829.709	$6s_{11}$	$7p_{11}$	400	4.27	5.19	4.21	3.97
4,843.294	$6s_{11}$	$7p_{12}$	300	4.50	5.06	4.07	3.84
4,916.508	$6s_{11}$	$6p'_{11}$	500	4.04	5.15	4.16	3.95
4,923.1522	$6s_{11}$	$7p_{22}$	500	4.30	5.22	4.21	3.99
5,028.2796	$6s_{11}$	$7p_{01}$	200	3.54	4.52	3.42	3.25
5,162.711	$6s'_{00}$	$7f_{11}$	10	2.86	3.30	3.12	
5,332.244	$6p_{01}$	$10d_{01}$	15 }	2.97	3.24	3.20	
5,364.626	$6p_{01}$	$10d_{12}$	30 }				
5,392.795	$6s'_{00}$	$6f_{11}$	100 }	3.31	3.86	3.35	2.46
5,394.738	$6p_{01}$	$7s'_{01}$	20 }				

TABLE 7e-5. THE SPECTRUM OF XENON I (*Continued*)

Wavelength	Classification		I_0	log I_1	log I_2	log I_3	log I_4
5,439.923	$6s'_{01}$	$7f_{12}$	30	3.65	3.49	3.21	2.03
5,460.037	$6p_{01}$	$11s_{12}$	15	3.23	3.12	2.81	
5,488.555	$6p_{22}$	$11d_{33}$	20*h*	2.85	3.22	3.56	
5,552.385	$6p_{01}$	$9d_{12}$	80	3.32	3.78	3.48	2.42
5,566.615	$6p_{01}$	$9d_{01}$	100	3.41	3.86	3.52	2.10
5,581.784	$6p_{01}$	$9d_{00}$	50	3.13	3.53	3.52	
5,618.878	$6p_{22}$	$10d_{33}$	80	3.21	3.60	3.61	2.21
5,688.373	$6s'_{01}$	$6f_{22}$	40	2.97	3.41	2.84	
5,695.750	$6s'_{01}$	$6f_{12}$	100				
5,696.479	$6s'_{01}$	$6f_{11}$	80	3.61	4.06	3.50	2.62
5,715.716	$6p_{01}$	$10s_{12}$	70				
5,716.252	$6p_{23}$	$10d_{34}$	80	3.56	4.00	3.83	2.57
5,807.311	$6p_{22}$	$9d_{23}$	15	2.39	2.93	2.67	
5,814.505	$6p_{22}$	$9d_{22}$	60	3.16	3.58	3.31	2.16
5,823.890	$6s'_{00}$	$5f_{11}$	300	3.96	4.65	4.08	3.23
5,824.800	$6p_{22}$	$9d_{33}$	150				
5,856.509	$6p_{01}$	$8d_{22}$	15	2.61	3.21	2.81	
5,875.018	$6p_{01}$	$8d_{12}$	100	4.03	5.41	3.77	2.98
5,894.988	$6p_{01}$	$8d_{01}$	100	3.92	4.44	3.85	3.02
5,904.462	$6p_{23}$	$9d_{23}$	20	3.15	3.42	3.16	
5,922.550	$6p_{23}$	$9d_{33}$	20	3.02	3.52	3.23	
5,931.241	$6p_{01}$	$8d_{00}$	80				
5,934.172	$6p_{23}$	$9d_{34}$	100	3.83	4.32	4.05	2.95
5,974.152	$6p_{12}$	$10d_{23}$	40	3.50	3.42	3.57	
5,989.18	$6p_{12}$	$10d_{12}$	20	2.90	3.19	3.17	
5,998.115	$6p_{22}$	$10s_{11}$	30	3.17	3.51	3.12	
6,007.909	$6p_{22}$	$10s_{12}$	15	2.87	3.20	2.79	
6,111.759	$6p_{11}$	$9d_{22}$	30				
6,111.951	$6p_{23}$	$10s_{12}$	40	3.63	....	3.72	2.56
6,152.069	$6p_{22}$	$8d_{23}$	20	....	3.46		
6,163.660	$6p_{22}$	$8d_{22}$	90				
6,163.935	$6s'_{01}$	$5f_{22}$	80	3.95	....	3.85	3.07
6,178.302	$6s'_{01}$	$5f_{12}$	150				
6,179.665	$6s'_{01}$	$5f_{11}$	120	3.99	....	3.95	3.28
6,182.420	$6p_{22}$	$8d_{33}$	300	4.19	....	4.19	3.42
6,189.10	$6p_{01}$	$9s_{11}$	20	2.89	3.43	3.16	
6,198.260	$6p_{01}$	$9s_{12}$	100				
6,200.890	$6p_{12}$	$9d_{23}$	60	3.72	3.64	3.72	3.01
6,206.297	$6p_{22}$	$8d_{01}$	20	3.18	....	3.27	
6,224.169	$6p_{12}$	$9d_{12}$	40	....	3.67	3.39	

Table 7e-5. The Spectrum of Xenon I (*Continued*)

Wavelength	Classification		I_0	log I_1	log I_2	log I_3	log I_4
6,261.212	$6p_{23}$	$8d_{23}$	50	3.39	4.03	3.45	
6,265.301	$6s'_{00}$	$8p_{01}$	40	3.18	3.87	2.96	
6,286.011	$5d_{34}$	$8f_{45}$	100	3.34	3.82	3.84	
6,292.649	$6p_{23}$	$8d_{33}$	50	3.43	4.06	3.47	
6,318.062	$6p_{23}$	$8d_{34}$	500	4.34	4.93	4.42	3.66
6,430.155	$6p_{12}$	$10s_{12}$	20	....	3.44		
6,469.705	$6p_{01}$	$7d_{12}$	300	4.15	4.92	4.05	3.56
6,472.841	$6p_{01}$	$7d_{11}$	150	3.92	4.57	3.70	3.20
6,487.765	$6p_{01}$	$7d_{22}$	120	3.90	4.59	3.72	3.22
6,497.43	$5d_{34}$	$7f_{33}$	30*hl*				
6,498.718	$6p_{11}$	$8d_{22}$	100	3.90	4.44	3.89	3.09
6,504.18	$6s'_{01}$	$8p_{00}$	200*h*	3.82	4.37	4.16	3.05
6,521.508	$6p_{11}$	$8d_{12}$	40	3.30	3.88	3.25	
6,533.159	$6p_{22}$	$9s_{11}$	100		4.32	3.56	
6,543.360	$6p_{22}$	$9s_{12}$	40	3.78	3.95		
6,554.196	$5d_{12}$	$7f_{23}$	50*hl*	3.54	4.02	3.78	
6,595.561	$6p_{12}$	$8d_{23}$	100	4.08	4.61	4.05	3.20
6,632.464	$6p_{12}$	$8d_{12}$	50	3.76	4.32	3.73	
6,666.965	$6p_{23}$	$9s_{12}$	60 }	4.26	5.03	4.19	3.69
6,668.920	$6p_{01}$	$7d_{00}$	150 }				
6,678.972	$6s'_{01}$	$8p_{01}$	25	3.49	4.12		
6,681.036	$5d_{00}$	$6f_{11}$	20				
6,728.008	$6p_{01}$	$7d_{01}$	200	4.48	5.22	4.34	3.85
6,777.57	$5d_{01}$	$6f_{12}$	50 }	3.86	4.32	3.85	2.96
6,778.60	$5d_{01}$	$6f_{11}$	40 }				
6,827.315	$6s'_{00}$	$4f_{11}$	200	3.91	4.12	4.27	3.83
6,846.613	$6p_{22}$	$7d_{12}$	60	3.95	4.72	4.03	3.45
6,866.838	$6p_{22}$	$7d_{23}$	50	3.87	4.56		
6,872.107	$5d_{34}$	$6f_{45}$	100	4.19	4.84	4.52	3.58
6,882.155	$6p_{22}$	$7d_{33}$	300	4.77	5.41	4.68	4.14
6,925.53	$5d_{12}$	$6f_{23}$	100	3.97	4.51	3.88	3.25
6,976.182	$6p_{23}$	$7d_{23}$	100	4.07	4.93	3.99	3.52
7,119.598	$6p_{23}$	$7d_{34}$	500	4.91	5.62	4.92	4.43
7,257.94	$5d_{33}$	$6f_{44}$	60	4.07	4.73	4.07	3.39
7,262.54	$6p_{11}$	$7d_{12}$	20	4.02	4.70	3.83	3.26
7,266.49	$6p_{11}$	$7d_{11}$	25	....	4.60		
7,283.961	$6s'_{01}$	$4f_{22}$	40 }	4.61	5.33	4.50	4.00
7,285.301	$6p_{11}$	$7d_{22}$	60 }				
7,316.272	$6s'_{01}$	$4f_{12}$	70	4.09	5.07	4.35	3.83
7,321.452	$6s'_{01}$	$4f_{11}$	80	....	5.00		

TABLE 7e-5. THE SPECTRUM OF XENON I (*Continued*)

Wavelength	Classification		I_0	log I_1	log I_2	log I_3	log I_4
7,336.480	$6p_{22}$	$5d'_{23}$	50	4.57	5.02	3.97	3.56
7,355.58	$5d_{00}$	$5f_{11}$	40	3.80	5.63	3.79	3.26
7,386.002	$6p_{01}$	$8s_{12}$	100	4.26	5.16	4.27	3.85
7,393.793	$6p_{12}$	$7d_{23}$	150	4.49	5.30	4.46	3.96
7,400.41	$6p_{12}$	$7d_{12}$	30	4.05	4.80	3.89	3.46
7,451.00	$5d_{01}$	$5f_{22}$	25	3.69	4.46	....	3.05
7,472.01	$5d_{01}$	$5f_{12}$	40	4.37	4.94	4.19	3.65
7,474.01	$5d_{01}$	$5f_{11}$	25				
7,492.23	$6p_{23}$	$5d'_{23}$	20	4.18	4.65	3.64	3.27
7,559.79	$5d_{34}$	$5f_{33}$	40	3.76	4.72	3.88	3.35
7,584.680	$5d_{34}$	$5f_{45}$	200	4.59	5.42	4.86	4.28
7,642.025	$6s'_{00}$	$6p'_{01}$	500}	4.98	5.92	5.36	4.88
7,643.91	$5d_{12}$	$5f_{33}$	100}				
7,664.56	$5d_{12}$	$5f_{12}$	30	4.26	4.83	4.00	3.47
7,740.31	$6p_{12}$	$7d_{01}$	40	3.87	4.59	3.67	3.17
7,783.66	$5d_{22}$	$6f_{33}$	50	3.90	4.55	3.84	3.17
7,802.651	$6p_{22}$	$8s_{11}$	100	4.31	5.19	4.33	3.89
7,881.320	$6p_{22}$	$8s_{12}$	100		4.73		3.45
7,887.395	$6s'_{01}$	$6p'_{00}$	300	5.20	5.66	4.90	4.45
7,937.41	$6p_{00}$	$7d_{11}$	40	3.75	4.42	3.50	3.05
7,967.341	$6s'_{00}$	$7p_{11}$	500	4.82	5.45	4.97	4.53
8,029.67	$5d_{33}$	$5f_{33}$	100	3.95	4.85	3.79	3.46
8,057.258	$5d_{33}$	$5f_{44}$	200	4.55	5.33	4.67	4.10
8,061.340	$6p_{23}$	$8s_{12}$	150	4.53	5.38	4.55	4.12
8,101.98	$5d_{23}$	$6f_{33}$	100	3.92	4.71	3.93	3.25
8,171.02	$5d_{01}$	$8p_{22}$	100	4.52	4.97	4.01	3.55
8,206.341	$6s'_{00}$	$6p'_{11}$	700	4.85	6.01	5.20	4.85
8,231.6348	$6s_{12}$	$6p_{12}$	10,000	5.66	7.16	6.87	6.37
8,266.519	$6s'_{01}$	$6p'_{01}$	500	4.75	5.93	5.20	4.72
8,280.1163	$6s_{11}$	$6p_{00}$	7,000	5.99	6.73	6.71	6.21
8,346.823	$6s'_{01}$	$6p'_{12}$	2,000	5.50	6.36	5.82	5.29
8,409.190	$6s_{12}$	$6p_{11}$	2,000	4.96	6.60	6.01	5.63
8,522.55	$6s'_{00}$	$7p_{00}$	30	3.69	4.72	3.69	3.28
8,530.10	$6p_{12}$	$8s_{11}$	30	3.79	4.74	3.83	3.39
8,576.01	$6s'_{01}$	$7p_{00}$	200	4.38	5.26	4.42	3.98
8,624.24	$6p_{12}$	$8s_{12}$	80	4.07	5.00	4.10	3.65
8,648.54	$6s'_{01}$	$7p_{11}$	250	4.65	5.56	4.77	4.32
8,692.20	$6s'_{01}$	$7p_{12}$	100}	4.47	5.13	4.31	3.87
8,696.86	$5d_{22}$	$5f_{33}$	200}		5.19	4.46	3.86
8,709.64	$5d_{22}$	$5f_{22}$	40	3.93	....	3.84	

TABLE 7e-5. THE SPECTRUM OF XENON I (*Continued*)

Wavelength	Classification		I_0	log I_1	log I_2	log I_3	log I_4
8,739.39	$6p_{01}$	$6d_{12}$	300	4.99	6.03	5.22	4.80
8,758.20	$6p_{22}$	$6d_{23}$	100	4.13	5.35	4.8	4.01
8,819.412	$6s_{12}$	$6p_{23}$	5,000	5.75	....	7.02	6.51
8,862.32	$6p_{01}$	$6d_{01}$	300	5.10	6.17	5.44	4.99
8,908.73	$6p_{01}$	$6d_{00}$	200	4.76	5.94	5.12	4.71
8,930.83	$6s'_{01}$	$6p'_{11}$	200	4.93	6.02	5.25	4.74
8,952.254	$6s_{11}$	$6p_{12}$	1,000	5.92	6.76	6.72	6.23
8,981.05	$6p_{23}$	$6d_{33}$	100	4.34	5.61	4.61	4.23
8,987.57	$6p_{22}$	$6d_{22}$	200	4.73	5.82	5.00	4.55
9,025.98	$6p_{11}$	$6d_{11}$	30	4.58	5.25	4.38	3.87
9,032.18	$5d_{00}$	$4f_{11}$	50	4.49	5.36	4.69	4.14
9,045.446	$6s_{12}$	$6p_{22}$	400	5.60	6.00	5.73	5.28
9,096.13	$5d_{23}$	$5f_{33}$	50	4.39	5.32	4.53	3.98
9,152.12	$5d_{01}$	$4f_{22}$	20	4.16	5.30		
9,162.654	$6s_{11}$	$6p_{11}$	500	5.97	6.93	6.94	6.39
9,167.52	$6p_{22}$	$6d_{33}$	100	....	6.22		
9,203.20	$5d_{01}$	$4f_{12}$	30	4.60	5.67	4.88	4.36
9,211.38	$5d_{01}$	$4f_{11}$	25	4.21	5.40	4.73	4.06
9,301.95	$5d_{34}$	$4f_{33}$	30	....	5.46	4.73	4.20
9,306.64	$6s'_{01}$	$7p_{01}$	40	4.74	5.59	4.75	4.33
9,374.76	$5d_{34}$	$4f_{45}$	100	4.86	5.66	5.61	5.08
9,412.01	$6p_{23}$	$6d_{33}$	60	4.66	5.10	5.05	4.56
9,445.34	$5d_{12}$	$4f_{23}$	80	4.81	5.86	5.31	4.77
9,497.07	$5d_{12}$	$4f_{12}$	40	4.40	5.50	4.71	4.19
9,513.379	$6p_{23}$	$6d_{34}$	200	5.48	6.30	5.91	5.41
9,585.14	$6p_{22}$	$6d_{01}$	20	3.95	....	4.27	3.77
9,685.32	$6p_{12}$	$6d_{23}$	150	5.04	6.04	5.40	4.88
9,700.99	$6p_{23}$	$6d_{12}$	20	4.14	6.00	4.31	3.82
9,718.16	$6p_{11}$	$6d_{22}$	100	5.04	6.95	5.31	4.80
9,799.699	$6s_{12}$	$6p_{01}$	2,000	5.79	6.78	7.00	6.49
9,923.192	$6s_{11}$	$6p_{22}$	3,000	6.19	....	7.03	6.51
10,023.72	$5d_{12}$	$4f_{33}$	50	4.49	....	4.85	4.39
10,107.34	$5d_{12}$	$4f_{44}$	80				
10,838.34	$6s_{11}$	$6p_{01}$	1,000				
11,742.26	$5d_{23}$	$4f_{34}$	90				
12,623.32	$6p_{01}$	$7s_{12}$	300				
13,656.48	$6p_{22}$	$7s_{11}$	150				
14,142.09	$6p_{23}$	$7s_{12}$	80				
14,732.38	$6p_{23}$	$7s_{12}$	200				
15,418.01	$6p_{11}$	$7s_{11}$	110				

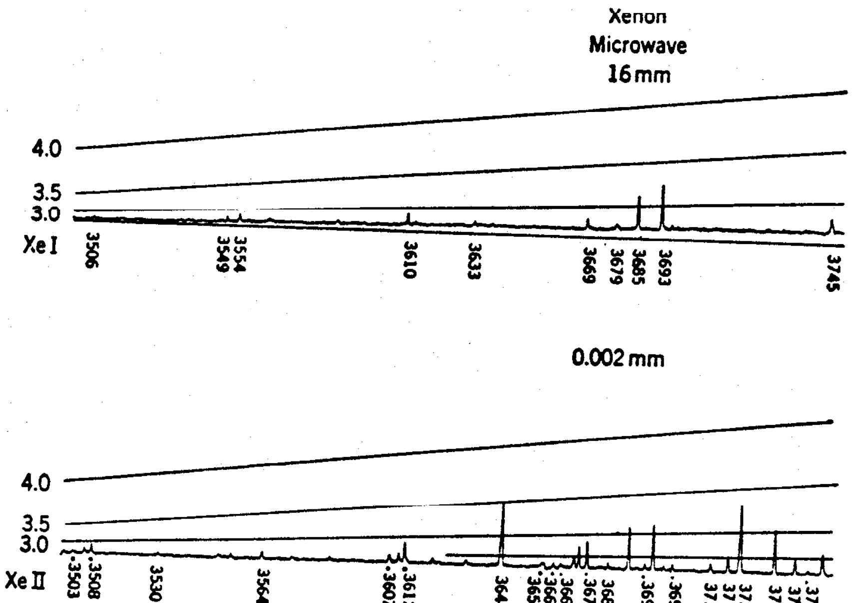


FIG. 7e-4. Photoelectric traces of the xenon spectrum, microwave discharges at 16 mm (upper traces) and 0.002 mm (lower traces). Wavelength range is 3,500 to 10,000 Å. The 16-mm trace shows the Xe I spectrum with the lines broadened. The strongest lines in the 0.002-mm trace are those for Xe II.

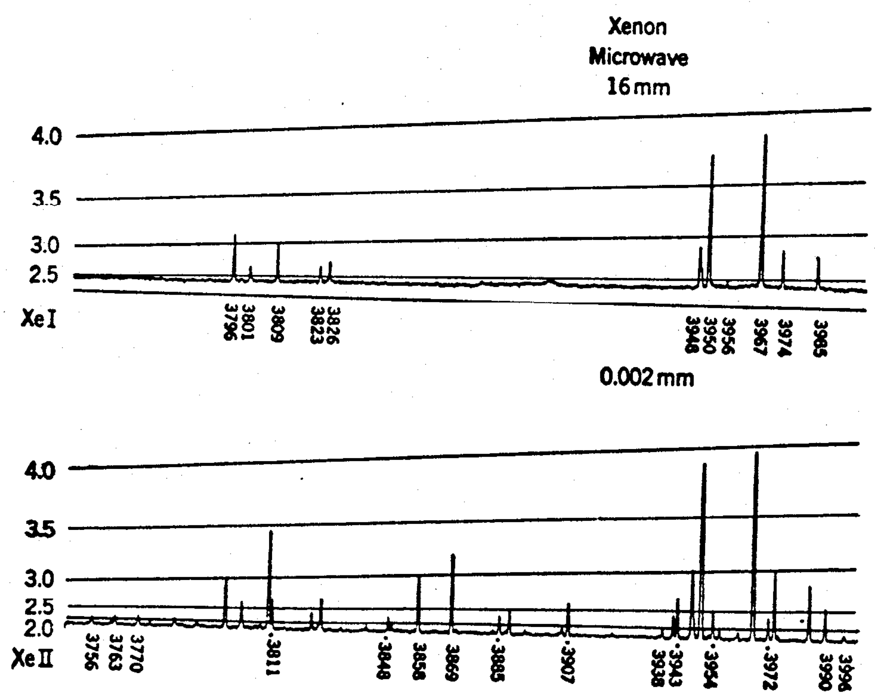


FIG. 7e-4 (*Continued*)

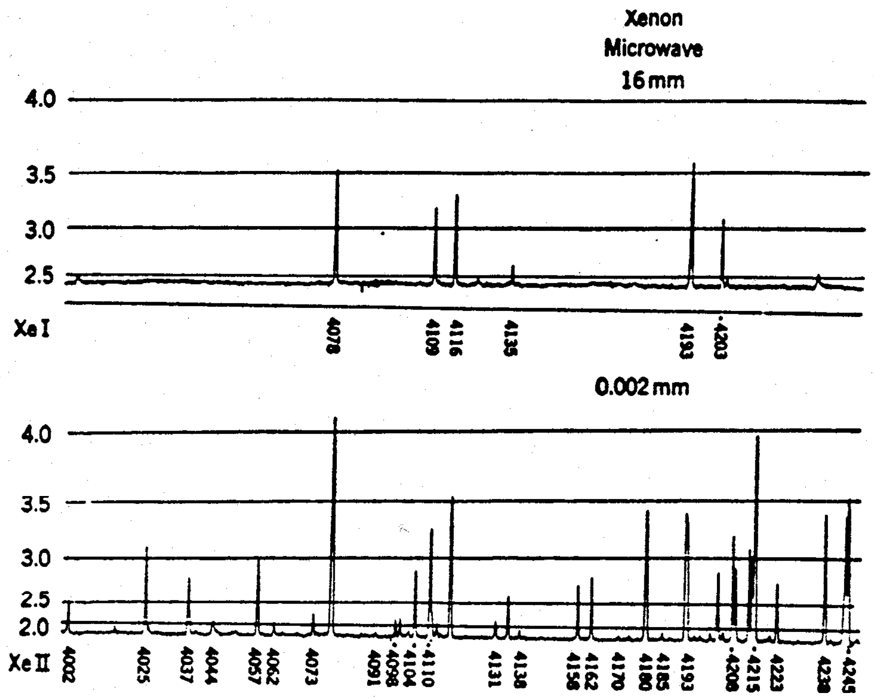


FIG. 7e-4 (*Continued*)

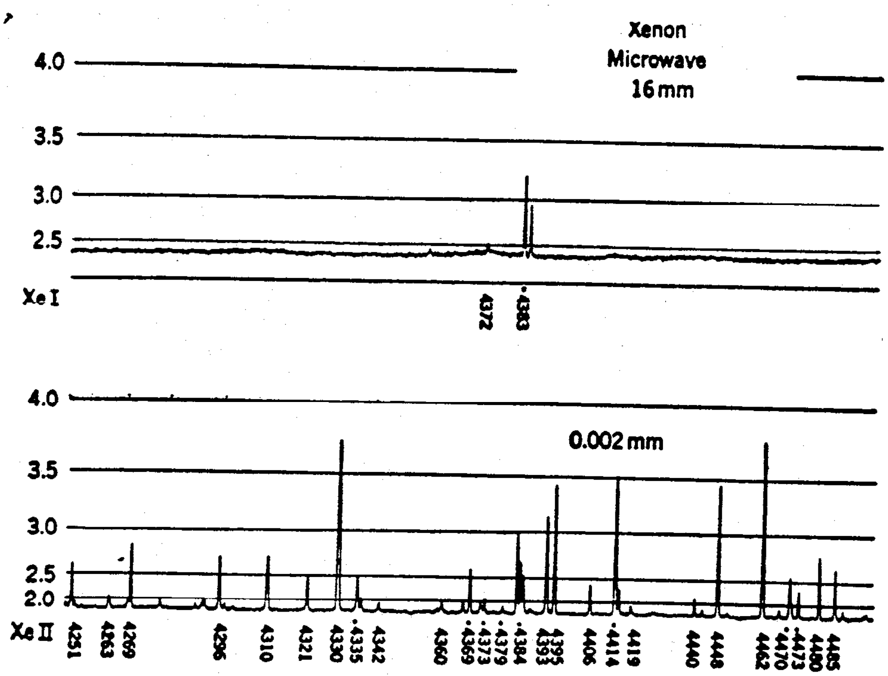


FIG. 7e-4 (*Continued*)

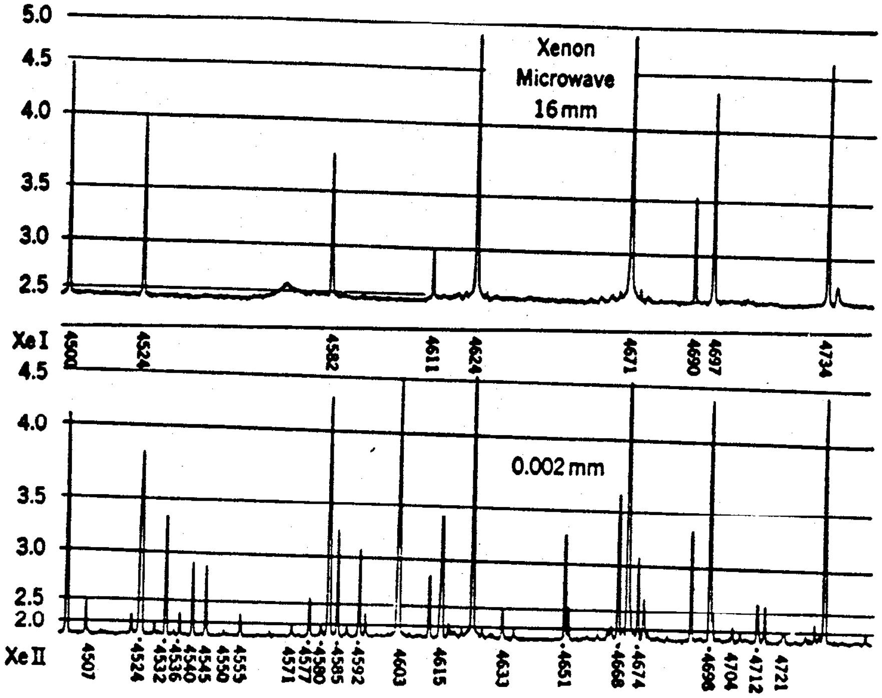


FIG. 7e-4 (*Continued*)

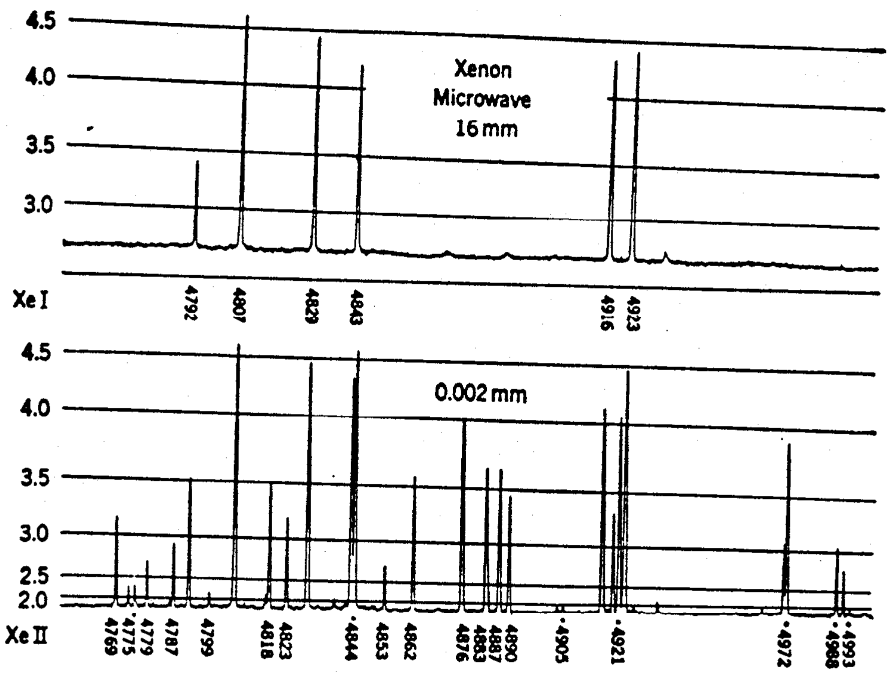


FIG. 7e-4 (*Continued*)

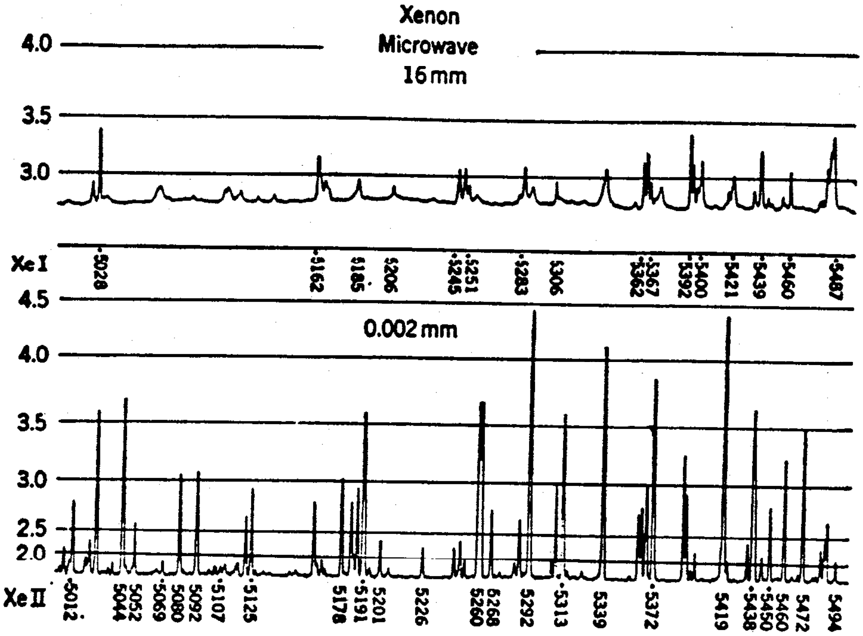


FIG. 7e-4 (*Continued*)

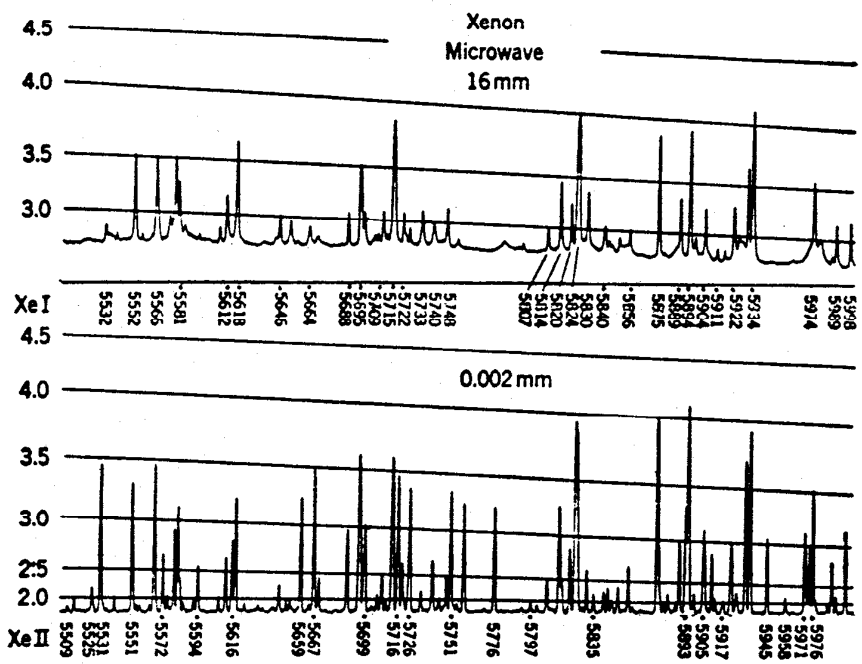


FIG. 7e-4 (*Continued*)

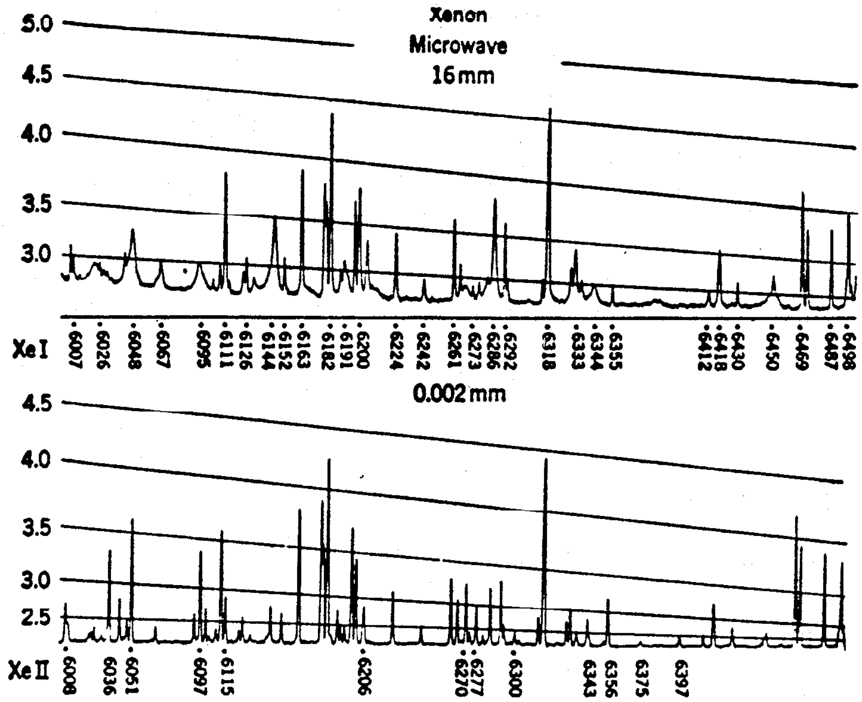


FIG. 7e-4 (*Continued*)

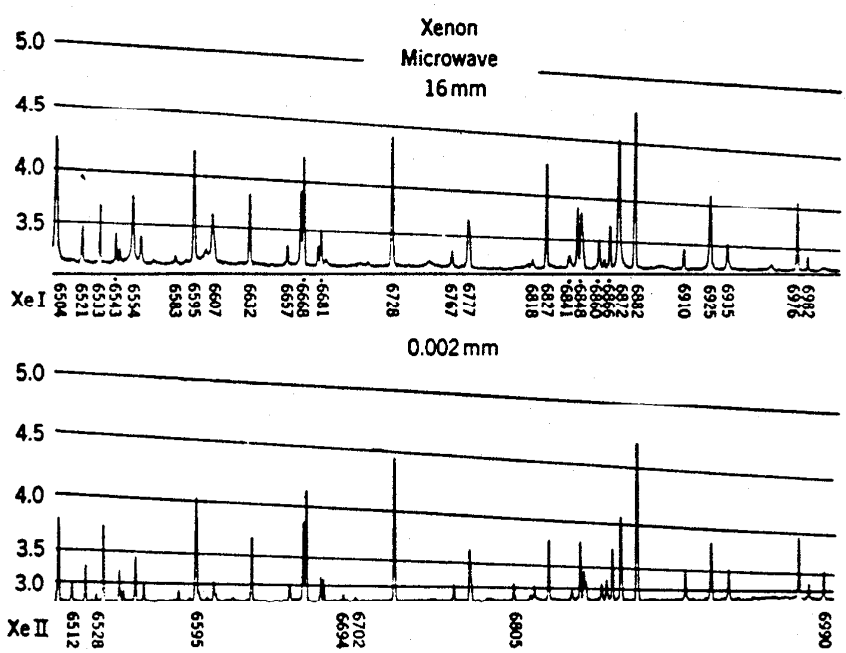


FIG. 7e-4 (*Continued*)

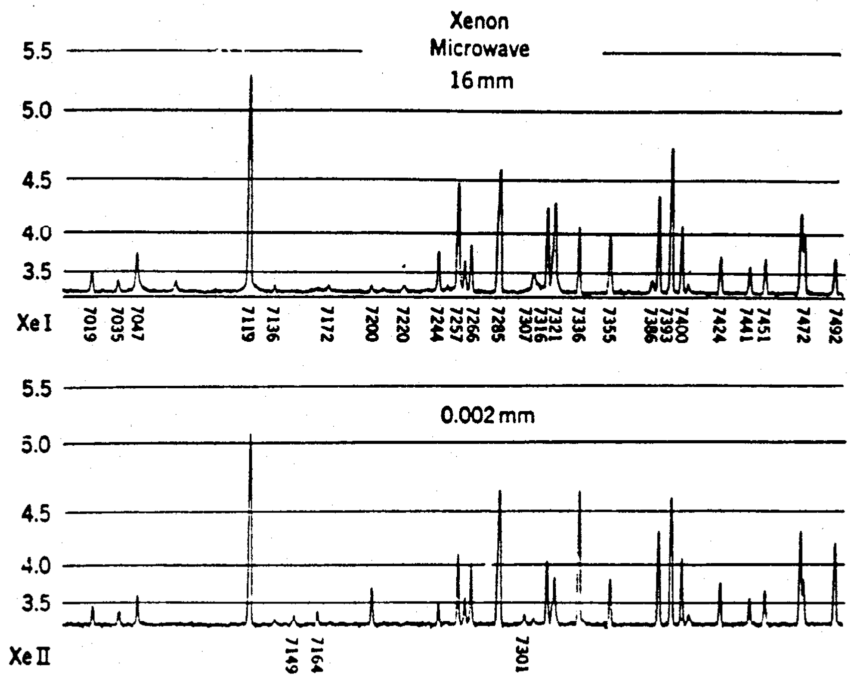


FIG. 7e-4 (*Continued*)

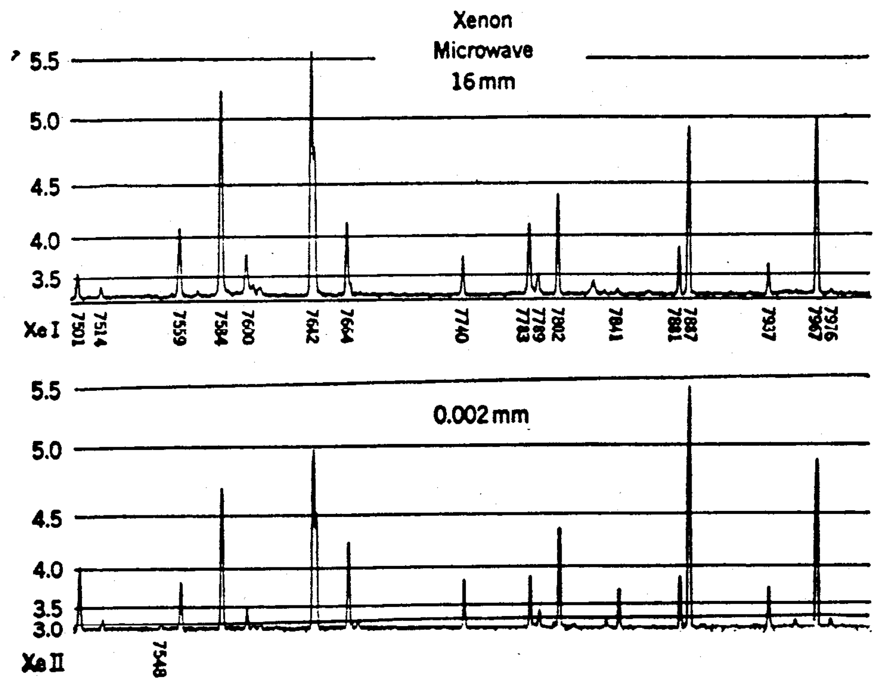


FIG. 7e-4 (*Continued*)

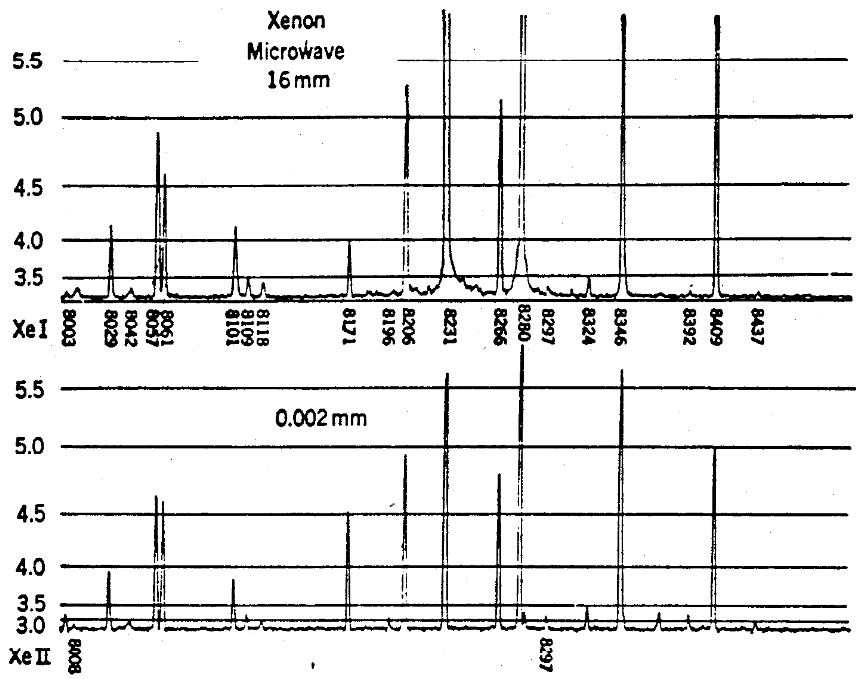


FIG. 7e-4 (*Continued*)

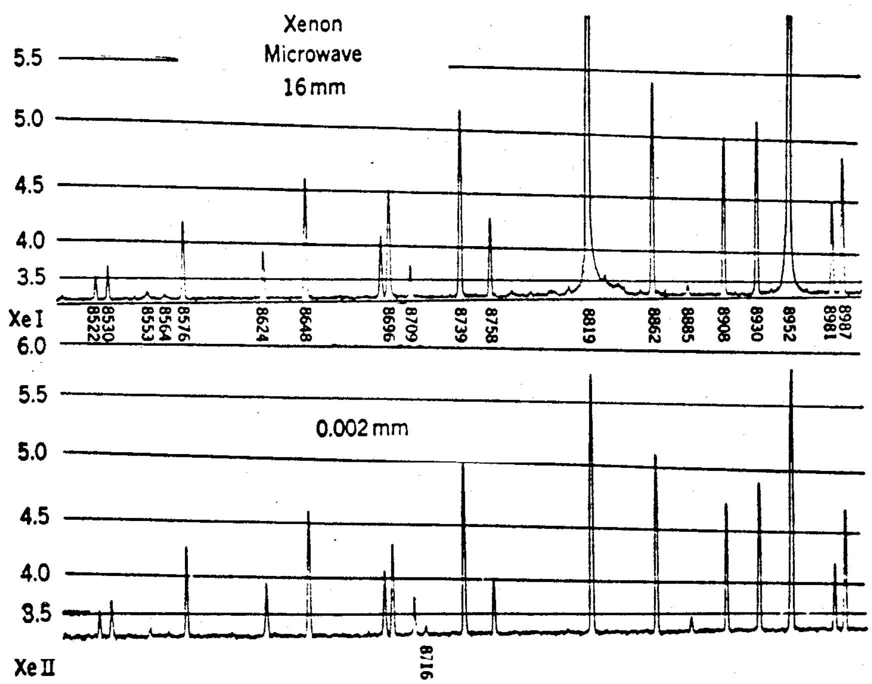


FIG. 7e-4 (*Continued*)

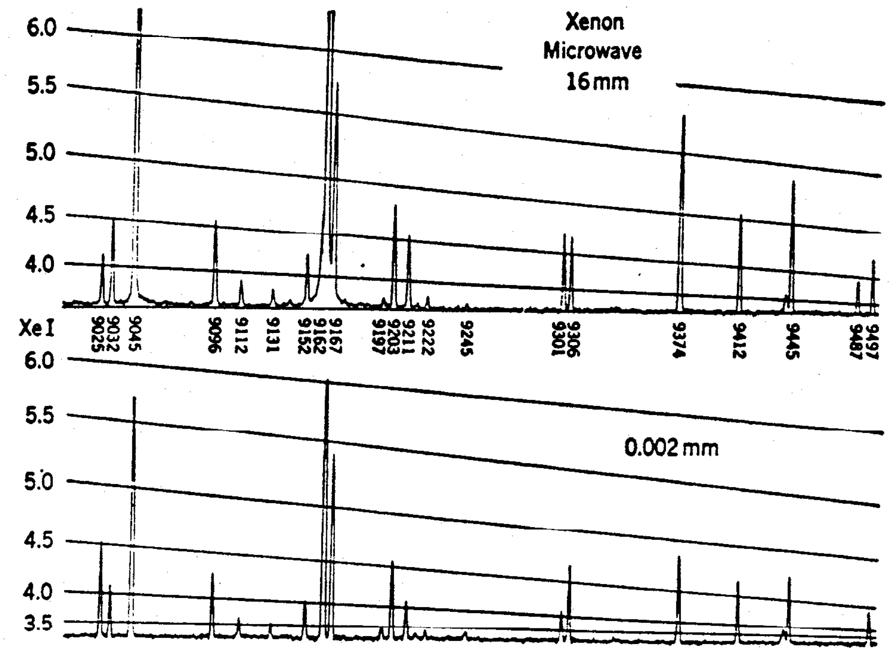


FIG. 7e-4 (*Continued*)

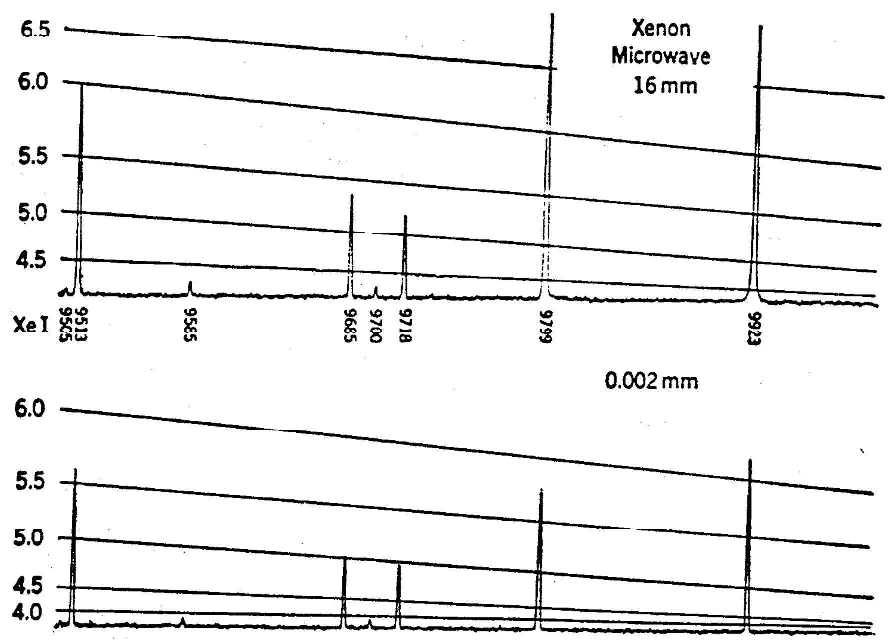


FIG. 7e-4 (*Continued*)

Iron I. The lines of the iron spectrum are extensively used as wavelength standards and may be used equally well as intensity standards. The traditional iron arc in air no longer satisfies the demands on accuracy and convenience because the lines are relatively broad, the wavelengths are not constant, and the arc cannot be made to burn steadily. A hollow-cathode discharge[1] with iron electrodes and neon at about 3 mm pressure is much superior. Microwave discharges[2] with volatile iron salts in a rare gas also give very sharp lines but are less suitable for providing intensity standards.

[1] Crosswhite, Dieke, and Legagneur, *J. Opt. Soc. Am.* **45**, 270 (1955).
[2] W. F. Meggers and F. O. Westfall, *J. Research Natl. Bur. Standards* **44**, 447 (1950)

Accurate wavelength measurements by several independent investigators are available for many iron lines. From measurements on the atmospheric arc Edlén has determined many well-defined energy levels and from these has computed a set of self-consistent wavelengths, which in 1955 were adopted as international secondary standards.[1] Many other lines are unsuitable as standards because their wavelengths are not constant. These ordinarily come from high-lying excited states.

No such difficulties are encountered with the hollow-cathode or other low-pressure discharges. At the present time, however, not enough measurements have been made to qualify any line as an international standard and there are some contradictory results. The values given in column λ_2 may be considered accurate in general to better than 0.001. As there is a systematic shift between the wavelengths of the low-pressure discharges and those of the arc in air, the arc wavelengths should not be used for the low-pressure discharge and vice versa. More and improved wavelengths for column λ_2 may be expected in the near future.

Explanation of Table 7e-6. COLUMN λ_1. The wavelengths of iron arc in air given to four decimal places are international standards.[1] The rest are taken from the compilation of Russell and Moore.[2]

COLUMN λ_2. Wavelengths of the hollow-cathode discharge: The four-decimal figures without letter designation are derived from the international standards of column λ_1 by applying observed pressure-shift corrections to the levels involved. The letters signify: L, Blackie and Littlefield,[3] measured with the reflecting echelon; H, J, at The Johns Hopkins University with the Fabry-Perot interferometer;[4,5] N, Stanley and Meggers;[6] W, Williams and Middleton[7] with the vacuum echelon. Values quoted to three decimal places are grating measurements made by interpolation between the above standards.[5]

CLASSIFICATION. Standard L, S coupling notation is used. E' is the energy of the upper state above the ground state in wave numbers. For more accurate values see Moore.[8]

INTENSITY COLUMNS. log I_2, quantitative intensities of a standard hollow-cathode discharge in neon at 3.5 mm pressure, current 90 ma.[5] Values with three decimals are photoelectric measurements; those with two decimals, photographic measurement with photoelectric calibration. Sensitivity calibration above 3,150 Å and standard tungsten ribbon-filament lamp calibrated by the National Bureau of Standards; between 2,700 and 3,150 Å, indirect calibration through self-absorption behavior; below 2,700, extrapolated. The scale in the log I_2 column is the same as for neon and argon (see Tables 7e-2 and 7e-3).

log I_3, iron arc in air, current 1 A, photographic measurements on arbitrary scale. Sensitivity correction as for I_2. r, self-reversal between 10 and 30 percent; R, same, larger than 30 percent.

log I_4, iron arc in air, current 2.2 A photoelectric measurement; otherwise same as I_3.

log νA_ν, absolute line emissive power in units of microergs per second per excited atom. Derived from measurements of Crosswhite,[5] King,[9] King and King,[10] and Carter.[11]

[1] *Trans. Intern. Astron. Union* **9**, 216 (1957).
[2] Russell and Moore, *Trans. Am. Phil. Soc.* **34**, 113 (1944).
[3] J. Blackie and T. A. Littlefield, *Proc. Roy. Soc.* (*London*), ser. A, **234**, 398 (1956).
[4] (H) R. W. Stanley and G. H. Dieke, *J. Opt. Soc. Am.* **45**, 280 (1955).
[5] (J) H. M. Crosswhite, *Johns Hopkins Spectroscopic Rept.* 13, 1958.
[6] R. W. Stanley and W. F. Meggers, *Natl. Bur. Standards J. Research* **58**, 41 (1957).
[7] W. E. Williams and A. Middleton, *Proc. Roy. Soc.* (*London*), ser. A, **172**, 159 (1939).
[8] C. E. Moore, Atomic Energy Levels, *Natl. Bur. Standards Circ.* 467, vol. 2, 1952.
[9] R. B. King, *Astrophys. J.* **95**, 78 (1942).
[10] R. B. King and A. S. King, *Astrophys. J.* **87**, 24 (1938).
[11] W. W. Carter, *Phys. Rev.* **76**, 962 (1949).

TABLE 7e-6. THE SPECTRUM OF IRON I

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
2,440.106	.109	a^3H_4	t^3H_4	60,758	4.2			
2,442.567	.568	a^3H_5	t^3H_5	60,549	4.0			
2,443.8728	.8718	a^5F_5	x^3G_5	47,835	4.36			
2,457.5980	.5975 L	a^5F_5	v^5F_5	47,606	5.09			
2,462.6483	.6474	u^5D_4	x^5F_4	40,594	5.08			
2,465.1500	.1490	a^5F_4	v^5F_4	47,930	4.85			
2,468.8803	.8793	a^5F_5	w^5G_5	47,420	4.86			
2,472.343	.345	a^5F_4	x_3G_4	47,812	4.87			
		a^5F_5	w^5G_6	47,363				
2,472.8962	.8953	a^5D_3	x^5F_3	40,842	5.13			
2,473.156	.155	a^5D_4	y^7P_4	40,422	5.00			
2,474.8151	.8141	a^5F_3	v^5F_3	48,123	4.69			
2,479.7774	.7765	a^5D_2	x^5F_2	41,018	5.07			
2,483.2718	.2709	a^5D_4	x^5F_5	40,257	5.75			
2,483.531	.533	a^5F_2	v^5F_2	48,239	4.54			
2,484.186	.185	a^5D_1	x^5F_1	41,131	4.97			
2,486.372	.367	a^5D_4	y^7P_3	40,207	4.90			
2,488.1437	.1428	a^5D_3	x^5F_4	40,594	5.59			
2,489.751	.750	a^5D_0	x^5F_1	41,131	4.98			
2,490.6454	.6445	a^5D_2	x^5F_3	40,842	5.45			
2,491.1562	.1553	a^5D_1	x^5F_2	41,018	5.20			
2,496.5343	.5332	a^5F_4	w^5G^5	47,420	4.78			
2,501.1332	.1326 L	a^5D_4	x^5D_3	39,970	5.03			
2,507.899	.902	a^5F_3	w^5G_4	47,590	4.73			
2,510.8362	.8353	a^5D_3	x^5D_2	40,231	5.04			
2,512.361	.367	a^5D_3	y^7P_3	40,207	4.63			
2,517.658	.661	a^5F_2	w^5G_3	47,693	4.58			
2,518.1029	.1020	a^5D_2	x^5D_1	40,405	4.92			
2,522.8505	.8496	a^5D_4	x^5D_4	39,626	5.54			
2,524.2939	.2928	a^5D_1	x^5D_0	40,491	4.65			
2,527.4358	.4346	a^5D_3	x^5D_3	39,970	5.30			
2,529.1361	.1351	a^5D_2	x^5D_2	40,231	4.86			
2,535.6086	.6076	a^5D_0	x^5D_1	40,405	4.60			
2,540.9734	.9719 L	a^5D_1	x^5D_2	40,231	4.85			
2,542.101	.100	b^3F_2	r^3G_3	60,365	4.46			
2,543.920	.921	b^3F_3	r^3G_4	60,172	4.40			
2,545.9795	.9789 L	a^5D_2	x^5D_3	39,970	4.92			
2,549.6142	.6140 L	a^5D_3	x^5D_4	39,626	4.87			
2,576.6916	.6907 L	a^5F_5	x^5G_5	45,726	4.50			
2,584.5370	.5364 L	a^5F_5	x^5G_6	45,608	5.17			
2,599.565	....	a^5F_4	x^5G_4	45,833	4.50			
2,605.6578	.6566	a^5F_5	y^3G_5	45,295	3.86			
2,606.8280	.8270 L	a^5F_4	x^5G_5	45,726	4.56			
2,618.0191	.0179	a^5F_3	x^5G_3	45,914	4.3			
2,623.532	.533	a^5F_3	x^5G_4	45,833	4.65			
2,635.8100	.8096 L	a^5F_2	x^5G_3	45,914	4.48			
2,643.9992	.9980	a^5F_1	x^5G_2	45,965	4.32			
2,666.8133	.8122	a^5F_5	v^5D_4	44,415	4.45			
2,679.0626	.0622 L	a^5F_5	w^5F_5	44,244	4.79			
2,689.2130	.2131 L	a^5F_4	v^5D_3	44,551	4.63			
2,699.1075	.1063	a^5F_4	v^5D_4	44,415	4.20			

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
2,706.5829	.5829 *L*	a^5F_3	v^5D_2	44,664	4.59	.....	.....	4.59
2,711.6560	.6555 *L*	a^5F_4	w^5F_5	44,244	4.29			
2,719.027	.020	a^5D_4	y^5P_3	36,767	5.44			
		(b^3F_3)	(t^3F_3)	(57,641)				
2,720.9035	.9024	a^5D_3	y^5P_2	37,158	5.08			
2,723.5780	.5770 *L*	a^5D_2	y^5P_1	37,410	4.61			
2,733.5816	.5810 *L*	a^5F_5	w^5D_4	43,500	4.96			
2,735.4762	.4750	a^5F_4	w^5D_3	43,923	4.71	4.70*R*	.....	3.56
2,737.3108	.3099 *L*	a^5D_1	y^5P_1	37,410	4.74	4.70*R*	.....	2.88
2,742.2554	.2542	a^5F_3	w^5D_2	44,184	4.4	4.50*R*	.....	3.28
2,742.4064	.4060 *L*	a^5D_2	y^5P_2	37,158	5.02	4.64*R*	.....	2.97
2,744.0691	.0680	a^5D_0	y^5P_1	37,410	4.33	4.66*R*	.....	2.65
2,750.1415	.1404	a^5D_3	y^5P_3	36,767	5.02	4.66*R*	.....	3.04
2,756.3295	.3284	a^5D_1	y^5P_2	37,158	4.36	.....	.....	2.3
2,761.7810	.7798	a^5F_2	w^5D_2	44,184	4.14	4.32*R*	.....	3.03
2,762.0275	.0263	a^5F_3	w^5D_3	43,923	4.09	4.40*R*	.....	3.06
2,767.5232	.5220	a^5F_4	w^5D_4	43,500	4.39	4.44*R*	.....	3.00
2,772.0748	.0736	a^5F_5	z^5H_6	42,992	4.47	4.64*R*	.....	2.38
2,778.2214	.2205 *L*	a^5F_5	y^5G_5	42,912	4.70	4.49*R*	.....	2.98
2,788.106	.104	a^5F_5	y^5G_6	42,784	5.60	4.65*R*	.....	3.89
2,797.7765	.7752	a^5F_4	z^5H_4	43,109	4.24	4.16*R*	.....	2.63
2,804.5212	.5207 *L*	a^5F_4	y^5G_4	43,023	4.65	4.48*R*	.....	2.99
2,806.9852	.9845 *L*	a^5F_4	z^5H_5	42,992	5.02	4.56*R*	.....	3.11
2,813.2877	.2867 *L*	a^5F_4	y^5G_5	42,912	5.37	4.62*R*	.....	3.53
2,823.2767	.2763 *L*	a^5F_3	y^5G_3	43,138	4.56	4.50*R*	.....	3.10
2,825.5569	.5559 *L*	a^5F_3	z^5H_4	43,109	4.81	4.52*R*	.....	3.17
2,828.8094	.8081	a^5F_2	z^5H_3	43,326	4.16	3.69	.....	2.15
2,832.4364	.4357 *L*	a^5F_3	y^5G_4	43,023	4.90	4.65*R*	.....	3.35
2,838.1205	.1187	a^5F_2	y^5G_2	43,210	4.36	4.33*r*	.....	2.85
2,843.6314	.6311	a^5F_4	x^5P_3	42,860	4.27	4.3*R*	.....	2.74
2,843.9775	.9762	a^5F_2	y^5G_3	43,138	4.96	4.61*R*	.....	3.36
2,851.7979	.7973 *L*	a^5F_1	y^5G_2	43,210	4.80	4.60*R*	.....	3.25
2,863.8644	.8634	a^5D_2	z^5G_3	35,612	3.23	4.10*r*	.....	1.48
2,869.3083	.3073	a^5D_3	z^5G_4	35,259	3.76	4.41*R*	.....	1.78
2,874.1733	.1723	a^5D_4	z^5G_5	34,782	3.92	4.48*R*	.....	1.84
2,912.1589	.1575	a^5D_4	y^5F_3	34,329	4.08	4.55*R*	.....	2.111
2,929.0085	.0073	a^5D_3	y^5F_2	34,547	4.20	4.50*R*	.....	2.215
2,936.9049	.9034	a^5D_4	y^5F_4	34,040	5.02	4.55*R*	.....	2.89
2,941.3438	.3423	a^5D_2	y^5F_1	34,692	3.82	4.55*R*	.....	2.009
2,947.8773	.8758	a^5D_3	y^5F_3	34,329	4.95	4.54*R*	.....	2.89
2,953.9411	.9400 *N*	a^5D_2	y^5F_2	34,547	4.75	4.52*R*	.....	2.766
2,957.3660	.3646 *N*	a^5D_1	y^5F_1	34,692	4.45	4.55*R*	.....	2.519
2,965.2561	.2545 *N*	a^5D_0	y^5F_1	34,692	4.01	4.54*R*	.....	2.27
		(a^3G_5)	(v^3H_5)	(55,430)				
2,966.8997	.8982	a^5D_4	y^5F_5	33,695	5.48	4.47*R*	.....	3.269
2,970.106	.110	a^5D_2	z^3P_1	34,363	4.80	4.52*R*	.....	1.40
		a^5D_1	y^5F_2	34,547				
2,973.1336	.1324	a^5D_2	y^5F_3	34,329	5.13	4.5*R*	....	3.067
2,973.2368	.2356	a^5D_3	y^5F_4	34,040	4.7	4.5*R*	.....	2.713
2,981.4459	.4450 *N*	a^5D_3	z^3P_2	33,947	4.83	4.52*R*	.....	2.41
2,983.5714	.5699 *N*	a^5D_4	y^5D_3	33,507	5.11	4.55*R*	.....	3.040
2,986.4569	.4558	a^5D_1	z^3P_1	34,362	3.26	3.57	....	0.59
2,987.2923	.2904 *N*	a^5F_4	x^5F_3	40,842	3.52	4.44*r*	...	2.60

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
2,994.4281	.4274 N	a^5D_3	y^5D_2	33,082	5.1	4.56R	.....	3.065
2,994.5033	.5022	a^5D_0	z^3P_1	34,363	4.4			
2,999.5125	.5118 N	a^5F_5	x^5F_5	40,527	4.73	4.63R	.....	3.29
3,000.4527	.4513	a^3F_4	y^3G_5	45,295	4.11	3.98	.....	2.86
3,000.9489	.9481 N	a^5D_2	y^5D_1	34,017	4.94	4.53R	.....	3.068
3,003.0323	.0304 N	a^5F_3	x^5F_2	41,018	3.31	4.39r	.....	2.66
3,007.2832	.2824 N	a^5D_2	z^3P_2	33,947	4.36	4.5R	.....	2.01
3,008.1399	.1390 N	a^5D_1	y^5D_0	34,122	4.62	4.49R	.....	2.827
3,009.5707	.5693 N	a^5F_4	x^5F_4	40,594	4.27	4.61R	.....	3.09
3,016.186	.185	a^5F_2	x^5F_1	41,131	3.19	4.20r	.....	2.48
3,017.6288	.6271 N	a^5D_1	y^5D_1	34,017	3.80	4.51R	.....	2.119
3,018.9848	.9827 N	a^5F_3	x^5F_3	40,842	3.72	4.48R	.....	2.94
3,020.4918	.4909 N	a^5D_2	y^5D_2	33,802	4.7	4.5R	.....	2.796
3,020.6405	.6392	a^5D_4	y^5D_4	33,096	5.64	4.4R	.....	3.473
3,021.0743	.0727 N	a^5D_3	y^5D_3	33,507	5.24	4.46R	.....	3.241
3,024.0337	.0328 N	a^5D_1	z^3P_2	33,947	4.59	4.54R	.....	2.27
3,025.638	.636	a^3H_6	w^3H_6	52,431	4.17	4.12r	.....	4.15
3,025.8442	.8423 N	a^5D_0	y^5D_1	34,017	4.69	4.54R	.....	2.780
3,026.4637	.4612 N	a^5F_2	x^5F_2	41,018	3.48	4.43R	.....	2.76
3,030.1494	.1477	a^3H_5	w^3H_5	52,613	3.92	4.04	.....	4.00
3,031.213	.213	a^3H_4	w^3H_4	52,769	3.81	3.96	.....	3.93
3,031.638	.636	a^5F_1	x^5F_1	41,131	3.36	4.39R	.....	2.71
3,037.3901	.3885 N	a^5D_1	y^5D_2	33,802	4.89	4.56R	.....	2.986
3,040.4281	.4272 N	a^5F_4	x^5F_5	40,257	3.74	4.34r	.....	2.57
3,041.6386	.6370	a^3F_3	y^3G_4	45,428	3.9	3.8		
3,041.7401	.7381 N	a^5F_3	x^5F_4	40,594	3.9	4.3r	.....	2.6
3,042.0215	.0198	a^5F_1	x^5F_2	41,018	3.12	4.16r	.....	2.45
3,042.6667	.6643 N	a^5F_2	x^5F_3	40,842	3.39	4.36r	.....	2.63
3,047.6060	.6039 N	a^5D_2	y^5D_3	33,507	5.02	4.56R	.....	3.044
3,057.4471	.4457 N	a^5F_5	x^5D_4	39,626	4.82	4.7R	.....	3.4
3,059.0871	.0859 N	a^5D_3	y^5D_4	33,096	5.06	4.5R	.....	2.901
3,067.2457	.2437 N	a^5F_4	x^5D_3	39,970	4.66	4.7R	.....	3.2
3,075.7214	.7193 N	a^5F_3	x^5D_2	40,231	4.09	4.7R	.....	3.2
3,083.7430	.7409 N	a^5F_2	x^5D_1	40,405	3.78	4.6R	.....	3.0
3,091.5786	.5768	a^5F_1	x^5D_0	40,491	3.41	4.5r	.....	2.69
3,099.8968	.8950	a^5F_1	x^5D_1	40,405	4.1	4.5R	.....	2.8
3,099.9695	.9678 N	a^5F_4	x^5D_4	39,626	4.1	4.6R	.....	2.9
3,100.3054	3032 N	a^5F_2	x^5D_2	40,231	3.80	4.5R	.....	2.9
3,100.6667	.6649 N	a^5F_3	x^5D_3	39,970	4.01	4.6R	.....	3.0
3,116.6337	.6319	a^5F_1	x^5D_2	40,231	2.86	3.99	.....	2.22
3,125.653	.651	a^5F_2	x^5D_3	39,970	3.49	4.18	.....	2.30
3,134.1115	.1099 N	a^5F_3	x^5D_4	39,626	3.05	3.97	.....	2.04
3,142.453	.454	z^7D_3	e^7S_3	51,570	2.84	3.25	.....	2.98
3,142.8908	.8890	a^3P_2	w^3P_2	50,187	2.90	3.23	.....	2.86
3,143.2434	.2426	a^5D_4	z^3F_3	31,805	2.88	3.05	.....	−0.09
3,143.990	.989	z^5D_4	i^5D_4	57,698	3.14	3.19	.....	3.68
3,151.353	.352	a^3G_4	y^1H_5	53,722	3.39	3.45	3.880	3.42
3,153.200	.200	z^7D_3	f^5F_4	51,462	3.03	3.44	3.76	3.14
3,157.040	.037	z^7D_4	e^7G_5	51,229	3.24	3.66	3.974	3.70
3,157.88	.886	z^7D_2	e^7S_3	51,570	3.06	3.48	3.830	3.24

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
3,160.658	.659	z^7D_4	e^7F_4	51,192	3.33	3.73	4.06	3.44
3,161.949	.947	z^7D_5	e^7G_6	50,968	3.08	3.56	3.766	3.16
3,165.860	.859	z^7D_3	e^7G_4	51,335	2.87	3.24	3.543	2.96
3,166.435	.436	b^3F_4	t^3D_3	52,213	3.08	3.44	3.772	3.35
3,175.447	.445	z^7D_5	e^7F_5	51.192	3.44	3.77	4.072	3.42
3,178.015	.014	z^7D_5	f^7D_4	50,808	3.29	3.65	3.948	
3,180.223	.223	z^7D_3	e^7F_4	51,192	3.81	4.07	4.37*r*	3.87
3,180.7562	.7556	a^5D_2	z^3F_2	32,134	3.79	3.73	3.81*R*	0.68
3,182.9798	.9781	a^5P_2	v^3D_3	49,135	3.07	3.30	3.521	2.63
3,184.8955	.8941	a^5D_3	z^3F_3	31,805	4.29	4.15*R*	3.97*R*	1.1
3,188.567	.570	z^7D_5	e^5G_5	50.704	3.06	3.31	3.81	2.95
3,188.819	.820	z^7D_1	e^5G_2	51,370	3.48	3.58	3.95	3.34
3,191.6599	.6594	a^5D_4	z^3D_3	31,323	4.42	4.21*R*	4.00*R*	1.13
3,192.799	.799	z^7D_1	e^7F_2	51,331	3.57	3.86	4.06	3.66
		(b^3G_4)	(v^3H_5)	(55,430)				
3,193.228	.2245	a^5D_4	z^3F_4	31,307	4.86	4.44*R*	4.66*R*	1.4
3,196.930	.926	z^7D_4	e^7F_5	50,833	4.41	4.4*r*	4.67*r*	4.0
3,196.977	.9868	a^5D_3	z^3D_2	31,686	.....	4.1*r*	.....	0.49
3,199.530	.500	z^7D_4	f^7D_4	50,808	4.03	4.08	3.53	
		(a^5D_1)	(z^3F_2)	32,134				
3,200.475	.470	z^7D_2	e^7F_3	51,149	3.97	4.09	4.407	
		z^7D_3	e^5S_2	51.149				
3,200.7854	.7849	a^5D_2	z^3D_1	31,937	3.10	3.22	.....	0.17
3,205.400	.3959 *N*	z^7D_1	e^7F_1	51,208	3.68	4.00	4.308	3.77
3,209.297	.295	z^5F_2	g^5G_3	58,710	3.76	3.48	3.887	
		z^7F_6	g^7D_5	53,801				
3,210.230	.228	z^7D_4	e^5G_5	50,704	3.56	3.64	4.05	3.24
3,210.830	.829	z^7D_2	f^7D_1	51,048	3.65	3.89	4.25	3.57
3,211.487	.486	z^7D_1	e^5S_2	51.149	3.0	3.34	.....	3.02
3,211.683	.678	z^5F_5	g^5G_5	58,002	3.81	3.56	4.11	4.12
3,211.989	.988	z^7D_5	e^7P_4	50,475	3.2	4.13	4.65*r*	3.68
3,214.044	.017	z^5F_4	g^5G_5	58.271	4.38	4.07	4.78*r*	
		z^7D_3	f^7D_3	50,862				
		(z^7D_3)	(e^7P_3)	(50,861)				
3,214.3964	.3950	a^5D_2	z^3F_3	31,805	4.39	4.07	.....	0.95
3,215.940	.938	z^7D_3	f^7D_2	50.999	3.84	4.00	4.346	3.72
3,217.380	.377	z^7D_3	f^5D_4	50,423	3.75	3.87	4.162	3.46
3,219.581	.582	z^7D_3	f^7D_4	50,808	3.93	4.12	4.41	3.81
3,219.806	.804	z^7D_4	e^7P_3	50,611	3.87	3.95	4.33	
		(a^5D_1)	(z^3D_1)	(31,937)				
3,222.069	.066	z^7D_5	f^7D_5	50,378	4.53	4.52*r*	4.79*R*	
3,225.789	.785	z^7D_5	e^7F_6	50,342	4.76	4.65*R*	4.89*R*	4.3
3,227.798	.795	z^7D_4	f^5D_3	50,534	4.04	4.11	4.48	3.78
3,229.1221	.1216	a^5D_0	z^3D_1	31,937	3.70	3.62	.....	0.54
3,230.210	.207	z^7D_3	e^7P_2	50,861	3.32	3.54	.....	3.16
3,230.963	.963	z^7D_3	f^5D_2	50,699	3.66	3.83	4.156	3.50
3,233.053	.051	b^3H_6	x^3I_7	57,028	3.87	3.52	4.060	4.28
3,233.967	.968	z^7D_4	e^7P_4	50,475	3.76	3.82	4.149	3.44
3,234.6138	.6133	a^5D_3	z^3D_3	31,323	4.09	3.91	3.75	0.75
3,236.2231	.2219 *N*	a^5D_3	z^3F_4	31,307	4.55	4.18	3.98*r*	1.08
3,239.436	.432	z^7D_4	f^5D_4	50,423	4.12	4.10	4.427	
3,244.190	.187	z^7D_4	f^7D_5	50,378	4.22	4.07	4.368	3.77

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA
3,246.0054	.0049	a^5D_1	z^3D_1	31,686	4.02	.....	3.72	0.48
3,246.962	.964	a^5P_2	z^3P_1	48,516	2.92	3.47	.....	3.80
3,248.206	.204	z^7D_2	f^7D_2	50,534	3.1	3.75	3.964	3.45
3,254.3628	.3608	b^3H_5	x^3I_6	57,070	3.80	3.56	3.99	4.23
3,257.5940	.5935 *N*	a^5P_1	v^5F_2	48,239	3.11	3.53	3.71	2.92
3,265.0473	.0468	a^5D_2	z^3D_2	31,323	4.03	3.83	3.69	0.69
3,265.6182	.6164	a^5P_3	v^5P_2	48,163	3.78	4.03	4.293	3.36
3,271.0014	.9996	a^5P_2	v^5P_1	48,290	3.74	4.05	4.279	3.46
3,280.2613	.2593	b^3H_4	x^3I_5	57,104	3.78	3.46	3.89	4.16
3,284.5888	.5870	a^5P_1	v^5P_2	48,163	2.81	3.40	3.552	2.81
3,286.7541	.7508 *W*	a^5P_3	v^5P_3	47,967	4.42	4.38	4.62*r*	3.76
3,292.022	.020	a^3D_3	u^3F_4	56,593	3.70	3.49	3.861	4.13
3,292.5910	.5892	a^5P_1	v^5P_1	48,290	3.41	3.76	4.008	3.19
3,298.1331	.1313	a^5P_1	v^5F_2	48,239	3.27	3.51	3.687	2.93
3,305.9719	.9700	a^5P_2	v^5P_3	47,967	4.09	4.25	4.44	3.65
3,306.356	.352	a^5P_1	v^5P_2	48,163	4.20	4.29	4.48	3.72
3,314.7420	.7399	a^3D_2	u^3F_3	56,783	3.67	3.41	3.80	4.03
3,323.7375	.7355	b^3P_2	v^3P_2	52,916	.....	3.41	3.723	3.71
3,328.8667	.8646	b^3H_5	u^3H_5	56,383	3.50	.....	3.666	4.11
3,337.6664	.6644	a^3G_5	u^3G_4	51,668	3.25	.....	3.433	3.25
3,340.5666	.5647	a^3P_2	x^3P_2	48,305	3.16	.....	3.395	2.79
3,341.906	.906	a^3G_5	6_5	51,630	3.22			
3,342.2163	.2144	a^3P_2	v^5P_1	48,290	2.86	.....	3.53	
3,342.298	.292	b^3P_1	8_1	52,858	3.31			
3,347.9271	.9252	a^3P_2	v^5F_2	48,239	3.06	.....	3.331	2.71
3,355.2287	.2266	b^3H_4	u^3H_4	56,423	3.43	.....	3.615	4.08
3,369.549	.549	a^3G_4	u^3G_4	51,668	3.82	3.74	3.964	
3,370.7852	.7832	a^3G_5	u^3G_5	51,374	4.07	3.99	4.196	4.00
3,378.676	.676	a^3G_5	v^3F_4	51,305	3.59	3.41	3.70	3.30
3,379.0206	.0187	a^5P_1	w^5D_2	47,136	3.38	3.48	3.74	2.76
3,380.1117	.1097	a^3G_3	u^3G_3	51,826	3.71	3.63	3.86	3.61
3,383.9808	.9789	a^5P_1	x^5F_2	47,093	3.82	3.81	3.99	3.08
3,389.748	.741	a^5P_1	1_2	47,420	3.05	.....	3.832	3.12
3,392.3058	.3038	a^5P_2	x^5F_1	47,197	3.72	3.72	.....	3.02
3,392.6540	.6520	a^5P_3	w^5D_3	47,107	4.14	4.20	4.32	3.49
3,394.5854	.5834	a^5P_2	u^5D_1	47,177	3.41	3.54	3.683	2.94
3,396.9774	.9757	a^5F_1	y^5P_2	37,158	2.74	3.62	3.47	1.46
3,399.3356	.3337	a^5P_2	w^5D_2	47,136	4.13	4.22	4.301	3.55
3,401.5200	.5180	a^5F_4	y^5P_3	42,967	3.15	3.92	3.79*r*	2.61
3,402.256	.255	b^3H_6	v^3H_6	55,490	3.67	3.51	3.770	4.15
3,404.3557	.3537	a^5P_3	x^5F_2	47,093	4.06	4.11	4.270	3.37
3,406.8021	.8001	a^5P_1	w^5D_1	47,272	3.75	3.86	3.95	3.16
3,407.4611	.4573 *W*	a^5P_3	x^5F_4	46,889	4.63	4.68	4.07*r*	3.94
3,413.1339	.1295 *W*	a^5P_2	w^5D_3	47,017	4.44	4.39	4.42*r*	3.67
3,417.8428	.8408	a^5P_1	u^5D_1	47,177	4.62?	4.19	4.241	3.51
3,418.507	.507	a^5P_1	u^5D_0	47,172	3.88	4.09	4.173	3.44
3,422.6583	.6563	a^5P_1	w^5D_2	47,136	3.84	3.96	4.12	3.25
3,424.2861	.2841	a^5P_3	u^5D_3	46,745	4.04	4.17	4.228	3.43
3,426.383	.381	a^5P_3	y^3P_2	46,727	3.59	3.94	4.14	
3,426.637	.030	a^5P_2	y^3P_1	46,902	3.73	3.85	.....	3.23

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
3,427.1213	.1193	a^5P_3	u^5D_4	46,721	4.57	4.63	4.61*r*	2.96
3,428.1948	.1928	a^5P_2	u^5D_2	46,889	3.98	4.06	4.127	3.36
3,440.6069	.6053	a^5D_4	z^5P_3	29,056	5.76	5.46*R*	4.6*R*	2.30
3,440.9899	.9888 *N*	a^5D_3	z^5P_2	29,469	5.39	5.22*R*	4.5*R*	1.91
3,443.8775	.8761 *N*	a^5D_2	z^5P_1	29,733	5.02	4.89*r*	4.32*R*	1.728
3,445.1508	.1493	a^5P_2	u^5D_3	46,745	4.28	4.32	4.34*r*	3.55
3,450.3304	.3284	a^5P_1	y^3P_1	46,902	3.75	3.93	3.922	3.18
3,451.9166	.9146	a^5P_1	u^5D_2	46,889	3.76	3.93	4.13	3.39
3,452.2760	.2746	a^5F_3	y^3F_4	36,686	3.69	4.14	4.13	2.04
3,465.8621	.8602 *N*	a^5D_1	z^5P_1	29,733	5.13	5.02*r*	4.36*R*	1.898
3,475.4511	.4497 *N*	a^5D_2	z^5P_2	29,469	5.32	5.13*R*	4.48*R*	2.031
3,476.7036	.7020 *N*	a^5D_0	z^5P_1	29,733	4.80	4.74*r*	4.32*R*	1.578
3,490.5749	.5740 *N*	a^5D_3	z^5P_3	29,056	5.38	5.06*R*	4.43*R*	1.971
3,497.110	....	a^5P_3	w^5P_3	40,137	3.58	3.99	4.152	3.30
3,497.8420	.8407 *N*	a^5D_1	z^5P_2	29,469	4.82	4.62*r*	4.30*R*	1.537
3,513.8196	.8177 *N*	a^5F_5	z^3G_5	35,379	4.55	4.48	4.48*R*	2.16
3,521.2630	.2610 *N*	a^5F_4	z^3G_4	35,768	4.45	4.52	4.51	2.30
3,526.0415	.0397 *N*	a^5D_2	z^5P_3	29,056	4.65 }	4.6	4.7*R*	0.83
3,526.1676	.1657	a^5F_3	z^5G_2	36,079	4.15 }			2.00
3,533.201	.196	z^7F_1	e^7G_2	51,540	3.96	3.98	4.20	4.07
3,536.556	.554	z^7F_2	e^7G_3	51,461	4.15	4.15	4.425	4.29
3,541.083	.083	z^7F_4	e^7G_5	51,229	4.34	4.29	4.56*r*	4.30
3,542.076	.076	z^7F_3	e^7G_4	51,335	4.29	4.24	4.52*r*	4.26
3,554.1196	.1181	a^5F_3	z^5G_3	35,856	3.16	3.85	4.04	1.85
3,554.922	.9245 *N*	z^7F_5	e^7G_6	50,968	4.29	4.53	4.79*r*	4.50
3,556.877	.877	z^7F_4	f^5F_5	51,103	4.22	4.10	4.326	4.14
3,558.5170	.5140	a^5F_2	z^5G_2	36,079	4.54	4.73	4.59*R*	2.55
3,565.3807	.3789 *N*	a^5F_3	z^3G_4	35,768	4.98	5.22	4.80*R*	2.99
3,570.0996	.0963 *H*	a^5F_4	z^3G_5	35,379	5.13	5.51*R* }	5.11*R*	3.14
3,570.243	.247	z^7F_6	e^7G_7	50,652	4.91	..... }		
3,571.995	.995	z^7F_5	e^7F_5	50,833	3.94	3.87	4.124	3.89
3,573.896	.886	b^3H_4	t^3G_3	54,600	3.81	3.79	4.00	4.28
3,581.195	.1925 *H*	a^5F_5	z^5G_6	34,844	5.56	5.73*R*	4.98*R*	3.7
3,582.201	.201	b^3H_5	12_5	54,014	4.05	.....	4.01	4.21
3,584.6627	.6605	a^3G_5	y^3H_5	49,604	4.14	4.09	4.32	3.94
3,585.3206	.3191	a^5F_3	z^5G_4	35,612	4.60	4.72	5.02	2.79
3,585.7068	.7053	a^5F_4	z^5G_5	35,257	4.35	4.47	4.74	2.47
3,586.114	.112	b^3H_6	t^3G_5	53,983	4.40	4.02	4.23	
3,586.9861	.9836 *N*	a^5F_2	z^5G_3	35,856	4.60	4.71	4.64*R*	2.46
3,589.1063	.1048	a^5F_5	z^5G_6	34,782	3.66	4.11	4.34	2.00
3,594.632	.631	z^7F_4	f^7D_4	50,808	3.91	3.91	4.068	3.84
3,603.2068	.2046	a^3G_5	v^3G_5	49,461	4.117	4.08	4.274	3.88
3,605.450	.454	a^3G_4	y^3H_4	49,727	4.386	4.22	4.56*r*	
		(z^7F_6)	(f^7D_5)	50,378				
3,606.6821	.6799	a^3G_5	y^3H_6	49,434	4.38	4.52	4.65*r*	
3,608.8609	.8591 *H*	a^5F_1	z^5G_2	35,856	5.239	5.27*r*	4.78*R*	3.02
3,610.159	.149	z^7F_6	e^7F_6	50,342	4.353	4.26	4.53*r*	
3,617.788	.784	c^3P_2	u^3D_3	51,969	4.137	4.01	4.26	4.19
3,618.7694	.7675 *H*	a^5F_2	z^5G_3	35,612	5.364	5.35*r*	4.83*R*	3.18
3,621.4640	.4618	a^3G_4	y^3H_5	49,604	4.33	4.30	4.48*r*	
3,622.001	.004	a^3G_3	v^3G_3	49,851	4.16	4.11	4.36	4.02

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
3,623.1878	.1856	a^3H_6	z^3H_6	46,982	4.141	3.88	4.013	3.28
3,631.4646	.4630 *H*	a^5F_3	z^5G_4	35,257	5.441	5.38	4.85*R*	3.01
3,634.326	.325	z^7P_4	e^5G_5	51,219	3.53	.....	3.83	3.66
3,638.2998	.2976	a^3G_3	y^3H_4	49,727	3.96	3.95	4.15	3.78
3,640.3918	.3896	a^3G_4	v^3G_5	40,461	4.253	4.21	4.390	4.00
3,645.822	.818	c^3P_0	u^3D_1	52,512	3.56	.....	3.83	3.83
3,647.8439	.8422	a^5F_4	z^5G_5	34,782	5.411	5.30*r*	4.80*R*	2.91
3,649.3045	.3025	a^5D_4	z^5F_3	27,395	3.58	4.00		
3,649.5090	.5067	a^3G_5	w^3F_4	49,109	4.397	4.23	3.44	3.99
3,650.031	.026	z^7P_3	e^7S_3	51,570	3.54	4.05 }	3.0	
3,650.2811	.2788	a^3H_5	z^3H_5	47,008	4.141	3.86 }		
3,651.4699	.4676	a^3G_3	v^3G_4	49,628	4.361	4.21	3.471	4.09
3,659.5188	.5165	a^3H_4	z^3H_4	47,107	3.899	3.78	3.843	3.12
3,669.5229	.5206	a^3G_4	w^3F_3	49,243	4.101	3.95	4.19	3.76
3,676.3135	.3112	b^3F_4	x^3G_5	47,835	3.934	3.72	3.844	3.22
3,677.6309	.6286	a^3G_3	w^3F_2	49,433	4.15	4.16	4.38	3.97
3,679.9152	.9129 *H*	a^5D_4	z^5F_4	27,167	5.071	4.88*r*	4.36*R*	1.449
3,682.226	....	a^1D_2	w^1D_2	55,754	4.175	3.97	4.260	4.69
3,683.0562	.0541 *N*	a^5D_3	z^5F_2	27,560	3.945	3.89	4.10*R*	0.496
3,684.1102	.1079	a^3G_4	v^3D_3	49,135	4.156	4.04	4.210	3.76
3,685.998	.995	z^7P_4	e^7F_5	50,833	4.01	4.00	4.22	3.99
3,687.4589	.4560 *H*	a^5F_5	y^5F_4	34,040	4.663	5.11*r*	4.63*R*	2.378
3,689.457	.457	z^7P_4	f^7D_4	50,808	3.876	3.97	4.196	
		b^3P_1	w^3P_1	50,043				
3,694.005	.005	z^7P_3	e^7S_3	51,570	4.11	4.16	4.333	4.21
3,695.054	.050	b^3F_3	v^3F_4	47,930	4.014	3.80	3.998	
3,697.426	.424	z^7P_3	e^5G_3	51,219	3.485	3.73	3.837	3.67
3,701.086	.085	z^7P_3	e^7F_4	51,192	4.10	4.11	4.330	4.16
3,703.556	.546	a^3G_3	w^3F_3	49,243	3.47	.....	3.93	
3,704.4635	.4612	a^3G_5	y^1G_4	48,703	3.971	4.12	4.00	3.50
3,705.5674	.5658 *H*	a^5D_3	z^5F_3	27,395	5.249	4.04*r*	5.45*R*	1.698
3,707.048	.041	z^7P_2	e^7F_2	51,149	3.79	3.83	4.040	3.85
3,707.8231	.8214	a^5D_2	z^5F_1	27,666	4.17 }	4.56	4.65*R*	
3,707.9216	.9200	a^5P_3	y^5S_2	44,512	4.42 }			
3,709.2484	.2458 *N*	a^5F_4	y^5F_3	34,329	4.758	5.00*r*	4.66*R*	2.540
3,716.442	.439	z^7P_4	e^7P_3	50,611	3.877	3.87	4.083	
3,719.9367	.9345 *H*	a^5D_4	z^5F_5	26,875	5.954	5.73*R*	4.76*R*	2.541
3,722.5642	.5629 *H*	a^5D_2	z^5F_2	27,560	5.10	5.06*r*	4.45*R*	1.747
3,724.3796	.3774	a^5P_2	z^3D_3	45,221	4.04	3.99	4.162	3.20
3,727.6211	.6187 *N*	a^5F_3	y^5F_3	34,547	4.69	4.97*r*	4.68*R*	2.543
3,730.3884	.3859	a^1G_4	u^3G_4	51,826	3.64	.....	3.804	3.70
3,732.399	.396	a^5P_2	y^5S_2	44,512	4.29	4.22	4.43*r*	
3,733.3191	.3168 *H*	a^5D_1	z^5F_1	27,666	5.00	4.96*r*	4.46*R*	1.624
3,734.8659	.8643 *N*	a^5F_5	y^5F_5	33,695	5.57	5.76*R*	5.03*R*	3.475
3,737.1333	.1317 *H*	a^5D_3	z^5F_4	27,167	5.89	5.57*R*	4.79*R*	2.408
3,738.3078	.3053	b^3H_5	z^1I_6	53,094	4.31	3.86	4.19	4.27
3,743.3640	.3614 *N*	a^5F_2	y^5F_1	34,692	4.53	4.77	4.75*R*	2.392
3,745.5623	.5602	a^5D_2	z^5F_3	27,395	5.66	5.38*R*	4.7*R*	2.25
3,745.9013	.8988 *N*	a^5D_0	z^5F_1	27,666	5.09	4.96*r*	.....	1.71
3,748.2639	.2618 *N*	a^5D_1	z^5F_2	27,560	5.41	5.19*R*	4.61*R*	1.990
3,749.4875	.4852 *N*	a^5F_4	y^5F_4	34,040	5.43	5.57*R*	4.98*R*	3.310

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
3,753.6134	.6111	a^5P_3	w^5D_2	44,184	3.75	3.92	4.134	3.04
3,758.2350	.2326 *H*	a^5F_3	y^5F_3	34,329	5.25	5.35*r*	4.90*R*	3.139
3,760.052	.0491 *H*	a^3H_6	z^3I_7	45,978	4.51	3.88	4.130	3.27
3,763.7910	.7887 *H*	a^5F_2	y^5F_2	34,547	5.01	5.17*r*	4.81*R*	2.926
3,765.5414	.5385 *H*	b^3H_6	y^3I_7	52,655	4.52	4.25	4.60*r*	
3,767.1939	.1912 *H*	a^5F_1	y^5F_1	34,692	4.75	5.03*r*	4.89*R*	2.785
3,785.950	.950	a^3H_5	z^3I_6	46,027	4.36	3.86	4.04	3.11
3,786.6781	.6764	a^5F_1	z^3P_0	34,556	3.91	3.86	3.93*r*	1.44
3,787.8825	.8800 *H*	a^5F_1	y^5F_2	34,547	4.450	4.76	4.63*R*	2.290
3,790.0943	.0923 *H*	a^5F_2	z^3P_1	34,363	4.345	4.22	4.32*R*	1.62
3,794.340	....	a^3H_4	z^3I_5	46,136	4.226	3.74	3.936	3.09
3,795.0045	.0017 *N*	a^5F_3	y^5F_3	34,329	4.580	4.89	4.69*R*	2.384
3,797.517	.514	b^3H_6	w^3H_6	52,431	4.091	4.01	4.344	4.32
3,798.5134	.5110 *N*	a^5F_4	y^5F_5	33,695	4.421	4.00	4.61*R*	2.028
3,799.5498	.5468 *H*	a^5F_3	y^5F_4	34,040	4.577	4.82	4.69*R*	2.306
3,805.3450	.3424 *H*	b^3H_4	y^3I_5	52,889	4.304	4.18	4.440	4.50
3,806.6992	.6966	b^3H_5	w^3H_5	52,613	3.945	3.98	4.24	
		(b^3F_3)	(w^3D_3)	47,136				
3,807.5392	.5369	a^5P_1	w^5D_2	44,184	3.59	3.90	4.076	2.99
3,812.9658	.9638 *H*	a^5F_3	z^3P_2	33,947	4.784	4.70	4.68*R*	2.16
3,814.5247	.5230	a^5F_1	z^3P_1	34,363	3.74	3.80	3.90*R*	1.35
3,815.8430	.8401 *H*	a^3F_4	y^3D_3	38,175	5.291	5.19*r*	4.98*R*	3.36
3,820.4274	.4251 *H*	a^5F_5	y^5D_4	33,096	5.444	5.36*r*	4.98*R*	3.233
3,821.1807	.1781	b^3H_5	y^3I_6	52,514	4.21	.....	4.48	4.48
3,824.4455	.4432 *H*	a^5D_4	z^5D_3	26,140	5.357	5.04*r*	4.65*R*	1.634
3,825.8834	.8808 *H*	a^5F_4	y^5D_3	33,507	5.240	5.42*r*	4.99*R*	3.094
3,827.8256	.8227 *H*	a^3F_3	y^3D_2	38,678	5.091	5.06*r*	4.96*R*	3.31
3,834.2244	.2219 *H*	a^5F_3	y^5D_2	33,802	4.973	5.11*r*	4.83*R*	2.846
3,839.2584	.2537	a^1G_4	z^1G_4	50,614	4.114	3.98	4.15	3.90
3,840.4397	.4376 *N*	a^5F_2	y^5D_1	34,017	4.697	5.02*r*	4.72*R*	2.609
3,841.0499	.0476 *H*	a^3F_2	y^3D_1	38,996	4.942	4.98	4.86*R*	3.19
3,843.2596	.2567 *H*	a^1G_4	z^1F_3	50,587	4.160			
3,846.8023	.8003 *H*	a^3D_3	t^3D_3	52,213	3.938	3.95	4.22	4.18
3,849.9694	.9591 *H*	a^5F_1	y^5D_0	34,122	4.326	4.80	4.65*R*	2.34
3,850.8193	.8175	a^5F_2	z^3P_2	33,947	4.083	4.25	4.34*R*	1.63
3,852.5752	.5728	a^5P_3	w^5D_4	43,500	3.381	3.78	3.938	2.76
3,856.3731	.3713 *H*	a^5D_3	z^5D_2	26,340	5.365	5.08*r*	4.25*R*	1.691
3,859.2143	.2119	a^3H_6	y^3G_5	45,295	4.17	.....	4.31	3.36
3,859.9132	.9121 *H*	a^5D_4	z^5D_4	25,900	5.978	5.52*R*	4.76*R*	2.244
3,865.5256	.5228 *N*	a^5F_1	y^5D_1	34,017	4.250	4.72	4.64*R*	2.25
3,867.2184	.2156 *H*	c^3P_2	w^3P_2	50,817	3.801	3.82	4.004	3.77
3,872.5032	.5007 *H*	a^5F_2	y^5D_2	33,802	4.366	4.77	4.63*R*	2.159
3,873.7624	.7607 *H*	a^3H_5	y^3G_4	45,428	4.158	3.91	4.11	3.17
3,878.0206	.0179 *N*	a^5F_3	y^5D_3	33,501	4.36	4.79	4.66*R*	2.184
3,878.5745	.5731 *H*	a^5D_2	z^5D_1	26,479	5.257	5.00*r*	4.68*R*	1.694
3,885.5121	.5098	a^3P_1	z^3D_2	45,282	3.57	.....	3.92	2.97
3,886.2839	.2820 *H*	a^5D_3	z^5D_3	26,140	5.619	5.11*r*	4.60*R*	1.865
3,887.0504	.0474 *N*	a^5F_4	y^5D_4	33,096	4.303	4.63	4.59*R*	2.075
3,888.5165	.5134 *H*	a^3F_3	y^3D_2	38,678	4.459	4.57	4.78*R*	2.70
3,893.3935	.3909	b^3G_5	v^3G_5	49,461	3.71	3.80	4.04	3.65
3,895.6579	.6562 *H*	a^5D_1	z^5D_0	26,550	4.907	4.81*r*	4.43*R*	1.266

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
3,897.896	.8898 *H*	a^3G_5	w^5G_6	47,363	2.54 }			
3,898.0111	.0105 *N*	a^5F_1	y^5D_2	33,802	3.33 }	4.09	4.35	
3,899.7086	.7076 *H*	a^5D_2	z^5D_2	26,340	5.112	4.99*r*	4.43*R*	1.402
3,902.9484	.9452 *H*	a^3F_3	y^3D_3	38,175	4.624	4.72	4.78*R*	2.87
3,903.9011	.8984	b^3G_4	y^3H_4	49,727	3.20	3.60	3.794	3.43
3,906.4814	.4792 *H*	a^5D_1	z^5D_1	26,479	4.371	4.40	4.28*R*	0.816
3,907.464	....	a^3G_3	x^3G_3	47,834	3.02			
3,907.9371	.9345	a^3G_3	w^5G_3	47,831	3.51	3.55	3.669	3.05
3,916.733	.731	b^3H_6	6_5	51,630	3.732	3.56	3.79	3.67
3,917.1834	.1814	a^5F_2	y^5D_3	33,507	3.19	3.94	4.01	0.695
3,918.644	....	b^3G_3	v^3G_3	49,851	3.52	.....	3.87	3.53
3,920.2601	.2577 *H*	a^5D_0	z^5D_1	26,479	4.848	4.74*r*	4.34*R*	1.324
3,922.9134	.9113 *H*	a^5D_3	z^5D_4	25,900	5.084	4.91*r*	4.42*R*	1.300
3,925.946	....	b^3P_0	x^3P_1	48,516	3.40	3.63	3.81	3.29
3,927.9216	.9197 *H*	a^5D_1	z^5D_2	26,340	5.107	4.96	4.51*R*	1.391
3,930.2981	.2963 *H*	a^5D_2	z^5D_3	26,140	5.161	5.00*r*	4.49*R*	1.389
3,935.8143	.8123 *H*	b^3P_2	v^5F_3	48,239	3.41	3.62	3.764	
3,940.8797	.8777	a^5F_3	y^5D_4	33,096	2.91	3.66	3.66	0.500
3,942.4418	.4391	b^3P_1	x^3P_2	48,305	3.14	3.54	3.688	3.14
3,948.7778	.7750	b^3H_5	u^3G_4	51,668	3.773	3.72	3.955	3.85
3,949.9558	.9524 *H*	a^5P_3	x^5P_2	42,860	3.804	3.92	3.996	2.75
3,951.164	.1634 *H*	a^3D_1	y^1D_2	51,708	3.715	3.66	3.879	3.78
3,952.6045	.6013 *H*	a^3G_5	z^3H_5	47,008	3.680	3.59	3.802	3.07
3,956.6796	.6769 *H*	a^3G_5	z^3H_6	46,982	4.428	4.03	4.49	3.76
3,966.0645	.0620	a^3F_2	y^3D_3	38,175	3.41	3.85	4.04*r*	
3,966.630	.627	z^5D_4	f^5F_5	51,103	3.781	3.79	4.055	
3,967.4234	.4206	b^3H_4	u^3G_3	51,826	3.07	3.59	3.836	3.74
3,969.2595	.2567 *H*	a^3F_4	y^3F_3	37,163	4.796	4.81	4.85*R*	2.77
3,971.3250	.3223	a^3G_5	z^3F_4	46,889	3.54	3.64	3.865	3.13
3,977.7437	.7411 *H*	a^5P_2	x^5P_2	42,860	3.932	3.90	4.121	2.88
3,981.7743	.7710 *H*	a^3G_4	z^3H_4	47,107	3.593	3.55	3.686	2.95
3,983.9593	.9568 *H*	a^3G_4	z^3F_3	47,197	3.677	3.72	3.880	3.18
3,997.3952	.3921 *H*	a^3G_4	z^3H_5	47,008	4.300	4.10	4.290	3.56
3,998.0554	.0527	a^3G_3	u^5D_4	46,721	3.613	3.78	3.981	3.21
4,005.2440	.2415 *H*	a^3F_3	y^3F_2	37,521	4.591	4.64	4.76*R*	2.66
4,009.7154	.7128 *H*	a^5P_1	x^5P_2	42,860	3.772	3.78	3.994	2.73
4,014.534	.5308 *H*	a^1H_5	y^1H_5	53,722	3.934	3.69	3.962	4.13
4,021.8696	.8663 *H*	a^3G_3	z^3H_4	47,107	3.990	3.75	4.033	3.31
4,045.8147	.8139 *H*	a^3F_4	y^3F_4	36,686	5.565	5.39*r*	5.08*R*	3.34
4,062.4440	.4409 *H*	b^3P_1	y^3S_1	47,556	3.716	4.04	3.90	3.25
4,063.5963	.5942 *H*	a^3F_3	y^3F_3	37,163	5.247	5.20*r*	4.96*R*	3.19
4,066.979	.974	b^3P_2	1_2	47,420	3.686	3.49	3.66	2.97
4,067.2738	.2711	b^3F_4	x^3D_3	45,221	3.37			
4,067.984	.978	z^5D_4	e^7P_4	50,475	3.720	3.66	3.89	3.63
4,071.7399	.7371 *H*	a^3F_2	y^3F_2	37,521	5.114	4.99*r*	4.98*R*	3.14
4,076.636	.6294 *H*	z^5D_4	f^5D_4	50,423	3.641	3.63	3.940	3.66
4,100.738	.7374 *H*	a^5F_5	z^5F_4	31,307	3.627	3.38	3.279	0.48
4,107.4917	.4880 *H*	b^3P_2	u^5D_1	47,177	3.638	3.72	3.957	3.26
4,109.8053	.8016 *H*	b^3P_1	w^3D_1	47,272	3.544	3.56	3.784	3.09
4,114.4485	.4456	b^3P_2	w^3D_2	47,136	3.25	3.37	3.478	2.78

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
4,118.5484	.5446 *H*	a^1H_5	z^1I_6	53,094	4.225	3.93	4.30	4.38
4,120.2087	.2061 *H*	b^3G_4	z^1H_5	48,383	3.302	3.30	3.393	2.85
4,121.8050	.8021	b^3P_2	z^3F_3	47,093	3.281	3.34	3.420	2.70
4,127.6113	.6083 *H*	b^3P_0	w^3D_1	47,272	3.581	3.55	3.81	3.12
4,132.0603	.0576 *H*	a^3F_3	y^3F_3	37,163	4.581	4.53	4.81*R*	2.58
4,132.9024	.8995	b^3P_1	w^3D_2	47,136	3.512	3.63	3.86	
		(a^3F_2)	(y^5P_2)	37,158				
4,134.6798	.6770 *H*	b^3P_2	w^3D_3	47,017	3.929	3.86	4.17	3.44
4,137.002	.9974 *H*	a^1P_1	y^1D_2	51,708	3.566	3.45	3.677	3.57
4,143.4174	.4145	a^1G_4	y^1G_4	48,703	4.298	3.97		
4,143.8703	.8680 *H*	a^3F_3	y^3F_4	36,686	4.862	4.70	4.86*R*	2.68
4,147.6719	.6687 *H*	a^3F_4	z^5G_3	36,079	3.399	3.65	3.81	1.64
4,149.372	.3658 *H*	z^5F_5	e^7G_6	50,968	3.15	3.31	3.446	3.25
4,152.1704	.1693 *H*	a^5F_3	z^3F_3	31,805	3.474	3.33	3.26	0.52
4,153.906	.901	z^5F_3	f^5F_4	51,462	3.616	3.74	3.909	3.78
4,154.5021	.4992	b^3P_2	y^3P_1	46,902	3.749	3.53	4.15	
4,156.8021	.7992	b^3P_2	u^5D_3	46,889	3.781	3.76	4.061	3.32
4,157.788	.781	z^5F_2	f^5F_2	51,604	3.448	3.57	3.726	3.61
4,170.9044	.9014	c^3P_2	z^3P_2	48,305	3.300	3.40	3.575	3.03
4,172.126	....	a^3D_3	w^3P_2	50,187	3.323	3.37	3.57	3.27
4,172.7454	.7445	a^5F_1	z^3D_2	31,686	3.678	3.45	3.519	0.77
4,174.9137	.9128	a^5F_4	z^3D_3	31,323	3.783	3.48	3.452	0.65
4,175.6386	.6356	b^3P_1	u^5D_2	46,889	3.705	3.74	4.004	3.26
4,176.571	.566	z^5F_4	f^5F_5	51,103	3.358	3.49	3.638	
		(z^5F_2)	(e^7F_3)	51,331				
4,177.5949	.5932 *H*	a^5F_4	z^3F_4	31,307	3.747	3.44	3.393	1.13
4,181.7571	.7542 *H*	b^3P_2	u^5D_3	46,745	4.125	4.11	4.427	3.66
4,184.8941	.8914 *H*	b^3P_2	y^3P_2	46,727	3.665	3.66	3.904	3.13
4,187.0436	.0371	z^7D_3	e^7D_2	43,634	4.110	4.12	4.48*r*	
4,187.8015	.7950	z^7D_4	e^7D_3	43,435	4.146	4.12	4.49*r*	
4,191.4358	.4297 *H*	z^7D_2	e^7D_1	43,764	3.923	4.04	4.336	3.19
4,195.337	....	z^5F_5	e^5G_5	50,704	3.551	3.63	3.80	3.56
4,196.218	.209	z^5F_3	e^5G_3	51,219	3.30	3.37	3.54	3.37
4,198.3098	.3038 *H*	z^7D_5	e^7D_4	43,163	4.161	4.11	4.46*r*	
4,199.0981	.0948 *H*	a^1G_4	z^7H^5	55,526	4.620	4.23	4.64*r*	
4,202.0320	.0282 *H*	a^3F_4	z^3G_4	35,768	4.540	4.66	4.81*R*	2.47
4,203.9867	.9878	b^3P_1	y^3P_2	46,727	3.619	3.60	3.852	3.08
4,206.6985	.6953 *H*	a^5D_3	z^7P_3	24,181	3.85?	3.35	3.30	
4,207.1298	.1268	b^3P_2	z^3S_1	46,601	3.03	3.26		
4,210.3497	.3431	z^7D_1	e^7D_1	43,764	3.87	3.86	4.124	
4,213.650	.647	b^3P_1	y^3P_0	46,673	3.30	3.33	3.425	2.98
4,216.1854	.1826 *H*	a^5D_4	z^7P_4	23,711	4.636	3.83	3.83*r*	−0.16
4,217.551	.545	z^5F_1	e^5G_2	51,370	3.180	3.51	3.698	3.55
4,219.3641	.3597 *H*	a^1H_5	y^3I_6	52,514	4.019	3.80	4.124	4.12
4,222.2181	.2128 *H*	z^7D_3	e^7D_3	43,435	3.717	3.86	4.097	2.90
4,224.176	.171	z^5F_4	e^7F_5	50,833	3.400	3.57	3.91	3.81
4,225.460	.454	z^5F_2	e^5G_3	51,219	3.347	3.55	3.756	3.59
4,227.434	.4257 *H*	z^5F_5	e^5G_6	50,523	4.268	4.15	4.520	3.86
4,231.525	....	a^3D_3	v^5G_3	49,851	2.84	.....	.....	3.55
4,232.732	.7261	a^5D_1	z^7P_2	24,507	3.02	.....	.....	−1.13
4,233.6089	.6019 *H*	z^7D_1	e^7D_2	43,634	4.021	4.06	4.42*r*	2.95
4,235.9433	.9361 *H*	z^7D_4	e^7D_4	43,163	4.432	4.27	4.67*r*	3.17

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
4,238.816	.8087 *H*	z^5F_3	e^5G_4	50,980	3.661	3.81	3.982	3.78
4,239.847	....	a^3G_5	y^3G_5	45,295	2.67	....	....	−0.80
4,245.2594	.2564 *H*	b^3P_0	z^3S_1	46,661	3.191	3.43	3.570	2.80
4,247.432	.4246 *H*	z^5F_4	e^5G_5	50,704	3.749	3.75	4.008	3.77
4,248.2275	.2244	c^3P_1	x^3P_2	48,305	2.969	3.18	3.267	2.72
4,250.1248	.1181	z^7D_2	e^7D_3	43,435	4.278	4.22	4.50*r*	3.02
4,250.7896	.7807	a^3F_3	z^3G_3	36,079	4.508	4.59	4.76*R*	2.45
4,258.3174	.3150 *H*	a^5D_2	z^7P_3	24,181	3.573	.....	2.99	−0.84
4,260.4794	.4733 *H*	z^7D_5	e^7D_5	42,816	4.894	4.62	4.95*r*	3.41
4,267.830	.826	c^3P_0	x^3P_1	48,516	3.14	3.33	3.417	2.90
4,271.1589	.1521	z^7D_3	e^7D_4	43,163	4.40	4.25	4.67*r*	3.12
4,271.7634	.7601 *H*	a^3F_4	z^3G_5	35,379	5.088	4.96*r*	4.95*R*	2.88
4,282.4057	.4026 *H*	a^5P_3	z^5S_2	40,895	4.391	4.12	4.48*r*	2.85
4,285.4453	.4422	b^3H_6	y^3H_6	49,434	3.08	3.23	3.276	2.87
4,291.466	.4627 *H*	a^3F_2	z^5G_2	35,856	3.881	3.36	3.215	
		a^5D_3	z^7P_4	23,711	.....	.....	.....	−0.86
4,294.1271	.1240 *H*	a^3F_4	z^5G_4	35,257	4.148	4.35	4.65*R*	2.07
4,298.0403	.0371	a^1G_4	x^3G_3	47,835	3.313	3.23	3.255	2.64
4,299.2409	.2338 *H*	z^7D_4	e^7D_5	42,816	4.394	4.23	4.66*r*	2.82
		(b^3H_5)	(y^3H_5)	49,604				
4,305.4545	.4513	c^3P_2	y^3S_1	47,556	3.20	3.29	3.344	2.69
4,307.9048	.9014 *H*	a^3F_3	z^3G_4	35,768	5.129	4.91*r*	4.93*R*	3.01
4,309.3771	.3739	b^3G_5	z^3H_6	46,982	3.524	3.44	3.60	2.87
4,315.0872	.0837 *H*	a^5P_2	z^5S_2	40,895	4.212	4.03	4.31	2.78
4,325.7647	.7615 *H*	a^3F_2	z^3G_3	36,079	5.181	4.96*r*	4.95*R*	3.06
		(a^5D_4)	(z^7F_3)	23,111				
4,327.100	....	a^1D_2	y^1D_2	51,708	3.310	.....	3.38	3.15
4,337.0484	.0459 *H*	a^3F_3	z^5G_3	35,612	3.471	3.98	4.15*r*	1.59
4,347.239	....	a^5D_4	z^7F_4	22,997	2.53	.....	.....	−1.16
4,352.7371	.7337 *H*	a^5P_1	z^5S_2	40,895	3.9	3.82	3.998	2.47
4,367.5811	.5774 *H*	b^3G_4	z^3H_5	47,008	3.400	3.32		
4,369.7745	.7711 *H*	a^1G_4	z^1G_4	47,453	3.910	3.55	3.699	3.04
4,375.9318	.9290 *H*	a^5D_4	z^7F_5	22,846	4.945	4.04	4.11*R*	0.11
4,383.5473	.5449 *H*	a^3F_4	z^5G_5	34,782	5.472	4.99*r*	5.08*R*	3.23
4,388.412	.407	z^5P_3	e^5P_3	51,837	3.200	3.36	3.441	3.34
4,390.9542	.9509	b^3G_3	z^3H_4	47,107	3.217	3.20	3.110	2.39
4,404.7525	.7503 *H*	a^3F_3	z^5G_4	35,257	5.068	4.91	4.95*R*	2.93
4,408.4176	.4147	a^5P_2	x^5D_1	40,405	2.62	3.53	3.599	2.02
4,415.1250	.1222 *H*	a^3F_2	z^5G_3	35,612	4.528	4.71	4.81*R*	2.45
4,422.5703	.5675 *H*	b^3P_1	x^3D_1	45,552	3.483	3.53	3.869	2.76
4,427.3118	.3093 *H*	a^5D_3	z^7F_4	23,193	4.823	3.99	4.08*R*	0.09
4,430.6175	.6145	a^5P_1	x^5D_0	40,491	2.67	3.57	3.66	2.08
4,433.223	.220	z^5P_2	e^5P_1	52,020	3.12	3.25	3.328	3.26
4,442.3428	.3398	a^5P_2	x^5D_2	40,231	2.33	3.87	4.06	2.44
4,443.1963	.1929	b^3P_0	x^3D_1	45,552	3.509	3.57	3.72	2.81
4,445.48	.4699	a^5D_2	z^7F_2	23,193	2.39	.....	.....	1.43
4,447.7212	.7182	a^5P_1	x^5D_1	40,405	3.017	3.78	3.958	2.36
4,450.320	.316	c^3P_0	y^3S_1	47,556	3.39	.....	2.432	1.78
4,454.3835	.3803	b^3P_2	x^3D_2	45,282	3.364	3.41	3.484	2.53
4,459.1213	.1183	a^5P_3	x^5D_3	39,970	3.24	3.89	4.072	2.42
4,461.6544	.6523 *H*	a^5D_3	z^7F_3	23,111	4.576	3.94	3.88*R*	−0.10
4,466.5542	.5501 *H*	b^3P_2	x^3D_3	45,221	4.057	3.93	4.164	
		(a^5D_1)	(z^7F_0)	23,270	.....	.....	.....	−1.07
4,469.381	.3742 *H*	z^5P_2	e^5P_3	51,837	3.391	3.47	3.614	3.51

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
4,476.0206	.0168 *H*	b^3P_1	x^3D_2	45,282	3.895	3.85	4.086	3.14
4,482.1720	.1684 *H*	a^5D_1	z^7F_2	23,193 }				
4,482.2563	.2533	a^5P_1	x^5D_2	40,231 }	4.4	3.9	4.0	−0.36
4,489.7416	.7391 *H*	a^5D_0	z^7F_1	23,245	3.741	3.41	.....	−0.77
4,494.5669	.5627 *H*	a^5P_2	x^5D_3	39,970	3.353	3.98	4.182	2.53
4,517.5289	.5254	c^3P_1	y^3P_1	46,902	2.40	.....	2.724	2.65
4,528.6175	.6132 *H*	a^5P_3	x^5D_4	39,626	3.747	4.17	4.46*r*	2.74
4,531.1520	.1485	a^3F_4	y^5F_4	34,040	3.050	.....	3.804	1.36
4,547.8505	.8468	a^1D_2	z^1F_3	50,587	3.409	.....	3.425	3.35
4,592.6547	.6511	a^3F_3	y^5F_3	34,329	2.77	.....	3.500	1.10
4,602.9446	.9388 *J*	a^3F_4	y^5F_5	33,695	3.123	.....	3.774	1.10
4,647.4370	.4327 *J*	b^3G_5	y^3G_5	45,295	3.532	.....	3.473	2.51
4,667.459	.4519 *J*	z^5P_3	e^7P_4	50,475	3.231	.....	3.455	3.20
4,678.852	.8440 *J*	z^5P_3	f^5D_4	50,423	3.254	.....	3.556	3.28
4,691.4144	.4101 *J*	b^3G_4	y^3G_4	45,428	3.345	.....	3.330	2.39
4,707.2807	.2727 *J*	z^5D_3	e^5F_4	47,378	3.342	.....	3.525	2.86
4,710.2864	.2825 *J*	b^3G_3	y^3G_3	45,563	3.26	.....	3.127	2.22
4,733.5955	.5926	a^3F_4	y^5D_4	33,096	2.42	.....	3.025	0.47
4,736.7807	.7717 *J*	z^5D_4	e^5F_5	47,006	3.517	.....	3.798	3.07
4,741.5321	.5205	b^3P_2	w^5D_3	43,923	2.44	.....	2.87	1.74
4,745.806	.801	z^5P_2	f^5D_3	50,534	2.605	.....	2.86	
		y^5D_4	f^5G_5	54,161				
4,772.817	.815	c^3P_2	x^3D_3	45,282	2.602	.....	2.84	
		a^3F_3	y^5D_3	33,507				
4,786.8106	.8069	c^3P_2	x^3D_2	45,221	2.888	.....	3.161	2.19
4,789.6537	.6499 *J*	a^1D_2	z^1D_2	49,477	3.415	.....	3.301	2.92
4,859.7480	.7399 *J*	z^7F_2	e^7D_1	43,764	3.654	.....	4.017	2.87
4,871.3244	.3177 *J*	z^7F_3	e^7D_2	43,634	4.096	.....	4.529	3.36
4,872.1444	.1369 *J*	z^7F_1	e^7D_1	43,764	3.790	.....	4.207	3.05
4,878.2182	.2094 *J*	z^7F_0	e^7D_1	43,764	3.527	.....	3.894	2.74
4,890.7616	.7541 *J*	z^7F_2	e^7D_2	43,634	4.049	.....	4.352	3.18
4,891.4989	.4915 *J*	z^7F_4	e^7D_3	43,435	4.404	.....	4.64*r*	3.44
4,903.3169	.3085 *J*	z^7F_1	e^7D_2	43,634	3.513	.....	3.852	2.68
4,919.0003	.9922 *J*	z^7F_3	e^7D_3	43,435	4.178	.....	4.410	3.21
4,920.5096	.5016 *H*	z^7F_5	e^7D_4	43,163	4.681	.....	4.80*r*	
4,924.7753	.7717	a^3P_2	y^3D_2	38,678	2.75	.....	3.030	1.28
4,938.8206	.8223 *J*	z^7F_2	e^7D_3	43,435	3.438	.....	3.74	2.54
4,939.6896	.6859	a^5F_5	z^5F_4	27,167	3.024	.....	3.350	0.00
4,957.3054	.2988 *J*	z^7F_4	e^7D_4	43,163	3.14			
4,957.6059	.5952 *H*	z^7F_6	e^7D_5	42,816	5.16	.....	5.0*R*	
4,966.0968	.0871 *J*	z^5F_5	e^5F_5	47,005	3.400	.....	3.614	2.88
4,982.507	.4977 *J*	y^5D_4	f^5P_3	53,161	3.430	.....	3.714	3.81
4,994.1323	.1284 *J*	a^5F_4	z^5F_3	27,395	3.191	.....	3.410	0.06
5,001.871	.8616 *J*	z^3F_4	e^3D_3	51,294	3.861	.....	3.895	
5,006.1254	.1172 *J*	z^7F_5	e^7D_5	42,816	4.051	.....	4.176	2.89
5,012.0712	.0672 *J*	a^5F_5	z^5F_5	26,875	3.791	.....	3.887	0.48
5,014.950	.9413 *J*	z^5F_3	e^5D_2	51,740	3.538	.....	3.682	3.57
5,041.7585	.7544 *J*	a_3F_4	z^3F_3	31,806	4.241	.....	3.748	1.01
5,049.8253	.8187 *J*	a^3P_2	y^3D_3	38,175	3.506	.....	3.979	2.10
5,051.6379	.6337 *J*	a^5F_4	z^5F_4	27,167	3.523	.....	3.690	0.34
5,079.2279	.2240	a^5P_2	z^5P_1	37,410	3.732	.....	3.557	1.56
5,083.3413	.3374	a^5F_3	z^5F_3	26,875	3.278	.....	3.492	0.10

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
5,110.4139	.4120 *J*	a^5D_4	z^7D_4	19,562	4.238	.....	3.613	−0.85
		(a^1H_5)	(z^1H_5)	48,383				
5,123.7231	.7192	a^5F_1	z^5F_1	27,666	3.323	.....	3.415	0.18
5,127.3624	.3585	a^5F_4	z^5F_5	26,875	3.002	.....	3.212	−0.14
5,133.692	.6885 *J*	y^5F_5	f^5G_6	53,169	3.577	.....	3.786	3.89
5,150.8425	.8385	a^5F_2	z^5F_3	27,395	2.506	.....	3.322	0.50
5,166.2841	.2814 *J*	a^5D_4	z^7D_5	19,351	3.901	.....	3.190	−1.50
5,167.4905	.4878 *H*	a^3F_4	z^3D_3	31,323	5.37	.....	4.71*R*	−1.67
5,168.9003	.8974 *J*	a^5D_3	z^7D_3	19,757	3.926	.....	3.48*r*	−1.03
5,171.5987	.5955 *H*	a^3F_4	z^3F_4	31,307	4.651	.....	4.23*R*	1.25
5,191.4615	.4544 *J*	z^7P_3	e^7D_2	43,764	3.701	.....	4.080	2.93
5,192.3509	.3437 *J*	z^7P_3	e^7D_4	43,435	3.914	.....	3.250	2.05
5,194.9441	.9410 *J*	a^3F_3	z^3F_3	31,805	4.275	.....	3.88*r*	0.96
5,198.7149	.7108	a^5P_1	y^5P_2	37,158	2.39	.....	3.32	1.30
5,202.3395	.3364 *J*	a^5P_3	y^5P_3	36,767	2.85	.....	3.725	1.77
5,204.5840	.5822 *J*	a^5D_2	z^7D_2	19,913	3.464	.....	2.86	−1.74
5,216.2770	.2738 *J*	a^3F_2	z^3F_2	32,134	4.171	.....	3.78	1.08
5,225.531	.5253 *J*	a^5D_1	z^7D_1	20,020	2.90	.....	.....	−1.78
5,227.1911	.1876 *H*	a^3F_3	z^3D_2	31,686	5.02	.....	4.93	
5,232.9474	9400 *H*	z^7P_4	e^7D_5	42,810	4.436	.....	4.61*r*	2.95
5,235.392	.3858 *J*	b^3F_3	x^5D_3	39,970	2.73	.....	2.96	
		c^3F_4	u^3D_3	51,969				
5,236.204	....	c^3F_2	8_1	52,858	1.83			
5,242.4955	.4903 *J*	a^1I_6	z^1H_5	48,383	3.20	.....	3.326	3.73
5,247.065	.0494 *J*	a^5D_2	z^7D_3	19,757	2.89	.....	.....	−2.00
5,250.211	.216	a^5D_0	z^7D_1	20,020	2.44	.....	.....	−1.93
5,250.6490	.6449	a^5P_2	y^5P_3	36,767	2.78	.....	3.402	1.32
5,263.3134	.3038 *J*	z^5D_2	e^5D_2	45,334	3.195	.....	3.60	2.65
5,266.5626	.5548 *J*	z^7P_3	e^7D_4	43,163	4.033	.....	4.281	3.06
5,269.5402	.5363 *J*	a^5F_5	z^5D_4	25,900	5.058	.....	4.68*r*	1.45
5,270.3602	.3557 *J*	a^3F_2	z^3D_1	31,937	4.914	.....	.....	1.48
5,281.7970	.7896 *J*	z^7P_2	e^7D_3	43,435	3.477	.....	3.832	2.63
5,283.6283	.6203 *J*	z^5D_4	e^5D_3	45,061	3.811	.....	4.045	3.07
5,302.3073	.2991 *H*	z^5D_1	e^5D_2	45,335	3.423	.....	3.736	2.79
5,307.3633	.3604 *H*	a^3F_3	z^3F_3	31,805	3.337	.....	3.00	0.26
5,324.1864	.1784 *H*	z^5D_4	e^5D_4	44,677	4.182	.....	4.393	3.36
5,328.0418	.0386 *J*	a^5F_4	z^5D_3	26,140	4.867	.....	4.70*R*	1.29
5,328.5336	.5309 *J*	a^3F_3	z^3D_3	31,323	4.507	.....	4.20*r*	1.19
5,332.9020	.8987 *H*	a^3F_3	z^3F_4	31,307	3.951	.....	3.155	0.36
5,339.9371	.9286 *H*	z^5D_3	e^5D_3	45,061	3.874	.....	3.846	2.87
5,341.0255	.0236 *H*	a^3F_3	z^3D_2	31,686	4.85	.....	4.00*r*	1.11
5,364.874	.8717 *J*	z^5G_2	e^5H_3	54,491	3.384	.....	3.64	3.91
5,367.470	.4671 *H*	z^5G_3	e^5H_4	54,237	3.564	.....	3.79	4.02
5,369.965	.9621 *H*	z^5G_4	e^5H_5	53,874	3.725	.....	3.91	4.10
5,371.4926	.4892 *H*	a^5F_3	z^5D_2	26,340	4.622	.....	4.61*R*	1.10
		(z^3G_4)	(e^3G_3)	54,379				
5,383.374	.3689 *H*	z^5G_6	e^5H_6	53,353	3.844	.....	4.11	4.23
5,397.1311	.1272 *H*	a^5F_4	z^5D_4	25,900	4.459	.....	4.43*R*	0.81
5,404.144	.1185 *J*	z^3G_4	e^3H_5	54,267	3.819	.....	4.08	
5,405.7781	.7744 *H*	a^5F_2	z^5D_1	26,479.	4.353	.....	4.49*R*	0.86
5,424.072	.0686 *H*	z^5G_6	e^5H_7	53,275	3.842	.....	4.08	4.19
5,429.6999	.6963 *H*	a^5F_3	z^5D_3	26,140	4.414	.....	4.48*R*	0.89
5,434.5268	.5237 *H*	a^5F_1	z^5D_0	26,550	4.048	.....	4.28*R*	0.72

TABLE 7e-6. THE SPECTRUM OF IRON I (*Continued*)

λ_1	λ_2	Classification		E'	log I_2	log I_3	log I_4	log νA_ν
5,446.9197	.9168 *H*	a^5F_2	z^5D_2	26,340	4.337	.....	4.42*R*	0.82
5,455.6131	.6093 *H*	a^5F_1	z^5D_1	26,479	4.144	.....	4.42*R*	0.72
5,497.5196	.5159 *H*	a^5F_1	z^5D_2	26,340	3.374	.....	3.60	0.12
5,501.4686	.4633 *H*	a^5F_3	z^5D_4	25,900	3.299	.....	3.46	−0.06
5,506.7824	.7785 *H*	a^5F_2	z^5D_3	26,140	3.494	.....	3.68	0.17
5,569.6256	.6174 *H*	z^5F_2	e^5D_1	45,509	3.541	.....	3.807	2.89
5,572.8501	.8419 *H*	z^5F_3	e^5D_2	45,334	3.806	.....	4.06	3.11
5,586.7634	.7555 *H*	z^5F_4	e^5D_3	45,061	4.074	.....	4.43	3.26
5,615.6521	.6434 *H*	z^5F_5	e^5D_4	44,677	4.262	.....	4.375	3.35
5,624.5501	.5417 *H*	z^5F_2	e^5D_2	45,334	3.319	.....	3.574	2.62
5,658.8247	.8156 *H*	z^5F_3	e^5D_3	45,061	3.22	.....	3.597	2.62
5,662.525	.516	y^5F_5	g^5D_4	51,351	3.661	.....	3.241	3.09
7,187.341	....	y^5D_4	e^5F_5	47,006	3.53			
7,445.776	....	y^5F_3	e^5F_3	47,756	3.48			
7,495.088	....	y^5F_4	e^5F_4	47,378	3.53			
7,511.045	....	y^5F_5	e^5F_2	47,006	3.66			
7,586.044	....	z^5G_5	e^3F_4	47,961	3.39			
7,780.586	....	z^3G_3	e^3F_2	48,928	3.28			
7,937.166	....	z^5G_5	e^5F_4	47,378	4.040			
7,998.972	....	z^5G_4	e^5F_3	47,756	3.26			
8,046.073	....	z^5G_3	e^3F_2	48,532	3.36			
8,220.406	....	z^5G_6	e^5F_5	47,006	3.69			
8,248.151	....	z^5G_4	e^5F_4	47,378	3.34			
8,327.063	....	a^5P_2	z^5P_1	29,773	3.61			
8,331.941	....	z^3G_5	e^5F_4	47,378	3.11			
8,387.781	....	a^5P_3	z^5P_2	29,469	3.79			
8,661.908	....	a^5P_1	z^5P_2	29,469	3.75			
8,688.633	....	a^5P_3	z^5P_3	29,056	4.161			
8,824.227	....	a^5P_2	z^5P_3	29,056	3.76			

Mercury I. This spectrum is very useful because of the ease with which it can be obtained. Any low-pressure mercury tube gives sharp lines; for example, a commercial so-called bactericidal lamp is suitable. High-pressure lamps give broader lines and very high pressure lamps (commercial type H6) a continuous spectrum. The mercury spectrum is useful as a general reference spectrum. Under high dispersion most lines show elaborate isotopic and hyperfine structure because there are six isotopes with considerable abundance: 196 (0.15 percent), 198 (10.12 percent), 199 (16.84 percent), 200 (23.13 percent), 201 (13.2 percent), 202 (29.80 percent), and 204 (6.85 percent). The two odd ones have lines with hyperfine structure. The structure of the lines is sometimes useful for obtaining the resolving power of spectrographs (for details of structure, see Schüler and Burns and Adams[1]). An example is shown in Fig. 7e-5.

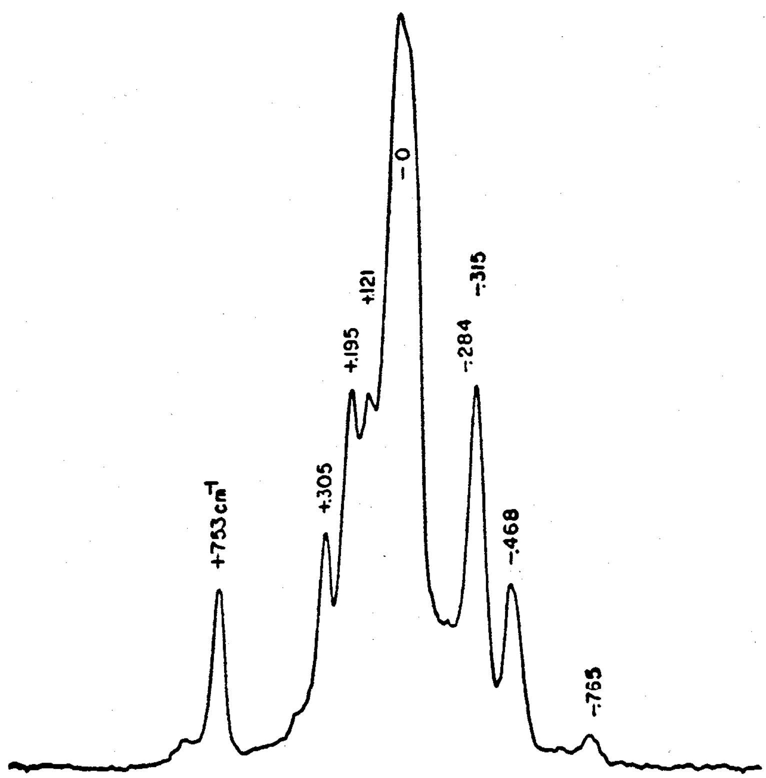


FIG. 7e-5. High-dispersion photoelectric trace of the 5461-Å line of ordinary mercury showing isotope and hyperfine structure. Resolving power was 400,000.

Pure Hg^{198} can be obtained by irradiation of gold with neutrons. Lamps with this isotope are now commercially available and the spectrum shows very sharp single lines. Meggers has proposed to adopt the wavelength of the green line (5,461) of Hg^{198} as a primary standard of length. International adoption of this proposal, however, awaits investigation of the variability of the wavelength with discharge conditions. In the meantime most of the strong lines of Hg^{198}, particularly those marked *S* in Table 7e-7, may be used as standards for interferometric wavelength measurements.

Hg^{202} is the most abundant isotope in natural mercury. Tubes with nearly pure Hg^{202} are also available and their wavelengths may also be used as standards.

Table 7e-7 gives the wavelengths of natural mercury, Hg^{198} and Hg^{202}. All values listed between 2,300 and 6,900 Å are recent interferometric wavelengths; those outside this interval are known with much less accuracy.

[1] Schüler and Keyston, *Z. Physik* **72**, 423 (1931); Schüler and Jones, *Z. Physik* **79**, 631 (1932); Burns and Adams, *J. Opt. Soc. Am.* **42**, 716 (1952).

TABLE 7c-7. THE SPECTRUM OF MERCURY I

Classification		λ (Hg nat.)	λ Hg^{198}	λ Hg^{202}	log *I*
6^1S	6^1P	1,402.72 *O*	....	....	(4)
6^1S	7^1P	1,849.52 *O*	....	....	(20)
6^1S	7^3P_2	2,296.97 *O*	....	....	
6^3P_0	10^3S	2,345.433 *O*	45.4400	45.4369	5.33
6^3P_0	8^3D_1	2,378.316 *O*	78.3246	78.3224	6.60
6^3P_1	10^3S	2,446.895	46.8998	46.8974	4.44
6^3P_0	9^3S	2,464.057	64.0636	64.0614	4.31
6^3P_1	8^3D_2	2,481.996	81.9993	81.9971	5.43
6^3P_1	8^3D_1	2,482.710	82.7131	82.7112	4.94
6^3P_1	8^1D_2	2,483.815	83.8215	83.8196	5.23
6^3P_0	7^3D_1	2,534.764	34.7691	34.7662	6.35
6^1S	6^3P_1	2,536.517	36.5063	36.5277	8.95
6^3P_1	9^1S	....	63.8610	63.8584	
6^3P_1	9^3S	2,576.285	76.2904	76.2882	5.00
6^3P_1	7^3D_2	2,652.039	52.0425	52.0399	6.20
6^3P_1	7^3D_1	2,653.679	53.6827	53.6809	6.75
6^3P_1	7^1D	2,655.127	55.1305	55.1284	5.63
6^3P_2	9^3D_3	2,698.828	98.8314	98.8293	5.35
6^3P_0	8^3S	2,752.778	52.7828	52.7801	5.58
6^3P_2	10^3S	2,759.706	59.7103	59.7077	4.0
6^3P_2	8^3D_3	2,803.465	03.4706	03.4678	5.25
6^3P_2	8^3D_2	2,804.434	04.4378	04.4357	4.56
6^3P_2	8^3D_1	2,805.344	05.347	05.3474	3.49
6^3P_2	8^1D	2,806.759	06.765	06.7630	3.52
6^3P_1	8^1S	2,856.935	56.9389	56.9357	4.30
6^3P_1	8^3S	2,893.594	93.5982	93.5952	5.88
6^3P_2	9^3S	2,925.410	25.4135	25.4104	4.82
6^3P_0	6^3D_1	2,967.280	67.2832	67.2819	6.52
6^3P_0	6^1D	2,967.543			
6^3P_2	7^3D_3	3,021.498	21.4996	21.4973	6.09
6^3P_2	7^3D_2	3,023.475	23.4764	23.4739	5.45
6^3P_2	7^3D_1	3,025.606	25.6080	25.6056	4.43
6^3P_2	7^1D	3,027.487	27.4896	27.4874	4.76
6^3P_1	6^3D_2	3,125.6681	25.6698	25.6675	6.62
6^3P_1	6^3D_1	3,131.5485	31.5513	31.5480	6.48
6^3P_1	6^1D	3,131.8391	31.8423	31.8394	6.56
6^3P_2	8^3S	3,341.4766	41.4814	41.4766	5.85
6^3P_2	6^3D_3	3,650.1533	50.1564*	50.1532	6.94
6^3P_2	6^3D_2	3,654.8363	54.8392	54.8361	6.51
6^3P_2	6^3D_1	3,662.879	62.8826	62.8801	5.70

TABLE 7e-7. THE SPECTRUM OF MERCURY I (*Continued*)

Classification		λ (Hg nat.)	λ Hg^{198}	λ Hg^{202}	log *I*
6^3P_2	6^1D	3,663.2793	63.2808	63.2778	6.35
6^1P	9^1D	3,704.1655	04.1698	04.1712	3.94
6^1P	8^1D	3,906.371	06.3715	06.3715	4.56
6^3P_0	7^3S	4,046.5630	46.5712*	46.5619	7.09
6^3P_1	7^1S	4,077.8314	77.8379	77.8284	6.00
6^1P	9^1S	4,108.054	08.0574	08.0572	
6^1P	7^3D_2	4,339.2232	39.2244	39.2251	4.74
6^1P	7^1D	4,347.4945	47.4958	47.4967	5.17
6^3P_1	7^3S	4,358.3277	58.3375	58.3257	7.07
6^1P	8^1S	4,916.068	16.0681	16.0677	4.35
6^3P_2	7^3S	5,460.7348	60.7532 *S*	60.7355	6.76
6^1P_1	6^3D_2	5,769.5982	69.5984 *S*	69.6000	6.02
6^1P_1	6^3D_1	5,789.664	89.669	89.671	4.41
6^1P	6^1D_2	5,790.6630	90.6628 *S*	90.6648	5.97
7^3S	8^1P	....	6,072.7128	72.6260	
7^1S	9^1P	....	6,234.4020	34.3776	
7^1S	8^1P	....	6,716.4289	16.3253	
7^3S	8^3P_2	6,907.52 *O*	07.4612	07.4675	
7^3S	8^3P_1	7,082.01 *O*			
7^3S	8^3P_0	7,092.20 *O*			
6^1P	7^1S	10,139.75 *O*	....	....	6.20
7^3S	7^3P_2	11,287.04 *O*	....	....	5.98
7^1S	7^1P	13,570.70 *O*	....	....	5.36
7^3S	7^3P_1	13,673.09 *O*	....	....	5.53
7^3S	7^3P_0	13,950.75 *O*	....	....	5.26
		15,295.25 *O*	....	....	5.78
6^1D	5^1F	16,918.3 *O*			
7^3P_2	7^3D_3	16,920.97 *O*			
6^3D_1	5^3F_2	16,942.33 *O*	....	....	4.72
7^3P_2	7^1D	17,072.67 *O*	....	....	4.90
6^3D_2	5^3F_3	17,109.57 *O*	....	....	4.74
6^3D_3	5^3F_4	17,202.08 *O*			
7^3P_0	8^3S	22,499.29 *O*			
7^3P_1	8^3S	23,253.47 *O*	....	... ...	4.49
7^3P_2	8^3S	36,261 *O*			

Values obtained by Blank[1] for Hg^{198} are 3,650.1569, 4,046.5716, and 4,358.3376.

Intensities are rough photoelectric values obtained at The Johns Hopkins University with a low-pressure neon-mercury discharge. The scale is the same as for neon (Table 7e-2). Intensities may be considerably different for other discharge conditions.

Mercury Tube

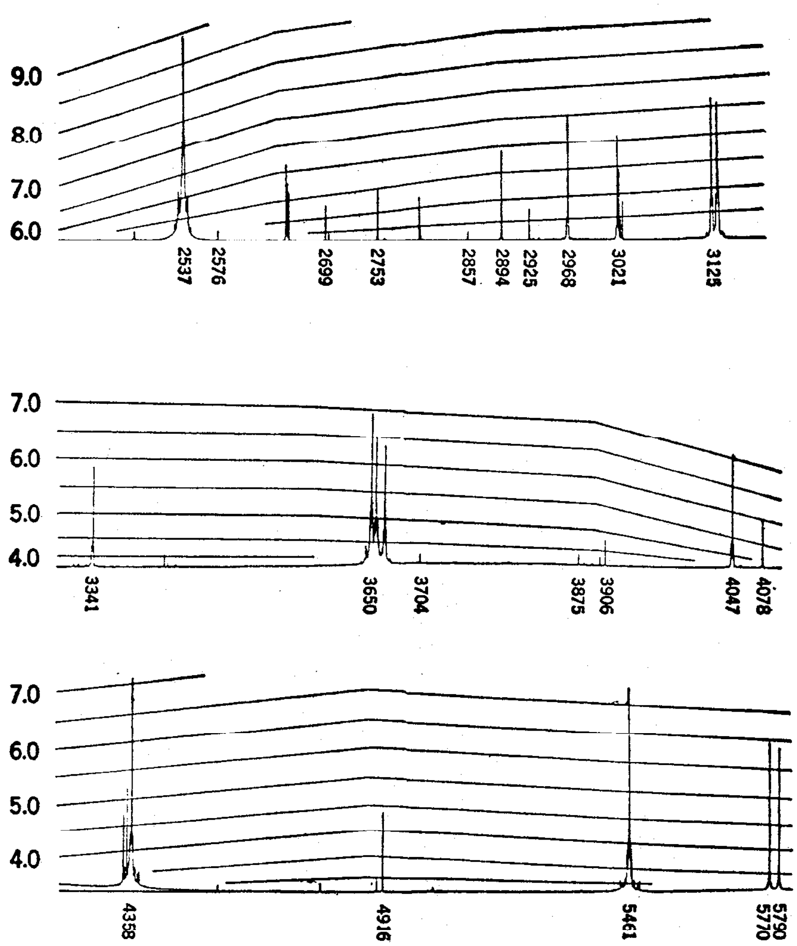


Fig. 7e-6. Photoelectric traces of the mercury spectrum, low-pressure mercury tube, 60 Hz discharge. Wavelength range 2400 to 5800 Å. In order to bring out the weaker lines, the sensitivity was increased so that the ghosts of the strong lines show.

Notes on Table 7e-7. All wavelengths are interferometric values by Burns,[2] except where otherwise noted.

Those marked *O* (natural mercury) are older values, sometimes of questionable accuracy. The values of Hg^{198} marked by * or *S* are averages, the latter proposed for international standards.

[1] Blank, *J. Opt. Soc. Am.* **40,** 345 (1950).

[2] Burns, Adams, and Longwell, *J. Opt. Soc. Am.* **40,** 339 (1950); Burns and Adams, *J. Opt. Soc. Am.* **42,** 56 (1952); **42,** 716 (1952).

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Kayser, H.: "Handbuch der Spektroscopie," 8 vols., S. Hirzel Verlag, Leipzig. Volumes 1–6 (1912) are now out of date but are still the chief source for the earlier developments in spectroscopy. Volumes 7 (1934) and 8 (1932) are more recent but also not quite up to modern standards. This handbook contains the most detailed compilation of spectroscopic data.

Minnaert, M., G. F. W. Mulders, and J. Houtgast: "Photometric Atlas of the Solar Spectrum," Amsterdam, 1940.

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