The Arc Spectrum of Cobalt

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The present analysis classifies 2725 lines and identifies 768 multiplets of the doublet, quartet, and sextet systems. The results are in complete agreement with Hund's theory, and indicate that all the important features of the structure of the neutral atom are now known. The results agree closely with those of Catalan and Antunes (who classified 2076 lines) except where changes in term-designations have been made on account of Zeeman data or of a new interpretation of the convergence of the components of multiple terms to their limits. The principal ionization potential is 7.84 volts. Tables are given of terms, electron configurations, and of 3007 lines, of which 91 percent are classified. Zeeman effects have been observed for 871 lines and g values derived for 270 levels. The large majority of these have nearly the theoretical values for LS coupling. There are some cases of g sharing (Table VII). The wave-length list includes measures of 1282 lines made with the interferometer by Dr. Keivin Burns of the Allegheny Observatory, which, by his generosity, are here published for the first time; and also 274 newly measured lines between λ2230 and λ1814.

1. Previous Investigations

THE first regularities in the arc spectrum of cobalt were detected by Walters[1] who identified the lowest terms of the quartet system. Catalan[2] in 1928 classified about 1200 lines. A thorough discussion, classifying 2076 lines, was published in 1936 by Catalan and Antunes.[3] This publication is unfortunately difficult of access in this country, and the situation is aggravated by the fact (communicated to us by Dr. Antunes) that the reprints which the authors hoped to distribute were lost in Toledo at the beginning of the Spanish War. We are very greatly indebted to Dr. Antunes for the loan of the single copy of this work in his possession —of which we have retained a photostatic copy.

The present work was begun without knowledge that this investigation was in progress, and has been extended farther with the aid of observations in the infra-red and ultraviolet. In view of the inaccessibility of the results of the earlier analysis, a detailed presentation of ours appears to be in order.

Observations of the Zeeman effect for 151 lines were given by Roth and Bartunek[4] who found g values for 93 levels. Our observations include 871 lines, and give g values for 270 levels.

Marvin[5] has made a theoretical discussion of the energy-levels in the deep configurations of Co I. We have found certain additional terms close to the positions predicted by him.

2. The Observational Data on Which the Present Investigation Is Based

(*a*) The *wave-lengths* have been compiled from all available sources (listed in Table VIII). We are very greatly indebted to Dr. Keivin Burns for putting at our disposal a long list of unpublished determinations with the interferometer. With his generous consent, these are printed here for the first time. Dr. Burns states that these observations are good to two parts per million. They are distinguished by heavy type in the general list (Table VIII). Next in preference, in order of accuracy, come the measures of Meggers and Kiess in the infra-red, including unpublished data kindly put at our disposal; those given in the *Wavelength Table of the Massachusetts Institute of Technology;* and unpublished measures of grating spectra by Burns. The observations have been extended from λ2230 to λ1814 by measures made by one of us (C.E.M.) on a plate taken by Dr. A. G. Shen-

[1] F. M. Walters, Jr., J. Washington Acad. Sci. **14**, 407 (1924).
[2] M. A. Catalan, Zeits. f. Physik **47**, 89 (1928).
[3] M. A. Catalan and M. T. Antunes, Anal. Soc. Española de Fisica y Quimica **34**, 103–145, 207–297 (1936).
[4] F. L. Roth and P. F. Bartunek, Phys. Rev. **47**, 526 (1935).
[5] H. H. Marvin, Phys. Rev. **47**, 521 (1935).

stone with a normal-incidence vacuum spectrograph having a 2-meter glass grating ruled 30,000 lines per inch. The dispersion is 4.2A/mm.[6] Few standard lines were available, and the measures are not of high precision.

King's temperature classification[7] has been, as always, of fundamental value in the analysis.

(*b*) The observations of Zeeman effect were made by one of us (R.B.K.) but include some plates and measures made earlier by A. S. King. They were obtained with the aid of the Weiss magnet and the 15-foot concave grating spectrograph of the Mt. Wilson laboratory. The field strength was slightly in excess of 30,000 gauss. The spectrum was photographed in the second order (dispersion 1.86A/mm) from λ2200 to λ5000, and in the first order from λ5000 to λ7000.

Measurements of the Zeeman patterns were made with an ordinary comparator. Most of the complex patterns were unresolved, the *n* components usually appearing as doublets with the components widened in some degree, while the *p* components were either undisplaced, though broadened, or appeared as doublets. Measurements of displacements on complex patterns appearing as doublets were usually made on the centers of gravity of each component of the doublet. In some cases, however, the patterns were on the verge of resolution and were strongly shaded inward or outward making it difficult to locate the center of gravity. Then settings were made on the strong edges of the pattern. These should give, very nearly, the separations of the strongest components of the complex patterns. In many cases one component of a doublet pattern, or one side of a resolved pattern, was badly blended with a neighboring line. In these cases the displacement was measured between the unblended component or components and the no-field line appearing in the adjacent spectra.

The reduction of the observed Zeeman separations in angstrom units to the theoretical unit of the normal Zeeman triplet was done in the usual manner. The field strengths were determined from measurements of the patterns of the sodium D lines and of numerous normal resolved patterns of previously classified Co I lines.

TABLE I. *Observed and predicted low levels in* Co I.

CONFIG.	TERM	PRINCIPAL LEVEL	INTERVALS
$3d^74s^2$	a^4F	0	816, 591, 402
		0	*808, 594, 406*
	b^4P	15,184	590, 422
		14,955	*250, 385*
	a^2G	16,468	766
		16,051	*787*
	b^2P	20,500	715
		20,878	*787*
	a^2H	21,780	695
		20,992	*703*
	b^2D	21,920	1232
		22,962	*1168*
	^2F	*35,798*	*−320*
	^2D	*56,272*	*−352*
$3d^84s$	b^4F	3483	660, 548, 386
		3483	*662, 538, 396*
	a^2F	7442	1018
		7629	*1050*
	a^4P	13,795	241, 363
		13,857	*498, 243*
	a^2D	16,778	−307
		16,799	*−359*
	a^2P	18,389	385
		18,194	*221*
	b^2G	23,184	23
		21,294	*4*
	^2S	*47,421*	
$3d^9$	c^2D	27,497	973
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3. RESULTS OF PRESENT ANALYSES

The results of the present analysis agree in general with those of Catalan and Antunes, except among the high levels—both odd and even—where many changes in designation have been made, based largely upon Zeeman data not previously available. The number of terms identified is 99—47 belonging to the doublet system, 43 quartets, and 9 sextets—including 284 energy-levels. There are 43 more levels which have not been grouped into terms—a total of 327 levels, of which 132 are even and 195 odd.

Combinations between these account for 2725 lines—including 69 which are unresolved blends of lines which should be roughly comparable in intensity. There are also 42 faint predicted lines which are masked by strong ones. These are grouped into 768 multiplets, and 204 combinations with miscellaneous levels, observed in whole or in part. Of these 186 are doublet combinations, 197 quartets, 18 sextets, 288 doublet-

[6] A. G. Shenstone, Phil. Trans. **237**, 453 (1938).
[7] A. S. King, Astrophys. J. **42**, 347 (1915), **51**, 179 (1920) Mt. Wilson Contr. Nos. 108 and 181.

TABLE II. *Electron configurations in* Co I.*

LIMIT d^7s		a^5F	b^3F	a^5P	^3P	^3H	^1H	^3G	^1G	^3D	^1D	^3P	^1P
Added Electron	$4s$	a^4F		b^4P		a^2H		a^2G		b^2D		b^2P	
	$4p$	z^6D^0 z^6F^0 z^6G^0	x^4D^0 x^4F^0 x^4G^0	$^6S^0$ $^6P^0$ $^6D^0$	x^4S^0 x^4P^0 t^4D^0	$^4G^0$ $^4H^0$ $^4I^0$	$^2G^0$ $^2H^0$ $^2I^0$	w^4F^0 w^4G^0 $^4H^0$	$^2F^0$ $^2G^0$ $^2H^0$	w^4P^0: s^4D^0: $^4F^0$	$^2P^0$ $^2D^0$ $^2F^0$	$^4S^0$ $^4P^0$ $^4D^0$	$^2S^0$ $^2P^0$ $^2D^0$
		z^4D^0 z^4F^0 z^4G^0	z^2D^0 z^2F^0 z^2G^0	z^4S^0 z^4P^0 w^4D^0	z^2S^0: y^2P^0: v^2D^0:	w^2G^0: y^2H^0: $^2I^0$		x^2F^0: x^2G^0 z^2H^0		$^2P^0$ $^2D^0$ $^2F^0$		x^2S^0: w^2P^0: $^2D^0$	

LIMIT d^8		a^3F	^3P	^1G	^1D
Added Electron	$4s$	b^4F a^2F	a^4P a^2P	b^2G	a^2D
	$4p$	y^4D^0 y^4F^0 y^4G^0	y^4S^0 y^4P^0 v^4D^0	u^2F^0 v^2G^0 x^2H^0:	z^2P^0 x^2D^0 w^2F^0:
		y^2D^0 y^2F^0 y^2G^0	y^2S^0: x^2P^0: w^2D^0:		

LIMIT d^7s		a^5F		b^3F	
Added Electron	$5s$	e^6F	f^4F	h^4F	g^2F
	$4d$	e^6P e^6D f^6F e^6G e^6H	f^4P f^4D i^4F f^4G f^4H	^4P ^4D ^4F ^4G ^4H	^2P ^2D ^2F ^2G ^2H

LIMIT d^8		a^3F	
Added Electron	$5s$	e^4F	e^2F
	$4d$	e^4P e^4D g^4F e^4G e^4H	e^2P e^2D f^2F e^2G e^2H

* A colon denotes that the assignment of the electron configuration is doubtful.

quartet, and 66 quartet-sextet intercombinations (while 13 are double intercombinations, between doublets and sextets).

The terms and unclassified levels are listed in Table IV. Some of the higher ones are incomplete—the components of small J value having eluded search.

4. ELECTRON CONFIGURATIONS

The *electron-configurations* for the low even terms can be assigned with certainty. Marvin's theoretical study is conclusive,—especially his prediction of the terms a^2H and b^2G close to the positions in which they were later found by Catalan and Antunes and by us, as shown in Table I, where the third column gives the level of the leading component and the next the term intervals—the observed values being in Roman type and the calculated in italics.

Marvin assigns b^2D to $3d^9$; but it fits his prediction for $3d^74s^2$ satisfactorily, and the recently discovered c^2D falls naturally in the other place.

The three remaining terms from the "low" configurations all lie so high that there is little or no hope of finding their combinations.

The odd configurations $3d^74s4p$ and $3d^84p$ give a great number of terms, forming triads, each of which should have its terms roughly at the same level and combine strongly with the related even low term. Many of these triads can be identified with certainty. Among the terms of small L value, especially in the doublets, there is a good deal of mutual perturbation and sharing of relationships, which make assignment difficult.

Among the high even terms, which are also included in the table, the "families" having the same limit-term in Co II are usually clearly separated, and assignments are rarely doubtful.

TABLE III. *Ionization potential of* Co I.

DESIG.	LEVEL	EST. n^*	TERM	Co II	$^4F_{4\frac{1}{2}}-{}^3F_4$	FINAL n^*
a^4F	0	1.278	67,188	3350	63,838	1.281
e^6F	45,676	2.277	21,165	3350	63,493	2.276
f^4F	47,524	2.386	19,276	3350	63,450	2.382
e^6H	53,822	2.892	13,121	3350	63,593	2.901
a^4F	0	1.226	73,009	9813	63,193	1.223
h^4F	52,864	2.308	20,600	9813	63,651	2.316
b^4F	3483	1.350	60,213	0	63,696	1.352
a^2F	7442	1.387	57,043	950	63,535	1.387
e^4F	44,782	2.420	18,738	0	63,520	2.421
e^2F	45,924	2.450	18,282	950	63,336	2.433
e^4H	51,142	2.975	12,399	0	63,709	2.978

TABLE IV. Co I *terms.*

CONFIG.	TERM		OBS. g	C. AND A.
d^8s	$a^2P_{1\frac{1}{2}}$	18,389.57	1.33	Id
	$a^2P_{\frac{1}{2}}$	18,775.01	0.69	Id
d^7s^2	$b^2P_{1\frac{1}{2}}$	20,500.71	1.29	Id
	$b^2P_{\frac{1}{2}}$	21,215.90	0.68	Id
$d^8(^3F)4d$	$e^2P_{1\frac{1}{2}}$	51,200.60	1.38:	$e^4P_{1\frac{1}{2}}$
	$e^2P_{\frac{1}{2}}$	52,041.14:	0.48:	$e^4P_{\frac{1}{2}}$
d^8s	$a^2D_{2\frac{1}{2}}$	16,778.16	1.28	Id
	$a^2D_{1\frac{1}{2}}$	16,470.60	1.09	Id
d^7s^2	$b^2D_{2\frac{1}{2}}$	21,920.09	1.24	Id
	$b^2D_{1\frac{1}{2}}$	23,152.57	0.79	Id
d^9	$c^2D_{2\frac{1}{2}}$	27,497.06	1.20	
	$c^2D_{1\frac{1}{2}}$	28,470.51	0.82	
$d^8(^3F)4d$	$e^2D_{2\frac{1}{2}}$	52,460.10	0.92	Id
	$e^2D_{1\frac{1}{2}}$	53,343.27	0.80	Id
d^8s	$a^2F_{3\frac{1}{2}}$	7442.41	1.16	Id
	$a^2F_{2\frac{1}{2}}$	8460.81	0.86	Id
$d^8(^3F)5s$	$e^2F_{3\frac{1}{2}}$	45,924.98	1.14	Id
	$e^2F_{2\frac{1}{2}}$	46,746.00	0.49:	Id
$d^8(^3F)4d$	$f^2F_{3\frac{1}{2}}$	52,095.00	1.11	Id
	$f^2F_{2\frac{1}{2}}$	52,970.62	1.13	Id
$d^7s(^3F)5s$	$g^2F_{3\frac{1}{2}}$	52,763.68	0.93	$e^2G_{3\frac{1}{2}}$
	$g^2F_{2\frac{1}{2}}$	53,704.14	0.98	Id
d^7s^2	$a^2G_{4\frac{1}{2}}$	16,467.90	1.11	Id
	$a^2G_{3\frac{1}{2}}$	17,233.68	0.90	Id
d^8s	$b^2G_{4\frac{1}{2}}$	23,184.23	1.11	
	$b^2G_{3\frac{1}{2}}$	23,207.76	0.87	
$d^8(^3F)4d$	$e^2G_{4\frac{1}{2}}$	52,156.46	1.12	Id
	$e^2G_{3\frac{1}{2}}$	52,856.68	0.92	$g^2F_{3\frac{1}{2}}$
d^7s^2	$a^2H_{5\frac{1}{2}}$	21,780.47	1.09	Id
	$a^2H_{4\frac{1}{2}}$	22,475.36	0.94	Id
$d^8(^3F)4d$	$e^2H_{5\frac{1}{2}}$	52,113.91	1.13	Id
	$e^2H_{4\frac{1}{2}}$	52,775.47	0.97	Id
d^8s	$a^4P_{2\frac{1}{2}}$	13,795.52	1.64	Id
	$a^4P_{1\frac{1}{2}}$	14,036.28	1.72	Id
	$a^4P_{\frac{1}{2}}$	14,399.28	2.66	Id
d^7s^2	$b^4P_{2\frac{1}{2}}$	15,184.04	1.50	Id
	$b^4P_{1\frac{1}{2}}$	15,774.04	1.47	Id
	$b^4P_{\frac{1}{2}}$	16,195.68	2.68	Id
$d^8(^3F)4d$	$e^4P_{2\frac{1}{2}}$	51,042.26	1.59	Id
	$e^4P_{1\frac{1}{2}}$	52,033.26	1.40	$e^2P_{1\frac{1}{2}}$
	$e^4P_{\frac{1}{2}}$	52,915.92:		$e^2P_{\frac{1}{2}}$
$d^7s(^5F)4d$	$f^4P_{2\frac{1}{2}}$	53,936.68	1.46	$f^6F_{4\frac{1}{2}}$
	$f^4P_{1\frac{1}{2}}$			
	$f^4P_{\frac{1}{2}}$			
$d^8(^3P)5s$	$g^4P_{2\frac{1}{2}}$	56,545.51:		$42_{2\frac{1}{2}}$ *
	$g^4P_{1\frac{1}{2}}$			
	$g^4P_{\frac{1}{2}}$			
$d^8(^3F)4d$	$e^4D_{3\frac{1}{2}}$	51,052.98	1.45	Id
	$e^4D_{2\frac{1}{2}}$	51,560.76	1.18	Id
	$e^4D_{1\frac{1}{2}}$	52,264.49:		Id
	$e^4D_{\frac{1}{2}}$	52,634.62	1.58:	Id
$d^7s(^5F)4d$	$f^4D_{3\frac{1}{2}}$	53,702.13	1.39	$e^6P_{3\frac{1}{2}}$
	$f^4D_{2\frac{1}{2}}$	54,282.73:		$i^4F_{3\frac{1}{2}}$
	$f^4D_{1\frac{1}{2}}$			
	$f^4D_{\frac{1}{2}}$			
d^7s^2	$a^4F_{4\frac{1}{2}}$	0.00	1.32	Id
	$a^4F_{3\frac{1}{2}}$	816.00	1.27	Id
	$a^4F_{2\frac{1}{2}}$	1406.84	1.05	Id
	$a^4F_{1\frac{1}{2}}$	1809.33	0.42	Id
d^8s	$b^4F_{4\frac{1}{2}}$	3482.82	1.34	Id
	$b^4F_{3\frac{1}{2}}$	4142.66	1.25	Id
	$b^4F_{2\frac{1}{2}}$	4690.18	1.04	Id
	$b^4F_{1\frac{1}{2}}$	5075.83	0.40	Id
$d^8(^3F)5s$	$e^4F_{4\frac{1}{2}}$	44,782.13	1.33	Id
	$e^4F_{3\frac{1}{2}}$	45,105.59	1.21	Id
	$e^4F_{2\frac{1}{2}}$	45,876.58	1.01	Id
	$e^4F_{1\frac{1}{2}}$	46,375.17	0.44	Id
$d^7s(^5F)5s$	$f^4F_{4\frac{1}{2}}$	47,524.47	1.33	Id
	$f^4F_{3\frac{1}{2}}$	48,201.60	1.27	Id
	$f^4F_{2\frac{1}{2}}$	48,718.57	1.04	Id
	$f^4F_{1\frac{1}{2}}$	49,078.43	0.36	Id
$d^8(^3F)4d$	$g^4F_{4\frac{1}{2}}$	51,170.14	1.34	Id
	$g^4F_{3\frac{1}{2}}$	51,199.58	1.16	Id
	$g^4F_{2\frac{1}{2}}$	52,070.00	1.08	Id
	$g^4F_{1\frac{1}{2}}$	52,702.76	0.76:	$e^4G_{2\frac{1}{2}}$
$d^7s(^3F)5s$	$h^4F_{4\frac{1}{2}}$	52,864.41	1.26	Id
	$h^4F_{3\frac{1}{2}}$	53,694.57	1.28:	Id
	$h^4F_{2\frac{1}{2}}$	54,258.75	0.98:	Id
	$h^4F_{1\frac{1}{2}}$	54,426.64		Id
$d^7s(^5F)4d$	$i^4F_{4\frac{1}{2}}$	53,788.78	1.27	$e^6D_{4\frac{1}{2}}$
	$i^4F_{3\frac{1}{2}}$	54,477.07		$f^6F_{3\frac{1}{2}}$
	$i^4F_{2\frac{1}{2}}$	54,904.99	0.85	$f^6F_{2\frac{1}{2}}$
	$i^4F_{1\frac{1}{2}}$			
$d^8(^3F)4d$	$e^4G_{5\frac{1}{2}}$	51,203.75	1.21	Id
	$e^4G_{4\frac{1}{2}}$	51,267.93	1.13	Id
	$e^4G_{3\frac{1}{2}}$	52,162.02	1.13	Id
	$e^4G_{2\frac{1}{2}}$	52,772.30	0.74	$g^4F_{1\frac{1}{2}}$
$d^7s(^5F)4d$	$f^4G_{5\frac{1}{2}}$	53,511.83	1.32	$f^6F_{5\frac{1}{2}}$
	$f^4G_{4\frac{1}{2}}$	54,158.17	1.25:	$j^4F_{4\frac{1}{2}}$
	$f^4G_{3\frac{1}{2}}$	54,514.67	1.23:	$f^4P_{2\frac{1}{2}}$
	$f^4G_{2\frac{1}{2}}$	55,165.63:		$f^6F_{1\frac{1}{2}}$
$d^8(^3F)4d$	$e^4H_{6\frac{1}{2}}$	51,142.53	1.21	Id
	$e^4H_{5\frac{1}{2}}$	51,174.28	1.13	Id
	$e^4H_{4\frac{1}{2}}$	52,121.21	0.96	Id
	$e^4H_{3\frac{1}{2}}$	52,716.70	0.93	Id
$d^7s(^5F)4d$	$f^4H_{6\frac{1}{2}}$	53,618.08	1.22	$e^6H_{6\frac{1}{2}}$
	$f^4H_{5\frac{1}{2}}$	54,315.67	1.18	$e^6H_{5\frac{1}{2}}$
	$f^4H_{4\frac{1}{2}}$	54,860.93	1.10:	$j^4F_{3\frac{1}{2}}$
	$f^4H_{3\frac{1}{2}}$	55,268.75		$e^6H_{3\frac{1}{2}}$
	$g^4H_{6\frac{1}{2}}$	57,922.06		
	$g^4H_{5\frac{1}{2}}$	58,441.03		
	$g^4H_{4\frac{1}{2}}$	58,673.73		
	$g^4H_{3\frac{1}{2}}$	59,314.82:		
$d^7s(^5F)4d$	$e^6P_{3\frac{1}{2}}$	53,789.12	1.81	
	$e^6P_{2\frac{1}{2}}$	54,445.61	1.67	$f^4D_{3\frac{1}{2}}$
	$e^6P_{1\frac{1}{2}}$	54,949.97	1.44:	Id
$d^7s(^5F)4d$	$e^6D_{4\frac{1}{2}}$	53,725.20	1.44	$e^6G_{5\frac{1}{2}}$
	$e^6D_{3\frac{1}{2}}$	54,352.30	1.48	Id
	$e^6D_{2\frac{1}{2}}$	54,946.90	1.47:	Id
	$e^6D_{1\frac{1}{2}}$	55,407.10:	2.14	
	$e^6D_{\frac{1}{2}}$			
$d^7s(^5F)5s$	$e^6F_{5\frac{1}{2}}$	45,676.00	1.48	Id
	$e^6F_{4\frac{1}{2}}$	46,223.01	1.43	Id
	$e^6F_{3\frac{1}{2}}$	46,706.83	1.40	Id
	$e^6F_{2\frac{1}{2}}$	47,090.65	1.32	Id
	$e^6F_{1\frac{1}{2}}$	47,364.73	1.09	Id
	$e^6F_{\frac{1}{2}}$	47,528.44	−0.71	Id
$d^7s(^5F)4d$	$f^6F_{5\frac{1}{2}}$	53,660.37	1.44	$31_{5\frac{1}{2}}$*
	$f^6F_{4\frac{1}{2}}$	54,356.45	1.36	$e^6G_{4\frac{1}{2}}$
	$f^6F_{3\frac{1}{2}}$	54,896.57	1.27	$e^6G_{3\frac{1}{2}}$
	$f^6F_{2\frac{1}{2}}$	55,283.02	1.17	$e^6G_{2\frac{1}{2}}$
	$f^6F_{1\frac{1}{2}}$	55,577.28:	1.07	$f^4D_{\frac{1}{2}}$
	$f^6F_{\frac{1}{2}}$			
$d^7s(^5F)4d$	$e^6G_{6\frac{1}{2}}$	53,728.36:	1.35	33*
	$e^6G_{5\frac{1}{2}}$	54,367.43	1.32	$f^4G_{5\frac{1}{2}}$
	$e^6G_{4\frac{1}{2}}$	54,682.91	1.23	†
	$e^6G_{3\frac{1}{2}}$	54,989.62:	1.23	$f^4G_{4\frac{1}{2}}$
	$e^6G_{2\frac{1}{2}}$	55,449.97	1.25	$f^4D_{1\frac{1}{2}}$
	$e^6G_{1\frac{1}{2}}$	55,389.73		Id
$d^7s(^5F)4d$	$e^6H_{7\frac{1}{2}}$	53,822.08	1.34	
	$e^6H_{6\frac{1}{2}}$	54,452.38	1.29	$f^4H_{6\frac{1}{2}}$
	$e^6H_{5\frac{1}{2}}$	54,947.68	1.22	$f^4H_{5\frac{1}{2}}$
	$e^6H_{4\frac{1}{2}}$	55,312.96		$f^4H_{4\frac{1}{2}}$
	$e^6H_{3\frac{1}{2}}$	55,520.64	0.94	$f^4G_{3\frac{1}{2}}$
	$e^6H_{2\frac{1}{2}}$	55,555.34		
	$1_{2\frac{1}{2}}$	54,561.74	1.36:	$e^6P_{2\frac{1}{2}}$
	$2_{1\frac{1}{2}}$	55,078.76	1.46:	$f^4P_{1\frac{1}{2}}$
	$3_{3\frac{1}{2}}$	55,223.14	1.14	$f^4D_{2\frac{1}{2}}$
	$4_{2\frac{1}{2}}$	55,598.74		$f^4H_{3\frac{1}{2}}$
	$5_{1\frac{1}{2},2\frac{1}{2}}$	55,721.01		$f^4G_{2\frac{1}{2}}$
	$6_{\frac{1}{2}}$	55,826.81		$f^4P_{\frac{1}{2}}$
$d^7s(^3P)4p$:	$z^2S^0_{\frac{1}{2}}$	44,454.51	2.10	$x^2P^0_{\frac{1}{2}}$
$d^8(^3P)4p$:	$y^2S^0_{\frac{1}{2}}$	47,977.94	2.05	
$d^7s(^3P)4p$:	$x^2S^0_{\frac{1}{2}}$	48,026.34	1.70	$w^2P^0_{\frac{1}{2}}$
	$w^2S^0_{\frac{1}{2}}$	48,837.72	1.50:	$t^4D^0_{\frac{1}{2}}$
$d^8(^1D)4p$	$z^2P^0_{1\frac{1}{2}}$	43,537.71	1.19	$y^2P^0_{1\frac{1}{2}}$
	$z^2P^0_{\frac{1}{2}}$	43,130.24	0.71	Id
$d^7s(^3P)4p$:	$y^2P^0_{1\frac{1}{2}}$	46,685.43	1.33	$w^4D^0_{1\frac{1}{2}}$
	$y^2P^0_{\frac{1}{2}}$	47,091.14	0.63	$w^4D^0_{\frac{1}{2}}$
$d^8(^3P)4p$:	$x^2P^0_{1\frac{1}{2}}$	48,334.37	1.39	$w^2P^0_{1\frac{1}{2}}$
	$x^2P^0_{\frac{1}{2}}$	48,160.43:	1.20	
$d^7s(^3P)4p$:	$w^2P^0_{1\frac{1}{2}}$	49,025.42	0.94	$54^0_{1\frac{1}{2}}$
	$w^2P^0_{\frac{1}{2}}$	49,754.73	1.24	
	$v^2P^0_{1\frac{1}{2}}$	50,925.11	1.32	$103^0_{1\frac{1}{2}}$
	$v^2P^0_{\frac{1}{2}}$	50,945.47	0.74	†
$d^7s(^3F)4p$	$z^2D^0_{2\frac{1}{2}}$	33,462.83	1.20	Id
	$z^2D^0_{1\frac{1}{2}}$	34,352.42	0.82	Id
$d^8(^3F)4p$	$y^2D^0_{2\frac{1}{2}}$	36,092.44	1.19	Id
	$y^2D^0_{1\frac{1}{2}}$	36,875.13	0.81	Id
$d^8(^1D)4p$	$x^2D^0_{2\frac{1}{2}}$	43,921.89	1.23	Id
	$x^2D^0_{1\frac{1}{2}}$	43,911.36	1.13	Id
$d^8(^3P)4p$:	$w^2D^0_{2\frac{1}{2}}$	45,688.15	1.19	$y^4P^0_{2\frac{1}{2}}$
	$w^2D^0_{1\frac{1}{2}}$	46,454.95	0.85	$v^2D^0_{1\frac{1}{2}}$
$d^7s(^3P)4p$:	$v^2D^0_{2\frac{1}{2}}$	46,671.94	1.21	$x^4P^0_{2\frac{1}{2}}$
	$v^2D^0_{1\frac{1}{2}}$	46,186.41	1.18	$w^2D^0_{1\frac{1}{2}}$
	$u^2D^0_{2\frac{1}{2}}$	53,195.98	1.16	†
	$u^2D^0_{1\frac{1}{2}}$	53,074.92	0.81	
$d^7s(^3F)4p$	$z^2F^0_{3\frac{1}{2}}$	31,871.15	1.18	Id
	$z^2F^0_{2\frac{1}{2}}$	32,781.71	0.88	Id
$d^8(^3F)4p$	$y^2F^0_{3\frac{1}{2}}$	35,450.56	1.12	Id
	$y^2F^0_{2\frac{1}{2}}$	36,329.86	0.96:	Id
$d^7s(^3G)4p$:	$x^2F^0_{3\frac{1}{2}}$	43,555.22	1.24	$w^2F^0_{3\frac{1}{2}}$
	$x^2F^0_{2\frac{1}{2}}$	43,425.71	1.02	$w^2F^0_{2\frac{1}{2}}$
$d^8(^1D)4p$:	$w^2F^0_{3\frac{1}{2}}$	47,225.11	1.25	$u^2F^0_{3\frac{1}{2}}$
	$w^2F^0_{2\frac{1}{2}}$	47,128.96	0.83	$u^2F^0_{2\frac{1}{2}}$
	$v^2F^0_{3\frac{1}{2}}$	48,317.17	1.18	$u^4D^0_{3\frac{1}{2}}$
	$v^2F^0_{2\frac{1}{2}}$	48,615.56:		$t^4D^0_{2\frac{1}{2}}$
$d^8(^1G)4p$	$u^2F^0_{3\frac{1}{2}}$	50,578.73	1.15	
	$u^2F^0_{2\frac{1}{2}}$	50,712.45	0.91	†
	$t^2F^0_{3\frac{1}{2}}$	51,896.75:	1.15:	
	$t^2F^0_{2\frac{1}{2}}$	52,796.13	0.92:	†
	$s^2F^0_{3\frac{1}{2}}$	53,103.78	1.16	†
	$s^2F^0_{2\frac{1}{2}}$	53,146.91:		
$d^7s(^3F)4p$	$z^2G^0_{4\frac{1}{2}}$	31,699.69	1.11	Id
	$z^2G^0_{3\frac{1}{2}}$	32,733.07	0.91	Id
$d^8(^3F)4p$	$y^2G^0_{4\frac{1}{2}}$	33,439.72	1.16	Id
	$y^2G^0_{3\frac{1}{2}}$	34,133.59	0 95	Id
$d^7s(^3G)4p$	$x^2G^0_{4\frac{1}{2}}$	46,032.10	1.12	$z^2H^0_{4\frac{1}{2}}$
	$x^2G^0_{3\frac{1}{2}}$	45,766.63	0.93	
$d^7s(^3H)4p$:	$w^2G^0_{4\frac{1}{2}}$	50,593.38	1.10	$101^0_{4\frac{1}{2}}$
	$w^2G^0_{3\frac{1}{2}}$	50,611.22	0.82	
$d^8(^1G)4p$	$v^2G^0_{4\frac{1}{2}}$	53,276.02	1.03	$102^0_{4\frac{1}{2}}$
	$v^2G^0_{3\frac{1}{2}}$	53,373.53	0.86	
$d^7s(^3G)4p$	$z^2H^0_{5\frac{1}{2}}$	45,540.28	1.12	Id
	$z^2H^0_{4\frac{1}{2}}$	45,111.48	0.90	
$d^7s(^3H)4p$:	$y^2H^0_{5\frac{1}{2}}$	50,375.91	1.09:	
	$y^2H^0_{4\frac{1}{2}}$	50,210.80	0.91	
$d^8(^1G)4p$:	$x^2H^0_{5\frac{1}{2}}$	50,703.08	1.08	
	$x^2H^0_{4\frac{1}{2}}$	50,902.61	0.98	
$d^7s(^5P)4p$	$z^4S^0_{1\frac{1}{2}}$	40,621.62	2.03	Id
$d^8(^3P)4p$	$y^4S^0_{1\frac{1}{2}}$	46,562.87	1.25	$x^4P^0_{1\frac{1}{2}}$
$d^7s(^3P)4p$	$x^4S^0_{1\frac{1}{2}}$	48,753.72	1.75	$t^4D^0_{1\frac{1}{2}}$

* Level rejected by Catalan and Antunes.

† Level regarded as doubtful by C. and A. and not given designation.

TABLE IV.—*Concluded.*

Config.	Term		Obs. g	C. and A.
$d^7s(^5P)4p$	$z^4P^0_{2\frac{1}{2}}$	41,968.89	1.63	Id
	$z^4P^0_{1\frac{1}{2}}$	41,982.66	1.73	Id
	$z^4P^0_{\frac{1}{2}}$	41,969.90	2.51	Id
$d^8(^3P)4p$	$y^4P^0_{2\frac{1}{2}}$	44,480.14	1.55	$w^4F^0_{2\frac{1}{2}}$
	$y^4P^0_{1\frac{1}{2}}$	44,658.03	1.62	$x^2P^0_{1\frac{1}{2}}$
	$y^4P^0_{\frac{1}{2}}$	44,857.57	2.44	$z^2S^0_{\frac{1}{2}}$
$d^7s(^3P)4p$	$x^4P^0_{2\frac{1}{2}}$	46,002.83	1.54	$w^2D^0_{2\frac{1}{2}}$
	$x^4P^0_{1\frac{1}{2}}$	45,904.68	1.68	$y^4P^0_{1\frac{1}{2}}$
	$x^4P^0_{\frac{1}{2}}$	45,957.29	2.48	$y^4P^0_{\frac{1}{2}}$
$d^7s(^3D)4p$:	$w^4P^0_{2\frac{1}{2}}$	51,160.03	1.51:	$85^0_{2\frac{1}{2}}$
	$w^4P^0_{1\frac{1}{2}}$	52,014.45	1.68	†
	$w^4P^0_{\frac{1}{2}}$	52,355.12	2.40	†
$d^7s(^5F)4p$	$z^4D^0_{3\frac{1}{2}}$	29,294.52	1.43	Id
	$z^4D^0_{2\frac{1}{2}}$	29,948.76	1.35	Id
	$z^4D^0_{1\frac{1}{2}}$	30,443.63	1.18	Id
	$z^4D^0_{\frac{1}{2}}$	30,742.65	−0.01	Id
$d^8(^3F)4p$	$y^4D^0_{3\frac{1}{2}}$	32,027.50	1.41	Id
	$y^4D^0_{2\frac{1}{2}}$	32,654.50	1.39	Id
	$y^4D^0_{1\frac{1}{2}}$	33,150.68	1.20	Id
	$y^4D^0_{\frac{1}{2}}$	33,449.18	0.01	Id
$d^7s(^3F)4p$	$x^4D^0_{3\frac{1}{2}}$	39,649.16	1.41	Id
	$x^4D^0_{2\frac{1}{2}}$	40,345.95	1.35	Id
	$x^4D^0_{1\frac{1}{2}}$	40,827.77	1.24	Id
	$x^4D^0_{\frac{1}{2}}$	41,101.80	−0.03	Id
$d^7s(^5P)4p$	$w^4D^0_{3\frac{1}{2}}$	43,398.62	1.33	$x^2F^0_{3\frac{1}{2}}$
	$w^4D^0_{2\frac{1}{2}}$	43,242.95	1.17	$x^2F^0_{2\frac{1}{2}}$
	$w^4D^0_{1\frac{1}{2}}$	43,263.57	1.16	$z^2P^0_{1\frac{1}{2}}$
	$w^4D^0_{\frac{1}{2}}$	43,435.58	0.14	$y^2P^0_{\frac{1}{2}}$
$d^8(^3P)4p$	$v^4D^0_{3\frac{1}{2}}$	45,971.19	1.42	$w^4D^0_{3\frac{1}{2}}$
	$v^4D^0_{2\frac{1}{2}}$	46,329.63	1.36	$w^4D^0_{2\frac{1}{2}}$
	$v^4D^0_{1\frac{1}{2}}$	46,260.02	1.48	$P^0_{1\frac{1}{2}}$
	$v^4D^0_{\frac{1}{2}}$	46,502.15	0.16	$x^4P^0_{\frac{1}{2}}$
	$u^4D^0_{3\frac{1}{2}}$	46,872.74	1.30	$v^4D^0_{3\frac{1}{2}}$
	$u^4D^0_{2\frac{1}{2}}$	47,393.93	1.28	$v^4D^0_{2\frac{1}{2}}$
	$u^4D^0_{1\frac{1}{2}}$	47,612.18	1.12	$v^4D^0_{1\frac{1}{2}}$
	$u^4D^0_{\frac{1}{2}}$	47,905.26	0.01	$v^4D^0_{\frac{1}{2}}$
$d^7s(^3P)4p$	$t^4D^0_{3\frac{1}{2}}$	48,217.32	1.19	$u^4D^0_{3\frac{1}{2}}$
	$t^4D^0_{2\frac{1}{2}}$	48,443.76	1.34	$u^4D^0_{2\frac{1}{2}}$
	$t^4D^0_{1\frac{1}{2}}$	48,546.07	1.05	$u^4D^0_{1\frac{1}{2}}$
	$t^4D^0_{\frac{1}{2}}$	48,571.77	0.36:	$u^4D^0_{\frac{1}{2}}$
$d^7s(^3D)4p$:	$s^4D^0_{3\frac{1}{2}}$	50,741.66		Id
	$s^4D^0_{2\frac{1}{2}}$	51,139.38	1.33:	Id
	$s^4D^0_{1\frac{1}{2}}$	51,847.27		Id
	$s^4D^0_{\frac{1}{2}}$	52,264.01:		
$d^7s(^5F)4p$	$z^4F^0_{4\frac{1}{2}}$	28,345.86	1.35	Id
	$z^4F^0_{3\frac{1}{2}}$	28,777.27	1.24	Id
	$z^4F^0_{2\frac{1}{2}}$	29,216.37	1.03	Id
	$z^4F^0_{1\frac{1}{2}}$	29,563.17	0.42	Id
$d^8(^3F)4p$	$y^4F^0_{4\frac{1}{2}}$	32,841.99	1.32	Id
	$y^4F^0_{3\frac{1}{2}}$	33,466.87	1.16	Id
	$y^4F^0_{2\frac{1}{2}}$	33,945.90	0.95	Id
	$y^4F^0_{1\frac{1}{2}}$	34,196.21	0.47	Id
$d^7s(^3F)4p$	$x^4F^0_{4\frac{1}{2}}$	41,225.76	1.35	Id
	$x^4F^0_{3\frac{1}{2}}$	41,918.41	1.24	Id
	$x^4F^0_{2\frac{1}{2}}$	42,434.23	1.04	Id
	$x^4F^0_{1\frac{1}{2}}$	42,796.67	0.44	Id
$d^7s(^3G)4p$	$w^4F^0_{4\frac{1}{2}}$	43,295.32	1.32	†
	$w^4F^0_{3\frac{1}{2}}$	43,847.98	1.20	$v^2F^0_{3\frac{1}{2}}$
	$w^4F^0_{2\frac{1}{2}}$	44,201.92	0.95	$v^2F^0_{2\frac{1}{2}}$
	$w^4F^0_{1\frac{1}{2}}$	44,555.71	0.44	$w^4P^0_{1\frac{1}{2}}$
	$v^4F^0_{4\frac{1}{2}}$	54,791.2		
	$v^4F^0_{3\frac{1}{2}}$	55,314.04:		
	$v^4F^0_{2\frac{1}{2}}$	55,684.7		
	$v^4F^0_{1\frac{1}{2}}$	55,622.84		
$d^7s(^5F)4p$	$z^4G^0_{5\frac{1}{2}}$	28,845.22	1.27	Id
	$z^4G^0_{4\frac{1}{2}}$	29,269.73	1.19	Id
	$z^4G^0_{3\frac{1}{2}}$	29,735.18	1.01	Id
	$z^4G^0_{2\frac{1}{2}}$	30,102.96	0.58	Id
$d^8(^3F)4p$	$y^4G^0_{5\frac{1}{2}}$	32,430.59	1.28	Id
	$y^4G^0_{4\frac{1}{2}}$	32,464.73	1.17	Id
	$y^4G^0_{3\frac{1}{2}}$	33,173.36	1.03	Id
	$y^4G^0_{2\frac{1}{2}}$	33,674.38	0.72	Id
$d^7s(^3F)4p$	$x^4G^0_{5\frac{1}{2}}$	41,528.53	1.31	Id
	$x^4G^0_{4\frac{1}{2}}$	42,269.32	1.18	Id
	$x^4G^0_{3\frac{1}{2}}$	42,811.44	0.98	Id
	$x^4G^0_{2\frac{1}{2}}$	43,199.65	0.83	Id
$d^7s(^3G)4p$	$w^4G^0_{5\frac{1}{2}}$	43,952.06:		
	$w^4G^0_{4\frac{1}{2}}$	44,183.34	1.18	$w^4F^0_{4\frac{1}{2}}$
	$w^4G^0_{3\frac{1}{2}}$	44,394.47	1.00	$w^4F^0_{3\frac{1}{2}}$
	$w^4G^0_{2\frac{1}{2}}$	44,568.47	0.70	
$d^7s(^5F)4p$	$z^6D^0_{4\frac{1}{2}}$	24,627.79	1.57	Id
	$z^6D^0_{3\frac{1}{2}}$	25,269.25	1.56	Id
	$z^6D^0_{2\frac{1}{2}}$	25,739.93	1.66	Id
	$z^6D^0_{1\frac{1}{2}}$	26,063.11	1.88	Id
	$z^6D^0_{\frac{1}{2}}$	26,250.49	3.37	Id
$d^7s(^5F)4p$	$z^6F^0_{5\frac{1}{2}}$	23,611.78	1.46	Id
	$z^6F^0_{4\frac{1}{2}}$	23,855.62	1.49	Id
	$z^6F^0_{3\frac{1}{2}}$	24,326.11	1.40	Id
	$z^6F^0_{2\frac{1}{2}}$	24,733.28	1.33	Id
	$z^6F^0_{1\frac{1}{2}}$	25,041.16	1.10	Id
	$z^6F^0_{\frac{1}{2}}$	25,232.79	−0.61	Id
$d^7s(^5F)4p$	$z^6G^0_{6\frac{1}{2}}$	25,138.88	1.40	Id
	$z^6G^0_{5\frac{1}{2}}$	25,568.68	1.34	Id
	$z^6G^0_{4\frac{1}{2}}$	25,937.59	1.29	Id
	$z^6G^0_{3\frac{1}{2}}$	26,232.05	1.15	Id
	$z^6G^0_{2\frac{1}{2}}$	26,450.02	0.88	Id
	$z^6G^0_{1\frac{1}{2}}$	26,597.64	−0.01	Id
	$1^0_{3\frac{1}{2}}$	41,041.43	1.40	
	$2^0_{2\frac{1}{2}}$	41,104.96	1.34:	
	$3^0_{3\frac{1}{2}}$	42,988.12		
	$4^0_{3\frac{1}{2}}$	43,969.90		
	$5^0_{1\frac{1}{2}}$	44,381.32:		
	$6^0_{3\frac{1}{2}}$?	47,839.15		
	$7^0_{2\frac{1}{2}}$	48,828.87		
	$8^0_{1\frac{1}{2}}$	48,851.58:		
	$9^0_{3\frac{1}{2},4\frac{1}{2}}$	49,197.74:		
	$10^0_{3\frac{1}{2}}$	49,484.05	1.25:	$117^0_{2\frac{1}{2}}$
	$11^0_{2\frac{1}{2}}$	49,847.08	1.09	
	$12^0_{1\frac{1}{2}}$	50,105.05	0.70:	$87^0_{1\frac{1}{2}}$
	$13^0_{3\frac{1}{2},4\frac{1}{2}}$	50,738.20		
	$14^0_{2\frac{1}{2}}$	50,806.55		
	$15^0_{3\frac{1}{2}}$	51,184.63		
	$16^0_{2\frac{1}{2}}$	51,863.18		
	$17^0_{2\frac{1}{2}}$	51,989.31:		
	$18^0_{3\frac{1}{2}}$	52,476.64		
	$19^0_{1\frac{1}{2}}$	52,498.17		
	$20^0_{1\frac{1}{2},2\frac{1}{2}}$	52,526.04		
	$21^0_{3\frac{1}{2},4\frac{1}{2}}$	53,065.96:		
	$22^0_{3\frac{1}{2}}$	53,463.10		
	$23^0_{1\frac{1}{2}}$	54,165.35	1.36	
	$24^0_{3\frac{1}{2}}$	54,398.60		
	$25^0_{4\frac{1}{2}}$	54,874.08		
	$26^0_{3\frac{1}{2}}$	54,932.32		
	$27^0_{2\frac{1}{2}}$	55,061.49	1.66:	
	$28^0_{3\frac{1}{2}}$	55,120.30:		
	$29^0_{2\frac{1}{2}}$	55,387.11:		
	$30^0_{2\frac{1}{2}}$	55,508.78		
	$31^0_{1\frac{1}{2}}$	55,737.87		
	$32^0_{1\frac{1}{2}}$	55,818.91	1.31:	
	$33^0_{1\frac{1}{2},2\frac{1}{2}}$	55,922.3		
	$34^0_{1\frac{1}{2},2\frac{1}{2}}$	56,101.84:		
	$35^0_{1\frac{1}{2},2\frac{1}{2}}$	56,222.04:		
	$36^0_{3\frac{1}{2},4\frac{1}{2}}$	58,187.39		
	$37^0_{2\frac{1}{2},3\frac{1}{2}}$	59,388.89		

Table II shows the assignments finally adopted. Terms predicted by theory but not found are denoted by the absence of small letters. Most of these terms are either very high, or would combine feebly, if at all, with the low level (e.g. the $^6S^0$, $^6P^0$, $^6D^0$, $^4H^0$). The most notable missing terms are the two $^2I^0$ terms, which are probably represented by observed lines with no satellites to identify them (§9). Most of the unassigned terms are odd, and all but two lie between 50,000 and 55,000 where the lower terms of the $5p$ configurations should be expected.

5. Series Limits

The convergence of the components of the terms of Co I to the components of the limit terms in Co II is of interest. Catalan and Antunes have shown[8] that, among the terms which have $d^8\,^3F$ as limit, the quartet and doublet components of lowest J go to $^3F_2$, those of next higher J to $^3F_3$, leaving two high J quartet components for $^3F_4$. This "inverted" convergence was found by one of us[9] for the limit $d^9\,^2D$ in Ni II. In Ni I, inverted convergence appears also in the terms having $d^8s\,^2F$ as limit, though that to $d^8s\,^4F$ is normal, but in Co I the convergence to $d^7s\,^3F$ is "normal." The combinations of all four components of h^4F with x^4G^0 are much stronger than those of g^2F, and the reverse is true for z^2F^0, z^2G^0; hence the doublet and quartet levels are correctly identified. But $h^4F_{4\frac{1}{2}}$, $g^2F_{3\frac{1}{2}}$ are close together; also $h^4F_{3\frac{1}{2}}$, $g^2F_{2\frac{1}{2}}$,

[8] Reference 3, pp. 132–134.
[9] H. N. Russell, Phys. Rev. **34**, 821 (1929).

and $h^4F_{2\frac{1}{2}}$, $h^4F_{1\frac{1}{2}}$. This suggests strongly that the convergence to d^7s ^5F should be normal. Catalan and Antunes concluded that it is inverted, and found it difficult to distinguish the sextets and quartets in this pentad by means of the line-intensities. Working on the assumption of normal arrangement, we have been able to arrange the levels into a pentad of terms which combine much more strongly with z^6D^0, z^6F^0, z^6G^0 than with any quartet, and another pentad which combine more strongly with the quartets than the sextets. The ten leading components of these terms all lie between 53,511 and 53,936, the second components between 54,158 and 54,477, and so on.

In consequence of this reinterpretation of the situation, our values for the leading components of the sextet pentad, e^6P, e^6D, f^6F, e^6G, e^6H differ from those of the previous authors. Two of them were rejected as not real levels by them, and two not given at all; yet all are determined by good combinations except $e^6H_{7\frac{1}{2}}$ which gives a single very strong line with the right Zeeman pattern. The components of small L and J in this pentad give faint lines, and some of them could not be identified. A level of 54,282 which we have placed in this pentad as $f^4D_{2\frac{1}{2}}$ is classified by Catalan and Antunes as $d^8(^3F)6s$ $^4F_{3\frac{1}{2}}$. It gives no combinations with levels having $J=4\frac{1}{2}$. If their interpretation is correct it seems to us very improbable that the $^4F_{4\frac{1}{2}}$ component, for which they searched in vain, should be missing, as, especially in high series members, it should give stronger lines.

6. Ionization Potential

The available series consist of only two members (4*s* and 5*s*). The best way to determine the ionization potential is that developed by Catalan and Antunes[10] and independently by Meggers and Russell[11]— estimating the Rydberg denominators n^* by comparison with neighboring elements. Reliable values of n^* are known for Mn, Ni, Cu and Zn, so that those for Co can be interpolated with security. Table III gives the results. Only the components of largest J in the terms, and of greatest L in the pentads, need be used. The error of the estimated term value is proportional to $\Delta n^*/n^{*3}$ so that the low terms give poor determinations. Adding this to the level of Co I, and subtracting the height of the limiting level in Co II above the ground-level, we obtain the level of $^3F_4$ above $^4F_{4\frac{1}{2}}$. The mean for the terms for which $n^*>2$ is 63,536 corresponding to an ionization potential of 7.84 volts with an estimated probable error of ± 0.02. The values of n^* corresponding to this limit are given in the last column. The agreement with the estimated values is very close. Catalan and Antunes, by the same method, find 63,339, (7.82 volts). They prefer the value 63,312 obtained from their 6*s* term by a Hicks formula. The level $g^4P_{2\frac{1}{2}}$, if in series with $b^4P_{2\frac{1}{2}}$, should give Δn^* about 1.10. This would place the limit at 75,000 above $^4F_{4\frac{1}{2}}$, or 11,500 above $^3F_4$ of Co II. The still undiscovered term d^8 ^3P should lie at about this level.

7. Term Table

Table IV gives the term values which have been finally adopted. These were obtained by the usual process of convergent approximation, finding mean values for the odd terms from their combinations with the low even ones, etc. In taking these means, values derived from Burns' interferometer measures were given triple weight, and discordant combinations with deviations of 0.1 cm^{-1} or more were disregarded if better data were available. A colon denotes that the term value is determined with inferior accuracy, but not that the reality of the level itself is doubted.

The term v^4F^0 is doubtful. It gives a good multiplet with b^4F, but its combinations with a^4F are polar lines in the arc, and were originally attributed to Co II.

The term designations given by Catalan and Antunes are listed in the last column, "Id" meaning that they are identical with ours, and a blank that the level does not appear in their list. The numerous differences in assignment arise among the odd terms mainly from the present availability of Zeeman data; among the high even terms, from our reinterpretation of the convergence to the d^7s limits (§5). Three levels which they rejected as not real are restored to our list, and also nine which they regarded as doubtful. Thirty-three energy levels for which

[10] Reference 3, pp. 139–140.

[11] W. F. Meggers and H. N. Russell, J. Research Nat. Bur. Stand. **17**, 190 (1936); (RP 906).

TABLE V. *Zeeman patterns of* Co I.

λ	Zeeman Effect Observed	Zeeman Effect Calculated
6872.32	(1.37)1.35	(1.34)1.34
6814.95	(0.43)1.34	(0.41)1.32
6771.04	(0.36)1.43	(0.33)1.42
6632.43	(–)1.09	(0)1.10
6595.86	(–)0.91	(0)0.86*s*
6591.83	(–)0.96	(0)0.98*s*
6563.40	(–)1.10	(0)1.11
6490.34	(–)0.94	(0)0.99
6477.86	(–)0.83	(0)0.88
6454.99	(–)1.17	(0)1.16
6451.13	(–)1.15	(0)1.19
6450.23	(–)1.16	(0)1.17 (0.03)0.90
6431.07	(?)1.03	(0)1.02
6430.34	(–)1.10?	(0)1.12
6429.91	(–)0.90	(0)0.92
6421.70	(–)0.85	(0)0.80*s*
6417.82	(–)0.78	(0)0.85
6395.15	(–)0.61	(0)0.55
6351.44	(?)0.97?	(0.26)1.02
6347.84	(–)1.15	(0.12)1.14
6340.80	(–)1.15:	(0)1.23
6320.41	(–)1.05	(0)1.14
6314.52	(–)1.06	(*0.08*, 0.25, 0.42) 0.71 . . . *1.55*
6313.03	(–)1.25	(0)1.16
6282.63	(–)0.90*A*	(0)0.79*s*
6273.02	(–)1.13	(0.35)0.96 (0)1.14
6271.47	(–)1.15?	(0)1.03
6257.57	(–)0.86	(0)0.88
6249.50	(–)1.11	(0.22)1.14
6247.28	(–)1.09:	(0)1.02
6246.38	(–)1.36:	(0)1.49
6232.44	(–)1.20	(0)1.21
6230.96	(0.71)*0.44*, 1.83	(0.74)*0.44*, 1.92
6223.35	(?)1.01:	(0.76)1.22
6211.19	(–)1.42	(0)1.37
6193.54	(–)1.02:	(0)1.01
6189.00	(0.54)1.48	(0.63)1.50
6181.00	(?)1.21:	(0.41)1.34
6122.64	(–)1.24	(0.09)1.22
6116.99	(1.33)1.35	(1.33)1.33
6107.93	(?)1.06	(0.57)1.06
6100.77	(–)1.24?:	(0)0.89
6093.14	(0.81)1.43	(0.76)1.45
6086.66	(–)1.21	(0.07)1.22
6082.43	(–)1.34	(0.07)1.34
6070.67	(–)0.79	(0.01)0.80
6049.11	(–)1.12	(0)0.87
6007.69	(0.46)1.08	(0.37)1.04
6006.35	(–)1.18	(0.03)1.12
6000.66	(–)1.05	(0.04)1.02
5991.89	(–)1.23	(0.18)1.24
5984.25 5984.09	(–)1.18	(0)1.12 (0)2.15
5946.48	(–)0.41	(0.03)0.43
5935.39	(–)1.32:	(0)1.30
5915.55	(–)0.93	(0.15)0.92
5890.48	(–)1.17	(0.19)1.14
5877.42	(–)1.29	(0)1.37
5876.10	(–)0.80	(0)1.08?
5846.57	(–)1.65	(0)1.53
5830.07	(–)1.20	(0.30)1.19
5826.29	(–)2.09?:	(0)1.92*s*
5790.08	(0.59:)?	(0.56)1.02
5774.37	(?)0.99:	(0.56)1.02
5770.44	(–)0.71	(0)0.71
5750.95	(–)1.12:	(0)1.11
5706.16	(–)1.20:	(0)1.11
5703.03	(?)0.76?:	(1.18)0.76?
5659.12	(–)1.66:	(0)1.67*s*
5651.73	(–)0.82:	(0)0.80*s* (0)0.90
5647.23	(–)1.10	(0)1.08
5637.73	(–)1.12	(0)1.16
5636.12	(–)1.08	(0)1.06
5616.07	(–)1.05	(0)1.08
5598.47	(–)0.55	(0)0.60
5590.74	(0.45)0.98	(0.38)0.96
5558.82	(–)0.85	(0.04)0.84
5546.96	(–)1.50?:	(0)1.42
5545.93	(–)1.12	(0.38)1.10
5524.99	(–)1.25	(0)1.30
5523.31	(–)0.86	(0)0.87*s*
5515.99	(?)1.08:	(0.28)1.02
5489.66	(–)1.18	(0)1.09
5488.12	(–)1.58*o*?	(0)1.57*s*
5483.96	(–)1.19	(0)1.16
5483.35	(–)1.10	(0)1.12

λ	Zeeman Effect Observed	Zeeman Effect Calculated
5477.08	(–)1.08	(0)1.07*s*
5470.46	(–)0.92	(0)0.94
5469.30	(0.72)1.59:	(0.66)1.35
5454.57	(–)1.33	(0.07)1.33
5452.30	(–)0.57	(0)0.54*s*
5444.58	(–)1.04	(0)0.96
5437.00	(–)0.82	(0)0.84
5434.57	(0.84:)1.12:	(0.79)0.90
5431.02	(–)0.67?:	(0)0.48*s*
5413.73	(0.78)1.13	(0.77)1.14
5408.11	(0.68:)?	(0.73)1.07
5407.52	(?)1.43	(*0.20*, 0.61, 1.02) 0.11 . . . *2.15*
5402.00	(0.41)0.68:	(0.41)0.62
5399.76	(–)0.94	(0.07)0.94
5393.72	(–)1.83:	(0)1.52
5390.47	(–)1.35	(0)1.40
5381.77	(–)1.11	(0)1.14*s*
5381.10	(0.68?:)?	(0.91)1.14
5369.59	(–)0.87*i*	(0)0.89*s*
5368.90	(–)0.93	(0)0.91*s*
5366.74	(?)1.01:	(0.15)1.14
5364.81	(1.35:)	(1.15)0.77
5362.78	(–)1.15	(0)1.04*s*
5359.20	(–)0.56	(0)0.61
5358.01	(?)0.88	(0)0.84
5353.50	(–)1.06	(0)1.06 (0)0.92
5352.04	(–)1.14	(0)1.14
5349.09	(–)1.16	(0)1.05
5347.49	(?)1.06:	(0.09)1.14
5343.38	(–)1.18:	(0)1.04
5342.70	(–)1.01	(0)1.02
5341.32	(–)1.16	(0.15)1.14
5339.52	(–)0.86	(0.09)0.94
5336.16	(–)1.16?:	(0)1.18
5334.82	(–)1.37?:	(0)1.15 (0)1.39*s*
5333.64	(0.87:)?	(0.67)1.20
5331.45	(0.74)?	(0.73)*0.47*, 1.93
5325.94	(–)1.03:	(0)0.91
5325.27	(–)1.22	(0.31)1.24
5321.71	(?)0.70	(0.44)0.82
5316.77	(–)1.15	(0.15)1.15
5312.65	(–)0.97	(0)0.90
5310.21	(?)0.76	(0.46)0.84
5301.04	(0.60)1.45	(0.55)1.52
5292.20	(–)1.19:	(0)1.38
5287.78	(–)1.30	(0.46)1.28
5283.48	(?)1.01	(0.24)1.07
5280.63	(–)1.07	(0)1.05
5276.18	(–)0.86	(0)0.84
5268.49	(–)0.80	(0)0.74
5266.50	(–)1.09	(0)1.09
5266.30	(–)0.88	(0)0.94*s*
5257.62	(–)1.18	(0)1.18
5254.65	(–)1.47	(0.12)1.43
5250.00	(–)1.35?	(0)1.45*s*
5247.92	(1.38)1.32	(1.33)1.33
5237.08	(–)1.35	(0)1.38*s*
5235.18	(–)0.92	(0)0.82
5230.21	(0.78)1.45	(0.73)1.46
5222.49	(–)1.06	(0)1.10*s*
5219.00	(?)1.80?:	(0)1.97*s*
5212.69	(–)1.33	(0.07)1.34
5210.83	(?)0.83	(0.78)0.78
5210.04	(–)1.16	(0)1.10
5183.53	(–)1.15	(0)1.20
5176.08	(–)1.22	(0.20)1.24
5166.06	(–)1.22:	(0)1.22*s*
5156.36	(–)1.11	(0)1.14*s*
5154.07	(–)1.00	(0)1.04
5146.75	(–)1.28	(0.09)1.26
5133.46	(–)1.20	(0)1.22*s*
5126.20	(–)1.07	(0.02)1.04
5124.71	(?)1.26	(0)1.36
5122.76	(–)0.37	(0.08)0.39
5108.90	(–)1.17	(0.07)1.12
5094.95	(–)1.30	(0)1.26
5087.85	(?)1.74:	(0)1.04
4993.00	(?)1.06:	(0.22)1.29
4986.44	(?)1.48:	(0.85)1.44
4979.94	(–)0.97	(0)0.97
4928.29	(?)1.00:	(0.52)1.36 (0)1.02
4924.99	(–)0.86	(0)1.62
4918.26	(?)0.47	(0.07)1.26
4915.96	(?)0.86:	(0)0.87
4914.71	(?)0.81:	
4907.58	(?)0.84:	(0)0.84

λ	Zeeman Effect Observed	Zeeman Effect Calculated
4904.17	(–)0.89:	(0.56)0.99
4899.52	(0.46)0.85:	(0.39)0.95
4886.99	(–)1.06	(0.04)1.12
4882.70	(0.77)1.13:	(0.74)1.28
4881.31	(?)0.93	
4867.87	(–)1.19*A*?	(0)1.18
4855.59	(?)0.59	(0)1.50
4849.31	(?)0.97:	(0.90)1.16
4843.45	(1.13)1.10	(0.96)1.10
4840.25	(–)1.12*A*?	(0)1.14
4815.90	(?)0.93	(0.48)0.96
4813.96	(1.71)0.56	(1.54)0.54
4813.47	(–)1.06*A*?	(0)1.10 (0)1.56
4795.85	(0.86:)1.00:	(0.74)1.06
4792.85	(–)0.93*A*?	(0)0.94
4785.07	(0.71)?	(0.74)1.06
4781.43	(0.81)1.36:	(0.78*s*)1.35
4779.97	(–)0.71	(0)0.72
4778.23	(–)0.93	(0.22)0.93
4776.31	(0.36)0.36	(0.36)0.36
4771.10	(–)1.24	(0)1.20
4768.07	(–)0.98	(0)1.08
4767.14	(–)0.82	(0)0.82
4756.72	(–)1.50?:	(0)1.42
4754.35	(–)0.50	(0)0.48*s*
4749.68	(–)1.33	(0)1.28
4737.76	(1.14)1.10	(0.93)1.14
4734.82	(1.15)1.18	(1.14)*0.05*, 2.22
4727.93	(0.76)?	(0.85)1.46
4718.47	(–)1.18	(0)1.06
4698.38	(2.05)1.32	(2.04)1.33
4693.19	(–?, *1.17*) 0.68, *1.49*, 2.16?	(0.40, *1.19*) 0.69, *1.48*, 2.28
4682.36	(0.75)1.49*C*?	(0.74)1.49
4663.40	(0.48)1.49	(0.47)1.48
4657.39	(1.37:)0.50:, *3.11*:	(1.30)0.58, *3.18*
4654.83	(?)0.95:	(0.22)0.93
4644.31	(–)0.86:	(0)0.82
4629.35	(0.35)1.54	(0.52)1.50
4625.76	(0.41)1.15	(0.37)1.26
4596.90	(–)1.27	(0)1.23
4594.63	(–)1.44	(0.06)1.44
4581.59	(–)1.44	(0)1.46 – –
4580.13	(–)1.26	(0)1.24
4570.02	(–)1.24	(0)1.18
4566.61	(0.75:)0.76:	(0.74)0.78
4565.57	(–)1.45	(0)1.48
4564.15	(–)0.92	(0)0.95
4552.44	(0.51?)?	(0.38)0.38, 1.14
4549.65	(–)1.46	(0)1.49 (0)0.60
4545.98	(–)1.35	(0)1.32
4545.23	(–)0.80:	(0)0.80?
4543.81	(–)1.24	(0.02)1.24
4540.78	(–?)1.00:	(0)0.86
4533.98	(–)1.50	(0)1.48
4530.94	(–)1.56	(0.09)1.47
4527.91	(–)1.62:	(0)1.87
4517.09	(0.87)–?, *1.95*	(0.84)0.24, *1.93*
4500.56	(–)0.96:	(0)0.86
4494.74	(–)1.01	(0)0.98
4483.91	(–)0.68	(0.05)0.66
4478.31	(–)1.09	(0.01)1.10
4471.80	(–)1.06	(0)1.14
4471.55	(–)1.33	(0.02)1.32
4469.54	(–)1.46	(0.22)1.46
4466.88	(–)1.42	(0)1.40
4431.60	(–)0.96	(0.18)0.90
4421.33	(–)1.56	(0)1.53
4417.39	(–)1.51	(0)1.51
4404.93	(0.25?)	(0.22)0.90, 1.35
4402.67	(–)1.23	(0)1.18
4395.87	(–)0.83?	(0)0.99*s*
4391.89	(–)1.22	(0.18)1.22
4391.56	(–)1.52	(0)1.50
4387.91	(–)1.20:	(0)1.32
4380.07	(–)1.34	(0.04)1.34
4379.26	(?)0.50	(0)0.58
4375.54	(–)1.13	(0.04)1.12
4374.91	(–)1.65	(0)1.64
4373.63	(–)0.99	(0)0.90
4371.13	(–)1.58	(0)1.57
4339.62	(0.24)1.23	(0.14)1.24
4331.23	(–)1.12	(0)1.13*s*
4310.09	(1.05:)1.80:	(0.91)1.60
4303.23	(–?, *1.10*)?	(0.34, *1.02*) 0.08, *0.76*, 1.44
4292.25	(–)0.96	(0)0.96

TABLE V.—*Continued.*

λ	Zeeman Effect Observed	Zeeman Effect Calculated
4287.38	(–)1.16	(0.38)1.18
4285.78	(0.77)1.15:	(0.70*s*)1.19
4276.10	(–)0.95	(0)0.98*s*
4268.03	(–)0.60	(0)0.68
4252.30	(0.62)1.34	(0.38)1.33
4248.18	(0.81)?	(0.76)1.06
4207.61	(?)1.14	(0.13)1.10
4190.71	(0.53)1.47	(0.63)1.40
4187.24	(–)1.55	(0)1.54 (0.38)1.34
4179.22	(–)0.94	(0)0.92
4170.88	(–)1.09	(0)1.08*s*
4162.16	(–)1.24	(0)1.29
4158.42	(–)0.84	(0)0.86
4150.42	(–)1.42	(0)1.49
4139.45	(–, *1.41*)1.56:	(0.47, *1.41*) 0.62, *1.56*, 2.50
4122.27	(–)1.08	(0)1.02
4121.31	(–)1.08	(0)1.02
4118.77	(–)0.95	(0)0.97
4110.53	(–)0.88	(0.04)0.87
4104.74	(–)0.75?	(0.01)0.70
4104.41	(0.23)1.19	(0.21)1.16
4092.84	(0.33)?	(0.32)*0.29*, 2.36
4092.38	(–)1.18	(0.06)1.17
4086.30	(–)1.31	(0)1.30
4082.59	(–)0.44	(0.03)0.41
4081.44	(–)1.11?	(0)0.99
4077.40	(0.40:)1.30	(0.33)1.30
4068.54	(–)1.29	(0)1.26
4066.36	(0.90*o*) (0.79*g*) 1.26*C*	(0.87*s*) (0.74*g*) 1.28
4058.60	(0.72)*0.53*, 1.88:	(0.72)*0.52*, 1 96
4058.18	(–)1.24	(0.03)1.24
4057.19	(*0.25*, 0.74)1.45:	(*0.23*, 0.69)0.19, 0.65, 1.11, *1.57*
4056.97	(–)1.37	(0)1.39
4053.91	(0.38)0.47	(0.28)0.42
4052.91	(–)1.29	(0.22)1.30
4045.38	(–)1.47*o* / 1.34*g* *B*?	(0)1.45*s* (0)1.24*g*
4035.54	(–)1.10?	(0)1.08
4027.03	(–)1.33	(0)1.28
4023.39	(0.83)	(0.79)1.75
4020.89	(–)1.33	(0.04)1.34
4013.94	(1.34)1.33	(1.36)1.32
4010.93	(?)0.87?	(0.44)1.32
4003.59	(0.29)0.91, *1.49*	(0.25)0.93, *1.43*
3997.90	(–)1.87*o*, *B*	(0)1.91*s*
3995.30	(–)1.20	(0)1.18
3991.68	(–)0.96	(0)0.97
3991.52	(–)1.17	(0)1.16
3990.29	(0.35)1.35	(0.32)1.36
3987.11	(–)1.54	(0)1.52
3979.51	(–)1.38	(0)1.36*s*
3978.86	(–)1.26?	(0)1.26
3978.65	(–)1.05	(0)1.08
3977.75	(–)0.95?	(0)0.99
3977.18	(0.23)1.35	(0.22)0.90, *1.35*
3974.72	(0.64*o*)1.32*C*?	(0.64*s*)1.34
3972.50	(–)1.25	(0)1.25 – –
3969.11	(–)1.15	(0)1.12
3960.99	(–)0.91	(0)0.89
3957.92	(0.54, *0.86*) –, –, 1.20, –, –	(0.16, 0.47, *0.78*) 0.57, 0.88, *1.20*, 1.51, 1.82
3952.91	(0.90*o*) (0.74*g*) 1.05	(0.87*s*) (0.74*g*) 1.04
3947.12	(0.74)0.87?, 2.25?	(0.75)0.72, *2.22*
3946.63	(–)1.25	(0)1.24
3945.32	(*0.13*, –, –)1.81*o*, *B*	(*0.14*, 0.42, 0.70) 0.46 . . . *1.86*
3942.68	(–)1.26	(0)1.28
3941.72	(–)1.14	(0)1.11
3940.88	(0.41?, *1.21*) 0.00, *0.80*, 1.67	(0.39, *1.17*) 0.01, *0.79*, 1.57
3938.85	(–)1.26	(0)1.27
3935.96	(–)1.89*o*, *B*	(0)1.88*s*
3935.28	(0.57)?	(0.55)1.48
3929.25	(–)1.31	(0.30)1.31
3925.15	(0.34)–?, *1.70*	(0.32)1.00, *1.65*
3922.75	(–)0.89	(0.20)0.90
3917.11	(0.26)1.20	(0.28)1.23
3909.93	(–)1.40	(0)1.38
3906.28	(0.86*o*)1.37*C*	(0.12, 0.36, *0.60*) 0.65, 0.89, *1.13*, 1.37, 1.61
3898.48	(–)1.69?	(0)1.70
3894.97	(0.20)0.24, *0.66*	(0.20)0.20, *0.60*

λ	Zeeman Effect Observed	Zeeman Effect Calculated
3894.07	(–)1.02	(0)1.06
3892.11	(–)1.23	(0.15)1.24
3885.27	(0.34)1.13	(0.38)1.10
3884.60	(*0.22*, 0.67)1.51?	(*0.21*, 0.60) 0.28 . . . *1.45*
3881.86	(–)0.94*g* / 0.75*i* *A*	(0)0.94*g* / 0.83*s*
3878.75	(–)2.53	(0.08)2.60
3876.83	(0.49)*1.22*, 2.38:?	(0.55)1.26 (0.48)*1.25*, 2.20
3873.95	(–)1.14	(0)1.12
3873.12	(–)1.24	(0)1.18
3861.16	(–)0.80	(0)0.89
3851.84	(0.63)1.16	(0.62)1.07
3850.09	(?, 1.74)1.84?	
3845.46	(–)1.23	(0)1.16
3843.69	(–)0.49?	(0)0.56
3842.04	(–)1.08	(0)1.06*s*
3841.45	(–)1.14	(0)1.16
3835.90	(–)1.27	(0.06)1.27
3823.52	(?)1.19*o*, *B*?	
3819.90	(–)1.21	(0)1.15
3817.94	(–)1.30	(0.06)1.31
3816.87	(–)1.02?	(0)0.75
3816.45	(–)1.65?	(0)1.75
3816.31	(0.51)*1.00*, –?	(0.52)*0.95*, 2.00
3814.45	(0.34)1.65	(0.36)1.60
3813.92	(–)1.09?	(0.03)1.24
3812.47	(0.34)1.58?	(0.31)*1.72*, 2.35
3808.10	(*0.18*, –, –, –)?	(0.16*s*)1.92
3805.77	(0.54)?	(0.44*s*)1.48
3797.44	(0.92)0.76	(0.91)0.77
3795.85	(0.42?)1.61?	(0.44)1.29
3783.73	(?)0.43?	(0.98)1.06
3777.54	(0.46)1.27	(0.28*s*)1.23
3774.59	(–)1.34	(0)1.37
3760.40	(0.42)1.98:	(0.44)1.88
3755.44	(–)1.40	(0)1.39
3754.34	(*0.22*, 0.71)?	(*0.23*, 0.69) *0.14* . . . 1.52
3752.78	(–)0.55	(0)0.60
3751.62	(0.39)1.17	(0.57)1.15
3749.93	(0.18)1.31*o*	(0.19)0.90, *1.28*
3745.49	(0.82*o*) (0.66*g*) 1.01*C*	(0.73*s*) (0.62*g*) 1.06
3740.18	(*0.23*, 0.66)	(*0.13*, 0.39) *0.44* . . . 1.22
3735.92	(–)1.44	(0)1.42*s*
3734.13	(–)1.12	(0)1.23
3733.48	(–)1.16	(0)1.14*s*
3732.39	(–)1.53*B*	(0.28)1.56
3731.26	(–)1.10	(0.10)1.12
3730.47	(–)1.36	(0)1.33
3728.84	(0.50)1.21	(0.51)1.19
3726.65	(*0.24*, 0.63)	(*0.20*, 0.59) *1.06* . . . 2.23
3712.17	(–)0.73*g* / 0.36*i*	(0)0.72*g* / 0.34*s*
3711.64	(0.99)1.67	(0.98)1.69
3708.82	(–)1.12	(*0.04*, 0.11) *0.92* . . . 1.13
3707.46	(0.45)0.62, *1.54*	(0.47)0.61, *1.56*
3704.06	(–)1.82*o*, *B*	(0)1.77*s*
3702.23	(–)0.93*B*?	(0)0.98
3693.47	(–)1.09	(0.14)1.14
3693.10	(–)1.10	(0)1.10
3690.71	(–)0.84*g* / 0.70*i* *A*	(0)0.88*g* / 0.66*s*
3686.47	(0.39)–?, 1.78	(0.36)1.04, *1.75*
3684.96	(0.50)1.26:, *2.07*:	(0.50)1.18, *2.17*
3684.47	(–)1.41	(0)1.39
3683.04	(–)1.25	(0.11)1.26
3676.55	(–)1.04	(0)1.04
3670.04	(1.25)1.40	(1.27)1.41
3662.15	(–)1.13	(0)1.08
3660.69	(0.58:)?	(0.66)1.49
3657.91	(0.17)1.22*o*	(0.18)0.87, *1.24*
3656.96	(*0.19*, 0.53, –) –?. 2.20:	(*0.18*, 0.55, 0.92) 0.49 . . . *2.34*
3654.44	(0.37)1.10, *1.90*	(0.38)1.09, *1.85*
3652.54	(–)1.73*o*, *B*	(0)1.72*s*
3651.25	(–)0.93	(0)0.88
3649.32	(–)1.02	(0)1.04
3648.14	(–)0.83	(0.15)0.84
3647.65	(*0.31*, 0.91) –?, 0.73, 1.37, *1.96*	(*0.30*, 0.91)0.11, 0.72, 1.33, *1.94*
3647.08	(0.26)–,0.94, *1.50*	(0.25)0.93, *1.42*
3643.18	(–)1.10	(0.06)1.11
3641.78	(–)1.30	(0)1.34
3639.44	(*0.22*, 0.55) *0.51*, 0.81, –	(*0.15*, 0.45)*0.72* 1.02, 1.32, 1.62

λ	Zeeman Effect Observed	Zeeman Effect Calculated
3638.34	(–)0.98	(0)0.91*s*
3637.31	(0.40)?	(0.40)1.09, *1.88*
3636.71	(0.42)1.34	(0.44)1.32
3634.71	(–)0.86	(0)0.82
3633.34	(0.57)1.18?	(0.18, *0.53*) 1.16, *1.51*, 1.86
3632.83	(–)1.14	(0)1.01
3631.94	(0.20)1.10	(0.21)*1.08*, 1.49
3631.39	(–)1.50	(0)1.49
3627.80	(–)0.91	(0)0.86
3624.33	(0.47)1.31?	(0.47)*1.26*, 2.19
3620.42	(–)1.85*o*, *B*?	(0)1.86*s*
3619.28	(–)1.18	(0.41)1.09
3615.38	(–)0.55*i*, *A*	(0)0.35*s* / 0.68*g*
3611.70	(–)0.92	(0)0.93*s*
3609.75	(–)1.21	(0)1.17
3605.37	(0.18)1.20	(0.21)1.22
3605.01	(–)0.80	(0)0.84
3604.46	(–)0.95	(0.11)0.92
3602.07	(–)0.40	(0)0.42
3600.80	(0.53)1.41?	(0.14, *0.42*) 1.05, *1.33*, 1.61
3596.51	(–)1.25	(0.21)1.26
3594.87	(–)1.01	(0.04)1.04 (0)1.00
3591.74	(0.19)1.35	(0.14)1.34
3587.18	(?)0.95	(0.22)0.91
3586.08	(–)0.94	(0)0.90
3585.80	(*0.19*, –)0.74	(*0.17*, 0.51)*0.77*, 1.11, 1.45, 1.79
3585.15	(0.46)1.34*C*	(0.47)1.33
3581.87	(0.33)0.92?, 1.67?	(0.32)1.01, *1.65*
3579.02	(–)1.52	(0)1.50*s*
3578.90	(–)1.24	(0)1.32*s*
3569.37	(–)1.23	(0.12)1.14
3564.94	(–)0.77	(0)0.75
3564.11	(–)0.86	(0)0.89
3562.09	(0.66)0.61, 1.05, 1.52	(0.24, *0.72*) 0.61, *1.09*, 1.57
3560.89	(0.40, *1.21*) 0.00, *0.78*, 1.59	(0.40, *1.20*) 0.00, *0.80*, 1.60
3558.77	(0.34)1.02	(0.35)0.96 (0.45)1.39
3552.98	(0.51)1.34?	(0.48)1.30
3552.72	(0.47)	(0.46*s*)2.05
3550.59	(*0.34*, 0.93) 0.73, 1.32, *1.97*	(*0.31*, 0.94)0.10, 0.73, 1.36, *1.99*
3548.43	(–)1.60	(0.02)1.64
3546.70	(–)1.51	(0)1.50*s*
3543.25	(–)1.05*g* / 0.87*i* *A*	(0)1.12*g* / 0.90*s*
3534.76	(–)1.20	(0)1.12 (0.24)1.19
3533.35	(–)0.70	(0)0.70
3530.55	(–)0.75?	(0.03)0.66
3529.81	(–)1.04	(0)1.03
3529.03	(–)0.98	(0)0.96
3527.94	(–)1.31	(0)1.24
3526.84	(–)1.35	(0.11)1.34
3525.87	(0.23)?	(*0.15*, 0.46) 1.03 . . . *1.96*
3522.85	(–)0.97	(0)0.93
3521.56	(–)1.58*B*	(0)1.62
3520.07	(0)1.55	(0)1.57
3518.34	(–)0.94	(0)0.94*s*
3513.47	(–)1.11	(0)1.05
3512.64	(–)1.02	(0)0.92
3510.42	(0.53)?	(0.47)1.35
3506.31	(–)1.20	(0)1.08
3504.72	(0.32)1.15	(0.49)1.12
3503.71	(–)0.95?	(0.09)0.92
3495.68	(–)0.84*B*	(0)0.96
3491.31	(0.49?, *1.23*) 0.00, *0.78*, 1.58	(0.38, *1.14*) 0.04, *0.80*, 1.56
3490.73	(*0.20*, 0.56, 0.92) 2.17*o*, *B*?	(*0.18*, 0.55, 0.92) 2.17*s*
3489.39	(–)1.15	(0)1.12
3487.71	(–)0.42*i*, *A*	(0)0.45*i*
3485.70	(0.34)1.19?	(0.32)*1.15*, 1.78
3485.36	(–)1.16	(0)1.14
3483.41	(–)1.45*B*	(0)1.44
3480.01	(*0.19*, 0.62)	(*0.19*, 0.56) 0.95 . . . *2.06*
3478.74	(0.66)?	(0.59)1.36
3478.55	(*0.23*, 0.62) 0.00, *0.43*, 0.84	(*0.25*, 0.75)*0.08*, 0.58, 1.08, 1.58
3477.83	(–)1.25	(0.22)1.26
3476.36	(0.25:)1.18	(0.24)1.19

TABLE V.—*Continued.*

λ	Zeeman Effect Observed	Zeeman Effect Calculated
3474.53	(0.38)1.13?	(0.35)1.12
3474.01	(−)1.40	(0)1.46 (0)1.31
3471.38	(−)1.32	(0.09)1.33
3469.68	(−)1.08	(0)1.04s
3465.79	(−)1.17	(0)1.16
3463.49	(−)1.08	(0.75)*0.41*, 1.91
3462.80	(*0.26*, 0.80) 0.69, 1.24, *1.80*	(*0.27*, 0.82)0.13, 0.68, 1.23, *1.78*
3461.17	(−)1.14	(0)1.15
3458.02	(−)1.20o, *B*?	(0.20)1.24
3456.92	(0.83o)?*C*	(0.91s)1.14
3456.52	(−)1.06	(0.04)1.08
3455.23	(−)0.66o, *B*	(0)0.63s
3453.51	(−)1.19	(0)1.15
3448.35	(−)1.20	(0.03)1.14
3446.08	(−)1.05	(0)1.06
3443.64	(0.64)1.15	(0.65)1.14
3442.91	(−)0.95	(0)0.95 (1.33)1.33
3438.90	(−)1.01	(0)1.02
3438.71	(−)1.10	(0)1.14
3435.75	(0.38)1.50	(0.48)1.50
3433.04	(−)0.46	(0.10)0.44
3432.31	(−)0.89?	(0)0.98
3431.58	(−)1.14	(0)1.17
3428.22	(−)1.12	(0)1.15 (1.11)1.42
3426.45	(−)1.42	(0)1.42
3424.50	(−)1.58	(0)1.60
3422.90	(*0.28*?, 0.95?)0.63?:	(*0.28*, 0.83)*0.34*, 0.89, 1.44, 1.99
3421.62	(?)1.30?	(0)1.34s
3420.79	(0.56)1.45	(0.57)1.41
3420.47	(0.78)?	(0.79)1.44
3417.67	(0.50)1.21	(0.50)1.20
3417.15	(0.32:)0.98	(0.20)1.00
3414.73	(*0.60*)	(0.63s)0.61s
3409.17	(0.28)1.26	(0.26)1.20
3406.89	(0.28)1.09	(0.36)2.01
3405.12	(−)1.37	(0.07)1.33
3402.06	(0.72)0.96	(0.26)0.94
3401.91	(0.31?, 0.89?)0.22?	(*0.32*, 0.95) *0.30*...2.19
3401.61	(0.34:)0.17?	(0.35s)0.03s
3400.47	(0.80:)	(0.79)0.93, *2.51*
3395.37	(−)0.83	(0)0.84
3390.79	(−)0.46	(0)0.48
3390.39	(0.69)0.39	(0.70)*0.39*, 1.78
3388.16	(0.32, 0.83)0.76 1.34, 1.93*	(*0.29*, 0.86)0.19 0.76, 1.33, *1.90*
3385.21	(*0.26*, 0.78, 1.30) 0.43, 0.95, 1.49, 2.02, *2.58*	(*0.26*, 0.79, 1.32) −0.07, 0.46, 0.99, 1.52, 2.05, *2.58*
3383.90	(1.06)1.45	(1.07)1.42
3382.07	(0.37)1.01, *1.77*	(0.35)1.04, *1.74*
3381.49	(−)1.11	(0.04)1.12
3378.73	(−)0.89	(0)0.97s
3378.35	(−)0.39	(0)0.30
3377.06	(−){0.94g, 0.71i} *A*?	(0){0.94g, 0.56s}
3376.20	(−)1.35	(0)1.32
3374.30	(0.65)1.35	(0.86)1.42
3373.96	(1.26)?	(1.35)1.33
3373.22	(0.20)1.08	(0.19)*1.14*, 1.51
3370.32	(−)1.23	(0)1.22
3367.11	(*0.12*,−,−,−)2.37o, *B*	(0.15i)2.42s
3365.01	(0.61)*0.94*?, 2.25?	(0.50)*1.18*, 2.18 (0.32)1.00, *1.64*
3364.25	(0.13)1.15	(0.13)1.14
3363.76	(0.61)0.65:	(0.97)1.40
3362.79	(0.44)1.39	(0.78)1.46
3361.55	(−)0.58*A*	(0)0.26
3359.28	(−)1.17	(0)0.74
3358.00	(−){1.73?, 1.18?}	(0)1.36 (0)1.14
3356.84	(−)1.11	(0)1.10
3356.46	(−)1.26	(0)1.30
3355.11	(−)0.58	(0.16)0.52
3354.37	(−)2.18o, *B*	(0)2.00s
3351.53	(−)1.36	(0.07)1.34
3348.11	(−)1.57	(0)1.56
3347.57	(−)0.66	(0)0.66
3346.93	(−)1.42	(0.19)1.46
3342.73	(−)1.26	(0)1.24
3341.94	(−){0.92g, 0.78i} *A*	(0){0.98g, 0.77s}
3341.34	(−)1.04	(0)1.02
3339.78	(0.41)0.94	(*0.16*, 0.48...1.12) *0.37*...2.61
3338.51	(−)1.31	(0.08)1.36
3337.17	(0.66){1.30g, 0.74i} *A*?	(0.67){1.25g, 0.53s}
3334.14	(−){2.09o, 1.72g} *B*	(0){1.97s, 1.66g} (0.34)0.97
3333.38	(1.06)	(1.05)1.10 (0)0.80
3329.46	(−)1.44	(0.24)1.44
3329.01	(−)−?, 1.28, −?	(0)1.29
3328.20	(0.44)1.31	(0.51)1.28
3326.99	(−)1.45	(0.09)1.45
3326.56	(−)1.04?	(0)0.65
3325.24	(0.60)*0.90*, 2.04?	(0.60)*0.88*, 2.08
3322.19	(−)1.10	(0.22)1.17 (0.30)1.07
3321.91	(−)1.34	(0)1.35s
3319.82	(−)1.52	(0)1.50
3319.47	(−)1.04	(0)1.05
3319.15	(−)1.06	(0)1.06
3318.39	(0.91)0.82, 1.71?	(0.21, 0.62, *1.03*) 0.62, 1.03, *1.44*, 1.85, 2.26
3315.03	(0.66)1.36	(0.42s)1.19 − −
3314.07	(−)0.88	(0)0.37 (0.03)0.86
3313.11	(1.47)0.77	(1.37)0.77, *3.51* − −
3312.82	(0.46)1.46	(0)1.88
3312.14	(0.51)*0.95*, 2.00?	(0.51)*0.96*, 1.97
3308.81	(−)1.40	(0.31)1.40
3308.48	(−)1.24	(0)1.25
3307.15	(−)1.60	(0)1.60
3306.40	(−)1.55	(0)1.50s
3305.73	(−)1.20	(0)1.22
3305.10	(0.49:)0.39 or 1.12	
3304.79	(?)1.31?	(0)1.00
3304.11	(−)0.61?	(0)0.98s
3303.88	(0.50)*1.15*, 2.07?	(0.52)*1.10*, 2.14
3298.68	(1.26)1.40	(1.26)1.42
3294.53	(0.80)1.87	(0.84)0.23, *1.91*
3294.09	(?)1.36?	
3293.86	(0.92:)0.44?	(0.98)1.06
3293.21	(−){1.01g, 0.64i} *A*?	(0){0.93g, 0.63s}
3292.08	(0.73)0.55	(0.72)*0.53*, 1.96
3287.57	(−)1.37	(0)1.36
3287.19	(0.39)1.32	(0.41)1.32
3283.77	(−)1.46	(0)1.42
3283.46	(−)1.13	(0)1.17s
3283.32	(−)1.26	(0)1.28
3279.25	(−)1.47	(0.01)1.48
3278.84	(0.67)0.68	(0.67)*0.65*, 2.00
3277.66	(0.19)1.43	(0.48)1.42
3277.30	(0.65)1.33	(0.68)1.34
3276.48	(−){0.95g, 0.72i} *A*	(0){0.94g, 0.56s}
3271.77	(−)1.26	(0)1.28
3270.19	(−)1.30	(0.38)1.34
3268.89	(?)0.60i	(0)0.50s
3265.35	(−)1.29	(0)1.28
3264.84	(0.22)0.87?, *1.29*	(0.18)0.91, *1.27* (0)1.86 (0)1.31
3264.71	(−)1.62	(0.14)1.67
3263.21	(0.30)1.18	(0.55)1.14
3260.81	(−){0.67g, 0.44i} *A*	(0){0.64g, 0.44s}
3258.41	(0.99)1.16?	(0.87)1.16
3258.03	(−)1.57	(0.20)1.60
3254.20	(−)1.39	(0)1.37
3253.41	(?)0.76?	(0.66)0.81, *1.12*
3251.65	(−)1.68?	(0)1.68
3249.99	(−)1.29	(0)1.32s
3247.17	(−)1.31	(0)1.32 (0)0.45
3246.99	(0.28)1.35	(0.31)1.36
3243.84	(−)1.51	(0.09)1.52
3243.57	(0.33)1.34	(0.36)*1.36*, 2.08
3237.02	(−){0.86g, 0.68i} *D*	(0){0.83g, 0.55s}
3235.78	(?)1.65	(1.02)1.65
3235.53	(−)0.99*A*?	(0)1.08 (0)1.02
3234.11	(−)1.33?	(0.20)1.40
3232.87	(−)1.49	(0)1.42
3227.75	(−)1.17	(0)1.22
3226.98	(0.35)1.03	(0.28)0.97
3224.63	(−)1.79	(0)1.74
3219.15	(0.16)1.20	(0.26)1.22
3216.99	(−)1.47	(0)1.52
3210.85	(−)1.15	
3210.21	(−)1.10	(0.04)1.10
3205.88	(−)1.06	(0)1.06
3203.02	(0.53)1.29	(0.41)1.34
3199.32	(0.79)1.25	(0.74)1.22
3198.66	(−){1.65o, 1.51g} *B*	(0){1.80s, 1.38g}
3196.42	(?)1.18	(0.17)1.20
3193.16	(0.29)1.20	(0.38)1.18
3192.22	(0.43)−, 1.06, *1.90*	(0.42)1.05, *1.89*
3191.29	(−)0.68	(0)0.74
3190.91	(−)0.63	(0)0.70
3189.75	(1.20)0.00, *0.80*, 1.60	(0.39, *1.17*) 0.03, *0.81*, 1.59
3188.37	(*0.32*, 0.91)*0.00*, 0.53, 1.11, 1.73	(*0.32*, 0.96)−*0.13* 0.51, 1.15, 1.79
3186.35	(0.41)0.97	(0.37)0.96
3185.94	(−)1.74	(0)1.69
3182.11	(0.78)*0.35*, 1.88	(0.78)*0.34*, 1.90
3180.29	(0.54)0.61?, *1.64*, 2.61?	(0.54)0.55, *1.63*
3177.26	(−)0.93	
3174.90	(0.68)1.29	(0.64)1.36
3174.14	(−)1.03	(0)1.22
3173.14	(0.48)1.30	(0.49)*1.19*, 2.17
3169.76	(−)1.05	(0)1.06
3168.06	(−)1.17?	(0)1.20
3161.65	(−)1.17	(0)1.14
3159.66	(0.18)0.57	(0)0.52 (0.17)1.00
3158.77	(−){0.98g, 0.85i} *A*	(0){1.00g, 0.82s}
3154.79	(−)1.06	(0)1.05
3154.67	(−)1.07	(0)1.06
3152.70	(1.32)1.33	(1.34)1.34
3152.12	(?)1.82?	(0.88)1.02
3149.31	(−)0.90	(0)0.94
3147.06	(−)1.03	(0)1.00
3145.02	(0.65)?	(0.74)*0.44*, 1.92
3140.71	(0.50)2.15?	(0.49)2.19
3139.94	(−)1.08	(0)1.12 (0.49)1.30
3137.75	(0.64)0.94	(0.59)*0.89*, 2.07
3137.32	(−){1.16o, 0.99g} *B*	(0){1.17s, 0.94g}
3129.48	(1.66)?	(1.67s)1.16
3127.25	(−)1.79	(0)1.72
3126.72	(−)1.46	(0)1.53
3121.56	(−)1.42*B*?	(0)1.41
3121.41	(−)1.24	(0)1.16
3118.24	(−)1.38	(0)1.44s
3113.47	(−)1.54	(0)1.58s
3110.82	(?)1.64	(0)1.74s
3109.50	(0.80)*0.95*, 1.48 1.99	(0.27, *0.81*) 0.91, *1.45*, 1.99 (0)1.48
3107.54	(−?)0.71	(0.02)0.71
3107.04	(−)1.13	(0)1.14
3105.92	(?)1.55?	(0)1.61
3103.98	(−?)1.55	(0.22)1.59
3103.73	(0.45)1.38	(0.48)1.39
3102.40	(0.32)1.60	(0.34)1.60
3099.66	(−)1.42	(0)1.41
3098.19	(0.74)0.89	(0.72)0.88
3096.70	(1.07)0.77, *1.45*	(0.33, *0.99*) 0.76, *1.42*, 2.08
3096.40	(0.66)*0.70*, −?	(0.66)*0.66*, 1.99
3095.71	(−)0.86i*A*?	(0)0.82s
3090.25	(0.83)0.24?	(0.82)*0.23*, 1.86
3089.59	(0.60)1.11	(0.71)1.15
3088.67	(−)0.70	(0)0.58 (0)0.98
3087.80	(1.24)1.54	(1.16)1.52
3086.77	(−)0.45	(0.07)0.44
3086.39	(−){2.17o, 2.05g} *B*	(0){2.33s, 1.98g}
3082.61	(−)1.14	(0)1.10s
3079.39	(−)1.66	(0.56)1.24 (0)1.76
3073.52	(0.67)1.11, *1.48*, 1.90	(0.24, *0.71*)1.01, *1.48*, 1.95
3072.34	(0.32)0.97	(0.25s)1.00
3071.95	(0.58)−, *0.63*, −	(0.56)0.62
3064.37	(−)1.00	(0)0.97
3062.19	(−)1.29	(0)1.36
3061.82	(0.30)1.21	(0.32)1.22
3060.04	(−)1.20	(0)1.25
3056.66	(?)1.21	(0)1.21

* Zeeman pattern from Rybar, Physik. Zeits. **12**, 889 (1911).

TABLE V.—*Concluded.*

λ	Zeeman Effect Observed	Zeeman Effect Calculated
3054.72	(-)0.75	(0)0.70*s*
3050.93	(-)1.90*B*?	(0)1.93
3050.49	(0.66)0.88, *1.28* 1.73	(0.21, *0.63*) 0.84, *1.26*, 1.68
3048.88	(*0.30*, 0.87) 0.72, 1.33, *1.95*	(*0.29*, 0.87)0.18, 0.76, 1.34, *1.92*
3048.10	(0.40?)0.94, *2.05*	(0.55)0.91, *2.02*
3044.00	(-)1.32	{(0)1.32 { – –
3042.48	(*0.30*, 0.82, 1.33) 0.43, 0.95, 1.52, 2.08, *2.60*	(*0.27*, 0.82, 1.37) -0.11, 0.44, 0.99, 1.54, 2.09, *2.64*
3040.81	(?)1.42:	(0.94)1.42
3039.56	(-)1.80	(0)1.87
3038.30	(?)0.71	(0)0.68*s*
3034.43	(-)1.39?	(0)1.39*s*
3031.28	(0.40)1.58	(0.39)1.61
3028.18	(-)1.45	
3026.37	(-)0.72*g* 0.49*i* } *A*	(0)0.80*g* 0.41*s*
3023.59	(-)1.50	(0)1.46
3022.35	(-)0.87	(0)0.88
3017.54	(-)2.02*o*, *B*	(0)2.07*s*
3017.25	(-)0.78:	(0)0.78
3015.68	(-)1.60	(0)1.58
3013.59	(-)2.31*o*, *B*	(0)2.34*s*
3006.52	(-)1.18	(0.74)1.20
3005.97	(-)1.48	
3005.76	(0.45)1.41	(0.35)1.42
3000.54	(0.98)1.18*C*	(0.94)1.11
2999.71	(-)1.98	(0)2.15*s*
2996.94	(?)0.90	(0)0.95
2996.54	(-)2.01	(0)2.18*s*
2995.24	(?)1.05	(0)1.09
2995.15	(-)0.87	(0.24)0.86
2989.59	(0.64)1.24	(0.59)1.24
2987.16	(-)1.94*o* 1.65*g* } *B*	(0)1.88*s* 1.60*g*
2982.26	(-)0.43	(0)0.42
2978.95	(0.80:)1.91	(0.72)1.96
2978.01	(-)1.33	(0)1.32
2977.46	(0.60:)1.40:	(0.84)1.42
2975.46	(0.64)1.15	(0.78)1.46
2971.36	(?)1.05?	
2969.61	(-)1.33	(0)1.32
2957.67	(-)0.95	(0)0.99
2955.38	(0.67)0.78	
2936.54	(-)1.15	{(0)1.21 { – –
2929.50	(-)1.11	(0.04)1.10
2928.81	(?)2.52	(0)2.62*s*
2927.66	(-)1.23	(0)1.25
2919.55	(-)0.75	(0)0.78
2911.56	(?)1.10:	(0)1.17
2907.67	(?)1.36	(0.50)1.40
2903.19	(0.50)1.04	(0.48)1.04
2899.81	(-)1.22	(0)1.18
2892.24	(-)1.21	
2886.44	(0.26)1.19	(0.44)1.20
2885.30	(?)1.49	(0.66)1.49
2882.21	(0.71)1.05	{(0.73)1.07 {(0.31)1.12

λ	Zeeman Effect Observed	Zeeman Effect Calculated
2878.55	(0.70)*0.69*, 2.03	(0.68)*0.64*, 2.00
2872.49	(-)0.75	(0)0.64
2862.60	(0.22)0.96	(0.20)1.00
2859.65	(-)2.02:	(0)1.87
2850.94	(0.58:)0.67	(0.55)0.62
2850.04	(-)0.64*A*?	(0)0.61
2842.38	(0.35)-, 1.10 *1.83*	(0.36)1.10, *1.83*
2837.15	(-)1.02*g* 0.85*i* } *A*	(0)0.98*g* 0.68*s*
2833.92	(-)1.32	(0)1.37
2828.46	(-)0.85	
2826.79	(-?)1.13	(0)1.12*s*
2823.64	(-)1.22	
2821.74	(?)0.95	(0)0.97*s*
2820.00	(-)0.63	{(0)0.66 {(0)1.67
2818.59	(?)1.10?	(0)1.23
2815.55	(0.57)1.29	(0.56*s*)1.33
2814.97	(-)1.77:	(0)1.66
2803.77	(0.81)1.15	(0.77*s*)1.20
2797.08	(-)1.60	{(0.20)0.90 {(0)1.64
2792.43	(-)1.22	(0)1.15
2785.89	(-?)0.43	(0)0.43*s*
2778.81	(-)1.54	(0.02)1.50
2774.96	(-)0.56	(0)0.51
2772.69	(-)1.15	
2766.38	(-)0.87	(0)0.89
2766.21	(-)0.88	(0.12)0.88
2764.18	(-)1.17	(0)1.22
2763.06	(-)0.97	
2761.36	(-)1.06	(0)1.00*s*
2758.53	(?)1.62	(0.29)1.58
2752.07	(-)0.79	{(0)0.79 {(0)0.86*s*
2746.02	(-)1.16	(0.12)1.18
2745.09	(-)1.24	(0.26)1.22
2740.45	(-)1.05	(0)1.07
2731.11	(0.39)0.95	(0.39)0.95
2728.75	(-)1.00	(0)1.02
2722.10	(-)1.29	(0)1.27*s*
2719.58	(-?)1.37	(0)1.42
2715.98	(-)1.07	(0.30)1.07
2695.84	(-)1.49	(0)1.52
2685.33	(-)1.52	(0)1.49
2679.75	(-)0.91	(0)1.02
2673.91	(?)1.23	(0)1.22
2661.71	(-)1.30	(0)1.24
2650.26	(-)0.42	(0.06)0.42
2649.93	(-)0.64	(0)0.62
2648.63	(-)0.95	{(0)1.04 {(0.04)1.34
2646.41	(-)1.23	(0.03)1.24
2629.97	(0.77)1.30	(0.74)1.33
2627.63	(-)1.14	(0)1.17*s*
2623.44	(-)1.88	(0)1.94*s*
2622.43	(-)0.91	(0)0.90
2617.85	(1.11)0.87?	(1.07)0.78
2613.49	(-)1.26	
2606.12	(-)0.51	(0)0.53*s*
2600.97	(-)1.63	(0)1.69*s*

λ	Zeeman Effect Observed	Zeeman Effect Calculated
2591.68	(-)0.89	(0)0.86*s*
2590.59	(-)1.07	(0)1.05
2585.33	(-)0.78	(0.07)0.84
2574.35	(0.58)1.34	(0.49*s*)1.34
2572.23	(-)1.52	(0)1.49
2567.34	(0.74)1.19	(0.75*s*)1.20
2562.12	(?)0.00, *0.83*, 1.64	(0.41, *1.23*) 0.01, *0.83*, 1.65
2556.76	(-)1.73	(0)1.35
2555.07	(-)1.79*o* 1.57*g* } *B*	(0)1.78*s* 1.36*g*
2553.33	(-)1.43	(0)1.44
2553.00	(-)1.37	(0)1.40
2549.29	(*0.49*, 1.45) *0.50*, 1.40, -?	(*0.49*, 1.47)-*0.42*, 0.56, 1.54, 2.52
2548.33	(-)1.06	(0)1.04*s*
2544.25	(-)1.53?	(0)0.53
2536.50	(-)1.21	(0.03)1.24
2535.96	(-)0.91	(0)0.91
2535.35	(0.50:)1.16	(0.41)1.23
2532.17	(-)0.46	(0.06)0.42
2531.35	(-)0.95	(0)0.92
2528.96	(-)1.12:	(0)1.07*s*
2521.36	(-)1.20	(0)1.16
2513.11	(-)1.21	(0)1.28
2512.90	(-)1.30	(0.26)1.20
2507.67	(-)-?, 2.00	(0)1.94*s*
2506.87	(0.77)?	(0.74)0.87
2504.51	(-)1.24	(0)1.36
2496.71	(-)1.04	(0)1.06
2495.55	(-)1.69	(0)1.62
2494.73	(-)1.51	(0)1.52
2493.93	(-)0.74	(0)0.72
2489.24	(?)0.62	(0)0.62*s*
2483.61	(0.70)1.11	(0.74)1.12
2476.64	(-)1.54	(0)1.58
2476.43	(-)1.43	
2473.90	(-)1.51	(0)1.49
2472.92	(?)2.29	(0)2.62*s*
2467.68	(-)1.51	(0)1.48
2460.80	(-)1.95*o*, *B*	(0)1.97*s*
2460.19	(?)1.64	(0)1.64
2456.23	(0.67)1.25	(0.72*s*)1.26
2441.04	(?)1.03	
2435.09	(-)1.07	
2432.21	(-)*0.96*?, 1.56?	(0.09)1.26
2429.22	(-)0.44*iA*	(0)0.37*s*
2428.59	(-)1.39	
2426.99	(-)1.52	
2424.93	(-)1.31	(0.11)1.33
2422.56	(-)1.65	(0.04)1.65
2413.18	(-)0.45	(0)0.46
2410.50	(-)0.80	
2402.16	(-)1.54	{(0)1.47
2402.05		{(0)1.56
2384.85	(?)1.48	(0)1.46
2380.48	(0.69)1.12	{(0.86)1.12 {(0)0.82
2369.67	(-)1.07	(0)1.11
2365.05	(0.54:)1.25	(0.52)1.25
2350.28	(-)1.47	(0)1.51

i Inside component.
o Outside component.
g Center of gravity of pattern.
s Strongest component calculated.
: Doubtful value.

A *n* component shaded outward.
B *n* component shaded inward.
C *p* component shaded inward.
D *p* component shaded outward.

we have given term designations are not given by Catalan and Antunes. Each of the low terms b^2G and c^2D accounts for 42 lines. Most of the higher levels are confirmed by from three to ten combinations; $g^4H_{6\frac{1}{2}}$ and $x^2H_{5\frac{1}{2}}{}^0$ have but two, and $e^6H_{7\frac{1}{2}}$ only one (§5).

Six levels to which they have given designations (in the pentads discussed in §5) are placed in our list of unclassified levels—either because of irregular intensities in the multiplets or because other levels, in a more probable position, were discovered. We have been constrained to reject as unreal five of their high odd levels (four in this pentad) and the low c^2D at 22,247, 23,392, which they regarded as doubtful. Of our 37 unclassified odd levels, all but two are new. More than two-thirds of these depend on the new measures in the ultraviolet.

8. ZEEMAN DATA

The observed separations are given in Table V. The *g* values given in Table IV were found from

TABLE VI. *The g sums for* Co I.

Config.		d^7s, d^8s, d^9	$d^8(^3F)$, $d^7s(^5F)$, $d^7s(^3F)+4p$	Other Odd Terms	High Even Terms	All Terms
J $\frac{1}{2}$	N	4	5	13	1	23
	O	6.71	2.73	17.80	−0.71	26.53
	T	6.67	2.67	17.33	−0.67	26.00
$1\frac{1}{2}$	N	9	11	19	7	46
	O	9.33	9.55	24.63	7.30	50.81
	T	9.33	9.33	25.07	7.33	51.06
$2\frac{1}{2}$	N	8	16	15	15	54
	O	9.81	17.26	17.79	17.39	62.25
	T	9.71	16.85	17.89	17.55	62.02
$3\frac{1}{2}$	N	5	16	12	18	51
	O	5.45	19.24	13.55	21.70	59.94
	T	5.40	19.14	13.74	21.27	59.55
$4\frac{1}{2}$	N	5	11	8	14	38
	O	5.82	14.18	8.54	17.13	45.67
	T	5.80	14.00	8.56	17.49	45.85
$5\frac{1}{2}$	N	1	5	2	9	17
	O	1.09	6.66	2.20	11.38	21.33
	T	1.09	6.62	2.18	11.36	21.34
$6\frac{1}{2}$	N		1		4	5
	O		1.40		5.06	6.46
	T		1.39		5.13	6.51
$7\frac{1}{2}$	N				1	1
	O				1.34	1.34
	T				1.33	1.33
All	N	32	65	69	69	235
	O	38.21	71.02	84.51	80.59	274.33
	T	38.00	70.00	84.77	80.79	273.56

these in the usual manner, starting with the unresolved patterns, and then using the formulae of Shenstone and Blair[12] in the case of unresolved patterns, when it appeared probable that the mean of a blend had been observed; or sometimes the formulae for the strongest line when this was probably observed. The computed patterns are derived from these empirical g values. For unresolved patterns, the center of gravity of the group is usually given. When the strongest component is entered instead, it is denoted by s. When two assignments are given in Table VIII, both calculated patterns are entered here.

The accuracy of the g values may be estimated by comparison with those of Roth and Bartunek.[13] Grouping the levels according to their J values the mean differences in the sense authors' values minus those of R and B are as follows in units of 0.01.

J	$\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{2}$	$5\frac{1}{2}$	$6\frac{1}{2}$
No.	7	20	26	21	15	6	1
Alg. mean	−4.3	−1.7	+0.8	+0.4	−0.5	+0.6	(+2)
Arith. mean	±5.7	±3.5	±2.5	±1.5	±1.4	±1.0	(±2)
Comp.	6.8	3.4	2.3	1.7	1.4	1.1	

The accuracy increases steadily with J, which is to be expected, for the displacement of the strongest n component of a resolved pattern is $J_1g_1-J_2g_2$ and that of an unresolved blend is $\frac{1}{2}\{(J+1)g_1-J_2g_2\}$. The observations therefore determine, on the average, the value of $(J+x)g$, where x should be of the order of $\frac{1}{2}$. The values of $6.8/(J+\frac{1}{2})$ are given in the last line and closely represent the observed mean discordances. The average value of J is 2.9, corresponding to a discordance of ±0.02 in the g values. If the two sets of determinations were of equal accuracy, the probable error of either would be ±0.012, confirming Roth and Bartunek's statement: "Most of the g factors are estimated to be reliable to about 0.01."

Most of the g values are in good agreement with those derived from the elementary theory (LS coupling). The g sums for various configurations are given in Table VI. Here for each group of configurations N is the number of levels of given J for which reliable g values were derived (omitting the doubtful values marked with colons in Table IV), O the sum of the observed g values, and T that of those from LS coupling. For the first two sets of configurations g values have been found for all the levels, so that the g sum test is strictly applicable. For the others some levels are missing and the test is not exact. The excess of O above T for the first two sets suggests that the observed values may be about one percent too great; but the others do not confirm this.

TABLE VII. *Conspicuous examples of the sharing of g values.*

Term	Level	$O-T$	Term	Level	$O-T$
$b^4P_{1\frac{1}{2}}$	15,774	−0.26	$y^4S^0{}_{1\frac{1}{2}}$	46,562	−0.75
$a^2D_{1\frac{1}{2}}$	16,470	+0.29	$v^4D^0{}_{1\frac{1}{2}}$	46,260	+0.28
			$v^2D^0{}_{1\frac{1}{2}}$	46,186	+0.38
$b^4P_{2\frac{1}{2}}$	15,184	−0.10			
$a^2D_{2\frac{1}{2}}$	16,778	+0.08	$e^2D_{2\frac{1}{2}}$	52,460	−0.28
			$f^2F_{2\frac{1}{2}}$	52,970	+0.27
$x^2F^0{}_{2\frac{1}{2}}$	43,425	+0.16			
$w^4D^0{}_{2\frac{1}{2}}$	43,242	−0.20	$g^2F_{3\frac{1}{2}}$	52,763	−0.21
			$e^4H_{3\frac{1}{2}}$	52,716	+0.26

[12] A. G. Shenstone and H. A. Blair, Phil. Mag. **8**, 765 (1929); H. N. Russell, Phys. Rev. **36**, 1590 (1930).

[13] F. L. Roth and P. F. Bartunek, Phys. Rev. **47**, 526 (1935).

TABLE VIII. *Arc spectrum of cobalt* (Co I).

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
1	11,894.93	10	8404.65	$c^2D_{1\frac12}-y^2D^0_{1\frac12}$
1	11,630.93	40	8595.41	$c^2D_{2\frac12}-y^2D^0_{2\frac12}$
1	11,508.4	6h	8686.9	$b^2G_{4\frac12}-z^2F^0_{3\frac12}$
1	11,402.20	3h	8767.84	
1	11,318.27	40	8832.85	$c^2D_{2\frac12}-y^2F^0_{2\frac12}$
1	11,305.0	2h	8843.2	$b^2G_{4\frac12}-y^4D^0_{3\frac12}$
1	11,158.6	2	8959.2	$b^4P_{1\frac12}-z^6F^0_{2\frac12}$
1	11,106.34	8	9001.40	$y^2D^0_{1\frac12}-e^4F_{2\frac12}$
1	11,094.7	3h	9010.8	
1	11,091.94	50	9013.09	$y^2D^0_{2\frac12}-e^4F_{3\frac12}$
1	11,085.4	1h?	9018.4	$v^4D^0_{3\frac12}-e^6G_{3\frac12}$?
1	11,018.1	1h?	9073.5	$z^4P^0_{2\frac12}-e^4P_{2\frac12}$
1	11,015.9	2h	9075.3	$v^4D^0_{\frac12}-f^6F_{1\frac12}$?
1	10,957.0	2h	9124.1	$x^4F^0_{3\frac12}-e^4P_{2\frac12}$
1	10,946.88	10h	9132.52	
1	10,935.42	4	9142.10	$b^4P_{2\frac12}-z^6F^0_{3\frac12}$
1	10,805.9	10h	9251.7	$x^4F^0_{3\frac12}-g^4F_{4\frac12}$
1	10,785.4	3h	9269.3	$a^2D_{1\frac12}-z^6D^0_{2\frac12}$
1	10,771.3	1?	9281.4	$x^4F^0_{3\frac12}-g^4F_{3\frac12}$
1	10,739.0	6h	9309.3	$x^2F^0_{3\frac12}-h^4F_{4\frac12}$
1	10,713.4	1	9331.6	$y^2F^0_{3\frac12}-e^4F_{4\frac12}$
1	10,692.6	3h	9349.7	$x^4F^0_{3\frac12}-e^4G_{4\frac12}$
1	10,681.82	30h	9359.14	
1	10,660.17	30	9378.14	$c^2D_{2\frac12}-y^2D^0_{1\frac12}$
1	10,561.3	2	9465.9	$w^4D^0_{3\frac12}-h^4F_{4\frac12}$
1	10,521.3	3h	9501.9	$b^2D_{1\frac12}-y^4D^0_{2\frac12}$
1	10,471.96	15	9546.69	$y^2F^0_{2\frac12}-e^4F_{2\frac12}$
1	10,447.39	4h	9569.15	$w^4F^0_{4\frac12}-h^4F_{4\frac12}$
1	10,442.11	20	9573.99	$b^2G_{3\frac12}-z^2F^0_{2\frac12}$
1	10,398.38	4h	9614.25	$x^4G^0_{5\frac12}-e^4H_{6\frac12}$
1	10,382.16	50	9629.27	$b^2D_{1\frac12}-z^2F^0_{2\frac12}$
1	10,367.95	2	9642.47	$x^4F^0_{3\frac12}-e^4D_{2\frac12}$
1	10,364.4	1	9645.8	$x^4G^0_{5\frac12}-e^4H_{5\frac12}$
1	10,354.45	60	9655.04	$y^2F^0_{3\frac12}-e^4F_{3\frac12}$
1	10,348.1	1?	9661.0	$x^4F^0_{2\frac12}-f^2F_{3\frac12}$
1	10,335.39	4h	9672.85	$u^4D^0_{3\frac12}-g^4P_{2\frac12}$
1	10,332.66	3h	9675.40	$x^4G^0_{5\frac12}-e^4G_{5\frac12}$
1	10,276.80	4h	9728.00	$x^4F^0_{2\frac12}-e^4G_{3\frac12}$
1	10,172.85	20h	9827.39	$x^4F^0_{4\frac12}-e^4D_{3\frac12}$
1	10,167.58	200	9832.48	$y^2D^0_{2\frac12}-e^2F_{3\frac12}$
1	10,154.90	2	9844.77	$x^4G^0_{4\frac12}-e^2H_{5\frac12}$
1	10,152.95	4	9846.66	$w^4F^0_{3\frac12}-h^4F_{3\frac12}$
1	10,131.37	2	9867.63	$b^4P_{\frac12}-z^6D^0_{1\frac12}$?
1	10,128.06	150	9870.86	$y^2D^0_{1\frac12}-e^2F_{2\frac12}$
1	10,111.0	1h	9887.5	$x^4G^0_{4\frac12}-e^2G_{4\frac12}$
1	10,105.43	2	9892.96	$x^4G^0_{4\frac12}-e^4G_{3\frac12}$
1	10,092.1	3h	9906.0	$x^4F^0_{1\frac12}-g^4F_{1\frac12}$?
1	10,078.62	100	9919.28	$a^2H_{5\frac12}-z^2G^0_{4\frac12}$
1	10,052.98	8	9944.58	$x^4F^0_{4\frac12}-g^4F_{4\frac12}$
1	10,048.80	3	9948.71	$x^4F^0_{4\frac12}-e^4H_{5\frac12}$
1	10,046.31	150	9951.18	$b^2D_{2\frac12}-z^2F^0_{3\frac12}$
1	10,031.45	5	9965.92	$b^4P_{1\frac12}-z^6D^0_{2\frac12}$
1	10,021.47	4h	9975.84	$x^4F^0_{1\frac12}-e^4G_{2\frac12}$
1	10,019.08	30h	9978.22	$x^4F^0_{4\frac12}-e^4G_{5\frac12}$
1	10,007.80	3	9989.47	$a^2H_{4\frac12}-y^4G^0_{4\frac12}$
2	9952.2	3h	10,045.3	$y^2F^0_{2\frac12}-e^4F_{1\frac12}$ $x^4G^0_{3\frac12}-e^2G_{3\frac12}$
2	9940.69	2	10,056.91	$w^4F^0_{2\frac12}-h^4F_{2\frac12}$
2	9918.1	1	10,079.8	$w^4D^0_{1\frac12}-e^2D_{1\frac12}$
2	9912.73	10	10,085.28	$b^4P_{2\frac12}-z^6D^0_{3\frac12}$
2	9909.52	1h	10,088.54	$w^4F^0_{3\frac12}-f^4P_{2\frac12}$
2	9890.92	30	10,107.51	$b^2D_{2\frac12}-y^4D^0_{3\frac12}$
2	9859.90	1	10,139.31	$x^2F^0_{3\frac12}-h^4F_{3\frac12}$
2	9852.5	1	10,146.9	$x^2F^0_{3\frac12}-f^4D_{3\frac12}$
2	9847.7	2	10,151.9	$x^4F^0_{3\frac12}-g^4F_{2\frac12}$
2	9823.52	4h	10,176.86	$x^4F^0_{3\frac12}-f^2F_{3\frac12}$?
2	9798.37	2h	10,202.98	$x^4F^0_{3\frac12}-e^4H_{4\frac12}$?
2	9785.39	40	10,216.52	$w^4F^0_{4\frac12}-f^4G_{5\frac12}$
2	9769.0	1h	10,233.66	$x^2F^0_{3\frac12}-i^4F_{4\frac12}$
2	9764.53	5h	10,238.34	$x^2F^0_{3\frac12}-e^2G_{4\frac12}$?
2	9746.02	100	10,257.79	$a^2H_{4\frac12}-z^2G^0_{3\frac12}$
2	9735.53	2	10,268.84	$x^2F^0_{2\frac12}-h^4F_{3\frac12}$
2	9729.54	3	10,275.16	$w^4F^0_{2\frac12}-i^4F_{3\frac12}$
2	9696.60	5	10,310.07	$b^2D_{1\frac12}-z^2D^0_{2\frac12}$ $w^4F^0_{3\frac12}-f^4G_{4\frac12}$
2	9694.0	2	10,312.8	$w^4F^0_{2\frac12}-f^4G_{3\frac12}$
2	9678.21	10h	10,329.66	$x^4F^0_{2\frac12}-g^2F_{3\frac12}$
2	9670.20	2	10,338.21	$x^4F^0_{2\frac12}-e^4G_{2\frac12}$
2	9659.94	3	10,349.20	$w^4F^0_{1\frac12}-i^4F_{2\frac12}$
2	9629.83	3h	10,381.56	
2	9613.46	4	10,399.23	$w^4F^0_{4\frac12}-h^4F_{3\frac12}$
2	9606.52	5	10,406.74	$w^4F^0_{4\frac12}-f^4D_{3\frac12}$
2	9597.90	200	10,416.09	$y^2F^0_{2\frac12}-e^2F_{2\frac12}$
2	9592.3	2h	10,422.2	$x^4F^0_{2\frac12}-e^2G_{3\frac12}$?
2	9585.28	2	10,429.81	$w^4F^0_{4\frac12}-e^6D_{4\frac12}$
2	9580.63	3	10,434.87	$w^4F^0_{3\frac12}-f^4D_{2\frac12}$
2	9569.00	5h	10,447.55	
2	9548.66	4	10,469.80	
2	9544.52	300	10,474.35	$y^2F^0_{3\frac12}-e^2F_{3\frac12}$
2	9527.17	10h	10,493.42	$w^4F^0_{4\frac12}-i^4F_{4\frac12}$
2	9517.33	1	10,504.27	$w^4F^0_{3\frac12}-e^6D_{3\frac12}$ $x^4G^0_{2\frac12}-g^2F_{2\frac12}$?
2	9513.42	1	10,508.59	$w^4F^0_{3\frac12}-f^6F_{4\frac12}$
2	9482.75	1	10,542.57	$x^4P^0_{2\frac12}-g^4P_{2\frac12}$
2	9470.74	2	10,555.94	$b^4P_{2\frac12}-z^6D^0_{2\frac12}$
2	9454.23	3h	10,574.38	$v^4D^0_{3\frac12}-g^4P_{2\frac12}$
2	9442.34	4h	10,587.69	$x^4G^0_{4\frac12}-e^2G_{3\frac12}$?
2	9435.70	3	10,595.15	$x^4G^0_{4\frac12}-h^4F_{4\frac12}$
2	9428.8	1	10,602.9	$x^2F^0_{3\frac12}-f^4G_{4\frac12}$
2	9422.60	3h	10,609.87	$w^4F^0_{1\frac12}-f^4G_{2\frac12}$
2	9406.12	4h	10,628.46	
2	9395.11	2	10,640.92	$x^4P^0_{1\frac12}-g^4P_{2\frac12}$
2	9356.98	200	10,684.28	$a^2H_{5\frac12}-y^4G^0_{4\frac12}$
2	9351.06	3	10,691.04	
2	9347.88	2h	10,694.68	$w^4F^0_{2\frac12}-f^6F_{3\frac12}$
2	9344.93	20	10,698.06	$a^2H_{4\frac12}-y^4G^0_{3\frac12}$
2	9340.54	3h	10,703.09	$w^4F^0_{2\frac12}-i^4F_{2\frac12}$
2	9319.53	2	10,727.21	$w^4F^0_{1\frac12}-f^6F_{2\frac12}$
2	9280.42	5	10,772.42	$y^2F^0_{3\frac12}-e^6F_{4\frac12}$
2	9262.5	2	10,793.3	$b^2D_{1\frac12}-y^4F^0_{2\frac12}$
2	9258.18	4	10,798.30	$x^4F^0_{3\frac12}-e^4H_{3\frac12}$
2	9245.60	1	10,812.99	$b^2D_{2\frac12}-z^2G^0_{3\frac12}$
2	9233.64	1	10,827.00	$a^2P_{1\frac12}-z^4F^0_{2\frac12}$
2	9207.96	1	10,857.19	$x^4F^0_{3\frac12}-e^2H_{4\frac12}$
2	9204.11	5	10,861.73	$b^2D_{2\frac12}-z^2F^0_{2\frac12}$
2	9185.95	2	10,883.21	$x^4G^0_{3\frac12}-h^4F_{3\frac12}$
2	9181.75	5	10,888.19	$x^4F^0_{4\frac12}-e^2H_{5\frac12}$
2	9177.93	20	10,892.72	$x^4G^0_{3\frac12}-g^2F_{2\frac12}$
2	9165.52	2	10,907.46	$x^4F^0_{1\frac12}-g^2F_{2\frac12}$
2	9133.24	6	10,946.02	$x^4F^0_{3\frac12}-h^4F_{4\frac12}$
2	9130.50	2	10,949.30	$b^2G_{4\frac12}-y^2G^0_{3\frac12}$
2	9111.64	1	10,971.96	$y^2G^0_{3\frac12}-e^4F_{3\frac12}$
2	9095.37	50	10,991.59	$a^2H_{4\frac12}-y^4F^0_{3\frac12}$
2	9071.35	4h	11,020.70	
2	9052.44	2	11,043.72	$b^2D_{1\frac12}-y^4F^0_{1\frac12}$
2	9040.0	1	11,058.9	$x^4G^0_{2\frac12}-h^4F_{2\frac12}$
2	9037.87	50	11,061.52	$a^2H_{5\frac12}-y^4F^0_{4\frac12}$
3	9032.70	1	11,067.86	$x^2D^0_{2\frac12}-e^6G_{3\frac12}$?
2	8986.51	3	11,124.74	
2	8972.89	7	11,141.63	$w^4F^0_{3\frac12}-e^6G_{3\frac12}$
2	8958.37	15	11,159.68	$y^4F^0_{2\frac12}-e^4F_{3\frac12}$
2	8953.72	2	11,165.48	$w^4F^0_{1\frac12}-5_{1\frac12,2\frac12}$
2	8939.14	5	11,183.69	$w^4D^0_{2\frac12}-h^4F_{1\frac12}$
2	8926.21	50	11,199.89	$b^2D_{1\frac12}-z^2D^0_{1\frac12}$
2	8904.63	30	11,227.03	$x^4G^0_{2\frac12}-h^4F_{1\frac12}$
2	8892.49	1	11,242.36	$x^4D^0_{1\frac12}-g^4F_{2\frac12}$
2	8888.70	8h	11,247.15	$x^4G^0_{5\frac12}-e^2H_{4\frac12}$
2	8878.28	3	11,260.35	$x^4F^0_{2\frac12}-h^4F_{3\frac12}$
2	8870.70	8	11,269.98	$x^4F^0_{2\frac12}-g^2F_{2\frac12}$
2	8856.56	3	11,287.96	
2	8850.70	30	11,295.44	$y^2F^0_{3\frac12}-e^2F_{2\frac12}$
2	8837.90	4h	11,311.80	
2	8835.21	20	11,315.25	$y^4F^0_{3\frac12}-e^4F_{4\frac12}$
4	8819.11v	100	11,335.90	$x^4G^0_{5\frac12}-h^4F_{4\frac12}$
2	8779.20	3	11,387.44	$w^4F^0_{4\frac12}-e^6G_{4\frac12}$
2	8774.71	2	11,393.26	$x^4D^0_{3\frac12}-e^4P_{2\frac12}$
2	8772.04	2	11,396.73	$w^4F^0_{2\frac12}-4_{2\frac12}$
2	8766.55	4h	11,403.87	$x^4D^0_{3\frac12}-e^4D_{3\frac12}$
2	8759.58	3	11,412.94	
2	8750.13	60	11,425.27	$x^4G^0_{4\frac12}-h^4F_{3\frac12}$
2	8745.56	8	11,431.24	$y^4G^0_{2\frac12}-e^4F_{3\frac12}$?
2	8744.37	10	11,432.80	
2	8733.27	40	11,447.32	$x^4G^0_{3\frac12}-h^4F_{2\frac12}$
2	8722.12	2	11,461.96	$x^4F^0_{1\frac12}-h^4F_{2\frac12}$
2	8678.65	3	11,519.37	$x^4G^0_{4\frac12}-i^4F_{4\frac12}$
2	8675.02	20	11,524.19	$z^2D^0_{1\frac12}-e^4F_{2\frac12}$
4	8661.06v	60	11,542.76	$b^2D_{2\frac12}-z^2D^0_{2\frac12}$
2	8658.14	3	11,546.66	$b^2D_{2\frac12}-y^4F^0_{3\frac12}$
2	8655.73	3h	11,549.87	$x^4F^0_{4\frac12}-e^2H_{4\frac12}$
2	8648.79	4	11,559.14	$a^2P_{1\frac12}-z^4D^0_{2\frac12}$
3	8596.09	3h	11,630.00	$x^4F^0_{1\frac12}-h^4F_{1\frac12}$
4	8589.78v	50	11,638.55	$y^4F^0_{3\frac12}-e^4F_{3\frac12}$ $x^4F^0_{4\frac12}-h^4F_{4\frac12}$
4	8586.68v	30	11,642.75	$z^2D^0_{2\frac12}-e^4F_{3\frac12}$
4	8575.32v	50	11,658.17	$a^2H_{4\frac12}-y^2G^0_{3\frac12}$
4	8574.46v	50	11,659.34	$a^2H_{5\frac12}-y^2G^0_{4\frac12}$
3	8569.72	18	11,665.79	$y^2G^0_{4\frac12}-e^4F_{3\frac12}$ $x^4G^0_{3\frac12}-i^4F_{3\frac12}$
5	8559.07	10	11,680.31	$y^4F^0_{1\frac12}-e^4F_{2\frac12}$
5	8513.52	5h	11,742.80	$y^2G^0_{3\frac12}-e^4F_{2\frac12}$
5	8489.50	30	11,776.02	$x^4F^0_{3\frac12}-h^4F_{3\frac12}$
3	8478.45	8	11,791.37	$y^2G^0_{3\frac12}-e^2F_{3\frac12}$
3	8454.71	1	11,824.48	$x^4F^0_{2\frac12}-h^4F_{2\frac12}$ $w^4D^0_{3\frac12}-3_{3\frac12}$
3	8409.03	10Wh	11,888.71	$x^4G^0_{4\frac12}-f^4G_{4\frac12}$
4	8379.44v	35	11,930.69	$y^4F^0_{2\frac12}-e^4F_{2\frac12}$

TABLE VIII.—*Continued.*

REF.	λ IA	INT.–TC	WAVE NO. VAC.	MULTIPLET DESIGNATION
4	8378.34*v*	50	11,932.26	$y^4G^0_{3\frac{1}{2}}-e^4F_{3\frac{1}{2}}$
4	8372.79*v*	80*h*	11,940.18	$y^4F^0_{4\frac{1}{2}}-e^4F_{4\frac{1}{2}}$
5	8345.55	20*h*	11,979.15	$y^4F^0_{2\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
5	8342.63	50*Wh*	11,983.33	$x^4G^0_{5\frac{1}{2}}-f^4G_{5\frac{1}{2}}$
5	8331.69	20	11,999.07	$a^2D_{2\frac{1}{2}}-z^4F^0_{3\frac{1}{2}}$
3	8318.55	5*Wh*	12,018.03	$x^4F^0_{3\frac{1}{2}}-f^4P_{2\frac{1}{2}}$
5	8315.35	20	12,022.66	$z^2D^0_{1\frac{1}{2}}-e^4F_{1\frac{1}{2}}$
5	8301.45	5*h*	12,042.79	$x^4F^0_{2\frac{1}{2}}-i^4F_{3\frac{1}{2}}$
4	8298.95*v* §§	60*h*	12,046.41	$x^4G^0_{4\frac{1}{2}}-f^4H_{5\frac{1}{2}}$
4	8296.82*v*	50*h*	12,049.50	$x^4G^0_{3\frac{1}{2}}-f^4H_{4\frac{1}{2}}$
5	8283.48	50*h*	12,068.90	$x^4G^0_{2\frac{1}{2}}-f^4H_{3\frac{1}{2}}$
3	8275.55	8*h*	12,080.47	$x^4F^0_{2\frac{1}{2}}-f^4G_{3\frac{1}{2}}$
5	8272.38	5*h*	12,085.10	$x^4G^0_{3\frac{1}{2}}-f^6F_{3\frac{1}{2}}$
5	8269.38	80*h*	12,089.48	$x^4G^0_{5\frac{1}{2}}-f^4H_{6\frac{1}{2}}$
3	8243.38	1	12,127.62	$x^4F^0_{2\frac{1}{2}}-1_{2\frac{1}{2}}$
4	8208.57*v*	80	12,179.05	$y^4F^0_{1\frac{1}{2}}-e^4F_{1\frac{1}{2}}$
4	8192.97*v*	125	12,202.24	$y^4G^0_{2\frac{1}{2}}-e^4F_{2\frac{1}{2}}$
5	8189.32	10*h*	12,207.68	$x^4G^0_{4\frac{1}{2}}-i^4F_{3\frac{1}{2}}$
5	8167.88	20*Wh*	12,239.71	$x^4F^0_{3\frac{1}{2}}-f^4G_{4\frac{1}{2}}$
5	8160.65	40	12,250.57	$y^4G^0_{2\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
3	8154.31	10*h*	12,260.09	$x^4G^0_{5\frac{1}{2}}-i^4F_{4\frac{1}{2}}$
4	8151.95*v*	60	12,263.64	$y^4F^0_{4\frac{1}{2}}-e^4F_{3\frac{1}{2}}$
5	8150.19	50	12,266.29	$b^2G_{4\frac{1}{2}}-y^2F^0_{3\frac{1}{2}}$
5	8140.43	40	12,280.99	$b^2P_{1\frac{1}{2}}-z^2F^0_{2\frac{1}{2}}$
5	8137.08	80	12,286.05	$x^4F^0_{4\frac{1}{2}}-f^4G_{5\frac{1}{2}}$
4	8116.37*v*	80	12,317.40	$y^4G^0_{4\frac{1}{2}}-e^4F_{4\frac{1}{2}}$
5	8114.04	10*h*	12,320.93	$x^4G^0_{2\frac{1}{2}}-e^6H_{3\frac{1}{2}}$
3	8112.13	5*Wh*	12,323.83	$z^2F^0_{2\frac{1}{2}}-e^4F_{3\frac{1}{2}}$
4	8093.**932***v*	8–III	12,351.54	$y^4G^0_{5\frac{1}{2}}-e^4F_{4\frac{1}{2}}$
5	8085.54	5*h*	12,364.36	$x^4F^0_{3\frac{1}{2}}-f^4D_{2\frac{1}{2}}$
3	8082.60	1	12,368.86	$x^4F^0_{1\frac{1}{2}}-f^4G_{2\frac{1}{2}}$
5	8080.23	60	12,372.49	$z^2G^0_{3\frac{1}{2}}-e^4F_{3\frac{1}{2}}$
5	8066.49	60	12,393.56	$z^2D^0_{1\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
3	8062.98	5*Wh*	12,398.96	$x^4G^0_{2\frac{1}{2}}-4_{2\frac{1}{2}}$
4	8055.**996***v*	2–*V*	12,409.71	$y^4F^0_{3\frac{1}{2}}-e^4F_{2\frac{1}{2}}$
3	8053.50	2*h*	12,413.55	{ $z^2D^0_{2\frac{1}{2}}-e^4F_{2\frac{1}{2}}$ { $x^4G^0_{4\frac{1}{2}}-e^6G_{4\frac{1}{2}}$
5	8050.76	5*Wh*	12,417.77	$x^4D^0_{2\frac{1}{2}}-g^2F_{3\frac{1}{2}}$
4	8043.**306***v*	2–*V*	12,429.28	$y^4F^0_{2\frac{1}{2}}-e^4F_{1\frac{1}{2}}$
5	8041.37	20	12,432.28	$b^2D_{2\frac{1}{2}}-z^2D^0_{1\frac{1}{2}}$
5	8037.64	10*h*	12,438.04	{ $a^2D_{2\frac{1}{2}}-z^4F^0_{2\frac{1}{2}}$ { $x^4F^0_{3\frac{1}{2}}-f^6F_{4\frac{1}{2}}$
4	8029.**217***v*	80	12,451.10	$y^4D^0_{2\frac{1}{2}}-e^4F_{3\frac{1}{2}}$
5	8024.73	40	12,458.05	$y^4F^0_{3\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
4	8022.**087***v*	40	12,462.16	$z^2D^0_{2\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
5	8017.86	15*h*	12,468.73	$x^4F^0_{4\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
5	8016.56	15*h*	12,470.76	$x^4F^0_{2\frac{1}{2}}-i^4F_{2\frac{1}{2}}$
5	8012.99	20*Wh*	12,476.31	$x^4F^0_{4\frac{1}{2}}-f^4D_{3\frac{1}{2}}$
4	8007.**239***v*	5–*V*	12,485.27	$y^2G^0_{4\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
5	7998.09	12*h*	12,499.55	$x^4F^0_{4\frac{1}{2}}-e^6D_{4\frac{1}{2}}$
5	7996.80	10*h*	12,501.57	{ $a^2G_{3\frac{1}{2}}-z^4G^0_{3\frac{1}{2}}$ { $x^4G^0_{3\frac{1}{2}}-e^6H_{4\frac{1}{2}}$
4	7987.36*v*	5–III	12,516.34	$a^2D_{2\frac{1}{2}}-z^4D^0_{3\frac{1}{2}}$
3	7984.22	1	12,521.27	$x^4G^0_{2\frac{1}{2}}-5_{1\frac{1}{2},2\frac{1}{2}}$
5	7980.57	3*h*	12,526.99	$x^4F^0_{3\frac{1}{2}}-e^6P_{2\frac{1}{2}}$?
5	7966.08	40	12,549.77	$y^4F^0_{1\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
3	7962.40	3*Wh*	12,555.58	$x^4F^0_{2\frac{1}{2}}-e^6G_{3\frac{1}{2}}$
5	7960.55	25*h*	12,558.50	$x^4F^0_{3\frac{1}{2}}-i^4F_{3\frac{1}{2}}$
5	7957.76	40*h*	12,562.90	$x^4F^0_{4\frac{1}{2}}-i^4F_{4\frac{1}{2}}$
4	7926.**525***v*	3–*V*	12,612.40	$y^2G^0_{3\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
5	7919.48	15*h*	12,623.62	$x^2D^0_{2\frac{1}{2}}-g^4P_{2\frac{1}{2}}$
3	7912.90	1	12,634.12	$x^2D^0_{1\frac{1}{2}}-g^4P_{2\frac{1}{2}}$
4	7908.**679***v*	6–III?	12,640.86	$y^4G^0_{4\frac{1}{2}}-e^4F_{3\frac{1}{2}}$
3	7907.14	1	12,643.32	$x^4F^0_{3\frac{1}{2}}-1_{2\frac{1}{2}}$
5	7885.25	10*Wh*	12,678.43	$x^4G^0_{4\frac{1}{2}}-e^6H_{5\frac{1}{2}}$
5	7877.49	20	12,690.91	
5	7873.32	10*h*	12,697.63	$w^4F^0_{3\frac{1}{2}}-g^4P_{2\frac{1}{2}}$
4	7871.**370***v*	2–*V*	12,700.78	$y^4G^0_{2\frac{1}{2}}-e^4F_{1\frac{1}{2}}$
4	7869.**868***v*	2–*V*	12,703.20	$y^4G^0_{3\frac{1}{2}}-e^4F_{2\frac{1}{2}}$
3	7866.10	1	12,709.29	$x^4G^0_{3\frac{1}{2}}-e^6H_{3\frac{1}{2}}$
5	7859.39	10*Wh*	12,720.14	$x^4G^0_{4\frac{1}{2}}-e^6G_{3\frac{1}{2}}$
4	7855.**821***v*	40*h*	12,725.92	$y^4D^0_{1\frac{1}{2}}-e^4F_{2\frac{1}{2}}$
5	7843.64	12	12,745.68	$a^2D_{1\frac{1}{2}}-z^4F^0_{2\frac{1}{2}}$
4	7839.**997***v*	40	12,751.60	$y^4G^0_{3\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
4	7838.**121***v*	3–*V*	12,754.66	$y^4D^0_{3\frac{1}{2}}-e^4F_{4\frac{1}{2}}$
3	7822.12	2*Wh*	12,780.74	$x^4F^0_{1\frac{1}{2}}-f^6F_{1\frac{1}{2}}$
3	7818.25	5*h*	12,787.07	{ $x^4G^0_{5\frac{1}{2}}-f^4H_{5\frac{1}{2}}$ { $x^4G^0_{3\frac{1}{2}}-4_{2\frac{1}{2}}$
3	7817.15	1	12,788.87	$x^4F^0_{2\frac{1}{2}}-3_{3\frac{1}{2}}$
5	7810.30	10*h*	12,800.09	$y^4F^0_{2\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
5	7809.24	20	12,801.83	$a^2G_{4\frac{1}{2}}-z^4G^0_{4\frac{1}{2}}$
5	7794.13	5*h*	12,826.64	$a^2G_{4\frac{1}{2}}-z^4D^0_{3\frac{1}{2}}$
3	7786.63	1	12,839.00	$x^4G^0_{5\frac{1}{2}}-e^6G_{5\frac{1}{2}}$
5	7764.02	12	12,876.38	$x^4D^0_{1\frac{1}{2}}-g^2F_{2\frac{1}{2}}$
5	7743.27	4	12,910.89	$z^2F^0_{3\frac{1}{2}}-e^4F_{4\frac{1}{2}}$
5	7735.45	10*h*	12,923.94	$x^4G^0_{5\frac{1}{2}}-e^6H_{6\frac{1}{2}}$
5	7734.23	40	12,925.98	$y^4D^0_{\frac{1}{2}}-e^4F_{1\frac{1}{2}}$
5	7725.95	12	12,939.84	$b^2D_{1\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$
4	7712.**661***v*	6–III	12,962.13	$b^2P_{1\frac{1}{2}}-z^2D^0_{2\frac{1}{2}}$
5	7704.92	12	12,975.16	$a^2H_{4\frac{1}{2}}-y^2F^0_{3\frac{1}{2}}$
5	7701.90	12	12,980.24	$b^2P_{\frac{1}{2}}-y^4F^0_{1\frac{1}{2}}$
5	7695.94	10*h*	12,990.29	$x^2F^0_{3\frac{1}{2}}-g^4P_{2\frac{1}{2}}$
3	7685.65	1	13,007.69	$z^2P^0_{1\frac{1}{2}}-g^4P_{2\frac{1}{2}}$
5	7648.08	12*h*	13,071.59	$y^4G^0_{2\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
3	7641.43	1	13,082.96	$y^4F^0_{4\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
3	7637.63	4	13,089.47	
5	7634.50	3	13,094.84	$z^2F^0_{2\frac{1}{2}}-e^4F_{2\frac{1}{2}}$
5	7618.64	2	13,122.09	$b^2G_{3\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
3	7616.13	1	13,126.42	$x^4F^0_{4\frac{1}{2}}-e^6D_{3\frac{1}{2}}$
5	7610.24	2–IV	13,136.58	$b^2P_{\frac{1}{2}}-z^2D^0_{1\frac{1}{2}}$
3	7606.30	2–V	13,143.38	{ $z^2F^0_{2\frac{1}{2}}-e^2F_{3\frac{1}{2}}$ { $z^2G^0_{3\frac{1}{2}}-e^4F_{2\frac{1}{2}}$
3	7604.30	1	13,146.84	$w^4D^0_{3\frac{1}{2}}-g^4P_{2\frac{1}{2}}$
3	7600.11	1	13,154.09	$x^4G^0_{5\frac{1}{2}}-e^6G_{4\frac{1}{2}}$?
3	7594.18	1	13,164.36	$x^4F^0_{2\frac{1}{2}}-4_{2\frac{1}{2}}$
5	7590.57	2–III	13,170.62	$a^2D_{2\frac{1}{2}}-z^4D^0_{2\frac{1}{2}}$
3	7588.71	1	13,173.85	$b^2P_{1\frac{1}{2}}-y^4G^0_{2\frac{1}{2}}$
5	7586.72	20	13,177.31	$b^2D_{1\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
3	7578.34	1	13,191.88	$z^2G^0_{3\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
5	7564.96	20	13,215.21	$x^4D^0_{3\frac{1}{2}}-h^4F_{4\frac{1}{2}}$
5	7561.06	15	13,222.03	$y^4D^0_{2\frac{1}{2}}-e^4F_{2\frac{1}{2}}$
5	7559.65	15	13,224.49	$y^4D^0_{1\frac{1}{2}}-e^4F_{1\frac{1}{2}}$
4	7553.**970***v*	4–IV	13,234.43	$z^2F^0_{3\frac{1}{2}}-e^4F_{3\frac{1}{2}}$
5	7533.48	1–IV	13,270.43	$y^4D^0_{2\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
5	7526.29	2	13,283.11	$z^2D^0_{2\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
3	7524.07	1	13,287.03	$x^4F^0_{2\frac{1}{2}}-5_{1\frac{1}{2},2\frac{1}{2}}$
3	7515.28	1	13,302.56	$w^4D^0_{2\frac{1}{2}}-g^4P_{2\frac{1}{2}}$
5	7502.72	3*h*	13,324.84	$x^4D^0_{\frac{1}{2}}-h^4F_{1\frac{1}{2}}$
5	7489.37	10	13,348.59	$x^4D^0_{2\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
3	7484.00	1	13,358.16	$x^4D^0_{2\frac{1}{2}}-g^2F_{2\frac{1}{2}}$
5	7478.77	3	13,367.51	$b^4P_{\frac{1}{2}}-z^4F^0_{1\frac{1}{2}}$
3	7471.21	1	13,381.03	$y^4F^0_{4\frac{1}{2}}-e^6F_{4\frac{1}{2}}$
4	7457.**342***v*	6–V	13,405.92	$z^2G^0_{4\frac{1}{2}}-e^4F_{3\frac{1}{2}}$
5	7443.43	10*h*	13,430.97	$x^4D^0_{1\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
5	7437.16	1–III*A*	13,442.29	$b^4P_{1\frac{1}{2}}-z^4F^0_{2\frac{1}{2}}$
5	7429.00	10	13,457.05	$x^4F^0_{4\frac{1}{2}}-e^6G_{4\frac{1}{2}}$
4	7417.38*v*	10–II	13,478.14	$a^2D_{1\frac{1}{2}}-z^4D^0_{2\frac{1}{2}}$
3	7406.23	1	13,498.43	$c^2D_{1\frac{1}{2}}-z^4P^0_{2\frac{1}{2}}$
3	7398.72	1	13,512.14	$c^2D_{1\frac{1}{2}}-z^4P^0_{1\frac{1}{2}}$
4	7388.**689***v*	5–III	13,530.48	$b^2D_{2\frac{1}{2}}-y^2F^0_{3\frac{1}{2}}$
3	7365.77	1	13,572.58	$y^4G^0_{3\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
4	7354.**579***v*	3–III	13,593.23	$b^4P_{2\frac{1}{2}}-z^4F^0_{3\frac{1}{2}}$
5	7353.47	25	13,595.28	$y^4D^0_{1\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
3	7351.55	1	13,598.83	$x^4D^0_{1\frac{1}{2}}-h^4F_{1\frac{1}{2}}$
3	7349.68	1	13,602.29	$x^4F^0_{3\frac{1}{2}}-e^6H_{3\frac{1}{2}}$
5	7315.73	25	13,665.42	$a^2D_{2\frac{1}{2}}-z^4D^0_{1\frac{1}{2}}$
3	7307.86	1	13,680.13	$x^4F^0_{3\frac{1}{2}}-4_{2\frac{1}{2}}$
5	7285.28#	4–IV	13,722.53	$b^2D_{1\frac{1}{2}}-y^2D^0_{1\frac{1}{2}}$
5	7263.58	6	13,763.53	$x^4F^0_{4\frac{1}{2}}-e^6G_{3\frac{1}{2}}$?
5	7250.12	1–III*A*	13,789.08	$b^4P_{1\frac{1}{2}}-z^4F^0_{1\frac{1}{2}}$
5	7217.34	8	13,851.71	$b^2P_{1\frac{1}{2}}-z^2D^0_{1\frac{1}{2}}$
4	7193.56*v*	4–V	13,897.50	$y^4D^0_{3\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
3	7185.63	1Cr?	13,912.84	$x^4D^0_{2\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
3	7173.37	1	13,936.61	$x^4D^0_{2\frac{1}{2}}-f^4D_{2\frac{1}{2}}$
4	7159.**153***v*	6–V	13,964.29	$z^2F^0_{2\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
4	7154.**688***v*	8–II	13,973.00	$a^2D_{1\frac{1}{2}}-z^4D^0_{1\frac{1}{2}}$
4	7134.**290***v*	5–V	14,012.96	$z^2G^0_{3\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
5	7124.47	1–III	14,032.27	$b^4P_{2\frac{1}{2}}-z^4F^0_{2\frac{1}{2}}$
3	7117.91	2	14,045.20	$x^4D^0_{3\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
6	7113.98	1	14,052.96	$x^4D^0_{3\frac{1}{2}}-f^4D_{3\frac{1}{2}}$
4	7113.**538***v*	5–V	14,053.84	$z^2F^0_{3\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
5	7102.55	25	14,075.58	
3	7101.77	1	14,077.12	$x^4D^0_{1\frac{1}{2}}-i^4F_{2\frac{1}{2}}$
3	7097.84	1	14,084.92	$y^2G^0_{4\frac{1}{2}}-f^4F_{4\frac{1}{2}}$
5	7094.53	1–IV	14,091.49	$y^4D^0_{2\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
4	7084.**974***v*	100–I	14,110.49	$b^4P_{2\frac{1}{2}}-z^4D^0_{3\frac{1}{2}}$
5	7079.20	10	14,122.00	$x^4D^0_{1\frac{1}{2}}-e^6P_{1\frac{1}{2}}$
5	7070.41	20	14,139.56	$x^4D^0_{3\frac{1}{2}}-i^4F_{4\frac{1}{2}}$
5	7055.88	25	14,168.68	$x^4D^0_{2\frac{1}{2}}-f^4G_{3\frac{1}{2}}$
4	7054.**042***v*	10–III	14,172.37	$b^2D_{2\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$
4	7052.**872***v*	60–I	14,174.72	$b^4P_{1\frac{1}{2}}-z^4D^0_{2\frac{1}{2}}$
5	7042.58	5*h*	14,195.43	$y^4D^0_{3\frac{1}{2}}-e^6F_{4\frac{1}{2}}$
5	7032.52	25	14,215.74	$x^4D^0_{2\frac{1}{2}}-1_{2\frac{1}{2}}$
4	7027.**797***v*	6–V	14,225.29	$z^2G^0_{4\frac{1}{2}}-e^2F_{3\frac{1}{2}}$
4	7016.**602***v*	35–I	14,247.99	$b^4P_{\frac{1}{2}}-z^4D^0_{1\frac{1}{2}}$
5	7015.18	5	14,250.88	$x^4D^0_{1\frac{1}{2}}-2_{1\frac{1}{2}}$
5	7004.81	3–III	14,271.98	$a^2D_{1\frac{1}{2}}-z^4D^0_{\frac{1}{2}}$
5	6997.22	4*d*–V	14,287.45	$x^4D^0_{3\frac{1}{2}}-f^4P_{2\frac{1}{2}}$
3	6977.02	1	14,328.82	$b^4P_{1\frac{1}{2}}-z^4G^0_{2\frac{1}{2}}$
3	6972.70	1	14,337.70	$x^4D^0_{1\frac{1}{2}}-f^4G_{2\frac{1}{2}}$
5	6946.31	10	14,392.17	$a^2P_{1\frac{1}{2}}-z^2F^0_{2\frac{1}{2}}$
5	6937.81	4–III	14,409.80	$b^2D_{2\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
5	6910.84	15	14,466.04	$a^2G_{3\frac{1}{2}}-z^2G^0_{4\frac{1}{2}}$
5	6908.08	30	14,471.81	$c^2D_{2\frac{1}{2}}-z^4P^0_{2\frac{1}{2}}$
3	6906.39	1	14,475.36	$x^4D^0_{\frac{1}{2}}-f^6F_{1\frac{1}{2}}$
5	6901.52	5	14,485.57	$c^2D_{2\frac{1}{2}}-z^4P^0_{1\frac{1}{2}}$
4	6872.32*v*	40–I	14,547.01	$b^4P_{\frac{1}{2}}-z^4D^0_{\frac{1}{2}}$
5	6864.91	10	14,562.82	$z^4P^0_{1\frac{1}{2}}-g^4P_{2\frac{1}{2}}$

§§ Error of +1A assumed in λ published in M. I. T. list.

\# Line double-Burns.

Table VIII.—*Continued.*

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
5	6858.38	25	14,576.69	$z^4P^0_{2½}-g^4P_{2½}$
5	6846.97	25	14,600.98	$x^4D^0_{2½}-e^6D_{2½}$
3	6845.66	10	14,603.77	$x^4D^0_{2½}-e^6P_{1½}$
5	6838.11	15	14,619.89	
3	6829.92	1	14,637.43	$a^2G_{3½}-z^2F^0_{3½}$
5	6826.96	3	14,643.77	$x^4D^0_{2½}-e^6G_{3½}$
5	6819.53	20	14,659.73	$c^2D_{1½}-z^2P^0_{½}$
4	6814.**950**v	40–I	14,669.58	$b^4P_{1½}-z^4D^0_{1½}$
5	6808.94	25*h*	14,682.53	$y^4F^0_{4½}-f^4F_{4½}$
3	6807.43	1	14,685.78	$y^2D^0_{1½}-e^4D_{2½}$
5	6799.40	6*h*	14,703.13	$x^4D^0_{3½}-e^6D_{3½}$
3	6792.35	1	14,718.39	$y^4D^0_{3½}-e^2F_{2½}$
5	6789.26	15	14,725.09	$x^4D^0_{½}-6_{½}$
5	6784.85	25	14,734.66	$y^4F^0_{3½}-f^4F_{3½}$
3	6778.06	1	14,749.42	$x^4D^0_{1½}-f^6F_{1½}$
4	6771.**040**v	50–I	14,764.71	$b^4P_{2½}-z^4D^0_{2½}$
5	6767.394	15	14,772.67	$y^4F^0_{2½}-f^4F_{2½}$
5	6758.10	25	14,792.99	$c^2D_{1½}-w^4D^0_{1½}$
5	6756.57	25	14,796.33	$x^4D^0_{3½}-e^6P_{2½}$
5	6742.17	5	14,827.93	$x^4D^0_{3½}-i^4F_{3½}$
5	6722.71	4	14,870.85	$y^2F^0_{2½}-e^2P_{1½}$
5	6720.95	4	14,874.75	$z^2F^0_{3½}-e^2F_{2½}$
5	6717.64	5*h*	14,882.08	$y^4F^0_{1½}-f^4F_{1½}$
5	6712.71	8*h*	14,893.01	$x^4D^0_{1½}-5_{1½,2½}$
5	6703.92	15	14,912.53	$x^4D^0_{3½}-1_{2½}$
3	6700.99	1	14,919.06	$b^4P_{2½}-z^4G^0_{2½}$
5	6692.87	4	14,937.15	$x^4D^0_{2½}-f^6F_{2½}$
4	6684.**875**v	30	14,955.02	$b^2D_{2½}-y^2D^0_{1½}$
5	6684.08	30	14,956.80	
3	6682.30	1*w*	14,960.78	$y^2D^0_{2½}-e^4D_{3½}$
3	6680.35	1	14,965.15	$c^2D_{1½}-w^4D^0_{½}$
4	6678.**818**v	5–II	14,968.58	$b^4P_{1½}-z^4D^0_{½}$
3	6672.96	2	14,981.72	$a^4P_{2½}-z^4F^0_{3½}$
5	6665.29	4	14,998.97	$x^4D^0_{1½}-6_{½}$
5	6663.72	3*h*	15,002.50	$z^4G^0_{2½}-e^4F_{3½}$
5	6652.29	3*h*	15,028.28	$y^4G^0_{3½}-f^4F_{3½}$
3	6649.97	5	15,033.52	$x^1D^0_{3½}-e^6G_{4½}$
5	6645.33	4*h*	15,044.01	$y^4G^0_{2½}-f^4F_{2½}$
10	6644.03	1	15,046.96	$z^4G^0_{3½}-e^4F_{4½}$
3	6638.40	1	15,059.72	$y^4G^0_{4½}-f^4F_{4½}$
5	6635.12	25*h*	15,067.16	$c^2D_{1½}-z^2P^0_{1½}$
4	6632.**438**v	15–II	15,073.26	$a^2P_{1½}-z^2D^0_{2½}$
4	6623.**780**v	2–III?	15,092.96	$a^2D_{2½}-z^2F^0_{3½}$
6	6623.36	1	15,093.92	$y^4G^0_{5½}-f^4F_{4½}$
4	6617.**572**v	3*n*–V	15,107.12	$y^2D^0_{2½}-g^4F_{3½}$
4	6617.**126**v	6*n*–V	15,108.14	$y^2D^0_{2½}-e^2P_{1½}$
4	6595.**869**v	12–V	15,156.83	$z^4D^0_{2½}-e^4F_{3½}$
7	6591.834	15	15,166.10	$y^2D^0_{1½}-e^2P_{½}$
3	6588.02	1	15,174.88	$x^4D^0_{2½}-e^6H_{3½}$?
4	6579.**373**v	15	15,194.83	$y^2D^0_{1½}-g^4F_{2½}$
4	6563.**403**v	40–II	15,231.80	$a^2G_{4½}-z^2G^0_{4½}$
8	6554.840	2*n*	15,251.70	$y^4F^0_{3½}-f^4F_{2½}$
8	6554.382	2*n*	15,252.76	$x^4D^0_{2½}-4_{2½}$
4	6551.**466**v	3–III	15,259.55	$b^4P_{2½}-z^4D^0_{1½}$
3	6540.64	1	15,284.81	$a^2P_{1½}-y^4G^0_{2½}$
5	6535.13	2*h*	15,297.69	$x^4D^0_{3½}-e^6D_{2½}$
5	6517.00	3*h*	15,340.25	$x^4D^0_{3½}-e^6G_{3½}$
4	6508.**785**v	5*h*	15,359.62	$y^4F^0_{4½}-f^4F_{3½}$
4	6504.**213**v	15	15,370.41	$z^4G^0_{3½}-e^4F_{3½}$
3	6502.29	1	15,374.96	$x^4D_{2½}-5_{1½,2½}$
3	6496.18	1	15,389.42	$y^2D^0_{1½}-e^4D_{1½}$
4	6490.**344**v	6–III	15,403.26	$a^2G_{4½}-z^2F^0_{3½}$
8	6483.305	1*n*	15,419.98	$z^2F^0_{2½}-f^4F_{3½}$
7	6482.806	2*h*	15,421.17	$a^2P_{½}-y^4F^0_{1½}$
4	6477.**861**v	10–V	15,432.94	$z^4D^0_{1½}-e^4F_{2½}$
4	6474.**558**v	25*w*	15,440.81	$c^2D_{1½}-x^2D^0_{1½}$
4	6470.**128**v	3	15,451.38	$c^2D_{1½}-x^2D^0_{2½}$
4	6463.**060**v	25*h*	15,468.28	$y^2D^0_{2½}-e^4D_{2½}$
4	6454.**998**v	40–III	15,487.60	$z^4D^0_{3½}-e^4F_{4½}$
4	6451.**136**v	3*n*–V	15,496.87	$y^4D^0_{3½}-f^4F_{4½}$
4	6450.**230**v	80–I	15,499.05	{ $a^4P_{2½}-z^4D^0_{3½}$ ($a^2G_{3½}-z^2G^0_{3½}$)
4	6444.**678**v	2–V	15,512.40	$z^4G^0_{4½}-e^4F_{4½}$
5	6439.171	80	15,525.67	
4	6431.**075**v	5*h*	15,545.21	$y^4G^0_{3½}-f^4F_{2½}$
7	6430.342	2–V	15,546.98	$y^4D^0_{2½}-f^4F_{3½}$
4	6429.**913**v	4–III	15,548.02	$a^2G_{3½}-z^2F^0_{2½}$
5	6425.115	5	15,559.63	$a^2G_{4½}-y^4D^0_{3½}$
4	6421.**703**v	2–V	15,567.90	$y^4D^0_{1½}-f^4F_{2½}$
5	6417.824	15–III	15,577.31	$a^2P_{½}-z^2D^0_{1½}$
9	6414.67	1	15,584.97	$y^2D^0_{1½}-e^2D_{2½}$
4	6407.**510**v	1	15,602.38	$y^2F^0_{3½}-e^4D_{3½}$
5	6396.524	2–V	15,629.18	$y^4D^0_{½}-f^4F_{1½}$
4	6395.**158**v	8–V	15,632.52	$z^4D^0_{½}-e^4F_{1½}$
5	6386.69	5*h*	15,653.25	$z^2F^0_{3½}-f^4F_{4½}$
3	6366.20	1*w*	15,703.62	$y^2F^0_{2½}-e^4P_{1½}$
8	6352.751	2*h*	15,736.87	$y^4G^0_{4½}-f^4F_{3½}$
4	6351.**448**v	2–V	15,740.10	$y^2F^0_{2½}-g^4F_{2½}$
4	6347.**843**v	10–V	15,749.04	$y^2F^0_{3½}-g^4F_{3½}$
4	6340.**805**v	10	15,766.52	$c^2D_{2½}-w^4D^0_{1½}$
4	6337.**963**v	5	15,773.59	$z^4G^0_{2½}-e^4F_{2½}$
8	6322.919	2*h*	15,811.12	$z^4D^0_{3½}-e^4F_{3½}$
4	6320.**418**v	8–IV	15,817.37	$y^2F^0_{3½}-e^4G_{4½}$
8	6318.551	4*n*	15,822.05	$z^4G^0_{2½}-e^2F_{3½}$
5	6315.779	2*h*	15,828.99	$b^2P_{1½}-y^2F^0_{2½}$
4	6314.**528**v	50	15,832.13	$y^2F^0_{2½}-e^4G_{3½}$
4	6313.**032**v	50	15,835.88	$z^4G^0_{4½}-e^4F_{3½}$
3	6302.50	1	15,862.34	$x^4G^0_{3½}-g^4H_{4½}$
3	6296.96	2*h*	15,876.30	$a^2D_{2½}-y^4D^0_{2½}$
4	6291.**829**v	5	15,889.24	$z^4F^0_{2½}-e^4F_{3½}$
4	6282.**636**v	40–I	15,912.49	$a^4P_{1½}-z^4D^0_{2½}$
3	6278.19	1	15,923.76	$z^4S^0_{1½}-g^4P_{2½}$
4	6276.**608**v	40	15,927.78	{ $z^4D^0_{2½}-e^4F_{2½}$ $y^4D^0_{1½}-f^4F_{1½}$
5	6275.133#	25	15,931.52	$z^4D^0_{1½}-e^4F_{1½}$
5	6273.026	4–III?	15,936.87	{ $z^2F^0_{2½}-f^4F_{2½}$ $z^4G^0_{5½}-e^4F_{4½}$
7	6271.900	1	15,939.73	{ $a^2G_{3½}-y^4G^0_{3½}$ $a^4P_{2½}-z^4G^0_{3½}$
4	6271.**472**v	5	15,940.82	$y^2D^0_{2½}-e^4P_{1½}$
3	6265.97	1	15,954.82	$a^2D_{2½}-z^2G^0_{3½}$
5	6262.825	5*h*	15,962.82	{ $a^2P_{1½}-z^2D^0_{1½}$ ($a^2G_{4½}-y^4G^0_{5½}$)
4	6257.**578**v	6–III	15,976.22	$z^4D^0_{2½}-e^2F_{3½}$
4	6257.**066**v	3	15,977.52	$y^2D^0_{2½}-g^4F_{2½}$
5	6253.940	2*h*	15,985.51	$z^2G^0_{3½}-f^4F_{2½}$
4	6249.**504**v	8–II	15,996.86	$a^2G_{4½}-y^4G^0_{4½}$
4	6247.**284**v	8	16,002.54	$y^2D^0_{2½}-f^2F_{3½}$
4	6246.**389**v	5*h*	16,004.83	$z^4F^0_{3½}-e^4F_{4½}$
4	6232.**440**v	2–IV?	16,040.65	$c^2D_{2½}-z^2P^0_{1½}$
5	6230.968	10–III	16,044.44	$a^4P_{½}-z^4D^0_{1½}$
4	6223.**355**v	10	16,064.07	$y^4D^0_{2½}-f^4F_{2½}$
5	6222.329	3	16,066.72	$a^4P_{1½}-z^4G^0_{2½}$
4	6211.**197**v	2–IV?	16,095.51	$y^2D^0_{1½}-f^2F_{2½}$
5	6205.503	3*h*	16,110.28	$y^2F^0_{3½}-e^4D_{2½}$
5	6203.701	2*h*	16,114.96	$x^4G^0_{2½}-g^4H_{3½}$
5	6197.837	5*h*	16,130.21	$y^2F^0_{2½}-e^2D_{2½}$
4	6193.**540**v	15	16,141.40	$z^4G^0_{3½}-e^4F_{2½}$
4	6189.**005**v	10–II*A*	16,153.23	$a^4P_{2½}-z^4D^0_{2½}$
3	6181.90	1	16,171.79	$x^4G^0_{4½}-g^4H_{5½}$
4	6181.**008**v	10*h*	16,174.13	$y^4D^0_{3½}-f^4F_{3½}$
5	6175.029	2	16,189.79	$z^4G^0_{3½}-e^2F_{3½}$
3	6171.43	1	16,199.23	$x^4D^0_{2½}-g^4P_{2½}$
3	6168.86	2*h*	16,205.97	$a^2G_{3½}-y^2G^0_{4½}$
3	6160.04	1	16,229.18	$a^2G_{3½}-z^2D^0_{2½}$
3	6158.53	2*h*	16,233.16	$a^2G_{3½}-y^4F^0_{3½}$
3	6146.38	3*h*	16,265.25	$a^2G_{4½}-z^2G^0_{3½}$
7	6143.764	5*h*	16,272.17	$z^4G^0_{2½}-e^4F_{1½}$
5	6132.410	10*h*	16,302.30	$z^4D^0_{1½}-e^2F_{2½}$
3	6130.41	1	16,307.62	$a^4P_{2½}-z^4G^0_{2½}$
4	6129.**118**v	20*w*	16,311.06	$a^2D_{1½}-z^2F^0_{2½}$
4	6128.**214**v	5	16,313.46	$z^4F^0_{1½}-e^4F_{2½}$
4	6122.**640**v	8–IV?	16,328.31	$z^4F^0_{3½}-e^4F_{3½}$
4	6116.**994**v	8–I	16,343.38	$a^4P_{½}-z^4D^0_{½}$
4	6107.**937**v	2–V	16,367.62	$y^2D^0_{2½}-e^2D_{2½}$
5	6105.470	10*h*	16,374.23	$a^2G_{4½}-y^4F^0_{4½}$
4	6100.**778**v	4*h*	16,386.83	$y^2F^0_{2½}-e^4H_{3½}$
8	6098.270	3	16,393.56	$x^4G^0_{5½}-g^4H_{6½}$
4	6093.**144**v	10–I	16,407.35	$a^4P_{1½}-z^4D^0_{1½}$
4	6086.**663**v	7–II?	16,424.83	$c^2D_{2½}-x^2D^0_{2½}$
5	6083.283	2*h*	16,433.96	$y^2F^0_{2½}-g^2F_{3½}$
4	6082.**431**v	15–III	16,436.25	$z^4F^0_{4½}-e^4F_{4½}$
4	6070.**671**v	2–V	16,468.09	$y^2D^0_{1½}-e^2D_{1½}$
4	6058.**233**v	3	16,501.90	$z^2G^0_{4½}-f^4F_{3½}$
4	6049.**110**v	6–V	16,526.79§	$y^2F^0_{2½}-e^2G_{3½}$
4	6015.**384**v	2	16,619.45	$y^2F^0_{3½}-g^4F_{2½}$
4	6013.**653**v	30†	16,624.23	$y^2D^0_{2½}-e^4H_{3½}$
4	6011.**402**v	2*h*	16,630.46	$z^4D^0_{3½}-e^2F_{3½}$
4	6007.**690**v	5–V	16,640.73	$y^2F^0_{2½}-f^2F_{2½}$
4	6006.**352**v	5–IV?	16,644.44	$y^2F^0_{3½}-f^2F_{3½}$
4	6005.**030**v	8	16,648.11	$a^4P_{2½}-z^4D^0_{1½}$
4	6002.**459**v	2	16,655.24	$z^4G^0_{4½}-e^2F_{3½}$
4	6000.**668**v	5–I	16,660.21§	$z^4F^0_{2½}-e^4F_{2½}$?
4	5996.**915**v	2	16,670.63	$y^2F^0_{3½}-e^4H_{4½}$
3	5993.48	1	16,680.19	$a^2D_{1½}-y^4D^0_{1½}$
4	5991.**890**v	20–III	16,684.62	$a^2D_{2½}-z^2D^0_{2½}$
3	5990.46	1	16,688.60	$a^2D_{2½}-y^4F^0_{3½}$
3	5989.58	1	16,691.05	$y^4D^0_{3½}-f^4F_{2½}$
8	5984.582	4*n*	16,704.99	$c^2D_{2½}-w^4F^0_{2½}$
4	5984.**253**v	3–III?	16,705.91	$y^2F^0_{3½}-e^2G_{4½}$
4	5984.**092**v	3–III?	16,706.36	$a^4P_{1½}-z^4D^0_{½}$
4	5983.**278**v	2	16,708.63	$z^4F^0_{2½}-e^2F_{3½}$
4	5981.**990**v	3*h*	16,712.22	$a^2G_{3½}-y^4F^0_{2½}$
5	5965.661	2*h*	16,757.96	$z^4D^0_{2½}-e^6F_{3½}$
11	5965.040	2*h*	16,759.72	$z^4F^0_{4½}-e^4F_{3½}$
3	5963.39	1	16,764.35	$y^2D^0_{2½}-e^2G_{3½}$
3	5951.73	2	16,797.20	$z^4D^0_{2½}-e^2F_{2½}$
4	5946.**484**v	5–III	16,812.01	$z^4F^0_{1½}-e^4F_{1½}$
7	5940.424	1	16,829.16	$y^2D^0_{1½}-g^2F_{2½}$
10	5939.86	1	16,830.76	$z^4G^0_{5½}-e^6F_{5½}$

† Wave-length 6013.582 (M. I. T.).

§ Line probably a blend.

TABLE VIII.—*Continued.*

REF.	λ *IA*	INT.–*TC*	WAVE NO. VAC.	MULTIPLET DESIGNATION
4	5935.**391**v	6–III	16,843.44	$b^4P_{2\frac12}-y^4D^0_{3\frac12}$
10	5923.13	1	16,878.30	$y^2D^0_{2\frac12}-f^2F_{2\frac12}$
5	5922.365	3	16,880.48	$b^4P_{1\frac12}-y^4D^0_{2\frac12}$
3	5916.88	2*h*	16,896.13	$x^4D^0_{3\frac12}-g^4P_{2\frac12}$
4	5915.**551**v	10–III	16,899.92	$a^2G_{3\frac12}-y^2G^0_{3\frac12}$
4	5905.**584**v	2*h*	16,928.45	$z^4D^0_{3\frac12}-e^6F_{4\frac12}$
4	5890.**487**v	12–III	16,971.83	$a^2G_{4\frac12}-y^2G^0_{4\frac12}$
3	5886.52	1	16,983.27	$c^2D_{2\frac12}-y^4P^0_{2\frac12}$
4	5883.**421**v	3	16,992.22	$a^2D_{1\frac12}-z^2D^0_{2\frac12}$
5	5881.077	2–I?	16,998.99	$a^2G_{4\frac12}-y^4F^0_{3\frac12}$
11	5878.047	1	17,007.75	$b^4P_{1\frac12}-z^2F^0_{2\frac12}$
4	5877.**427**v	4*h*	17,009.54	$y^2F^0_{3\frac12}-e^2D_{2\frac12}$
4	5876.**102**v	4*h*	17,013.38	$y^2F^0_{2\frac12}-e^2D_{1\frac12}$
4	5846.**575**v	2–V	17,099.30	$z^4F^0_{3\frac12}-e^4F_{2\frac12}$
4	5834.**628**v	1	17,134.32	$y^2G^0_{3\frac12}-e^4G_{4\frac12}$
4	5830.**070**v	4–V	17,147.71	$z^4F^0_{3\frac12}-e^2F_{3\frac12}$
4	5826.**299**v	3	17,158.81	$z^4F^0_{2\frac12}-e^4F_{1\frac12}$
3	5818.09	2	17,183.02	$z^4F^0_{1\frac12}-e^2F_{2\frac12}$
3	5806.34	1	17,217.79	$c^2D_{1\frac12}-w^2D^0_{2\frac12}$
3	5793.92	1Fe?	17,254.70	$y^4F^0_{2\frac12}-e^2P_{1\frac12}$
4	5790.**084**v	2	17,266.13	$y^2F^0_{3\frac12}-e^4H_{3\frac12}$
4	5774.**375**v	2	17,313.10	$y^2F^0_{3\frac12}-g^2F_{3\frac12}$
4	5770.**443**v	2–V	17,324.90	$y^2F^0_{3\frac12}-e^2H_{4\frac12}$
3	5768.71	1	17,330.10	$z^4F^0_{4\frac12}-e^6F_{5\frac12}$
3	5760.39	1	17,355.13	$z^4G^0_{3\frac12}-e^6F_{2\frac12}$?
11	5754.079	1	17,374.17	$y^2F^0_{2\frac12}-g^2F_{2\frac12}$
5	5752.883	2*h*	17,377.78	$z^4G^0_{5\frac12}-e^6F_{4\frac12}$
5	5750.952	2	17,383.61	$y^2D^0_{1\frac12}-h^4F_{2\frac12}$
10	5741.50	1	17,412.23	$z^4D^0_{3\frac12}-e^6F_{3\frac12}$
5	5740.986	2*h*	17,413.79	$y^2F^0_{3\frac12}-h^4F_{4\frac12}$
3	5739.59	1	17,418.03	$a^2D_{2\frac12}-y^4F^0_{1\frac12}$
3	5736.52	1	17,427.35	$y^2G^0_{3\frac12}-e^4D_{2\frac12}$
3	5734.25	1	17,434.25	$c^2D_{1\frac12}-x^4P^0_{1\frac12}$
3	5733.28	1	17,437.20	$z^4G^0_{4\frac12}-e^6F_{3\frac12}$
3	5730.45	1	17,445.81	$z^4F^0_{3\frac12}-e^6F_{4\frac12}$
3	5720.80	1	17,475.24	$a^2D_{1\frac12}-y^4F^0_{2\frac12}$
10	5715.91	1	17,490.19	$z^4F^0_{2\frac12}-e^6F_{3\frac12}$
4	5706.**160**v	1	17,520.07	$y^2F^0_{3\frac12}-f^2F_{2\frac12}$
5	5703.031	2*h*	17,529.68	$z^4F^0_{2\frac12}-e^2F_{2\frac12}$
3	5696.75	1	17,549.01	$b^4P_{2\frac12}-z^2G^0_{3\frac12}$
5	5688.593	2–II	17,574.17	$a^2D_{2\frac12}-z^2D^0_{1\frac12}$
11	5688.169	1	17,575.48	$y^4F^0_{3\frac12}-e^4P_{2\frac12}$
3	5686.96	3	17,579.22	$z^4F^0_{4\frac12}-e^2F_{3\frac12}$
3	5684.69	1	17,586.24	$y^4F^0_{3\frac12}-e^4D_{3\frac12}$
10	5681.04	1	17,597.54	$b^4P_{2\frac12}-z^2F^0_{2\frac12}$
11	5679.637	1	17,601.89	$y^2D^0_{2\frac12}-h^4F_{3\frac12}$?
3	5676.49	2	17,611.64	$y^2D^0_{2\frac12}-g^2F_{2\frac12}$
5	5675.421	3*h*	17,614.96	$y^4F^0_{2\frac12}-e^4D_{2\frac12}$
4	5659.**121**v	3–II	17,665.70	$a^2G_{4\frac12}-y^2G^0_{3\frac12}$
3	5656.10	1	17,675.13	$b^2D_{1\frac12}-x^4D^0_{1\frac12}$
5	5651.734	3*h*	17,688.79	{$b^4P_{1\frac12}-z^2D^0_{2\frac12}$ $z^2D^0_{1\frac12}-e^2P_{\frac12}$}
4	5647.**234**v	12–II	17,702.88	$a^2P_{1\frac12}-y^2D^0_{2\frac12}$
5	5643.087	5*h*	17,715.89	$c^2D_{1\frac12}-v^2D^0_{1\frac12}$
5	5642.542	2*h*	17,717.60	$z^2D^0_{1\frac12}-g^4F_{2\frac12}$
5	5639.991	1–III*A*	17,725.62	$a^2D_{1\frac12}-y^4F^0_{1\frac12}$
4	5637.**734**v	3–V	17,732.71	$y^4F^0_{3\frac12}-g^4F_{3\frac12}$
4	5636.**455**v	1	17,736.73	$z^2D^0_{2\frac12}-g^4F_{3\frac12}$
4	5636.**128**v	3–V	17,737.77	$z^2D^0_{2\frac12}-e^2P_{1\frac12}$
5	5627.726	2	17,764.25	$y^2G^0_{4\frac12}-e^4G_{5\frac12}$
5	5616.077	5	17,801.09	$y^4F^0_{3\frac12}-e^4G_{4\frac12}$
9	5602.26	1	17,845.00	$y^4F^0_{1\frac12}-e^2P_{\frac12}$
5	5598.478	50Ca?	17,857.05	$b^2G_{4\frac12}-1^0_{3\frac12}$
4	5594.**778**v	2	17,868.86	$y^4G^0_{3\frac12}-e^4P_{2\frac12}$
10	5593.13	1	17,874.13	$z^4F^0_{2\frac12}-e^6F_{2\frac12}$
5	5592.185	2	17,877.15	$z^4F^0_{4\frac12}-e^6F_{4\frac12}$
4	5590.**744**v	10–II	17,881.75	$a^2D_{1\frac12}-z^2D^0_{1\frac12}$
3	5589.27	1*g*?	17,886.47	$y^4G^0_{2\frac12}-e^4D_{2\frac12}$
3	5581.28	2	17,912.08	$z^2D^0_{1\frac12}-e^4D_{1\frac12}$
11	5576.045	1	17,928.89	$y^2F^0_{2\frac12}-h^4F_{2\frac12}$
9	5573.65	1	17,936.60	$y^2G^0_{3\frac12}-g^4F_{2\frac12}$
11	5569.678	1Fe?	17,949.39	$b^2D_{1\frac12}-x^4D^0_{\frac12}$?
3	5565.87	1	17,961.67	$y^2G^0_{3\frac12}-f^2F_{3\frac12}$?
3	5563.69	1	17,968.71	$z^4F^0_{3\frac12}-e^2F_{2\frac12}$
4	5558.**825**v	2–III?	17,984.42	$c^2D_{1\frac12}-w^2D^0_{1\frac12}$
5	5546.968	4	18,022.88	$y^2G^0_{3\frac12}-e^2G_{4\frac12}$
4	5545.**937**v	2–III?	18,026.22	$y^4G^0_{3\frac12}-g^4F_{3\frac12}$
9	5544.28	1	18,031.61	$c^2D_{1\frac12}-v^4D^0_{\frac12}$
11	5533.070	1	18,068.14	$y^4F^0_{1\frac12}-e^4D_{1\frac12}$
4	5530.**780**v	10–II	18,075.62	$a^4P_{2\frac12}-z^2F^0_{3\frac12}$
3	5527.19	1	18,087.36	$y^4F^0_{2\frac12}-e^4P_{1\frac12}$
11	5525.674	1	18,092.33	$c^2D_{1\frac12}-y^4S^0_{1\frac12}$
4	5524.**990**v	4–V	18,094.55	$y^4G^0_{3\frac12}-e^4G_{4\frac12}$
7	5523.968	1	18,097.92	$z^2D^0_{2\frac12}-e^4D_{2\frac12}$
4	5523.**310**v	8–II?	18,100.07	$a^2P_{\frac12}-y^2D^0_{1\frac12}$
4	5515.**990**v	3*h*	18,124.09	$y^4F^0_{2\frac12}-g^4F_{2\frac12}$
3	5508.29	1	18,149.43	$y^4F^0_{2\frac12}-f^2F_{3\frac12}$?
3	5503.23	1	18,166.11	$y^2D^0_{2\frac12}-h^4F_{2\frac12}$
11	5501.511	1	18,171.79	$b^4P_{1\frac12}-y^4F^0_{2\frac12}$
11	5497.557	1	18,184.86	$y^2F^0_{2\frac12}-f^4G_{3\frac12}$
4	5495.**682**v	2–III?	18,191.06	$c^2D_{2\frac12}-w^2D^0_{2\frac12}$
4	5489.**666**v	5–III?	18,211.00	$y^4F^0_{4\frac12}-e^4D_{3\frac12}$
4	5488.**121**v	1	18,216.12	$y^4F^0_{2\frac12}-e^4G_{3\frac12}$
4	5483.**962**v	10–V	18,229.94	$z^4D^0_{3\frac12}-f^4F_{4\frac12}$
4	5483.**354**v	40–I	18,231.96	$a^4P_{2\frac12}-y^4D^0_{3\frac12}$
9	5479.74	1	18,243.99	$y^2F^0_{3\frac12}-h^4F_{3\frac12}$
4	5477.**089**v	5–V	18,252.82	$z^4D^0_{2\frac12}-f^4F_{3\frac12}$
5	5476.906	400*w*Ni	18,253.42	($y^2F^0_{3\frac12}-g^2F_{2\frac12}$)
10	5476.47	<1	18,254.88	$z^4G^0_{4\frac12}-f^4F_{4\frac12}$
4	5470.**460**v	4–V	18,274.92	$z^4D^0_{1\frac12}-f^4F_{2\frac12}$
5	5469.305	4–III*A*	18,278.79	$b^4P_{2\frac12}-z^2D^0_{2\frac12}$
9	5457.45	1	18,318.50	$y^4F^0_{2\frac12}-e^4D_{1\frac12}$
4	5454.**573**v	20–V	18,328.16	$y^4F^0_{4\frac12}-g^4F_{4\frac12}$
4	5453.**338**v	1	18,332.31	$y^4F^0_{4\frac12}-e^4H_{5\frac12}$
4	5452.**305**v	3–V	18,335.78	$z^4D^0_{\frac12}-f^4F_{1\frac12}$
9	5447.93	1	18,350.51	$z^2D^0_{1\frac12}-g^4F_{1\frac12}$
4	5444.**585**v	20–IV?	18,361.78	$y^4F^0_{4\frac12}-e^4G_{5\frac12}$
4	5437.**002**v	3–III?	18,387.39	$y^4G^0_{3\frac12}-e^4D_{2\frac12}$
4	5434.**576**v	2–III?	18,395.60	$y^4G^0_{2\frac12}-g^4F_{2\frac12}$
4	5431.**027**v	2–V	18,407.62	$c^2D_{2\frac12}-x^4P^0_{1\frac12}$
10	5428.00	0	18,417.89	$z^2F^0_{2\frac12}-g^4F_{3\frac12}$
12	5427.39	2	18,419.96	$z^2D^0_{1\frac12}-e^4G_{2\frac12}$
12	5427.21	2	18,420.57	$y^4G^0_{2\frac12}-f^2F_{3\frac12}$
4	5426.**734**v	1	18,422.18	$b^4P_{1\frac12}-y^4F^0_{1\frac12}$
4	5425.**621**v	4	18,425.96	{$y^4F^0_{4\frac12}-e^4G_{4\frac12}$ ($b^2D_{2\frac12}-x^4D^0_{2\frac12}$)
9	5421.98	1	18,438.34	$y^4F^0_{1\frac12}-e^4D_{\frac12}$
7	5413.734	2–V	18,466.42	$z^4G^0_{3\frac12}-f^4F_{3\frac12}$
5	5408.119	2–III?	18,485.59	$a^2P_{1\frac12}-y^2D^0_{1\frac12}$
4	5407.**520**v	5–V	18,487.64	$y^4G^0_{2\frac12}-e^4G_{3\frac12}$
4	5402.**000**v	3–V	18,506.53	$y^4F^0_{1\frac12}-g^4F_{1\frac12}$
4	5399.**762**v	10	18,514.20	$y^4F^0_{2\frac12}-e^2D_{2\frac12}$
5	5393.729	3*h*	18,534.91	$z^2G^0_{3\frac12}-e^4G_{4\frac12}$
12	5390.81	2	18,544.95	$y^4D^0_{2\frac12}-g^4F_{3\frac12}$
4	5390.**478**v	2–IV?	18,546.09	$y^4D^0_{2\frac12}-e^2P_{1\frac12}$
4	5381.**776**v	6–V	18,576.07	$y^4F^0_{1\frac12}-e^4G_{2\frac12}$
5	5381.105	5–III	18,578.39	$b^4P_{1\frac12}-z^2D^0_{1\frac12}$
9	5378.20	1	18,588.42	$y^4G^0_{4\frac12}-e^4D_{3\frac12}$
4	5373.**958**v	1	18,603.10	$y^4F^0_{3\frac12}-g^4F_{2\frac12}$
9	5372.75	1	18,607.32	$z^2D^0_{2\frac12}-g^4F_{2\frac12}$
7	5370.350	1	18,615.60	$z^4G^0_{2\frac12}-f^4F_{2\frac12}$
4	5369.**591**v	20–I	18,618.23	$a^4P_{1\frac12}-y^4D^0_{2\frac12}$
4	5368.**904**v	30	18,620.61	$c^2D_{1\frac12}-y^2P^0_{\frac12}$
4	5366.**743**v	5	18,628.11	$y^4F^0_{3\frac12}-f^2F_{3\frac12}$
4	5364.**816**v	4	18,634.80	$z^4D^0_{1\frac12}-f^4F_{1\frac12}$
4	5362.**781**v	15–III	18,641.87	$y^2G^0_{3\frac12}-e^2H_{4\frac12}$
4	5359.**200**v	6–III?	18,654.33	$y^4F^0_{3\frac12}-e^4H_{4\frac12}$
5	5358.923	2–IV	18,655.29	$y^2G^0_{4\frac12}-f^2F_{3\frac12}$
9	5358.01	1	18,658.47	$c^2D_{1\frac12}-w^2F^0_{2\frac12}$
4	5353.**500**v	25–III	18,674.19	{$y^2G^0_{4\frac12}-e^2H_{5\frac12}$ ($a^2D_{2\frac12}-y^2F^0_{3\frac12}$)
4	5352.**046**v	20–III	18,679.26	$z^4G^0_{5\frac12}-f^4F_{4\frac12}$
4	5349.**091**v	4–V	18,689.58	$y^4F^0_{3\frac12}-e^2G_{4\frac12}$?
4	5347.**499**v	4–V	18,695.15	$y^4F^0_{3\frac12}-e^4G_{3\frac12}$
4	5344.**570**v	10	18,705.39	$y^4G^0_{4\frac12}-g^4F_{4\frac12}$
4	5343.**383**v	20–III	18,709.55	$y^4G^0_{4\frac12}-e^4H_{5\frac12}$
4	5342.**703**v	50–III	18,711.93	$y^4G^0_{5\frac12}-e^4H_{6\frac12}$
4	5341.**328**v	7–V	18,716.74	$y^2G^0_{4\frac12}-e^2G_{4\frac12}$
5	5339.528	4–V	18,723.05	$y^2G^0_{3\frac12}-e^2G_{3\frac12}$
7	5337.330	1*n*	18,730.76	$y^2G^0_{3\frac12}-h^4F_{4\frac12}$
4	5336.**163**v	3–V	18,734.86	$y^4G^0_{4\frac12}-g^4F_{3\frac12}$
4	5334.**821**v	6–V	18,739.57	{$y^4G^0_{5\frac12}-g^4F_{4\frac12}$ ($y^4G^0_{4\frac12}-e^4G_{5\frac12}$)
4	5333.**647**v	5–III	18,743.70	$y^4G^0_{5\frac12}-e^4H_{5\frac12}$
4	5332.**652**v	5–III	18,747.20	$z^4F^0_{3\frac12}-f^4F_{4\frac12}$
4	5331.**456**v	15–II	18,751.40	$a^4P_{\frac12}-y^4D^0_{1\frac12}$
10	5329.82	1	18,757.16	$y^4F^0_{2\frac12}-g^4F_{1\frac12}$?
9	5328.01	2–V	18,763.53	
5	5326.247	3–IV	18,769.74	$z^4D^0_{2\frac12}-f^4F_{2\frac12}$
4	5325.**949**v	4–III	18,770.79	$y^4F^0_{2\frac12}-e^4H_{3\frac12}$
4	5325.**276**v	10–III	18,773.16	$y^4G^0_{5\frac12}-e^4G_{5\frac12}$
4	5321.**719**v	2–V	18,785.71	$y^4G^0_{2\frac12}-e^2D_{2\frac12}$
4	5316.**772**v	7–III	18,803.19	$y^4G^0_{4\frac12}-e^4G_{4\frac12}$
4	5312.**650**v	8–III	18,817.78	$y^4F^0_{2\frac12}-g^2F_{3\frac12}$
4	5310.**219**v	20	18,826.39	$y^4F^0_{2\frac12}-e^4G_{2\frac12}$
10	5308.55	1	18,832.31	$y^2F^0_{3\frac12}-f^4D_{2\frac12}$?
4	5307.**208**v	0	18,837.07	$y^2G^0_{3\frac12}-f^2F_{2\frac12}$
4	5301.**042**v	15–II	18,858.98	$a^4P_{2\frac12}-y^4D^0_{2\frac12}$
7	5292.203	1*n*	18,890.48	$y^4D^0_{1\frac12}-e^2P_{\frac12}$
13	5290.49	0	18,896.60	$y^4G^0_{3\frac12}-g^4F_{2\frac12}$
4	5287.**785**v	5–V	18,906.26	$y^4D^0_{2\frac12}-e^4D_{2\frac12}$
5	5287.574	3–V	18,907.02	$z^4D^0_{3\frac12}-f^4F_{3\frac12}$
9	5286.48	1	18,910.93	$y^4F^0_{2\frac12}-e^2G_{3\frac12}$
9	5284.08	1	18,919.52	$y^4D^0_{1\frac12}-g^4F_{2\frac12}$
4	5283.**487**v	4–V	18,921.64	$y^4G^0_{3\frac12}-f^2F_{3\frac12}$
4	5280.**631**v	20–III	18,931.88	$z^4G^0_{4\frac12}-f^4F_{3\frac12}$
4	5276.**183**v	8–V	18,947.84	$y^4G^0_{3\frac12}-e^4H_{4\frac12}$
4	5268.**498**v	10–III	18,975.48	$z^4G^0_{2\frac12}-f^4F_{1\frac12}$
4	5266.**506**v	25–II	18,982.65	$a^2G_{4\frac12}-y^2F^0_{3\frac12}$
4	5266.**302**v	10–II?	18,983.39	$z^4G^0_{3\frac12}-f^4F_{2\frac12}$
4	5265.**786**v	4–V	18,985.25	$z^4F^0_{2\frac12}-f^4F_{3\frac12}$
11	5265.523	1	18,986.20	{$a^4P_{2\frac12}-z^2F^0_{2\frac12}$ $y^2D^0_{2\frac12}-2_{1\frac12}$

TABLE VIII.—*Continued.*

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
9	5264.83	1	18,988.69	$y^4G^0_{3\frac{1}{2}}-e^4G_{3\frac{1}{2}}$
4	5264.**203**v	2–IV	18,990.96	$z^2D^0_{1\frac{1}{2}}-e^2D_{1\frac{1}{2}}$
6	5262.48	2	18,997.17	$z^2D^0_{2\frac{1}{2}}-e^2D_{2\frac{1}{2}}$
4	5257.**621**v	10–III	19,014.73	$y^4D^0_{3\frac{1}{2}}-e^4P_{2\frac{1}{2}}$
4	5254.**652**v	8–IV	19,025.48	$y^4D^0_{3\frac{1}{2}}-e^4D_{3\frac{1}{2}}$
10	5253.84	1	19,028.42	$y^4G^0_{2\frac{1}{2}}-g^4F_{1\frac{1}{2}}$
4	5250.**003**v	7–V	19,042.32	$y^4G^0_{2\frac{1}{2}}-e^4H_{3\frac{1}{2}}$
4	5247.**921**v	15–II	19,049.88	$a^4P_{\frac{1}{2}}-y^4D^0_{\frac{1}{2}}$
10	5243.541	1	19,065.79	$c^2D_{2\frac{1}{2}}-y^4S^0_{1\frac{1}{2}}$
4	5237.**085**v	5	19,089.29	$y^4G^0_{2\frac{1}{2}}-g^2F_{3\frac{1}{2}}$
4	5235.**188**v	15–II	19,096.21	$a^2G_{3\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
9	5234.67	1	19,098.10	$y^4G^0_{2\frac{1}{2}}-e^4G_{2\frac{1}{2}}$
10	5230.363	1	19,113.82	$y^4D^0_{1\frac{1}{2}}-e^4D_{1\frac{1}{2}}$
4	5230.**210**v	25–II	19,114.38	$a^4P_{1\frac{1}{2}}-y^4D^0_{1\frac{1}{2}}$
4	5222.**490**v	4–IV	19,142.64	$y^4D^0_{3\frac{1}{2}}-g^4F_{4\frac{1}{2}}$
10	5221.243	1	19,147.21	$y^4F^0_{1\frac{1}{2}}-e^2D_{1\frac{1}{2}}$
4	5219.**008**v	2–V	19,155.41	$z^4F^0_{1\frac{1}{2}}-f^4F_{2\frac{1}{2}}$
4	5214.**751**v	1	19,171.05	$z^2F^0_{3\frac{1}{2}}-e^4P_{2\frac{1}{2}}$
10	5214.440	0	19,172.19	$y^4D^0_{3\frac{1}{2}}-g^4F_{3\frac{1}{2}}$
4	5212.**699**v	25–III	19,178.59	$z^4F^0_{4\frac{1}{2}}-f^4F_{4\frac{1}{2}}$
4	5211.**832**v	3–IV	19,181.78	$z^2F^0_{3\frac{1}{2}}-e^4D_{3\frac{1}{2}}$
10	5211.714	2	19,182.22	$y^4G^0_{2\frac{1}{2}}-e^2G_{3\frac{1}{2}}$
4	5210.**834**v	3–IV	19,185.46	$y^4D^0_{\frac{1}{2}}-e^4D_{\frac{1}{2}}$
4	5210.**042**v	3–IV	19,188.38	$c^2D_{2\frac{1}{2}}-y^2P^0_{1\frac{1}{2}}$
4	5192.**358**v	4–V	19,253.73	$y^4D^0_{\frac{1}{2}}-g^4F_{1\frac{1}{2}}$
9	5183.53	1	19,286.52	$y^4G^0_{3\frac{1}{2}}-e^2D_{2\frac{1}{2}}$?
9	5183.04	1	19,288.34	$z^2F^0_{2\frac{1}{2}}-g^4F_{2\frac{1}{2}}$
9	5180.13	1	19,299.18	$z^2F^0_{3\frac{1}{2}}-g^4F_{4\frac{1}{2}}$
9	5179.66	1	19,300.92	$z^2D^0_{2\frac{1}{2}}-g^2F_{3\frac{1}{2}}$
10	5177.585	1n	19,308.66	$y^4F^0_{3\frac{1}{2}}-e^2H_{4\frac{1}{2}}$
10	5177.363	1n	19,309.49	$y^4D^0_{1\frac{1}{2}}-e^2D_{2\frac{1}{2}}$
4	5176.**085**v	20–III	19,314.26	$a^2D_{2\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$
6	5173.48	0	19,323.98	$y^2G^0_{4\frac{1}{2}}-g^2F_{3\frac{1}{2}}$
4	5172.**292**v	2	19,328.42	$z^2F^0_{3\frac{1}{2}}-g^4F_{3\frac{1}{2}}$
4	5166.**060**v	2–V	19,351.74	$z^2D^0_{1\frac{1}{2}}-g^2F_{2\frac{1}{2}}$
4	5165.**156**v	3–IV?	19,355.12	$a^4P_{2\frac{1}{2}}-y^4D^0_{1\frac{1}{2}}$
4	5158.**854**v	2–IV?	19,378.77	$y^4D^0_{2\frac{1}{2}}-e^4P_{1\frac{1}{2}}$
5	5158.431	2–IV?	19,380.36	$z^2F^0_{2\frac{1}{2}}-e^4G_{3\frac{1}{2}}$
4	5156.**366**v	10–IV?	19,388.12	$z^2G^0_{3\frac{1}{2}}-e^4H_{4\frac{1}{2}}$
12	5154.87	3	19,393.74	$z^2D^0_{2\frac{1}{2}}-e^2G_{3\frac{1}{2}}$
4	5154.**070**v	8–IV?	19,396.75	$z^2F^0_{3\frac{1}{2}}-e^4G_{4\frac{1}{2}}$
4	5149.**796**v	4–II	19,412.85	$a^4P_{1\frac{1}{2}}-y^4D^0_{\frac{1}{2}}$
4	5149.**108**v	2–IV?	19,415.45	$y^4D^0_{2\frac{1}{2}}-g^4F_{2\frac{1}{2}}$
4	5146.**753**v	15–IV?	19,424.33	$z^4F^0_{3\frac{1}{2}}-f^4F_{3\frac{1}{2}}$
5	5145.512	2–IV?	19,429.01	$z^2G^0_{3\frac{1}{2}}-e^4G_{3\frac{1}{2}}$
4	5142.**471**v	3	19,440.50	$y^4D^0_{2\frac{1}{2}}-f^2F_{3\frac{1}{2}}$
9	5141.03	1	19,445.95	$y^2F^0_{3\frac{1}{2}}-f^6F_{3\frac{1}{2}}$
11	5135.543	1	19,466.73	$y^4D^0_{\frac{1}{2}}-e^4P_{\frac{1}{2}}$
4	5133.**467**v	15–V	19,474.60	$z^2G^0_{4\frac{1}{2}}-e^4H_{5\frac{1}{2}}$
4	5126.**201**v	10–IV?	19,502.20	$z^4F^0_{2\frac{1}{2}}-f^4F_{2\frac{1}{2}}$
4	5125.**715**v	7–IV?	19,504.05	$z^2G^0_{4\frac{1}{2}}-e^4G_{5\frac{1}{2}}$
4	5124.**718**v	2–IV?	19,507.85	$y^4F^0_{1\frac{1}{2}}-g^2F_{2\frac{1}{2}}$
4	5122.**767**v	8–IV?	19,515.28	$z^4F^0_{1\frac{1}{2}}-f^4F_{1\frac{1}{2}}$
5	5113.232	6–IV?	19,551.67	$a^2D_{2\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
4	5108.**903**v	10–V	19,568.24	$z^2G^0_{4\frac{1}{2}}-e^4G_{4\frac{1}{2}}$
9	5108.27	1	19,570.66	$y^2G^0_{3\frac{1}{2}}-g^2F_{2\frac{1}{2}}$
10	5103.11	1	19,590.45	$y^4G^0_{3\frac{1}{2}}-g^2F_{3\frac{1}{2}}$
7	5100.034	1N	19,602.27	$y^4G^0_{3\frac{1}{2}}-e^2H_{4\frac{1}{2}}$
9	5098.02	1	19,610.01	$y^4D^0_{2\frac{1}{2}}-e^4D_{1\frac{1}{2}}$
4	5094.**955**v	8–III	19,621.81	$a^2D_{1\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$
10	5091.282	1	19,635.97	$b^4F_{2\frac{1}{2}}-z^6F^0_{3\frac{1}{2}}$
4	5087.**858**v	3–V	19,649.18	$y^4G^0_{4\frac{1}{2}}-e^2H_{5\frac{1}{2}}$
10	5085.695	1	19,657.53	$b^4F_{1\frac{1}{2}}-z^6F^0_{2\frac{1}{2}}$
4	5077.**410**v	3–III?	19,689.61	$z^2F^0_{3\frac{1}{2}}-e^4D_{2\frac{1}{2}}$
9	5076.83	1	19,691.86	$y^4G^0_{4\frac{1}{2}}-e^2G_{4\frac{1}{2}}$
9	5067.55	2–IV?	19,727.92	$c^2D_{2\frac{1}{2}}-w^2F^0_{3\frac{1}{2}}$
11	5059.849	1	19,757.94	$y^4F^0_{2\frac{1}{2}}-g^2F_{2\frac{1}{2}}$?
11	5057.990	1	19,765.20	$y^4D^0_{1\frac{1}{2}}-e^4P_{\frac{1}{2}}$
11	5050.601	1	19,794.12	$a^2H_{4\frac{1}{2}}-x^4G^0_{4\frac{1}{2}}$
7	5034.970	1N	19,855.57	$z^4F^0_{4\frac{1}{2}}-f^4F_{3\frac{1}{2}}$
12	5034.06	3	19,859.16	$a^2D_{1\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
7	5033.36	1N	19,861.92	$z^4F^0_{2\frac{1}{2}}-f^4F_{1\frac{1}{2}}$
4	5022.**118**v	2	19,906.38	$z^2D^0_{1\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
4	5013.**326**v	1n	19,941.29	$z^4F^0_{3\frac{1}{2}}-f^4F_{2\frac{1}{2}}$
4	5007.**286**v	5	19,965.35	$b^4F_{1\frac{1}{2}}-z^6F^0_{1\frac{1}{2}}$
10	5004.187	1	19,977.71	$b^2D_{1\frac{1}{2}}-z^2P^0_{\frac{1}{2}}$
10	5000.877	1	19,990.93	$z^6G^0_{3\frac{1}{2}}-e^6F_{4\frac{1}{2}}$
4	4993.**006**v	5	20,022.44	$y^4F^0_{4\frac{1}{2}}-h^4F_{4\frac{1}{2}}$
4	4988.**035**v	10	20,042.40	$z^2G^0_{3\frac{1}{2}}-e^2H_{4\frac{1}{2}}$
4	4987.**853**v	2–IA	20,043.13	$b^4F_{2\frac{1}{2}}-z^6F^0_{2\frac{1}{2}}$
4	4986.**443**v	10	20,048.80	$b^2D_{2\frac{1}{2}}-z^4P^0_{2\frac{1}{2}}$
10	4983.04	1	20,062.49	$b^2D_{2\frac{1}{2}}-z^4P^0_{1\frac{1}{2}}$ $y^4F^0_{1\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
4	4981.**789**v	0	20,067.53	$y^4D^0_{3\frac{1}{2}}-f^2F_{3\frac{1}{2}}$
4	4979.**944**v	60	20,074.96	$z^2F^0_{2\frac{1}{2}}-e^2G_{3\frac{1}{2}}$
9	4974.47	1	20,097.05	$a^2D_{2\frac{1}{2}}-y^2D^0_{1\frac{1}{2}}$
4	4971.**935**v	2–IV	20,107.30	$z^6G^0_{5\frac{1}{2}}-e^6F_{5\frac{1}{2}}$
4	4971.**015**v	6	20,111.02	$b^2D_{1\frac{1}{2}}-w^4D^0_{1\frac{1}{2}}$
4	4967.**902**v	10w	20,123.62	$z^2G^0_{3\frac{1}{2}}-e^2G_{3\frac{1}{2}}$
5	4967.528	3	20,125.14	$y^2G^0_{3\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
4	4966.**581**v	2–IA	20,128.98	$b^4F_{4\frac{1}{2}}-z^6F^0_{5\frac{1}{2}}$
11	4961.891	1	20,148.00	$y^2F^0_{3\frac{1}{2}}-4_{2\frac{1}{2}}$
4	4959.**682**v	5	20,156.97	$b^4F_{1\frac{1}{2}}-z^6F^0_{\frac{1}{2}}$
4	4953.**179**v	2–IA	20,183.44	$b^4F_{3\frac{1}{2}}-z^6F^0_{3\frac{1}{2}}$
5	4951.828	2	20,188.95	$z^2F^0_{2\frac{1}{2}}-f^2F_{2\frac{1}{2}}$
4	4948.**589**v	4	20,202.16	$y^4D^0_{2\frac{1}{2}}-e^2G_{3\frac{1}{2}}$
5	4945.784	4	20,213.61	
9	4945.55	1	20,214.57	$b^2G_{4\frac{1}{2}}-w^4D^0_{3\frac{1}{2}}$?
7	4944.735	1n	20,217.90	$b^2G_{3\frac{1}{2}}-x^2F^0_{2\frac{1}{2}}$
5	4943.282	2	20,223.85	$z^2F^0_{3\frac{1}{2}}-f^2F_{3\frac{1}{2}}$
5	4942.350	2	20,227.66	$y^4F^0_{3\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
9	4941.65	1	20,230.53	$y^4F^0_{1\frac{1}{2}}-h^4F_{1\frac{1}{2}}$
4	4941.**354**v	3	20,231.73	$z^2D^0_{2\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
4	4936.**418**v	6	20,251.97	$(y^4G^0_{4\frac{1}{2}}-e^4H_{3\frac{1}{2}})$
5	4935.222	2	20,256.87	$z^6G^0_{2\frac{1}{2}}-e^6F_{3\frac{1}{2}}$
5	4934.065	25Ba?	20,261.63	
4	4932.**883**v	5	20,266.48	$b^4P_{2\frac{1}{2}}-y^2F^0_{3\frac{1}{2}}$
11	4931.346	1	20,272.80	$b^2D_{1\frac{1}{2}}-x^2F^0_{2\frac{1}{2}}$?
11	4930.783	3	20,275.11	
11	4928.818	1	20,283.19	$b^2D_{1\frac{1}{2}}-w^4D^0_{\frac{1}{2}}$ $c^2D_{1\frac{1}{2}}-x^4S^0_{1\frac{1}{2}}$
4	4928.**290**v	2–III	20,285.37	$z^6G^0_{4\frac{1}{2}}-e^6F_{4\frac{1}{2}}$ $z^2F^0_{3\frac{1}{2}}-e^2G_{4\frac{1}{2}}$
11	4925.676	1	20,296.13	$z^6G^0_{2\frac{1}{2}}-e^2F_{2\frac{1}{2}}$
4	4924.**998**v	4	20,298.93	$y^4G^0_{4\frac{1}{2}}-g^2F_{3\frac{1}{2}}$
4	4920.**272**v	1–IIIA	20,318.42	$b^4P_{1\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$
11	4918.266	2	20,326.71	$b^2P_{1\frac{1}{2}}-x^4D^0_{1\frac{1}{2}}$?
11	4915.960	3	20,336.24	$a^2H_{4\frac{1}{2}}-x^4G^0_{3\frac{1}{2}}$
11	4914.714	3	20,341.40	
4	4912.**399**v	1–IA	20,350.99	$b^4F_{2\frac{1}{2}}-z^6F^0_{1\frac{1}{2}}$
11	4910.934	4R	20,357.06	
4	4908.**481**v	3	20,367.23	$c^2D_{1\frac{1}{2}}-w^2S^0_{\frac{1}{2}}$
9	4907.58	1	20,370.96	$b^2G_{4\frac{1}{2}}-x^2F^0_{3\frac{1}{2}}$
5	4907.125	2	20,372.86	$b^4F_{4\frac{1}{2}}-z^6F^0_{4\frac{1}{2}}$
4	4904.**172**v	1–III	20,385.13	$b^2D_{1\frac{1}{2}}-z^2P^0_{1\frac{1}{2}}$
9	4902.52	1	20,392.00	$y^4G^0_{4\frac{1}{2}}-e^2G_{3\frac{1}{2}}$
4	4899.**520**v	2–IIIA	20,404.48	$a^2D_{1\frac{1}{2}}-y^2D^0_{1\frac{1}{2}}$
4	4897.**182**v	15	20,414.22	$z^2G^0_{4\frac{1}{2}}-e^2H_{5\frac{1}{2}}$
10	4892.76	1	20,432.67	$y^4D^0_{3\frac{1}{2}}-e^2D_{2\frac{1}{2}}$
7	4892.508	1n	20,433.73	$y^4G^0_{5\frac{1}{2}}-h^4F_{4\frac{1}{2}}$
4	4886.**995**v	5	20,456.78	$z^2G^0_{4\frac{1}{2}}-e^2G_{4\frac{1}{2}}$
4	4882.**704**v	2–III	20,474.76	$z^6G^0_{3\frac{1}{2}}-e^6F_{3\frac{1}{2}}$
11	4881.311	4	20,480.60	$(y^4F^0_{2\frac{1}{2}}-h^4F_{1\frac{1}{2}})$
12	4880.25	2	20,485.05	$b^4F_{3\frac{1}{2}}-z^6D^0_{4\frac{1}{2}}$
12	4878.**356**v	0	20,493.00	$z^6G^0_{1\frac{1}{2}}-e^6F_{2\frac{1}{2}}$
4	4869.**377**v	10	20,530.79	$y^4G^0_{3\frac{1}{2}}-g^2F_{2\frac{1}{2}}$
4	4867.**870**v	25–II	20,537.15	$z^6G^0_{6\frac{1}{2}}-e^6F_{5\frac{1}{2}}$
5	4863.461	5	20,555.76	$b^4P_{1\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
4	4862.**097**v	1	20,561.53	$z^2F^0_{2\frac{1}{2}}-e^2D_{1\frac{1}{2}}$
9	4857.938	1	20,579.13	$b^4F_{2\frac{1}{2}}-z^6D^0_{3\frac{1}{2}}$
7	4855.590	1	20,589.08	$z^2F^0_{3\frac{1}{2}}-e^2D_{2\frac{1}{2}}$
4	4855.**235**v	0	20,590.58	$b^4F_{3\frac{1}{2}}-z^6F^0_{2\frac{1}{2}}$
11	4853.309	3	20,598.76	$z^4D^0_{1\frac{1}{2}}-e^4P_{2\frac{1}{2}}$
11	4851.973	1	20,604.43	$b^2P_{1\frac{1}{2}}-2^0_{2\frac{1}{2}}$
11	4849.315	2	20,615.73	$y^4F^0_{2\frac{1}{2}}-1_{2\frac{1}{2}}$
4	4843.**454**v	3–III	20,640.67	$z^6G^0_{2\frac{1}{2}}-e^6F_{2\frac{1}{2}}$
4	4840.**253**v	25–III	20,654.32	$z^6G^0_{5\frac{1}{2}}-e^6F_{4\frac{1}{2}}$
10	4837.948	2	20,664.16	$b^4F_{1\frac{1}{2}}-z^6D^0_{2\frac{1}{2}}$
10	4834.359	—	20,679.50	$b^4P_{\frac{1}{2}}-y^2D^0_{1\frac{1}{2}}$
4	4832.**088**v	0	20,689.22	$y^4D^0_{3\frac{1}{2}}-e^4H_{3\frac{1}{2}}$
10	4818.411	1	20,747.95	$y^4D^0_{3\frac{1}{2}}-e^2H_{4\frac{1}{2}}$
9	4817.43	1	20,752.17	$y^4G^0_{2\frac{1}{2}}-h^4F_{1\frac{1}{2}}$
4	4815.**900**v	1–III	20,758.77	$b^2D_{1\frac{1}{2}}-x^2D^0_{1\frac{1}{2}}$
4	4813.**966**v	2–III	20,767.11	$z^6G^0_{1\frac{1}{2}}-e^6F_{1\frac{1}{2}}$
4	4813.**476**v	20–III	20,769.22	$z^6G^0_{4\frac{1}{2}}-e^6F_{3\frac{1}{2}}$ $(b^2D_{1\frac{1}{2}}-x^2D^0_{2\frac{1}{2}})$
10	4808.24	1	20,791.84	$y^4F^0_{3\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
10	4801.79	1	20,819.76	$z^2D^0_{2\frac{1}{2}}-f^4D_{2\frac{1}{2}}$
4	4797.**835**v	1	20,836.93	$y^4D^0_{3\frac{1}{2}}-h^4F_{4\frac{1}{2}}$
4	4797.**750**v	1	20,837.30	$c^2D_{2\frac{1}{2}}-x^2P^0_{1\frac{1}{2}}$
4	4796.**378**v	1–IIA	20,843.26	$b^4F_{4\frac{1}{2}}-z^6F^0_{3\frac{1}{2}}$
4	4795.**853**v	2–V	20,845.54	$z^2F^0_{3\frac{1}{2}}-e^4H_{3\frac{1}{2}}$
9	4794.27	1	20,852.42	$y^4F^0_{4\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
4	4792.**855**v	15–III	20,858.58	$z^6G^0_{3\frac{1}{2}}-e^6F_{2\frac{1}{2}}$
4	4785.**070**v	50	20,892.51	$z^2F^0_{3\frac{1}{2}}-g^2F_{3\frac{1}{2}}$
11	4782.561	1	20,903.47	$a^2F_{3\frac{1}{2}}-z^4F^0_{4\frac{1}{2}}$
4	4781.**432**v	3–IIA	20,908.41	$b^4P_{2\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$
4	4779.**979**v	10–III	20,914.76	$z^6G^0_{2\frac{1}{2}}-e^6F_{1\frac{1}{2}}$
4	4778.**233**v	2–IV	20,922.41	$z^2F^0_{2\frac{1}{2}}-g^2F_{2\frac{1}{2}}$
4	4776.**311**v	6–III	20,930.83	$z^6G^0_{1\frac{1}{2}}-e^6F_{\frac{1}{2}}$
11	4773.498	1	20,943.16	$y^4D^0_{3\frac{1}{2}}-f^2F_{2\frac{1}{2}}$
5	4771.108	6–III	20,953.65	$z^6D^0_{3\frac{1}{2}}-e^6F_{4\frac{1}{2}}$
4	4768.**072**v	5–III	20,966.99	$z^6D^0_{2\frac{1}{2}}-e^6F_{3\frac{1}{2}}$
4	4767.**142**v	100	20,971.08	$z^2G^0_{3\frac{1}{2}}-g^2F_{2\frac{1}{2}}$
11	4762.353	1Mn?	20,992.17	$z^2G^0_{3\frac{1}{2}}-e^6D_{4\frac{1}{2}}$
4	4756.**722**v	100	21,017.02	$z^2G^0_{4\frac{1}{2}}-e^4H_{3\frac{1}{2}}$
4	4754.**358**v	3–III	21,027.47	$z^6D^0_{1\frac{1}{2}}-e^6F_{2\frac{1}{2}}$
9	4751.57	1	21,039.81	$y^4D^0_{2\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
4	4749.68v	10–III	21,048.18	$z^6D^0_{4\frac{1}{2}}-e^6F_{5\frac{1}{2}}$
4	4746.**115**v	100	21,063.99	$z^2G^0_{4\frac{1}{2}}-g^2F_{3\frac{1}{2}}$
12	4742.22	2	21,081.29	$y^4G^0_{5\frac{1}{2}}-f^4G_{5\frac{1}{2}}$
11	4738.097	1	21,099.64	$z^2F^0_{3\frac{1}{2}}-f^2F_{2\frac{1}{2}}$

TABLE VIII.—*Continued.*

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
4	4737.769v	2–IIA	21,101.10	$b^4P_{1\frac{1}{2}}-y^2D^0_{1\frac{1}{2}}$
9	4736.22	1	21,108.00	$y^4D^0_{1\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
4	4734.828v	2–III?	21,114.20	$z^6D^0_{\frac{1}{2}}-e^6F_{1\frac{1}{2}}$
4	4732.051v	40	21,126.59	$b^4F_{3\frac{1}{2}}-z^6D^0_{3\frac{1}{2}}$
7	4729.058	2	21,139.97	
4	4727.936v	3–IA	21,144.98	$b^4F_{4\frac{1}{2}}-z^6D^0_{4\frac{1}{2}}$
11	4727.746	1	21,145.83	$b^4P_{2\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
4	4725.250v	1	21,157.00	$z^2G^0_{4\frac{1}{2}}-e^2G_{3\frac{1}{2}}$
4	4718.470v	50	21,187.40	$y^4G^0_{5\frac{1}{2}}-f^4H_{6\frac{1}{2}}$
9	4709.04	1	21,229.83	$y^4G^0_{5\frac{1}{2}}-f^6F_{5\frac{1}{2}}$ $y^4G^0_{4\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
4	4704.386v	3	21,250.83	$z^4D^0_{2\frac{1}{2}}-g^4F_{3\frac{1}{2}}$
11	4704.144	1	21,251.93	$z^4D^0_{2\frac{1}{2}}-e^2P_{1\frac{1}{2}}$
4	4699.180v	25	21,274.37	$a^2F_{2\frac{1}{2}}-z^4G^0_{3\frac{1}{2}}$
4	4698.389v	3–IV?	21,277.96	$z^6D^0_{\frac{1}{2}}-e^6F_{\frac{1}{2}}$
9	4697.52	1	21,281.89	$y^4D^0_{2\frac{1}{2}}-f^4P_{2\frac{1}{2}}$?
11	4697.000	1	21,284.25	$c^2D_{1\frac{1}{2}}-w^2P^0_{\frac{1}{2}}$
4	4693.190v	6–IV?	21,301.53	$z^6D^0_{1\frac{1}{2}}-e^6F_{1\frac{1}{2}}$
9	4689.98	1	21,316.11	$y^4F^0_{4\frac{1}{2}}-f^4G_{4\frac{1}{2}}$
4	4688.489v	20	21,322.88	$b^2D_{2\frac{1}{2}}-w^4D^0_{2\frac{1}{2}}$
4	4685.858v	30	21,334.86	$a^2F_{3\frac{1}{2}}-z^4F^0_{3\frac{1}{2}}$
9	4683.95	1	21,343.55	$b^2D_{2\frac{1}{2}}-w^4D^0_{1\frac{1}{2}}$
4	4682.361v	9–III?	21,350.79	$z^6D^0_{2\frac{1}{2}}-e^6F_{2\frac{1}{2}}$
11	4677.528	1	21,372.85	$b^4F_{2\frac{1}{2}}-z^6D^0_{1\frac{1}{2}}$
5	4677.251	4	21,374.12	$b^4F_{1\frac{1}{2}}-z^6G^0_{2\frac{1}{2}}$
4	4676.705v	0	21,376.61	$c^2D_{1\frac{1}{2}}-11^0_{2\frac{1}{2}}$
9	4670.92	1	21,403.09	$b^2D_{1\frac{1}{2}}-w^4F^0_{1\frac{1}{2}}$
4	4667.861v	10	21,417.11	
4	4663.403v	12–III	21,437.59	$z^6D^0_{3\frac{1}{2}}-e^6F_{3\frac{1}{2}}$
4	4657.390v	100	21,465.26	$z^6D^0_{1\frac{1}{2}}-e^6F_{\frac{1}{2}}$
4	4654.834v	25	21,477.05	$z^2F^0_{2\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
10	4654.519	1	21,478.50	$b^2D_{2\frac{1}{2}}-w^4D^0_{3\frac{1}{2}}$
4	4653.770v	1	21,481.96	$b^2P_{1\frac{1}{2}}-z^4P^0_{1\frac{1}{2}}$
11	4652.470	1	21,487.96	$a^2F_{2\frac{1}{2}}-z^4D^0_{2\frac{1}{2}}$
12	4651.84	3	21,490.87	
5	4648.652	5	21,505.61	$b^2D_{2\frac{1}{2}}-x^2F^0_{2\frac{1}{2}}$ $b^2D_{1\frac{1}{2}}-y^4P^0_{1\frac{1}{2}}$
4	4645.153v	0	21,521.81	$b^4F_{1\frac{1}{2}}-z^6G^0_{1\frac{1}{2}}$
4	4644.317v	70	21,525.68	$z^2G^0_{3\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
4	4643.733v	15	21,528.39	$c^2D_{2\frac{1}{2}}-w^2P^0_{1\frac{1}{2}}$
9	4642.79	1	21,532.76	$z^4G^0_{3\frac{1}{2}}-e^4G_{4\frac{1}{2}}$
4	4640.820v	10	21,541.90	$b^4F_{2\frac{1}{2}}-z^6G^0_{3\frac{1}{2}}$
9	4639.07	1	21,550.03	$y^2G^0_{4\frac{1}{2}}-e^6G_{3\frac{1}{2}}$
9	4631.10	1	21,587.12	$z^6G^0_{4\frac{1}{2}}-f^4F_{4\frac{1}{2}}$?
9	4630.52	1	21,589.82	$z^4D^0_{1\frac{1}{2}}-e^4P_{1\frac{1}{2}}$
4	4629.359v	15–III	21,595.24	$z^6D^0_{4\frac{1}{2}}-e^6F_{4\frac{1}{2}}$
4	4628.908v	125	21,597.34	$b^4F_{3\frac{1}{2}}-z^6D^0_{2\frac{1}{2}}$
9	4627.44	1	21,604.19	$y^4D^0_{2\frac{1}{2}}-h^4F_{2\frac{1}{2}}$
4	4625.767v	2–III	21,612.00	$z^4D^0_{2\frac{1}{2}}-e^4D_{2\frac{1}{2}}$
4	4624.561v	10	21,617.64	$b^2D_{2\frac{1}{2}}-z^2P^0_{1\frac{1}{2}}$
4	4623.020v	150	21,624.84	$z^6D^0_{2\frac{1}{2}}-e^6F_{1\frac{1}{2}}$
4	4622.691v	30	21,626.38	$z^4D^0_{1\frac{1}{2}}-g^4F_{2\frac{1}{2}}$
4	4620.824v	25	21,635.12	$b^2D_{2\frac{1}{2}}-x^2F^0_{3\frac{1}{2}}$
10	4619.329	1	21,642.12	$a^2F_{2\frac{1}{2}}-z^4G^0_{2\frac{1}{2}}$
4	4614.003v	60	21,667.11	$y^4D^0_{3\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
9	4612.41	1	21,674.58	$y^4D^0_{3\frac{1}{2}}-f^4D_{3\frac{1}{2}}$
4	4608.908v	8	21,691.06	$b^4P_{2\frac{1}{2}}-y^2D^0_{1\frac{1}{2}}$
4	4601.158v	30	21,727.59	$y^4G^0_{5\frac{1}{2}}-f^4G_{4\frac{1}{2}}$
4	4596.903v	5–IV	21,747.70	$z^4D^0_{3\frac{1}{2}}-e^4P_{2\frac{1}{2}}$
4	4594.633v	4–IV	21,758.45	$z^4D^0_{3\frac{1}{2}}-e^4D_{3\frac{1}{2}}$
11	4594.356	1	21,759.76	$b^4F_{2\frac{1}{2}}-z^6G^0_{2\frac{1}{2}}$
11	4591.375	1	21,773.89	$a^2F_{3\frac{1}{2}}-z^4F^0_{2\frac{1}{2}}$
9	4589.36	1	21,783.44	$z^4G^0_{4\frac{1}{2}}-e^4D_{3\frac{1}{2}}$
4	4588.730v	1–IA	21,786.44	$b^4F_{4\frac{1}{2}}-z^6D^0_{3\frac{1}{2}}$
4	4586.936v	15	21,794.96	$b^4F_{3\frac{1}{2}}-z^6G^0_{4\frac{1}{2}}$
4	4581.596v	20–III	21,820.36	$z^6F^0_{4\frac{1}{2}}-e^6F_{5\frac{1}{2}}$ $(z^4D^0_{1\frac{1}{2}}-e^4D_{1\frac{1}{2}})$
11	4581.380	1	21,821.39	$z^6D^0_{3\frac{1}{2}}-e^6F_{2\frac{1}{2}}$
11	4580.964	1	21,823.37	$z^2F^0_{3\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
4	4580.139v	4–IA	21,827.30	$a^2F_{3\frac{1}{2}}-z^4G^0_{4\frac{1}{2}}$
5	4579.364	25	21,831.00	$z^2F^0_{3\frac{1}{2}}-f^4D_{3\frac{1}{2}}$
10	4577.27	1	21,840.99	$y^4F^0_{4\frac{1}{2}}-e^6G_{4\frac{1}{2}}$
4	4574.942v	20	21,852.10	$a^2F_{3\frac{1}{2}}-z^4D^0_{3\frac{1}{2}}$
4	4570.024v	2–IV	21,875.61	$z^4D^0_{3\frac{1}{2}}-g^4F_{4\frac{1}{2}}$
5	4567.533	2	21,887.54	$y^4G^0_{4\frac{1}{2}}-e^6D_{3\frac{1}{2}}$
4	4566.610v	100	21,891.97	$z^4D^0_{\frac{1}{2}}-e^4D_{\frac{1}{2}}$
4	4565.578v	15–III	21,896.91	$z^6F^0_{3\frac{1}{2}}-e^6F_{4\frac{1}{2}}$
5	4564.843	10	21,900.44	$z^4G^0_{4\frac{1}{2}}-g^4F_{4\frac{1}{2}}$
4	4564.153v	35	21,903.75	$b^2G_{3\frac{1}{2}}-z^2H^0_{4\frac{1}{2}}$
5	4563.989	10	21,904.53	$z^4G^0_{4\frac{1}{2}}-e^4H_{5\frac{1}{2}}$
10	4563.85	1	21,905.20	$z^4D^0_{3\frac{1}{2}}-g^4F_{3\frac{1}{2}}$
9	4563.38	1	21,907.46	$b^4F_{2\frac{1}{2}}-z^6G^0_{1\frac{1}{2}}$
9	4563.02	1	21,909.19	$y^4D^0_{3\frac{1}{2}}-f^4P_{2\frac{1}{2}}$
4	4561.948v	25	21,914.34	$b^2P_{\frac{1}{2}}-z^2P^0_{\frac{1}{2}}$
9	4561.22	1	21,917.83	$z^2F^0_{3\frac{1}{2}}-e^6P_{3\frac{1}{2}}$
9	4560.97	1	21,919.04	$a^2H_{4\frac{1}{2}}-w^4G^0_{3\frac{1}{2}}$
5	4559.123	10	21,927.91	$b^2D_{2\frac{1}{2}}-w^4F^0_{3\frac{1}{2}}$
4	4553.336v	25	21,955.79	$z^6G^0_{5\frac{1}{2}}-f^4F_{4\frac{1}{2}}$
4	4552.441v	25	21,960.10	$z^4D^0_{\frac{1}{2}}-g^4F_{1\frac{1}{2}}$
10	4550.469	<1	21,969.62	$z^6G^0_{3\frac{1}{2}}-f^4F_{3\frac{1}{2}}$
4	4549.658v	10–III	21,973.54	$z^6F^0_{2\frac{1}{2}}-e^6F_{3\frac{1}{2}}$ $(z^4D^0_{3\frac{1}{2}}-e^4G_{4\frac{1}{2}})$
10	4547.75	<1	21,982.75	$a^2F_{2\frac{1}{2}}-z^4D^0_{1\frac{1}{2}}$
11	4546.873	1	21,986.99	$c^2D_{2\frac{1}{2}}-10^0_{3\frac{1}{2}}$
4	4545.985v	1–III	21,991.29	$b^2D_{2\frac{1}{2}}-x^2D^0_{1\frac{1}{2}}$
4	4545.238v	50	21,994.90	$z^2G^0_{4\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
11	4544.541	1	21,998.27	$z^4G^0_{4\frac{1}{2}}-e^4G_{4\frac{1}{2}}$
4	4543.810v	6–III	22,001.82	$b^2D_{2\frac{1}{2}}-x^2D^0_{2\frac{1}{2}}$
9	4541.65	1	22,012.28	$y^4G^0_{4\frac{1}{2}}-i^4F_{3\frac{1}{2}}$
4	4540.786v	30	22,016.47	$z^4D^0_{1\frac{1}{2}}-e^2D_{2\frac{1}{2}}$
10	4534.353	1	22,047.70	$b^2P_{\frac{1}{2}}-w^4D^0_{1\frac{1}{2}}$
4	4533.985v	7–III	22,049.49	$z^6F^0_{1\frac{1}{2}}-e^6F_{2\frac{1}{2}}$
11	4532.605	1	22,056.20	$a^4P_{1\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$
4	4530.949v	30–II	22,064.26	$z^6F^0_{5\frac{1}{2}}-e^6F_{5\frac{1}{2}}$
4	4527.919v	2–III	22,079.03	$z^6D^0_{4\frac{1}{2}}-e^6F_{3\frac{1}{2}}$
4	4526.794v	2–III	22,084.52	$z^4D^0_{2\frac{1}{2}}-e^4P_{1\frac{1}{2}}$
4	4526.518v	0	22,085.86	$b^4F_{4\frac{1}{2}}-z^6G^0_{5\frac{1}{2}}$
5	4525.787	5	22,089.43	$b^4F_{3\frac{1}{2}}-z^6G^0_{3\frac{1}{2}}$
12	4524.72	3	22,094.64	
4	4519.283v	40	22,121.22	$z^4D^0_{2\frac{1}{2}}-g^4F_{2\frac{1}{2}}$
9	4517.96	1	22,127.70	$z^2G^0_{3\frac{1}{2}}-f^4H_{4\frac{1}{2}}$
4	4517.094v	4–III	22,131.94	$z^6F^0_{\frac{1}{2}}-e^6F_{1\frac{1}{2}}$
4	4514.177v	1–IV	22,146.24	$z^4D^0_{2\frac{1}{2}}-f^2F_{3\frac{1}{2}}$
11	4508.664	1	22,173.32	$z^4D^0_{\frac{1}{2}}-e^4P_{\frac{1}{2}}$
4	4500.562v	5	22,213.24	$z^4D^0_{2\frac{1}{2}}-e^4G_{3\frac{1}{2}}$
5	4499.261	3	22,219.66	$b^2P_{\frac{1}{2}}-w^4D^0_{\frac{1}{2}}$
4	4494.746v	2–IV	22,241.98	$c^2D_{1\frac{1}{2}}-u^2F^0_{2\frac{1}{2}}$
9	4493.05	1	22,250.38	$y^4D^0_{2\frac{1}{2}}-i^4F_{2\frac{1}{2}}$
5	4492.076	5	22,255.20	$z^6D^0_{3\frac{1}{2}}-f^4F_{4\frac{1}{2}}$ $(y^4D^0_{3\frac{1}{2}}-f^4D_{2\frac{1}{2}})$
5	4490.309	2	22,263.96	$z^6G^0_{4\frac{1}{2}}-f^4F_{3\frac{1}{2}}$
9	4489.40	1	22,268.46	$z^6G^0_{2\frac{1}{2}}-f^4F_{2\frac{1}{2}}$
4	4486.706v	50	22,281.84	$b^2D_{2\frac{1}{2}}-w^4F^0_{2\frac{1}{2}}$
4	4484.513v	60	22,292.73	$a^2F_{3\frac{1}{2}}-z^4G^0_{3\frac{1}{2}}$
4	4483.918v	3–III	22,295.69	$z^6F^0_{\frac{1}{2}}-e^6F_{\frac{1}{2}}$
5	4483.586	20h	22,297.34	$z^4G^0_{5\frac{1}{2}}-e^4H_{6\frac{1}{2}}$
11	4481.577	1	22,307.34	$b^4F_{3\frac{1}{2}}-z^6G^0_{2\frac{1}{2}}$
5	4478.657	5	22,321.87	$b^2P_{\frac{1}{2}}-z^2P^0_{1\frac{1}{2}}$
4	4478.319v	4–III	22,323.56	$z^6F^0_{1\frac{1}{2}}-e^6F_{1\frac{1}{2}}$
4	4477.212v	30wh	22,329.08	$z^4G^0_{5\frac{1}{2}}-e^4H_{5\frac{1}{2}}$ $y^4D^0_{3\frac{1}{2}}-f^6F_{4\frac{1}{2}}$
4	4471.809v	1–III	22,356.06	$b^2G_{4\frac{1}{2}}-z^2H^0_{5\frac{1}{2}}$
4	4471.550v	5–III	22,357.36	$z^6F^0_{2\frac{1}{2}}-e^6F_{2\frac{1}{2}}$
10	4471.271	1	22,358.75	$z^4G^0_{5\frac{1}{2}}-e^4G_{5\frac{1}{2}}$
11	4471.046	1	22,359.88	$z^4G^0_{3\frac{1}{2}}-f^2F_{3\frac{1}{2}}$
4	4469.547v	15–III	22,367.38	$z^6F^0_{4\frac{1}{2}}-e^6F_{4\frac{1}{2}}$
9	4467.53	1	22,377.47	$y^4D^0_{\frac{1}{2}}-6_{\frac{1}{2}}$
4	4466.881v	10–III	22,380.72	$z^6F^0_{3\frac{1}{2}}-e^6F_{3\frac{1}{2}}$
4	4465.817v	5	22,386.06	$z^4G^0_{3\frac{1}{2}}-e^4H_{4\frac{1}{2}}$
11	4460.725	1	22,411.61	$z^2F^0_{3\frac{1}{2}}-f^4D_{2\frac{1}{2}}$
4	4458.594v	10	22,422.32	$z^4F^0_{3\frac{1}{2}}-g^4F_{3\frac{1}{2}}$
11	4458.242	1	22,424.09	$y^4D^0_{2\frac{1}{2}}-2_{1\frac{1}{2}}$
11	4452.166	1	22,454.70	$b^4F_{4\frac{1}{2}}-z^6G^0_{4\frac{1}{2}}$
9	4450.79	1	22,461.61	$z^6D^0_{2\frac{1}{2}}-f^4F_{3\frac{1}{2}}$
4	4445.711v	4–III	22,487.29	$z^6F^0_{1\frac{1}{2}}-e^6F_{\frac{1}{2}}$
4	4445.049v	2–IV	22,490.65	$z^4F^0_{3\frac{1}{2}}-e^4G_{4\frac{1}{2}}$
4	4441.952v	5	22,506.33	$a^2F_{3\frac{1}{2}}-z^4D^0_{2\frac{1}{2}}$
9	4441.02	1	22,511.05	$z^4D^0_{2\frac{1}{2}}-e^2D_{2\frac{1}{2}}$? $y^4D^0_{2\frac{1}{2}}-f^4G_{2\frac{1}{2}}$
4	4437.872v	2	22,527.02	$z^4D^0_{1\frac{1}{2}}-f^2F_{2\frac{1}{2}}$
4	4436.193v	15	22,535.55	$b^2D_{1\frac{1}{2}}-w^2D^0_{2\frac{1}{2}}$ $z^2G^0_{3\frac{1}{2}}-f^4H_{3\frac{1}{2}}$
4	4431.608v	3–III	22,558.86	$b^2G_{3\frac{1}{2}}-x^2G^0_{3\frac{1}{2}}$
9	4429.33	1	22,570.46	$y^4D^0_{1\frac{1}{2}}-5_{1\frac{1}{2},2\frac{1}{2}}$
9	4422.00	1	22,607.87	$z^2F^0_{2\frac{1}{2}}-e^6G_{1\frac{1}{2}}$ $c^2D_{2\frac{1}{2}}-12^0_{1\frac{1}{2}}$
4	4421.337v	4–III	22,611.26	$z^6F^0_{5\frac{1}{2}}-e^6F_{4\frac{1}{2}}$
9	4420.86	1	22,613.70	$z^4G^0_{2\frac{1}{2}}-e^4H_{3\frac{1}{2}}$
9	4420.43	1	22,615.90	$z^2G^0_{4\frac{1}{2}}-f^4H_{5\frac{1}{2}}$
10	4418.000	<1	22,628.34	$z^6G^0_{2\frac{1}{2}}-f^4F_{1\frac{1}{2}}$ $y^4D^0_{2\frac{1}{2}}-f^6F_{2\frac{1}{2}}$
9	4417.76	1	22,629.57	$b^2P_{1\frac{1}{2}}-z^2P^0_{\frac{1}{2}}$
4	4417.398v	5–III	22,631.43	$z^6F^0_{2\frac{1}{2}}-e^6F_{1\frac{1}{2}}$
4	4416.482v	3	22,636.12	$a^2H_{4\frac{1}{2}}-z^2H^0_{4\frac{1}{2}}$
4	4412.727v	1	22,655.38	$z^6D^0_{1\frac{1}{2}}-f^4F_{2\frac{1}{2}}$
7	4411.786	1	22,660.21	$a^2F_{3\frac{1}{2}}-z^4G^0_{2\frac{1}{2}}$
4	4411.685v	0	22,660.73	$z^4G^0_{2\frac{1}{2}}-g^2F_{3\frac{1}{2}}$
9	4410.02	1	22,669.29	$z^4G^0_{2\frac{1}{2}}-e^4G_{2\frac{1}{2}}$
4	4404.932v	3–III	22,695.47	$b^2P_{\frac{1}{2}}-x^2D^0_{1\frac{1}{2}}$
9	4404.28	1	22,698.83	$b^2P_{1\frac{1}{2}}-x^4G^0_{2\frac{1}{2}}$
4	4402.674v	3–III	22,707.11	$z^4F^0_{4\frac{1}{2}}-e^4D_{3\frac{1}{2}}$
10	4396.717	1	22,737.88	$b^2D_{2\frac{1}{2}}-y^4P^0_{1\frac{1}{2}}$
4	4395.871v	1–IIIA	22,742.25	$b^2P_{1\frac{1}{2}}-w^4D^0_{2\frac{1}{2}}$
9	4394.54	1	22,749.15	$b^4F_{4\frac{1}{2}}-z^6G^0_{3\frac{1}{2}}$
4	4391.890v	3–III	22,762.86	$b^2P_{1\frac{1}{2}}-w^4D^0_{1\frac{1}{2}}$
4	4391.568v	4–III	22,764.54	$z^6F^0_{3\frac{1}{2}}-e^6F_{2\frac{1}{2}}$
4	4387.915v	3	22,783.49	$z^4F^0_{3\frac{1}{2}}-e^4D_{2\frac{1}{2}}$
9	4381.50	1	22,816.84	$z^4F^0_{2\frac{1}{2}}-e^4P_{1\frac{1}{2}}$
4	4380.07v	5–III?	22,824.28	$z^4F^0_{4\frac{1}{2}}-g^4F_{4\frac{1}{2}}$
4	4379.266v	1	22,828.49	$z^4F^0_{4\frac{1}{2}}-e^4H_{5\frac{1}{2}}$
9	4376.26	1	22,844.17	$z^4G^0_{4\frac{1}{2}}-e^2H_{5\frac{1}{2}}$
4	4375.540v	2–III	22,847.92	$b^2G_{4\frac{1}{2}}-x^2G^0_{4\frac{1}{2}}$
10	4375.103	1	22,850.20	$b^2D_{1\frac{1}{2}}-x^4P^0_{2\frac{1}{2}}$
4	4374.918v	3–III	22,851.17	$z^6F^0_{4\frac{1}{2}}-e^6F_{3\frac{1}{2}}$

TABLE VIII.—*Continued.*

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
4	4374.446v	2wh	22,853.64	$z^4F^0_{2\frac12}-g^4F_{2\frac12}$
4	4373.634v	6–IV	22,857.88	$z^4F^0_{4\frac12}-e^4G_{5\frac12}$
9	4372.08	1	22,866.00	$y^4D^0_{2\frac12}-e^6H_{3\frac12}$
4	4371.130v	5–III	22,870.96	$a^2D_{2\frac12}-x^4D^0_{3\frac12}$
9	4368.08	1	22,886.94	$z^4G^0_{4\frac12}-e^2G_{4\frac12}$
9	4367.03	1	22,892.44	$z^4G^0_{4\frac12}-e^4G_{3\frac12}$
4	4366.213v	2	22,896.73	$z^6D^0_{4\frac12}-f^4F_{4\frac12}$
4	4361.913v	2h	22,919.30	$a^4F_{2\frac12}-z^6F^0_{3\frac12}$
5	4361.031	2	22,923.94	$a^4F_{1\frac12}-z^6F^0_{2\frac12}$
4	4360.830v	10	22,924.99	$b^2P_{1\frac12}-x^2F^0_{2\frac12}$
4	4359.426v	15	22,932.38	$z^6D^0_{3\frac12}-f^4F_{3\frac12}$
9	4358.96	1	22,934.83	$b^2P_{1\frac12}-w^4D^0_{\frac12}$
9	4358.08	1	22,939.46	$z^2F^0_{4\frac12}-5_{1\frac12,2\frac12}$
5	4357.173	10	22,944.23	$y^4D^0_{2\frac12}-4_{2\frac12}$
4	4356.900v	3	22,945.67	$z^4F^0_{2\frac12}-e^4G_{3\frac12}$
4	4353.824v	4	22,961.88	$y^4D^0_{3\frac12}-e^6G_{3\frac12}$?
4	4350.630v	1	22,978.74	$z^6D^0_{2\frac12}-f^4F_{2\frac12}$
9	4350.10	1	22,981.54	$z^4G^0_{3\frac12}-e^4H_{3\frac12}$
10	4343.724	<1	23,015.27	$z^6D^0_{1\frac12}-f^4F_{1\frac12}$
4	4342.486v	0	23,021.83	$z^4D^0_{2\frac12}-f^2F_{2\frac12}$
9	4341.19	1	23,028.71	$z^4G^0_{3\frac12}-g^2F_{3\frac12}$
7	4340.240	1n	23,033.75	$b^2D_{1\frac12}-v^2D^0_{1\frac12}$ $z^2F^0_{3\frac12}-i^4F_{2\frac12}$
4	4339.625v	5–III	23,037.01	$b^2P_{1\frac12}-z^2P^0_{1\frac12}$
9	4339.03	1	23,040.17	$z^4G^0_{3\frac12}-e^2H_{4\frac12}$
9	4337.54	2	23,048.09	$z^4F^0_{2\frac12}-e^4D_{1\frac12}$
9	4334.37	1	23,064.94	$a^2H_{4\frac12}-z^2H^0_{5\frac12}$
9	4333.14	1	23,071.49	$z^4F^0_{1\frac12}-e^4D_{\frac12}$
9	4331.64	1	23,079.55	$a^4P_{2\frac12}-y^2D^0_{1\frac12}$
4	4331.231v	3–IV	23,081.66	$c^2D_{2\frac12}-u^2F^0_{3\frac12}$
4	4326.406v	0	23,107.40	$b^2D_{1\frac12}-v^4D^0_{1\frac12}$
9	4324.32	1	23,118.54	$z^2F^0_{3\frac12}-e^6G_{3\frac12}$
4	4320.385v	2	23,139.60	$z^4F^0_{1\frac12}-g^4F_{1\frac12}$
4	4313.403v	0	23,177.05	$b^2D_{1\frac12}-v^4D^0_{2\frac12}$
4	4310.093v	2	23,194.85	$a^2P_{\frac12}-z^4P^0_{\frac12}$
4	4309.437v	2	23,198.38	$z^6F^0_{3\frac12}-f^4F_{4\frac12}$
4	4307.439v	2–V	23,209.15	$z^4F^0_{1\frac12}-e^4G_{2\frac12}$
4	4303.235v	3–IA	23,231.82	$a^4F_{1\frac12}-z^6F^0_{1\frac12}$
4	4301.026v	3	23,243.75	$z^4F^0_{2\frac12}-e^2D_{2\frac12}$
4	4297.928v	2	23,260.50	$z^4D^0_{1\frac12}-g^2F_{2\frac12}$
4	4292.250v	3h	23,291.27	$a^2H_{4\frac12}-x^2G^0_{3\frac12}$
9	4291.94	1	23,292.95	$z^4F^0_{3\frac12}-g^4F_{2\frac12}$
7	4290.206	1	23,302.37	$b^2D_{1\frac12}-w^2D^0_{1\frac12}$
9	4288.54	1	23,311.42	$z^4G^0_{5\frac12}-e^2G_{4\frac12}$
4	4287.381v	2	23,317.72	$z^4F^0_{3\frac12}-f^2F_{3\frac12}$
4	4285.782v	6–I	23,326.42	$a^4F_{2\frac12}-z^6F^0_{2\frac12}$
10	4283.33	—	23,339.78	$b^2P_{\frac12}-w^4F^0_{1\frac12}$
4	4282.567v	1	23,343.94	$z^4F^0_{3\frac12}-e^4H_{4\frac12}$
4	4276.107v	2	23,379.20	$z^4F^0_{3\frac12}-e^2G_{4\frac12}$
7	4275.069	3	23,384.88	$z^4F^0_{3\frac12}-e^4G_{3\frac12}$
4	4270.427v	2	23,410.30	$a^2F_{2\frac12}-z^2F^0_{3\frac12}$
4	4268.446v	2–III	23,421.16	$b^2P_{1\frac12}-x^2D^0_{2\frac12}$
5	4268.032	3h	23,423.43	$a^4F_{1\frac12}-z^6F^0_{\frac12}$
9	4267.18	1	23,428.11	$c^2D_{2\frac12}-v^2P^0_{1\frac12}$
10	4264.642	—	23,442.05	$b^2P_{\frac12}-y^4P^0_{1\frac12}$
4	4263.743v	2	23,447.00	$z^4G^0_{4\frac12}-e^4H_{3\frac12}$
10	4263.333	<1	23,449.25	$z^6D^0_{3\frac12}-f^4F_{2\frac12}$
4	4259.865v	2	23,468.34	$z^6F^0_{2\frac12}-f^4F_{3\frac12}$
9	4255.22	1	23,493.96	$z^4G^0_{4\frac12}-g^2F_{3\frac12}$
4	4252.302v	12–I	23,510.08	$a^4F_{3\frac12}-z^6F^0_{3\frac12}$
4	4248.188v	2–V	23,532.84	$b^2D_{1\frac12}-y^2P^0_{1\frac12}$
4	4245.578v	2–V	23,547.31	$z^4F^0_{2\frac12}-g^2F_{3\frac12}$
5	4241.886	2–III	23,567.81	$a^2D_{2\frac12}-x^4D^0_{2\frac12}$
4	4241.516v	2–V	23,569.86	$z^4D^0_{3\frac12}-h^4F_{4\frac12}$
9	4240.79	1	23,573.90	$z^6D^0_{4\frac12}-f^4F_{3\frac12}$
4	4238.442v	2	23,586.96	$z^4G^0_{4\frac12}-e^2G_{3\frac12}$
4	4237.341v	1–III	23,593.08	$a^2P_{1\frac12}-z^4P^0_{1\frac12}$
7	4233.996‡	2–IA 2–IA	23,611.72	$a^4F_{4\frac12}-z^6F^0_{5\frac12}$
4	4229.955v	3h	23,634.28	$a^4F_{2\frac12}-z^6F^0_{1\frac12}$
11	4228.861	1	23,640.39	$z^4F^0_{2\frac12}-e^2G_{3\frac12}$
9	4228.54	1	23,642.19	$c^2D_{2\frac12}-s^4D^0_{2\frac12}$
4	4225.110v	2–III	23,661.38	
4	4223.768v	0	23,668.89	$z^6F^0_{4\frac12}-f^4F_{4\frac12}$
10	4222.254	<1	23,677.39	$z^6F^0_{1\frac12}-f^4F_{2\frac12}$
9	4221.09	1	23,683.92	$z^4D^0_{\frac12}-h^4F_{1\frac12}$
4	4220.436v	2	23,687.59	$c^2D_{2\frac12}-15^0_{3\frac12}$
7	4220.274	2	23,688.50	$b^2G_{4\frac12}-u^4D^0_{3\frac12}$
4	4214.872v	2	23,718.86	
4	4210.086v	0	23,745.82	$z^4D^0_{2\frac12}-h^4F_{3\frac12}$
9	4208.74	1	23,753.42	$z^4D^0_{2\frac12}-f^4D_{3\frac12}$
4	4207.611v	2h	23,759.79	$a^2H_{5\frac12}-z^2H^0_{5\frac12}$
11	4206.143	1	23,768.08	$b^2D_{2\frac12}-w^2D^0_{2\frac12}$
10	4204.85	<1	23,775.39	$z^4F^0_{4\frac12}-e^4H_{4\frac12}$
11	4204.057	1	23,779.87	$z^4F^0_{1\frac12}-e^2D_{1\frac12}$?
5	4198.425	3h	23,811.77	$a^4F_{3\frac12}-z^6D^0_{4\frac12}$
12	4197.85	2	23,815.03	$z^4D^0_{1\frac12}-h^4F_{2\frac12}$
9	4196.84	1	23,820.76	$z^2G^0_{4\frac12}-e^6H_{3\frac12}$?
9	4194.87	1–III	23,831.95	
5	4194.344	5	23,834.94	
4	4192.856v	3h	23,843.40	$a^2D_{2\frac12}-z^4S^0_{1\frac12}$
10	4192.473	<1	23,845.57	$z^6F^0_{\frac12}-f^4F_{1\frac12}$
4	4190.712v	20–I	23,855.60	$a^4F_{4\frac12}-z^6F^0_{4\frac12}$
9	4189.50	1	23,862.50	$a^4F_{2\frac12}-z^6D^0_{3\frac12}$
4	4187.246v	4–II	23,875.34	$a^2D_{1\frac12}-x^4D^0_{2\frac12}$ $(z^6F^0_{3\frac12}-f^4F_{3\frac12})$
9	4184.50	1	23,891.01	$y^4D^0_{2\frac12}-g^4P_{2\frac12}$
4	4180.695v	0	23,912.75	$z^6F^0_{5\frac12}-f^4F_{4\frac12}$
4	4179.226v	2–III	23,921.14	$b^2G_{3\frac12}-w^2F^0_{2\frac12}$
9	4177.59	1	23,930.52	$a^4F_{1\frac12}-z^6D^0_{2\frac12}$
4	4176.039v	0	23,939.42	$z^4F^0_{3\frac12}-e^4H_{3\frac12}$
10	4172.569	1	23,959.32	$z^4G^0_{3\frac12}-h^4F_{3\frac12}$
4	4170.888v	4	23,968.98	$z^4G^0_{3\frac12}-g^2F_{2\frac12}$
9	4168.44	1	23,983.05	$z^4D^0_{1\frac12}-h^4F_{1\frac12}$
10	4168.114	<1	23,984.93	$z^6F^0_{2\frac12}-f^4F_{2\frac12}$?
9	4167.85	1	23,986.45	$z^4F^0_{3\frac12}-g^2F_{3\frac12}$
9	4167.61	1	23,987.83	$z^4D^0_{2\frac12}-f^4P_{2\frac12}$
5	4162.169	2–IV	24,019.18	$z^4G^0_{5\frac12}-h^4F_{4\frac12}$
9	4160.70	8 Co II?	24,027.67	$c^2D_{1\frac12}-19^0_{1\frac12}$
4	4158.420v	4–III	24,040.84	$b^2G_{4\frac12}-w^2F^0_{3\frac12}$
9	4156.91	1	24,049.57	$a^2D_{2\frac12}-x^4D^0_{1\frac12}$
10	4156.646	—	24,051.10	$b^2D_{2\frac12}-v^4D^0_{3\frac12}$
10	4155.97	—	24,055.01	$b^2P_{1\frac12}-w^4F^0_{1\frac12}$
9	4151.74	1	24,079.52	$z^4F^0_{3\frac12}-e^2G_{3\frac12}$
9	4151.20	1	24,082.65	$b^2D_{2\frac12}-x^4P^0_{2\frac12}$ $z^4D^0_{2\frac12}-63$
4	4150.429v	2–IIA	24,087.13	$b^4F_{2\frac12}-z^4F^0_{3\frac12}$
4	4139.452v	3–III	24,151.00	$a^2D_{1\frac12}-z^4S^0_{1\frac12}$
10	4138.393	1	24,157.18	$b^2P_{1\frac12}-y^4P^0_{1\frac12}$
5	4132.155	4–I	24,193.64	$a^2F_{2\frac12}-y^4D^0_{2\frac12}$
9	4131.85	3–V	24,195.43	
7	4130.538	1n	24,203.12	$b^4F_{3\frac12}-z^4F^0_{4\frac12}$
5	4122.271	2–III	24,251.66	$a^2H_{5\frac12}-x^2G^0_{4\frac12}$
4	4121.318v	60–II	24,257.26	$a^2F_{3\frac12}-z^2G^0_{4\frac12}$
4	4118.774v	50–II	24,272.25	$a^2F_{2\frac12}-z^2G^0_{3\frac12}$
4	4110.532v	25–I	24,320.91	$a^2F_{2\frac12}-z^2F^0_{2\frac12}$
5	4110.073	5h	24,323.63	$z^4G^0_{2\frac12}-h^4F_{1\frac12}$
7	4109.706	1d–(IA)	24,325.80	$a^4F_{4\frac12}-z^6F^0_{3\frac12}$ $c^2D_{1\frac12}-t^2F^0_{2\frac12}$
11	4108.488	1	24,333.01	$a^4F_{2\frac12}-z^6D^0_{2\frac12}$
9	4108.34	1	24,333.89	$z^4D^0_{2\frac12}-f^4D_{2\frac12}$
10	4106.462	<1	24,345.02	$z^6F^0_{2\frac12}-f^4F_{1\frac12}$
10	4106.306	<1	24,345.94	$z^6F^0_{4\frac12}-f^4F_{3\frac12}$
4	4104.743v	4–III	24,355.21	$a^2P_{\frac12}-z^2P^0_{\frac12}$
4	4104.418v	2–III	24,357.14	$a^2D_{1\frac12}-x^4D^0_{1\frac12}$
4	4097.193v	2	24,400.09	$z^4D^0_{3\frac12}-h^4F_{3\frac12}$
4	4095.925v	2–V	24,407.64	$z^4D^0_{3\frac12}-f^4D_{3\frac12}$
5	4093.053	2–V	24,424.77	$z^4G^0_{4\frac12}-h^4F_{3\frac12}$
5	4092.848	3–III	24,426.00	$b^4P_{\frac12}-z^4S^0_{1\frac12}$
4	4092.386v	25–I	24,428.75	$a^2F_{3\frac12}-z^2F^0_{3\frac12}$
5	4090.354	20h	24,440.89	
4	4088.291v	1–IA	24,453.22	$a^4F_{3\frac12}-z^6D^0_{3\frac12}$
9	4086.92	1	24,461.42	$z^4D^0_{1\frac12}-i^4F_{2\frac12}$?
4	4086.300v	15–II	24,465.14	$b^4P_{2\frac12}-x^4D^0_{3\frac12}$
4	4084.113v	2	24,478.24	$z^4F^0_{2\frac12}-h^4F_{3\frac12}$
9	4083.63	1–IV	24,481.13	
4	4082.593v	2–IA	24,487.35	$b^4F_{1\frac12}-z^4F^0_{1\frac12}$
4	4081.440v	2–V	24,494.27	$z^4D^0_{3\frac12}-i^4F_{4\frac12}$
9	4079.42	1	24,506.39	$z^4D^0_{1\frac12}-e^6P_{1\frac12}$
5	4077.406	2–V	24,518.49	$z^4F^0_{4\frac12}-h^4F_{4\frac12}$
11	4077.382	2–III	24,518.64	
4	4076.565v	3h	24,523.56	$z^4G^0_{3\frac12}-h^4F_{2\frac12}$
4	4076.124v	3–IA	24,526.21	$b^4F_{2\frac12}-z^4F^0_{2\frac12}$
4	4069.540v	1–IV	24,565.89	$z^4D^0_{2\frac12}-f^4G_{3\frac12}$
4	4068.541v	8–II	24,571.92	$b^4P_{1\frac12}-x^4D^0_{2\frac12}$
4	4066.365v	15–I	24,585.07	$a^2F_{3\frac12}-y^4D^0_{3\frac12}$
4	4063.174v	3h	24,604.38	$b^4F_{2\frac12}-z^4D^0_{3\frac12}$ $c^2D_{1\frac12}-u^2D^0_{1\frac12}$
9	4061.76	1	24,612.94	$z^4D^0_{2\frac12}-1_{2\frac12}$
10	4059.321	1–(IA)	24,627.73	$a^4F_{4\frac12}-z^6D^0_{4\frac12}$
7	4058.762	1	24,631.12	$a^2D_{1\frac12}-x^4D^0_{\frac12}$
4	4058.600v	6–II	24,632.11	$b^4P_{\frac12}-x^4D^0_{1\frac12}$
4	4058.183v	8–I	24,634.64	$b^4F_{3\frac12}-z^4F^0_{3\frac12}$
4	4057.195v	5–I	24,640.63	$a^4F_{1\frac12}-z^6G^0_{2\frac12}$
5	4056.979	2–V	24,641.95	$z^4D^0_{3\frac12}-f^4P_{2\frac12}$
4	4054.618v	2–(IA)	24,656.30	$a^4F_{2\frac12}-z^6D^0_{1\frac12}$
4	4053.918v	1–IV	24,660.55	$a^2P_{\frac12}-w^4D^0_{\frac12}$
4	4052.912v	3–III	24,666.68	$z^4G^0_{5\frac12}-f^4G_{5\frac12}$
4	4049.283v	4	24,688.78	$b^2P_{\frac12}-x^4P^0_{1\frac12}$
4	4045.386v	20–I	24,712.56	$a^2F_{2\frac12}-y^4G^0_{3\frac12}$
4	4040.794v	2–III	24,740.65	$a^2P_{1\frac12}-z^2P^0_{\frac12}$
5	4040.647	2	24,741.55	$b^2P_{\frac12}-x^4P^0_{\frac12}$
4	4038.963v	0	24,751.86	$b^2D_{2\frac12}-v^2D^0_{2\frac12}$
4	4037.198v	2	24,762.68	$a^2P_{\frac12}-z^2P^0_{1\frac12}$
4	4036.763v	0	24,765.35	$b^2D_{2\frac12}-y^2P^0_{1\frac12}$
4	4035.542v	8–III	24,772.84	$z^4G^0_{5\frac12}-f^4H_{6\frac12}$
5	4034.490	250rMn	24,779.30	$(z^4G^0_{3\frac12}-f^4G_{3\frac12})$
4	4027.032v	10–I	24,825.19	$a^4F_{2\frac12}-z^6G^0_{3\frac12}$
10	4025.497	1	24,834.66	$z^4D^0_{\frac12}-f^6F_{1\frac12}$
4	4023.399v	4–III	24,847.61	$b^4P_{1\frac12}-z^4S^0_{1\frac12}$

‡ Coincides with V I.

TABLE VIII.—*Continued.*

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
4	4020.898v	20–I	24,863.06	$b^4F_{4\frac12}-z^4F^0_{4\frac12}$
4	4019.288v	5–I	24,873.02	$b^4F_{2\frac12}-z^4F^0_{1\frac12}$ $(b^4F_{1\frac12}-z^4D^0_{2\frac12})$
5	4019.140	5	24,873.94	$a^2P_{1\frac12}-w^4D^0_{1\frac12}$
7	4016.830	2–V	24,888.24	$z^4G^0_{4\frac12}-f^4G_{4\frac12}$
4	4015.222v	2	24,898.21	
4	4013.942v	7–II	24,906.15	$b^4P_{\frac12}-x^4D^0_{\frac12}$
4	4012.143v	2	24,917.32	$z^4F^0_{3\frac12}-h^4F_{3\frac12}$
4	4011.089v	2–IA	24,923.86	$a^4F_{3\frac12}-z^6D^0_{2\frac12}$
4	4010.931v	3h	24,924.85	$z^4F^0_{3\frac12}-f^4D_{3\frac12}$
4	4007.923v	1–III	24,943.55	$z^4G^0_{5\frac12}-i^4F_{4\frac12}$
11	4007.273	1	24,947.60	$z^4G^0_{3\frac12}-e^6G_{4\frac12}$
4	4003.596v	2–III	24,970.51	$b^2P_{\frac12}-v^2D^0_{1\frac12}$
11	3999.180	1	24,998.08	$z^4D^0_{2\frac12}-e^6D_{2\frac12}$
7	3998.554	1n	25,001.99	$a^2F_{2\frac12}-z^2D^0_{2\frac12}$
4	3997.901v	40–II	25,006.08	$a^2F_{2\frac12}-y^4F^0_{2\frac12}$
11	3997.051	1	25,011.40	$z^4F^0_{3\frac12}-i^4F_{4\frac12}$
4	3995.306v	60–II	25,022.32	$a^2F_{3\frac12}-y^4G^0_{4\frac12}$
4	3994.542v	6–I	25,027.11	$b^4F_{1\frac12}-z^4G^0_{2\frac12}$
9	3992.36	1	25,040.79	$z^4D^0_{2\frac12}-e^6G_{3\frac12}$
10	3992.014	1	25,042.95	$a^4F_{2\frac12}-z^6G^0_{2\frac12}$
5	3991.831	15	25,044.10	$b^2P_{\frac12}-v^4D^0_{1\frac12}$
4	3991.684v	6–I	25,045.03	$b^4F_{2\frac12}-z^4G^0_{3\frac12}$
4	3991.528v	4–IV	25,046.00	$z^4G^0_{4\frac12}-f^4H_{5\frac12}$
4	3990.299v	6–II	25,053.72	$b^4P_{1\frac12}-x^4D^0_{1\frac12}$
11	3989.687	1	25,057.56	$z^4D^0_{3\frac12}-e^6D_{3\frac12}$?
4	3988.884v	2	25,062.61	$z^4G^0_{2\frac12}-f^4G_{2\frac12}$
4	3987.117v	6–I	25,073.71	$b^4F_{3\frac12}-z^4F^0_{2\frac12}$
7	3985.449	2h	25,084.21	$z^6D^0_{\frac12}-6_{\frac12}$
4	3979.518v	10–I	25,121.59	$a^4F_{3\frac12}-z^6G^0_{4\frac12}$
5	3978.864	4–V	25,125.72	$z^4G^0_{3\frac12}-f^4H_{4\frac12}$
4	3978.650v	10–I	25,127.07	$b^4F_{3\frac12}-z^4G^0_{4\frac12}$
9	3977.75	1	25,132.76	$b^2G_{4\frac12}-v^2F^0_{3\frac12}$
4	3977.184v	3–III	25,136.33	$a^2P_{\frac12}-x^2D^0_{1\frac12}$
4	3975.320v	3–III	25,148.12	$a^2P_{1\frac12}-z^2P^0_{1\frac12}$
4	3974.726v	10–I	25,151.88	$b^4F_{3\frac12}-z^4D^0_{3\frac12}$
5	3973.561	15Ni?	25,159.25	$z^4F^0_{3\frac12}-f^4P_{2\frac12}$
4	3973.144v	10–II	25,161.89	$b^4P_{2\frac12}-x^4D^0_{2\frac12}$
4	3972.506v	6–III	25,165.93	$z^4F^0_{4\frac12}-f^4G_{5\frac12}$ $(z^4G^0_{2\frac12}-f^4H_{3\frac12})$
4	3969.116v	8–III	25,187.43	$b^2P_{1\frac12}-w^2D^0_{2\frac12}$
9	3968.61	1–IIA	25,190.64	$a^2D_{2\frac12}-z^4P^0_{2\frac12}$ $a^4F_{2\frac12}-z^6G^0_{1\frac12}$
10	3966.438	—	25,204.43	$a^2D_{2\frac12}-z^4P^0_{1\frac12}$
4	3965.236v	2–IIA	25,212.07	$a^2F_{3\frac12}-y^4D^0_{2\frac12}$
7	3965.011	1–IIA	25,213.50	$a^2F_{2\frac12}-y^4G^0_{2\frac12}$
4	3960.997v	6–II	25,239.05	$b^2P_{\frac12}-w^2D^0_{1\frac12}$
9	3958.60	1	25,254.34	$z^4G^0_{3\frac12}-e^6G_{3\frac12}$
4	3957.928v	15–II	25,258.62	$b^4F_{2\frac12}-z^4D^0_{2\frac12}$
7	3957.629	10	25,260.53	$z^4F^0_{2\frac12}-i^4F_{3\frac12}$
9	3956.59	1	25,267.17	$z^4D^0_{3\frac12}-1_{2\frac12}$
4	3956.270v	15	25,269.21	$a^4F_{4\frac12}-z^6D^0_{3\frac12}$
4	3954.954v	1	25,277.62	$z^4D^0_{1\frac12}-5_{1\frac12,2\frac12}$
7	3953.612	1n	25,286.20	$b^2P_{\frac12}-v^4D^0_{\frac12}$
5	3952.917	25–II	25,290.64	$a^2F_{3\frac12}-z^2G^0_{3\frac12}$
5	3952.326	8–I	25,294.42	$b^4F_{4\frac12}-z^4F^0_{3\frac12}$
4	3951.717v	4h	25,298.32	$z^4F^0_{2\frac12}-f^4G_{3\frac12}$
4	3947.125v	3–II	25,327.75	$b^4P_{1\frac12}-x^4D^0_{\frac12}$
4	3946.633v	2–II	25,330.91	$b^4P_{1\frac12}-2^0_{2\frac12}$
4	3945.326v	15–I	25,339.30	$a^2F_{3\frac12}-z^2F^0_{2\frac12}$
5	3944.950	1–IV	25,341.72	$z^4F^0_{1\frac12}-i^4F_{2\frac12}$
9	3944.41	1	25,345.19	$z^4F^0_{2\frac12}-1_{2\frac12}$
4	3942.684v	2–IV	25,356.28	$z^4F^0_{4\frac12}-f^4D_{3\frac12}$
4	3941.728v	20–II	25,362.43	$b^4F_{4\frac12}-z^4G^0_{5\frac12}$
4	3940.887v	12–I	25,367.84	$b^4F_{1\frac12}-z^4D^0_{1\frac12}$
9	3939.07	2–V	25,379.54	$z^4F^0_{4\frac12}-e^6D_{4\frac12}$?
4	3938.856v	3–V	25,380.92	$z^4F^0_{3\frac12}-f^4G_{4\frac12}$
5	3937.949	7h	25,386.76	$z^4F^0_{1\frac12}-e^6P_{1\frac12}$
4	3935.964v	30–II	25,399.58	$a^2F_{3\frac12}-y^4F^0_{4\frac12}$
5	3935.287	1–III	25,403.94	$b^2P_{1\frac12}-x^4P^0_{1\frac12}$
4	3934.712v	1–III	25,407.65	$b^2G_{3\frac12}-v^2F^0_{2\frac12}$
4	3933.918v	6–I	25,412.78	$b^4F_{2\frac12}-z^4G^0_{2\frac12}$
5	3933.654	80Ca?	25,414.48	
7	3933.159	1n	25,417.69	$z^4G^0_{2\frac12}-e^6H_{3\frac12}$
10	3930.076	1	25,437.63	$b^4P_{2\frac12}-z^4S^0_{1\frac12}$
4	3929.256v	3–III	25,442.93	$z^4F^0_{4\frac12}-i^4F_{4\frac12}$
4	3925.151v	3–III	25,469.54	$b^2P_{\frac12}-y^2P^0_{1\frac12}$
4	3922.755v	7–I	25,485.10	$a^2F_{2\frac12}-y^4F^0_{2\frac12}$
4	3921.104v	1–IV	25,495.83	$z^4G^0_{2\frac12}-4_{2\frac12}$
4	3920.729v	4–II	25,498.27	$a^2D_{1\frac12}-z^4P^0_{2\frac12}$
5	3920.581	2–III	25,499.23	$a^2D_{1\frac12}-z^4P^0_{\frac12}$
4	3920.135v	2–III	25,502.13	$b^2P_{1\frac12}-x^4P^0_{2\frac12}$
5	3919.635	4	25,505.38	$z^4F^0_{3\frac12}-f^4D_{2\frac12}$
10	3918.627	1	25,511.94	$a^2D_{1\frac12}-z^4P^0_{1\frac12}$
4	3917.115v	8–II	25,521.79	$a^2P_{1\frac12}-x^2D^0_{1\frac12}$
4	3915.503v	2	25,532.30	$a^2P_{1\frac12}-x^2D^0_{2\frac12}$
4	3909.933v	15–I	25,568.67	$a^4F_{4\frac12}-z^6G^0_{5\frac12}$
9	3908.57	1	25,577.59	$z^4G^0_{3\frac12}-e^6H_{4\frac12}$
4	3906.287v	10–I	25,592.54	$b^4F_{3\frac12}-z^4G^0_{3\frac12}$
7	3905.540	2–V	25,597.43	
7	3904.790	3–V	25,602.35	$z^4F^0_{1\frac12}-f^4G_{2\frac12}$
4	3904.058v	2–V	25,607.15	$z^4G^0_{5\frac12}-e^6H_{6\frac12}$
7	3902.390	1n	25,618.09	$z^4G^0_{2\frac12}-5_{1\frac12,2\frac12}$
10	3899.996	<1	25,633.82	$a^4F_{3\frac12}-z^6G^0_{2\frac12}$?
4	3898.485v	4–III	25,643.75	$b^4P_{2\frac12}-x^4D^0_{1\frac12}$
4	3894.976v	20–II	25,666.85	$b^4F_{1\frac12}-z^4D^0_{\frac12}$
4	3894.073v	60–II	25,672.81	$a^2F_{2\frac12}-y^2G^0_{3\frac12}$
5	3893.303	2–V	25,677.88	$z^4G^0_{4\frac12}-e^6H_{5\frac12}$
7	3893.067	2–III	25,679.44	$a^2P_{\frac12}-z^2S^0_{\frac12}$
7	3892.968	1n	25,680.09	$z^4F^0_{2\frac12}-f^6F_{3\frac12}$
7	3892.210	1	25,685.09	$b^2D_{1\frac12}-w^2S^0_{\frac12}$
4	3892.118v	3–III	25,685.70	$b^2P_{1\frac12}-v^2D^0_{1\frac12}$
5	3891.680	2–V	25,688.59	$z^4F^0_{2\frac12}-i^4F_{2\frac12}$
4	3890.734v	1	25,694.84	$c^2D_{1\frac12}-23^0_{1\frac12}$
4	3889.978v	2–III	25,699.83	$z^4F^0_{3\frac12}-i^4F_{3\frac12}$
4	3885.275v	6–I	25,730.94	$a^2F_{3\frac12}-y^4G^0_{3\frac12}$
4	3884.601v	10–I	25,735.41	$a^2F_{2\frac12}-y^4F^0_{1\frac12}$
4	3881.869v	25–I	25,753.52	$b^4F_{2\frac12}-z^4D^0_{1\frac12}$
5	3881.006	3	25,759.24	$b^2P_{1\frac12}-v^4D^0_{1\frac12}$
5	3880.839	8	25,760.35	
12	3880.40	3	25,763.26	
4	3878.750v	70r	25,774.23	$b^4P_{\frac12}-z^4P^0_{\frac12}$
4	3876.831v	20–I	25,786.98	$b^4F_{4\frac12}-z^4G^0_{4\frac12}$ $b^4P_{\frac12}-z^4P^0_{1\frac12}$
4	3873.953v	40–II	25,806.14	$b^4F_{3\frac12}-z^4D^0_{2\frac12}$
4	3873.120v	60–II	25,811.69	$b^4F_{4\frac12}-z^4D^0_{3\frac12}$
4	3870.534v	4–III	25,828.93	$b^2P_{1\frac12}-v^4D^0_{2\frac12}$
4	3866.832v	2	25,853.66	$a^4P_{2\frac12}-x^4D^0_{3\frac12}$
7	3863.966	1	25,872.84	$b^2D_{1\frac12}-w^2P^0_{1\frac12}$
5	3863.607	2–III	25,875.24	$b^2P_{\frac12}-y^2P^0_{\frac12}$
4	3861.164v	20–I	25,891.61	$a^2F_{2\frac12}-z^2D^0_{1\frac12}$
12	3860.42	4	25,896.60	
4	3856.796v	4–III	25,920.93	$b^4P_{2\frac12}-2^0_{2\frac12}$
4	3851.848v	2–III	25,954.23	$b^2P_{1\frac12}-w^2D^0_{1\frac12}$
4	3850.945v	4–IA	25,960.32	$b^4F_{3\frac12}-z^4G^0_{2\frac12}$
4	3850.097v	5–III	25,966.03	$c^2D_{2\frac12}-22^0_{3\frac12}$
4	3845.468v	60–II	25,997.29	$a^2F_{3\frac12}-y^2G^0_{4\frac12}$
7	3844.866	1	26,001.36	$b^2P_{1\frac12}-v^4D^0_{\frac12}$
4	3843.692v	4–III	26,009.30	$a^2G_{3\frac12}-w^4D^0_{2\frac12}$
4	3842.047v	30–II	26,020.44	$a^2F_{3\frac12}-z^2D^0_{2\frac12}$
4	3841.458v	5–I	26,024.43	$a^2F_{3\frac12}-y^4F^0_{3\frac12}$
5	3835.900	8	26,062.13	$b^2P_{1\frac12}-y^4S^0_{1\frac12}$
5	3835.689	10	26,063.57	
5	3835.497	3	26,064.87	$a^2P_{1\frac12}-z^2S^0_{\frac12}$
4	3832.899v	5	26,082.54	$a^2P_{\frac12}-y^4P^0_{\frac12}$
11	3830.096	1n	26,101.63	$z^4D^0_{1\frac12}-g^4P_{2\frac12}$
9	3823.52	1–IV	26,146.52	
4	3819.908v	4–II	26,171.24	$b^2P_{1\frac12}-v^2D^0_{2\frac12}$
4	3817.940v	18	26,184.73	$b^2P_{1\frac12}-y^2P^0_{1\frac12}$
4	3816.876v	5–II	26,192.03	$a^2G_{3\frac12}-x^2F^0_{2\frac12}$
4	3816.458v	15–I	26,194.90	$b^4P_{1\frac12}-z^4P^0_{2\frac12}$
4	3816.318v	15–I	26,195.86	$b^4P_{1\frac12}-z^4P^0_{\frac12}$
4	3814.457v	5–III	26,208.64	$b^4P_{1\frac12}-z^4P^0_{1\frac12}$
5	3813.925	30r	26,212.29	$z^4F^0_{3\frac12}-e^6G_{3\frac12}$
5	3812.470	4–III	26,222.30	$a^4P_{\frac12}-z^4S_{1\frac12}$
4	3811.065v	5–I	26,231.97	$a^2F_{3\frac12}-y^4G^0_{2\frac12}$
4	3808.102v	10–I	26,252.38	$b^4F_{4\frac12}-z^4G^0_{3\frac12}$
4	3805.775v	2–III	26,268.43	$a^2P_{1\frac12}-y^4P^0_{1\frac12}$
7	3801.233	1n	26,299.81	$b^2G_{4\frac12}-10^0_{3\frac12}$
11	3799.808	1	26,309.68	$a^4P_{1\frac12}-x^4D^0_{2\frac12}$
4	3797.442v	1	26,326.07	$a^2D_{1\frac12}-x^4F^0_{1\frac12}$
4	3795.856v	1	26,337.07	$z^4F^0_{4\frac12}-e^6G_{4\frac12}$
7	3787.345	1	26,396.25	$b^2P_{\frac12}-u^4D^0_{1\frac12}$
4	3783.731v	5h	26,421.46	$a^2D_{2\frac12}-x^4G^0_{2\frac12}$
4	3777.543v	6–III	26,464.74	$a^2D_{2\frac12}-w^4D^0_{2\frac12}$
5	3777.078	1–III	26,468.00	$a^2P_{1\frac12}-y^4P^0_{\frac12}$
4	3774.599v	8–II	26,485.38	$a^2D_{2\frac12}-w^4D^0_{1\frac12}$
11	3771.851	1	26,504.68	$z^4F^0_{2\frac12}-5_{1\frac12,2\frac12}$
11	3769.703	1	26,519.78	$z^6F^0_{1\frac12}-e^4D_{2\frac12}$?
4	3760.401v	4–II	26,585.38	$a^4P_{1\frac12}-z^4S^0_{1\frac12}$
4	3759.684v	3–III	26,590.45	$b^2P_{1\frac12}-y^2P^0_{\frac12}$
9	3756.30	1	26,614.40	$a^2G_{3\frac12}-w^4F^0_{3\frac12}$
4	3755.447v	10–II	26,620.45	$a^2D_{2\frac12}-w^4D^0_{3\frac12}$
4	3754.346v	4–III	26,628.26	$b^2P_{1\frac12}-w^2F^0_{2\frac12}$
4	3752.787v	10	26,639.32	$b^2G_{3\frac12}-11^0_{2\frac12}$
9	3752.18	1	26,643.63	$z^4F^0_{4\frac12}-e^6G_{3\frac12}$
11	3751.805	1	26,646.29	$y^4D^0_{3\frac12}-g^4H_{4\frac12}$
4	3751.625v	5–III	26,647.57	$a^2D_{2\frac12}-x^2F^0_{2\frac12}$
4	3749.930v	9–II	26,659.62	$a^2D_{1\frac12}-z^2P^0_{\frac12}$
4	3745.491v	25–I	26,691.21	$a^2F_{3\frac12}-y^2G^0_{3\frac12}$
4	3740.186v	5–II	26,729.07	$a^2D_{1\frac12}-x^4G^0_{2\frac12}$
4	3739.441v	0	26,734.39	$b^4P_{2\frac12}-x^4F^0_{3\frac12}$
9	3739.20	1	26,736.12	$a^2G_{3\frac12}-4^0_{3\frac12}$
5	3735.928	12–II	26,759.53	$a^2D_{2\frac12}-z^2P^0_{1\frac12}$
4	3734.139v	7–II	26,772.35	$a^2D_{1\frac12}-w^4D^0_{2\frac12}$
4	3733.483v	12–II	26,777.05	$a^2D_{2\frac12}-x^2F^0_{3\frac12}$
4	3732.390v	20–I	26,784.89	$b^4P_{2\frac12}-z^4P^0_{2\frac12}$
4	3731.268v	2–III	26,792.95	$a^2D_{1\frac12}-w^4D^0_{1\frac12}$
4	3730.476v	20–II	26,798.63	$b^4P_{2\frac12}-z^4P^0_{1\frac12}$
4	3728.840v	3–III	26,810.40	$b^2P_{\frac12}-x^2S^0_{\frac12}$
4	3726.653v	5–III	26,826.13	$a^4P_{2\frac12}-z^4S^0_{1\frac12}$
4	3712.177v	6–III	26,930.74	$a^2G_{4\frac12}-w^4D^0_{3\frac12}$
4	3711.646v	3–III	26,934.59	$b^4P_{\frac12}-z^2P^0_{\frac12}$
4	3708.823v	12–II	26,955.09	$a^2D_{1\frac12}-x^2F^0_{2\frac12}$

TABLE VIII.—*Continued.*

REF.	λ *IA*	INT.–*TC*	WAVE NO. VAC.	MULTIPLET DESIGNATION
4	3707.**465**v	6–II	26,964.96	$a^2D_{1\frac12}-w^4D^0_{\frac12}$
10	3707.01	—	26,968.28	$a^2G_{3\frac12}-w^4F^0_{2\frac12}$
4	3704.**060**v	25–I	26,989.75	$a^2F_{2\frac12}-y^2F^0_{3\frac12}$
4	3702.**237**v	12–III	27,003.04	$b^2G_{3\frac12}-y^2H^0_{4\frac12}$
5	3699.017	2n–IV	27,026.55	$b^2G_{4\frac12}-y^2H^0_{4\frac12}$
4	3693.**476**v	8–I	27,067.09	$a^2D_{1\frac12}-z^2P^0_{1\frac12}$
5	3693.364	2–III	27,067.91	$b^4P_{\frac12}-w^4D^0_{1\frac12}$
4	3693.**106**v	8–I	27,069.80	$a^2D_{2\frac12}-w^4F^0_{3\frac12}$
4	3690.**715**v	7–II	27,087.34	$a^2G_{4\frac12}-x^2F^0_{3\frac12}$
4	3686.**477**v	2–III	27,118.49	$b^2P_{\frac12}-x^2P^0_{1\frac12}$
4	3684.**960**v	2–III	27,129.64	$a^2P_{\frac12}-x^4P^0_{1\frac12}$
5	3684.479	10–III	27,133.18	$a^2D_{2\frac12}-x^2D^0_{1\frac12}$
4	3683.**047**v	20–II	27,143.73	$a^2D_{2\frac12}-x^2D^0_{2\frac12}$
11	3677.980	1	27,181.13	$b^4F_{2\frac12}-z^2F^0_{3\frac12}$
10	3677.835	1	27,182.20	$a^2P_{\frac12}-x^4P^0_{\frac12}$
4	3676.**552**v	12–III	27,191.68	$b^2G_{4\frac12}-y^2H^0_{5\frac12}$
4	3670.**041**v	3–III	27,239.92	$b^4P_{\frac12}-w^4D^0_{\frac12}$
4	3669.**237**v	1	27,245.89	$a^4P_{2\frac12}-1^0_{3\frac12}$
9	3668.66	1–III	27,250.18	$b^4P_{2\frac12}-x^4F^0_{2\frac12}$
9	3664.6	1n	27,280.37	$z^6D^0_{1\frac12}-e^2D_{1\frac12}$
4	3662.**158**v	12–II	27,298.56	$a^2P_{1\frac12}-w^2D^0_{2\frac12}$
4	3660.**699**v	5	27,309.44	$a^4P_{2\frac12}-2^0_{2\frac12}$
4	3657.**918**v	2–III	27,330.20	$b^2P_{\frac12}-t^4D^0_{1\frac12}$
4	3656.**962**v	7–I	27,337.34	$b^4F_{2\frac12}-y^4D^0_{3\frac12}$
10	3656.33	<1	27,342.07	$b^4P_{\frac12}-z^2P^0_{1\frac12}$
4	3654.**441**v	5–II	27,356.20	$b^4P_{1\frac12}-z^2P^0_{\frac12}$
4	3652.**541**v	15–I	27,370.43	$a^4F_{2\frac12}-z^4F^0_{3\frac12}$
4	3651.**254**v	4–III	27,380.08	$a^2G_{4\frac12}-w^4F^0_{3\frac12}$
4	3649.**329**v	8–III	27,394.52	$b^2G_{4\frac12}-u^2F^0_{3\frac12}$
4	3648.**140**v	3–III	27,403.45	$b^2G_{3\frac12}-w^2G^0_{3\frac12}$
4	3647.**658**v	12–I	27,407.07	$a^4F_{1\frac12}-z^4F^0_{2\frac12}$
5	3647.388	1–III	27,409.10	$b^2G_{4\frac12}-w^2G^0_{4\frac12}$
4	3647.**081**v	5–III	27,411.41	$a^2P_{\frac12}-v^2D^0_{1\frac12}$
7	3645.440	3–III	27,423.75	$a^2D_{2\frac12}-w^4F^0_{2\frac12}$
4	3645.**190**v	5–III	27,425.63	$b^4P_{1\frac12}-x^4G^0_{2\frac12}$
11	3645.005	1g?	27,427.02	$b^2G_{4\frac12}-w^2G^0_{3\frac12}$
4	3643.**181**v	9–II	27,440.75	$a^2D_{1\frac12}-x^2D^0_{1\frac12}$
4	3641.**784**v	6–II	27,451.28	$a^2D_{1\frac12}-x^2D^0_{2\frac12}$
7	3641.673	1n	27,452.11	$c^2D_{1\frac12}-33^0_{1\frac12,2\frac12}$?
4	3639.**443**v	10–II	27,468.93	$b^4P_{1\frac12}-w^4D^0_{2\frac12}$
4	3638.**346**v	1–III	27,477.21	$b^2P_{1\frac12}-y^2S^0_{\frac12}$
4	3637.45v	1	27,483.98	$a^2G_{4\frac12}-w^4G^0_{5\frac12}$
4	3637.**319**v	4–III	27,484.97	$a^2P_{\frac12}-v^4D^0_{1\frac12}$
4	3636.**713**v	6–II	27,489.55	$b^4P_{1\frac12}-w^4D^0_{1\frac12}$
4	3635.06v	2	27,502.02	$a^2G_{4\frac12}-4^0_{3\frac12}$
4	3634.**713**v	7–III	27,504.68	$b^2G_{3\frac12}-u^2F^0_{2\frac12}$
4	3633.**340**v	2–III	27,515.07	$a^2P_{1\frac12}-x^4P^0_{1\frac12}$
4	3632.**839**v	7–III	27,518.87	$b^2G_{4\frac12}-x^2H^0_{5\frac12}$
5	3631.948	2–III	27,525.61	$b^2P_{1\frac12}-x^2S^0_{\frac12}$
4	3631.**390**v	20r–I	27,529.85	$a^4F_{3\frac12}-z^4F^0_{4\frac12}$
7	3628.228	2n	27,553.84	$b^2G_{4\frac12}-13^0_{3\frac12,4\frac12}$
4	3627.**806**v	25r–I	27,557.04	$b^4F_{3\frac12}-z^2G^0_{4\frac12}$
4	3626.**020**v	2–III*A*	27,570.62	$a^4P_{\frac12}-z^4P^0_{\frac12}$
4	3625.56v	3	27,574.09	$z^6G^0_{4\frac12}-f^4G_{5\frac12}$
4	3624.**955**v	8–I	27,578.71	$b^4F_{1\frac12}-y^4D^0_{2\frac12}$
4	3624.**337**v	5–III	27,583.42	$a^4P_{\frac12}-z^4P^0_{1\frac12}$
4	3623.02v	2	27,593.44	$z^6F^0_{1\frac12}-e^4D_{\frac12}$?
4	3622.35v	1	27,598.57	$b^2G_{3\frac12}-14^0_{2\frac12}$
4	3621.70v	15*R*	27,603.49	$z^6D^0_{2\frac12}-e^2D_{1\frac12}$
4	3620.**422**v	5–III	27,613.25	$a^2P_{1\frac12}-x^4P^0_{2\frac12}$
4	3620.03v	2	27,616.26	$a^2D_{2\frac12}-w^4G^0_{3\frac12}$
11	3619.285	1	27,621.92	$b^2P_{\frac12}-w^2S^0_{\frac12}$
4	3618.**010**v	4–II*A*	27,631.65	$a^2F_{2\frac12}-y^2D^0_{2\frac12}$
4	3617.48v	2	27,635.69	$b^2P_{\frac12}-8^0_{1\frac12}$
4	3615.**387**v	6–II	27,651.70	$b^4P_{1\frac12}-x^2F^0_{2\frac12}$
4	3614.34v	1	27,659.74	$b^2P_{1\frac12}-x^2P^0_{\frac12}$
4	3614.10v	0	27,661.51	$b^4P_{1\frac12}-w^4D^0_{\frac12}$
4	3611.**701**v	10–II	27,679.92	$a^2P_{\frac12}-w^2D^0_{1\frac12}$
4	3609.**752**v	4–III	27,694.86	$b^2G_{3\frac12}-x^2H^0_{4\frac12}$
4	3608.82v	3	27,702.02	$a^2D_{2\frac12}-y^4P^0_{2\frac12}$
5	3608.307	3–II*A*	27,705.96	$b^4F_{1\frac12}-z^2F^0_{2\frac12}$
4	3607.04v	0	27,715.72	$b^4P_{\frac12}-x^2D^0_{1\frac12}$
4	3606.69v	7	27,718.39	$b^2G_{4\frac12}-x^2H^0_{4\frac12}$
4	3605.**370**v	20r–I	27,728.52	$b^4F_{3\frac12}-z^2F^0_{3\frac12}$
5	3605.015	5–III	27,731.25	$a^2D_{1\frac12}-w^4F^0_{2\frac12}$
4	3604.**469**v	4–II	27,735.45	$a^2H_{4\frac12}-y^2H^0_{4\frac12}$
4	3602.38v	2	27,751.52	$c^2D_{1\frac12}-35^0_{1\frac12,2\frac12}$
4	3602.**079**v	40*R*–II	27,753.86	$a^4F_{1\frac12}-z^4F^0_{1\frac12}$
4	3600.**803**v	3–III	27,763.69	$b^4P_{1\frac12}-z^2P^0_{1\frac12}$
4	3596.**510**v	5–III	27,796.83	$a^2P_{1\frac12}-v^2D^0_{1\frac12}$
4	3595.545	3	27,804.29	$b^4P_{2\frac12}-3^0_{3\frac12}$?
4	3594.**870**v	50*R*–II	27,809.51	$a^4F_{2\frac12}-z^4F^0_{2\frac12}$ ($b^2P_{\frac12}-w^2P^0_{1\frac12}$)
4	3592.33v	2	27,829.18	$z^6G^0_{1\frac12}-h^4F_{1\frac12}$?
4	3591.**746**v	4–III	27,833.70	$b^2P_{1\frac12}-x^2P^0_{1\frac12}$
4	3589.47v	2	27,851.31	$z^6G^0_{4\frac12}-i^4F_{4\frac12}$ $z^6G^0_{4\frac12}-e^6P_{3\frac12}$
4	3587.**186**v	70*R*–II	27,869.08	$a^2F_{2\frac12}-y^2F^0_{2\frac12}$
7	3586.082	3–III	27,877.66	$a^2G_{3\frac12}-z^2H^0_{4\frac12}$
5	3585.808	4–II	27,879.79	$a^2D_{2\frac12}-y^4P^0_{1\frac12}$
4	3585.**154**v	25*R*–I	27,884.88	$b^4F_{3\frac12}-y^4D^0_{3\frac12}$
5	3584.801	15–I	27,887.62	$a^4F_{2\frac12}-z^4D^0_{3\frac12}$
4	3581.**873**v	4–II	27,910.42	$a^2P_{\frac12}-y^2P^0_{1\frac12}$
4	3579.15v	3	27,931.63	$b^2G_{3\frac12}-s^4D^0_{2\frac12}$
5	3579.029	6–II	27,932.60	$a^4P_{1\frac12}-z^4P^0_{2\frac12}$
5	3578.903	6–II	27,933.58	$a^4P_{1\frac12}-z^4P^0_{\frac12}$
4	3578.**076**v	6–II	27,940.03	$a^2P_{1\frac12}-v^4D^0_{2\frac12}$
5	3577.688	2–V	27,943.06	$b^2P_{1\frac12}-t^4D^0_{2\frac12}$ $z^6G^0_{5\frac12}-f^4G_{5\frac12}$
4	3577.**260**v	3–II	27,946.41	$a^4P_{1\frac12}-z^4P^0_{1\frac12}$
4	3575.**361**v	60r–II	27,961.25	$a^4F_{3\frac12}-z^4F^0_{3\frac12}$
4	3574.**967**v	25r–I	27,964.33	$b^4F_{2\frac12}-y^4D^0_{2\frac12}$
4	3573.37v	1	27,976.81	$b^2G_{3\frac12}-15^0_{3\frac12}$ $z^6G^0_{2\frac12}-h^4F_{1\frac12}$
4	3570.35v	4n–II	28,000.48	$b^2G_{4\frac12}-15^0_{3\frac12}$
4	3569.**370**v	80*R*–II	28,008.18	$a^2F_{3\frac12}-y^2F^0_{3\frac12}$
5	3568.426	2–III	28,015.59	$b^4P_{2\frac12}-x^4G^0_{2\frac12}$
4	3564.**947**v	25r–I	28,042.93	$b^4F_{2\frac12}-z^2G^0_{3\frac12}$
5	3564.643	2	28,045.32	$b^2P_{1\frac12}-t^4D^0_{1\frac12}$
4	3564.**115**v	4–III	28,049.48	$z^6G^0_{5\frac12}-f^4H_{6\frac12}$
4	3562.**912**v	7–II	28,058.95	$b^4P_{2\frac12}-w^4D^0_{2\frac12}$
4	3562.**097**v	6–III	28,065.37	$a^2P_{1\frac12}-w^2D^0_{1\frac12}$
4	3561.38v	1	28,070.98	$b^2P_{1\frac12}-t^4D^0_{\frac12}$
4	3560.**891**v	20r–I	28,074.87	$b^4F_{1\frac12}-y^4D^0_{1\frac12}$
5	3560.306	5–III	28,079.48	$b^4P_{2\frac12}-w^4D^0_{1\frac12}$
7	3559.597	1–IV	28,085.08	$a^2D_{1\frac12}-w^4F^0_{1\frac12}$
4	3558.**772**v	12–I	28,091.59	$b^4F_{2\frac12}-z^2F^0_{2\frac12}$ ($z^6G^0_{5\frac12}-f^6F_{5\frac12}$)
7	3557.980	2	28,097.84	$a^2D_{1\frac12}-w^4G^0_{2\frac12}$
10	3556.120	1	28,112.54	$a^2P_{1\frac12}-v^4D^0_{\frac12}$
5	3553.161	2–III	28,135.95	$a^2H_{4\frac12}-w^2G^0_{3\frac12}$
4	3552.**989**v	8–II	28,137.31	$b^4P_{1\frac12}-x^2D^0_{1\frac12}$
4	3552.**720**v	8–I	28,139.44	$a^4F_{1\frac12}-z^4D^0_{2\frac12}$
5	3551.666	2–III	28,147.79	$b^4P_{1\frac12}-x^2D^0_{2\frac12}$
4	3550.**592**v	20r–I	28,156.30	$a^4F_{2\frac12}-z^4F^0_{1\frac12}$
4	3550.20v	5	28,159.38	$z^6G^0_{5\frac12}-e^6G_{6\frac12}$?
4	3548.**438**v	7–II	28,173.40	$a^4P_{2\frac12}-z^4P^0_{2\frac12}$
4	3546.88v	1	28,185.73	$b^4P_{\frac12}-5^0_{1\frac12}$
4	3546.**707**v	6–III	28,187.14	$a^4P_{2\frac12}-z^4P^0_{1\frac12}$
4	3543.**256**v	15–II	28,214.59	$b^4P_{2\frac12}-w^4D^0_{3\frac12}$
7	3542.976	2–II*A*	28,216.83	$b^4F_{4\frac12}-z^2G^0_{4\frac12}$
5	3542.508	2h	28,220.55	$z^6G^0_{4\frac12}-f^4G_{4\frac12}$
5	3540.40v	3w	28,237.33	$z^6F^0_{2\frac12}-f^2F_{2\frac12}$
4	3539.**442**v	1	28,245.00	$z^6G^0_{3\frac12}-i^4F_{3\frac12}$
4	3538.44v	1	28,253.00	$b^2P_{1\frac12}-x^4S^0_{1\frac12}$
4	3537.**707**v	1–III	28,258.85	$b^4P_{\frac12}-z^2S^0_{\frac12}$
4	3534.**769**v	4–III	28,282.34	$a^2P_{1\frac12}-v^2D^0_{2\frac12}$ ($z^6G^0_{3\frac12}-f^4G_{3\frac12}$)
4	3533.**356**v	25r–I	28,293.65	$a^4F_{1\frac12}-z^4G^0_{2\frac12}$
6	3533.081	2	28,295.84	$a^2P_{1\frac12}-y^2P^0_{1\frac12}$
5	3530.554	1–III	28,316.10	$a^2P_{\frac12}-y^2P^0_{\frac12}$
4	3529.**816**v	80*R*–II	28,322.03	$b^4F_{3\frac12}-y^4G^0_{4\frac12}$
4	3529.**032**v	30r–I	28,328.31	$a^4F_{2\frac12}-z^4G^0_{3\frac12}$
5	3527.947	5–III	28,337.02	$b^2P_{1\frac12}-w^2S^0_{\frac12}$
4	3526.**847**v	100*R*–II	28,345.86	$a^4F_{4\frac12}-z^4F^0_{4\frac12}$
5	3525.872	3–III	28,353.70	$b^4P_{2\frac12}-z^2P^0_{1\frac12}$
5	3525.089	2h	28,360.00	$b^4P_{\frac12}-w^4F^0_{1\frac12}$
5	3523.701	7–II	28,371.17	$b^4P_{2\frac12}-x^2F^0_{3\frac12}$
4	3523.**423**v	25r–I	28,373.41	$b^4F_{1\frac12}-y^4D^0_{\frac12}$
7	3522.856	4–III	28,377.98	$z^6G^0_{4\frac12}-f^4H_{5\frac12}$
5	3521.731	5–I	28,387.04	$a^2D_{1\frac12}-y^2P^0_{\frac12}$ $b^4F_{1\frac12}-z^2D^0_{2\frac12}$
5	3521.567	30r–I	28,388.36	$b^4F_{4\frac12}-z^2F^0_{3\frac12}$
4	3520.**075**v	15–II	28,400.39	$a^4F_{3\frac12}-z^4F^0_{2\frac12}$
4	3518.**340**v	50*R*–II	28,414.40	$a^2F_{2\frac12}-y^2D^0_{1\frac12}$
5	3516.675	1–III	28,427.85	$b^4P_{1\frac12}-w^4F^0_{2\frac12}$
5	3516.418	2	28,429.93	$z^6G^0_{4\frac12}-e^6G_{5\frac12}$
4	3516.04v	3	28,433.03	$z^6D^0_{3\frac12}-f^4D_{3\frac12}$
4	3513.82v	3?	28,450.92	$z^6G^0_{3\frac12}-e^6G_{4\frac12}$
4	3513.**478**v	50*R*–II	28,453.72	$a^4F_{3\frac12}-z^4G^0_{4\frac12}$
4	3512.**640**v	60*R*–II	28,460.51	$b^4F_{2\frac12}-y^4D^0_{1\frac12}$
4	3512.41v	2	28,462.35	$b^4P_{\frac12}-y^4P^0_{1\frac12}$
4	3510.**426**v	30r–I	28,478.46	$a^4F_{3\frac12}-z^4D^0_{3\frac12}$
4	3509.**843**v	50r–II	28,483.19	$b^4F_{2\frac12}-y^4G^0_{3\frac12}$
4	3506.**310**v	80*R*–II	28,511.89	$b^4F_{3\frac12}-y^4D^0_{2\frac12}$
4	3505.**133**v	3–III	28,521.46	$z^6G^0_{6\frac12}-f^6F_{5\frac12}$
4	3504.**728**v	5–III	28,524.76	$b^2P_{1\frac12}-w^2P^0_{1\frac12}$
5	3503.717	3–III	28,532.98	$a^2G_{3\frac12}-x^2G^0_{3\frac12}$
7	3502.998	2d	28,538.84	$b^2P_{\frac12}-w^2P^0_{\frac12}$
4	3502.63v	20r–I	28,541.81	$a^4F_{2\frac12}-z^4D^0_{2\frac12}$
4	3502.**278**v	100*R*–II	28,544.71	$b^4F_{4\frac12}-y^4D^0_{3\frac12}$
5	3496.794	6–III	28,589.47	$z^6G^0_{6\frac12}-e^6G_{6\frac12}$
5	3496.681	15–I	28,590.40	$b^4F_{3\frac12}-z^2G^0_{3\frac12}$
5	3496.070	3–III	28,595.39	$a^2H_{5\frac12}-y^2H^0_{5\frac12}$
4	3495.**682**v	50r–II	28,598.57	$b^4F_{1\frac12}-y^4G^0_{2\frac12}$
4	3494.63v	2	28,607.17	$b^4P_{1\frac12}-5^0_{1\frac12}$
5	3491.987	3–III	28,628.83	$z^6G^0_{3\frac12}-f^4H_{4\frac12}$ $z^6G^0_{2\frac12}-2_{1\frac12}$
4	3491.**316**v	15–I	28,634.33	$a^4F_{1\frac12}-z^4D^0_{1\frac12}$
4	3490.**736**v	10–I	28,639.09	$b^4F_{3\frac12}-z^2F^0_{2\frac12}$
4	3489.**399**v	60r–II	28,650.06	$a^2F_{3\frac12}-y^2D^0_{2\frac12}$
4	3488.73v	1	28,655.56	$b^2G_{3\frac12}-16^0_{2\frac12}$
7	3487.956	1n	28,661.91	$b^4P_{\frac12}-y^4P^0_{\frac12}$
4	3487.**712**v	8–II	28,663.92	$b^4P_{2\frac12}-w^4F^0_{3\frac12}$

TABLE VIII.—*Continued.*

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
4	3487.29v	2	28,667.37	$z^6D^0_{3\frac{1}{2}}-f^4P_{2\frac{1}{2}}$
4	3485.**700**v	4–II	28,680.46	$b^4P_{1\frac{1}{2}}-z^2S^0_{\frac{1}{2}}$
4	3485.**368**v	15–III	28,683.20	$z^6G^0_{6\frac{1}{2}}-e^6H_{7\frac{1}{2}}$
4	3483.80v	6	28,696.10	$a^4F_{2\frac{1}{2}}-z^4G^0_{2\frac{1}{2}}$
4	3483.**410**v	20r–I	28,699.32	$b^4F_{3\frac{1}{2}}-y^4F^0_{4\frac{1}{2}}$
5	3483.141	2–III	28,701.54	$a^2P_{1\frac{1}{2}}-y^2P^0_{\frac{1}{2}}$
7	3482.590	1n	28,706.07	$b^4P_{1\frac{1}{2}}-y^4P^0_{2\frac{1}{2}}$
4	3482.07v	3	28,710.40	$b^2D_{1\frac{1}{2}}-16^0_{2\frac{1}{2}}$
4	3481.52v	1	28,714.85	$z^6G^0_{3\frac{1}{2}}-e^6D_{2\frac{1}{2}}$
4	3481.42v	1	28,715.74	$z^6G^0_{2\frac{1}{2}}-f^4G_{2\frac{1}{2}}$
4	3480.29v	3	28,725.03	$c^2D_{2\frac{1}{2}}-35^0_{1\frac{1}{2},2\frac{1}{2}}$
4	3480.**012**v	6–II	28,727.34	$b^4P_{2\frac{1}{2}}-x^2D^0_{1\frac{1}{2}}$
11	3479.579	1–III	28,730.92	$a^4P_{\frac{1}{2}}-z^2P^0_{\frac{1}{2}}$
5	3478.744	7–II	28,737.81	$b^4P_{2\frac{1}{2}}-x^2D^0_{2\frac{1}{2}}$
5	3478.555	8–III	28,739.37	$a^2P_{1\frac{1}{2}}-w^2F^0_{2\frac{1}{2}}$
4	3477.**836**v	4–III	28,745.31	$z^6G^0_{4\frac{1}{2}}-e^6G_{4\frac{1}{2}}$
4	3477.64v	1	28,746.91	$z^6G^0_{5\frac{1}{2}}-f^4H_{5\frac{1}{2}}$
5	3476.360#	5n–IV	28,757.51	$z^6G^0_{3\frac{1}{2}}-e^6G_{3\frac{1}{2}}$
11	3476.002	1	28,760.48	$a^4P_{1\frac{1}{2}}-x^4F^0_{1\frac{1}{2}}$
4	3474.**530**v	6–I	28,772.66	$b^4F_{2\frac{1}{2}}-z^2D^0_{2\frac{1}{2}}$
4	3474.26v	6–?	28,774.86	$z^6D^0_{2\frac{1}{2}}-f^4G_{3\frac{1}{2}}$
11	3474.018	100R–II	28,776.90	$a^4F_{4\frac{1}{2}}-z^4F^0_{3\frac{1}{2}}$ $b^4F_{2\frac{1}{2}}-y^4F^0_{3\frac{1}{2}}$
7	3473.455	1–III	28,781.57	$b^4P_{1\frac{1}{2}}-w^4F^0_{1\frac{1}{2}}$
5	3472.707	6	28,787.76	$z^6G^0_{5\frac{1}{2}}-f^6F_{4\frac{1}{2}}$
7	3472.196	1–IV	28,792.00	$z^6G^0_{1\frac{1}{2}}-e^6G_{1\frac{1}{2}}$
4	3471.**382**v	7–III	28,798.75	$z^6G^0_{5\frac{1}{2}}-e^6G_{5\frac{1}{2}}$
7	3469.683	8	28,812.85	$a^2H_{5\frac{1}{2}}-w^2G^0_{4\frac{1}{2}}$
4	3468.**973**v	3–III	28,818.75	$z^6G^0_{2\frac{1}{2}}-f^4H_{3\frac{1}{2}}$
5	3468.592	1–IV	28,821.92	$z^6D^0_{2\frac{1}{2}}-1_{2\frac{1}{2}}$
11	3467.262	1–IV	28,832.97	$z^6G^0_{2\frac{1}{2}}-f^6F_{2\frac{1}{2}}$
4	3465.**792**v	100R–II	28,845.20	$a^4F_{4\frac{1}{2}}-z^4G^0_{5\frac{1}{2}}$
4	3464.95v	1	28,852.24	$z^6G^0_{1\frac{1}{2}}-e^6G_{2\frac{1}{2}}$
5	3463.499	3–III	28,864.30	$a^4P_{\frac{1}{2}}-w^4D^0_{1\frac{1}{2}}$
4	3462.**804**v	60r–II	28,870.09	$b^4F_{1\frac{1}{2}}-y^4F^0_{2\frac{1}{2}}$
4	3461.**173**v	15–III	28,883.70	$z^6G^0_{5\frac{1}{2}}-e^6H_{6\frac{1}{2}}$
4	3460.85v	1	28,886.43	$b^2D_{2\frac{1}{2}}-14^0_{2\frac{1}{2}}$
5	3460.719	4–I	28,887.48	$a^2F_{3\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
4	3460.58v	1	28,888.69	$z^6D^0_{3\frac{1}{2}}-f^4G_{4\frac{1}{2}}$?
5	3458.028	3–III	28,909.96	$a^2D_{2\frac{1}{2}}-w^2D^0_{2\frac{1}{2}}$
4	3456.**924**v	9–I	28,919.20	$a^4F_{3\frac{1}{2}}-z^4G^0_{3\frac{1}{2}}$
7	3456.525	1–IV	28,922.53	$a^2H_{5\frac{1}{2}}-x^2H^0_{5\frac{1}{2}}$
5	3456.437	1–IV	28,923.27	$z^6G^0_{4\frac{1}{2}}-f^4H_{4\frac{1}{2}}$
4	3455.**237**v	25r–I	28,933.32	$a^4F_{1\frac{1}{2}}-z^4D^0_{\frac{1}{2}}$
4	3454.61v	2d?	28,938.54	$z^4G^0_{3\frac{1}{2}}-g^4H_{4\frac{1}{2}}$
4	3454.47v	0	28,939.77	$z^6G^0_{2\frac{1}{2}}-e^6G_{1\frac{1}{2}}$
4	3453.**514**v	200R–II	28,947.75	$b^4F_{4\frac{1}{2}}-y^4G^0_{5\frac{1}{2}}$
4	3452.**324**v	3–III	28,957.73	$z^6G^0_{1\frac{1}{2}}-e^6H_{2\frac{1}{2}}$
4	3452.18v	2	28,958.98	$z^6G^0_{4\frac{1}{2}}-f^6F_{3\frac{1}{2}}$
5	3449.706	5	28,979.70	$z^6G^0_{1\frac{1}{2}}-f^6F_{1\frac{1}{2}}$
5	3449.441	60R–II	28,981.93	$b^4F_{4\frac{1}{2}}-y^4G^0_{4\frac{1}{2}}$
5	3449.170	60R–II	28,984.21	$b^4F_{2\frac{1}{2}}-y^4G^0_{2\frac{1}{2}}$
5	3448.358	4–III	28,991.03	$z^6G^0_{3\frac{1}{2}}-3_{3\frac{1}{2}}$
5	3447.281	3–IV	29,000.09	$z^6G^0_{2\frac{1}{2}}-e^6G_{2\frac{1}{2}}$
4	3446.66v	1	29,005.33	$b^2D_{2\frac{1}{2}}-v^2P^0_{1\frac{1}{2}}$?
5	3446.088	12–III	29,010.13	$z^6G^0_{4\frac{1}{2}}-e^6H_{5\frac{1}{2}}$
4	3445.68v	2	29,013.54	$z^6D^0_{3\frac{1}{2}}-f^4D_{2\frac{1}{2}}$
7	3445.445	1n	29,015.54	$z^6D^0_{1\frac{1}{2}}-2_{1\frac{1}{2}}$
4	3445.17v	1–III	29,017.87	$b^4P_{2\frac{1}{2}}-w^4F^0_{2\frac{1}{2}}$
4	3443.**644**v	80R–II	29,030.74	$b^4F_{3\frac{1}{2}}-y^4G^0_{3\frac{1}{2}}$
4	3443.42v	4	29,032.64	$z^6D^0_{4\frac{1}{2}}-f^6F_{5\frac{1}{2}}$
5	3443.203	5–III?	29,034.43	
4	3442.**918**v	40r–II	29,036.84	$a^4F_{2\frac{1}{2}}-z^4D^0_{1\frac{1}{2}}$ $(a^4P_{\frac{1}{2}}-w^4D^0_{\frac{1}{2}})$
6	3441.255	3	29,050.87	$z^6G^0_{3\frac{1}{2}}-f^6F_{2\frac{1}{2}}$
5	3441.140	2–IV	29,051.84	$z^6G^0_{4\frac{1}{2}}-e^6G_{3\frac{1}{2}}$
4	3439.39v	4	29,066.62	$z^6D^0_{4\frac{1}{2}}-h^4F_{3\frac{1}{2}}$?
5	3438.909	5–IV	29,070.69	$z^6G^0_{2\frac{1}{2}}-e^6H_{3\frac{1}{2}}$
5	3438.713	4–III	29,072.35	$a^2G_{4\frac{1}{2}}-z^2H^0_{5\frac{1}{2}}$
4	3438.47v	2	29,074.43	$z^6D^0_{4\frac{1}{2}}-f^4D_{3\frac{1}{2}}$
4	3438.18v	3w	29,076.81	$z^4G^0_{5\frac{1}{2}}-g^4H_{6\frac{1}{2}}$
4	3437.**680**v	6n–III	29,081.08	$z^6G^0_{3\frac{1}{2}}-e^6H_{4\frac{1}{2}}$
11	3437.453	1	29,083.00	$z^6D^0_{3\frac{1}{2}}-e^6D_{3\frac{1}{2}}$
4	3436.**955**v	3–III	29,087.22	$z^6D^0_{3\frac{1}{2}}-f^6F_{4\frac{1}{2}}$
10	3436.169	1	29,093.86	$a^4P_{1\frac{1}{2}}-z^2P^0_{\frac{1}{2}}$
4	3435.95v	1	29,095.71	$a^2G_{3\frac{1}{2}}-v^4D^0_{2\frac{1}{2}}$
5	3435.753	8	29,097.39	$z^6D^0_{4\frac{1}{2}}-e^6D_{4\frac{1}{2}}$
11	3435.149	1	29,102.50	$z^6D^0_{1\frac{1}{2}}-f^4G_{2\frac{1}{2}}$
4	3433.**045**v	60R–II	29,120.34	$b^4F_{1\frac{1}{2}}-y^4F^0_{1\frac{1}{2}}$
5	3432.845	3	29,122.04	$a^2H_{5\frac{1}{2}}-x^2H^0_{4\frac{1}{2}}$
5	3432.318	3–III	29,126.51	$a^2D_{2\frac{1}{2}}-x^4P^0_{1\frac{1}{2}}$
4	3431.**582**v	50r–II	29,132.76	$a^4F_{3\frac{1}{2}}-z^4D^0_{2\frac{1}{2}}$
7	3430.900	1n	29,138.55	$a^4P_{\frac{1}{2}}-z^2P^0_{1\frac{1}{2}}$
7	3430.810	1n	29,139.31	$z^6D^0_{\frac{1}{2}}-e^6G_{1\frac{1}{2}}$
5	3429.681	1–IV	29,148.90	$z^6G^0_{2\frac{1}{2}}-4_{2\frac{1}{2}}$
4	3428.**763**v	3–III	29,156.71	$z^6D^0_{2\frac{1}{2}}-f^6F_{3\frac{1}{2}}$
4	3428.**222**v	6–III	29,161.31	$z^6D^0_{4\frac{1}{2}}-e^6P_{3\frac{1}{2}}$ $(z^6D^0_{4\frac{1}{2}}-i^4F_{4\frac{1}{2}})$
5	3427.768	2–IV	29,165.17	$z^6D^0_{2\frac{1}{2}}-i^4F_{2\frac{1}{2}}$
4	3427.05v	1	29,171.29	$z^4G^0_{4\frac{1}{2}}-g^4H_{5\frac{1}{2}}$
4	3426.**454**v	3–III	29,176.36	$z^6D^0_{3\frac{1}{2}}-e^6P_{2\frac{1}{2}}$
4	3424.**500**v	10–II	29,193.00	$a^2D_{2\frac{1}{2}}-v^4D^0_{3\frac{1}{2}}$
4	3424.00v	1	29,197.30	$b^4P_{2\frac{1}{2}}-5^0_{1\frac{1}{2}}$
4	3423.35v	1	29,202.84	$a^2P_{\frac{1}{2}}-y^2S^0_{\frac{1}{2}}$
4	3422.**900**v	4–III	29,206.65	$a^4P_{1\frac{1}{2}}-w^4D^0_{2\frac{1}{2}}$
5	3422.784	7	29,207.64	$z^6D^0_{3\frac{1}{2}}-i^4F_{3\frac{1}{2}}$
11	3422.497	1–IV	29,210.09	$z^6D^0_{2\frac{1}{2}}-e^6P_{1\frac{1}{2}}$
4	3422.29v	2	29,211.84	$z^4G^0_{2\frac{1}{2}}-g^4H_{3\frac{1}{2}}$
4	3421.**628**v	3–III	29,217.51	$a^2D_{1\frac{1}{2}}-w^2D^0_{2\frac{1}{2}}$
5	3421.348	3	29,219.90	$z^6D^0_{1\frac{1}{2}}-f^6F_{2\frac{1}{2}}$
7	3421.029	1	29,222.62	$a^2P_{1\frac{1}{2}}-u^4D^0_{1\frac{1}{2}}$
4	3420.**790**v	7–III	29,224.66	$a^2D_{2\frac{1}{2}}-x^4P^0_{2\frac{1}{2}}$
4	3420.**474**v	5–II	29,227.36	$a^4P_{1\frac{1}{2}}-w^4D^0_{1\frac{1}{2}}$
5	3417.795	6–I	29,250.27	$b^4F_{4\frac{1}{2}}-z^2G^0_{3\frac{1}{2}}$
5	3417.673	5–III	29,251.31	$a^2P_{\frac{1}{2}}-x^2S^0_{\frac{1}{2}}$
7	3417.353	1d	29,254.05	$b^2P_{1\frac{1}{2}}-w^2P^0_{\frac{1}{2}}$
4	3417.**154**v	50r–II	29,255.76	$b^4F_{2\frac{1}{2}}-y^4F^0_{2\frac{1}{2}}$
4	3415.**519**v	5–I	29,269.76	$a^4F_{4\frac{1}{2}}-z^4G^0_{4\frac{1}{2}}$
5	3414.736	200W	29,276.47	$b^4F_{1\frac{1}{2}}-z^2D^0_{1\frac{1}{2}}$
4	3413.52v	3Ni?	29,286.94	$a^4F_{3\frac{1}{2}}-z^4G^0_{2\frac{1}{2}}$
4	3413.33v	1	29,288.53	$z^6G^0_{3\frac{1}{2}}-e^6H_{3\frac{1}{2}}$
4	3412.87v	2	29,292.50	$b^2G_{4\frac{1}{2}}-18^0_{3\frac{1}{2}}$ $z^6D^0_{3\frac{1}{2}}-1_{2\frac{1}{2}}$
5	3412.633	80R–II	29,294.52	$a^4F_{4\frac{1}{2}}-z^4D^0_{3\frac{1}{2}}$
5	3412.339	80R–II	29,297.04	$b^4F_{3\frac{1}{2}}-y^2G^0_{4\frac{1}{2}}$
5	3409.646	15	29,320.18	$b^4F_{3\frac{1}{2}}-z^2D^0_{2\frac{1}{2}}$
5	3409.177	60r–II	29,324.21	$b^4F_{3\frac{1}{2}}-y^4F^0_{3\frac{1}{2}}$
5	3408.891	2–IV?	29,326.67	$z^6D^0_{1\frac{1}{2}}-e^6G_{1\frac{1}{2}}$ $z^6D^0_{\frac{1}{2}}-f^6F_{1\frac{1}{2}}$
4	3407.**467**v	2	29,338.93	$z^6D^0_{2\frac{1}{2}}-2_{1\frac{1}{2}}$
9	3406.89	1	29,343.89	$z^6D^0_{1\frac{1}{2}}-e^6D_{1\frac{1}{2}}$
5	3405.816	30R	29,353.15	
5	3405.120	150R–II	29,359.15	$b^4F_{4\frac{1}{2}}-y^4F^0_{4\frac{1}{2}}$
4	3404.05v	1	29,368.36	$z^6F^0_{3\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
11	3403.166	1	29,376.00	$z^6F^0_{3\frac{1}{2}}-f^4D_{3\frac{1}{2}}$
4	3402.18v	2	29,384.50	$b^4P_{2\frac{1}{2}}-w^4G^0_{2\frac{1}{2}}$
5	3402.064	4–III	29,385.52	$a^2P_{\frac{1}{2}}-x^2P^0_{\frac{1}{2}}$
5	3401.913	20	29,386.82	$z^6D^0_{1\frac{1}{2}}-e^6G_{2\frac{1}{2}}$
5	3401.617	2–III	29,389.38	$a^4P_{1\frac{1}{2}}-x^2F^0_{2\frac{1}{2}}$
4	3400.**471**v	1–III	29,399.29	$a^4P_{1\frac{1}{2}}-w^4D^0_{\frac{1}{2}}$
4	3399.93v	1w	29,403.95	$z^4G^0_{4\frac{1}{2}}-g^4H_{4\frac{1}{2}}$
4	3399.44v	1–IV	29,408.22	$a^2D_{2\frac{1}{2}}-v^2D^0_{1\frac{1}{2}}$
4	3398.**811**v	3–III	29,413.64	$z^6D^0_{3\frac{1}{2}}-e^6G_{4\frac{1}{2}}$
5	3396.457	1–III	29,434.03	$a^2D_{1\frac{1}{2}}-x^4P^0_{1\frac{1}{2}}$
4	3395.**370**v	40r–II	29,443.45	$b^4F_{2\frac{1}{2}}-y^2G^0_{3\frac{1}{2}}$
5	3394.916	2–III	29,447.39	$a^4P_{2\frac{1}{2}}-w^4D^0_{2\frac{1}{2}}$
4	3393.16v	2	29,462.67	$z^6F^0_{3\frac{1}{2}}-i^4F_{4\frac{1}{2}}$
4	3390.94v	1	29,481.92	$a^2D_{2\frac{1}{2}}-v^4D^0_{1\frac{1}{2}}$
7	3390.797	3–III	29,483.16	$z^6D^0_{2\frac{1}{2}}-3_{3\frac{1}{2}}$
4	3390.**396**v	5–III	29,486.65	$a^2D_{1\frac{1}{2}}-x^4P^0_{\frac{1}{2}}$
11	3388.677	1–III	29,501.60	$a^4P_{1\frac{1}{2}}-z^2P^0_{1\frac{1}{2}}$
5	3388.494	3	29,503.20	$a^2G_{4\frac{1}{2}}-v^4D^0_{3\frac{1}{2}}$
4	3388.**163**v	30r–II	29,506.08	$b^4F_{2\frac{1}{2}}-y^4F^0_{1\frac{1}{2}}$
4	3387.47v	1–IV	29,512.09	$a^4P_{\frac{1}{2}}-x^2D^0_{1\frac{1}{2}}$
5	3387.061	1–IV	29,515.68	$a^2P_{1\frac{1}{2}}-u^4D^0_{\frac{1}{2}}$
11	3386.471	1g?	29,520.82	$z^6F^0_{1\frac{1}{2}}-1_{2\frac{1}{2}}$
5	3385.559	6	29,528.77	$z^6D^0_{2\frac{1}{2}}-f^4H_{3\frac{1}{2}}$
4	3385.**219**v	25r–II	29,531.74	$b^4F_{3\frac{1}{2}}-y^4G^0_{2\frac{1}{2}}$
4	3384.78v	4	29,535.57	$z^6D^0_{1\frac{1}{2}}-4_{2\frac{1}{2}}$
4	3383.**909**v	4–III	29,543.17	$z^6D^0_{2\frac{1}{2}}-f^6F_{2\frac{1}{2}}$
4	3383.18v	3	29,549.51	$z^6F^0_{2\frac{1}{2}}-f^4D_{2\frac{1}{2}}$
4	3382.96v	1	29,551.45	$a^2D_{2\frac{1}{2}}-v^4D^0_{2\frac{1}{2}}$
7	3382.071	2–III	29,559.22	$a^2P_{\frac{1}{2}}-x^2P^0_{1\frac{1}{2}}$
5	3381.498	4–III	29,564.23	$a^2G_{4\frac{1}{2}}-x^2G^0_{4\frac{1}{2}}$
4	3379.71v	1	29,579.86	$z^4G^0_{3\frac{1}{2}}-g^4H_{3\frac{1}{2}}$
4	3378.**736**v	5–III	29,588.40	$a^2P_{1\frac{1}{2}}-y^2S^0_{\frac{1}{2}}$
4	3378.**357**v	3–III	29,591.72	$z^6D^0_{3\frac{1}{2}}-f^4H_{4\frac{1}{2}}$
4	3377.90v	2	29,595.75	$z^4G^0_{5\frac{1}{2}}-g^4H_{5\frac{1}{2}}$
4	3377.**060**v	5–II	29,603.08	$a^4P_{2\frac{1}{2}}-w^4D^0_{3\frac{1}{2}}$
5	3376.934	2	29,604.18	$b^2P_{1\frac{1}{2}}-12^0_{1\frac{1}{2}}$
4	3376.**206**v	2–III	29,610.57	$z^6F^0_{3\frac{1}{2}}-f^4P_{2\frac{1}{2}}$
7	3375.238	1	29,619.06	$z^6F^0_{2\frac{1}{2}}-e^6D_{3\frac{1}{2}}$
5	3374.303	5–III	29,627.27	$z^6D^0_{3\frac{1}{2}}-f^6F_{3\frac{1}{2}}$
4	3373.**969**v	4–III	29,630.20	$a^4P_{2\frac{1}{2}}-x^2F^0_{2\frac{1}{2}}$
4	3373.33v	2	29,635.78	$z^6D^0_{3\frac{1}{2}}-i^4F_{2\frac{1}{2}}$
4	3373.**226**v	7–III	29,636.73	$a^2P_{1\frac{1}{2}}-x^2S^0_{\frac{1}{2}}$
4	3372.45v	2	29,643.58	$b^2D_{1\frac{1}{2}}-t^2F^0_{2\frac{1}{2}}$
5	3371.015	2	29,656.17	$z^6F^0_{4\frac{1}{2}}-f^4G_{5\frac{1}{2}}$
4	3370.80v	2	29,658.02	$z^6D^0_{1\frac{1}{2}}-5_{1\frac{1}{2},2\frac{1}{2}}$
4	3370.**322**v	10–I	29,662.27	$b^4F_{2\frac{1}{2}}-z^2D^0_{1\frac{1}{2}}$
10	3368.67	1	29,676.81	$a^2D_{2\frac{1}{2}}-w^2D^0_{1\frac{1}{2}}$
5	3368.570	8	29,677.69	$z^6D^0_{3\frac{1}{2}}-e^6D_{2\frac{1}{2}}$
11	3367.411	1	29,687.91	$z^6D^0_{4\frac{1}{2}}-f^4H_{5\frac{1}{2}}$
4	3367.**111**v	30r–II	29,690.55	$b^4F_{4\frac{1}{2}}-y^4G^0_{3\frac{1}{2}}$
5	3365.014	2–III	29,709.05	$b^4P_{\frac{1}{2}}-x^4P^0_{1\frac{1}{2}}$ $(b^2P_{\frac{1}{2}}-v^2P^0_{1\frac{1}{2}})$
7	3364.900	1n	29,710.06	$z^6D^0_{2\frac{1}{2}}-e^6G_{2\frac{1}{2}}$
4	3364.**255**v	4–III	29,715.76	$a^2D_{1\frac{1}{2}}-v^2D^0_{1\frac{1}{2}}$
5	3363.760	3–IV	29,720.13	$z^6D^0_{3\frac{1}{2}}-e^6G_{3\frac{1}{2}}$
5	3363.274	4–III	29,724.42	$z^6D^0_{4\frac{1}{2}}-e^6D_{3\frac{1}{2}}$

TABLE VIII.—*Continued.*

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
4	3362.**797**v	6–III	29,728.64	$z^6D^0_{4\frac{1}{2}}-f^6F_{4\frac{1}{2}}$
10	3362.085	1	29,734.93	$a^4F_{4\frac{1}{2}}-z^4G^0_{3\frac{1}{2}}$?
4	3361.**553**v	5?–III	29,739.64	$z^6D^0_{4\frac{1}{2}}-e^6G_{5\frac{1}{2}}$
5	3361.267	18	29,742.17	$a^4P_{2\frac{1}{2}}-z^2P^0_{1\frac{1}{2}}$
5	3361.093	5	29,743.71	$z^6F^0_{2\frac{1}{2}}-i^4F_{3\frac{1}{2}}$
4	3359.**284**v	6–III	29,759.73	$a^4P_{2\frac{1}{2}}-x^2F^0_{3\frac{1}{2}}$
4	3359.**066**v	3–III	29,761.66	$b^4P_{\frac{1}{2}}-x^4P^0_{\frac{1}{2}}$
4	3358.**003**v	3–III	29,771.08	$a^2P_{1\frac{1}{2}}-x^2P^0_{\frac{1}{2}}$ $a^2P_{\frac{1}{2}}-t^4D^0_{1\frac{1}{2}}$
4	3356.**842**v	3–III	29,781.38	$z^6F^0_{2\frac{1}{2}}-f^4G_{3\frac{1}{2}}$
4	3356.**464**v	6–III	29,784.73	$a^2D_{2\frac{1}{2}}-y^4S^0_{1\frac{1}{2}}$
4	3355.**940**v	2–III	29,789.38	$a^2D_{1\frac{1}{2}}-v^4D^0_{1\frac{1}{2}}$
5	3355.118	3–III	29,796.68	$a^2P_{\frac{1}{2}}-t^4D^0_{\frac{1}{2}}$
4	3354.**374**v	20–II	29,803.29	$b^4F_{3\frac{1}{2}}-y^4F^0_{2\frac{1}{2}}$
5	3354.213	4–III?	29,804.72	$z^6F^0_{4\frac{1}{2}}-f^6F_{5\frac{1}{2}}$
4	3351.**539**v	3–III	29,828.50	$z^6F^0_{2\frac{1}{2}}-1_{2\frac{1}{2}}$
4	3351.**138**v	1–IV	29,832.06	$z^6F^0_{3\frac{1}{2}}-f^4G_{4\frac{1}{2}}$
5	3350.376	4h	29,838.85	$z^6F^0_{4\frac{1}{2}}-h^4F_{3\frac{1}{2}}$
4	3349.**519**v	7	29,846.49	$z^6F^0_{4\frac{1}{2}}-f^4D_{3\frac{1}{2}}$
4	3349.**204**v	3h	29,849.29	$z^6D^0_{4\frac{1}{2}}-i^4F_{3\frac{1}{2}}$
4	3348.**112**v	8–II	29,859.03	$a^2D_{1\frac{1}{2}}-v^4D^0_{2\frac{1}{2}}$
5	3347.574	7	29,863.82	$z^6F^0_{1\frac{1}{2}}-i^4F_{2\frac{1}{2}}$
4	3346.**932**v	8–III	29,869.55	$z^6F^0_{4\frac{1}{2}}-e^6D_{4\frac{1}{2}}$
5	3346.310	1–IIIA	29,875.10	$a^4P_{1\frac{1}{2}}-x^2D^0_{1\frac{1}{2}}$
4	3345.57v	2	29,881.69	$b^2G_{4\frac{1}{2}}-21^0_{3\frac{1}{2},4\frac{1}{2}}$
7	3345.146	1	29,885.50	$a^4P_{1\frac{1}{2}}-x^2D^0_{2\frac{1}{2}}$
4	3345.02v	3	29,886.63	$z^6D^0_{4\frac{1}{2}}-f^4G_{3\frac{1}{2}}$?
5	3344.245	2–III	29,893.55	$a^2D_{2\frac{1}{2}}-v^2D^0_{2\frac{1}{2}}$
7	3343.530	1	29,899.94	$z^6F^0_{5\frac{1}{2}}-f^4G_{5\frac{1}{2}}$
5	3342.734	8–III	29,907.07	$a^2D_{2\frac{1}{2}}-y^2P^0_{1\frac{1}{2}}$
5	3342.564	4	29,908.59	
4	3341.**947**v	5–III	29,914.11	$b^4P_{1\frac{1}{2}}-w^2D^0_{2\frac{1}{2}}$
4	3341.**341**v	5–III	29,919.53	$b^2G_{4\frac{1}{2}}-s^2F^0_{3\frac{1}{2}}$
4	3341.04v	5	29,922.22	$b^2D_{1\frac{1}{2}}-u^2L^0_{1\frac{1}{2}}$
4	3339.**780**v	8–III	29,933.51	$z^6F^0_{4\frac{1}{2}}-e^6P_{3\frac{1}{2}}$
4	3339.15v	4	29,939.15	$b^2G_{3\frac{1}{2}}-s^2F^0_{2\frac{1}{2}}$
4	3338.71v	2	29,943.07	$b^2D_{2\frac{1}{2}}-16^0_{2\frac{1}{2}}$
5	3338.519	1–III	29,944.82	$a^2P_{1\frac{1}{2}}-x^2P^0_{1\frac{1}{2}}$
4	3337.50v	3	29,954.00	$z^6D^0_{3\frac{1}{2}}-3_{3\frac{1}{2}}$
4	3337.**171**v	8–I	29,956.92	$b^4F_{4\frac{1}{2}}-y^2G^0_{4\frac{1}{2}}$
4	3334.45v	1	29,981.38	$z^6D^0_{2\frac{1}{2}}-5_{1\frac{1}{2},2\frac{1}{2}}$
4	3334.**146**v	30r–II	29,984.10	$b^4F_{4\frac{1}{2}}-y^4F^0_{3\frac{1}{2}}$ $(a^2D_{1\frac{1}{2}}-w^2D^0_{1\frac{1}{2}})$
7	3333.688	1n	29,988.22	$b^2G_{3\frac{1}{2}}-u^2D^0_{2\frac{1}{2}}$
4	3333.**388**v	10–I	29,990.91	$b^4F_{3\frac{1}{2}}-y^2G^0_{3\frac{1}{2}}$ $(b^4P_{\frac{1}{2}}-v^2D^0_{1\frac{1}{2}})$
4	3331.67v	2	30,006.36	$z^6F^0_{5\frac{1}{2}}-f^4H_{6\frac{1}{2}}$
4	3330.81v	4w	30,014.12	$z^6D^0_{3\frac{1}{2}}-f^6F_{2\frac{1}{2}}$?
4	3329.**466**v	5–III	30,026.24	$z^6F^0_{3\frac{1}{2}}-e^6D_{3\frac{1}{2}}$
4	3329.**013**v	2–III	30,030.33	$z^6F^0_{3\frac{1}{2}}-f^6F_{4\frac{1}{2}}$
4	3328.**207**v	3–III	30,037.60	$z^6F^0_{1\frac{1}{2}}-2_{1\frac{1}{2}}$
4	3327.50v	4w	30,043.94	$z^6D^0_{3\frac{1}{2}}-e^6H_{4\frac{1}{2}}$
5	3326.991	8–III	30,048.57	$z^6F^0_{5\frac{1}{2}}-f^6F_{5\frac{1}{2}}$
5	3326.564	2–IIIA	30,052.43	$a^4P_{2\frac{1}{2}}-w^4F^0_{3\frac{1}{2}}$
4	3326.38v	0	30,054.10	$a^2P_{1\frac{1}{2}}-t^4D^0_{2\frac{1}{2}}$
4	3326.27v	1	30,055.06	$a^4P_{\frac{1}{2}}-z^2S^0_{\frac{1}{2}}$ $z^6D^0_{4\frac{1}{2}}-e^6G_{4\frac{1}{2}}$
4	3325.43v	2	30,062.69	$a^2P_{\frac{1}{2}}-w^2S^0_{\frac{1}{2}}$
4	3325.**240**v	10–II	30,064.40	$b^4P_{\frac{1}{2}}-v^4D^0_{1\frac{1}{2}}$
4	3324.81v	2w	30,068.26	$b^2G_{3\frac{1}{2}}-v^2G^0_{4\frac{1}{2}}$
4	3324.70v	1	30,069.31	$b^2D_{2\frac{1}{2}}-17^0_{2\frac{1}{2}}$
4	3322.**198**v	8–III	30,091.93	$a^2D_{1\frac{1}{2}}-y^4S^0_{1\frac{1}{2}}$ $b^2G_{4\frac{1}{2}}-v^2G^0_{4\frac{1}{2}}$
5	3321.912	2–III	30,094.51	$a^2D_{2\frac{1}{2}}-u^4D^0_{3\frac{1}{2}}$
4	3319.**822**v	4–III	30,113.46	$z^6F^0_{5\frac{1}{2}}-e^6D_{4\frac{1}{2}}$
5	3319.561	8	30,115.83	$a^4P_{2\frac{1}{2}}-x^2D^0_{1\frac{1}{2}}$
5	3319.478	8–II	30,116.58	$z^6F^0_{5\frac{1}{2}}-e^6G_{6\frac{1}{2}}$
5	3319,156	4–III	30,119.51	$z^6F^0_{3\frac{1}{2}}-e^6P_{2\frac{1}{2}}$
4	3318.60v	1	30,124.60	$z^6F^0_{1\frac{1}{2}}-f^4G_{2\frac{1}{2}}$
4	3318.**398**v	4–II	30,126.38	$a^4P_{2\frac{1}{2}}-x^2D^0_{2\frac{1}{2}}$
4	3317.93v	0	30,130.63	$b^4P_{1\frac{1}{2}}-x^4P^0_{1\frac{1}{2}}$
5	3315.035	3–III	30,156.94	$a^2P_{1\frac{1}{2}}-t^4D^0_{1\frac{1}{2}}$ $z^6F^0_{\frac{1}{2}}-e^6G_{1\frac{1}{2}}$
5	3314.345	2–V	30,163.22	$z^6F^0_{2\frac{1}{2}}-f^6F_{3\frac{1}{2}}$
4	3314.**073**v	8–III	30,165.70	$a^4P_{1\frac{1}{2}}-w^4F^0_{2\frac{1}{2}}$ $b^2G_{3\frac{1}{2}}-v^2G^0_{3\frac{1}{2}}$
4	3313.38v	1	30,171.99	$z^6F^0_{2\frac{1}{2}}-i^4F_{2\frac{1}{2}}$
4	3313.**116**v	2–IV	30,174.41	$z^6F^0_{\frac{1}{2}}-e^6D_{1\frac{1}{2}}$ $(a^4P_{2\frac{1}{2}}-4^0_{3\frac{1}{2}})$
4	3312.**825**v	3–III	30,177.06	$(z^6F^0_{5\frac{1}{2}}-i^4F_{4\frac{1}{2}})$
5	3312.277	3	30,182.05	$a^2P_{1\frac{1}{2}}-t^4D^0_{\frac{1}{2}}$
5	3312.148	7–II	30,183.23	$b^4P_{1\frac{1}{2}}-x^4P^0_{\frac{1}{2}}$
4	3311.48v	3	30,189.28	$b^2G_{4\frac{1}{2}}-v^2G^0_{3\frac{1}{2}}$
4	3310.16v	1	30,201.32	$a^2D_{1\frac{1}{2}}-v^2D^0_{2\frac{1}{2}}$
5	3309.017	2	30,211.79	$b^2P_{1\frac{1}{2}}-u^2F^0_{2\frac{1}{2}}$
4	3308.**814**v	4–III	30,213.64	$z^6F^0_{2\frac{1}{2}}-e^6D_{2\frac{1}{2}}$
7	3308.688	1	30,214.79	$a^2D_{1\frac{1}{2}}-y^2P^0_{1\frac{1}{2}}$
4	3308.**482**v	4–III	30,216.68	$z^6F^0_{2\frac{1}{2}}-e^6P_{1\frac{1}{2}}$
5	3307.473	4	30,225.89	$a^2P_{1\frac{1}{2}}-v^2F^0_{2\frac{1}{2}}$
4	3307.**156**v	7–II	30,228.79	$b^4P_{1\frac{1}{2}}-x^4P^0_{2\frac{1}{2}}$
4	3306.**404**v	1–IV	30,235.66	$z^6F^0_{3\frac{1}{2}}-1_{2\frac{1}{2}}$
4	3305.**730**v	2–III	30,241.83	$z^6F^0_{1\frac{1}{2}}-f^6F_{2\frac{1}{2}}$
4	3305.**109**v	2–IV	30,247.51	
4	3304.**791**v	1–IV	30,250.42	$a^2P_{\frac{1}{2}}-w^2P^0_{1\frac{1}{2}}$
4	3304.**119**v	3–IV	30,256.57	$z^6F^0_{2\frac{1}{2}}-e^6G_{3\frac{1}{2}}$
4	3303.**881**v	4–II	30,258.75	$a^4P_{\frac{1}{2}}-y^4P^0_{1\frac{1}{2}}$
7	3302.781	1	30,268.83	$z^6D^0_{4\frac{1}{2}}-f^6F_{3\frac{1}{2}}$
4	3299.11v	0	30,302.49	$z^6F^0_{4\frac{1}{2}}-f^4G_{4\frac{1}{2}}$
4	3298.**680**v	6–III	30,306.46	$b^4P_{\frac{1}{2}}-v^4D^0_{\frac{1}{2}}$
4	3297.22v	6	30,319.85	$z^6D^0_{4\frac{1}{2}}-e^6H_{5\frac{1}{2}}$
4	3296.19v	3	30,329.36	$z^6D^0_{3\frac{1}{2}}-4_{2\frac{1}{2}}$
5	3294.536	2–IV	30,344.58	$z^6F^0_{\frac{1}{2}}-f^6F_{1\frac{1}{2}}$
4	3294.48v	1	30,345.09	$a^4P_{1\frac{1}{2}}-5^0_{1\frac{1}{2}}$
5	3294.098	3	30,348.61	$z^6F^0_{1\frac{1}{2}}-e^6G_{1\frac{1}{2}}$
5	3293.861	2–III	30,350.80	$a^2D_{2\frac{1}{2}}-w^2F^0_{2\frac{1}{2}}$
4	3293.**210**v	3–III	30,356.80	$z^6F^0_{3\frac{1}{2}}-e^6G_{4\frac{1}{2}}$
4	3292.44v	2	30,363.94	$a^2P_{1\frac{1}{2}}-x^4S^0_{1\frac{1}{2}}$
4	3292.22v	1	30,365.96	$z^6F^0_{1\frac{1}{2}}-e^6D_{1\frac{1}{2}}$
4	3292.**081**v	3–III	30,367.21	$b^4P_{\frac{1}{2}}-y^4S^0_{1\frac{1}{2}}$
5	3287.827	5	30,406.49	$a^4P_{2\frac{1}{2}}-w^4F^0_{2\frac{1}{2}}$
4	3287.**575**v	2–III	30,408.83	$z^6F^0_{1\frac{1}{2}}-e^6G_{2\frac{1}{2}}$
4	3287.**192**v	7–II	30,412.37	$b^4P_{1\frac{1}{2}}-v^2D^0_{1\frac{1}{2}}$
5	3286.545	1–III	30,418.35	$a^4P_{1\frac{1}{2}}-z^2S^0_{\frac{1}{2}}$
5	3285.874	5	30,424.57	$b^2P_{1\frac{1}{2}}-v^2P^0_{1\frac{1}{2}}$?
5	3283.777	3–II	30,444.00	$a^4P_{1\frac{1}{2}}-y^4P^0_{2\frac{1}{2}}$
4	3283.**466**v	9–I	30,446.88	$a^2D_{2\frac{1}{2}}-w^2F^0_{3\frac{1}{2}}$
5	3283.329	4–III	30,448.15	$a^2P_{1\frac{1}{2}}-w^2S^0_{\frac{1}{2}}$
5	3282.232	1–III	30,458.32	$a^4P_{\frac{1}{2}}-y^4P^0_{\frac{1}{2}}$
7	3282.041	1–IV	30,460.10	$z^6F^0_{4\frac{1}{2}}-f^4H_{5\frac{1}{2}}$
7	3281.820	2	30,462.15	$a^2P_{1\frac{1}{2}}-8^0_{1\frac{1}{2}}$
4	3281.**585**v	2–IA	30,464.34	$a^4F_{2\frac{1}{2}}-z^2F^0_{3\frac{1}{2}}$
4	3279.**254**v	5–II	30,485.99	$b^4P_{1\frac{1}{2}}-v^4D^0_{1\frac{1}{2}}$
4	3278.**842**v	6–III	30,489.82	$b^4P_{\frac{1}{2}}-y^2P^0_{1\frac{1}{2}}$
4	3278.**105**v	2–IV	30,496.67	$z^6F^0_{4\frac{1}{2}}-e^6L_{3\frac{1}{2}}$
4	3277.**662**v	3–III	30,500.79	$z^6F^0_{4\frac{1}{2}}-f^6F_{4\frac{1}{2}}$
4	3277.**304**v	4–III	30,504.12	$b^4P_{2\frac{1}{2}}-w^2D^0_{2\frac{1}{2}}$
4	3276.**483**v	4–III	30,511.77	$z^6F^0_{4\frac{1}{2}}-e^6G_{5\frac{1}{2}}$
4	3276.23v	2	30,514.08	$z^6F^0_{1\frac{1}{2}}-e^6H_{2\frac{1}{2}}$
4	3275.66v	1	30,519.40	$a^4P_{1\frac{1}{2}}-w^4F^0_{1\frac{1}{2}}$
5	3273.931	10	30,535.55	
4	3272.76v	1	30,546.49	$z^6F^0_{5\frac{1}{2}}-f^4G_{4\frac{1}{2}}$
5	3272.405	3	30,549.79	$z^6F^0_{2\frac{1}{2}}-f^6F_{2\frac{1}{2}}$
4	3271.**778**v	8–II	30,555.64	$b^4P_{1\frac{1}{2}}-v^4D^0_{2\frac{1}{2}}$
5	3270.198	2–IV	30,570.40	$z^6F^0_{3\frac{1}{2}}-f^6F_{3\frac{1}{2}}$
4	3269.30v	3	30,578.80	$z^6F^0_{3\frac{1}{2}}-i^4F_{2\frac{1}{2}}$
4	3268.**894**v	1–III	30,582.60	$b^4P_{2\frac{1}{2}}-x^2G^0_{3\frac{1}{2}}$
4	3268.56v	2w	30,585.77	$a^4P_{2\frac{1}{2}}-5^0_{1\frac{1}{2}}$
4	3267.**998**v	1–IV	30,590.99	
4	3267.68v	2	30,593.98	$z^6P^0_{\frac{1}{2}}-6_{\frac{1}{2}}$
4	3266.47v	4	30,605.30	$a^2G_{3\frac{1}{2}}-6^0_{3\frac{1}{2}}$
4	3265.**352**v	3–III	30,615.77	$a^2D_{2\frac{1}{2}}-u^4D^0_{2\frac{1}{2}}$
4	3264.**842**v	5–I	30,620.56	$a^2D_{1\frac{1}{2}}-y^2P^0_{\frac{1}{2}}$ $(a^4F_{2\frac{1}{2}}-y^4D^0_{3\frac{1}{2}})$ $(z^6F^0_{3\frac{1}{2}}-e^6D_{2\frac{1}{2}})$
7	3264.718	7h	30,621.72	$a^4P_{1\frac{1}{2}}-y^4P^0_{1\frac{1}{2}}$
4	3263.**213**v	4–II	30,635.84	$a^2P_{1\frac{1}{2}}-w^2P^0_{1\frac{1}{2}}$
4	3260.**814**v	9–II	30,658.38	$a^2D_{1\frac{1}{2}}-w^2F^0_{2\frac{1}{2}}$
4	3260.72v?	—	30,659.31	$b^2P_{1\frac{1}{2}}-w^4P^0_{2\frac{1}{2}}$
5	3260.286	5	30,663.34	$z^6F^0_{3\frac{1}{2}}-e^6G_{3\frac{1}{2}}$
5	3259.847	3	30,667.48	
4	3259.20v	6	30,673.60	$z^6F^0_{2\frac{1}{2}}-e^6D_{1\frac{1}{2}}$
4	3258.**418**v	1–III	30,680.92	$b^4P_{1\frac{1}{2}}-w^2D^0_{1\frac{1}{2}}$
4	3258.**035**v	4–III	30,684.53	$a^4P_{2\frac{1}{2}}-y^4P^0_{2\frac{1}{2}}$
4	3254.63v	9	30,716.60	$z^6F^0_{2\frac{1}{2}}-e^6G_{2\frac{1}{2}}$
4	3254.**202**v	12–II	30,720.67	$b^4P_{2\frac{1}{2}}-x^4P^0_{1\frac{1}{2}}$
7	3253.416	1–IV	30,728.09	$b^4P_{1\frac{1}{2}}-v^4D^0_{\frac{1}{2}}$
4	3251.**656**v	2	30,744.72	$z^6F^0_{5\frac{1}{2}}-f^6F_{4\frac{1}{2}}$
4	3250.51v	5w	30,755.57	$z^6F^0_{5\frac{1}{2}}-e^6G_{5\frac{1}{2}}$
5	3250.335	4	30,757.22	$a^2G_{4\frac{1}{2}}-w^2F^0_{3\frac{1}{2}}$
4	3249.**995**v	6–II	30,760.44	$b^4F_{2\frac{1}{2}}-y^2F^0_{3\frac{1}{2}}$
4	3247.**170**v	8–II	30,787.20	$b^4P_{2\frac{1}{2}}-v^4D^0_{3\frac{1}{2}}$ $(z^6F^0_{2\frac{1}{2}}-e^6H_{3\frac{1}{2}})$
5	3246.997	4–III	30,788.83	$b^4P_{1\frac{1}{2}}-y^4S^0_{1\frac{1}{2}}$
4	3245.**750**v	3	30,800.67	$a^2H_{4\frac{1}{2}}-v^2G^0_{4\frac{1}{2}}$
4	3243.**840**v	8–II	30,818.80	$b^4P_{2\frac{1}{2}}-x^4P^0_{2\frac{1}{2}}$
5	3243.579	2–III	30,821.28	$a^4P_{1\frac{1}{2}}-y^4P^0_{\frac{1}{2}}$
4	3241.**548**v	5	30,840.59	$z^6F^0_{5\frac{1}{2}}-e^6H_{6\frac{1}{2}}$
4	3241.05v	3	30,845.31	$a^4F_{1\frac{1}{2}}-y^4D^0_{2\frac{1}{2}}$
7	3239.256	1	30,862.41	$a^4P_{2\frac{1}{2}}-y^4P^0_{1\frac{1}{2}}$
4	3238.92v	5	30,865.59	$z^6F^0_{2\frac{1}{2}}-4_{2\frac{1}{2}}$
4	3237.80v	2	30,876.25	$b^2D_{2\frac{1}{2}}-t^2F^0_{2\frac{1}{2}}$
4	3237.**028**v	8–II	30,883.65	$a^4F_{3\frac{1}{2}}-z^2G^0_{4\frac{1}{2}}$
5	3235.783	5h	30,895.53	$b^4P_{\frac{1}{2}}-y^2P^0_{\frac{1}{2}}$
4	3235.**532**v	6–II	30,897.93	$a^2H_{4\frac{1}{2}}-v^2G^0_{3\frac{1}{2}}$ $b^4P_{1\frac{1}{2}}-v^2D^0_{2\frac{1}{2}}$
5	3234.119	1–IV	30,911.43	$b^4P_{1\frac{1}{2}}-y^2P^0_{1\frac{1}{2}}$
4	3232.**874**v	60	30,923.33	$a^2D_{1\frac{1}{2}}-u^4D^0_{2\frac{1}{2}}$
4	3229.36v	3	30,956.93	$z^6F^0_{3\frac{1}{2}}-f^6F_{2\frac{1}{2}}$
4	3227.**752**v	2–IIA	30,972.40	$a^4F_{1\frac{1}{2}}-z^2F^0_{2\frac{1}{2}}$
4	3226.**986**v	4–III	30,979.75	$a^2P_{\frac{1}{2}}-w^2P^0_{\frac{1}{2}}$
4	3226.25v	6	30,986.84	$z^6F^0_{3\frac{1}{2}}-e^6H_{4\frac{1}{2}}$
4	3226.15v	2	30,987.77	$a^2H_{4\frac{1}{2}}-22^0_{3\frac{1}{2}}$ $z^6F^0_{2\frac{1}{2}}-5_{1\frac{1}{2},2\frac{1}{2}}$
4	3224.**632**v	4–III	31,002.37	$b^4P_{2\frac{1}{2}}-v^2D^0_{1\frac{1}{2}}$

TABLE VIII.—*Continued.*

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
5	3223.147	1–IIIA	31,016.65	$b^4F_{1\frac12}-y^2D^0_{2\frac12}$
4	3220.62v	4	31,040.99	$z^6F^0_{4\frac12}-f^6F_{3\frac12}$
4	3219.**150**v	5–II	31,055.17	$a^4F_{3\frac12}-z^2F^0_{3\frac12}$
5	3216.996	1–III	31,075.95	$b^4P_{2\frac12}-v^4D^0_{1\frac12}$
4	3215.**332**v	1–IV	31,092.04	$z^6F^0_{4\frac12}-e^6H_{5\frac12}$
4	3211.01v	4	31,133.87	$z^6F^0_{4\frac12}-e^6G_{3\frac12}$
4	3210.85v	3n–IV	31,135.41	
4	3210.**219**v	5–III	31,141.56	$a^2D_{1\frac12}-u^4D^0_{1\frac12}$
4	3209.80v	1	31,145.57	$b^4P_{2\frac12}-v^4D^0_{2\frac12}$
4	3208.85v	1	31,154.84	$b^2D_{2\frac12}-u^2D^0_{1\frac12}$
4	3205.**883**v	1–IV	31,183.67	$b^2D_{2\frac12}-s^2F^0_{3\frac12}$
4	3205.40v	0	31,188.34	$a^2F_{2\frac12}-x^4D^0_{3\frac12}$
4	3204.77v	1	31,194.54	$z^6F^0_{3\frac12}-e^6H_{3\frac12}$
4	3203.**026**v	4–I	31,211.49	$a^4F_{3\frac12}-y^4D^0_{3\frac12}$
4	3199.**322**v	4–I	31,247.62	$a^4F_{2\frac12}-y^4D^0_{2\frac12}$
4	3198.**660**v	5–II	31,254.09	$b^4F_{1\frac12}-y^2F^0_{2\frac12}$
4	3196.93v	2w	31,270.96	$b^4P_{2\frac12}-w^2D^0_{1\frac12}$
4	3196.74v	1	31,272.86	$z^6F^0_{3\frac12}-4_{2\frac12}$?
7	3196.423	1	31,275.96	$b^2D_{2\frac12}-u^2D^0_{2\frac12}$
4	3193.**164**v	5–II	31,307.88	$b^4F_{3\frac12}-y^2F^0_{3\frac12}$
4	3192.**220**v	3–III	31,317.14	$b^4P_{1\frac12}-y^2P^0_{\frac12}$
4	3191.**297**v	4–II	31,326.20	$a^4F_{2\frac12}-z^2G^0_{3\frac12}$
7	3190.910	1	31,329.99	$a^2P_{\frac12}-12^0_{1\frac12}$
4	3189.**752**v	5–I	31,341.37	$a^4F_{1\frac12}-y^4D^0_{1\frac12}$
4	3188.**377**v	7–III	31,354.88	$b^4P_{1\frac12}-w^2F^0_{2\frac12}$
4	3187.60v	3	31,362.52	$b^2P_{1\frac12}-16^0_{2\frac12}$
4	3187.34v	4	31,365.13	$a^2P_{1\frac12}-w^2P^0_{\frac12}$
4	3186.**350**v	5–I	31,374.83	$a^4F_{2\frac12}-z^2F^0_{2\frac12}$
4	3185.**948**v	2–III	31,378.79	$b^4P_{2\frac12}-y^4S^0_{1\frac12}$
4	3182.**118**v	7–III	31,416.55	$b^4P_{\frac12}-u^4D^0_{1\frac12}$
4	3180.**290**v	2–III	31,434.61	$a^2D_{1\frac12}-u^4D^0_{\frac12}$
4	3179.**828**v	1–IV	31,439.18	$a^2D_{2\frac12}-t^4D^0_{3\frac12}$
4	3177.**266**v	8–III	31,464.53	
4	3174.**905**v	4–III	31,487.93	$b^4P_{2\frac12}-v^2D^0_{2\frac12}$
4	3174.**140**v	2–III	31,495.51	$a^2H_{5\frac12}-v^2G^0_{4\frac12}$
4	3173.56v	1	31,501.30	$b^4P_{2\frac12}-y^2P^0_{1\frac12}$
4	3173.**140**v	1–III	31,505.44	$a^4P_{\frac12}-x^4P^0_{1\frac12}$
4	3169.**766**v	9–III	31,538.97	$a^2D_{2\frac12}-v^2F^0_{3\frac12}$
5	3168.060	6–III	31,555.96	$a^2D_{2\frac12}-x^2P^0_{1\frac12}$
4	3161.**652**v	5–III	31,619.91	$b^4P_{1\frac12}-u^4D^0_{2\frac12}$
4	3159.**662**v	10–II	31,639.83	{ $a^4F_{1\frac12}-y^4D^0_{\frac12}$ { $b^4F_{2\frac12}-y^2F^0_{2\frac12}$
4	3158.**772**v	12–II	31,648.74	$a^4F_{3\frac12}-y^4G^0_{4\frac12}$
7	3158.458	1	31,651.89	$a^4P_{1\frac12}-w^2D^0_{2\frac12}$
7	3158.293	1	31,653.54	$a^4F_{1\frac12}-z^2D^0_{2\frac12}$
4	3157.**090**v	1–III	31,665.60	$a^2D_{2\frac12}-t^4D^0_{2\frac12}$
4	3154.**794**v	10–II	31,688.65	$b^4P_{2\frac12}-u^4D^0_{3\frac12}$
5	3154.678	5–III	31,689.81	$a^2D_{1\frac12}-x^2P^0_{\frac12}$
7	3153.692	1	31,699.72	$a^4F_{4\frac12}-z^2G^0_{4\frac12}$
4	3152.**707**v	6–III	31,709.62	$b^4P_{\frac12}-u^4D^0_{\frac12}$
7	3152.120	1	31,715.53	$a^2P_{1\frac12}-12^0_{1\frac12}$
5	3150.819	2–V	31,728.62	
5	3150.655	2–V	31,730.27	
4	3149.**310**v	10–II	31,743.82	$a^4F_{2\frac12}-y^4D^0_{1\frac12}$
4	3147.**060**v	15r–II	31,766.52	$a^4F_{2\frac12}-y^4G^0_{3\frac12}$
4	3145.49v	15g?	31,782.37	$b^4P_{\frac12}-y^2S^0_{\frac12}$
4	3145.**022**v	3–III	31,787.10	$a^4P_{\frac12}-v^2D^0_{1\frac12}$
4	3143.**814**v	2	31,799.32	$b^4F_{1\frac12}-y^2D^0_{1\frac12}$
4	3140.**715**v	2–IV	31,830.69	$b^4P_{\frac12}-x^2S^0_{\frac12}$
4	3139.**947**v	12–II	31,838.48	{ $a^4F_{3\frac12}-y^4D^0_{2\frac12}$ { $(b^4P_{1\frac12}-u^4D^0_{1\frac12})$
7	3138.893	1	31,849.17	$a^2G_{4\frac12}-v^2F^0_{3\frac12}$
4	3138.36v	2	31,854.58	$b^2P_{1\frac12}-w^4P^0_{\frac12}$
4	3137.**755**v	4–III	31,860.72	$a^4P_{\frac12}-v^4D^0_{1\frac12}$
7	3137.454	3–III	31,863.78	$a^2D_{1\frac12}-x^2P^0_{1\frac12}$
4	3137.**328**v	10–II	31,865.05	$a^4F_{1\frac12}-y^4G^0_{2\frac12}$
5	3136.999	1–III	31,868.40	$a^4P_{1\frac12}-x^4P^0_{1\frac12}$
4	3136.**726**v	5–II	31,871.17	$a^4F_{4\frac12}-z^2F^0_{3\frac12}$
4	3134.62v	2	31,892.56	$a^4P_{2\frac12}-w^2D^0_{2\frac12}$
4	3132.**218**v	4–II	31,917.04	$a^4F_{3\frac12}-z^2G^0_{3\frac12}$
4	3131.**829**v	1–IV	31,921.00	$a^4P_{1\frac12}-x^4P^0_{\frac12}$
4	3129.**481**v	3–III	31,944.95	$b^4P_{2\frac12}-w^2F^0_{2\frac12}$
4	3129.**006**v	3–II	31,949.80	$b^4F_{3\frac12}-y^2D^0_{2\frac12}$
4	3127.**252**v	7–I	31,967.72	$b^4F_{4\frac12}-y^2F^0_{3\frac12}$
5	3126.725	4–III	31,973.11	$a^2D_{1\frac12}-t^4D^0_{2\frac12}$
5	3126.488	1–IV	31,975.53	$a^2D_{2\frac12}-x^4S^0_{1\frac12}$
5	3121.566	10–II	32,025.95	$a^4F_{3\frac12}-y^4F^0_{4\frac12}$
5	3121.415	10–II	32,027.50	$a^4F_{4\frac12}-y^4D^0_{3\frac12}$
4	3120.10v	3	32,040.98	$b^4P_{2\frac12}-w^2F^0_{3\frac12}$
7	3119.154	1	32,050.71	$a^2D_{2\frac12}-7^0_{2\frac12}$
4	3118.**636**v	1–IIA	32,056.04	$a^4F_{2\frac12}-z^2D^0_{2\frac12}$
4	3118.**249**v	5–II	32,060.01	$a^4F_{2\frac12}-y^4F^0_{3\frac12}$
4	3116.75v	1	32,075.40	$a^2D_{1\frac12}-t^4D^0_{1\frac12}$
4	3114.**118**v	10Ni?	32,102.54	$a^4P_{\frac12}-v^4D^0_{\frac12}$
4	3113.**473**v	6–III	32,109.19	$a^4P_{2\frac12}-x^4P^0_{1\frac12}$
5	3111.339	2–III	32,131.21	$b^4P_{1\frac12}-u^4D^0_{\frac12}$
4	3110.**821**v	5–I	32,136.56	$a^4F_{1\frac12}-y^4F^0_{2\frac12}$
4	3110.62v	5	32,138.63	$b^4P_{\frac12}-x^2P^0_{1\frac12}$
5	3110.021	5–III	32,144.83	$a^2D_{1\frac12}-v^2F^0_{2\frac12}$
4	3109.**506**v	4–III	32,150.15	{ $a^4P_{1\frac12}-v^2D^0_{1\frac12}$ { $(a^2P_{\frac12}-v^2P^0_{1\frac12})$
4	3108.48v	1	32,160.74	$a^2F_{2\frac12}-z^4S^0_{1\frac12}$
**	3108.223	1	32,163.40	$a^4P_{\frac12}-y^4S^0_{1\frac12}$
4	3107.**540**v	1–IV	32,170.49	$a^2P_{\frac12}-v^2P^0_{\frac12}$
5	3107.044	3–III	32,175.62	$a^4P_{2\frac12}-v^4D^0_{3\frac12}$
4	3106.**142**v	1–IIIA	32,184.97	$b^4F_{2\frac12}-y^2D^0_{1\frac12}$
4	3105.**929**v	3–II	32,187.18	$b^4F_{3\frac12}-y^2F^0_{2\frac12}$
5	3103.983	5–III	32,207.35	$a^4P_{2\frac12}-x^4P^0_{2\frac12}$
4	3103.**735**v	5–III	32,209.93	$b^4P_{2\frac12}-u^4D^0_{2\frac12}$
4	3102.**405**v	4–III	32,223.74	$a^4P_{1\frac12}-v^4D^0_{1\frac12}$
4	3100.33v	5	32,245.32	$b^2D_{2\frac12}-23^0_{1\frac12}$
4	3100.15v	6d	32,247.22	$a^2D_{2\frac12}-w^2P^0_{1\frac12}$
4	3099.**667**v	2–III	32,252.20	$b^4P_{1\frac12}-x^2S^0_{\frac12}$
4	3098.**194**v	10–II	32,267.53	$a^4F_{2\frac12}-y^4G^0_{2\frac12}$
4	3096.**705**v	2–III	32,283.05	$a^2D_{1\frac12}-x^4S^0_{1\frac12}$
4	3096.**402**v	3–III	32,286.21	$a^4P_{\frac12}-y^2P^0_{1\frac12}$
4	3095.**716**v	3–III	32,293.36	$a^4P_{1\frac12}-v^4D^0_{2\frac12}$
4	3090.**251**v	4–III	32,350.47	$b^4P_{\frac12}-t^4D^0_{1\frac12}$
4	3089.**596**v	10–II	32,357.33	$a^4F_{3\frac12}-y^4G^0_{3\frac12}$
4	3088.**676**v	1–IIIA	32,366.97	{ $a^2F_{2\frac12}-x^4D^0_{1\frac12}$ { $(a^2D_{1\frac12}-w^2S^0_{\frac12})$
4	3087.**806**v	3–III	32,376.09	$b^4P_{\frac12}-t^4D^0_{\frac12}$
4	3087.35v	2	32,380.91	$a^2D_{1\frac12}-8^0_{1\frac12}$
4	3086.83v?	1?	32,386.30	$b^4P_{1\frac12}-x^2P^0_{\frac12}$
4	3086.**777**v	15r–II	32,386.88	$a^4F_{1\frac12}-y^4F^0_{1\frac12}$
4	3086.**393**v	4–III	32,390.90	$a^4P_{2\frac12}-v^2D^0_{1\frac12}$
4	3085.65v	3	32,398.72	$a^2H_{4\frac12}-25^0_{4\frac12}$
4	3083.**749**v	1	32,418.68	$a^4P_{1\frac12}-w^2D^0_{1\frac12}$
5	3082.844	2–III	32,428.19	$b^4P_{2\frac12}-u^4D^0_{1\frac12}$
4	3082.**614**v	12r–II	32,430.61	$a^4F_{4\frac12}-y^4G^0_{5\frac12}$
4	3079.**394**v	5–II	32,464.52	{ $a^4F_{4\frac12}-y^4G^0_{4\frac12}$ { $a^4P_{2\frac12}-v^4D^0_{1\frac12}$
4	3073.**520**v	3–III	32,526.56	$a^4P_{1\frac12}-y^4S^0_{1\frac12}$
5	3072.664	20	32,535.62	$a^2P_{1\frac12}-v^2P^0_{1\frac12}$
4	3072.**341**v	15r–II	32,539.04	$a^4F_{2\frac12}-y^4F^0_{2\frac12}$
4	3071.**957**v	6–I	32,543.11	$a^4F_{1\frac12}-z^2D^0_{1\frac12}$
5	3070.857	1–IV	32,554.77	$a^2D_{1\frac12}-w^2P^0_{1\frac12}$
5	3070.752	5	32,555.88	$a^2P_{1\frac12}-x^2P^0_{\frac12}$
7	3070.550	1	32,558.02	$b^4P_{\frac12}-x^4S^0_{1\frac12}$
4	3070.34v	1	32,560.26	$b^4P_{1\frac12}-x^2P^0_{1\frac12}$
7	3069.032	1	32,574.13	$b^2P_{1\frac12}-u^2D^0_{1\frac12}$
4	3064.**370**v	5–II	32,623.68	$a^4F_{3\frac12}-y^2G^0_{4\frac12}$
4	3063.25v	1	32,635.58	$a^4P_{1\frac12}-v^2D^0_{2\frac12}$
4	3062.46v	1	32,643.97	$a^2F_{2\frac12}-2^0_{2\frac12}$?
4	3062.**199**v	5–II	32,646.81	$a^4F_{3\frac12}-z^2D^0_{2\frac12}$
7	3061.983	1	32,649.11	$a^4P_{1\frac12}-y^2P^0_{1\frac12}$
4	3061.**822**v	20r–II	32,650.83	$a^4F_{3\frac12}-y^4F^0_{3\frac12}$
4	3061.**013**v	1–III	32,659.46	$a^4P_{2\frac12}-w^2D^0_{1\frac12}$
4	3060.**048**v	5–III	32,669.76	$b^4P_{1\frac12}-t^4D^0_{2\frac12}$
4	3056.**668**v	2	32,705.88	$a^2D_{2\frac12}-10^0_{3\frac12}$
5	3054.724	4–II	32,726.69	$a^4F_{2\frac12}-y^2G^0_{3\frac12}$
5	3054.132	18	32,733.04	$a^4F_{4\frac12}-z^2G^0_{3\frac12}$
5	3050.932	60	32,767.37	$a^4P_{2\frac12}-y^4S^0_{1\frac12}$
4	3050.**496**v	3–III	32,772.05	$b^4P_{1\frac12}-t^4D^0_{1\frac12}$
4	3048.**888**v	12r–II	32,789.34	$a^4F_{2\frac12}-y^4F^0_{1\frac12}$
4	3048.**108**v	2–IV	32,797.73	$b^4P_{1\frac12}-t^4D^0_{\frac12}$
4	3044.**004**v	30R–II	32,841.94	{ $a^4F_{4\frac12}-y^4F^0_{4\frac12}$ { $(b^4P_{1\frac12}-v^2F^0_{2\frac12})$
4	3042.**481**v	8–II	32,858.38	$a^4F_{3\frac12}-y^4G^0_{2\frac12}$
4	3040.**812**v	1–IV	32,876.42	$a^4P_{2\frac12}-v^2D^0_{2\frac12}$
4	3039.**563**v	3–III	32,889.93	$a^4P_{2\frac12}-y^2P^0_{1\frac12}$
4	3038.**302**v	2–III	32,903.57	$a^2F_{3\frac12}-x^4D^0_{2\frac12}$
4	3034.**432**v	6–II	32,945.53	$a^4F_{2\frac12}-z^2D^0_{1\frac12}$
4	3034.08v	1	32,949.30	{ $b^2D_{1\frac12}-34^0_{1\frac12,2\frac12}$ { $b^2P_{\frac12}-23^0_{1\frac12}$
4	3031.51v	0	32,977.28	$a^2G_{3\frac12}-y^2H^0_{4\frac12}$
4	3031.**288**v	2–III	32,979.70	$b^4P_{1\frac12}-x^4S^0_{1\frac12}$
4	3028.**184**v	1	33,013.51	
4	3026.**373**v	6–III	33,033.26	$b^4P_{2\frac12}-t^4D^0_{3\frac12}$
4	3024.**400**v	1	33,054.81	{ $a^4P_{1\frac12}-y^2P^0_{\frac12}$ { $b^4P_{1\frac12}-7^0_{2\frac12}$
4	3023.**590**v	1	33,063.67	$b^4P_{1\frac12}-w^2S^0_{\frac12}$
4	3023.11v	0	33,068.88	$a^2D_{2\frac12}-11^0_{2\frac12}$
4	3022.**355**v	3–III	33,077.18	$a^4P_{2\frac12}-u^4D^0_{3\frac12}$
4	3020.96v	1	33,092.46	$a^4P_{1\frac12}-w^2F^0_{2\frac12}$
4	3020.85v	2	33,093.65	$a^2H_{5\frac12}-25^0_{4\frac12}$
4	3017.**548**v	15r–II	33,129.87	$a^4F_{3\frac12}-y^4F^0_{2\frac12}$
4	3017.**254**v	3–III	33,133.09	$b^4P_{2\frac12}-v^2F^0_{3\frac12}$
4	3015.**686**v	3–III	33,150.32	$b^4P_{2\frac12}-x^2P^0_{1\frac12}$
4	3013.**592**v	8–II	33,173.36	$a^4F_{4\frac12}-y^4G^0_{3\frac12}$
4	3010.01v	0	33,212.85	$a^4P_{\frac12}-u^4D^0_{1\frac12}$
4	3007.59v	1	33,239.51	$a^2P_{\frac12}-w^4P^0_{1\frac12}$
4	3006.**523**v	1	33,251.35	$b^4P_{1\frac12}-w^2P^0_{1\frac12}$
4	3005.**974**v	2	33,257.43	
4	3005.**766**v	3–III	33,259.72	$b^4P_{2\frac12}-t^4D^0_{2\frac12}$
4	3000.**545**v	7–II	33,317.59	$a^4F_{3\frac12}-y^2G^0_{3\frac12}$
7	2999.714	1–IV	33,326.82	$a^2D_{2\frac12}-12^0_{1\frac12}$
4	2998.08v	3	33,344.99	$a^2G_{3\frac12}-u^2F^0_{3\frac12}$
7	2996.945	1	33,357.62	$a^4P_{1\frac12}-u^4D^0_{2\frac12}$

** Measure by R. B. King, communicated by letter, January, 1940.

TABLE VIII.—*Continued.*

REF.	λ IA	INT.–TC	WAVE NO. VAC.	MULTIPLET DESIGNATION
4	2996.76v	2	33,359.70	$a^2G_{3\frac{1}{2}}-w^2G^0_{4\frac{1}{2}}$
4	2996.**549**v	1–IV	33,362.02	$b^4P_{2\frac{1}{2}}-t^4D^0_{1\frac{1}{2}}$
7	2995.248	1	33,376.51	$a^2D_{1\frac{1}{2}}-11^0_{2\frac{1}{2}}$
4	2995.**150**v	50	33,377.60	$a^2G_{3\frac{1}{2}}-w^2G^0_{3\frac{1}{2}}$
4	2990.51v	4	33,429.42	$a^4P_{2\frac{1}{2}}-w^2F^0_{3\frac{1}{2}}$
4	2989.**590**v	15r–II	33,439.68	$a^4F_{4\frac{1}{2}}-y^2G^0_{4\frac{1}{2}}$
4	2987.**166**v	15r–II	33,466.81	$a^4F_{4\frac{1}{2}}-y^4F^0_{3\frac{1}{2}}$
4	2986.10v	0	33,478.74	$a^2G_{3\frac{1}{2}}-u^2F^0_{2\frac{1}{2}}$
4	2983.68v	0	33,505.88	$a^4P_{\frac{1}{2}}-u^4D^0_{\frac{1}{2}}$
4	2983.50v	2	33,507.96	$a^2F_{2\frac{1}{2}}-z^4P^0_{2\frac{1}{2}}$
4	2982.**262**v	1–III	33,521.84	$a^2F_{2\frac{1}{2}}-z^4P^0_{1\frac{1}{2}}$
7	2978.950	1n	33,559.11	$b^4P_{\frac{1}{2}}-w^2P^0_{\frac{1}{2}}$
4	2978.**010**v	30	33,569.70	$b^4P_{2\frac{1}{2}}-x^4S^0_{1\frac{1}{2}}$
4	2977.**462**v	1	33,575.88	$a^4P_{1\frac{1}{2}}-u^4D^0_{1\frac{1}{2}}$
4	2975.**464**v	4	33,598.43	$a^4P_{2\frac{1}{2}}-u^4D^0_{2\frac{1}{2}}$
4	2975.35v	1	33,599.68	$a^2P_{1\frac{1}{2}}-17^0_{2\frac{1}{2}}$
4	2973.**123**v	1	33,624.88	$a^2P_{1\frac{1}{2}}-w^4P^0_{1\frac{1}{2}}$
4	2972.93v	1	33,627.05	$a^4P_{\frac{1}{2}}-x^2S^0_{\frac{1}{2}}$
4	2972.30v	0	33,634.23	$a^2D_{1\frac{1}{2}}-12^0_{1\frac{1}{2}}$
4	2971.**363**v	1	33,644.78	$b^4P_{2\frac{1}{2}}-7^0_{2\frac{1}{2}}$
4	2969.79v	1	33,662.60	$a^2F_{3\frac{1}{2}}-2^0_{2\frac{1}{2}}$
7	2969.617	1w	33,664.58	$b^2P_{1\frac{1}{2}}-23^0_{1\frac{1}{2}}$
4	2969.24v	2	33,668.84	$a^2G_{3\frac{1}{2}}-x^2H^0_{4\frac{1}{2}}$
4	2959.16v	1	33,783.52	$a^2F_{3\frac{1}{2}}-x^4F^0_{4\frac{1}{2}}$
4	2957.**672**v	50	33,800.53	$a^2D_{2\frac{1}{2}}-u^2F^0_{3\frac{1}{2}}$
4	2955.**382**v	30	33,826.72	
4	2954.83v	1?	33,833.01	$a^2D_{2\frac{1}{2}}-w^2G^0_{3\frac{1}{2}}$
4	2951.69v	1	33,868.99	$a^4P_{1\frac{1}{2}}-u^4D^0_{\frac{1}{2}}$
4	2948.49v	1	33,905.74	$a^2G_{3\frac{1}{2}}-s^4D^0_{2\frac{1}{2}}$
4	2948.30v	2	33,907.94	$a^2G_{4\frac{1}{2}}-y^2H^0_{5\frac{1}{2}}$
4	2946.01v	0	33,934.36	$a^2D_{2\frac{1}{2}}-u^2F^0_{2\frac{1}{2}}$
4	2944.58v	2	33,950.79	$a^2G_{3\frac{1}{2}}-15^0_{3\frac{1}{2}}$?
4	2943.**479**v	30	33,963.50	$a^2D_{2\frac{1}{2}}-s^4D^0_{3\frac{1}{2}}$
4	2942.**624**v	1	33,973.37	$a^2F_{2\frac{1}{2}}-x^4F^0_{2\frac{1}{2}}$
4	2941.**993**v	1	33,980.66	$b^4P_{1\frac{1}{2}}-w^2P^0_{\frac{1}{2}}$
4	2941.**182**v	1	33,990.03	$a^4P_{1\frac{1}{2}}-x^2S^0_{\frac{1}{2}}$
4	2936.**546**v	1	34,043.68	{ $a^4F_{2\frac{1}{2}}-y^2F^0_{3\frac{1}{2}}$ { $a^4P_{2\frac{1}{2}}-6^0_{3\frac{1}{2}}$
4	2934.**014**v	5	34,073.06	$b^4P_{1\frac{1}{2}}-11^0_{2\frac{1}{2}}$
4	2929.**505**v	75	34,125.50	$a^2G_{4\frac{1}{2}}-w^2G^0_{4\frac{1}{2}}$
4	2928.**812**v	50	34,133.58	$a^4F_{4\frac{1}{2}}-y^2G^0_{3\frac{1}{2}}$
4	2927.**970**v	4	34,143.39	$a^2G_{4\frac{1}{2}}-w^2G^0_{3\frac{1}{2}}$
4	2927.**667**v	50	34,146.92	$a^2D_{2\frac{1}{2}}-v^2P^0_{1\frac{1}{2}}$
4	2919.**552**v	30	34,241.83	$a^2D_{1\frac{1}{2}}-u^2F^0_{2\frac{1}{2}}$
4	2917.12v	1	34,270.38	$a^2G_{4\frac{1}{2}}-13^0_{3\frac{1}{2},4\frac{1}{2}}$
7	2916.041	1	34,283.06	$a^4F_{1\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$
4	2914.**608**v	7	34,299.91	$a^2P_{\frac{1}{2}}-u^2D^0_{1\frac{1}{2}}$
4	2911.**970**v	5	34,330.99	$b^4P_{1\frac{1}{2}}-12^0_{1\frac{1}{2}}$
4	2911.**560**v	5	34,335.82	$a^2F_{2\frac{1}{2}}-x^4F^0_{1\frac{1}{2}}$
4	2910.31v	1	34,350.61	$a^2F_{2\frac{1}{2}}-x^4G^0_{3\frac{1}{2}}$
4	2909.**984**v	4	34,354.42	$a^4P_{\frac{1}{2}}-x^4S^0_{1\frac{1}{2}}$
7	2907.670	1	34,381.75	$a^2D_{2\frac{1}{2}}-w^4P^0_{2\frac{1}{2}}$
7	2905.576	1	34,406.53	{ $a^2P_{1\frac{1}{2}}-t^2F^0_{2\frac{1}{2}}$ { $a^2D_{2\frac{1}{2}}-15^0_{3\frac{1}{2}}$
7	2905.496	1	34,407.48	$a^4P_{1\frac{1}{2}}-t^4D^0_{2\frac{1}{2}}$
4	2905.**132**v	3	34,411.79	
4	2904.**290**v	2	34,421.76	$a^4P_{2\frac{1}{2}}-t^4D^0_{3\frac{1}{2}}$
4	2903.**197**v	25	34,434.72	$a^2G_{4\frac{1}{2}}-x^2H^0_{4\frac{1}{2}}$
4	2901.53v	1	34,454.48	$a^2D_{1\frac{1}{2}}-v^2P^0_{1\frac{1}{2}}$
4	2899.**819**v	25	34,474.83	$a^2D_{1\frac{1}{2}}-v^2P^0_{\frac{1}{2}}$
4	2899.73v	4	34,475.90	$a^2F_{3\frac{1}{2}}-x^4F^0_{3\frac{1}{2}}$
5	2895.891	3	34,521.59	$a^4P_{2\frac{1}{2}}-v^2F^0_{3\frac{1}{2}}$
5	2895.485	20	34,526.44	$a^2F_{3\frac{1}{2}}-z^4P^0_{2\frac{1}{2}}$
5	2895.335	4	34,528.23	
4	2892.**242**v	25	34,565.15	
4	2889.**845**v	3	34,593.81	
4	2887.14v	1	34,626.16	$a^4P_{\frac{1}{2}}-w^2P^0_{1\frac{1}{2}}$
4	2886.86v	2	34,629.61	$a^2G_{3\frac{1}{2}}-16^0_{2\frac{1}{2}}$
4	2886.**444**v	50	34,634.57	$a^4F_{3\frac{1}{2}}-y^2F^0_{3\frac{1}{2}}$
7	2885.307	3	34,648.22	$a^4P_{2\frac{1}{2}}-t^4D^0_{2\frac{1}{2}}$
7	2884.074	1	34,663.03	{ $a^2G_{3\frac{1}{2}}-t^2F^0_{3\frac{1}{2}}$ { $b^4P_{2\frac{1}{2}}-11^0_{2\frac{1}{2}}$
4	2883.**602**v	15	34,668.71	$a^2D_{1\frac{1}{2}}-s^4D^0_{2\frac{1}{2}}$
4	2882.**219**v	30	34,685.34	{ $a^2P_{1\frac{1}{2}}-u^2D^0_{1\frac{1}{2}}$ { ($a^4F_{2\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$)
4	2881.**876**v	5	34,689.47	$a^2D_{1\frac{1}{2}}-w^4P^0_{2\frac{1}{2}}$
4	2879.**612**v	25	34,716.74	$a^2G_{4\frac{1}{2}}-15^0_{3\frac{1}{2}}$
4	2878.**558**v	12	34,729.45	$b^4P_{\frac{1}{2}}-v^2P^0_{1\frac{1}{2}}$
4	2876.86v	2	34,749.91	$b^4P_{\frac{1}{2}}-v^2P^0_{\frac{1}{2}}$
4	2876.82v	2	34,750.47	$a^4P_{2\frac{1}{2}}-t^4D^0_{1\frac{1}{2}}$
4	2876.**383**v	3	34,755.71	$a^2G_{3\frac{1}{2}}-17^0_{2\frac{1}{2}}$
4	2875.**438**v	2	34,767.13	
4	2874.**196**v	4	34,782.16	$a^2F_{2\frac{1}{2}}-w^4D^0_{2\frac{1}{2}}$
4	2873.32v	5	34,792.77	$a^4P_{1\frac{1}{2}}-7^0_{2\frac{1}{2}}$
4	2872.**497**v	15	34,802.73	$a^2F_{2\frac{1}{2}}-w^4D^0_{1\frac{1}{2}}$
4	2871.06v	1g?	34,820.16	$a^4P_{2\frac{1}{2}}-v^2F^0_{2\frac{1}{2}}$
4	2870.**506**v	3	34,826.87	$a^2F_{3\frac{1}{2}}-x^4G^0_{4\frac{1}{2}}$
4	2867.**463**v	4	34,863.82	
5	2863.538	3	34,911.61	
7	2862.768	9h	34,921.00	$b^4P_{2\frac{1}{2}}-12^0_{1\frac{1}{2}}$
4	2862.**602**v	50	34,923.02	$a^4F_{2\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
4	2861.**351**v	15r	34,938.29	$b^4P_{1\frac{1}{2}}-u^2F^0_{2\frac{1}{2}}$
4	2859.**654**v	40	34,959.02	$b^4F_{2\frac{1}{2}}-x^4D^0_{3\frac{1}{2}}$
4	2857.98v	0	34,979.48	$b^2G_{3\frac{1}{2}}-36^0_{3\frac{1}{2},4\frac{1}{2}}$
4	2857.21v	1	34,988.97	$a^4P_{1\frac{1}{2}}-w^2P^0_{1\frac{1}{2}}$
4	2856.98v	0	34,991.72	$a^2F_{3\frac{1}{2}}-x^4F^0_{2\frac{1}{2}}$
4	2856.04v	1	35,003.20	$b^2G_{4\frac{1}{2}}-36^0_{3\frac{1}{2},4\frac{1}{2}}$
4	2851.74v	2	35,056.03	$a^4P_{2\frac{1}{2}}-8^0_{1\frac{1}{2}}$
4	2850.**947**v	30	35,065.79	$a^4F_{1\frac{1}{2}}-y^2D^0_{1\frac{1}{2}}$
4	2850.**047**v	75	35,076.86	$a^2F_{2\frac{1}{2}}-z^2P^0_{1\frac{1}{2}}$
4	2849.38v	2	35,085.03	$a^2D_{2\frac{1}{2}}-16^0_{2\frac{1}{2}}$
4	2848.61v	0	35,094.59	$a^2F_{2\frac{1}{2}}-x^2F^0_{3\frac{1}{2}}$?
4	2842.**382**v	30	35,171.44	$b^4P_{1\frac{1}{2}}-v^2P^0_{\frac{1}{2}}$
4	2837.**154**v	75r	35,236.25	$a^2D_{2\frac{1}{2}}-w^4P^0_{1\frac{1}{2}}$
4	2836.64v	0	35,242.68	$a^2G_{3\frac{1}{2}}-18^0_{3\frac{1}{2}}$
4	2834.**428**v	50	35,270.14	$b^4F_{1\frac{1}{2}}-x^4D^0_{2\frac{1}{2}}$
4	2833.**922**v	40	35,276.43	$a^4F_{3\frac{1}{2}}-y^2D^0_{2\frac{1}{2}}$
4	2828.**466**v	15	35,344.48	
4	2826.**797**v	50W	35,365.34	$b^4P_{1\frac{1}{2}}-s^4D^0_{2\frac{1}{2}}$
4	2825.89v	0	35,376.66	$a^2D_{1\frac{1}{2}}-s^4D^0_{1\frac{1}{2}}$
5	2825.151	75w	35,385.95	$b^4P_{1\frac{1}{2}}-w^4P^0_{2\frac{1}{2}}$
4	2824.62v	1	35,392.58	$a^2D_{1\frac{1}{2}}-16^0_{2\frac{1}{2}}$
4	2824.45v	1	35,394.68	$b^4P_{2\frac{1}{2}}-u^2F^0_{3\frac{1}{2}}$
5	2823.647	5h	35,404.80	
5	2821.745	30h	35,428.66	$a^2G_{4\frac{1}{2}}-t^2F^0_{3\frac{1}{2}}$?
4	2820.**002**v	50	35,450.55	{ $a^2F_{2\frac{1}{2}}-x^2D^0_{1\frac{1}{2}}$ { $a^4F_{4\frac{1}{2}}-y^2F^0_{3\frac{1}{2}}$
5	2819.174	10	35,460.97	$a^2F_{2\frac{1}{2}}-x^2D^0_{2\frac{1}{2}}$
4	2818.**592**v	30	35,468.29	$a^4F_{2\frac{1}{2}}-y^2D^0_{1\frac{1}{2}}$
4	2815.**555**v	50r	35,506.54	$b^4F_{3\frac{1}{2}}-x^4D^0_{3\frac{1}{2}}$
4	2814.**976**v	25	35,513.85	$a^4F_{3\frac{1}{2}}-y^2F^0_{2\frac{1}{2}}$
5	2812.449	3	35,545.75	$b^4F_{1\frac{1}{2}}-z^4S^0_{1\frac{1}{2}}$
4	2811.**508**v	50w	35,557.65	$b^4P_{2\frac{1}{2}}-s^4D^0_{3\frac{1}{2}}$
4	2811.**126**v	50	35,562.48	$a^2G_{3\frac{1}{2}}-t^2F^0_{2\frac{1}{2}}$
4	2804.**098**v	5	35,651.61	$b^4P_{\frac{1}{2}}-s^4D^0_{1\frac{1}{2}}$
4	2803.**770**v	100	35,655.78	$b^4F_{2\frac{1}{2}}-x^4D^0_{2\frac{1}{2}}$
4	2800.42v	00	35,698.48	$a^2D_{2\frac{1}{2}}-18^0_{3\frac{1}{2}}$
4	2799.37v	0	35,711.83	$a^2H_{4\frac{1}{2}}-36^0_{3\frac{1}{2},4\frac{1}{2}}$
4	2797.**081**v	50	35,741.04	{ $a^2F_{2\frac{1}{2}}-w^4F^0_{2\frac{1}{2}}$ { $b^4P_{2\frac{1}{2}}-v^2P^0_{1\frac{1}{2}}$
4	2796.**228**v	50	35,751.94	$b^4F_{1\frac{1}{2}}-x^4D^0_{1\frac{1}{2}}$
5	2795.819	15	35,757.17	$a^2F_{3\frac{1}{2}}-x^4G^0_{2\frac{1}{2}}$
4	2792.**436**v	40	35,800.49	$a^2F_{3\frac{1}{2}}-w^4D^0_{2\frac{1}{2}}$
4	2791.**430**v	2	35,813.39	
4	2791.**009**v	50	35,818.80	$b^4P_{\frac{1}{2}}-w^4P^0_{1\frac{1}{2}}$
4	2790.**284**v	30h	35,828.10	
4	2787.**016**v	5	35,870.11	$a^2G_{3\frac{1}{2}}-s^2F^0_{3\frac{1}{2}}$
4	2785.**899**v	50	35,884.49	$a^2D_{1\frac{1}{2}}-w^4P^0_{\frac{1}{2}}$
4	2782.**258**v	3	35,931.45	$b^4F_{2\frac{1}{2}}-z^4S^0_{1\frac{1}{2}}$
4	2782.11v	0	35,933.40	$a^2F_{2\frac{1}{2}}-w^4G^0_{3\frac{1}{2}}$?
5	2781.032	8	35,947.28	
4	2778.**813**v	75	35,975.99	$b^4P_{2\frac{1}{2}}-w^4P^0_{2\frac{1}{2}}$
4	2775.**578**v	50	36,017.92	$a^2D_{2\frac{1}{2}}-t^2F^0_{2\frac{1}{2}}$
4	2774.**960**v	50	36,025.94	$b^4F_{1\frac{1}{2}}-x^4D^0_{\frac{1}{2}}$
4	2773.68v	3	36,042.56	$a^2G_{3\frac{1}{2}}-v^2G^0_{4\frac{1}{2}}$?
4	2772.**692**v	30h	36,055.41	$a^2D_{1\frac{1}{2}}-20^0_{1\frac{1}{2},2\frac{1}{2}}$
4	2772.**541**v	15h	36,057.37	
4	2771.**697**v	9h	36,068.35	$b^4P_{\frac{1}{2}}-s^4D^0_{\frac{1}{2}}$
4	2771.**324**v	1	36,073.21	$b^4P_{1\frac{1}{2}}-s^4D^0_{1\frac{1}{2}}$
4	2770.10v	0	36,089.13	$b^4P_{1\frac{1}{2}}-16^0_{2\frac{1}{2}}$
4	2769.**659**v	10	36,094.89	$a^2F_{2\frac{1}{2}}-w^4F^0_{1\frac{1}{2}}$
4	2768.**686**v	20	36,107.58	$a^2F_{2\frac{1}{2}}-w^4G^0_{2\frac{1}{2}}$
5	2768.294	9	36,112.69	$a^2F_{3\frac{1}{2}}-x^2F^0_{3\frac{1}{2}}$
4	2766.**382**v	50	36,137.65	$b^4F_{2\frac{1}{2}}-x^4D^0_{1\frac{1}{2}}$
4	2766.**215**v	50	36,139.83	$a^2G_{3\frac{1}{2}}-v^2G^0_{3\frac{1}{2}}$
4	2764.**188**v	100r	36,166.33	$b^4F_{4\frac{1}{2}}-x^4D^0_{3\frac{1}{2}}$
4	2763.**062**v	1	36,181.07	$b^2G_{3\frac{1}{2}}-37^0_{2\frac{1}{2},3\frac{1}{2}}$
4	2761.**366**v	75	36,203.29	$b^4F_{3\frac{1}{2}}-x^4D^0_{2\frac{1}{2}}$
4	2758.**538**v	30	36,240.40	$b^4P_{1\frac{1}{2}}-w^4P^0_{1\frac{1}{2}}$
4	2754.26v	1	36,296.64	$a^2D_{2\frac{1}{2}}-u^2D^0_{1\frac{1}{2}}$
4	2752.**070**v	40	36,325.57	{ $a^2D_{1\frac{1}{2}}-t^2F^0_{2\frac{1}{2}}$ { ($a^2D_{2\frac{1}{2}}-s^2F^0_{3\frac{1}{2}}$)
5	2750.141	15	36,351.05	$b^4F_{2\frac{1}{2}}-1^0_{3\frac{1}{2}}$
4	2746.**028**v	50	36,405.49	$a^2F_{3\frac{1}{2}}-w^4F^0_{3\frac{1}{2}}$
4	2745.**098**v	50	36,417.82	$a^2D_{2\frac{1}{2}}-u^2D^0_{2\frac{1}{2}}$
4	2740.**457**v	50	36,479.49	$a^2F_{3\frac{1}{2}}-x^2D^0_{2\frac{1}{2}}$
4	2732.**848**v	2 Co II?	36,581.05	$b^4P_{1\frac{1}{2}}-w^4P^0_{\frac{1}{2}}$
4	2731.112v	50W	36,604.31	$a^2D_{1\frac{1}{2}}-u^2D^0_{1\frac{1}{2}}$
4	2728.**754**v	3	36,635.94	$a^2G_{4\frac{1}{2}}-s^2F^0_{3\frac{1}{2}}$
4	2723.05v	0	36,712.71	$b^4P_{2\frac{1}{2}}-t^2F^0_{3\frac{1}{2}}$
4	2722.**106**v	50w	36,725.40	$a^2D_{1\frac{1}{2}}-u^2D^0_{2\frac{1}{2}}$
4	2719.**581**v	25	36,759.50	$a^2F_{3\frac{1}{2}}-w^4F^0_{2\frac{1}{2}}$
4	**2715.987**v	75w	36,808.14	$a^2G_{4\frac{1}{2}}-v^2G^0_{4\frac{1}{2}}$
4	2709.29v	0	36,899.10	$b^4F_{3\frac{1}{2}}-1^0_{3\frac{1}{2}}$?
4	2708.**810**v	30	36,905.66	$a^2G_{4\frac{1}{2}}-v^2G^0_{3\frac{1}{2}}$
4	2707.99v	1 Co II?	36,916.86	$a^4P_{2\frac{1}{2}}-u^2F^0_{2\frac{1}{2}}$
4	2705.**843**v	15w Co II?	36,946.12	$a^4P_{2\frac{1}{2}}-s^4D^0_{3\frac{1}{2}}$
4	2705.**412**v	3	36,952.01	$a^2F_{3\frac{1}{2}}-w^4G^0_{5\frac{1}{2}}$
7	2700.298	1	37,021.98	$b^4P_{1\frac{1}{2}}-t^2F^0_{2\frac{1}{2}}$
4	2695.**846**v	50w	37,083.12	$b^4F_{3\frac{1}{2}}-x^4F^0_{4\frac{1}{2}}$
4	2694.**392**v	25	37,103.13	$a^4P_{1\frac{1}{2}}-s^4D^0_{2\frac{1}{2}}$
7	2692.479	1	37,129.49	$a^4P_{2\frac{1}{2}}-v^2P^0_{1\frac{1}{2}}$
4	2685.**336**v	75w	37,228.25	$b^4F_{2\frac{1}{2}}-x^4F^0_{3\frac{1}{2}}$
4	2680.**104**v	25	37,300.92	$b^4P_{1\frac{1}{2}}-u^2D^0_{1\frac{1}{2}}$

TABLE VIII.—*Continued.*

Ref.	λ IA	Int.-TC	Wave No. Vac.	Multiplet Designation
4	2679.751v	75W	37,305.83	$a^2F_{2\frac{1}{2}}-x^2G^0_{3\frac{1}{2}}$
4	2677.021v	0	37,343.88	$a^4P_{2\frac{1}{2}}-s^4D^0_{2\frac{1}{2}}$
4	2675.980v	10W Co II?	37,358.40	$b^4F_{1\frac{1}{2}}-x^4F^0_{2\frac{1}{2}}$
4	2675.546v	1	37,364.46	$a^4P_{2\frac{1}{2}}-w^4P^0_{2\frac{1}{2}}$
4	2673.918v	25	37,387.21	$a^2D_{2\frac{1}{2}}-23^0_{1\frac{1}{2}}$
4	2669.575v	2	37,448.03	$a^4P_{\frac{1}{2}}-s^4D^0_{1\frac{1}{2}}$
4	2668.08v	1	37,468.97	$b^2D_{2\frac{1}{2}}-37^0_{2\frac{1}{2},3\frac{1}{2}}$
4	2661.714v	2 Co II?	37,558.62	$b^4F_{4\frac{1}{2}}-1^0_{3\frac{1}{2}}$
4	2657.340v	0	37,620.44	$a^2D_{2\frac{1}{2}}-24^0_{3\frac{1}{2}}$
4	2650.266v	50w	37,720.85	$b^4F_{1\frac{1}{2}}-x^4F^0_{1\frac{1}{2}}$
4	2649.931v	50w	37,725.61	$a^2F_{2\frac{1}{2}}-v^2D^0_{1\frac{1}{2}}$
5	2648.635	5 Co II?	37,744.07	$b^4F_{2\frac{1}{2}}-x^4F^0_{2\frac{1}{2}}$ $b^4F_{4\frac{1}{2}}-x^4F^0_{4\frac{1}{2}}$
4	2646.413v	10w	37,775.76	$b^4F_{3\frac{1}{2}}-x^4F^0_{3\frac{1}{2}}$
4	2644.772v	10w	37,799.20	$a^2F_{2\frac{1}{2}}-v^4D^0_{1\frac{1}{2}}$
4	2642.884v	10r	37,826.20	$b^4F_{3\frac{1}{2}}-z^4P^0_{2\frac{1}{2}}$
5	2636.365	5 Co II?	37,919.72	$b^4P_{2\frac{1}{2}}-s^2F^0_{3\frac{1}{2}}$
4	2632.89v	3	37,969.73	$b^4P_{\frac{1}{2}}-23^0_{1\frac{1}{2}}$
7	2631.215	1n	37,993.94	$a^2F_{2\frac{1}{2}}-w^2D^0_{1\frac{1}{2}}$
4	2629.970v	30	38,011.93	$b^4P_{2\frac{1}{2}}-u^2D^0_{2\frac{1}{2}}$
5	2628.761	3	38,029.41	
4	2627.638v	50W	38,045.66	$b^4F_{4\frac{1}{2}}-x^4G^0_{5\frac{1}{2}}$
4	2627.031v	2	38,054.45	$b^4F_{1\frac{1}{2}}-z^2P^0_{\frac{1}{2}}$
7	2626.122	1	38,067.62	$a^4P_{2\frac{1}{2}}-16^0_{2\frac{1}{2}}$
4	2624.795v	1	38,086.86	
4	2623.96v	5	38,098.95	$a^4P_{\frac{1}{2}}-19^0_{1\frac{1}{2}}$
4	2623.755v	40	38,101.97	$a^2F_{2\frac{1}{2}}-y^4S^0_{1\frac{1}{2}}$
4	2623.440v	2	38,106.54	$b^4F_{2\frac{1}{2}}-x^4F^0_{1\frac{1}{2}}$
4	2622.430v	30r	38,121.21	$b^4F_{2\frac{1}{2}}-x^4G^0_{3\frac{1}{2}}$
4	2622.250v	3	38,123.83	$b^4F_{1\frac{1}{2}}-x^4G^0_{2\frac{1}{2}}$
4	2622.059v	40w Co I+II	38,126.61	$b^4F_{3\frac{1}{2}}-x^4G^0_{4\frac{1}{2}}$
4	2619.276v	50w	38,167.11	$b^4F_{1\frac{1}{2}}-w^4D^0_{2\frac{1}{2}}$
4	2617.859v	50w	38,187.77	$b^4F_{1\frac{1}{2}}-w^4D^0_{1\frac{1}{2}}$
4	2616.260v	40w	38,211.11	$a^2F_{2\frac{1}{2}}-v^2D^0_{2\frac{1}{2}}$
4	2615.336v	10	38,224.61	$a^2F_{2\frac{1}{2}}-y^2P^0_{1\frac{1}{2}}$
4	2614.124v	30	38,242.33	$a^4F_{2\frac{1}{2}}-x^4D^0_{3\frac{1}{2}}$
4	2613.894v	4	38,245.69	$a^2F_{3\frac{1}{2}}-w^2D^0_{2\frac{1}{2}}$
4	2613.492v	25 Co I+II	38,251.58	
4	2610.762v	40w	38,291.57	$b^4F_{3\frac{1}{2}}-x^4F^0_{2\frac{1}{2}}$
4	2608.900v	1g?	38,318.90	$a^4P_{1\frac{1}{2}}-w^4P^0_{\frac{1}{2}}$
4	2606.120v	40	38,359.77	$b^4F_{1\frac{1}{2}}-w^4D^0_{\frac{1}{2}}$
4	2602.581v	1	38,411.93	$a^2F_{2\frac{1}{2}}-u^4D^0_{3\frac{1}{2}}$
4	2600.977v	10w	38,435.62	$b^4F_{4\frac{1}{2}}-x^4F^0_{3\frac{1}{2}}$
4	2599.200v	5	38,461.89	$b^4F_{1\frac{1}{2}}-z^2P^0_{1\frac{1}{2}}$ $a^4P_{1\frac{1}{2}}-19^0_{1\frac{1}{2}}$
4	2595.986v	0	38,509.51	$b^4F_{2\frac{1}{2}}-x^4G^0_{2\frac{1}{2}}$
4	2595.214v	1	38,520.97	
4	2594.161v	10w	38,536.60	$a^4F_{1\frac{1}{2}}-x^4D^0_{2\frac{1}{2}}$
4	2593.070v	1	38,552.81	$b^4F_{2\frac{1}{2}}-w^4D^0_{2\frac{1}{2}}$
4	2592.563v	0	38,560.35	$a^2F_{3\frac{1}{2}}-x^4P^0_{2\frac{1}{2}}$
4	2591.686v	10r	38,573.40	$b^4F_{2\frac{1}{2}}-w^4D^0_{1\frac{1}{2}}$
5	2590.594	75W	38,589.65	$a^2F_{3\frac{1}{2}}-x^2G^0_{4\frac{1}{2}}$
4	2589.30v	00	38,608.95	$a^2D_{2\frac{1}{2}}-29^0_{2\frac{1}{2}}$
4	2585.335v	50W	38,668.15	$a^2F_{2\frac{1}{2}}-w^2F^0_{2\frac{1}{2}}$
4	2583.03v	3	38,702.59	$a^4P_{2\frac{1}{2}}-19^0_{1\frac{1}{2}}$
4	2580.838v	50W	38,735.52	$b^4F_{2\frac{1}{2}}-x^2F^0_{2\frac{1}{2}}$
4	2578.924v	30	38,764.26	$a^2F_{2\frac{1}{2}}-w^2F^0_{3\frac{1}{2}}$
4	2577.446v	1	38,786.49	$b^4F_{4\frac{1}{2}}-x^4G^0_{4\frac{1}{2}}$
4	2575.733v	2	38,812.29	$a^4F_{1\frac{1}{2}}-z^4S^0_{1\frac{1}{2}}$
4	2574.351v	6r	38,833.12	$a^4F_{3\frac{1}{2}}-x^4D^0_{3\frac{1}{2}}$
4	2573.538v	30r	38,845.39	$b^4F_{3\frac{1}{2}}-3^0_{3\frac{1}{2}}$
4	2573.395v	40	38,847.55	$b^4F_{2\frac{1}{2}}-z^2P^0_{1\frac{1}{2}}$
4	2572.234v	50w	38,865.08	$b^4F_{2\frac{1}{2}}-x^2F^0_{3\frac{1}{2}}$
10	2570.762	<1	38,887.33	$a^2F_{3\frac{1}{2}}-v^4D^0_{2\frac{1}{2}}$
11	2567.742	1	38,933.06	$a^2F_{2\frac{1}{2}}-u^4D^0_{2\frac{1}{2}}$
4	2567.344v	50r	38,939.10	$a^4F_{2\frac{1}{2}}-x^4D^0_{2\frac{1}{2}}$
4	2565.985v	1	38,959.72	$a^2D_{2\frac{1}{2}}-31^0_{1\frac{1}{2}}$
4	2564.566v	0	38,981.28	$b^4P_{2\frac{1}{2}}-23^0_{1\frac{1}{2}}$
4	2562.124v	10r	39,018.42	$a^4F_{1\frac{1}{2}}-x^4D^0_{1\frac{1}{2}}$
4	2561.280v	25	39,031.28	
4	2560.027v	1d Co II?	39,050.39	
4	2559.595v	0	39,056.98	$b^4F_{3\frac{1}{2}}-x^4G^0_{2\frac{1}{2}}$
4	2556.762v	50w Co II?	39,100.25	$b^4F_{3\frac{1}{2}}-w^4D^0_{2\frac{1}{2}}$
4	2555.074v	6	39,126.08	$b^4F_{1\frac{1}{2}}-w^4F^0_{2\frac{1}{2}}$
4	2553.337v	10r	39,152.69	$b^4F_{3\frac{1}{2}}-w^4F^0_{4\frac{1}{2}}$
4	2553.004v	40r	39,157.80	$b^4F_{2\frac{1}{2}}-w^4F^0_{3\frac{1}{2}}$
4	2551.230v	0	39,185.03	
4	2549.296v	4	39,214.75	$a^4F_{2\frac{1}{2}}-z^4S^0_{1\frac{1}{2}}$
4	2548.875v	3	39,221.23	$b^4F_{2\frac{1}{2}}-x^2D^0_{1\frac{1}{2}}$
4	2548.333v	20 Co II?	39,229.57	$a^2F_{3\frac{1}{2}}-v^2D^0_{2\frac{1}{2}}$
4	2548.194v	0	39,231.71	$b^4F_{2\frac{1}{2}}-x^2D^0_{2\frac{1}{2}}$
4	2544.862v	4	39,283.07	$b^4F_{3\frac{1}{2}}-x^2F^0_{2\frac{1}{2}}$
4	2544.252v	50r Co II?	39,292.49	$a^4F_{1\frac{1}{2}}-x^4D^0_{\frac{1}{2}}$
4	2543.232v	1	39,308.25	$a^4P_{2\frac{1}{2}}-s^2F^0_{3\frac{1}{2}}$
10	2538.70	<1	39,378.41	$a^2F_{2\frac{1}{2}}-6^0_{3\frac{1}{2}}$ $b^4F_{1\frac{1}{2}}-z^2S^0_{\frac{1}{2}}$?
4	2538.339v	6	39,384.02	
4	2536.503v	1	39,412.52	$b^4F_{3\frac{1}{2}}-x^2F^0_{3\frac{1}{2}}$
4	2535.961v	10r Co II?	39,420.94	$a^4F_{2\frac{1}{2}}-x^4D^0_{1\frac{1}{2}}$
4	2535.359v	5	39,430.30	$a^2F_{3\frac{1}{2}}-u^4D^0_{3\frac{1}{2}}$
4	2532.176v	10 Co II?	39,479.86	$b^4F_{1\frac{1}{2}}-w^4F^0_{1\frac{1}{2}}$
4	2531.354v	5	39,492.68	$b^4F_{1\frac{1}{2}}-w^4G^0_{2\frac{1}{2}}$
4	2530.546v	5	39,505.29	$b^4F_{4\frac{1}{2}}-3^0_{3\frac{1}{2}}$
4	2530.134v	40w Co II?	39,511.72	$b^4F_{2\frac{1}{2}}-w^4F^0_{2\frac{1}{2}}$
5	2528.967	50R	39,529.96	$a^4F_{3\frac{1}{2}}-x^4D^0_{2\frac{1}{2}}$
4	2528.186v	3 Co II?	39,542.16	$b^4P_{\frac{1}{2}}-31^0_{1\frac{1}{2}}$?
4	2525.626v	4	39,582.24	$b^4F_{1\frac{1}{2}}-y^4P^0_{1\frac{1}{2}}$
4	2523.00v	4 Co II?	39,623.45	$b^4P_{\frac{1}{2}}-32^0_{1\frac{1}{2}}$?
5	2521.363	75R Co II?	39,649.16	$a^4F_{4\frac{1}{2}}-x^4D^0_{3\frac{1}{2}}$
4	2520.908v	3	39,656.31	
4	2518.988v	3	39,686.54	$a^2F_{3\frac{1}{2}}-w^2F^0_{2\frac{1}{2}}$
5	2517.869	10w	39,704.17	$b^4F_{2\frac{1}{2}}-w^4G^0_{3\frac{1}{2}}$
4	2517.792v	6	39,705.39	$b^4F_{3\frac{1}{2}}-w^4F^0_{3\frac{1}{2}}$
4	2515.075v	1	39,748.28	$b^4P_{2\frac{1}{2}}-26^0_{3\frac{1}{2}}$
4	2513.119v	4	39,779.22	$b^4F_{3\frac{1}{2}}-x^2D^0_{2\frac{1}{2}}$
4	2512.900v	5	39,782.68	$a^2F_{3\frac{1}{2}}-w^2F^0_{3\frac{1}{2}}$
4	2511.019v	10r Co II?	39,812.48	$b^4F_{4\frac{1}{2}}-w^4F^0_{4\frac{1}{2}}$
4	2510.10v	0 Co II?	39,827.01	$b^4F_{3\frac{1}{2}}-4^0_{3\frac{1}{2}}$
4	2509.234v	2	39,840.80	
4	2508.730v	1	39,848.80	$b^4P_{1\frac{1}{2}}-v^4F^0_{1\frac{1}{2}}$
4	2507.678v	40w	39,865.52	$b^4F_{2\frac{1}{2}}-w^4F^0_{1\frac{1}{2}}$
4	2507.169v	2	39,873.62	$a^2F_{2\frac{1}{2}}-x^2P^0_{1\frac{1}{2}}$
4	2506.873v	10w	39,878.32	$b^4F_{2\frac{1}{2}}-w^4G^0_{2\frac{1}{2}}$
4	2505.107v	3	39,906.43	
4	2504.518v	4 Co II?	39,915.82	$b^4F_{4\frac{1}{2}}-w^4D^0_{3\frac{1}{2}}$
4	2503.860v	1	39,926.30	
4	2503.24v	1	39,936.26	$b^4P_{2\frac{1}{2}}-28^0_{3\frac{1}{2}}$
4	2502.284v	5	39,951.45	$a^2F_{3\frac{1}{2}}-u^4D^0_{2\frac{1}{2}}$
4	2501.508v	2	39,963.84	$b^4P_{1\frac{1}{2}}-31^0_{1\frac{1}{2}}$
4	2501.257v	2	39,967.85	$b^4F_{2\frac{1}{2}}-y^4P^0_{1\frac{1}{2}}$
4	2500.494v	10h	39,980.05	
4	2496.713v	12	40,040.59	$b^4F_{3\frac{1}{2}}-w^4G^0_{4\frac{1}{2}}$
4	2496.45v	1	40,044.86	$b^4P_{1\frac{1}{2}}-32^0_{1\frac{1}{2}}$
4	2495.551v	10	40,059.23	$b^4F_{3\frac{1}{2}}-w^4F^0_{2\frac{1}{2}}$
4	2494.730v	9	40,072.42	$b^4F_{4\frac{1}{2}}-x^2F^0_{3\frac{1}{2}}$
4	2493.930v	30w	40,085.27	$a^2F_{2\frac{1}{2}}-t^4D^0_{1\frac{1}{2}}$
4	2491.15v	1	40,130.00	$b^4P_{2\frac{1}{2}}-v^4F^0_{3\frac{1}{2}}$
4	2490.02v	0	40,148.2	$b^4P_{1\frac{1}{2}}-33^0_{1\frac{1}{2},2\frac{1}{2}}$
4	2489.62v	3	40,154.6	$a^2F_{2\frac{1}{2}}-v^2F^0_{2\frac{1}{2}}$
4	2489.507v	1	40,156.48	
4	2489.249v	4	40,160.64	$a^4F_{1\frac{1}{2}}-z^4P^0_{\frac{1}{2}}$
4	2488.461v	4	40,173.36	$a^4F_{1\frac{1}{2}}-z^4P^0_{1\frac{1}{2}}$
4	2485.952v	1	40,213.90	
4	2483.613v	12 Co II?	40,251.77	$b^4F_{3\frac{1}{2}}-w^4G^0_{3\frac{1}{2}}$
4	2481.09v	0	40,292.7	$a^2F_{2\frac{1}{2}}-x^4S^0_{1\frac{1}{2}}$
4	2478.293v	2	40,338.17	
4	2476.640v	40w	40,365.09	$b^4F_{4\frac{1}{2}}-w^4F^0_{3\frac{1}{2}}$
9	2476.43	1 Co II?	40,368.5	$a^2F_{2\frac{1}{2}}-7^0_{2\frac{1}{2}}$?
4	2474.702v	5	40,396.70	$a^2F_{3\frac{1}{2}}-6^0_{3\frac{1}{2}}$
4	2473.901v	8	40,409.77	$a^4F_{3\frac{1}{2}}-x^4F^0_{4\frac{1}{2}}$
4	2472.922v	7	40,425.77	$b^4F_{3\frac{1}{2}}-w^4G^0_{2\frac{1}{2}}$
4	2472.066v	3	40,439.77	
4	2470.270v	20w	40,469.17	$b^4F_{4\frac{1}{2}}-w^4G^0_{5\frac{1}{2}}$
4	2467.685v	20w	40,511.55	$a^4F_{2\frac{1}{2}}-x^4F^0_{3\frac{1}{2}}$
4	2465.111v	3	40,553.86	$b^4P_{2\frac{1}{2}}-31^0_{1\frac{1}{2}}$
4	2464.615v	3	40,562.02	$a^4F_{2\frac{1}{2}}-z^4P^0_{2\frac{1}{2}}$
4	2464.459v	2	40,564.59	$a^2F_{2\frac{1}{2}}-w^2P^0_{1\frac{1}{2}}$
4	2463.776v	4	40,575.84	$a^4F_{2\frac{1}{2}}-z^4P^0_{1\frac{1}{2}}$
4	2462.122v	20	40,603.09	$a^4P_{2\frac{1}{2}}-24^0_{3\frac{1}{2}}$
4	2461.562v	2	40,612.32	$b^4F_{1\frac{1}{2}}-w^2D^0_{2\frac{1}{2}}$
4	2460.800v	20	40,624.90	$a^4F_{1\frac{1}{2}}-x^4F^0_{2\frac{1}{2}}$
4	2460.195v	20	40,634.89	$b^4P_{2\frac{1}{2}}-32^0_{1\frac{1}{2}}$
5	2456.237	20w	40,700.36	$b^4F_{4\frac{1}{2}}-w^4G^0_{4\frac{1}{2}}$
4	2453.382v	4	40,747.72	
4	2451.747v	3	40,774.89	$a^2F_{3\frac{1}{2}}-t^4D^0_{3\frac{1}{2}}$
4	2451.237v	1	40,783.37	
4	2448.505v	2	40,828.87	$b^4F_{1\frac{1}{2}}-x^4P^0_{1\frac{1}{2}}$
4	2445.756v	3	40,874.76	$a^2F_{3\frac{1}{2}}-v^2F^0_{3\frac{1}{2}}$
4	2445.353v	2	40,881.50	$b^4F_{1\frac{1}{2}}-x^4P^0_{\frac{1}{2}}$
4	2443.548v	5	40,911.70	$b^4F_{4\frac{1}{2}}-w^4G^0_{3\frac{1}{2}}$
4	2443.18v	0	40,917.8	$b^4P_{2\frac{1}{2}}-34^0_{1\frac{1}{2},2\frac{1}{2}}$
4	2442.888v	4	40,922.75	
4	2442.62v	2 Co II?	40,927.2	$b^4F_{1\frac{1}{2}}-x^4P^0_{2\frac{1}{2}}$
4	2441.040v	20	40,953.73	$a^2G_{3\frac{1}{2}}-36^0_{3\frac{1}{2},4\frac{1}{2}}$
4	2440.141v	4w	40,968.81	$b^4F_{3\frac{1}{2}}-z^2H^0_{4\frac{1}{2}}$
4	2439.495v	8h	40,979.66	
4	2439.038v	20R	40,987.34	$a^4F_{1\frac{1}{2}}-x^4F^0_{1\frac{1}{2}}$
5	2438.411	2	40,997.87	$b^4F_{2\frac{1}{2}}-w^2D^0_{2\frac{1}{2}}$
4	2438.201v	1	41,001.41	$a^2F_{3\frac{1}{2}}-t^4D^0_{2\frac{1}{2}}$
4	2436.786v	3	41,025.21	$a^4P_{1\frac{1}{2}}-27^0_{2\frac{1}{2}}$
5	2436.657	50R	41,027.38	$a^4F_{2\frac{1}{2}}-x^4F^0_{2\frac{1}{2}}$
4	2435.823v	10	41,041.43	$a^4F_{4\frac{1}{2}}-1^0_{3\frac{1}{2}}$
4	2435.094v	20w	41,053.71	
4	2433.75v	0	41,076.4	$b^4F_{2\frac{1}{2}}-x^2G^0_{3\frac{1}{2}}$
4	2432.213v	40R	41,102.34	$a^4F_{3\frac{1}{2}}-x^4F^0_{3\frac{1}{2}}$
4	2431.74v	1	41,110.3	$b^4F_{1\frac{1}{2}}-v^2D^0_{1\frac{1}{2}}$
4	2430.176v	10	41,136.79	$a^4P_{2\frac{1}{2}}-26^0_{3\frac{1}{2}}$
4	2429.226v	25	41,152.88	$a^4F_{3\frac{1}{2}}-z^4P^0_{2\frac{1}{2}}$
4	2428.596v	10	41,163.55	
4	2426.997v	12	41,190.67	
4	2425.593v	8	41,214.51	$b^4F_{2\frac{1}{2}}-x^4P^0_{1\frac{1}{2}}$
4	2424.932v	250R	41,225.74	$a^4F_{4\frac{1}{2}}-x^4F^0_{4\frac{1}{2}}$
4	2422.568v	30w	41,265.97	$a^4P_{2\frac{1}{2}}-27^0_{2\frac{1}{2}}$
4	2421.688v	8	41,280.96	$b^4F_{2\frac{1}{2}}-v^4D^0_{3\frac{1}{2}}$

TABLE VIII.—*Continued.*

REF.	λ IA	INT.–TC	WAVE NO. VAC.	MULTIPLET DESIGNATION
4	2419.828*v*	6	41,312.69	$b^4F_{2\frac12}-x^4P^0_{2\frac12}$
4	2419.324*v*	10*d*‡	41,321.30	
4	2419.122*v*	20*w*	41,324.75	
4	2418.580*v*	1	41,334.01	
4	2418.476*v*	1 Co II?	41,335.78	
4	2417.329*v*	25	41,355.40	
4	2417.045*v*	10	41,360.25	
4	2415.516*v*	3	41,386.43	$a^2F_{3\frac12}-7^0_{2\frac12}$
4	2415.32*v*	2*w*	41,389.8	$a^4F_{2\frac12}-x^4F^0_{1\frac12}$
4	2415.29*v*	4	41,390.3	$a^4F_{1\frac12}-x^4G^0_{2\frac12}$
4	2414.458*v*	40*R*	41,404.56	$a^4F_{2\frac12}-x^4G^0_{3\frac12}$
4	2413.580*v*	15	41,419.63	$a^4P_{\frac12}-32^0_{1\frac12}$
4	2413.187*v*	15	41,426.37	$b^4F_{1\frac12}-v^4D^0_{\frac12}$
4	2412.896*v*	6	41,431.37	
4	2412.762*v*	12*r*	41,433.67	$a^4F_{1\frac12}-w^4D^0_{2\frac12}$
4	2411.618*v*	250*R*	41,453.32	$\{a^4F_{3\frac12}-x^4G^0_{4\frac12}$ $(a^4F_{1\frac12}-w^4D^0_{1\frac12})$
4	2410.504*v*	40*w*	41,472.48	$a^4P_{1\frac12}-30^0_{2\frac12}$
4	2409.654*v*	8	41,487.11	$b^4F_{1\frac12}-y^4S^0_{1\frac12}$
4	2409.123*v*	20	41,496.25	$b^4F_{2\frac12}-v^2D^0_{1\frac12}$
4	2407.249*v*	100	41,528.58	$a^4F_{4\frac12}-x^4G^0_{5\frac12}$
4	2406.266*v*	25	41,545.52	$b^4F_{3\frac12}-w^2D^0_{2\frac12}$
4	2404.84*v*	10	41,570.1	$b^4F_{2\frac12}-v^4D^0_{1\frac12}$
4	2403.637*v*	15	41,590.95	
4	2403.337*v*	15	41,596.14	$b^4F_{1\frac12}-v^2D^0_{2\frac12}$
4	2402.559*v*	15	41,609.61	$b^4F_{1\frac12}-y^2P^0_{1\frac12}$
4	2402.164*v*	30*r*	41,616.46	$a^4F_{1\frac12}-x^2F^0_{2\frac12}$
4	2402.058*v*	10*r*	41,618.29	$a^4F_{3\frac12}-x^4F^0_{2\frac12}$
4	2401.595*v*	30	41,626.31	$a^4F_{1\frac12}-w^4D^0_{\frac12}$
4	2401.102*v*	30	41,634.86	
4	2400.8[illegible]3*v*	30	41,639.52	$b^4F_{2\frac12}-v^4D^0_{2\frac12}$
4	2400.[illegible]58*v*	30	41,644.29	$a^2F_{2\frac12}-12^0_{1\frac12}$
4	2398.[illegible]54*v*	4	41,679.08	
4	2397.25*v*	4	41,701.7	$a^4P_{1\frac12}-31^0_{1\frac12}$
5	2397.03	6	41,705.6	
4	2396.779*v*	90	41,709.95	
4	2396.588*v*	5	41,713.27	$a^4P_{2\frac12}-30^0_{2\frac12}$
4	2396.232*v*	10	41,719.47	$a^2G_{4\frac12}-36^0_{3\frac12,4\frac12}$
4	2395.390*v*	6	41,734.13	
5	2394.227	4	41,754.40	
10	2393.635	1	41,764.73	$b^4F_{2\frac12}-w^2D^0_{1\frac12}$
4	2392.029*v*	2	41,792.76	$a^4F_{2\frac12}-x^4G^0_{2\frac12}$
4	2391.369*v*	9	41,804.30	
4	2390.426*v*	4	41,820.79	
4	2389.984*v*	8	41,828.52	$b^4F_{3\frac12}-v^4D^0_{3\frac12}$
5	2389.540	12 Co II	41,836.29	$(a^4F_{2\frac12}-w^4D^0_{2\frac12})$
4	2388.374*v*	3	41,856.72	$a^4F_{2\frac12}-w^4D^0_{1\frac12}$
4	2388.175*v*	5	41,860.21	$b^4F_{3\frac12}-x^4P^0_{2\frac12}$
4	2387.460*v*	10	41,872.74	$b^4F_{2\frac12}-y^4S^0_{1\frac12}$
5	2386.509	3	41,889.42	$b^4F_{3\frac12}-x^2G^0_{4\frac12}$
4	2385.813*v*	9	41,901.65	
4	2384.858*v*	10*R*	41,918.42	$a^4F_{4\frac12}-x^4F^0_{3\frac12}$
4	2381.26*v*	4	41,981.8	$b^4F_{2\frac12}-v^2D^0_{2\frac12}$
4	2380.696*v*	4	41,991.70	$a^4F_{2\frac12}-w^4D^0_{3\frac12}$
4	2380.483*v*	20*d*	41,995.46	$\{a^4F_{3\frac12}-x^4G^0_{3\frac12}$ $b^4F_{2\frac12}-y^2P^0_{1\frac12}$
4	2379.357*v*	4	42,015.33	$b^4F_{1\frac12}-y^2P^0_{\frac12}$
4	2379.160*v*	4	42,018.81	$a^4F_{2\frac12}-x^2F^0_{2\frac12}$
4	2378.905*v*	5	42,023.31	$a^4P_{2\frac12}-32^0_{1\frac12}$
4	2377.215*v*	12	42,053.18	$b^4F_{1\frac12}-w^2F^0_{2\frac12}$
4	2376.975*v*	6	42,057.43	$b^4F_{4\frac12}-z^2H^0_{5\frac12}$
5	2374.456	4	42,102.04	$a^4F_{1\frac12}-x^2D^0_{1\frac12}$
4	2373.862*v*	9	42,112.58	$a^4F_{1\frac12}-x^2D^0_{2\frac12}$
4	2373.56*v*	0	42,117.9	$a^2F_{2\frac12}-u^2F^0_{3\frac12}$
4	2373.370*v*	20	42,121.30	
4	2372.832*v*	15	42,130.86	$a^4F_{2\frac12}-z^2P^0_{1\frac12}$
4	2371.845*v*	6 Co II?	42,148.38	$a^4F_{2\frac12}-x^2F^0_{3\frac12}$
4	2371.458*v*	15	42,155.26	$a^2G_{3\frac12}-37^0_{2\frac12,3\frac12}$
4	2370.514*v*	10	42,172.05	$a^4F_{3\frac12}-3^0_{3\frac12}$
4	2369.924*v*	9	42,182.54	$b^4F_{2\frac12}-u^4D^0_{3\frac12}$
4	2369.674*v*	15	42,187.00	$b^4F_{3\frac12}-v^4D^0_{2\frac12}$
4	2366.046*v*	5	42,251.68	$a^2F_{2\frac12}-u^2F^0_{2\frac12}$
4	2365.057*v*	18*d*	42,269.34	$a^4F_{4\frac12}-x^4G^0_{4\frac12}$
5	2364.251	3	42,283.76	$b^4F_{4\frac12}-x^2G^0_{3\frac12}$
4	2362.327*v*	8	42,318.19	$b^4F_{1\frac12}-u^4D^0_{2\frac12}$
4	2360.789*v*	9	42,345.76	$a^2F_{2\frac12}-14^0_{2\frac12}$
4	2358.676*v*	10	42,383.69	$a^4F_{3\frac12}-x^4G^0_{2\frac12}$
4	2358.177*v*	20	42,392.65	$a^4F_{1\frac12}-w^4F^0_{2\frac12}$
4	2357.507*v*	10	42,404.70	$a^2F_{3\frac12}-11^0_{2\frac12}$
4	2356.267*v*	10	42,427.02	$a^4F_{3\frac12}-w^4D^0_{2\frac12}$
4	2355.611*v*	7	42,438.83	$b^4F_{2\frac12}-w^2F^0_{2\frac12}$
4	2355.480*v*	30	42,441.19	$a^4F_{2\frac12}-w^4F^0_{3\frac12}$
5	2354.41	5	42,460.5	
4	2354.18*v*	2	42,464.6	$a^2F_{2\frac12}-v^2P^0_{1\frac12}$
4	2353.36*v*	10	42,479.4	$a^4F_{3\frac12}-w^4F^0_{4\frac12}$
4	2352.864*v*	15*d*	42,488.37	$b^4F_{4\frac12}-v^4D^0_{3\frac12}$
4	2351.98*v*	4	42,504.4	$a^4F_{2\frac12}-x^2D^0_{1\frac12}$
4	2351.385*v*	10	42,515.10	$a^4F_{2\frac12}-x^2D^0_{2\frac12}$
4	2350.596*v*	6	42,529.36	$b^4F_{3\frac12}-v^2D^0_{2\frac12}$
4	2350.284*v*	12	42,535.01	$b^4F_{2\frac12}-w^2F^0_{3\frac12}$
4	2347.657*v*	4	42,582.60	$a^4F_{3\frac12}-w^4D^0_{3\frac12}$
4	2346.161*v*	7	42,609.75	$a^4F_{3\frac12}-x^2F^0_{2\frac12}$
5	2342.793	2	42,671.00	$a^4F_{1\frac12}-y^4P^0_{2\frac12}$
4	2341.784*v*	4	42,689.38	
4	2340.99*v*	5	42,703.8	$b^4F_{2\frac12}-u^4D^0_{2\frac12}$
4	2339.92*v*	?	42,723.5	$a^2F_{2\frac12}-15^0_{3\frac12}$
4	2339.550*v*	5	42,730.15	$b^4F_{3\frac12}-u^4D^0_{3\frac12}$
4	2339.048*v*	4 Co II?	42,739.32	$a^4F_{3\frac12}-x^2F^0_{3\frac12}$
4	2338.656*v*	10*d*	42,746.48	$a^4F_{1\frac12}-w^4F^0_{1\frac12}$
4	2337.95*v*	3*w* Co II?	42,759.4	$a^4F_{1\frac12}-w^4G^0_{2\frac12}$
4	2337.477*v*	4	42,768.04	
4	2336.00*v*	10*d*	42,795.1	$a^4F_{2\frac12}-w^4F^0_{2\frac12}$
4	2335.102*v*	15	42,811.53	$a^4F_{4\frac12}-x^4G^0_{3\frac12}$
4	2334.12*v*	5 Co II?	42,829.6	$b^4F_{1\frac12}-u^4D^0_{\frac12}$
4	2333.980*v*	3	42,832.11	
4	2333.071*v*	6	42,848.79	$a^4F_{1\frac12}-y^4P^0_{1\frac12}$
4	2332.087*v*	10	42,866.88	
4	2329.089*v*	6 Co II?	42,922.05	$b^4F_{2\frac12}-u^4D^0_{1\frac12}$
4	2328.861*v*	10	42,926.25	
4	2328.298*v*	6	42,936.63	
4	2327.539*v*	5	42,950.63	$b^4F_{1\frac12}-x^2S^0_{\frac12}$
5	2325.80	6	42,982.7	
5	2325.615	50*w*	42,986.16	$b^4F_{3\frac12}-w^2F^0_{2\frac12}$
4	2325.530*v*	12	42,987.73	$a^4F_{2\frac12}-w^4G^0_{3\frac12}$
4	2323.131*v*	15*d*	43,032.12	$a^4F_{3\frac12}-w^4F^0_{3\frac12}$
4	2322.260*v*	4	43,048.26	$a^4F_{1\frac12}-y^4P^0_{\frac12}$
4	2320.906*v*	4	43,073.37	$a^4F_{2\frac12}-y^4P^0_{2\frac12}$
4	2320.41*v*	1	43,082.5	$b^4F_{3\frac12}-w^2F^0_{3\frac12}$
4	2319.152*v*	4	43,105.94	$a^4F_{3\frac12}-x^2D^0_{2\frac12}$
4	2317.516*v*	5	43,136.37	$a^2F_{3\frac12}-u^2F^0_{3\frac12}$
4	2316.843*v*	5	43,148.90	$\{a^4F_{2\frac12}-w^4F^0_{1\frac12}$ $b^4F_{2\frac12}-6^0_{3\frac12}$
4	2316.733*v*	5	43,150.95	$a^2F_{3\frac12}-w^2G^0_{4\frac12}$
4	2316.157*v*	10*w*	43,161.68	$a^4F_{2\frac12}-w^4G^0_{2\frac12}$
4	2311.35*v*	10	43,251.4	$\{a^4F_{2\frac12}-y^4P^0_{1\frac12}$ $b^4F_{3\frac12}-u^4D^0_{2\frac12}$
5	2310.962	12	43,258.69	$b^4F_{1\frac12}-x^2P^0_{1\frac12}$
4	2310.36*v*	1	43,270.0	$a^2F_{3\frac12}-u^2F^0_{2\frac12}$
5	2309.020	10*R*	43,295.09	$a^4F_{4\frac12}-w^4F^0_{4\frac12}$
4	2308.98*v*	?	43,295.9	$a^2F_{3\frac12}-13^0_{3\frac12,4\frac12}$
4	2305.169*v*	15	43,367.40	$a^4F_{3\frac12}-w^4G^0_{4\frac12}$
4	2304.182*v*	10	43,385.97	$a^4F_{3\frac12}-w^4F^0_{2\frac12}$
4	2303.966*v*	12	43,390.04	$b^4F_{4\frac12}-u^4D^0_{3\frac12}$
4	2303.504*v*	9	43,398.74	$a^4F_{4\frac12}-w^4D^0_{3\frac12}$
4	2303.31*v*	?	43,402.3	$a^2F_{2\frac12}-16^0_{2\frac12}$
4	2298.356*v*	15	43,495.93	$b^4F_{1\frac12}-t^4D^0_{\frac12}$
4	2296.704*v*	18	43,527.22	$b^4F_{2\frac12}-t^4D^0_{3\frac12}$
4	2296.038*v*	18	43,539.84	$b^4F_{1\frac12}-v^2F^0_{2\frac12}$
4	2295.223*v*	15	43,555.30	$a^4F_{4\frac12}-x^2F^0_{3\frac12}$
4	2294.003*v*	10	43,578.46	$a^4F_{3\frac12}-w^4G^0_{3\frac12}$
4	2291.450*v*	12	43,627.01	$b^4F_{2\frac12}-v^2F^0_{3\frac12}$
4	2290.541*v*	10	43,644.32	$b^4F_{2\frac12}-x^2P^0_{1\frac12}$
4	2289.495*v*	9	43,664.26	$a^4F_{3\frac12}-y^4P^0_{2\frac12}$
4	2288.774*v*	15	43,678.01	$b^4F_{1\frac12}-x^4S^0_{1\frac12}$
4	2287.804*v*	12*d*	43,696.53	$b^4F_{3\frac12}-6^0_{3\frac12}$
4	2285.408*v*	12	43,742.34	$b^4F_{4\frac12}-w^2F^0_{3\frac12}$
4	2284.86*v*	30	43,752.8	$a^4F_{3\frac12}-w^4G^0_{2\frac12}$?
4	2284.81*v*	3	43,753.8	$b^4F_{2\frac12}-t^4D^0_{2\frac12}$
4	2284.375*v*	8	43,762.25	$b^4F_{1\frac12}-w^2S^0_{\frac12}$
5	2281.34	5	43,820.3	
4	2279.927*v*	10Fe	43,847.48	$(a^4F_{4\frac12}-w^4F^0_{3\frac12})$
4	2279.480*v*	15	43,856.08	$b^4F_{2\frac12}-t^4D^0_{1\frac12}$
5	2278.298	9	43,878.83	$a^4F_{1\frac12}-w^2D^0_{2\frac12}$
4	2276.523*v*	20*r*	43,913.04	
4	2275.884*v*	9	43,925.37	$b^4F_{2\frac12}-v^2F^0_{2\frac12}$
4	2274.617*v*	8	43,949.83	$b^4F_{1\frac12}-w^2P^0_{1\frac12}$
4	2274.495*v*	9	43,952.19	$a^4F_{4\frac12}-w^4G^0_{5\frac12}$
4	2273.58*v*	2	43,969.9	$a^4F_{4\frac12}-4^0_{3\frac12}$
4	2268.742*v*	12	44,063.63	$b^4F_{2\frac12}-x^4S^0_{1\frac12}$
4	2268.163*v*	15	44,074.88	$b^4F_{3\frac12}-t^4D^0_{3\frac12}$
4	2267.113*v*	12	44,095.29	$a^4F_{1\frac12}-x^4P^0_{1\frac12}$
4	2264.880*v*	15	44,138.76	$b^4F_{2\frac12}-7^0_{2\frac12}$
4	2264.41*v*	10	44,148.0	$a^4F_{1\frac12}-x^4P^0_{\frac12}$
4	2262.592*v*	10	44,183.39	$a^4F_{4\frac12}-w^4G^0_{4\frac12}$
10	2262.07	0 Co II?	44,193.6	$a^4F_{1\frac12}-x^4P^0_{2\frac12}$
5	2258.328	9	44,266.81	
4	2257.582*v*	10	44,281.43	$a^4F_{2\frac12}-w^2D^0_{2\frac12}$
4	2256.565*v*	10	44,301.39	$b^4F_{3\frac12}-t^4D^0_{2\frac12}$
4	2254.82*v*	10	44,335.6	$a^2F_{2\frac12}-t^2F^0_{2\frac12}$
5	2253.776	10	44,356.20	$b^4F_{4\frac12}-6^0_{3\frac12}$
10	2253.587	3	44,359.92	$a^4F_{2\frac12}-x^2G^0_{3\frac12}$
4	2252.712*v*	10	44,377.15	$a^4F_{1\frac12}-v^2D^0_{1\frac12}$
4	2251.83*v*	8	44,394.5	$a^4F_{4\frac12}-w^4G^0_{3\frac12}$
4	2250.496*v*	10	44,420.84	$a^2F_{3\frac12}-16^0_{2\frac12}$
4	2248.981*v*	5	44,450.78	$a^4F_{1\frac12}-v^4D^0_{1\frac12}$
4	2248.80*v*	1	44,454.3	$a^2F_{3\frac12}-t^2F^0_{3\frac12}$
4	2247.86*v*	4	44,472.8	$b^4F_{3\frac12}-v^2F^0_{2\frac12}$
4	2246.599*v*	25	44,497.91	$a^4F_{2\frac12}-x^4P^0_{1\frac12}$
5	2245.600	10	44,517.68	
4	2245.463*v*	5	44,520.42	$a^4F_{1\frac12}-v^4D^0_{2\frac12}$

‡ Partly Ni—Burns.

TABLE VIII.—*Continued.*

Ref.	λ *IA*	Int.–*TC*	Wave No. Vac.	Multiplet Designation
4	2244.12*v*	?	44,547.0	$a^2F_{3\frac12}-17^0_{2\frac12}$
4	2243.**254***v*	10	44,564.26	$a^4F_{2\frac12}-v^4D^0_{3\frac12}$
4	2241.65*v*	9	44,596.1	$a^4F_{2\frac12}-x^4P^0_{2\frac12}$
4	2240.74*v*	6	44,614.1	$a^2F_{2\frac12}-u^2D^0_{1\frac12}$
4	2239.30*v*	1	44,643.0	$a^2F_{2\frac12}-s^2F^0_{3\frac12}$
4	2237.**125***v*	10	44,686.31	$a^2F_{2\frac12}-s^2F^0_{2\frac12}$ $b^4F_{3\frac12}-7^0_{2\frac12}$
4	2236.**796***v*	15	44,692.88	$a^4F_{1\frac12}-v^4D^0_{\frac12}$
4	2234.**710***v*	12	44,734.60	$b^4F_{4\frac12}-t^4D^0_{3\frac12}$
4	2233.**759***v*	10	44,753.64	$a^4F_{1\frac12}-y^4S^0_{1\frac12}$
5	2233.099	9	44,766.87	
4	2232.88*v*	4	44,771.4	$b^4F_{1\frac12}-11^0_{2\frac12}$
4	2232.**460***v*	8 Co II?	44,779.68	$a^4F_{2\frac12}-v^2D^0_{1\frac12}$
5	2231.749	6	44,793.95	$b^4F_{2\frac12}-10^0_{3\frac12}$
13	2230.07	8	44,827.7	
4	2229.**734***v*	10	44,834.42	$b^4F_{4\frac12}-v^2F^0_{3\frac12}$
5	2228.806	12	44,853.09	$a^4F_{2\frac12}-v^4D^0_{1\frac12}$
5	2228.334	4	44,862.59	$a^4F_{1\frac12}-v^2D^0_{2\frac12}$
4	2227.**853***v*	10	44,872.27	$a^4F_{3\frac12}-w^2D^0_{2\frac12}$
4	2227.**666***v*	12	44,876.04	$a^4F_{1\frac12}-y^2P^0_{1\frac12}$
5	2225.848	5	44,912.69	$a^2F_{2\frac12}-v^2G^0_{3\frac12}$
5	2225.350	12	44,922.74	$a^4F_{2\frac12}-v^4D^0_{2\frac12}$
4	2223.97*v*	0	44,950.5	$a^4F_{3\frac12}-x^2G^0_{3\frac12}$
5	2219.154	9	45,048.15	$a^4F_{2\frac12}-w^2D^0_{1\frac12}$
5	2218.813	10	45,055.08	$b^4F_{3\frac12}-9^0_{3\frac12,4\frac12}$
5	2213.86	4 Co II?	45,155.9	$a^4F_{2\frac12}-y^4S^0_{1\frac12}$ $(a^4F_{3\frac12}-v^4D^0_{3\frac12})$
5	2213.819	7	45,156.70	$b^4F_{2\frac12}-11^0_{2\frac12}$
5	2212.354	9	45,186.60	$a^4F_{3\frac12}-x^4P^0_{2\frac12}$
13	2212.23	15	45,189.1	
13	2210.89	2	45,216.5	$a^4F_{3\frac12}-x^2G^0_{4\frac12}$
4	2208.**508***v*	12	45,265.28	$a^4F_{2\frac12}-v^2D^0_{2\frac12}$
4	2207.**853***v*	9	45,278.70	$a^4F_{2\frac12}-y^2P^0_{1\frac12}$
5	2207.697	10	45,281.90	$a^4F_{1\frac12}-y^2P^0_{\frac12}$
4	2204.**796***v*	18	45,341.48	$b^4F_{3\frac12}-10^0_{3\frac12}$
13	2203.96	3*N*	45,358.7	
13	2203.53	4	45,367.5	
13	2202.59	3	45,386.9	
13	2201.79	4	45,403.4	
13	2201.55	6	45,408.3	
13	2201.41	6	45,411.2	
5	2201.235	4	45,414.82	$b^4F_{2\frac12}-12^0_{1\frac12}$
5	2198.764	2	45,465.85	$a^4F_{2\frac12}-u^4D^0_{3\frac12}$
13	2197.98	3	45,482.1	
5	2197.633	5	45,489.25	
13	2197.34	8	45,495.3	
5	2196.904	3	45,504.34	
4	2196.**458***v*	15	45,513.58	$a^4F_{3\frac12}-v^4D^0_{2\frac12}$
13	2196.02	3	45,522.7	
13	2195.17	2	45,540.3	$a^4F_{4\frac12}-z^2H^0_{5\frac12}$
13	2191.16	3	45,623.6	$a^2F_{3\frac12}-21^0_{3\frac12,4\frac12}$
5	2189.350	3	45,661.34	$a^2F_{3\frac12}-s^2F^0_{3\frac12}$
5	2187.284	5	45,704.45	$a^2F_{2\frac12}-23^0_{1\frac12}$ $b^4F_{3\frac12}-11^0_{2\frac12}$ $(a^2F_{3\frac12}-s^2F^0_{2\frac12})$
4	2186.**777***v*	12	45,715.1	$b^4F_{4\frac12}-9^0_{3\frac12,4\frac12}$
13	2186.45	8	45,721.9	$a^4F_{2\frac12}-w^2F^0_{2\frac12}$
5	2186.030	3	45,730.67	$b^4F_{1\frac12}-14^0_{2\frac12}$
5	2184.950	10	45,753.28	$a^2F_{3\frac12}-u^2D^0_{2\frac12}$
5	2184.314	8	45,766.59	$a^4F_{4\frac12}-x^2G^0_{3\frac12}$
13	2183.33	3*N*	45,787.2	
5	2182.587	15	45,802.80	$a^4F_{1\frac12}-u^4D^0_{1\frac12}$
5	2181.121	12	45,833.58	$a^2F_{3\frac12}-v^2G^0_{4\frac12}$
13	2180.23	7	45,852.3	
4	2180.**060***v*	10	45,855.88	$a^4F_{3\frac12}-v^2D^0_{2\frac12}$
13	2178.59	25*n*	45,886.8	
13	2178.06	8Fe?	45,898.0	
5	2176.968	2	45,921.00	$b^4F_{2\frac12}-w^2G^0_{3\frac12}$
5	2176.494	4	45,931.01	$a^2F_{3\frac12}-v^2G^0_{3\frac12}$
13	2176.03	3	45,940.8	
13	2174.90	8	45,964.7	
4	2174.**589***v*	30*r*	45,971.24	$a^4F_{4\frac12}-v^4D^0_{3\frac12}$
5	2173.845	10	45,986.98	$a^4F_{2\frac12}-u^4D^0_{2\frac12}$
5	2173.173	10	46,001.19	$b^4F_{4\frac12}-10^0_{3\frac12}$
5	2172.175	4	46,022.33	$b^4F_{2\frac12}-u^2F^0_{2\frac12}$
13	2171.68	0*N*	46,032.8	$a^4F_{4\frac12}-x^2G^0_{4\frac12}$
5	2170.565	10	46,056.45	$a^4F_{3\frac12}-u^4D^0_{3\frac12}$
5	2168.711	18	46,095.83	$a^4F_{1\frac12}-u^4D^0_{\frac12}$
13	2167.75	3	46,116.3	$b^4F_{2\frac12}-14^0_{2\frac12}$
13	2164.36	6	46,188.5	
13	2163.96	5*NN*	46,197.0	
13	2163.78	3?	46,200.9	
5	2163.574	12	46,205.26	$a^4F_{2\frac12}-u^4D^0_{1\frac12}$
5	2163.034	15	46,216.79	$a^4F_{1\frac12}-x^2S^0_{\frac12}$
5	2162.196	6	46,234.70	$b^4F_{2\frac12}-v^2P^0_{1\frac12}$
13	2161.58	3*N*	46,247.9	
13	2158.87	4	46,305.9	
5	2158.542	10	46,312.96	$a^4F_{3\frac12}-w^2F^0_{2\frac12}$
13	2158.30	8	46,318.2	
13	2157.20	5*N*	46,341.8	
13	2156.33	5*NN*	46,360.5	
13	2155.29	12	46,382.8	
13	2154.24	3	46,405.4	
5	2154.074	10	46,409.01	$a^4F_{3\frac12}-w^2F^0_{3\frac12}$
13	2153.50	12	46,421.4	
13	2152.83	2	46,435.8	$b^4F_{3\frac12}-u^2F^0_{3\frac12}$
5	2152.148	10	46,450.54	$b^4F_{3\frac12}-w^2G^0_{4\frac12}$
13	2151.69	3*N*	46,460.4	
13	2151.26	2 Co II?	46,469.7	$b^4F_{2\frac12}-w^4P^0_{2\frac12}$
13	2150.11	5	46,494.6	$b^4F_{2\frac12}-15^0_{3\frac12}$
5	2148.708	6	46,524.90	$a^4F_{1\frac12}-x^2P^0_{1\frac12}$
13	2147.77	5*N*	46,545.2	
13	2146.65	0	46,569.5	$b^4F_{3\frac12}-u^2F^0_{2\frac12}$
5	2146.264	12	46,577.87	$a^4F_{3\frac12}-u^4D^0_{2\frac12}$
5	2145.45	12	46,595.5	$b^4F_{3\frac12}-13^0_{3\frac12,4\frac12}$
5	2143.679	3	46,634.03	$a^4F_{1\frac12}-t^4D^0_{2\frac12}$
13	2142.34	2*N*	46,663.2	$b^4F_{3\frac12}-14^0_{2\frac12}$
5	2138.971	15	46,736.67	$a^4F_{1\frac12}-t^4D^0_{1\frac12}$
5	2137.780	15	46,762.70	$a^4F_{1\frac12}-t^4D^0_{\frac12}$
13	2137.38	0	46,771.4	$b^4F_{1\frac12}-s^4D^0_{1\frac12}$
5	2135.798	4	46,806.09	$a^4F_{1\frac12}-v^2F^0_{2\frac12}$
5	2135.59	3	46,810.64	$a^4F_{2\frac12}-t^4D^0_{3\frac12}$
13	2134.92	6	46,825.3	
13	2134.10	8*N*	46,843.3	
5	2132.767	10	46,872.60	$a^4F_{4\frac12}-u^4D^0_{3\frac12}$
13	2131.84	0	46,893.0	$b^4F_{4\frac12}-y^2H^0_{5\frac12}$
5	2131.052	3	46,910.32	$a^4F_{2\frac12}-v^2F^0_{3\frac12}$
13	2130.91	tr	46,913.4	$b^4F_{1\frac12}-17^0_{2\frac12}$
5	2130.276	8	46,927.40	$a^4F_{2\frac12}-x^2P^0_{1\frac12}$
5	2129.508	5	46,944.32	$a^4F_{1\frac12}-x^4S^0_{1\frac12}$
5	2127.147	10	46,996.42	$b^4F_{3\frac12}-s^4D^0_{2\frac12}$
5	2126.199	5	47,017.37	$b^4F_{3\frac12}-w^4P^0_{2\frac12}$
5	2125.949	5	47,022.90	$a^4F_{3\frac12}-6^0_{3\frac12}$
5	2125.322	5	47,036.77	$a^4F_{2\frac12}-t^4D^0_{2\frac12}$
5	2125.116	10	47,041.33	$b^4F_{3\frac12}-15^0_{3\frac12}$
13	2124.80	0	47,048.3	$a^2F_{2\frac12}-30^0_{2\frac12}$
13	2124.13	8	47,063.2	
13	2122.64	10	47,096.2	$b^4F_{4\frac12}-u^2F^0_{3\frac12}$
13	2121.99	6*N*	47,110.6	$b^4F_{4\frac12}-w^2G^0_{4\frac12}$
5	2121.391	3	47,123.92	
5	2120.705	10	47,139.16	$a^4F_{2\frac12}-t^4D^0_{1\frac12}$
5	2119.904	10	47,156.97	$b^4F_{2\frac12}-s^4D^0_{1\frac12}$
5	2119.192	5	47,172.82	$b^4F_{2\frac12}-16^0_{2\frac12}$
5	2118.505	6	47,188.11	$b^4F_{1\frac12}-s^4D^0_{\frac12}$
13	2117.68	15*s*	47,206.5	$b^4F_{2\frac12}-t^2F^0_{3\frac12}$
5	2116.842	10	47,225.17	$a^4F_{4\frac12}-w^2F^0_{3\frac12}$
13	2116.29	8	47,237.5	
13	2115.49	2?	47,255.4	$b^4F_{4\frac12}-13^0_{3\frac12,4\frac12}$
5	2115.338	12	47,258.74	$b^4F_{4\frac12}-s^4D^0_{3\frac12}$
5	2114.41	4	47,279.5	$b^4F_{1\frac12}-w^4P^0_{\frac12}$
5	2113.536	12	47,299.03	$b^4F_{2\frac12}-17^0_{2\frac12}$
13	2113.20	3	47,306.6	
13	2112.40	12	47,324.5	$b^4F_{2\frac12}-w^4P^0_{1\frac12}$
5	2111.416	10	47,346.52	$a^4F_{2\frac12}-x^4S^0_{1\frac12}$?
13	2111.08	5*N*	47,354.1	
13	2110.89	tr	47,358.3	$a^2F_{2\frac12}-32^0_{1\frac12}$
5	2109.206	5	47,396.12	
5	2108.980	15	47,401.20	$a^4F_{3\frac12}-t^4D^0_{3\frac12}$
13	2108.16	0	47,419.6	$b^4F_{4\frac12}-x^2H^0_{4\frac12}$
13	2108.05	0	47,422.1	$a^4F_{2\frac12}-7^0_{2\frac12}$ $b^4F_{1\frac12}-19^0_{1\frac12}$
5	2106.798	25 Co II?	47,450.29	$b^4F_{1\frac12}-20^0_{1\frac12,2\frac12}$
13	2105.02?	?*NN*	47,490.4	$a^2F_{3\frac12}-26^0_{3\frac12}$?
5	2104.730	25	47,496.90	
13	2104.50	12*Nd*?	47,502.1	
13	2103.85	5	47,516.8	
13	2103.10	4*N*	47,533.7	
13	2102.62	10	47,544.6	
13	2101.70	3	47,565.4	
13	2100.66	6	47,588.9	
5	2099.35	10	47,618.6	$a^4F_{2\frac12}-w^2P^0_{1\frac12}$
5	2098.942	12	47,627.87	$a^4F_{3\frac12}-t^4D^0_{2\frac12}$
5	2097.511	20	47,660.35	
5	2095.77	15	47,699.9	
13	2094.86	15	47,720.7	$b^4F_{1\frac12}-t^2F^0_{2\frac12}$ $b^4F_{3\frac12}-16^0_{2\frac12}$
5	2093.40	15	47,753.9	$b^4F_{3\frac12}-t^2F^0_{3\frac12}$
13	2091.98	12	47,786.3	$b^4F_{2\frac12}-18^0_{3\frac12}$
13	2091.40	10	47,799.6	$a^4F_{3\frac12}-v^2F^0_{2\frac12}$
13	2091.05	15	47,807.6	$b^4F_{2\frac12}-19^0_{1\frac12}$
13	2089.83	10	47,835.5	$b^4F_{2\frac12}-20^0_{1\frac12,2\frac12}$
13	2089.67	10	47,839.2	$a^4F_{4\frac12}-6^0_{3\frac12}$
13	2089.35	15	47,846.5	$b^4F_{3\frac12}-17^0_{2\frac12}$
13	2087.55	15	47,887.7	
13	2085.67	15*N*	47,930.9	
13	2085.04	9	47,945.4	$a^4F_{1\frac12}-w^2P^0_{\frac12}$
13	2084.09	10	47,967.2	
13	2082.11	12	48,012.8	$a^4F_{3\frac12}-7^0_{2\frac12}$
13	2081.04	10	48,037.5	$a^4F_{1\frac12}-11^0_{2\frac12}$
13	2079.55	tr	48,071.9	$b^4F_{1\frac12}-s^2F^0_{2\frac12}$?
13	2079.32	12	48,077.3	$a^4F_{2\frac12}-10^0_{3\frac12}$
13	2078.06	2	48,106.4	$b^4F_{2\frac12}-t^2F^0_{2\frac12}$
13	2077.76	25*NN*	48,113.3	
13	2077.44	1*N*	48,120.8	$b^4F_{1\frac12}-u^2D^0_{2\frac12}$?

TABLE VIII.—*Continued.*

Ref.	λ IA	Int.–TC	Wave No. Vac.	Multiplet Designation
5	2073.27	10	48,217.5	$a^4F_{4\frac{1}{2}}-t^4D^0_{3\frac{1}{2}}$
13	2071.95	4*N*	48,248.3	
13	2069.91	12	48,295.8	$a^4F_{1\frac{1}{2}}-12^0_{1\frac{1}{2}}$
5	2068.99	10	48,317.3	$a^4F_{4\frac{1}{2}}-v^2F^0_{3\frac{1}{2}}$
13	2067.58	5	48,350.2	
13	2067.42	6*NN*	48,354.0	
13	2066.22	12	48,382.0	$a^4F_{3\frac{1}{2}}-9^0_{3\frac{1}{2},4\frac{1}{2}}$
13	2066.12	0 Co II?	48,384.4	$b^4F_{2\frac{1}{2}}-u^2D^0_{1\frac{1}{2}}$
5	2064.86	4	48,413.9	{ $b^4F_{4\frac{1}{2}}-t^2F^0_{3\frac{1}{2}}$ / $b^4F_{2\frac{1}{2}}-s^2F^0_{3\frac{1}{2}}$
13	2062.92	6	48,459.4	
13	2061.39	6	48,495.4	
13	2059.90	3	48,530.5	
13	2058.51	3*NN*	48,563.2	
13	2055.46	4*N*	48,635.3	
5	2054.07	10	48,668.2	$a^4F_{3\frac{1}{2}}-10^0_{3\frac{1}{2}}$
13	2053.46	5*N*	48,682.6	
13	2053.27	6	48,687.1	
13	2052.82	6	48,697.8	$a^4F_{2\frac{1}{2}}-12^0_{1\frac{1}{2}}$
13	2048.59	5	48,798.3	
13	2043.70	8?	48,915.1	
13	2043.37	8	48,923.0	$b^4F_{3\frac{1}{2}}-21^0_{3\frac{1}{2},4\frac{1}{2}}$
5	2043.00	8	48,931.8	
13	2042.72	8*N*	48,938.6	
13	2041.76	3	48,961.6	$b^4F_{3\frac{1}{2}}-s^2F^0_{3\frac{1}{2}}$
13	2041.11	20	48,977.1	
13	2039.95?	25 Co II?	49,005.0	$b^4F_{3\frac{1}{2}}-s^2F^0_{2\frac{1}{2}}$?
13	2038.86	0 Co II?	49,031.2	$a^4F_{3\frac{1}{2}}-11^0_{2\frac{1}{2}}$
13	2037.92	2 Co II?	49,053.8	$b^4F_{3\frac{1}{2}}-u^2D^0_{2\frac{1}{2}}$
13	2035.35	5	49,115.7	$a^4F_{1\frac{1}{2}}-b^2P^0_{1\frac{1}{2}}$
13	2035.05	7*N*	49,123.0	
13	2034.49	8*N*	49,136.5	$a^4F_{1\frac{1}{2}}-v^2P^0_{\frac{1}{2}}$
13	2031.96	15	49,197.7	$a^4F_{4\frac{1}{2}}-9^0_{3\frac{1}{2},4\frac{1}{2}}$
13	2029.99	8	49,245.4	
13	2029.78	8	49,250.5	
13	2027.77	3	49,299.3	
10	2026.794	—	49,323.0	$a^4F_{3\frac{1}{2}}-s^4D^0_{2\frac{1}{2}}$
13	2026.51	6	49,330.0	$a^4F_{1\frac{1}{2}}-s^4D^0_{2\frac{1}{2}}$
13	2026.35	8*d*?	49,333.8	
13	2024.68	10	49,374.5	
13	2023.17	4	49,411.4	
13	2020.56	tr*N*	49,475.2	$b^4F_{2\frac{1}{2}}-23^0_{1\frac{1}{2}}$
13	2020.18	2	49,484.5	$a^4F_{4\frac{1}{2}}-10^0_{3\frac{1}{2}}$
5	2017.26	4	49,556.1	
13	2016.17	15 Co II?	49,582.9	$b^4F_{4\frac{1}{2}}-21^0_{3\frac{1}{2},4\frac{1}{2}}$
5	2015.99	4	49,587.3	
5	2014.58	20*w*	49,622.03	
13	2011.77	8*N*?	49,691.3	
5	2011.07	5 Co II?	49,708.6	$b^4F_{2\frac{1}{2}}-24^0_{3\frac{1}{2}}$
5	2010.10	8	49,732.6	$a^4F_{2\frac{1}{2}}-s^4D^0_{2\frac{1}{2}}$
13	2009.24	9	49,753.9	$a^4F_{2\frac{1}{2}}-w^4P^0_{2\frac{1}{2}}$?
13	2008.85	8	49,763.6	
5	2008.28	5	49,777.7	$a^4F_{2\frac{1}{2}}-15^0_{3\frac{1}{2}}$
13	2008.04	15	49,783.6	
13	2004.00	10*N*	49,884.0	
13	2002.44	6?	49,922.8	$a^4F_{3\frac{1}{2}}-13^0_{3\frac{1}{2},4\frac{1}{2}}$
13	2002.32	25 Co II?	49,925.8	$a^4F_{3\frac{1}{2}}-s^4D^0_{3\frac{1}{2}}$
13	2002.01	3	49,933.6	
13	2000.12	12*N*	49,980.7	$b^4F_{4\frac{1}{2}}-22^0_{3\frac{1}{2}}$
13	1999.89	8	49,986.5	
	λ Vac.			
13	1998.49	25*l*	50,037.8	$a^4F_{1\frac{1}{2}}-s^4D^0_{1\frac{1}{2}}$
13	1994.98	15*N*	50,125.8	
13	1993.25	10*N*	50,169.3	
13	1992.79	20	50,180.9	
13	1991.80	3	50,205.8	$a^4F_{1\frac{1}{2}}-w^4P^0_{1\frac{1}{2}}$?
13	1990.34	30 Co II?	50,242.7	$b^4F_{2\frac{1}{2}}-26^0_{3\frac{1}{2}}$?
13	1989.80	25 Co II?	50,256.3	$b^4F_{3\frac{1}{2}}-24^0_{3\frac{1}{2}}$
13	1989.28	10	50,269.4	
13	1987.65	20	50,310.7	$b^4F_{1\frac{1}{2}}-29^0_{2\frac{1}{2}}$
13	1987.24	10?	50,321.0	
13	1987.15	12?	50,323.3	
13	1987.03	15	50,326.4	
13	1986.31	6	50,344.6	$a^4F_{3\frac{1}{2}}-w^4P^0_{2\frac{1}{2}}$
13	1985.88	4	50,355.5	
13	1985.36	10	50,368.7	$a^4F_{3\frac{1}{2}}-15^0_{3\frac{1}{2}}$
13	1985.25	10	50,371.5	$b^4F_{2\frac{1}{2}}-27^0_{2\frac{1}{2}}$
13	1982.81	8	50,433.5	$b^4F_{1\frac{1}{2}}-30^0_{2\frac{1}{2}}$
13	1982.52	20	50,440.8	$a^4F_{2\frac{1}{2}}-s^4D^0_{1\frac{1}{2}}$
13	1981.97	20	50,454.9	$a^4F_{1\frac{1}{2}}-s^4D^0_{\frac{1}{2}}$
13	1980.89	40*N*	50,482.4	
13	1980.59	15	50,490.0	$a^4F_{2\frac{1}{2}}-t^2F^0_{3\frac{1}{2}}$
13	1978.53	12	50,542.6	
13	1978.36	10	50,546.9	$b^4F_{1\frac{1}{2}}-v^4F^0_{1\frac{1}{2}}$
13	1976.97	30	50,582.5	$a^4F_{2\frac{1}{2}}-17^0_{2\frac{1}{2}}$
13	1975.94	6	50,608.8	$b^4F_{1\frac{1}{2}}-v^4F^0_{2\frac{1}{2}}$
13	1975.67	20	50,615.7	
13	1975.36	6*N*	50,623.7	$b^4F_{2\frac{1}{2}}-v^4F^0_{3\frac{1}{2}}$
13	1974.39	15	50,648.6	$b^4F_{3\frac{1}{2}}-v^4F^0_{4\frac{1}{2}}$
13	1973.85	25	50,662.4	$b^4F_{1\frac{1}{2}}-31^0_{1\frac{1}{2}}$
13	1973.62	5	50,668.3	
13	1972.82	tr?	50,688.9	$a^4F_{1\frac{1}{2}}-19^0_{1\frac{1}{2}}$
13	1972.52	30*N*	50,696.6	$b^4F_{2\frac{1}{2}}-29^0_{2\frac{1}{2}}$
13	1971.75	15	50,716.4	$a^4F_{1\frac{1}{2}}-20^0_{1\frac{1}{2},2\frac{1}{2}}$
13	1971.16	30*N*	50,731.6	$b^4F_{3\frac{1}{2}}-25^0_{4\frac{1}{2}}$
13	1970.71	50	50,743.1	{ $b^4F_{1\frac{1}{2}}-32^0_{1\frac{1}{2}}$ / ($a^4F_{4\frac{1}{2}}-s^4D^0_{3\frac{1}{2}}$)
13	1969.68	3	50,769.7	
13	1968.93	25*N*	50,789.0	$b^4F_{3\frac{1}{2}}-26^0_{3\frac{1}{2}}$
13	1968.69	25*N*	50,795.2	
13	1967.78	10	50,818.7	$b^4F_{2\frac{1}{2}}-30^0_{2\frac{1}{2}}$
13	1966.96	10	50,839.9	
13	1966.68	9	50,847.1	$b^4F_{1\frac{1}{2}}-33^0_{1\frac{1}{2},2\frac{1}{2}}$
13	1964.03	20	50,915.7	$b^4F_{4\frac{1}{2}}-24^0_{3\frac{1}{2}}$
13	1963.92	8?	50,918.6	$b^4F_{3\frac{1}{2}}-27^0_{2\frac{1}{2}}$
13	1963.55	20	50,928.2	$a^2F_{2\frac{1}{2}}-37^0_{2\frac{1}{2},3\frac{1}{2}}$
13	1963.38	12	50,932.6	$b^4F_{2\frac{1}{2}}-v^4F^0_{1\frac{1}{2}}$
13	1961.59	25	50,979.0	
13	1961.26	8	50,987.6	$a^4F_{1\frac{1}{2}}-t^2F^0_{2\frac{1}{2}}$?
13	1961.00	15	50,994.4	$b^4F_{2\frac{1}{2}}-v^4F^0_{2\frac{1}{2}}$
13	1958.94	15	51,048.0	{ $b^4F_{2\frac{1}{2}}-31^0_{1\frac{1}{2}}$ / ($a^4F_{3\frac{1}{2}}-16^0_{2\frac{1}{2}}$)
13	1958.55	25	51,058.2	
13	1958.10	8	51,069.9	$a^4F_{2\frac{1}{2}}-18^0_{3\frac{1}{2}}$
13	1957.69	12*N*	51,080.6	$a^4F_{3\frac{1}{2}}-t^2F^0_{3\frac{1}{2}}$
13	1956.22	15	51,119.0	$a^4F_{2\frac{1}{2}}-20^0_{1\frac{1}{2},2\frac{1}{2}}$
13	1955.17	30	51,146.4	$b^4F_{1\frac{1}{2}}-35^0_{1\frac{1}{2},2\frac{1}{2}}$
13	1954.22	30	51,171.3	$b^4F_{3\frac{1}{2}}-v^4F^0_{3\frac{1}{2}}$
13	1953.71	8	51,184.7	$a^4F_{4\frac{1}{2}}-15^0_{3\frac{1}{2}}$
13	1953.50	4	51,190.2	
13	1951.90	25	51,232.1	$b^4F_{2\frac{1}{2}}-33^0_{1\frac{1}{2},2\frac{1}{2}}$
13	1951.44	12	51,244.2	$b^4F_{3\frac{1}{2}}-29^0_{2\frac{1}{2}}$
13	1949.00	15	51,308.4	$b^4F_{4\frac{1}{2}}-v^4F^0_{4\frac{1}{2}}$
13	1948.09	10	51,332.3	
13	1947.58	5	51,345.8	
13	1946.79	25	51,366.6	$b^4F_{3\frac{1}{2}}-30^0_{2\frac{1}{2}}$
13	1945.86	0	51,391.2	$b^4F_{4\frac{1}{2}}-25^0_{4\frac{1}{2}}$
13	1945.09	12	51,411.5	$b^4F_{2\frac{1}{2}}-34^0_{1\frac{1}{2},2\frac{1}{2}}$
13	1943.64	12	51,449.9	$b^4F_{4\frac{1}{2}}-26^0_{3\frac{1}{2}}$
13	1940.16	15 Co II?	51,542.1	$b^4F_{3\frac{1}{2}}-v^4F^0_{2\frac{1}{2}}$
13	1939.75	3	51,553.0	
13	1938.94	10	51,574.6	
13	1936.58	30 Co II?	51,637.4	$b^4F_{4\frac{1}{2}}-28^0_{3\frac{1}{2}}$
13	1935.72	0*N*	51,660.4	$a^4F_{3\frac{1}{2}}-18^0_{3\frac{1}{2}}$
13	1935.46	0*N*	51,667.3	$a^4F_{2\frac{1}{2}}-u^2D^0_{1\frac{1}{2}}$
13	1934.34	12	51,697.2	$a^4F_{2\frac{1}{2}}-s^2F^0_{3\frac{1}{2}}$
13	1933.03	3	51,732.3	
13	1931.89	8	51,762.8	
13	1931.00	10*N*	51,786.6	
13	1930.90	6?	51,789.3	$a^4F_{2\frac{1}{2}}-u^2D^0_{2\frac{1}{2}}$
13	1930.38	10	51,803.3	
13	1929.34	15	51,831.2	$b^4F_{4\frac{1}{2}}-v^4F^0_{3\frac{1}{2}}$
13	1926.90	10	51,896.8	$a^4F_{4\frac{1}{2}}-t^2F^0_{3\frac{1}{2}}$
13	1925.05	12	51,946.7	$a^2F_{3\frac{1}{2}}-37^0_{2\frac{1}{2},3\frac{1}{2}}$
13	1924.46	15	51,962.6	
13	1911.86	8	52,305.1	
13	1906.72	5	52,446.1	
13	1905.87	20	52,469.5	
13	1905.41	6	52,482.2	
13	1904.75	5	52,500.3	
13	1902.15	10	52,572.1	
13	1901.75	20	52,583.1	
13	1897.73	8	52,694.6	
13	1897.48	10	52,701.5	
13	1895.78	4	52,748.7	
13	1894.07	3	52,796.4	
13	1893.43	3	52,814.2	
13	1889.87	10	52,913.7	
13	1889.60	6	52,921.2	
13	1887.89	12	52,969.2	
13	1884.56	10*N*	53,062.8	
13	1884.45	10	53,065.9	$a^4F_{4\frac{1}{2}}-21^0_{3\frac{1}{2},4\frac{1}{2}}$
13	1881.09	5	53,160.7	
13	1880.82	15	53,168.3	
13	1880.34	4	53,181.9	
13	1878.28	25	53,240.2	
13	1877.40	15	53,265.1	
13	1876.88	8	53,279.9	
13	1876.48	7	53,291.2	
13	1876.01	10	53,304.6	
13	1875.22	4	53,327.1	
13	1872.37	8	53,408.3	
13	1870.45	5	53,463.1	
13	1869.16	5	53,500.0	
13	1866.45	3	53,577.7	$a^4F_{1\frac{1}{2}}-29^0_{2\frac{1}{2}}$
13	1866.27	6	53,582.8	$a^4F_{3\frac{1}{2}}-24^0_{3\frac{1}{2}}$
13	1864.92	4	53,621.6	
13	1862.31	25	53,696.8	
13	1858.26	3	53,813.8	$a^4F_{1\frac{1}{2}}-v^4F^0_{1\frac{1}{2}}$
13	1856.13	15 Co II?	53,875.5	$a^4F_{1\frac{1}{2}}-v^4F^0_{2\frac{1}{2}}$
13	1855.05	40 Co II?	53,906.9	$a^4F_{2\frac{1}{2}}-v^4F^0_{3\frac{1}{2}}$
13	1854.28	8	53,929.3	$a^4F_{1\frac{1}{2}}-31^0_{1\frac{1}{2}}$

TABLE VIII.—*Concluded.*

REF.	λ IA	INT.–TC	WAVE NO. VAC.	MULTIPLET DESIGNATION
13	1852.71	30 Co II?	53,975.0	$a^4F_{3\frac12}-v^4F^0_{4\frac12}$
13	1852.52	15?	53,980.5	$a^4F_{2\frac12}-29^0_{2\frac12}$
13	1851.49	8	54,010.6	
13	1850.80	4	54,030.7	
13	1847.89	30	54,115.8	$a^4F_{3\frac12}-26^0_{3\frac12}$
13	1846.94	4	54,143.6	
13	1843.45	8	54,246.1	$a^4F_{3\frac12}-27^0_{2\frac12}$
13	1842.34	25 Co II?	54,278.8	$a^4F_{2\frac12}-v^4F^0_{2\frac12}$?
13	1841.88	3	54,292.4	$a^4F_{1\frac12}-34^0_{1\frac12,2\frac12}$
13	1841.47	10	54,304.5	$a^4F_{3\frac12}-28^0_{3\frac12}$
13	1840.79	10	54,324.5	
13	1840.55	10	54,331.6	$a^4F_{2\frac12}-31^0_{1\frac12}$
13	1838.28	15	54,398.7	$a^4F_{4\frac12}-24^0_{3\frac12}$
13	1837.82	8	54,412.3	$a^4F_{1\frac12}-35^0_{1\frac12,2\frac12}$; $a^4F_{2\frac12}-32^0_{1\frac12}$
13	1837.13	3	54,432.7	
13	1836.97	3	54,437.5	
13	1834.99	10 Co II?	54,496.2	$a^4F_{3\frac12}-v^4F^0_{3\frac12}$?
13	1834.34	10	54,515.5	$a^4F_{2\frac12}-33^0_{1\frac12,2\frac12}$
13	1832.47	15	54,571.2	$a^4F_{3\frac12}-29^0_{2\frac12}$
13	1828.35	12	54,694.2	$a^4F_{2\frac12}-34^0_{1\frac12,2\frac12}$
13	1825.17	1 Co II?	54,789.4	$a^4F_{4\frac12}-v^4F^0_{4\frac12}$?
13	1822.03	3	54,883.8	
13	1820.42	12	54,932.4	$a^4F_{4\frac12}-26^0_{3\frac12}$
13	1814.20	12	55,120.7	$a^4F_{4\frac12}-28^0_{3\frac12}$

Notes in intensity column: *d*, double; *g*, ghost; *h*, hazy; *l*, shaded to longer wave-length (asymmetrical); *n*, diffuse; *N*, very diffuse; *r*, narrow self-reversal; *R*, wide self-reversal; *s*, shaded to shorter wave-length (asymmetrical); *w*, wide or complex; *W*, very wide or complex.

[1] Meggers, unpublished material, 1935.
[2] Meggers and Kiess, J. Research Nat. Bur. Stand. **9**, 319 (1932), (RP 473).
[3] Meggers and Kiess, Sci. Pap. Bur. Stand. **14**, 645 (1918); (No. 324).
[4] Burns, unpublished material. Three-place measures in heavy type are interferometer measures; "v" denotes vacuum source.
[5] *M. I. T. Wave-Length Tables* (The Technology Press; John Wiley and Sons, New York, 1939).
[6] Russell, unpublished material.
[7] Dhein, Zeits. f. Wiss. Ptg. **19**, 289 (1920).
[8] Stüting, Zeits. f. Wiss. Ptg. **7**, 73 (1909).
[9] Exner and Haschek, see Kayser, *Handbuch der Spectroscopie*, Vol. **5** (1910), p. 310; also reference 10 below; also King, Mt. Wilson Contr. No. 108; Astrophys. J. **42**, 347 (1915).
[10] Catalan and Antunes, Anal. Soc. Española de Fisica y Quimica **34**, 207 (1936).
[11] Krebs, Zeits. f. Wiss. Ptg. **16**, 292 (1917).
[12] Hasselberg, see Kayser, *Handbuch der Spectroscopie*, Vol. **5** (1910), p. 310.
[13] C. E. Moore, unpublished material.

There are a few conspicuous cases of sharing of g values between neighboring terms, as shown in Table VII. The most remarkable group is $y^4S_{1\frac12}{}^0$, $v^4D_{1\frac12}{}^0$, $v^2D_{1\frac12}{}^0$. The designations of the first two might almost as well be interchanged. Those here given depend on the intensities in the multiplets with a^4P, b^4P; but these also indicate such an extensive sharing of properties by the three levels that it is hardly more than a formality to give them definite names. The intermixture of $b^4P_{1\frac12}$ and $a^2D_{1\frac12}$ is less complete, and they may be definitely labeled. A somewhat better agreement with the theoretical g values could also be obtained by interchanging the designations $e^4P_{\frac12}$ and $e^4D_{\frac12}$, and also $e^6P_{1\frac12}$ and $e^6D_{1\frac12}$, without much disturbing the energy levels or intensities.

9. LINE LIST

Table VIII includes all the classified lines, and all unclassified lines of intensity exceeding 5 on the M.I.T. scale or 2 on that of other observers. Fainter unclassified lines are included for which King gives a temperature class or Burns has an interferometer measure. Lines which are very probably due to impurities, or to Co II, are also omitted.

The wave-lengths in column 2 have been collected from many sources, as described in the notes, and indexed in column 1. The values printed in heavy type are Burns' interferometer measures. They greatly exceed the rest in accuracy. For other lines, we have entered what appears to us to be the best available wave-length, but it has been impracticable to secure a strictly homogeneous system. The intensities in the third column are King's estimates for all lines to which he has assigned a temperature class (column 4). For the other lines the values of the M.I.T. catalog are entered, when available, except in the red (λ8648–11,894) where the values of Meggers and Kiess were adopted. For the remaining lines the intensity assigned by the measurer is given.

All these intensities are estimates of the strength of the lines on the negatives, and different observers have used extremely different scales—the older lists going usually from 1 to 10 and some recent ones from 1 to 3000, so that great caution is necessary in comparing them.

King's estimates are much more nearly homogeneous, but fall off at both ends with the sensitivity of his plates. His temperature classes show the usual close correlation with the energy levels, and have been of great aid in the analysis. The wave number and the adopted designation are given in the last two columns.

Of the 3007 lines in this table 282 have not been classified. Only one, λ3177.266, is of any considerable strength. This, and some other low-temperature lines between λ3500 and λ3150 are probably the principal components of the missing combinations of a^2G and a^2H (§4); but, since the faint components of the multiplets have not been found, they cannot be classified.

This spectrum may now be regarded as pretty well analyzed. Between λ11,900 and λ2500 there are 90 unclassified lines out of 2388; between λ2500 and λ2200, 52 out of 279; and between λ2200 and λ1810, 140 out of 340.

The classification is therefore fairly complete except in the remoter ultraviolet. Here many of the lines we list may belong to Co II, a spectrum still very incompletely analyzed. Some of these are noted by "Co II?" following the intensity in Table VIII.

It is a pleasure to express our gratitude to Dr. M. T. Antunes for making the important work of Catalan and himself accessible to us; to Dr. Keivin Burns for the communication of his extensive and accurate measures,—especially with the interferometer—; to Dr. A. S. King for the loan of a set of plates of the spectrum, and for Zeeman data; and to Dr. A. G. Shenstone for taking the spectrogram which permitted the extension of our work beyond λ2230.

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The Effect of an Activator on the Absorption Spectrum of Zinc Sulphide Powders

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The absorption of zinc sulphide powders, both pure and with various concentrations of activator, was measured in the region 3200–4800A by the diffuse reflection method. It was found that the long wave-length limit of the absorption band for a pure ZnS powder was at 3800A and that this limit moved to longer wave-lengths with increasing concentration of Ag activator. No evidence could be found of a secondary absorption peak characteristic of the activator.

If pure zinc sulphide is to luminesce under ultraviolet light, it must be activated. This is usually done by heating the powder with a trace of the salt of a foreign atom, such as silver or copper. In order to get a clearer picture of the nature of this activating process, it seems desirable to find out what effect the heat treatment and the presence of foreign atoms have on the absorption spectrum of the pure powder. Gisolf,[1] studying the transmission of thin layers of ZnS powder, has reported that, within an accuracy of 10 angstrom units, no difference is found between the wave-lengths of the absorption edge for both pure ZnS and for ZnS activated with traces of Cu or Ag. He also claims to have found a secondary absorption peak, characteristic of the impurity, on the long wave-length side of the principal absorption edge.[2] These results were not confirmed, however, in the experiments about to be described.

The absorption spectra of the ZnS powders were obtained by the diffuse reflection method. The source of radiation was a 120-watt tungsten lamp with a quartz window.[3] The ZnS powder[4] was sprinkled in a thin layer over the corrugated end of a black wooden rod, held at an angle of approximately 45° in front of the slit of a small Littrow quartz spectrograph. During preliminary experiments a quartz mercury arc was used as a source of radiation. The appearance on the photographic plate, with small but uniformly diminished intensity, of the mercury lines in the region 3342 to 2537A was interpreted as indicating that a little light enters the spectrograph after one surface reflection from the crystals. Most of the reflected light, however, is apparently totally reflected internally, perhaps several times, so that it arrives at the slit of the

[1] J. H. Gisolf, Physica **6**, 87 (1939).
[2] See reference 1, Fig. 2 on page 87, and remarks on page 88.

[3] Kindly loaned by Professor George Winchester of Rutgers University.
[4] Thanks are due to Dr. G. R. Shaw, Dr. L. B. Headrick and Mr. H. W. Leverenz of the RCA Manufacturing Company, for supplying the samples of ZnS used in these experiments.