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Energy Levels and Classified Lines in the Second Spectrum of Thorium (Th II)

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The analysis of Th II has been extended with improved observations of the spectrum between 2000 and 25 000 Å. About 6500 lines are classified as transitions between 199 odd levels and 271 even levels. Of the 192 levels expected from the six odd configurations $5f(6d+7s)^2$ and $(6d+7s)^27p$, 188 are now known. In the even level system, all but one of the 37 levels of the three $(6d+7s)^3$ configurations are known. Of the 268 levels predicted for the configurations $5f^27s+5f7s7p+5f6d7p+5f^26d$, 235 are now known. The identifications are based on the theoretical calculations by N. Minsky.[1] New Zeeman effect observations have increased the number of levels with known g-values to 406 out of 470 known levels. The classifications will be useful in establishing secondary standards of wavelength.

Key words: Energy levels of Th II; g-values of Th II; spectrum of Th II; Th II spectrum; thorium; wavelengths of Th II.

1. Introduction

The first work published on the analysis of the second spectrum of thorium (Th II) was done by McNally, Harrison, and Park [1942][2] at the M.I.T. Spectroscopy Laboratory. Their analysis was based on the new thorium wavelengths reported in the M.I.T. Wavelength Tables of Harrison [1939] and new Zeeman effect observations made with the Bitter magnet at fields of about 9 teslas. With resolved Zeeman patterns for more than 700 lines, they classified 1100 Th II lines as arising from 219 levels. Measured g-values were provided for each level. Many levels were identified from the Zeeman effect. The levels belonged to two unconnected groups of terms. In one group, the low even configurations were identified as $(6d+7s)^3$ and the higher odd configurations as $6d^27p$, $6d7s7p$, and $5f6d7s$. In the other group the low odd levels were attributed to $5f7s^2$ and $5f6d7s$ and the higher evens to $5f7s7p$ and $5f6d7p$.

In a second paper, McNally [1945] investigated the infrared spectrum of Th II and established that the lowest odd level, $5f7s^2\ ^2F^\circ_{2\frac{1}{2}}$, lay 4490 cm^{-1} above the ground state. His paper gives 301 levels on a unified scale relative to the ground state. Of these levels, 21 are credited to the first paper of de Bruin, Schuurmans, and Klinkenberg [1943] (v.i.) and 17 others have been rejected since.

In an investigation which, because of the war, was entirely independent, de Bruin, Schuurmans, and Klinkenberg [1943], [1944] at the Zeeman Laboratory in Amsterdam, classified about 1900 lines as arising from 232 levels. Measured g-values were published for every level but no list of classified lines could be printed. They found essentially the same two systems as those found at M.I.T. and in a note at the end of their second paper announced their discovery of the wavenumber difference between the two systems which later, and independently, was confirmed by McNally.

Their work was extended by Schuurmans [1946] with a discussion based on the theory of the configurations with $5f$-electrons. He suggested tentative locations for the then undiscovered configuration $5f^27p$ and for $5f^3$. He found 31 new levels, all but one of which are here confirmed.

In 1958 G. W. Charles prepared a compilation of available data on the first four spectra of thorium. For Th II Charles listed 165 odd and 191 even levels (including some not previously published) and 2850 classified lines, together with all known Zeeman patterns and isotope shifts. We have rejected 5 even and 14 odd levels in his list.

Recently Minsky [1969] has calculated all 13 of the important configurations of Th II as three groups in intermediate coupling with configuration interaction. They are the low even group $(6d+7s)^3$, the high even group $5f^2\,7s+5f7s7p+5f6d7p+5f^26d$, and the six odd configurations $5f7s^2+5f6d7s+5f6d^2+6d7s7p+7s^27p+6d^27p$. Thus Minsky's work provides a modern theoretical analysis for all the important configurations of Th II.

In addition to his extensive theoretical analysis,

[1] N. Minsky, Dissertation, Hebrew University, Jerusalem (1969).

[2] Literature references are at the end of this paper.

Minsky discovered 29 new levels, all of which are confirmed in this paper. Furthermore, his predictions of the locations of the undiscovered levels of the thirteen configurations have been most helpful in guiding our searches and, of course, in identifying newly found levels.

Recently Brewer [1971] has predicted the position of the lowest terms of $5f^27p$ at 48 000 : 2000 cm^{-1}, $5f7p^2$ at 54 000 ± 4000 cm^{-1}, and $5f^3$ at 55 000 ± 5000 cm^{-1}. In this paper we have confirmed his predictions for f^2p and fp^2.

2. Observations

A summary of the observations of thorium spectra at NBS and elsewhere prior to 1960 has been given by Zalubas [1960]. His monograph presented new observations of wavelengths and intensities in electrodeless lamps and spark sources for 15 000 lines of Th I and Th II in the spectral range 2000 to 11 550 Å. It superseded all previous published descriptions of Th I and Th II in both accuracy and extent. The monograph was used by Minsky [1969] for his extension of the classification of Th II.

With the completion of the new description, work on the analysis of Th I was begun by Zalubas [1959]. As the work proceeded it became clear that the analysis could be carried on to a considerably more advanced state if the precision of the wavelengths could be improved still further. New observations were made at NBS over the period 1965–1970 with instruments of higher resolution and with improved standards. These observations will be described in detail in a forthcoming publication on thorium spectra by Zalubas.

In the region 9200 to 30 000 Å lines observed with the C.N.R.S. (Orsay) Fourier transform spectrometer of Connes et al. [1970] were generously furnished to us by Giacchetti. That list is discussed and published by Giacchetti, Blaise, Corliss, and Zalubas [1974]. Earlier work in the infrared region of the thorium spectra was done by Steers [1967] and by Bernage, Houdart, and Niay [1971].

The list of thorium lines now at hand has nearly 40 000 lines, of which about 14 000 are regarded as belonging to Th II. This list will be published to replace the earlier list of Zalubas [1960].

In addition to the wavelength observations described above, we have Zeeman effect plates taken at the Argonne National Laboratory in 1964 in the range 2690 to 9100 Å at a magnetic field of 2.4 teslas. These spectra, made with electrodeless thorium iodide lamps, provided Zeeman patterns mostly for Th I, but there were also many good resolved patterns for lines of Th II. These data were used to calculate g-values for Th II levels for which published values were not already available.

3. Searches for Energy Levels

Before we undertook searches for new energy levels in Th II, we had to improve the accuracy of the published level values, most of which were in error by more than 0.03 cm^{-1} and a few by more than 0.2 cm^{-1}. With the aid of the proposed secondary-standard wavelengths of Giacchetti, Stanley, and Zalubas [1970] and Giacchetti's Fourier transform infrared list, we determined three decimal wavenumber values (cm^{-1}) for 82 even and 110 odd levels. With these values and our new line list we then determined two decimal values for the remaining known levels.

The searches for new energy levels were carried out on the NBS Univac 1108 using the programs called "Combo," written by Jack Tech. They were guided by the predictions of Minsky [1969]. At the conclusion of the searchers we had found 71 new even and 37 new odd levels.

This paper incorporates the results of seven investigations, each of which increased the number of known energy levels in Th II. The contribution of each to the total number of levels now regarded as real is listed below.

Symbol		Even	Odd	Total
H	McNally et al. [1942]	112	102	214
B	de Bruin et al. [1943], [1944]	37	28	65
R	McNally [1945]	8	5	13
S	Schuurmans [1946]	21	10	31
C	Charles [1958]	7	3	10
M	Minsky [1969]	15	14	29
Z	Present paper	71	37	108
	Total	271	199	470

Although, as mentioned earlier, the results of McNally, Harrison and Park and of de Bruin, Schuurmans and Klinkenberg were for the most part the same, we have credited the levels in common to McNally et al. because of prior publication.

4. Results

4.1. Energy Levels

The known energy levels are listed in numerical order in two tables: (1) the even parity levels and (2) the odd levels. The relative positions of the configurations are illustrated by the energy diagram in figure 1.

The three low even configurations $(6d+7s)^3$ have 37 levels of which 31 were already known. We have found five of the remaining six levels, leaving only the highest level with $J=1/2$ undiscovered.

The four higher even configurations $4f^26s$, $5f7s7p$, $5f6d7p$ and $5f^26d$ start between 24 000 and 33 000 cm^{-1} and consist of 268 levels, of which 235 are now known. Most of the unknown levels are above 50 000 cm^{-1}. In these configurations Minsky's correlation of observed energy levels with the calculated ones appears to be in error above 42 000 cm^{-1} for $J=2\frac{1}{2}$, above 41 000 cm^{-1} for $J=3\frac{1}{2}$, and above 43 000 cm^{-1} for $J=4\frac{1}{2}$. No designations are given here for these levels, only the configurations. New calculations will

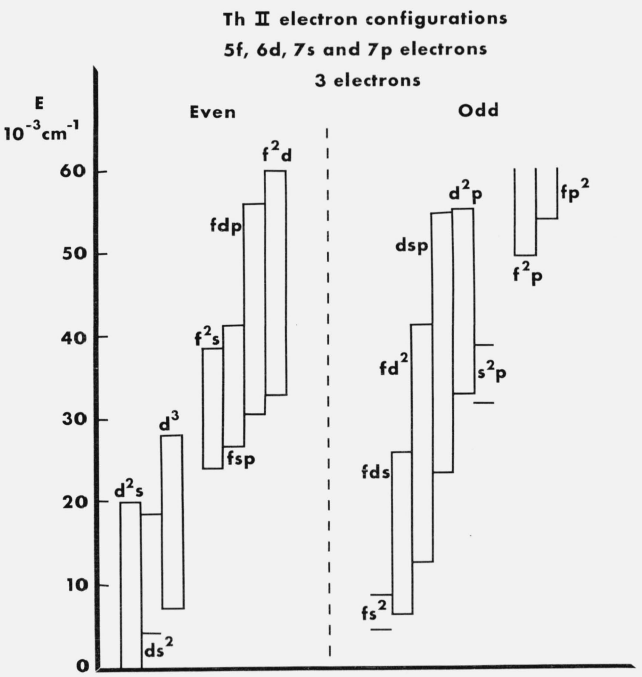

FIGURE 1. *Relative positions of the 15 known electron configurations of Th* II.

be needed before proper correlation of energy levels with eigenvectors can be made in these cases.

The three low odd configurations $5f(6d+7s)^2$, with 122 levels, are now all known. The lowest term, $5f7s^2$ $^2F°$, was identified by McNally, Harrison, and Park [1942]. The three high odd configurations $(6d+7s)^27p$ give 70 levels, of which only the two highest $J=1/2$ and $J=1\,1/2$ levels have not been found.

The three higher odd configurations $5f^27p$, $5f7p^2$, and $5f^3$ are predicted by Brewer [1971] to start near 50 000 cm^{-1}. We have found eight likely $5f^27p$ levels. The lowest, at 49 495.57 cm^{-1}, may be $^4I°_{41/2}$, which lies lowest, according to Hund's rule.

In tables 1 and 2 the configuration of the largest component in the eigenvector of the level is listed in the first column. The compositions are from Minsky [1969]. If this component is at least 50 percent, the term symbol is listed in the second column and serves as a designation for the level. If the largest component in the eigenvector is less than 50 percent, no name is given and the term symbol for the major component appears in column seven.

For example, the leading component of the ground state is 43 percent $6d^27s\ ^4F_{11/2}$ with a second component of 27 percent $6d7s^2\ ^2D_{11/2}$. However, the level at 1859 cm^{-1} is 52 percent $6d^27s\ ^4F_{11/2}$ and 36 percent $6d7s^2\ ^2D_{11/2}$. Therefore, it is impossible to assign a meaningful *LS* designation to the ground level. In a spectrum with such strong intermediate coupling and configuration interactions, many levels have no meaningful names.

The *J*-value, observed level value, and observed *g*-value appear in the next three columns. The *g*-values are taken from Charles's [1958] compilation or from our own observations. The percentage contributed by the first component in the eigenvector of the level is given in the sixth column. In columns 8 and 9 appears the percentage and term for the second largest component. A very few of the levels of Th II have purity greater than 99 percent. In such cases the second component is omitted from the table.

The last columns show the approximate number of combinations observed for each level and a symbol (from the list in section 3) for the discoverer of the level.

The $6d^3$ configuration has two ^2D terms, which are theoretically differentiated by the seniority number of Racah [1943]. We use the notations of Nielson and Koster [1963] for these terms; the $^2D1$ term has seniority 1 and the $^2D2$ term has seniority 3.

TABLE 1. *Even energy levels of* Th II

Configuration	Term	*J*	Level (cm^{-1})	*g*	Leading percentages		*n*, ref.
					First	Second	
$6d^2(^3F)7s$		1 1/2	0.000	0.639	43 ^4F	27 $6d(^2D)7s^2\ ^2D$	74 H
$6d^2(^3F)7s$	^4F	2 1/2	1521.893	1.076	65	17 $(^1D)\ ^2D$	82 H
$6d^2(^3F)7s$	^4F	1 1/2	1859.936	0.586	52	36 $6d(^2D)7s^2\ ^2D$	64 H
$6d(^2D)7s^2$		2 1/2	4113.356	1.163	36 ^2D	30 $6d^2(^3F)7s\ ^4F$	78 H
$6d^2(^3F)7s$	^4F	3 1/2	4146.575	1.232	96	2 $(^1F)\ ^2F$	68 H
$6d^2(^3F)7s$	^4F	4 1/2	6213.488	1.312	89	9 $(^1G)\ ^2G$	43 H
$6d^2(^3P)7s$	^4P	1/2	6244.294	2.112	70	13 $(^1P)\ ^2P$	31 H
$6d^3$		1 1/2	7001.425	0.800	41 ^4F	16 $6d(^2D)7s^2\ ^2D$	62 H
$6d^2(^1P)7s$		1/2	7828.562	1.254	36 ^2P	36 $6d^3\ ^2P$	33 H
$6d^2(^3P)7s$	^4P	1 1/2	8018.191	1.608	89	3 $6d^3\ ^4F$	51 H

TABLE 1. *Even energy levels of* Th II – Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$6d^3$		1½	8460.354	0.968	43	^4F	21	$6d(^2P)7s^2\ ^2P$	60	H
$6d^2(^1F)7s$	^2F	2½	8605.841	0.986	62		11	$6d(^2D)7s^2\ ^2D$	72	H
$6d^2(^3P)7s$	^4P	2½	9061.101	1.419	71		12	$(^1F)\ ^2F$	69	H
$6d^3$	^4F	2½	9400.967	1.034	84		6	$6d(^2D)7s^2\ ^2D$	69	H
$6d^2(^1G)7s$	^2G	3½	9711.961	0.953	54		27	$6d^3\ ^2G$	64	H
$6d^2(^1G)7s$		4½	10379.124	1.153	41	^2G	30	$6d^3\ ^2G$	45	B
$6d^3$		3½	10855.324	1.166	46	^4F	33	$6d^2(^1F)7s\ ^2F$	57	B
$6d^2(^1D)7s$	^2D	1½	12219.974	0.977	56		11	$6d(^2D)7s^2\ ^2D$	55	H
$6d^3$		3½	12570.492	1.131	40	^4F	34	$6d^2(^1F)7s\ ^2F$	56	B
$6d^3$	^4F	4½	13248.709	1.242	60		33	$6d^2(^1G)7s\ ^2G$	36	H
$6d^2(^1D)7s$		2½	13250.505	1.245	44	^2D	20	$6d(^2D)7s^2\ ^2D$	48	H
$6d^3$	^4P	½	14349.390	2.555	93		5	$6d^2(^1P)7s\ ^2P$	22	H
$6d^3$	^4P	1½	15236.639	1.592	71		19	$6d^2(^1P)7s\ ^2P$	36	H
$6d^3$	^2H	4½	15305.265	1.006	69		16	^4F	35	H
$6d^3$	^4P	2½	15786.986	1.571	91		4	$^2D1$	36	B
$6d^3$	^2G	3½	16818.067	0.916	58		32	$6d^2(^1G)7s\ ^2G$	45	B
$6d^3$	^2H	5½	17727.251	1.09	99				20	Z
$6d^3$		1½	18118.705	0.93	44	$^2D2$	20	$^2D1$	35	M
$6d^2(^1S)7s$	^2S	½	19594.350		80		10	$6d^3\ ^2P$	12	Z
$6d^3$	^2G	4½	19880.083	1.08	59		22	^2H	23	Z
$6d^3$	$^2D2$	2½	20158.744	1.19	67		12	$6d^2(^1D)7s\ ^2D$	38	M
$6d^3$	^2F	2½	22106.437	0.92	71		8	$6d^2(^1F)7s\ ^2F$	36	Z
$6d^3$	^2F	3½	22834.138	1.12	82		15	$6d^2(^1F)7s\ ^2F$	31	M
$5f^2(^3H)7s$	^4H	3½	24381.802	0.70	74		12	$5f6d(^3G°)7p\ ^4H$	21	M
$5f^2(^3H)7s$		4½	25246.298	0.96	45	^4H	33	$(^3H)\ ^2H$	20	R
$6d^3$		1½	25381.927	1.25	46	^2P	34	$6d^2(^1P)7s\ ^2P$	9	Z
$5f7s(^3F°)7p$		2½	26488.644	0.776	43	^4G	16	$(^3F°)\ ^4F$	18	H
$5f^2(^3F)7s$		1½	26762.272	0.47	42	^4F	17	$5f6d(^3F°)7p\ ^4F$	18	B
$5f7s(^3F°)7p$		3½	27257.144	1.032	32	^4G	15	$(^1F°)\ ^2G$	23	H
$5f^2(^3H)7s$		4½	27526.948	0.93	42	^2H	37	$(^3H)\ ^4H$	20	S
$5f^2(^3F)7s$		2½	27593.965	0.963	37	^4F	17	$5f7s(^3F°)7p\ ^4G$	23	B
$5f7s(^3F°)7p$		1½	27631.225	0.625	45	^4F	25	$5f^2(^3F)7s\ ^4F$	14	H
$5f^2(^3H)7s$	^4H	5½	27937.074	1.12	73		14	$(^3H)\ ^2H$	13	Z
$6d^3$	$^2D1$	1½	28011.159	0.717	52		36	$^2D3$	11	H
$6d^3$	$^2D1$	2½	28026.347	1.13	70		14	^2F	15	S

TABLE 1. *Even energy levels of* Th II – Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages		n, ref.
					First	Second	
$5f7s(^3F°)7p$		$2^1/_2$	28823.649	0.987	26 ^4F	15 $(^3F°)$ ^4D	18 H
$5f^2(^3F)7s$		$2^1/_2$	29345.894	0.935	39 ^2F	29 (^3F) ^4F	24 B
$5f^2(^3F)7s$	^4F	$3^1/_2$	29431.847	1.1	63	11 $5f6d(^3F°)7p$ ^4F	23 M
$5f^2(^3F)7s$		$4^1/_2$	29515.132	1.030	32 ^4F	13 (^1G) ^2G	25 H
$5f^2(^3F)7s$		$3^1/_2$	29873.948	1.10	44 ^2F	18 (^3F) ^2G	19 B
$5f6d(^3H°)7p$		$4^1/_2$	30452.723	1.035	41 ^4I	14 $(^3H°)$ ^2H	22 H
$5f^2(^3H)7s$	^2H	$5^1/_2$	30484.713	1.08	72	12 (^3H) ^4H	17 M
$5f^2(^3H)7s$	^4H	$6^1/_2$	30548.67	1.23	87	6 $5f6d(^3G°)7p$ ^4H	4 Z
$5f7s(^3F°)7p$		$3^1/_2$	30879.418	1.213	35 ^4F	25 $(^3F°)$ ^4D	22 B
$5f6d(^3F°)7p$		$2^1/_2$	31259.295	0.781	27 ^4G	15 $5f^2(^3F)7s$ ^2F	22 H
$5f7s(^1F°)7p$		$2^1/_2$	31754.210	0.948	36 ^2F	23 $(^1F°)$ ^2D	21 H
$5f7s(^3F°)7p$		$4^1/_2$	31773.077	1.222	35 ^4G	30 $(^3F°)$ ^4F	21 H
$5f7s(^1F°)7p$		$3^1/_2$	32576.745	1.024	22 ^2G	18 $5f^2(^3F)7s$ ^2F	27 H
$5f^2(^3H)6d$	^4K	$5^1/_2$	32620.859	0.826	72	11 (^3H) ^2I	9 H
$5f6d(^3H°)7p$		$3^1/_2$	32736.186	0.904	24 ^4H	13 $(^3H°)$ ^2G	24 H
$5f6d(^1D°)7p$		$1^1/_2$	32959.48	0.874	23 ^2D	15 $(^1D°)$ ^2P	16 H
$5f7s(^3F°)7p$		$3^1/_2$	33209.40	1.051	15 ^4G	13 $(^1F°)$ ^2F	29 H
$5f^2(^3F)7s$		$4^1/_2$	33384.444	1.14	26 ^4F	16 (^1G) ^2G	24 B
$5f^2(^3F)6d$		$3^1/_2$	33637.228	0.830	17 ^4H	11 (^3H) ^4H	22 H
$5f^2(^1D)7s$		$2^1/_2$	33730.94	1.031	13 ^2D	8 $5f6d(^1D°)7p$ ^2D	23 H
$5f^2(^1D)7s$		$1^1/_2$	34019.240	0.823	25 ^2D	21 $5f6d(^3F°)7p$ ^2D	18 B
$5f^2(^1D)7s$		$2^1/_2$	34174.540	0.986	22 ^2D	12 $5f6d(^3F°)7p$ ^4G	27 H
$5f^2(^3H)6d$		$4^1/_2$	34270.25	0.938	42 ^2H	11 (^3F) ^2H	22 H
$5f^2(^1G)7s$		$3^1/_2$	34279.321	1.047	26 ^2G	14 $5f7s(^1F°)7p$ ^2G	34 H
$5f7s(^3F°)7p$		$2^1/_2$	34543.551	1.003	28 ^4D	13 $(^3F°)$ ^4F	29 H
$5f7s(^3F°)7p$		$4^1/_2$	34553.950	1.069	19 ^4G	15 $(^3F°)$ ^4F	28 H
$5f6d(^3H°)7p$	^4I	$5^1/_2$	34661.718	0.998	50	12 $(^3H°)$ ^2H	19 H
$5f6d(^3F°)7p$		$3^1/_2$	34726.58	0.950	29 ^4G	18 $5f^2(^3F)6d$ ^4G	22 H
$5f^2(^3P)7s$	^4P	$^1/_2$	34782.74	1.67	57	14 $5f6d(^3P°)7p$ ^4P	6 S
$5f7s(^3F°)7p$	^4D	$1^1/_2$	35021.37	1.042	57	15 $(^3F°)$ ^4F	18 B
$5f^2(^3H)6d$	^4K	$6^1/_2$	35400.78	0.98	91	3 (^1G) ^2I	6 Z
$5f7s(^3F°)7p$	^4D	$^1/_2$	35425.627	0.265	88	2 $5f^2(^3F)6d$ ^4D	7 H
$5f6d(^1G°)7p$		$4^1/_2$	35456.181	1.054	23 ^2H	13 $5f^2(^1G)7s$ ^2G	25 H
$5f^2(^3H)6d$		$5^1/_2$	35525.169	1.024	18 ^2H	17 (^3H) ^4K	16 B
$5f^2(^3H)6d$	^4I	$4^1/_2$	35545.60	0.826	71	8 (^1G) ^2H	19 H

TABLE 1. *Even energy levels of* Th II – Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$5f6d(^3F°)7p$		$2^1/_2$	35741.295	0.954	19	^4G	9	$(^3F°)\ ^2D$	29	H
$5f6d(^1G°)7p$		$3^1/_2$	35878.862	0.983	17	^2F	11	$(^3H°)\ ^4H$	31	H
$5f^2(^3F)6d$		$^1/_2$	36040.85	1.210	29	^2P	28	$5f^2(^3P)7s\ ^2P$	11	H
$5f^2(^3F)6d$		$2^1/_2$	36065.729	0.887	42	^4G	10	$(^3H)\ ^4G$	26	H
$5f^2(^3F)6d$		$4^1/_2$	36125.335	1.035	22	^4H	19	$(^3H)\ ^4H$	24	H
$5f^2(^3P)7s$	^4P	$1^1/_2$	36328.61	1.615	64		10	$5f6d(^3P°)7p\ ^4P$	17	H
$5f6d(^1G°)7p$		$3^1/_2$	36809.279	1.022	13	^2F	13	$5f^2(^3F)6d\ ^4H$	33	H
$5f^2(^3P)7s$		$^1/_2$	36812.44	0.737	36	^2P	17	$5f6d(^3D°)7p\ ^2P$	13	H
$5f7s(^3F°)7p$		$5^1/_2$	37053.44		19	^4G	14	$5f^2(^3H)6d\ ^2I$	13	Z
$5f6d(^3H°)7p$		$4^1/_2$	37063.308	0.999	29	^4H	13	$5f^2(^3F)6d\ ^4H$	27	H
$5f6d(^3F°)7p$		$3^1/_2$	37277.368	0.881	16	^4G	13	$5f^2(^3H)6d\ ^4G$	26	H
$5f6d(^3F°)7p$		$2^1/_2$	37465.46	1.048	18	^4D	15	$(^3F°)\ ^2D$	28	H
$5f^2(^3P)7s$		$1^1/_2$	37542.17	1.003	21	^2P	13	$5f6d(^1D°)7p\ ^2D$	22	H
$5f^2(^3H)6d$	^4I	$5^1/_2$	37562.27	1.008	61		14	$5f7s(^3F°)7p\ ^4G$	13	R
$5f^2(^1I)7s$	^2I	$6^1/_2$	37575.24	1.088	77		6	$5f6d(^1H°)7p\ ^2I$	10	R
$5f7s(^3F°)7p$		$5^1/_2$	37679.71	1.13	31	^4G	11	$5f6d(^3H°)7p\ ^4G$	18	R
$5f6d(^3G°)7p$		$3^1/_2$	37787.89	1.062	26	^4H	11	$(^3G°)\ ^4G$	27	B
$5f7s(^3F°)7p$		$1^1/_2$	37821.97	1.15	13	^2D	7	$5f6d(^3F°)7p\ ^4F$	17	B
$5f^2(^3F)6d$		$4^1/_2$	37840.845	1.07	35	^4G	15	$(^3H)\ ^4G$	21	S
$5f7s(^3F°)7p$		$2^1/_2$	37945.104	0.893	32	^2F	16	$5f6d(^1G°)7p\ ^2F$	28	H
$5f^2(^3P)7s$		$2^1/_2$	38105.065	1.172	33	^4P	9	$5f6d(^3D°)7p\ ^4P$	25	H
$5f^2(^3H)6d$	^4K	$7^1/_2$	38107.11	1.08	99				2	Z
$5f7s(^1F°)7p$		$3^1/_2$	38165.355	0.981	11	^2G	7	$5f6d(^3G°)7p\ ^2F$	30	H
$5f6d(^3H°)7p$		$4^1/_2$	38179.941	0.979	29	^2H	14	$(^3H°)\ ^4I$	25	H
$5f7s(^3F°)7p$		$3^1/_2$	38291.801	0.949	19	^2G	12	$5f^2(^3F)6d\ ^4G$	31	H
$5f^2(^3F)6d$		$1^1/_2$	38372.02	1.200	15	^4P	15	$5f6d(^1D°)7p\ ^2P$	13	B
$5f7s(^3F°)7p$		$3^1/_2$	38389.368	1.088	16	^4D	7	$5f6d(^3F°)7p\ ^2G$	27	H
$5f^2(^3H)6d$	^4I	$6^1/_2$	38517.98	1.111	55		33	$5f6d(^3H°)7p\ ^4I$	8	B
$5f7s(^1F°)7p$		$4^1/_2$	38617.68	1.16	39	^2G	19	$(^3F°)\ ^4F$	20	M
$5f6d(^1D°)7p$		$2^1/_2$	38728.681	1.255	13	^2F	12	$5f^2(^3F)6d\ ^4P$	31	H
$5f^2(^3F)6d$		$5^1/_2$	38740.45	1.188	27	^4H	20	$(^3H)\ ^4H$	12	R
$5f^2(^1D)7s$		$1^1/_2$	38757.190	0.935	14	^2D	10	$(^1P)\ ^2P$	21	H
$5f6d(^3D°)7p$		$1^1/_2$	38836.20	1.013	21	^4F	9	$5f^2(^3P)7s\ ^2P$	20	H
$5f^2(^1I)7s$		$5^1/_2$	38862.817	1.083	47	^2I	13	$5f6d(^3H°)7p\ ^2I$	22	R
$5f6d(^3H°)7p$		$2^1/_2$	38863.85	0.967	15	^4G	10	$(^3G°)\ ^4G$	25	H

TABLE 1. *Even energy levels of* Th II – Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$5f6d(^3F^\circ)7p$		1/2	38867.170	0.947	34	^4D	25	$5f^2(^3F)6d\ ^4P$	12	H
$5f^2(^3F)6d$		3 1/2	39068.691	1.114	23	^2F	7	$5f6d(^3F^\circ)7p\ ^4D$	30	H
$5f^2(^3H)6d$		6 1/2	39085.55	1.10	33	^2I	25	$(^1I)\ ^2I$	8	S
$5f6d(^3F^\circ)7p$		1 1/2	39150.679	0.739	18	^4D	12	$(^3D^\circ)\ ^4D$	21	H
$5f6d(^1G^\circ)7p$		5 1/2	39352.294	1.05	20	^2H	10	$5f^2(^3F)6d\ ^4H$	15	S
$5f7s(^1F^\circ)7p$		2 1/2	39366.90	1.140	22	^2D	13	$(^3F^\circ)\ ^4D$	24	H
$5f^2(^3F)6d$		3 1/2	39458.272	0.979	15	^4G	9	$5f6d(^3G^\circ)7p\ ^4G$	24	H
$5f6d(^3F^\circ)7p$		4 1/2	39552.244	1.100	13	^2G	10	$(^1G^\circ)\ ^2H$	29	H
$5f6d(^3H^\circ)7p$		2 1/2	39700.583	1.090	16	^4G	10	$(^3F^\circ)\ ^4F$	29	H
$5f6d(^3G^\circ)7p$		4 1/2	39895.42	1.024	13	^2G	12	$(^3F^\circ)\ ^4G$	29	H
$5f^2(^3F)6d$		5 1/2	39939.115	1.12	25	^4G	14	$5f^2(^1I)7s\ ^2I$	17	B
$5f^2(^3F)6d$		1/2	39948.40	1.542	29	^4P	23	$5f6d(^3F^\circ)7p\ ^4D$	9	H
$5f6d(^3H^\circ)7p$		2 1/2	40216.12	1.024	23	^4G	10	$5f^2(^1D)7s\ ^2D$	23	S
$5f7s(^1F^\circ)7p$		1 1/2	40222.903	0.738	25	^2D	17	$(^3F^\circ)\ ^2D$	18	H
$5f7s(^1F^\circ)7p$		1 1/2	40278.13	0.705	14	^2D	13	$5f^2(^3H)6d\ ^4F$	22	H
$5f6d(^3G^\circ)7p$		4 1/2	40367.44	1.176	26	^4G	8	$(^3G^\circ)\ ^4F$	27	B
$5f6d(^1D^\circ)7p$		3 1/2	40411.48	1.106	18	^2F	11	$(^3F^\circ)\ ^2G$	25	H
$5f6d(^3P^\circ)7p$		1/2	40523.74	0.50	41	^4D	12	$(^3D^\circ)\ ^4D$	11	S
$5f6d(^3F^\circ)7p$		3 1/2	40570.63	1.1	19	^4D	12	$(^3G^\circ)\ ^4G$	28	M
$5f6d(^3H^\circ)7p$		5 1/2	40574.76	1.140	14	^2H	11	$(^3H^\circ)\ ^4G$	19	B
$5f^2(^3F)6d$		2 1/2	40644.331	0.856	11	^2F	10	$(^3F)\ ^4P$	35	H
$5f^2(^3H)6d$		6 1/2	40724.74	1.129	32	^4I	26	$5f6d(^3H^\circ)7p\ ^4I$	11	B
$5f6d(^3D^\circ)7p$		2 1/2	40923.62	0.988	24	^4F	9	$5f^2(^3H)6d\ ^4F$	30	H
$5f6d(^3F^\circ)7p$		1 1/2	40991.58	1.036	10	^4D	9	$5f^2(^3H)6d\ ^4F$	23	S
$5f6d(^1G^\circ)7p$		4 1/2	41047.209	1.112	30	^2G	20	$(^3F^\circ)\ ^4G$	29	B
$5f^2(^3H)6d$	^4I	7 1/2	41099.07	1.17	83		6	$(^3H)\ ^2K$	5	B
$5f6d(^3H^\circ)7p$		5 1/2	41223.56	1.11	35	^4H	26	$(^1G^\circ)\ ^2H$	19	B
$5f7s(^3F^\circ)7p$		2 1/2	41328.341	1.101	22	^2D	7	$5f6d(^3F^\circ)7p\ ^4F$	32	H
$5f^2(^1G)6d$		4 1/2	41398.51	0.983	25	^2H	10	$5f6d(^3G^\circ)7p\ ^4H$	28	S
$5f^26d+5f6d7p$		3 1/2	41488.15	1.010					31	H
$5f^2(^3F)6d$		1 1/2	41676.85	1.220	21	^4P	11	$5f6d(^3D^\circ)7p\ ^4D$	21	H
$5f^26d+5f6d7p$		3 1/2	41688.44	0.940					29	H
$5f^2(^3F)6d$		6 1/2	41882.39		37	^4H	23	$(^3H)\ ^4H$	8	Z
$5f6d(^3F^\circ)7p$		4 1/2	41909.33	1.097	12	^2G	10	$(^3G^\circ)\ ^4F$	26	B
$5f^2(^3F)6d$		1 1/2	41936.53	1.095	22	^4P	16	$(^3F)\ ^2D$	18	C

TABLE 1. *Even energy levels of* Th II – Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$5f^2(^3F)6d$		1/2	42008.16	0.8	24	^2P	17	$5f6d(^3D°)7p$ ^4D	7	Z
$5f6d(^3G°)7p$		5 1/2	42146.54	1.158	31	^4G	12	$(^3G°)$ ^2H	22	B
$5f6d(^3F°)7p$		4 1/2	42200.205	1.08	12	^4G	11	$(^3H°)$ ^2G	32	B
$5f^26d+5f6d7p$		3 1/2	42222.31	0.935					30	S
$5f6d(^3P°)7p$		1/2	42246.02	0.8	20	^4P	13	$5f^2(^3F)6d$ ^4D	7	Z
$5f^26d+5f6d7p$		2 1/2	42336.83	1.15					21	Z
$5f^26d+5f6d7p$		2 1/2	42352.13	1.126					27	H
$5f^26d+5f6d7p$		3 1/2	42518.907	1.080					31	H
$5f6d(^3H°)7p$		6 1/2	42644.878	1.10	32	^4I	28	$(^3H°)$ ^4H	10	B
$5f^26d+5f6d7p$		3 1/2	42751.324	1.09					31	S
$5f6d(^3H°)7p$		4 1/2	42955.85	1.141	21	^4G	15	$(^2G°)$ ^4F	29	B
$5f^2(^3H)6d$	^2K	6 1/2	43014.143	0.976	57		25	(^1I) ^2K	12	H
$5f^26d+5f6d7p$		2 1/2	43096.54	0.982					21	H
$5f6d(^3H°)7p$	^2I	5 1/2	43127.21	1.037	53		9	$(^3H°)$ ^4H	22	B
$5f^26d+5f6d7p$		2 1/2	43227.86	1.153					22	H
$5f^2(^3F)6d$		1 1/2	43244.86	1.08	28	^4F	13	(^3F) ^2P	16	Z
$5f^26d+5f6d7p$		3 1/2	43246.83	1.033					30	R
$5f^26d+5f6d7p$		2 1/2	43772.47	1.04					28	Z
$5f^26d+5f6d7p$		3 1/2	43803.975	1.026					32	H
$5f6d(^3F°)7p$		1 1/2	43807.55	1.211	23	^4D	18	$(^3D°)$ ^4D	21	H
$5f^26d+5f6d7p$		4 1/2	43809.26	1.102					27	B
$5f6d(^3P°)7p$		1/2	43965.62	1.555	20	^4D	15	$5f^2(^3F)6d$ ^4D	12	S
$5f^26d+5f6d7p$		4 1/2	44096.26	1.14					27	Z
$5f6d(^3G°)7p$		5 1/2	44177.26	1.12	18	^4H	17	$5f^2(^1G)6d$ ^2H	20	B
$5f^2(^3F)6d$		1 1/2	44300.548	1.342	19	^4F	9	$5f6d(^3F°)7p$ ^2D	18	H
$5f^26d+5f6d7p$		2 1/2	44388.77	1.158					29	H
$5f^26d+5f6d7p$		4 1/2	44450.28	1.04					26	M
$5f^26d+5f6d7p$		3 1/2	44503.80	1.058					26	H
$5f^26d+5f6d7p$		2 1/2	44552.68	1.182					21	H
$5f6d(^3F°)7p$		5 1/2	44727.24	1.2	43	^4G	10	$(^3H°)$ ^4G	17	M
$5f6d(^1D°)7p$		1/2	44789.30	0.84	24	^2P	18	$(^3F°)$ ^4D	13	Z
$5f^26d+5f6d7p$		3 1/2	44807.95	1.078					29	B
$5f^2(^3F)6d$		1 1/2	44889.81	1.346	36	^4D	21	$5f6d(^3P°)7p$ ^4D	19	C
$5f^26d+5f6d7p$		3 1/2	44898.77	1.181					29	H
$5f6d(^3H°)7p$	^4I	7 1/2	45095.24		58		25	$5f^2(^3H)6d$ ^2K	5	Z

TABLE 1. *Even energy levels of* Th II – Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages		n, ref.
					First	Second	
$5f^26d+5f6d7p$		4½	45126.24	1.21			24 B
$5f^26d+5f6d7p$		2½	45189.645	0.674			24 H
$5f6d(^3P^\circ)7p$		1½	45306.16	0.6	27 ^4P	17 $(^3D^\circ)$ ^4P	13 Z
$5f^26d+5f6d7p$		3½	45395.04	1.216			21 S
$5f^26d+5f6d7p$		2½	45610.63	1.075			23 H
$5f6d(^3H^\circ)7p$		7½	45646.25	1.13	35 ^4I	29 $5f^2(^3H)6d$ ^2K	3 Z
$5f^2(^3H)6d$		5½	45735.10	1.141	34 ^4H	16 (^3F) ^4H	20 B
$5f^26d+5f6d7p$		2½	45800.27	1.3			26 Z
$5f^26d+5f6d7p$		4½	45904.40	1.02			17 S
$5f6d(^3F^\circ)7p$		5½	46216.583	1.16	14 ^4G	14 $5f^2(^3F)6d$ ^4G	21 S
$5f^26d+5f6d7p$		4½	46253.33	1.01			23 M
$5f6d(^1D^\circ)7p$		1½	46264.24	0.891	13 ^2P	10 $(^3D^\circ)$ ^4D	17 H
$5f^26d+5f6d7p$		3½	46352.23	1.1			34 C
$5f6d(^3H^\circ)7p$		6½	46378.86	1.13	29 ^2I	25 $5f^2(^3H)6d$ ^4H	11 B
$5f^26d+5f6d7p$		3½	46385.42	1.07			31 Z
$5f6d(^3G^\circ)7p$		1½	46395.98		23 ^4F	17 $5f^2(^3H)6d$ ^4F	15 Z
$5f6d(^3G^\circ)7p$		5½	46555.61		32 ^4H	20 $(^3H^\circ)$ ^4G	15 Z
$5f^26d+5f6d7p$		2½	46581.30	1.018			28 C
$5f^26d+5f6d7p$		2½	46603.20	1.112			28 H
$5f^26d+5f6d7p$		3½	46706.25	1.081			19 H
$5f6d(^3G^\circ)7p$		5½	46861.59	1.15	12 ^4H	12 $5f^2(^1I)6d$ ^2I	20 Z
$5f^26d+5f6d7p$		2½	46902.54	1.143			22 H
$5f6d(^3H^\circ)7p$		6½	46910.78	1.18	26 ^4H	22 $(^3H^\circ)$ ^2I	14 S
$5f^2(^1D)6d$		1½	46935.66	0.956	22 ^2P	19 (^3P) ^2P	23 H
$5f6d(^3D^\circ)7p$		½	47145.77		19 ^4D	18 $(^3D^\circ)$ ^4P	8 C
$5f6d(^3P^\circ)7p$		1½	47148.60	1.09	11 ^4S	9 $5f^2(^3F)6d$ ^4D	19 H
$5f^26d+5f6d7p$		4½	47171.38	1.15			23 Z
$5f^26d+5f6d7p$		2½	47324.39	1.189			35 H
$5f6d(^3G^\circ)7p$		5½	47675.06	1.15	17 ^2H	14 $5f^2(^3H)6d$ ^4G	6 Z
$5f^26d+5f6d7p$		4½	47731.50	1.1			24 M
$5f^2(^3P)6d$		1½	47869.61		18 ^4F	14 (^3F) ^2D	25 Z
$5f^26d+5f6d7p$		3½	47871.39	1.194			23 S
$5f^26d+5f6d7p$		4½	48006.87	1.13			25 Z
$5f^26d+5f6d7p$		3½	48298.50	1.07			22 S
$5f^26d+5f6d7p$		2½	48320.81				20 Z

TABLE 1. *Even energy levels of* Th II – Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$5f^26d+5f6d7p$		$3^1/_2$	48453.12						22	Z
$5f^26d+5f6d7p$		$2^1/_2$	48492.03						20	Z
$5f6d(^3G°)7p$		$6^1/_2$	48612.23	1.08	49	^4H	17	$5f^2(^1G)6d\ ^2I$	9	Z
$5f6d(^3D°)7p$		$1^1/_2$	48689.95	0.922	19	^2D	12	$5f^2(^3P)6d\ ^4F$	24	H
$5f^2(^3P)6d$		$1^1/_2$	48817.97	0.956	22	^4F	19	$5f6d(^3D°)7p\ ^2D$	17	H
$5f^26d+5f6d7p$		$4^1/_2$	48844.96	1.1					25	S
$5f^26d+5f6d7p$		$2^1/_2$	49068.82						22	Z
$5f^2(^1I)6d$		$5^1/_2$	49124.56		18	^2H	18	$5f6d(^3G°)7p\ ^4G$	18	Z
$5f6d(^3G°)7p$		$5^1/_2$	49357.99	1.15	30	^2H	28	$(^1H°)\ ^2H$	15	Z
$5f^26d+5f6d7p$		$3^1/_2$	49377.17	1.2					23	M
$5f6d(^3P°)7p$		$1^1/_2$	49414.65	1.003	18	^4S	14	$5f^2(^3P)6d\ ^4D$	14	H
$5f6d(^3D°)7p$		$^1/_2$	49485.52		17	^4P	16	$5f^2(^3P)6d\ ^4D$	10	Z
$5f^2(^1I)6d$		$6^1/_2$	49527.320	1.1	26	^2I	25	$5f6d(^3G°)7p\ ^4H$	7	Z
$5f^26d+5f6d7p$		$4^1/_2$	49837.66						19	Z
$5f^26d+5f6d7p$		$2^1/_2$	49873.098						23	Z
$5f^26d+5f6d7p$		$3^1/_2$	49960.57	1.248					27	R
$5f^26d+5f6d7p$		$3^1/_2$	50407.27						16	M
$5f^26d+5f6d7p$		$4^1/_2$	50470.04	1.18					30	S
$5f6d(^1H°)7p$		$5^1/_2$	50631.12		19	^2I	18	$5f^2(^3F)6d\ ^2H$	14	Z
$5f^26d+5f6d7p$		$2^1/_2$	50663.62						20	Z
$5f6d(^3D°)7p$		$1^1/_2$	50735.47	1.36	16	^2P	9	$(^3P°)\ ^4S$	23	C
$5f6d(^3D°)7p$		$1^1/_2$	50907.79	1.3	26	^4P	10	$5f^2(^3F)6d\ ^4P$	10	Z
$5f^2(^3P)6d$		$1^1/_2$	51024.846	1.270	24	^4D	15	$5f6d(^3P°)7p\ ^4P$	16	C
$5f^26d+5f6d7p$		$4^1/_2$	51224.27						19	Z
$5f^26d+5f6d7p$		$3^1/_2$	51268.12						21	Z
$5f^26d+5f6d7p$		$2^1/_2$	51362.89						21	Z
$5f^2(^3P)6d$		$^1/_2$	51653.96		24	^2P	17	$(^3P)\ ^4D$	10	Z
$5f6d(^1P°)7p$		$1^1/_2$	51676.08		25	^2D	11	$5f^2(^3P)6d\ ^4P$	15	Z
$5f^26d+5f6d7p$		$4^1/_2$	51681.99						17	Z
$5f^26d+5f6d7p$		$3^1/_2$	51830.53						25	Z
$5f^26d+5f6d7p$		$2^1/_2$	51865.14						25	Z
$5f^26d+5f6d7p$		$2^1/_2$	51935.68						22	Z
$5f^2(^1I)6d$	^2I	$5^1/_2$	52170.20	1.12	55		16	$5f6d(^1H°)7p\ ^2H$	16	Z
$5f^26d+5f6d7p$		$3^1/_2$	52272.33						19	Z
$5f6d(^1P°)7p$		$1^1/_2$	52307.48		22	^2D	12	$5f^2(^1G)6d\ ^2D$	15	Z

TABLE 1. *Even energy levels of* Th II – Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$5f^2 6d + 5f6d7p$		$3^1/_2$	52562.52						19	Z
$5f6d(^3P^\circ)7p$		$1^1/_2$	52735.74		22	^2D	16	$(^3P^\circ)$ ^2P	17	Z
$5f^2(^1I)6d$		$6^1/_2$	52918.92		36	^2I	18	(^3H) ^2I	10	Z
$5f^2 6d + 5f6d7p$		$4^1/_2$	53520.890						17	Z
$5f^2 6d + 5f6d7p$		$2^1/_2$	53845.40						20	Z
$5f^2 6d + 5f6d7p$		$3^1/_2$	54010.17						18	Z
$5f^2 6d + 5f6d7p$		$3^1/_2$	54169.67						14	Z
$5f^2 6d + 5f6d7p$		$2^1/_2$	54493.99						20	M
$5f^2 6d + 5f6d7p$		$4^1/_2$	54845.32						15	Z
$5f6d(^1F^\circ)7p$		$1^1/_2$	54922.10		18	^2D	17	$5f^2(^3P)6d$ ^4P	15	Z
$5f^2 6d + 5f6d7p$		$4^1/_2$	55496.83						18	Z
$5f6d(^1F^\circ)7p$		$1^1/_2$	56235.23		16	^2D	15	$5f^2(^3P)6d$ ^4P	14	Z
$5f^2 6d + 5f6d7p$		$2^1/_2$	56391.01						16	Z
$5f^2(^1I)6d$		$5^1/_2$	56945.14	1.1	40	^2H	26	$5f6d(^1H^\circ)7p$ ^2H	11	Z
$5f^2 6d + 5f6d7p$		$4^1/_2$	57078.52						13	Z
$5f^2 6d + 5f6d7p$		$3^1/_2$	59387.31						14	Z

TABLE 2. *Odd energy levels of* Th II

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$5f(^2F^\circ)7s^2$	$^2F^\circ$	$2^1/_2$	4490.256	0.856	89		3	$5f(^1S^\circ)6d^2$ $^2F^\circ$	74	H
$5f6d(^3H^\circ)7s$	$^4H^\circ$	$3^1/_2$	6168.351	0.718	78		17	$(^1G^\circ)$ $^2G^\circ$	76	H
$5f6d(^3F^\circ)7s$	$^4F^\circ$	$1^1/_2$	6691.386	0.492	74		20	$(^1D^\circ)$ $^2D^\circ$	60	H
$5f6d(^3H^\circ)7s$		$4^1/_2$	6700.183	1.018	37	$^4H^\circ$	27	$(^1G^\circ)$ $^2G^\circ$	70	H
$5f6d(^3F^\circ)7s$	$^4F^\circ$	$2^1/_2$	7331.485	1.061	54		25	$(^1D^\circ)$ $^2D^\circ$	77	H
$5f(^2F^\circ)7s^2$	$^2F^\circ$	$3^1/_2$	8378.853	1.132	85		3	$5f(^1S^\circ)6d^2$ $^2F^\circ$	91	H
$5f6d(^1G^\circ)7s$	$^2G^\circ$	$3^1/_2$	9202.264	0.911	50		17	$(^3F^\circ)$ $^4F^\circ$	86	H
$5f6d(^1G^\circ)7s$		$4^1/_2$	9238.018	1.086	44	$^2G^\circ$	31	$(^3H^\circ)$ $^4H^\circ$	76	H
$5f6d(^3G^\circ)7s$	$^4G^\circ$	$2^1/_2$	9585.404	0.601	83		6	$6d^2(^3F)7p$ $^4G^\circ$	87	H
$5f6d(^3F^\circ)7s$	$^4F^\circ$	$3^1/_2$	9720.296	1.173	60		11	$(^3G^\circ)$ $^4G^\circ$	84	H

TABLE 2. *Odd energy levels of* Th II – Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$5f6d(^3H°)7s$	$^4H°$	$5^1/_2$	10189.063	1.128	81		13	$(^3H°)\ ^2H°$	62	H
$5f6d(^3H°)7s$		$4^1/_2$	10572.042	0.931	45	$^2H°$	27	$(^3H°)\ ^4H°$	79	H
$5f6d(^3F°)7s$		$2^1/_2$	10673.137	1.088	40	$^4F°$	31	$(^1D°)\ ^2D°$	82	H
$5f6d(^3G°)7s$	$^4G°$	$3^1/_2$	11116.584	0.983	54		8	$(^1G°)\ ^2G°$	99	H
$5f6d(^1D°)7s$	$^2D°$	$1^1/_2$	11576.402	0.832	51		19	$(^3F°)\ ^4F°$	67	H
$5f6d(^3D°)7s$	$^4D°$	$^1/_2$	11725.431	0.255	53		12	$5f(^1D°)6d^2\ ^2P°$	33	H
$5f6d(^3F°)7s$	$^2F°$	$2^1/_2$	12472.178	0.982	55		17	$(^1D°)\ ^2D°$	89	H
$5f(^3F°)6d^2$		$3^1/_2$	12485.688	0.855	37	$^4H°$	20	$(^3F°)\ ^2G°$	90	B
$5f6d(^3F°)7s$	$^4F°$	$4^1/_2$	12488.288	1.245	53		30	$(^3G°)\ ^4G°$	82	B
$5f6d(^3D°)7s$		$1^1/_2$	12902.378	1.167	48	$^4D°$	9	$(^1D°)\ ^2D°$	71	H
$5f6d(^3H°)7s$	$^4H°$	$6^1/_2$	13406.439	1.231	96		2	$5f(^3F°)6d^2\ ^4H°$	28	B
$5f6d(^3G°)7s$	$^4G°$	$4^1/_2$	13468.969	1.185	57		20	$(^3F°)\ ^4F°$	68	B
$5f6d(^3F°)7s$		$3^1/_2$	13818.339	1.153	26	$^2F°$	17	$(^1F°)\ ^2F°$	94	B
$5f6d(^3D°)7s$		$^1/_2$	14101.800	0.523	33	$^4D°$	29	$5f(^1D°)6d^2\ ^2P°$	38	S
$5f(^3F°)6d^2$	$^4I°$	$4^1/_2$	14275.583	0.791	77		10	$5f6d(^3H°)7s\ ^2H°$	75	H
$5f6d(^3H°)7s$	$^2H°$	$5^1/_2$	14484.327	1.09	60		15	$5f(^1D°)6d^2\ ^2H°$	59	B
$5f6d(^3D°)7s$	$^4D°$	$2^1/_2$	14545.557	1.339	67		6	$(^1D°)\ ^2D°$	80	B
$5f6d(^3G°)7s$		$3^1/_2$	14790.996	0.862	40	$^2G°$	29	$5f(^3F°)6d^2\ ^4H°$	91	H
$5f6d(^3P°)7s$		$1^1/_2$	15144.738	1.366	41	$^4P°$	14	$(^3D°)\ ^4D°$	65	H
$5f(^3F°)6d^2$	$^4H°$	$4^1/_2$	15242.905	1.00	59		20	$(^3F°)\ ^2G°$	56	B
$5f6d(^3P°)7s$	$^4P°$	$^1/_2$	15324.239	2.565	87		5	$6d7s(^3D)7p\ ^4P°$	28	S
$5f6d(^3G°)7s$	$^4G°$	$5^1/_2$	15349.879	1.267	91		4	$6d^2(^3F)7p\ ^4G°$	50	B
$5f6d(^3D°)7s$	$^4D°$	$3^1/_2$	15453.036	1.296	55		17	$(^3F°)\ ^2F°$	92	B
$5f6d(^3D°)7s$	$^2D°$	$1^1/_2$	15710.843	0.643	52		21	$(^3P°)\ ^4P°$	67	R
$5f6d(^3D°)7s$		$2^1/_2$	16033.149	1.07	33	$^2D°$	32	$(^1F°)\ ^2F°$	77	B
$5f(^3F°)6d^2$	$^4I°$	$5^1/_2$	16564.633	0.98	86		4	$(^1G°)\ ^2I°$	47	B
$5f(^3F°)6d^2$		$3^1/_2$	16906.604	0.950	24	$^2G°$	17	$(^3F°)\ ^4H°$	82	S
$5f(^1D°)6d^2$		$1^1/_2$	17121.623	1.277	28	$^2P°$	28	$5f6d(^3P°)7s\ ^2P°$	60	H
$5f6d(^3G°)7s$	$^2G°$	$4^1/_2$	17272.252	1.083	58		12	$5f(^1D°)6d^2\ ^2G°$	79	B
$5f6d(^3P°)7s$	$^4P°$	$2^1/_2$	17460.625	1.51	73		8	$(^1D°)\ ^2D°$	83	B
$5f(^3F°)6d^2$		$4^1/_2$	17722.990	1.08	45	$^2G°$	30	$(^3F°)\ ^4H°$	59	M
$5f(^3F°)6d^2$	$^4H°$	$5^1/_2$	17771.06	1.10	69		13	$(^1G°)\ ^2I°$	45	B
$5f6d(^3P°)7s$		$^1/_2$	17837.804	1.080	30	$^2P°$	25	$5f(^3F°)6d^2\ ^4D°$	29	M
$5f(^3F°)6d^2$		$2^1/_2$	17983.388	0.995	25	$^2F°$	14	$(^3F°)\ ^4D°$	72	S
$5f(^3F°)6d^2$		$1^1/_2$	18214.423	0.876	31	$^4F°$	14	$(^3F°)\ ^4D°$	48	H

TABLE 2. *Odd energy levels of* Th II—Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$5f(^3F°)6d^2$		1/2	18568.27	1.007	44	$^2S°$	25	$(^3F°)\ ^4D°$	31	Z
$5f(^3F°)6d^2$	$^4I°$	6 1/2	18816.87	1.10	72		8	$(^1G°)\ ^2I°$	34	B
$5f6d(^1F°)7s$		3 1/2	18973.782	1.12	37	$^2F°$	14	$5f(^3F°)6d^2\ ^2G°$	57	S
$5f(^3F°)6d^2$		1 1/2	19050.832	0.888	33	$^4F°$	23	$(^3F°)\ ^4D°$	45	H
$5f6d(^3D°)7s$		2 1/2	19248.267	0.931	20	$^2D°$	16	$(^1F°)\ ^2F°$	63	H
$5f(^3F°)6d^2$	$^4H°$	6 1/2	19912.34	1.16	56		22	$(^3F°)\ ^4I°$	30	B
$5f6d(^1F°)7s$		3 1/2	20080.667	1.142	14	$^2F°$	12	$5f(^3F°)6d^2\ ^2F°$	60	H
$5f(^3P°)6d^2$		2 1/2	20120.157	0.743	44	$^4G°$	15	$(^3F°)\ ^4F°$	64	R
$5f(^1G°)6d^2$		5 1/2	20288.57	0.97	42	$^2I°$	26	$(^3F°)\ ^4H°$	37	M
$5f(^3F°)6d^2$		2 1/2	20310.944	1.161	17	$^4D°$	15	$(^3F°)\ ^4G°$	62	M
$5f(^3F°)6d^2$		2 1/2	20686.148	0.945	39	$^4F°$	8	$(^3P°)\ ^4G°$	59	B
$5f(^3P°)6d^2$		3 1/2	20969.01	0.99	39	$^4G°$	14	$(^3F°)\ ^4G°$	50	M
$5f(^1D°)6d^2$		4 1/2	20989.81	0.953	27	$^2H°$	16	$5f6d(^3G°)7s\ ^2G°$	63	S
$5f6d(^1P°)7s$		1 1/2	21131.81	1.24	24	$^2P°$	18	$5f(^3F°)6d^2\ ^2P°$	47	M
$5f(^3F°)6d^2$		2 1/2	21297.417	0.767	38	$^4G°$	21	$(^3P°)\ ^4G°$	62	H
$5f(^3F°)6d^2$		3 1/2	21682.747	1.248	41	$^4F°$	17	$(^3F°)\ ^4D°$	51	B
$5f6d(^1H°)7s$	$^2H°$	5 1/2	22014.881	1.10	61		18	$5f(^1D°)6d^2\ ^2H°$	47	S
$5f(^3F°)6d^2$	$^4I°$	7 1/2	22028.00	1.18	97		2	$(^1G°)\ ^2K°$	11	S
$5f(^1G°)6d^2$		4 1/2	22139.66	1.090	23	$^2G°$	19	$(^1G°)\ ^2H°$	55	H
$5f6d(^1P°)7s$		1/2	22355.208	0.77	35	$^2P°$	16	$5f(^3F°)6d^2\ ^2P°$	23	M
$5f(^3P°)6d^2$		2 1/2	22513.290	1.17	43	$^2D°$	21	$(^3F°)\ ^4D°$	40	C
$5f6d(^1H°)7s$		4 1/2	22642.107	1.043	42	$^2H°$	9	$5f(^1D°)6d^2\ ^2G°$	50	H
$5f(^3F°)6d^2$	$^4G°$	3 1/2	22685.447	0.981	65		12	$(^3P°)\ ^4G°$	45	B
$5f(^3P°)6d^2$		1 1/2	23012.060	1.017	25	$^4F°$	13	$(^3P°)\ ^2D°$	30	H
$5f(^1G°)6d^2$		6 1/2	23187.02		31	$^2I°$	31	$(^3F°)\ ^4H°$	23	Z
$6d7s(^3D)7p$		1 1/2	23372.582	1.067	29	$^4F°$	9	$5f(^3P°)6d^2\ ^4F°$	27	H
$5f(^3F°)6d^2$		3 1/2	23518.425	1.2	21	$^4F°$	18	$(^3F°)\ ^4D°$	45	M
$5f(^3P°)6d^2$		3 1/2	23697.66	1.0	26	$^4G°$	26	$(^1G°)\ ^2G°$	43	Z
$5f(^3F°)6d^2$		4 1/2	23730.656	1.186	45	$^4F°$	13	$(^1G°)\ ^2H°$	35	H
$5f(^3F°)6d^2$	$^4P°$	1 1/2	24132.037	1.429	60		5	$6d7s(^3D)7p\ ^4F°$	30	H
$5f(^1G°)6d^2$		5 1/2	24309.226	1.11	25	$^2H°$	25	$(^3F°)\ ^2H°$	31	M
$5f(^3F°)6d^2$		1 1/2	24414.643	1.105	24	$^4S°$	17	$6d7s(^3D)7p\ ^4F°$	29	H
$5f(^3F°)6d^2$	$^4P°$	2 1/2	24463.792	1.396	64		7	$(^3F°)\ ^2D°$	43	H
$5f(^3F°)6d^2$		4 1/2	24757.507	1.13	45	$^4G°$	40	$(^3P°)\ ^4G°$	37	S
$6d7s(^3D)7p$		2 1/2	24873.981	1.081	26	$^4F°$	20	$5f(^3P°)6d^2\ ^4F°$	25	H

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TABLE 2. *Odd energy levels of* Th II—Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages		n, ref.
					First	Second	
$5f(^1G°)6d^2$		3½	24982.451	0.990	30 $^2G°$	24 $(^1D°)\ ^2G°$	37 H
$5f(^3P°)6d^2$		½	25027.04	0.6	28 $^4D°$	22 $(^3F°)\ ^4P°$	6 Z
$5f(^3P°)6d^2$		1½	25188.124	0.937	19 $^4D°$	16 $(^3P°)\ ^4F°$	23 H
$5f(^3F°)6d^2$		½	25266.498	0.725	32 $^4P°$	29 $(^3P°)\ ^4D°$	12 H
$5f(^3F°)6d^2$		5½	25414.92	1.236	44 $^4G°$	28 $(^1G°)\ ^2H°$	33 M
$5f(^3P°)6d^2$		2½	25440.234	1.138	20 $^4F°$	13 $(^3F°)\ ^4P°$	33 H
$5f6d(^1P°)7s$		½	25594.88	1.27	17 $^2P°$	14 $5f(^3F°)6d^2\ ^2S°$	7 Z
$5f(^3F°)6d^2$		4½	25607.12	1.09	23 $^4G°$	17 $(^3P°)\ ^4G°$	32 M
$5f(^3P°)6d^2$		2½	26424.48	1.169	29 $^4F°$	20 $(^3P°)\ ^4D°$	29 H
$5f(^3P°)6d^2$		1½	26586.27	0.76	28 $^4F°$	28 $(^3P°)\ ^2D°$	19 Z
$6d7s(^3D)7p$		½	26626.478	0.645	38 $^4D°$	19 $(^3D)\ ^2P°$	8 H
$5f(^1G°)6d^2$	$^2K°$	6½	26647.80		86	7 $(^1G°)\ ^2I°$	11 M
$5f(^3P°)6d^2$	$^4G°$	5½	26770.495	1.250	53	33 $(^3F°)\ ^4G°$	22 S
$5f(^3P°)6d^2$	$^4F°$	3½	26963.92	1.20	73	7 $(^3F°)\ ^4F°$	22 Z
$5f(^3F°)6d^2$		1½	26965.202	1.384	35 $^4S°$	17 $(^3F°)\ ^2P°$	24 B
$5f(^3P°)6d^2$	$^4D°$	3½	27249.543	1.382	50	18 $(^3F°)\ ^4D°$	24 R
$5f(^1G°)6d^2$		4½	27357.36	1.02	25 $^2H°$	14 $(^3P°)\ ^4F°$	35 M
$5f(^1D°)6d^2$		1½	27403.18	1.002	20 $^2D°$	20 $(^3P°)\ ^4D°$	11 H
$5f(^1G°)6d^2$		4 /2	27787.84	1.16	31 $^2G°$	18 $(^1D°)\ ^2G°$	23 M
$6d7s(^3D)7p$		2½	28243.812	0.922	25 $^4F°$	17 $6d^2(^3F)7p\ ^4G°$	22 H
$5f(^1G°)6d^2$		2½	28587.36	1.0	42 $^2F°$	17 $(^3F°)\ ^2F°$	26 Z
$6d7s(^3D)7p$		1½	28720.835	1.162	46 $^4D°$	9 $(^3D)\ ^2P°$	16 H
$5f(^3F°)6d^2$		2½	28923.20	1.07	22 $^2D°$	15 $(^1D°)\ ^2D°$	19 Z
$5f(^1D°)6d^2$		2½	29095.467	0.998	24 $^2F°$	11 $6d^2(^3F)7p\ ^4G°$	26 H
$5f(^3F°)6d^2$		1½	29720.32	0.990	21 $^2D°$	15 $(^1D°)\ ^2D°$	21 H
$5f(^3P°)6d^2$	$^4F°$	4½	29788.45		67	13 $(^1D°)\ ^2G°$	18 Z
$5f(^1G°)6d^2$	$^2F°$	3½	30101.42	1.13	68	13 $(^3F°)\ ^2F°$	21 Z
$5f(^1G°)6d^2$	$^2K°$	7½	30223.14		97	2 $(^3F°)\ ^4I°$	4 Z
$5f(^1G°)6d^2$		5½	30310.210	1.1	34 $^2H°$	23 $(^1D°)\ ^2H°$	19 Z
$5f(^3F°)6d^2$		½	30564.58	0.553	25 $^2P°$	20 $(^1D°)\ ^2P°$	7 H
$5f(^3F°)6d^2$	$^2H°$	4½	30956.568	0.94	50	23 $(^1D°)\ ^2H°$	16 Z
$6d^2(^3F)7p$		2½	30972.166	1.217	16 $^4G°$	15 $6d7s(^3D)7p\ ^2D°$	16 H
$6d7s(^3D)7p$	$^4F°$	3½	30994.263	1.199	53	8 $6d^2(^3F)7p\ ^4G°$	19 H
$6d7s(^3D)7p$		1½	31353.127	0.863	17 $^4F°$	9 $6d^2(^3F)7p\ ^2D°$	15 H
$7s^2(^1S°)7p$		½	31625.680	0.344	31 $^2P°$	26 $6d7s(^3D)7p\ ^4D°$	10 H

TABLE 2. *Odd energy levels of* Th II—Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages				n, ref.	
					First		Second			
$5f(^1D^\circ)6d^2$		$3^1/_2$	31800.192	1.168	37	$^2F^\circ$	11	$(^3P^\circ)\ ^2F^\circ$	24	H
$6d7s(^3D)7p$		$2^1/_2$	31810.548	1.118	36	$^4D^\circ$	12	$6d^2(^3F)7p\ ^2D^\circ$	19	H
$5f(^3F^\circ)6d^2$		$5^1/_2$	31924.599	0.99	26	$^2H^\circ$	22	$(^3F^\circ)\ ^2I^\circ$	16	Z
$5f(^3F^\circ)6d^2$		$1^1/_2$	31928.714	0.891	25	$^2D^\circ$	16	$(^1G^\circ)\ ^2D^\circ$	18	H
$5f(^1D^\circ)6d^2$		$2^1/_2$	32850.07	1.093	18	$^2D^\circ$	16	$(^3F^\circ)\ ^2D^\circ$	16	H
$6d^2(^3F)7p$	$^4G^\circ$	$3^1/_2$	32957.432	1.072	58		11	$6d7s(^3D)7p\ ^4F^\circ$	17	H
$5f(^1G^\circ)6d^2$		$1^1/_2$	33215.466	1.036	20	$^2D^\circ$	17	$6d^2(^3F)7p\ ^4F^\circ$	16	H
$5f(^1S^\circ)6d^2$		$2^1/_2$	33354.78	0.952	37	$^2F^\circ$	14	$(^3P^\circ)\ ^2F^\circ$	18	H
$5f(^1D^\circ)6d^2$		$1^1/_2$	33843.042	1.19	32	$^2P^\circ$	13	$5f6d(^3P^\circ)7s\ ^2P^\circ$	9	Z
$6d^2(^1G)7p$		$3^1/_2$	33902.085	1.0	19	$^2G^\circ$	15	$(^1G)\ ^2F^\circ$	17	Z
$6d7s(^3D)7p$		$2^1/_2$	34212.024	1.148	30	$^4D^\circ$	10	$(^1D)\ ^2F^\circ$	16	H
$6d^2(^3P)7p$		$^1/_2$	34330.500	1.503	29	$^2S^\circ$	24	$(^3P)\ ^4P^\circ$	9	H
$6d7s(^3D)7p$		$1^1/_2$	34986.606	1.298	27	$^4D^\circ$	22	$(^3D)\ ^4P^\circ$	13	R
$5f(^1G^\circ)6d^2$		$2^1/_2$	35156.916	1.079	29	$^2D^\circ$	13	$(^1G^\circ)\ ^2F^\circ$	16	H
$5f(^3F^\circ)6d^2$	$^2I^\circ$	$6^1/_2$	35165.36	1.08	58		41	$(^1G^\circ)\ ^2I^\circ$	5	Z
$6d^2(^3P)7p$	$^4D^\circ$	$^1/_2$	35198.99	0.972	54		16	$6d7s(^3D)7p\ ^4P^\circ$	9	H
$6d^2(^3F)7p$		$4^1/_2$	35593.436		38	$^4G^\circ$	18	$(^3F)\ ^4F^\circ$	8	Z
$6d7s(^3D)7p$		$3^1/_2$	35593.527	1.253	39	$^4D^\circ$	10	$5f(^3P^\circ)6d^2\ ^2G^\circ$	17	B
$5f(^3F^\circ)6d^2$		$5^1/_2$	35602.42	1.02	38	$^2I^\circ$	22	$(^1G^\circ)\ ^2I^\circ$	10	Z
$5f(^3P^\circ)6d^2$		$4^1/_2$	36193.437	1.149	34	$^2G^\circ$	18	$6d^2(^1G)7p\ ^2G^\circ$	14	H
$6d^2(^3F)7p$		$1^1/_2$	36390.527	0.829	21	$^4F^\circ$	21	$5f(^1G^\circ)6d^2\ ^2P^\circ$	14	H
$6d^2(^3P)7p$		$1^1/_2$	36444.815	1.182	47	$^4D^\circ$	9	$5f(^1G^\circ)6d^2\ ^2P^\circ$	13	H
$6d^2(^3F)7p$		$1^1/_2$	36581.568	1.107	21	$^4F^\circ$	14	$5f(^1G^\circ)6d^2\ ^2D^\circ$	14	H
$6d^2(^1D)7p$		$3^1/_2$	36583.82	1.140	21	$^2F^\circ$	19	$6d7s(^1D)7p\ ^2F^\circ$	16	H
$6d^2(^3F)7p$		$2^1/_2$	36687.992	1.049	41	$^4F^\circ$	8	$6d7s(^3D)7p\ ^4P^\circ$	14	H
$5f(^1G^\circ)6d^2$	$^2P^\circ$	$^1/_2$	37130.340	0.521	70		8	$6d^2(^3P)7p\ ^4D^\circ$	10	H
$6d7s(^3D)7p$	$^4F^\circ$	$4^1/_2$	37569.762	1.29	70		21	$6d^2(^3F)7p\ ^4G^\circ$	9	B
$6d7s(^3D)7p$		$1^1/_2$	37601.699	1.267	24	$^2D^\circ$	11	$6d^2(^1D)7p\ ^2P^\circ$	15	H
$6d7s(^3D)7p$		$^1/_2$	37607.989	2.239	43	$^4P^\circ$	33	$6d^2(^3P)7p\ ^2S^\circ$	7	H
$6d^2(^1D)7p$		$^1/_2$	37716.322	0.690	28	$^2P^\circ$	18	$(^3F)\ ^4D^\circ$	5	H
$5f(^1S^\circ)6d^2$		$3^1/_2$	37756.790	1.118	27	$^2F^\circ$	20	$(^3P^\circ)\ ^2F^\circ$	18	H
$6d^2(^3P)7p$		$2^1/_2$	37846.174	1.165	17	$^2D^\circ$	15	$(^3P)\ ^4D^\circ$	22	H
$6d7s(^3D)7p$		$1^1/_2$	38436.169	1.419	33	$^4P^\circ$	27	$7s^2(^1S)7p\ ^2P^\circ$	12	H
$6d^2(^3P)7p$		$2^1/_2$	38493.769	1.217	18	$^4D^\circ$	11	$6d7s(^1D)7p\ ^2D^\circ$	21	H
$6d^2(^3F)7p$		$2^1/_2$	38581.627	1.105	20	$^2F^\circ$	16	$6d7s(^3D)7p\ ^2F^\circ$	21	H

TABLE 2. *Odd energy levels of* Th II—Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages		n, ref.	
					First	Second		
$6d^2(^3F)7p$		$3^1/_2$	38764.652	1.098	19 $^2G°$	18 $(^3F)\ ^2F°$	14	B
$6d^2(^1G)7p$		$3^1/_2$	39396.55	1.131	24 $^2F°$	17 $5f(^1S°)6d^2\ ^2F°$	19	H
$6d^2(^3F)7p$		$4^1/_2$	39442.996	1.145	30 $^4G°$	16 $(^3F)\ ^2G°$	11	H
$6d7s(^3D)7p$		$2^1/_2$	39861.642	1.172	26 $^4P°$	11 $6d^2(^1G)7p\ ^2F°$	19	H
$6d^2(^3F)7p$		$3^1/_2$	40184.111	1.230	20 $^4F°$	16 $(^3F)\ ^4D°$	13	B
$6d^2(^3F)7p$		$1^1/_2$	40472.459	1.249	39 $^4D°$	14 $6d7s(^1D)7p\ ^2D°$	17	H
$5f(^3P°)6d^2$		$2^1/_2$	40654.460	0.943	21 $^2F°$	14 $(^1S°)\ ^2F°$	17	H
$6d^2(^1G)7p$		$3^1/_2$	40706.82	1.073	24 $^2G°$	15 $5f(^1S°)6d^2\ ^2F°$	15	H
$6d^2(^3F)7p$	$^4D°$	$^1/_2$	40825.607	0.261	51	8 $6d7s(^3D)7p\ ^2P°$	9	H
$6d^2(^3F)7p$	$^4G°$	$5^1/_2$	41447.968	1.267	88	4 $5f6d(^3G°)7s\ ^4G°$	6	R
$6d^2(^1D)7p$		$1^1/_2$	42112.94	1.467	21 $^2P°$	16 $(^3P)\ ^4S°$	16	H
$6d^2(^3F)7p$		$2^1/_2$	42219.764	1.168	31 $^4D°$	15 $(^1D)\ ^2F°$	21	H
$6d^2(^3F)7p$		$4^1/_2$	42319.024	1.165	38 $^4F°$	32 $(^1G)\ ^2H°$	10	H
$6d^2(^3F)7p$		$1^1/_2$	42418.228	1.304	24 $^4D°$	14 $(^3P)\ ^2D°$	16	H
$6d^2(^3F)7p$		$3^1/_2$	42944.467	1.246	25 $^4D°$	23 $6d7s(^3D)7p\ ^2F°$	16	H
$6d^2(^3P)7p$		$1^1/_2$	43287.642	1.564	40 $^4S°$	32 $(^3P)\ ^4P°$	14	H
$6d^2(^3P)7p$		$2^1/_2$	43382.780	1.203	39 $^4D°$	18 $(^3F)\ ^4D°$	16	H
$6d^2(^3P)7p$	$^4P°$	$^1/_2$	43744.11	2.219	54	19 $(^3P)\ ^2S°$	9	H
$6d^2(^1G)7p$		$3^1/_2$	43773.64	1.052	18 $^2G°$	16 $(^3P)\ ^4D°$	16	B
$6d^2(^3P)7p$		$3^1/_2$	44650.491	1.234	42 $^4D°$	11 $(^3F)\ ^2G°$	17	H
$6d7s(^3D)7p$		$2^1/_2$	44821.897	0.999	30 $^2F°$	10 $5f(^3P°)6d^2\ ^2F°$	14	H
$6d^2(^3P)7p$		$2^1/_2$	45221.54	1.347	47 $^4P°$	10 $6d7s(^3D)7p\ ^2F°$	15	H
$6d^2(^3F)7p$	$^2G°$	$4^1/_2$	45489.129	1.089	61	18 $(^3F)\ ^4F°$	12	H
$6d^2(^3F)7p$		$3^1/_2$	45689.325	1.261	18 $^2F°$	13 $6d7s(^1D)7p\ ^2F°$	11	H
$6d7s(^1D)7p$		$1^1/_2$	45697.78	1.18	30 $^2P°$	10 $6d^2(^3P)7p\ ^2D°$	10	B
$6d^2(^3P)7p$		$1^1/_2$	45838.437		31 $^2P°$	20 $(^1D)\ ^2D°$	5	Z
$6d^2(^3P)7p$		$2^1/_2$	46155.54	1.152	33 $^2D°$	12 $6d7s(^3D)7p\ ^2D°$	16	H
$6d^2(^1G)7p$	$^2G°$	$4^1/_2$	46368.21	1.088	51	29 $(^1G)\ ^2H°$	8	H
$6d7s(^3D)7p$		$1^1/_2$	46423.76	1.118	20 $^2P°$	14 $6s^2(^1S)7p\ ^2P°$	14	H
$6d^2(^1S)7p$		$^1/_2$	46426.05	0.9	16 $^2P°$	14 $6d7s(^3D)7p\ ^2P°$	6	Z
$6d^2(^1G)7p$	$^2H°$	$5^1/_2$	47466.262	1.13	83	6 $5f6d(^1H°)7s\ ^2H°$	4	Z
$6d7s(^1D)7p$		$^1/_2$	48532.05		30 $^2P°$	24 $(^3D)\ ^2P°$	8	Z
$6d^2(^1D)7p$		$3^1/_2$	49121.92	1.11	36 $^2F°$	24 $6d7s(^1D)7p\ ^2F°$	9	Z
$6d^2(^1D)7p$		$2^1/_2$	49289.524	1.208	47 $^2D°$	10 $(^3P)\ ^4P°$	9	H
$5f^27p?$		$4^1/_2$	49495.57				14	Z
$6d^2(^3P)7p$		$1^1/_2$	51528.46	0.925	25 $^2D°$	16 $6d7s(^1D)7p\ ^2D°$	11	C
$6d^2(^1G)7p$		$2^1/_2$	51946.84	0.937	37 $^2F°$	11 $6d7s(^3D)7p\ ^2F°$	12	B
$5f^2\ 7p?$		$2^1/_2$	52678.41				11	Z

TABLE 2. *Odd energy levels of* Th II—Continued

Configuration	Term	J	Level (cm^{-1})	g	Leading percentages		n, ref.
					First	Second	
$5f\,7p^2$?		4½	54360.46				12 Z
$6d7s(^3D)7p$		3½	54497.69	1.126	28 $^2F°$	27 $6d\,^2(^1G)7p\ ^2F°$	10 C
$6d\,^2(^3F)7p$		2½	54648.28		21 $^2D°$	15 $(^1G)\ ^2F°$	12 Z
$5f^2\ 7p$?		4½	55038.943				11 Z
$5f^2\ 7p$?		4½	56086.24				17 Z
$5f^2\ 7p$?		3½	56683.43				17 Z
$5f^2\ 7p$?		2½	56892.09				15 Z
$5f^2\ 7p$?		2½	59299.15				15 Z
		1½	59616.61	1.1			13 Z
$5f\,7p^2$?		1½	59987.43				11 Z
$5f^2\ 7p$?		4½	59993.66				11 Z

4.2. Classified Lines

The classified lines of Th II (table 3) consist of 6500 lines in the wavelength range 2000 to 25 000 Å. Following the measured wavelength in table 3, the visually estimated intensities in electrodeless lamp and sliding spark spectra are given. Lines not observed as single sharp lines are described with the following symbols:

b = blend (two wavelengths measured)
d = double (one wavelength measured)
h = hazy
l = shaded to long wavelength
r = reversed
s = shaded to short wavelengths
w = wide

In column 4 is the wavenumber in vacuum in units of cm^{-1}. The classification is given by the values of the energy levels responsible for the transition, with their J-values as subscripts, and a superscript degree symbol to indicate odd parity.

The average absolute value of O–C in cm^{-1} for 100 lines at each of seven wavelengths is shown below.

Wavelength	O–C
3 000	0.007
3 500	.009
4 000	.010
4 500	.012
6 000	.012
9 000	.018
15 000	.002

The general precision of the wave numbers of the lines was determined by measuring the precision of repeating differences between three pairs of odd levels. The average deviation of 180 differences from the means was 0.015 cm^{-1}. Therefore the average deviation for a single wavenumber is about 0.011 cm^{-1}.

The Th II lines that have not been classified will be published in an improved complete description of thorium spectra.

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TABLE 3. *Classified lines of* Th II

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
29068.481	1		3439.214	$10379_{9/2} - 13818^{\circ}_{7/2}$	21121.474	1		4733.226	$10572^{\circ}_{9/2} - 15305_{9/2}$
25401.710	1		3935.669	$10855_{7/2} - 14790^{\circ}_{7/2}$	21046.638	0		4750.056	$23187^{\circ}_{13/2} - 27937_{11/2}$
25181.424	1		3970.098	$4490^{\circ}_{5/2} - 8460_{3/2}$	21014.864	2		4757.238	$9061_{5/2} - 13818^{\circ}_{7/2}$
24926.551	3		4010.692	$9238^{\circ}_{9/2} - 13248_{9/2}$	20934.926	0		4775.403	$15305_{9/2} - 20080^{\circ}_{7/2}$
24887.997	2		4016.905	$14101^{\circ}_{1/2} - 18118_{3/2}$	20692.063	6		4831.452	$1859_{3/2} - 6691^{\circ}_{3/2}$
24352.698	0		4105.201	$10379_{9/2} - 14484^{\circ}_{11/2}$	20682.889	4		4833.595	$9711_{7/2} - 14545^{\circ}_{5/2}$
24345.717	0		4106.378	$9711_{7/2} - 13818^{\circ}_{7/2}$	20649.114	1		4841.501	$22685^{\circ}_{7/2} - 27526_{9/2}$
24291.248	3		4115.586	$4490^{\circ}_{5/2} - 8605_{5/2}$	20609.747	1		4850.749	$17983^{\circ}_{5/2} - 22834_{7/2}$
24060.000	1		4155.142	$6700^{\circ}_{9/2} - 10855_{7/2}$	20575.702	0		4858.775	$22106_{5/2} - 26965^{\circ}_{3/2}$
23964.262	3		4171.742	$16818_{7/2} - 20989^{\circ}_{9/2}$	20554.521	3		4863.782	$10379_{9/2} - 15242^{\circ}_{9/2}$
23850.490	2		4191.642	$8378^{\circ}_{7/2} - 12570_{7/2}$	20528.880	4		4869.857	$8378^{\circ}_{7/2} - 13248_{9/2}$
23745.817	1		4210.119	$13250_{5/2} - 17460^{\circ}_{5/2}$	20521.311	2		4871.653	$8378^{\circ}_{7/2} - 13250_{5/2}$
23742.146	4		4210.770	$6168^{\circ}_{7/2} - 10379_{9/2}$	20468.653	4		4884.186	$8018_{3/2} - 12902^{\circ}_{3/2}$
23696.506	1		4218.880	$14349_{1/2} - 18568^{\circ}_{1/2}$	20450.627	1		4888.491	$7331^{\circ}_{5/2} - 12219_{3/2}$
23621.480	2		4232.280	$4146_{7/2} - 8378^{\circ}_{7/2}$	20443.773	2		4890.130	$12570_{7/2} - 17460^{\circ}_{5/2}$
23597.934	1		4236.503	$18118_{3/2} - 22355^{\circ}_{1/2}$	20430.283	0		4893.359	$18118_{3/2} - 23012^{\circ}_{3/2}$
23477.236	1		4258.283	$13468^{\circ}_{9/2} - 17727_{11/2}$	20395.738	3		4901.647	$12219_{3/2} - 17121^{\circ}_{3/2}$
23458.743	0		4261.640	$20120^{\circ}_{5/2} - 24381_{7/2}$	20389.710	4		4903.096	$6213_{9/2} - 11116^{\circ}_{7/2}$
23437.525	5		4265.498	$4113_{5/2} - 8378^{\circ}_{7/2}$	20358.092	0		4910.711	$4490^{\circ}_{5/2} - 9400_{5/2}$
23372.954	0		4277.282	$20969^{\circ}_{7/2} - 25246_{9/2}$	20165.057	3		4957.720	$20288^{\circ}_{11/2} - 25246_{9/2}$
23316.550	1		4287.629	$17727_{11/2} - 22014^{\circ}_{11/2}$	20139.866	1		4963.921	$13250_{5/2} - 18214^{\circ}_{3/2}$
23222.202	1		4305.049	$20158_{5/2} - 24463^{\circ}_{5/2}$	20061.498	0		4983.312	$15305_{9/2} - 20288^{\circ}_{11/2}$
23075.703	2		4332.380	$12485^{\circ}_{7/2} - 16818_{7/2}$	19998.121	1		4999.105	$23012^{\circ}_{3/2} - 28011_{3/2}$
23003.968	2		4345.890	$12472^{\circ}_{5/2} - 16818_{7/2}$	19984.221	0		5002.582	$26770^{\circ}_{11/2} - 31773_{9/2}$
22937.124	2		4358.555	$6213_{9/2} - 10572^{\circ}_{9/2}$	19844.520	0		5037.799	$25414^{\circ}_{11/2} - 30452_{9/2}$
22911.403	0		4363.448	$24982^{\circ}_{7/2} - 29345_{5/2}$	19774.295	6		5055.690	$4146_{7/2} - 9202^{\circ}_{7/2}$
22785.383	1		4387.581	$10855_{7/2} - 15242^{\circ}_{9/2}$	19719.303	1		5069.789	$25414^{\circ}_{11/2} - 30484_{11/2}$
22733.218	0		4397.649	$27526_{9/2} - 31924^{\circ}_{11/2}$	19703.648	1		5073.817	$7828_{1/2} - 12902^{\circ}_{3/2}$
22631.728	0		4417.370	$9400_{5/2} - 13818^{\circ}_{7/2}$	19703.283	1		5073.911	$10379_{9/2} - 15453^{\circ}_{7/2}$
22582.257	1		4427.047	$15453^{\circ}_{7/2} - 19880_{9/2}$	19701.761	0		5074.303	$15236_{3/2} - 20310^{\circ}_{5/2}$
22571.571	1		4429.143	$19880_{9/2} - 24309^{\circ}_{11/2}$	19683.409	5		5079.034	$9711_{7/2} - 14790^{\circ}_{7/2}$
22506.128	4		4442.022	$8460_{3/2} - 12902^{\circ}_{3/2}$	19644.523	4		5089.088	$14790^{\circ}_{7/2} - 19880_{9/2}$
22467.732	1		4449.613	$15144^{\circ}_{3/2} - 19594_{1/2}$	19593.390	0		5102.369	$19880_{9/2} - 24982^{\circ}_{7/2}$
22445.678	2		4453.985	$8018_{3/2} - 12472^{\circ}_{5/2}$	19540.414	1		5116.202	$10189^{\circ}_{11/2} - 15305_{9/2}$
22343.861	3		4474.281	$13248_{9/2} - 17722^{\circ}_{9/2}$	19535.499	0		5117.489	$22139^{\circ}_{9/2} - 27257_{7/2}$
22264.353	6		4490.259	$0_{3/2} - 4490^{\circ}_{5/2}$	19503.105	1		5125.989	$23697^{\circ}_{7/2} - 28823_{5/2}$
22098.511	0		4523.957	$15786_{5/2} - 20310^{\circ}_{5/2}$	19474.463	2		5133.528	$19248^{\circ}_{5/2} - 24381_{7/2}$
21907.002	1		4563.505	$10673^{\circ}_{5/2} - 15236_{3/2}$	19473.652	1		5133.742	$25414^{\circ}_{11/2} - 30548_{13/2}$
21906.445	1		4563.621	$9711_{7/2} - 14275^{\circ}_{9/2}$	19432.597	3		5144.588	$9400_{5/2} - 14545^{\circ}_{5/2}$
21871.813	1		4570.847	$4490^{\circ}_{5/2} - 9061_{5/2}$	19402.768	2		5152.497	$12570_{7/2} - 17722^{\circ}_{9/2}$
21852.069	2		4574.977	$7001_{3/2} - 11576^{\circ}_{3/2}$	19353.457	0		5165.625	$20080^{\circ}_{7/2} - 25246_{9/2}$
21743.999	5		4597.715	$10855_{7/2} - 15453^{\circ}_{7/2}$	19338.976	7		5169.493	$1521_{5/2} - 6691^{\circ}_{3/2}$
21662.376	0		4615.039	$22642^{\circ}_{9/2} - 27257_{7/2}$	19307.868	2		5177.822	$10855_{7/2} - 16033^{\circ}_{5/2}$
21558.955	2		4637.178	$15242^{\circ}_{9/2} - 19880_{9/2}$	19179.419	3		5212.499	$8605_{5/2} - 13818^{\circ}_{7/2}$
21387.561	1		4674.339	$24757^{\circ}_{9/2} - 29431_{7/2}$	19165.340	1		5216.328	$12902^{\circ}_{3/2} - 18118_{3/2}$
21329.914	1		4686.972	$6168^{\circ}_{7/2} - 10855_{7/2}$	19145.601	7		5221.706	$4490^{\circ}_{5/2} - 9711_{7/2}$
21264.265	0		4701.442	$14349_{1/2} - 19050^{\circ}_{3/2}$	19082.536	3		5238.963	$12488^{\circ}_{9/2} - 17727_{11/2}$
21262.841	1		4701.757	$12570_{7/2} - 17272^{\circ}_{9/2}$	19076.390	0		5240.651	$12219_{3/2} - 17460^{\circ}_{5/2}$
21162.697	5		4724.006	$7001_{3/2} - 11725^{\circ}_{1/2}$	18961.873	1		5272.301	$25607^{\circ}_{9/2} - 30879_{7/2}$
21123.018	0		4732.880	$13250_{5/2} - 17983^{\circ}_{5/2}$	18880.700	0		5294.968	$22642^{\circ}_{9/2} - 27937_{11/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
18624.701	0		5367.748	$14790^{\circ}_{7/2} - 20158_{5/2}$	16433.049	2		6083.636	$9061_{5/2} - 15144^{\circ}_{3/2}$
18557.117	1		5387.297	$22139^{\circ}_{9/2} - 27526_{9/2}$	16428.820	2		6085.202	$8460_{3/2} - 14545^{\circ}_{5/2}$
18547.718	3		5390.027	$9400_{5/2} - 14790^{\circ}_{7/2}$	16380.898	6		6103.004	$9202^{\circ}_{7/2} - 15305_{9/2}$
18469.362	1		5412.894	$12570_{7/2} - 17983^{\circ}_{5/2}$	16269.133	3		6144.930	$10673^{\circ}_{5/2} - 16818_{7/2}$
18402.093	0		5432.681	$19594_{1/2} - 25027^{\circ}_{1/2}$	16182.835	0		6177.699	$20310^{\circ}_{5/2} - 26488_{5/2}$
18381.291	3		5438.829	$4146_{7/2} - 9585^{\circ}_{5/2}$	16163.327	3		6185.155	$8605_{5/2} - 14790^{\circ}_{7/2}$
18293.755	1		5464.854	$21297^{\circ}_{5/2} - 26762_{3/2}$	15951.379	0		6267.338	$20989^{\circ}_{9/2} - 27257_{7/2}$
18271.367	5		5471.550	$1859_{3/2} - 7331^{\circ}_{5/2}$	15939.011	1		6272.201	$6213_{9/2} - 12485^{\circ}_{7/2}$
18269.704	3		5472.048	$4113_{5/2} - 9585^{\circ}_{5/2}$	15936.374	4		6273.239	$7828_{1/2} - 14101^{\circ}_{1/2}$
18239.409	5		5481.137	$6244_{1/2} - 11725^{\circ}_{1/2}$	15932.409	6		6274.800	$6213_{9/2} - 12488^{\circ}_{9/2}$
18228.371	4		5484.456	$9061_{5/2} - 14545^{\circ}_{5/2}$	15927.216	0		6276.846	$24982^{\circ}_{7/2} - 31259_{5/2}$
18112.220	1		5519.627	$20969^{\circ}_{7/2} - 26488_{5/2}$	15898.637	1		6288.129	$20969^{\circ}_{7/2} - 27257_{7/2}$
18082.856	4		5528.590	$6691^{\circ}_{3/2} - 12219_{3/2}$	15877.380	0		6296.548	$21297^{\circ}_{5/2} - 27593_{5/2}$
18075.163	1		5530.943	$9711_{7/2} - 15242^{\circ}_{9/2}$	15843.848	0		6309.874	$9400_{5/2} - 15710^{\circ}_{3/2}$
17936.434	7		5573.722	$4146_{7/2} - 9720^{\circ}_{7/2}$	15815.492	6		6321.187	$9711_{7/2} - 16033^{\circ}_{5/2}$
17900.307	4		5584.971	$9720^{\circ}_{7/2} - 15305_{9/2}$	15767.555	3		6340.405	$13818^{\circ}_{7/2} - 20158_{5/2}$
17837.933	1		5604.500	$14275^{\circ}_{9/2} - 19880_{9/2}$	15747.955	1		6348.296	$12219_{3/2} - 18568^{\circ}_{1/2}$
17830.167	5		5606.941	$4113_{5/2} - 9720^{\circ}_{7/2}$	15706.454	2		6365.070	$4490^{\circ}_{5/2} - 10855_{7/2}$
17795.604	3		5617.831	$12219_{3/2} - 17837^{\circ}_{1/2}$	15698.032	0		6368.485	$20120^{\circ}_{5/2} - 26488_{5/2}$
17721.115	4		5641.445	$8460_{3/2} - 14101^{\circ}_{1/2}$	15640.438	5		6391.936	$9061_{5/2} - 15453^{\circ}_{7/2}$
17705.162	3		5646.528	$12472^{\circ}_{5/2} - 18118_{3/2}$	15637.160	3		6393.276	$11725^{\circ}_{1/2} - 18118_{3/2}$
17699.808	0		5648.236	$23697^{\circ}_{7/2} - 29345_{5/2}$	15631.483	1		6395.598	$15710^{\circ}_{3/2} - 22106_{5/2}$
17535.396	0		5701.194	$23730^{\circ}_{9/2} - 29431_{7/2}$	15624.606	1		6398.413	$17983^{\circ}_{5/2} - 24381_{7/2}$
17534.504	5		5701.484	$11116^{\circ}_{7/2} - 16818_{7/2}$	15615.505	1		6402.142	$6168^{\circ}_{7/2} - 12570_{7/2}$
17507.525	0		5710.270	$25246_{9/2} - 30956^{\circ}_{9/2}$	15612.710	0		6403.288	$12570_{7/2} - 18973^{\circ}_{7/2}$
17462.260	3		5725.072	$13248_{9/2} - 18973^{\circ}_{7/2}$	15593.649	1		6411.115	$13468^{\circ}_{9/2} - 19880_{9/2}$
17456.286	0		5727.031	$19880_{9/2} - 25607^{\circ}_{9/2}$	15558.814	2		6425.469	$4146_{7/2} - 10572^{\circ}_{9/2}$
17455.753	0		5727.206	$24757^{\circ}_{9/2} - 30484_{11/2}$	15425.673	2		6480.928	$22106_{5/2} - 28587^{\circ}_{5/2}$
17447.564	3		5729.894	$9061_{5/2} - 14790^{\circ}_{7/2}$	15317.814	3		6526.563	$4146_{7/2} - 10673^{\circ}_{5/2}$
17413.587	2		5741.074	$9711_{7/2} - 15453^{\circ}_{7/2}$	15315.929	5		6527.366	$8018_{3/2} - 14545^{\circ}_{5/2}$
17405.417	3		5743.769	$9400_{5/2} - 15144^{\circ}_{3/2}$	15315.660	2		6527.481	$10379_{9/2} - 16906^{\circ}_{7/2}$
17346.089	1		5763.414	$12219_{3/2} - 17983^{\circ}_{5/2}$	15293.025	0		6537.142	$20989^{\circ}_{9/2} - 27526_{9/2}$
17244.366	1		5797.412	$22139^{\circ}_{9/2} - 27937_{11/2}$	15288.921	4		6538.897	$8605_{5/2} - 15144^{\circ}_{3/2}$
17235.699	1		5800.327	$13250_{5/2} - 19050^{\circ}_{3/2}$	15280.959	2		6542.304	$11576^{\circ}_{3/2} - 18118_{3/2}$
17229.251	0		5802.498	$20686^{\circ}_{5/2} - 26488_{5/2}$	15266.440	4		6548.526	$6700^{\circ}_{9/2} - 13248_{9/2}$
17208.215	8		5809.591	$1521_{5/2} - 7331^{\circ}_{5/2}$	15241.775	1		6559.123	$6691^{\circ}_{3/2} - 13250_{5/2}$
17155.413	1		5827.472	$23518^{\circ}_{7/2} - 29345_{5/2}$	15240.242	7		6559.783	$4113_{5/2} - 10673^{\circ}_{5/2}$
17030.220	3		5870.311	$6700^{\circ}_{9/2} - 12570_{7/2}$	15214.240	1		6570.994	$20686^{\circ}_{5/2} - 27257_{7/2}$
16958.427	1		5895.163	$15236_{3/2} - 21131^{\circ}_{3/2}$	15188.855	5		6581.976	$17727_{11/2} - 24309^{\circ}_{11/2}$
16956.701	2		5895.763	$15786_{5/2} - 21682^{\circ}_{7/2}$	15135.223	0		6605.299	$10855_{7/2} - 17460^{\circ}_{5/2}$
16941.790	0		5900.952	$7001_{3/2} - 12902^{\circ}_{3/2}$	15034.068	3		6649.742	$9061_{5/2} - 15710^{\circ}_{3/2}$
16912.370	1		5911.217	$21682^{\circ}_{7/2} - 27593_{5/2}$	15015.230	2		6658.085	$6244_{1/2} - 12902^{\circ}_{3/2}$
16906.064	0		5913.422	$23518^{\circ}_{7/2} - 29431_{7/2}$	15013.595	0		6658.810	$17722^{\circ}_{9/2} - 24381_{7/2}$
16890.066	5		5919.023	$7331^{\circ}_{5/2} - 13250_{5/2}$	15009.909	2		6660.445	$22685^{\circ}_{7/2} - 29345_{5/2}$
16520.919	3		6051.279	$10855_{7/2} - 16906^{\circ}_{7/2}$	14970.942	1		6677.781	$12570_{7/2} - 19248^{\circ}_{5/2}$
16518.765	3		6052.068	$9400_{5/2} - 15453^{\circ}_{7/2}$	14969.772	1		6678.303	$25246_{9/2} - 31924^{\circ}_{11/2}$
16495.017	0		6060.781	$15236_{3/2} - 21297^{\circ}_{5/2}$	14940.492	7		6691.391	$0_{3/2} - 6691^{\circ}_{3/2}$
16492.394	2		6061.745	$13818^{\circ}_{7/2} - 19880_{9/2}$	14939.197	1		6691.971	$12902^{\circ}_{3/2} - 19594_{1/2}$
16477.433	2		6067.249	$9238^{\circ}_{9/2} - 15305_{9/2}$	14920.495	3		6700.359	$16818_{7/2} - 23518^{\circ}_{7/2}$
16453.368	0		6076.123	$20686^{\circ}_{5/2} - 26762_{3/2}$	14899.905	2		6709.618	$15305_{9/2} - 22014^{\circ}_{11/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
14739.988	0		6782.412	$14349_{1/2} - 21131^{\circ}_{3/2}$	13395.691	4		7463.046	$4113_{5/2} - 11576^{\circ}_{3/2}$
14699.723	2		6800.990	$16033^{\circ}_{5/2} - 22834^{\circ}_{7/2}$	13376.396	0		7473.811	$20120^{\circ}_{5/2} - 27593_{5/2}$
14690.666	0		6805.183	$20158_{5/2} - 26963^{\circ}_{7/2}$	13373.859	3		7475.229	$17771^{\circ}_{11/2} - 25246_{9/2}$
14672.400	0		6813.655	$18568^{\circ}_{1/2} - 25381_{3/2}$	13370.190	2		7477.280	$19880_{9/2} - 27357^{\circ}_{9/2}$
14633.086	3		6831.961	$13248_{9/2} - 20080^{\circ}_{7/2}$	13319.676	1		7505.637	$9400_{5/2} - 16906^{\circ}_{7/2}$
14627.874	4		6834.395	$15305_{9/2} - 22139^{\circ}_{9/2}$	13311.623	2		7510.178	$12570_{7/2} - 20080^{\circ}_{7/2}$
14579.735	6		6856.961	$1521_{5/2} - 8378^{\circ}_{7/2}$	13310.052	1		7511.064	$20120^{\circ}_{5/2} - 27631_{3/2}$
14565.023	0		6863.887	$8460_{3/2} - 15324^{\circ}_{1/2}$	13306.095	2		7513.298	$20080^{\circ}_{7/2} - 27593_{5/2}$
14557.004	4		6867.668	$10855_{7/2} - 17722^{\circ}_{9/2}$	13304.846	2		7514.003	$19248^{\circ}_{5/2} - 26762_{3/2}$
14508.948	1		6890.415	$19880_{9/2} - 26770^{\circ}_{11/2}$	13288.387	1		7523.310	$17722^{\circ}_{9/2} - 25246_{9/2}$
14503.235	6		6893.129	$10379_{9/2} - 17272^{\circ}_{9/2}$	13283.226	1		7526.233	$21297^{\circ}_{5/2} - 28823_{5/2}$
14472.395	1		6907.818	$20686^{\circ}_{5/2} - 27593_{5/2}$	13262.164	2		7538.186	$10189^{\circ}_{11/2} - 17727_{11/2}$
14462.402	0		6912.591	$16818_{7/2} - 23730^{\circ}_{9/2}$	13251.713	2		7544.131	$7001_{3/2} - 14545^{\circ}_{5/2}$
14433.541	1		6926.413	$8378^{\circ}_{7/2} - 15305_{9/2}$	13251.713	2		7544.131	$17837^{\circ}_{1/2} - 25381_{3/2}$
14360.388	0		6961.697	$15144^{\circ}_{3/2} - 22106_{5/2}$	13241.997	0		7549.666	$12570_{7/2} - 20120^{\circ}_{5/2}$
14343.260	6		6970.010	$4146_{7/2} - 11116^{\circ}_{7/2}$	13223.385	3		7560.292	$9711_{7/2} - 17272^{\circ}_{9/2}$
14339.066	2		6972.049	$9061_{5/2} - 16033^{\circ}_{5/2}$	13222.361	0		7560.878	$14545^{\circ}_{5/2} - 22106_{5/2}$
14275.223	0		7003.230	$4113_{5/2} - 11116^{\circ}_{7/2}$	13188.919	2		7580.049	$9238^{\circ}_{9/2} - 16818_{7/2}$
14224.305	0		7028.299	$12219_{3/2} - 19248^{\circ}_{5/2}$	13179.277	0		7585.595	$15786_{5/2} - 23372^{\circ}_{3/2}$
14159.556	0		7060.438	$13250_{5/2} - 20310^{\circ}_{5/2}$	13145.904	7		7604.852	$6213_{9/2} - 13818^{\circ}_{7/2}$
14070.742	5		7105.003	$8605_{5/2} - 15710^{\circ}_{3/2}$	13130.308	1		7613.885	$22106_{5/2} - 29720^{\circ}_{3/2}$
14043.929	1		7118.568	$15236_{3/2} - 22355^{\circ}_{1/2}$	13126.998	1		7615.805	$9202^{\circ}_{7/2} - 16818_{7/2}$
14028.205	3		7126.547	$8018_{3/2} - 15144^{\circ}_{3/2}$	13029.053	0		7673.056	$12485^{\circ}_{7/2} - 20158_{5/2}$
14025.216	2		7128.066	$10855_{7/2} - 17983^{\circ}_{5/2}$	13016.640	5		7680.373	$1521_{5/2} - 9202^{\circ}_{7/2}$
14007.683	1		7136.988	$20120^{\circ}_{5/2} - 27257_{7/2}$	13006.151	2		7686.567	$12472^{\circ}_{5/2} - 20158_{5/2}$
13972.014	1		7155.208	$10572^{\circ}_{9/2} - 17727_{11/2}$	13004.273	4		7687.677	$17727_{11/2} - 25414^{\circ}_{11/2}$
13895.433	3		7194.642	$9711_{7/2} - 16906^{\circ}_{7/2}$	12983.105	0		7700.211	$20310^{\circ}_{5/2} - 28011_{3/2}$
13836.909	0		7225.072	$15786_{5/2} - 23012^{\circ}_{3/2}$	12964.195	2		7711.443	$19050^{\circ}_{3/2} - 26762_{3/2}$
13822.377	0		7232.668	$9585^{\circ}_{5/2} - 16818_{7/2}$	12940.654	7		7725.471	$1859_{3/2} - 9585^{\circ}_{5/2}$
13811.481	4		7238.374	$20288^{\circ}_{11/2} - 27526_{9/2}$	12933.539	5		7729.721	$4490^{\circ}_{5/2} - 12219_{3/2}$
13788.405	1		7250.488	$8460_{3/2} - 15710^{\circ}_{3/2}$	12930.664	1		7731.440	$15786_{5/2} - 23518^{\circ}_{7/2}$
13778.916	6		7255.481	$6213_{9/2} - 13468^{\circ}_{9/2}$	12925.892	3		7734.294	$22139^{\circ}_{9/2} - 29873_{7/2}$
13777.235	1		7256.366	$12902^{\circ}_{3/2} - 20158_{5/2}$	12901.919	2		7748.665	$9711_{7/2} - 17460^{\circ}_{5/2}$
13756.558	2		7267.273	$22834_{7/2} - 30101^{\circ}_{7/2}$	12742.669	1		7845.503	$9061_{5/2} - 16906^{\circ}_{7/2}$
13709.552	1		7292.190	$22139^{\circ}_{9/2} - 29431_{7/2}$	12684.798	3		7881.296	$13250_{5/2} - 21131^{\circ}_{3/2}$
13699.211	3		7297.695	$23187^{\circ}_{13/2} - 30484_{11/2}$	12683.213	4		7882.281	$7828_{1/2} - 15710^{\circ}_{3/2}$
13665.979	0		7315.441	$14790^{\circ}_{7/2} - 22106_{5/2}$	12642.339	3		7907.765	$19880_{9/2} - 27787^{\circ}_{9/2}$
13664.604	3		7316.177	$7828_{1/2} - 15144^{\circ}_{3/2}$	12591.895	1		7939.444	$16818_{7/2} - 24757^{\circ}_{9/2}$
13654.606	0		7321.534	$18118_{3/2} - 25440^{\circ}_{5/2}$	12479.376	1		8011.029	$9711_{7/2} - 17722^{\circ}_{9/2}$
13636.063	5		7331.490	$0_{3/2} - 7331^{\circ}_{5/2}$	12468.606	1		8017.949	$11576^{\circ}_{3/2} - 19594_{1/2}$
13626.116	4		7336.842	$15305_{9/2} - 22642^{\circ}_{9/2}$	12458.068	1		8024.731	$19912^{\circ}_{13/2} - 27937_{11/2}$
13582.026	0		7360.659	$22513^{\circ}_{5/2} - 29873_{7/2}$	12421.310	1		8048.478	$21297^{\circ}_{5/2} - 29345_{5/2}$
13544.406	1		7381.103	$15453^{\circ}_{7/2} - 22834_{7/2}$	12402.749	1		8060.523	$9061_{5/2} - 17121^{\circ}_{3/2}$
13524.811	1		7391.797	$12488^{\circ}_{9/2} - 19880_{9/2}$	12400.331	3		8062.095	$6213_{9/2} - 14275^{\circ}_{9/2}$
13520.057	1		7394.396	$12485^{\circ}_{7/2} - 19880_{9/2}$	12398.153	2		8063.511	$1521_{5/2} - 9585^{\circ}_{5/2}$
13494.985	0		7408.134	$8378^{\circ}_{7/2} - 15786_{5/2}$	12372.484	4		8080.240	$4490^{\circ}_{5/2} - 12570_{7/2}$
13460.143	3		7427.310	$8605_{5/2} - 16033^{\circ}_{5/2}$	12356.076	2		8090.970	$12219_{3/2} - 20310^{\circ}_{5/2}$
13445.057	0		7435.644	$13250_{5/2} - 20686^{\circ}_{5/2}$	12318.487	1		8115.659	$12570_{7/2} - 20686^{\circ}_{5/2}$
13427.136	3		7445.568	$10673^{\circ}_{5/2} - 18118_{3/2}$	12285.424	1		8137.500	$20686^{\circ}_{5/2} - 28823_{5/2}$
13425.849	0		7446.282	$20080^{\circ}_{7/2} - 27526_{9/2}$	12276.652	1		8143.315	$7001_{3/2} - 15144^{\circ}_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
12251.360	0		8160.126	$22834_{7/2} - 30994^{\circ}_{7/2}$	11071.877	1		9029.419	$6213_{9/2} - 15242^{\circ}_{9/2}$
12244.970	3		8164.384	$16818_{7/2} - 24982^{\circ}_{7/2}$	11069.049	3		9031.726	$7001_{3/2} - 16033^{\circ}_{5/2}$
12200.702	1		8194.007	$18568^{\circ}_{1/2} - 26762_{3/2}$	11013.293	1		9077.450	$12219_{3/2} - 21297^{\circ}_{5/2}$
12194.157	8		8198.405	$1521_{5/2} - 9720^{\circ}_{7/2}$	11010.266	1		9079.946	$6244_{1/2} - 15324^{\circ}_{1/2}$
12170.869	0		8214.092	$21131^{\circ}_{3/2} - 29345_{5/2}$	10981.861	1		9103.431	$8018_{3/2} - 17121^{\circ}_{3/2}$
12136.565	1		8237.309	$22642^{\circ}_{9/2} - 30879_{7/2}$	10942.244	8		9136.391	$6213_{9/2} - 15349^{\circ}_{11/2}$
12102.779	1		8260.304	$17121^{\circ}_{3/2} - 25381_{3/2}$	10941.617	4		9136.914	$6168^{\circ}_{7/2} - 15305_{9/2}$
12087.362	2		8270.840	$6213_{9/2} - 14484^{\circ}_{11/2}$	10924.483	4		9151.245	$1521_{5/2} - 10673^{\circ}_{5/2}$
12086.503	3		8271.428	$9711_{7/2} - 17983^{\circ}_{5/2}$	10892.630	0		9178.005	$15236_{3/2} - 24414^{\circ}_{3/2}$
12043.786	1		8300.765	$8605_{5/2} - 16906^{\circ}_{7/2}$	10861.797	1		9204.059	$12902^{\circ}_{3/2} - 22106_{5/2}$
12011.883	0		8322.811	$7001_{3/2} - 15324^{\circ}_{1/2}$	10835.309	2w		9226.559	$20288^{\circ}_{11/2} - 29515_{9/2}$
12007.854	5		8325.604	$4146_{7/2} - 12472^{\circ}_{5/2}$	10834.611	2		9227.153	$15236_{3/2} - 24463^{\circ}_{5/2}$
11984.664	8		8341.714	$4146_{7/2} - 12488^{\circ}_{9/2}$	10820.075	5		9239.549	$6213_{9/2} - 15453^{\circ}_{7/2}$
11979.873	2		8345.050	$22139^{\circ}_{9/2} - 30484_{11/2}$	10794.056	3		9261.821	$9711_{7/2} - 18973^{\circ}_{7/2}$
11979.873	2		8345.050	$15786_{5/2} - 24132^{\circ}_{3/2}$	10790.541	0		9264.838	$10855_{7/2} - 20120^{\circ}_{5/2}$
11974.695	1		8348.658	$16033^{\circ}_{5/2} - 24381_{7/2}$	10757.771	0		9293.060	$7828_{1/2} - 17121^{\circ}_{3/2}$
11960.136	3		8358.821	$4113_{5/2} - 12472^{\circ}_{5/2}$	10740.457	1		9308.041	$10572^{\circ}_{9/2} - 19880_{9/2}$
11940.834	2		8372.333	$4113_{5/2} - 12485^{\circ}_{7/2}$	10723.921	7		9322.394	$4146_{7/2} - 13468^{\circ}_{9/2}$
11934.349	1		8376.882	$20969^{\circ}_{7/2} - 29345_{5/2}$	10660.847	3		9377.549	$8605_{5/2} - 17983^{\circ}_{5/2}$
11911.501	4		8392.950	$10855_{7/2} - 19248^{\circ}_{5/2}$	10658.585	1		9379.539	$18214^{\circ}_{3/2} - 27593_{5/2}$
11903.594	0		8398.525	$12570_{7/2} - 20969^{\circ}_{7/2}$	10642.859	1		9393.398	$13248_{9/2} - 22642^{\circ}_{9/2}$
11874.199	3		8419.316	$12570_{7/2} - 20989^{\circ}_{9/2}$	10605.455	4		9426.527	$25594^{\circ}_{1/2} - 35021_{3/2}$
11865.636	4		8425.392	$15305_{9/2} - 23730^{\circ}_{9/2}$	10595.992	0		9434.946	$13250_{5/2} - 22685^{\circ}_{7/2}$
11846.202	2		8439.214	$8378^{\circ}_{7/2} - 16818_{7/2}$	10587.588	1		9442.435	$8018_{3/2} - 17460^{\circ}_{5/2}$
11842.232	0		8442.043	$20989^{\circ}_{9/2} - 29431_{7/2}$	10576.600	1		9452.244	$15305_{9/2} - 24757^{\circ}_{9/2}$
11808.476	0		8466.176	$12219_{3/2} - 20686^{\circ}_{5/2}$	10572.824	1		9455.620	$10855_{7/2} - 20310^{\circ}_{5/2}$
11776.403	5		8489.233	$9238^{\circ}_{9/2} - 17727_{11/2}$	10560.617	1		9466.550	$6244_{1/2} - 15710^{\circ}_{3/2}$
11739.687	2		8515.783	$8605_{5/2} - 17121^{\circ}_{3/2}$	10539.400	1		9485.607	$10673^{\circ}_{5/2} - 20158_{5/2}$
11715.587	1		8533.301	$9585^{\circ}_{5/2} - 18118_{3/2}$	10538.316	2		9486.583	$7331^{\circ}_{5/2} - 16818_{7/2}$
11695.652	0		8547.846	$18214^{\circ}_{3/2} - 26762_{3/2}$	10483.360	4		9536.313	$9711_{7/2} - 19248^{\circ}_{5/2}$
11655.207	1		8577.508	$6213_{9/2} - 14790^{\circ}_{7/2}$	10429.665	6		9585.409	$0_{3/2} - 9585^{\circ}_{5/2}$
11648.639	1		8582.344	$11576^{\circ}_{3/2} - 20158_{5/2}$	10423.795	2		9590.807	$14790^{\circ}_{7/2} - 24381_{7/2}$
11631.948	3		8594.659	$10379_{9/2} - 18973^{\circ}_{7/2}$	10419.574	7		9594.692	$1521_{5/2} - 11116^{\circ}_{7/2}$
11594.834	0		8622.170	$16818_{7/2} - 25440^{\circ}_{5/2}$	10404.502	3		9608.591	$8605_{5/2} - 18214^{\circ}_{3/2}$
11542.494	3		8661.268	$8460_{3/2} - 17121^{\circ}_{3/2}$	10402.349	1		9610.580	$17983^{\circ}_{5/2} - 27593_{5/2}$
11521.827	2		8676.804	$15786_{5/2} - 24463^{\circ}_{5/2}$	10391.352	0		9620.750	$12485^{\circ}_{7/2} - 22106_{5/2}$
11515.375	0		8681.665	$16564^{\circ}_{11/2} - 25246_{9/2}$	10373.462	0		9637.342	$15236_{3/2} - 24873^{\circ}_{5/2}$
11478.678	2		8709.420	$7001_{3/2} - 15710^{\circ}_{3/2}$	10359.998	3		9649.867	$9400_{5/2} - 19050^{\circ}_{3/2}$
11455.648	1u		8726.929	$12570_{7/2} - 21297^{\circ}_{5/2}$	10356.372	2		9653.246	$15786_{5/2} - 25440^{\circ}_{5/2}$
11412.071	2		8760.253	$4490^{\circ}_{5/2} - 13250_{5/2}$	10316.006	1		9691.018	$10189^{\circ}_{11/2} - 19880_{9/2}$
11387.846	1		8778.888	$17983^{\circ}_{5/2} - 26762_{3/2}$	10304.810	2		9701.547	$10379_{9/2} - 20080^{\circ}_{7/2}$
11374.713	6		8789.024	$4113_{5/2} - 12902^{\circ}_{3/2}$	10301.161	6		9704.984	$4113_{5/2} - 13818^{\circ}_{7/2}$
11290.238	0		8854.785	$8605_{5/2} - 17460^{\circ}_{5/2}$	10288.987	4		9716.467	$1859_{3/2} - 11576^{\circ}_{3/2}$
11252.925	1		8884.146	$20989^{\circ}_{9/2} - 29873_{7/2}$	10249.314	1		9754.077	$8460_{3/2} - 18214^{\circ}_{3/2}$
11244.310	2d		8890.952	$13248_{9/2} - 22139^{\circ}_{9/2}$	10247.419	1		9755.881	$17771^{\circ}_{11/2} - 27526_{9/2}$
11232.320	2		8900.443	$6244_{1/2} - 15144^{\circ}_{3/2}$	10244.986	1		9758.198	$22014^{\circ}_{11/2} - 31773_{9/2}$
11204.818	2		8922.289	$9061_{5/2} - 17983^{\circ}_{5/2}$	10241.463	2		9761.555	$13250_{5/2} - 23012^{\circ}_{3/2}$
11202.078	1		8924.471	$17837^{\circ}_{1/2} - 26762_{3/2}$	10219.382	2		9782.646	$14349_{1/2} - 24132^{\circ}_{3/2}$
11186.716	0		8936.727	$20158_{5/2} - 29095^{\circ}_{5/2}$	10208.285	0		9793.281	$20080^{\circ}_{7/2} - 29873_{7/2}$
11107.735	0		9000.271	$8460_{3/2} - 17460^{\circ}_{5/2}$	10197.163	0		9803.962	$17722^{\circ}_{9/2} - 27526_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
10180.909	0		9819.614	$8018_{3/2} - 17837^{\circ}_{1/2}$	9362.640	1		10677.819	$9202^{\circ}_{7/2} - 19880_{9/2}$
10169.296	2		9830.828	$10855_{7/2} - 20686^{\circ}_{5/2}$	9360.989	2		10679.702	$9400_{5/2} - 20080^{\circ}_{7/2}$
10133.559	7		9865.497	$1859_{3/2} - 11725^{\circ}_{1/2}$	9349.246	1		10693.116	$6213_{9/2} - 16906^{\circ}_{7/2}$
10085.323	1		9912.681	$9061_{5/2} - 18973^{\circ}_{7/2}$	9346.644	1	2	10696.092	$22513^{\circ}_{5/2} - 33209_{7/2}$
10045.996	0		9951.486	$15236_{3/2} - 25188^{\circ}_{3/2}$	9311.053	2	4	10736.978	$30310^{\circ}_{11/2} - 41047_{9/2}$
10032.174	1		9965.197	$8018_{3/2} - 17983^{\circ}_{5/2}$	9292.242	2	2	10758.713	$35593^{\circ}_{7/2} - 46352_{7/2}$
9993.866	2		10003.395	$15242^{\circ}_{9/2} - 25246_{9/2}$	9267.686	2		10787.220	$7331^{\circ}_{5/2} - 18118_{3/2}$
9988.024	2		10009.246	$7828_{1/2} - 17837^{\circ}_{1/2}$	9267.082	3		10787.923	$8460_{3/2} - 19248^{\circ}_{5/2}$
9943.061	6		10054.508	$1521_{5/2} - 11576^{\circ}_{3/2}$	9253.268	1	3	10804.028	$20969^{\circ}_{7/2} - 31773_{9/2}$
9926.172	0		10071.616	$12570_{7/2} - 22642^{\circ}_{9/2}$	9252.860	0		10804.504	$18118_{3/2} - 28923^{\circ}_{5/2}$
9892.187	0		10106.217	$14275^{\circ}_{9/2} - 24381_{7/2}$	9249.887	5	4	10807.977	$27357^{\circ}_{9/2} - 38165_{7/2}$
9890.522	1		10107.918	$8460_{3/2} - 18568^{\circ}_{1/2}$	9245.253	10	5	10813.394	$20158_{5/2} - 30972^{\circ}_{5/2}$
9888.819	0		10109.659	$15305_{9/2} - 25414^{\circ}_{11/2}$	9233.267	3	75	10827.431	$10855_{7/2} - 21682^{\circ}_{7/2}$
9880.782	2		10117.882	$6700^{\circ}_{9/2} - 16818_{7/2}$	9226.409	0	5	10835.479	$20158_{5/2} - 30994^{\circ}_{7/2}$
9878.520	2		10120.199	$7001_{3/2} - 17121^{\circ}_{3/2}$	9225.657	1	2	10836.363	$14545^{\circ}_{5/2} - 25381_{3/2}$
9876.688	0		10122.076	$13250_{5/2} - 23372^{\circ}_{3/2}$					$7001_{3/2} - 17837^{\circ}_{1/2}$
9869.929	0		10129.008	$4146_{7/2} - 14275^{\circ}_{9/2}$	9164.081	0	8	10909.175	$26770^{\circ}_{11/2} - 37679_{11/2}$
9864.597	2	8	10134.483	$10855_{7/2} - 20989^{\circ}_{9/2}$	9157.414	2	20	10917.117	$14349_{1/2} - 25266^{\circ}_{1/2}$
9863.866	1		10135.234	$12219_{3/2} - 22355^{\circ}_{1/2}$	9133.422	0	5	10945.794	$33354^{\circ}_{5/2} - 44300_{3/2}$
9834.008	3		10166.006	$17771^{\circ}_{11/2} - 27937_{11/2}$					$30101^{\circ}_{7/2} - 41047_{9/2}$
9817.034	3h	3	10183.583	$19248^{\circ}_{5/2} - 29431_{7/2}$	9129.691	3	5	10950.268	$1521_{5/2} - 12472^{\circ}_{5/2}$
9780.808	1	1	10221.301	$19880_{9/2} - 30101^{\circ}_{7/2}$	9124.513	2	4	10956.482	$9202^{\circ}_{7/2} - 20158_{5/2}$
9734.696	1		10269.718	$13248_{9/2} - 23518^{\circ}_{7/2}$	9119.627	200	100	10962.352	$16564^{\circ}_{11/2} - 27526_{9/2}$
9663.062	0		10345.849	$12488^{\circ}_{9/2} - 22834_{7/2}$	9118.418	4	5	10963.805	$1521_{5/2} - 12485^{\circ}_{7/2}$
9651.502	4	2	10358.241	$15236_{3/2} - 25594^{\circ}_{1/2}$	9113.459	2	10	10969.771	$16818_{7/2} - 27787^{\circ}_{9/2}$
9642.471	4		10367.942	$8605_{5/2} - 18973^{\circ}_{7/2}$	9112.672	2	15	10970.718	$14275^{\circ}_{9/2} - 25246_{9/2}$
9613.689	5		10398.982	$4146_{7/2} - 14545^{\circ}_{5/2}$	9109.777	2	10	10974.205	$9711_{7/2} - 20686^{\circ}_{5/2}$
9583.076	3		10432.201	$4113_{5/2} - 14545^{\circ}_{5/2}$	9107.667	2	15	10976.747	$18118_{3/2} - 29095^{\circ}_{5/2}$
9578.636	0	5	10437.037	$22139^{\circ}_{9/2} - 32576_{7/2}$	9103.998	1	4	10981.171	$26963^{\circ}_{7/2} - 37945_{5/2}$
9577.344	3		10438.445	$9720^{\circ}_{7/2} - 20158_{5/2}$	9103.341	3	5	10981.964	$7001_{3/2} - 17983^{\circ}_{5/2}$
9560.574	1	2	10456.755	$21297^{\circ}_{5/2} - 31754_{5/2}$	9096.811	1	3	10989.847	$11116^{\circ}_{7/2} - 22106_{5/2}$
9558.370	1	2	10459.166	$7001_{3/2} - 17460^{\circ}_{5/2}$	9072.260	5	40	11019.587	$9061_{5/2} - 20080^{\circ}_{7/2}$
9519.819	0	5	10501.521	$26963^{\circ}_{7/2} - 37465_{5/2}$	9066.096	20	40	11027.079	$6700^{\circ}_{9/2} - 17727_{11/2}$
9494.041	1		10530.034	$11576^{\circ}_{3/2} - 22106_{5/2}$	9062.545	100	150	11031.400	$4113_{5/2} - 15144^{\circ}_{3/2}$
9483.850	0		10541.349	$18973^{\circ}_{7/2} - 29515_{9/2}$	9053.468	150	75	11042.460	$1859_{3/2} - 12902^{\circ}_{3/2}$
9477.269	1	10	10548.669	$23730^{\circ}_{9/2} - 34279_{7/2}$	9046.321	0	5	11051.184	$35165^{\circ}_{13/2} - 46216_{11/2}$
9456.023	0		10572.370	$19912^{\circ}_{13/2} - 30484_{11/2}$	9040.106	50	75	11058.781	$6213_{9/2} - 17272^{\circ}_{9/2}$
9455.297	0	15w	10573.182	$20686^{\circ}_{5/2} - 31259_{5/2}$	9038.675	4	15	11060.532	$13248_{9/2} - 24309^{\circ}_{11/2}$
9439.854	0		10590.479	$8460_{3/2} - 19050^{\circ}_{3/2}$	9032.634	0	8	11067.929	$22834_{7/2} - 33902^{\circ}_{7/2}$
9432.280	3		10598.983	$9711_{7/2} - 20310^{\circ}_{5/2}$	8974.923	1		11139.099	$20120^{\circ}_{5/2} - 31259_{5/2}$
9420.493	2d		10612.244	$1859_{3/2} - 12472^{\circ}_{5/2}$	8974.326	0	5	11139.840	$27249^{\circ}_{7/2} - 38389_{7/2}$
9398.155	2	4	10637.468	$15786_{5/2} - 26424^{\circ}_{5/2}$	8964.041	2	20	11152.621	$12219_{3/2} - 23372^{\circ}_{3/2}$
9394.096	0		10642.064	$9238^{\circ}_{9/2} - 19880_{9/2}$	8957.972	10	100	11160.177	$12570_{7/2} - 23730^{\circ}_{9/2}$
9393.770	1		10642.433	$8605_{5/2} - 19248^{\circ}_{5/2}$	8954.817	1	2	11164.109	$13250_{5/2} - 24414^{\circ}_{3/2}$
9392.016	1		10644.421	$4146_{7/2} - 14790^{\circ}_{7/2}$	8935.812	1	10	11187.853	$15236_{3/2} - 26424^{\circ}_{5/2}$
9374.051	0		10664.821	$17272^{\circ}_{9/2} - 27937_{11/2}$	8929.834	0	5	11195.343	$35156^{\circ}_{5/2} - 46352_{7/2}$
9366.743	0d		10673.141	$0_{3/2} - 10673^{\circ}_{5/2}$	8928.630	3	2	11196.852	$32576_{7/2} - 43773^{\circ}_{7/2}$
9362.794	0		10677.643	$4113_{5/2} - 14790^{\circ}_{7/2}$	8902.210	1	3	11230.082	$8018_{3/2} - 19248^{\circ}_{5/2}$
9362.794	0		10677.643	$14349_{1/2} - 25027^{\circ}_{1/2}$	8887.781	1	3	11248.314	$22106_{5/2} - 33354^{\circ}_{5/2}$
9362.685	2	20	10677.767	$34212^{\circ}_{5/2} - 44889_{3/2}$	8880.875	1	2	11257.061	$9711_{7/2} - 20969^{\circ}_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
8864.494	2	3	11277.863	$9711_{7/2} - 20989^{\circ}_{9/2}$	8403.787	100	300	11896.128	$12485^{\circ}_{7/2} - 24381_{7/2}$
8842.067	15	2	11306.468	$4146_{7/2} - 15453^{\circ}_{7/2}$	8403.556	15	15	11896.455	$9400_{5/2} - 21297^{\circ}_{5/2}$
8826.334	0	5	11326.622	$24414^{\circ}_{3/2} - 35741_{5/2}$	8399.688	5s	2	11901.933	$26965^{\circ}_{3/2} - 38867_{1/2}$
8816.161	8	40	11339.692	$4113_{5/2} - 15453^{\circ}_{7/2}$	8397.074	2	5	11905.638	$18973^{\circ}_{7/2} - 30879_{7/2}$
8798.457	1	5	11362.509	$17983^{\circ}_{5/2} - 29345_{5/2}$	8394.722	0	8	11908.974	$44177_{11/2} - 56086^{\circ}_{9/2}$
8784.553	40	50	11380.493	$1521_{5/2} - 12902^{\circ}_{3/2}$	8392.547	2	50	11912.060	$12219_{3/2} - 24132^{\circ}_{3/2}$
8777.333	1	3	11389.854	$15236_{3/2} - 26626^{\circ}_{1/2}$	8391.218	0	8	11913.947	$24414^{\circ}_{3/2} - 36328_{3/2}$
8757.977	0	5	11415.027	$24463^{\circ}_{5/2} - 35878_{7/2}$	8387.089	150	200	11919.812	$4113_{5/2} - 16033^{\circ}_{5/2}$
8749.761	1	1	11425.746	$16818_{7/2} - 28243^{\circ}_{5/2}$	8351.367	3	8	11970.798	$9711_{7/2} - 21682^{\circ}_{7/2}$
8745.509	2	2	11431.301	$32957^{\circ}_{7/2} - 44388_{5/2}$	8351.052	2	8	11971.249	$17460^{\circ}_{5/2} - 29431_{7/2}$
8736.376	1	3	11443.251	$20310^{\circ}_{5/2} - 31754_{5/2}$	8342.686	2	5	11983.254	$28587^{\circ}_{5/2} - 40570_{7/2}$
8721.653	8	100	11462.568	$15786_{5/2} - 27249^{\circ}_{7/2}$	8321.156	0	10	12014.259	$15242^{\circ}_{9/2} - 27257_{7/2}$
8719.623	5	50	11465.237	$15305_{9/2} - 26770^{\circ}_{11/2}$	8313.535	4	2	12025.272	$25440^{\circ}_{5/2} - 37465_{5/2}$
8698.591	10	4	11492.958	$33902^{\circ}_{7/2} - 45395_{7/2}$	8310.076	1	10	12030.278	$22513^{\circ}_{5/2} - 34543_{5/2}$
8695.106	2	1	11497.564	$22139^{\circ}_{9/2} - 33637_{7/2}$	8302.576	2	15	12041.145	$22685^{\circ}_{7/2} - 34726_{7/2}$
8688.761	2w	1	11505.960	$22513^{\circ}_{5/2} - 34019_{3/2}$	8295.021	4	15	12052.112	$15305_{9/2} - 27357^{\circ}_{9/2}$
8686.605	3	10	11508.816	$13248_{9/2} - 24757^{\circ}_{9/2}$	8282.232	5	15	12070.722	$9061_{5/2} - 21131^{\circ}_{3/2}$
8686.074	10	25	11509.520	$6213_{9/2} - 17722^{\circ}_{9/2}$	8280.974	1	8	12072.556	$25607^{\circ}_{9/2} - 37679_{11/2}$
8682.441	3	8	11514.336	$8605_{5/2} - 20120^{\circ}_{5/2}$	8263.029	0	8	12098.774	$30101^{\circ}_{7/2} - 42200_{9/2}$
8629.132	8	40w	11585.469	$9711_{7/2} - 21297^{\circ}_{5/2}$	8258.994	4	3	12104.685	$33384_{9/2} - 45489^{\circ}_{9/2}$
8628.062	1	4	11586.905	$20989^{\circ}_{9/2} - 32576_{7/2}$	8242.406	0	8	12129.045	$35602^{\circ}_{11/2} - 47731_{9/2}$
8621.818	2	1	11595.297	$32957^{\circ}_{7/2} - 44552_{5/2}$	8241.355	2	15	12130.592	$22139^{\circ}_{9/2} - 34270_{9/2}$
8620.179	10	15	11597.501	$4113_{5/2} - 15710^{\circ}_{3/2}$	8236.320	5	2	12138.008	$35593^{\circ}_{7/2} - 47731_{9/2}$
8617.110	2	8	11601.632	$18118_{3/2} - 29720^{\circ}_{3/2}$	8235.216	0	5	12139.635	$22139^{\circ}_{9/2} - 34279_{7/2}$
8600.910	3	10	11623.484	$13250_{5/2} - 24873^{\circ}_{5/2}$	8221.233	0	5	12160.282	$25414^{\circ}_{11/2} - 37575_{13/2}$
8599.731	10	25	11625.077	$9061_{5/2} - 20686^{\circ}_{5/2}$	8220.764	3	10	12160.976	$10673^{\circ}_{5/2} - 22834_{7/2}$
8597.434	5	10	11628.183	$22642^{\circ}_{9/2} - 34270_{9/2}$	8217.219	75	150	12166.223	$13248_{9/2} - 25414^{\circ}_{11/2}$
8591.828	200	300	11635.770	$10379_{9/2} - 22014^{\circ}_{11/2}$	8216.352	0	15	12167.506	$35156^{\circ}_{5/2} - 47324_{5/2}$
8590.751	2	40	11637.229	$22642^{\circ}_{9/2} - 34279_{7/2}$	8203.190	200	100	12187.029	$12570_{7/2} - 24757^{\circ}_{9/2}$
8587.629	5	50	11641.459	$20158_{5/2} - 31800^{\circ}_{7/2}$	8198.067	1	1	12194.645	$12219_{3/2} - 24414^{\circ}_{3/2}$
8582.539	2		11648.364	$25414^{\circ}_{11/2} - 37063_{9/2}$	8184.393	1	10	12215.019	$26647^{\circ}_{13/2} - 38862_{11/2}$
8580.560	2	1	11651.050	$24414^{\circ}_{3/2} - 36065_{5/2}$	8182.265	5	8	12218.196	$37277_{7/2} - 49495^{\circ}_{9/2}$
8568.203	10	150	11667.853	$18816^{\circ}_{13/2} - 30484_{11/2}$	8181.307	2	10	12219.626	$20989^{\circ}_{9/2} - 33209_{7/2}$
8531.872	3	5	11717.538	$11116^{\circ}_{7/2} - 22834_{7/2}$	8178.203	4	20	12224.264	$17121^{\circ}_{3/2} - 29345_{5/2}$
8523.848	2	4	11728.568	$15236_{3/2} - 26965^{\circ}_{3/2}$	8177.169	5	15	12225.810	$8460_{3/2} - 20686^{\circ}_{5/2}$
8522.191	2	5	11730.849	$9400_{5/2} - 21131^{\circ}_{3/2}$	8170.181	3	5	12236.267	$9061_{5/2} - 21297^{\circ}_{5/2}$
8521.409	2	25	11731.925	$13250_{5/2} - 24982^{\circ}_{7/2}$	8166.441	150	100	12241.871	$1859_{3/2} - 14101^{\circ}_{1/2}$
8512.591	5h	50	11744.078	$17771^{\circ}_{11/2} - 29515_{9/2}$	8165.733	4	4	12242.932	$17272^{\circ}_{9/2} - 29515_{9/2}$
8500.667	50	75	11760.551	$10379_{9/2} - 22139^{\circ}_{9/2}$	8165.153	8h	8	12243.802	$12219_{3/2} - 24463^{\circ}_{5/2}$
8498.514	2	5	11763.531	$26965^{\circ}_{3/2} - 38728_{5/2}$	8163.117	100	150	12246.855	$7001_{3/2} - 19248^{\circ}_{5/2}$
8496.718	8	4	11766.017	$22513^{\circ}_{5/2} - 34279_{7/2}$	8152.391	8	40	12262.968	$10379_{9/2} - 22642^{\circ}_{9/2}$
8481.756	2	4	11786.773	$10855_{7/2} - 22642^{\circ}_{9/2}$	8150.530	0	8	12265.768	$20310^{\circ}_{5/2} - 32576_{7/2}$
8477.916	20	150	11792.111	$43246_{7/2} - 55038^{\circ}_{9/2}$	8145.474	2	5	12273.382	$20686^{\circ}_{5/2} - 32959_{3/2}$
8453.046	2h	1	11826.805	$24982^{\circ}_{7/2} - 36809_{7/2}$	8139.896	75	100	12281.792	$9400_{5/2} - 21682^{\circ}_{7/2}$
8452.387	4	2	11827.727	$39396^{\circ}_{7/2} - 51224_{9/2}$	8130.213	15	8	12296.420	$1521_{5/2} - 13818^{\circ}_{7/2}$
8450.675	75b	150	11830.123	$10855_{7/2} - 22685^{\circ}_{7/2}$	8127.630	2	8	12300.327	$15710^{\circ}_{3/2} - 28011_{3/2}$
8436.118	0	5	11850.537	$32957^{\circ}_{7/2} - 44807_{7/2}$	8125.514	1	3	12303.531	$12570_{7/2} - 24873^{\circ}_{5/2}$
8412.973	4	25	11883.139	$15710^{\circ}_{3/2} - 27593_{5/2}$	8123.655	2	5	12306.346	$10379_{9/2} - 22685^{\circ}_{7/2}$
8410.532	25	25	11886.588	$4146_{7/2} - 16033^{\circ}_{5/2}$	8112.024	1	1	12323.991	$6244_{1/2} - 18568^{\circ}_{1/2}$
8405.770	3	8	11893.322	$12570_{7/2} - 24463^{\circ}_{3/2}$	8082.673	5	4	12368.743	$23372^{\circ}_{3/2} - 35741_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
8054.524	10	50	12411.970	$12570_{7/2} - 24982^{\circ}_{7/2}$	7743.934	5	25	12909.780	$12472^{\circ}_{5/2} - 25381_{3/2}$
8053.584	1	8	12413.418	$35593^{\circ}_{9/2} - 48006_{9/2}$	7731.716	75	100	12930.181	$9711_{7/2} - 22642^{\circ}_{9/2}$
8053.010	1	10	12414.303	$22139^{\circ}_{9/2} - 34553_{9/2}$	7729.542	2	4	12933.818	$15786_{5/2} - 28720^{\circ}_{3/2}$
8036.828	20	10	12439.299	$16906^{\circ}_{7/2} - 29345_{5/2}$	7701.101	15	20	12981.583	$14275^{\circ}_{9/2} - 27257_{7/2}$
8020.742	2	2	12464.246	$25381_{3/2} - 37846^{\circ}_{5/2}$	7676.212	100	15	13023.674	$1521_{5/2} - 14545^{\circ}_{5/2}$
8015.626	25	300	12472.202	$0_{3/2} - 12472^{\circ}_{5/2}$	7637.767	1	3	13089.229	$20120^{\circ}_{5/2} - 33209_{7/2}$
7984.363	8	10	12521.037	$9585^{\circ}_{5/2} - 22106_{5/2}$	7633.890	2	4	13095.876	$20288^{\circ}_{11/2} - 33384_{9/2}$
7983.722	1	10	12522.042	$22139^{\circ}_{9/2} - 34661_{11/2}$	7624.311	5	8	13112.330	$9400_{5/2} - 22513^{\circ}_{5/2}$
7981.670	5	50	12525.261	$16906^{\circ}_{7/2} - 29431_{7/2}$	7623.565	5	5	13113.613	$8018_{3/2} - 21131^{\circ}_{3/2}$
7981.213	75	1	12525.978	$8605_{5/2} - 21131^{\circ}_{3/2}$	7623.440	1	1	13113.828	$9720^{\circ}_{7/2} - 22834_{7/2}$
7973.517	5	4	12538.068	$27357^{\circ}_{9/2} - 39895_{9/2}$	7620.586	3	4	13118.739	$7001_{3/2} - 20120^{\circ}_{5/2}$
7972.881	4h	50	12539.069	$22014^{\circ}_{11/2} - 34553_{9/2}$	7616.576	1	2	13125.646	$4146_{7/2} - 17272^{\circ}_{9/2}$
7945.845	0	5	12581.733	$27357^{\circ}_{9/2} - 39939_{11/2}$	7614.810	3	8	13128.690	$20080^{\circ}_{7/2} - 33209_{7/2}$
7945.057	5	50	12582.981	$17727_{11/2} - 30310^{\circ}_{11/2}$	7608.659	2	3	13139.303	$10379_{9/2} - 23518^{\circ}_{7/2}$
7936.475	2	15	12596.587	$21682^{\circ}_{7/2} - 34279_{7/2}$	7566.526	5	20	13212.467	$17272^{\circ}_{9/2} - 30484_{11/2}$
7934.889	0	8	12599.105	$21131^{\circ}_{3/2} - 33730_{5/2}$	7556.892	1	4	13229.311	$17727_{11/2} - 30956^{\circ}_{9/2}$
7933.275	2	4	12601.668	$17272^{\circ}_{9/2} - 29873_{7/2}$	7547.309	1	8	13246.108	$21297^{\circ}_{5/2} - 34543_{5/2}$
7928.939	4	40	12608.559	$16906^{\circ}_{7/2} - 29515_{9/2}$	7536.407	50	10	13265.270	$11116^{\circ}_{7/2} - 24381_{7/2}$
7914.333	0	5	12631.829	$29720^{\circ}_{3/2} - 42352_{5/2}$	7536.011	0	8	13265.967	$24309^{\circ}_{11/2} - 37575_{13/2}$
7896.427	5c	40	12660.472	$14101^{\circ}_{1/2} - 26762_{3/2}$	7534.224	3	2	13269.113	$1521_{5/2} - 14790^{\circ}_{7/2}$
7894.776	4	20	12663.120	$10855_{7/2} - 23518^{\circ}_{7/2}$	7525.507	200	150	13284.483	$9400_{5/2} - 22685^{\circ}_{7/2}$
7892.892	3	5	12666.143	$22355^{\circ}_{1/2} - 35021_{3/2}$	7525.329	10	5	13284.797	$1859_{3/2} - 15144^{\circ}_{3/2}$
7891.743	3	8	12667.987	$8018_{3/2} - 20686^{\circ}_{5/2}$	7522.654	2	10	13289.521	$20989^{\circ}_{9/2} - 34279_{7/2}$
7883.986	1	8	12680.451	$28026_{5/2} - 40706^{\circ}_{7/2}$	7514.891	4	4	13303.250	$7828_{1/2} - 21131^{\circ}_{3/2}$
7880.761	4	8	12685.640	$1859_{3/2} - 14545^{\circ}_{5/2}$	7514.604	1	4	13303.758	$20080^{\circ}_{7/2} - 33384_{9/2}$
7877.057	15	50	12691.605	$8605_{5/2} - 21297^{\circ}_{5/2}$	7511.346	50	25	13309.528	$7001_{3/2} - 20310^{\circ}_{5/2}$
7875.448	8	100	12694.198	$15242^{\circ}_{9/2} - 27937_{11/2}$	7509.517	1	1	13312.770	$16033^{\circ}_{5/2} - 29345_{5/2}$
7871.284	4	1	12700.913	$39861^{\circ}_{5/2} - 52562_{7/2}$	7508.791	3		13314.057	$4146_{7/2} - 17460^{\circ}_{5/2}$
7853.482	0	15	12729.703	$17722^{\circ}_{9/2} - 30452_{9/2}$	7497.882	4	8	13333.428	$24132^{\circ}_{3/2} - 37465_{5/2}$
7849.616	8	150	12735.972	$14790^{\circ}_{7/2} - 27526_{9/2}$	7490.104	8	5	13347.274	$4113_{5/2} - 17460^{\circ}_{5/2}$
7836.703	0	5	12756.958	$25188^{\circ}_{3/2} - 37945_{5/2}$	7488.169	2	2	13350.723	$15236_{3/2} - 28587^{\circ}_{5/2}$
7836.081	1	5	12757.971	$12488^{\circ}_{9/2} - 25246_{9/2}$	7487.713	5	5	13351.536	$10379_{9/2} - 23730^{\circ}_{9/2}$
7835.266	2	40	12759.298	$22834_{7/2} - 35593^{\circ}_{9/2}$	7484.002	1	3	13358.156	$24463^{\circ}_{5/2} - 37821_{3/2}$
7834.805	2	10h	12760.049	$4146_{7/2} - 16906^{\circ}_{7/2}$	7483.374	2	8	13359.277	$22834_{7/2} - 36193^{\circ}_{9/2}$
7834.446	100	200	12760.633	$12485^{\circ}_{7/2} - 25246_{9/2}$	7479.821	3	15	13365.623	$23697^{\circ}_{7/2} - 37063_{9/2}$
7824.041	2	10	12777.603	$17771^{\circ}_{11/2} - 30548_{13/2}$	7454.096	2	4	13411.749	$21131^{\circ}_{3/2} - 34543_{5/2}$
7818.331	4	40	12786.935	$27787^{\circ}_{9/2} - 40574_{11/2}$	7439.086	8	8	13438.810	$13818^{\circ}_{7/2} - 27257_{7/2}$
7815.866	1	2	12790.968	$30223^{\circ}_{15/2} - 43014_{13/2}$	7438.494	2	8	13439.880	$22685^{\circ}_{7/2} - 36125_{9/2}$
7811.159	2	40	12798.676	$20158_{5/2} - 32957^{\circ}_{7/2}$					$23372^{\circ}_{3/2} - 36812_{1/2}$
7807.026	5	4	12805.451	$24982^{\circ}_{7/2} - 37787_{7/2}$	7437.708	2	5	13441.300	$22014^{\circ}_{11/2} - 35456_{9/2}$
7806.029	4	3	12807.087	$12219_{3/2} - 25027^{\circ}_{1/2}$	7431.680	4	2	13452.202	$9061_{5/2} - 22513^{\circ}_{5/2}$
7787.793	75b	200	12837.076	$8460_{3/2} - 21297^{\circ}_{5/2}$	7431.378	5	3	13452.749	$14484^{\circ}_{11/2} - 27937_{11/2}$
7786.444	2	5	12839.300	$20120^{\circ}_{5/2} - 32959_{3/2}$	7423.311	10	4	13467.368	$6691^{\circ}_{3/2} - 20158_{5/2}$
7784.608	2	50	12842.328	$10855_{7/2} - 23697^{\circ}_{7/2}$	7414.052	5	4	13484.187	$15236_{3/2} - 28720^{\circ}_{3/2}$
7777.302	0	5	12854.392	$30101^{\circ}_{7/2} - 42955_{9/2}$	7412.008	4	5	13487.905	$19248^{\circ}_{5/2} - 32736_{7/2}$
7773.429	2	1	12860.796	$21682^{\circ}_{7/2} - 34543_{5/2}$	7399.724	2	4	13510.296	$22014^{\circ}_{11/2} - 35525_{11/2}$
7767.173	0	8	12871.155	$21682^{\circ}_{7/2} - 34553_{9/2}$	7396.009	8	8	13517.082	$20120^{\circ}_{5/2} - 33637_{7/2}$
7764.645	3	10	12875.346	$10855_{7/2} - 23730^{\circ}_{9/2}$	7393.434	200	150	13521.790	$13248_{9/2} - 26770^{\circ}_{11/2}$
7748.368	2	3	12902.393	$0_{3/2} - 12902^{\circ}_{3/2}$	7389.264	20	3	13529.421	$14101^{\circ}_{1/2} - 27631_{3/2}$
7747.415	5	4	12903.980	$36581^{\circ}_{3/2} - 49485_{1/2}$	7380.156	8	8	13546.117	$16906^{\circ}_{7/2} - 30452_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
7359.069	2	8	13584.933	$20969^{\circ}_{7/2} - 34553_{9/2}$	7098.675	1	3	14083.253	$26963^{\circ}_{7/2} - 41047_{9/2}$
7358.347	50	20	13586.266	$12902^{\circ}_{3/2} - 26488_{5/2}$	7089.699	4		14101.083	$4113_{5/2} - 18214^{\circ}_{3/2}$
7354.610	2	3	13593.169	$20686^{\circ}_{5/2} - 34279_{7/2}$	7089.334	400	100	14101.809	$0_{3/2} - 14101^{\circ}_{1/2}$
7353.034	8		13596.083	$9238^{\circ}_{9/2} - 22834_{7/2}$	7087.595	0	5	14105.269	$24757^{\circ}_{9/2} - 38862_{11/2}$
7353.007	15	8	13596.133	$9238^{\circ}_{9/2} - 22834_{7/2}$	7084.983	2	10	14110.469	$22014^{\circ}_{11/2} - 36125_{9/2}$
7352.581	5		13596.920	$26770^{\circ}_{11/2} - 40367_{9/2}$	7078.262	5	4	14123.867	$22685^{\circ}_{7/2} - 36809_{7/2}$
7349.315	3	8	13602.963	$18973^{\circ}_{7/2} - 32576_{7/2}$	7075.331	200	150	14129.718	$11116^{\circ}_{7/2} - 25246_{9/2}$
7347.048	8	15	13607.160	$17272^{\circ}_{9/2} - 30879_{7/2}$	7075.003	5	4	14130.373	$7001_{3/2} - 21131^{\circ}_{3/2}$
7346.341	15	15	13608.469	$10855_{7/2} - 24463^{\circ}_{5/2}$	7053.614	300	75	14173.221	$1859_{3/2} - 16033^{\circ}_{5/2}$
7338.591	5	3	13622.841	$1521_{5/2} - 15144^{\circ}_{3/2}$	7045.795	400	150	14188.950	$15242^{\circ}_{9/2} - 29431_{7/2}$ $1521_{5/2} - 15710^{\circ}_{3/2}$
7337.775	15	8	13624.356	$9061_{5/2} - 22685^{\circ}_{7/2}$					
7332.015	3	3	13635.059	$15710^{\circ}_{3/2} - 29345_{5/2}$	7008.051	2	5	14265.368	$20288^{\circ}_{11/2} - 34553_{9/2}$
7323.851	4	5	13650.258	$20080^{\circ}_{7/2} - 33730_{5/2}$	6995.930	2	5	14290.084	$12472^{\circ}_{5/2} - 26762_{3/2}$
7312.255	2	4	13671.905	$20989^{\circ}_{9/2} - 34661_{11/2}$	6993.034	300	200	14296.002	$22513^{\circ}_{5/2} - 36809_{7/2}$
7308.515	5	8	13678.901	$15144^{\circ}_{3/2} - 28823_{5/2}$					$7001_{3/2} - 21297^{\circ}_{5/2}$
7305.397	100	75	13684.739	$7001_{3/2} - 20686^{\circ}_{5/2}$	6992.692	50	40	14296.701	$9400_{5/2} - 23697^{\circ}_{7/2}$
7292.669	5	5	13708.623	$13818^{\circ}_{7/2} - 27526_{9/2}$	6985.467	20	40	14311.488	$9061_{5/2} - 23372^{\circ}_{3/2}$
7289.438	3	8	13714.700	$13250_{5/2} - 26965^{\circ}_{3/2}$	6975.478	1	5	14331.982	$25607^{\circ}_{9/2} - 39939_{11/2}$
7257.189	4	4	13775.644	$13818^{\circ}_{7/2} - 27593_{5/2}$	6973.043	0	5	14336.987	$8018_{3/2} - 22355^{\circ}_{1/2}$
7250.587	15	20	13788.187	$13468^{\circ}_{9/2} - 27257_{7/2}$	6973.020	4	5	14337.034	$8018_{3/2} - 22355^{\circ}_{1/2}$
7240.981	5	2	13806.479	$9711_{7/2} - 23518^{\circ}_{7/2}$	6965.415	2	5	14352.687	$16906^{\circ}_{7/2} - 31259_{5/2}$
7225.125	20	5	13836.778	$4146_{7/2} - 17983^{\circ}_{5/2}$	6956.332	1	8	14371.428	$14349_{1/2} - 28720^{\circ}_{3/2}$
7217.759	150	50	13850.898	$1859_{3/2} - 15710^{\circ}_{3/2}$	6955.504	2	20	14373.139	$20288^{\circ}_{11/2} - 34661_{11/2}$
7216.158	4	4	13853.971	$12570_{7/2} - 26424^{\circ}_{5/2}$	6953.230	0	5	14377.839	$22685^{\circ}_{7/2} - 37063_{9/2}$
7195.955	5	5	13892.867	$15453^{\circ}_{7/2} - 29345_{5/2}$	6952.961	50	50	14378.396	$10379_{9/2} - 24757^{\circ}_{9/2}$
7194.925	3	5	13894.856	$8460_{3/2} - 22355^{\circ}_{1/2}$	6946.781	1	5	14391.187	$18568^{\circ}_{1/2} - 32959_{3/2}$
7191.128	500	300	13902.192	$10855_{7/2} - 24757^{\circ}_{9/2}$	6938.967	0	5	14407.393	$23697^{\circ}_{7/2} - 38105_{5/2}$
7188.415	3	2	13907.439	$8605_{5/2} - 22513^{\circ}_{5/2}$	6937.080	0	25	14411.312	$22642^{\circ}_{9/2} - 37053_{11/2}$
7187.438	2	4	13909.330	$14101^{\circ}_{1/2} - 28011_{3/2}$	6932.458	2	5	14420.920	$15453^{\circ}_{7/2} - 29873_{7/2}$
7181.902	1	3	13920.051	$16564^{\circ}_{11/2} - 30484_{11/2}$	6929.689	2	3	14426.682	$23518^{\circ}_{7/2} - 37945_{5/2}$
7179.048	1	8	13925.585	$24463^{\circ}_{5/2} - 38389_{7/2}$	6921.432	2	20	14443.893	$21297^{\circ}_{5/2} - 35741_{5/2}$
7176.719	25	25	13930.104	$10379_{9/2} - 24309^{\circ}_{11/2}$	6917.036	3	3	14453.072	$26770^{\circ}_{11/2} - 41223_{11/2}$
7176.184	20	10	13931.143	$1521_{5/2} - 15453^{\circ}_{7/2}$	6915.001	2b	8	14457.325	$9061_{5/2} - 23518^{\circ}_{7/2}$
7172.987	1	2	13937.352	$25414^{\circ}_{11/2} - 39352_{11/2}$	6910.690	1	3	14466.344	$20989^{\circ}_{9/2} - 35456_{9/2}$
7166.514	0	8	13949.940	$35545_{9/2} - 49495^{\circ}_{9/2}$	6909.845	100	200	14468.113	$13468^{\circ}_{9/2} - 27937_{11/2}$
7165.988	20	10	13950.964	$9061_{5/2} - 23012^{\circ}_{3/2}$	6907.384	2	5	14473.268	$20080^{\circ}_{7/2} - 34553_{9/2}$
7160.764	1	3	13961.142	$19248^{\circ}_{5/2} - 33209_{7/2}$	6903.086	2	40	14482.279	$23697^{\circ}_{7/2} - 38179_{9/2}$
7157.067	0	5	13968.353	$20310^{\circ}_{5/2} - 34279_{7/2}$	6902.652	5	2	14483.190	$15305_{9/2} - 29788^{\circ}_{9/2}$
7151.197	3	3	13979.819	$31924^{\circ}_{11/2} - 45904_{9/2}$	6898.146	0	8	14492.650	$23187^{\circ}_{13/2} - 37679_{11/2}$
7148.191	5	5	13985.698	$9711_{7/2} - 23697^{\circ}_{7/2}$	6891.087	1	3	14507.496	$28243^{\circ}_{5/2} - 42751_{7/2}$
7145.793	3	2	13990.391	$6168^{\circ}_{7/2} - 20158_{5/2}$	6889.297	300	200	14511.265	$1521_{5/2} - 16033^{\circ}_{5/2}$
7140.454	10	15	14000.852	$13248_{9/2} - 27249^{\circ}_{7/2}$	6888.720	10	3	14512.481	$25188^{\circ}_{3/2} - 39700_{5/2}$
7139.861	5	25	14002.015	$17771^{\circ}_{11/2} - 31773_{9/2}$	6877.881	1	10	14535.351	$20989^{\circ}_{9/2} - 35525_{11/2}$
7132.509	4h		14016.448	$12472^{\circ}_{5/2} - 26488_{5/2}$	6873.051	10	3	14545.566	$0_{3/2} - 14545^{\circ}_{5/2}$
7124.286	0	5	14032.626	$14790^{\circ}_{7/2} - 28823_{5/2}$	6870.154	2	2	14551.699	$8460_{3/2} - 23012^{\circ}_{3/2}$
7120.334	1	2	14040.414	$20686^{\circ}_{5/2} - 34726_{7/2}$	6869.274	2	5	14553.564	$24309^{\circ}_{11/2} - 38862_{11/2}$
7119.977	0	5	14041.118	$27357^{\circ}_{9/2} - 41398_{9/2}$	6868.638	2	3	14554.911	$14790^{\circ}_{7/2} - 29345_{5/2}$
7113.983	8	10	14052.949	$8460_{3/2} - 22513^{\circ}_{5/2}$	6854.496	10	15	14584.940	$10855_{7/2} - 25440^{\circ}_{5/2}$
7109.371	0	5	14062.065	$15453^{\circ}_{7/2} - 29515_{9/2}$	6851.210	1	5	14591.935	$22685^{\circ}_{7/2} - 37277_{7/2}$
7100.507	150	75	14079.619	$8605_{5/2} - 22685^{\circ}_{7/2}$	6850.531	5	40	14593.382	$17983^{\circ}_{5/2} - 32576_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
6845.852	3	4	14603.356	$10379_{9/2} - 24982^{\circ}_{7/2}$	6628.169	1	3	15082.957	$14790^{\circ}_{7/2} - 29873_{7/2}$
6845.132	1	2	14604.892	$24463^{\circ}_{5/2} - 39068_{7/2}$	6622.127	1	5	15096.719	$20969^{\circ}_{7/2} - 36065_{5/2}$
6832.885	5	20	14631.069	$15242^{\circ}_{9/2} - 29873_{7/2}$	6619.940	200	200	15101.706	$4146_{7/2} - 19248^{\circ}_{5/2}$
6832.196	2	3	14632.544	$17121^{\circ}_{3/2} - 31754_{5/2}$	6619.616	3	40	15102.445	$22685^{\circ}_{7/2} - 37787_{7/2}$
6812.762	40	750	14674.285	$10572^{\circ}_{9/2} - 25246_{9/2}$	6617.054	25	50	15108.293	$12485^{\circ}_{7/2} - 27593_{5/2}$
6810.539	40	100	14679.075	$12570_{7/2} - 27249^{\circ}_{7/2}$	6616.863	2	2	15108.729	$12902^{\circ}_{3/2} - 28011_{3/2}$
6804.731	8	20	14691.603	$12902^{\circ}_{3/2} - 27593_{5/2}$	6615.482	1	10	15111.883	$26770^{\circ}_{11/2} - 41882_{13/2}$
6796.776	10	10	14708.798	$10673^{\circ}_{3/2} - 25381_{3/2}$	6615.345	3	5	15112.196	$20288^{\circ}_{11/2} - 35400_{13/2}$
6792.470	1	2	14718.123	$24982^{\circ}_{7/2} - 39700_{5/2}$	6611.194	3	15	15121.684	$17837^{\circ}_{1/2} - 32959_{3/2}$
6789.687	1	3	14724.155	$14790^{\circ}_{7/2} - 29515_{9/2}$	6610.306	1	8	15123.716	$19050^{\circ}_{3/2} - 34174_{5/2}$
6786.360	2	8	14731.374	$18118_{3/2} - 32850^{\circ}_{5/2}$	6605.406	200	150	15134.935	$4113_{5/2} - 19248^{\circ}_{5/2}$
6784.629	1	2	14735.132	$24132^{\circ}_{3/2} - 38867_{1/2}$	6604.106	2	20	15137.914	$24757^{\circ}_{9/2} - 39895_{9/2}$
6784.159	1	2	14736.153	$19594_{1/2} - 34330^{\circ}_{1/2}$	6601.537	5	2	15143.805	$9238^{\circ}_{9/2} - 24381_{7/2}$
6779.987	15	10	14745.221	$12219_{3/2} - 26965^{\circ}_{3/2}$	6601.124	5	3	15144.752	$0_{3/2} - 15144^{\circ}_{3/2}$
6771.323	3	3	14764.088	$22513^{\circ}_{5/2} - 37277_{7/2}$	6594.891	2	4	15159.066	$12472^{\circ}_{5/2} - 27631_{3/2}$
6770.101	150	100	14766.752	$8605_{5/2} - 23372^{\circ}_{3/2}$	6593.606	3	10	15162.020	$9711_{7/2} - 24873^{\circ}_{5/2}$
6769.385	3l	15	14768.314	$21297^{\circ}_{5/2} - 36065_{5/2}$	6592.555	0	8	15164.437	$31259_{5/2} - 46423^{\circ}_{3/2}$
6769.126	4h	5	14768.879	$12488^{\circ}_{9/2} - 27257_{7/2}$	6591.790	0	8	15166.197	$23697^{\circ}_{7/2} - 38863_{5/2}$
6768.164	1	3	14770.979	$19248^{\circ}_{5/2} - 34019_{3/2}$	6585.996	3	8	15179.539	$9202^{\circ}_{7/2} - 24381_{7/2}$
6767.945	2	5	14771.456	$12485^{\circ}_{7/2} - 27257_{7/2}$	6584.276	8	3	15183.505	$7828_{1/2} - 23012^{\circ}_{3/2}$
6766.341	8	10	14774.958	$7331^{\circ}_{5/2} - 22106_{5/2}$	6583.585	5	4	15185.098	$28587^{\circ}_{5/2} - 43772_{5/2}$
6760.888	25	25	14786.875	$12570_{7/2} - 27357^{\circ}_{9/2}$	6583.310	8	100	15185.733	$44807_{7/2} - 59993^{\circ}_{9/2}$
6757.310	0	5	14794.704	$24757^{\circ}_{9/2} - 39552_{9/2}$	6578.923	2	2	15195.859	$25027^{\circ}_{1/2} - 40222_{3/2}$
6756.540	100b	75	14796.390	$9585^{\circ}_{5/2} - 24381_{7/2}$	6577.651	20	100	15198.797	$15349^{\circ}_{11/2} - 30548_{13/2}$
6742.493	8	5	14827.216	$4146_{7/2} - 18973^{\circ}_{7/2}$	6576.800	0	5	15200.764	$18973^{\circ}_{7/2} - 34174_{5/2}$
6737.643	50	8	14837.889	$25440^{\circ}_{5/2} - 40278_{3/2}$	6573.986	2	10	15207.271	$15786_{5/2} - 30994^{\circ}_{7/2}$
6732.242	3	3	14849.793	$17771^{\circ}_{11/2} - 32620_{11/2}$	6573.482	2	10	15208.437	$16564^{\circ}_{11/2} - 31773_{9/2}$
6725.376	3	1	14864.953	$27357^{\circ}_{9/2} - 42222_{7/2}$	6572.883	5	40	15209.823	$15242^{\circ}_{9/2} - 30452_{9/2}$
6715.181	25	8	14887.521	$6244_{1/2} - 21131^{\circ}_{3/2}$	6570.097	1	2	15216.272	$34279_{7/2} - 49495^{\circ}_{9/2}$
6704.048	50	25	14912.244	$8460_{3/2} - 23372^{\circ}_{3/2}$	6569.628	8	50	15217.358	$12570_{7/2} - 27787^{\circ}_{9/2}$
				$11576^{\circ}_{3/2} - 26488_{5/2}$					
					6569.057	5	2	15218.681	$29431_{7/2} - 44650^{\circ}_{7/2}$
6703.883	10	8	14912.611	$8605_{5/2} - 23518^{\circ}_{7/2}$	6566.192	0	8	15225.321	$34270_{9/2} - 49495^{\circ}_{9/2}$
6703.348	5		14913.801	$22139^{\circ}_{9/2} - 37053_{11/2}$	6565.909	3	8	15225.978	$17983^{\circ}_{5/2} - 33209_{7/2}$
6700.487	2	5	14920.169	$22642^{\circ}_{9/2} - 37562_{11/2}$	6561.566	1	4	15236.055	$18118_{3/2} - 33354^{\circ}_{5/2}$
6692.717	100	25	14937.491	$4113_{5/2} - 19050^{\circ}_{3/2}$	6561.462	0	5	15236.297	$26963^{\circ}_{7/2} - 42200_{9/2}$
6664.956	4h	5	14999.708	$15453^{\circ}_{7/2} - 30452_{9/2}$	6561.244	0	8	15236.803	$24463^{\circ}_{5/2} - 39700_{5/2}$
6662.624	10h	8	15004.958	$15305_{9/2} - 30310^{\circ}_{11/2}$	6560.055	15	200	15239.565	$14275^{\circ}_{9/2} - 29515_{9/2}$
6659.496	1h	2	15012.006	$22834_{7/2} - 37846^{\circ}_{5/2}$	6559.088	2	50	15241.811	$15242^{\circ}_{9/2} - 30484_{11/2}$
6651.164	2	3	15030.812	$14484^{\circ}_{11/2} - 29515_{9/2}$	6558.576	1	8	15243.001	$24309^{\circ}_{11/2} - 39552_{9/2}$
6651.058	2	3	15031.051	$19248^{\circ}_{5/2} - 34279_{7/2}$	6550.542	8	5	15261.696	$1859_{3/2} - 17121^{\circ}_{3/2}$
6651.000	1	2	15031.182	$21297^{\circ}_{5/2} - 36328_{3/2}$	6544.596	2	8	15275.562	$17460^{\circ}_{5/2} - 32736_{7/2}$
6648.956	50	50	15035.803	$10379_{9/2} - 25414^{\circ}_{11/2}$	6540.141	4	1	15285.967	$24414^{\circ}_{3/2} - 39700_{5/2}$
6648.496	50	50	15036.843	$11725^{\circ}_{1/2} - 26762_{3/2}$	6535.645	1	5	15296.483	$18973^{\circ}_{7/2} - 34270_{9/2}$
6647.693	2	5l	15038.660	$12488^{\circ}_{9/2} - 27526_{9/2}$	6532.223	5	20	15304.496	$17272^{\circ}_{9/2} - 32576_{7/2}$
6646.542	40	50	15041.264	$12485^{\circ}_{7/2} - 27526_{9/2}$	6531.769	0	8	15305.560	$18973^{\circ}_{7/2} - 34279_{7/2}$
6644.661	200	150	15045.522	$9711_{7/2} - 24757^{\circ}_{9/2}$	6529.947	0	40	15309.830	$25414^{\circ}_{11/2} - 40724_{13/2}$
6643.374	1	8	15048.436	$22014^{\circ}_{11/2} - 37063_{9/2}$	6520.938	4	8	15330.981	$23187^{\circ}_{13/2} - 38517_{13/2}$
6637.032	1	2	15062.816	$9400_{5/2} - 24463^{\circ}_{5/2}$	6518.963	1	5	15335.626	$25188^{\circ}_{3/2} - 40523_{1/2}$
6633.453	10	20	15070.943	$9061_{5/2} - 24132^{\circ}_{3/2}$	6518.439	3	5	15336.859	$13250_{5/2} - 28587^{\circ}_{5/2}$
6631.806	1	3	15074.686	$36193^{\circ}_{9/2} - 51268_{7/2}$	6511.356	5	15	15353.542	$9061_{5/2} - 24414^{\circ}_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
6511.256	3	10	15353.778	$7001_{3/2}^{\circ} - 22355_{1/2}^{\circ}$	6381.966	1	10l	15664.822	$22014_{11/2}^{\circ} - 37679_{11/2}$
6510.997	5	15	15354.388	$8018_{3/2} - 23372_{3/2}^{\circ}$	6379.795	2	10	15670.153	$16906_{7/2}^{\circ} - 32576_{7/2}$
6503.997	4	2	15370.914	$14349_{1/2} - 29720_{3/2}^{\circ}$	6379.170	5	10	15671.688	$8460_{3/2} - 24132_{3/2}^{\circ}$
6503.898	5	2	15371.148	$31800_{7/2}^{\circ} - 47171_{9/2}$	6378.756	4	10	15672.705	$13250_{5/2} - 28923_{5/2}^{\circ}$
6503.512	50	75	15372.060	$11116_{7/2}^{\circ} - 26488_{5/2}$	6378.494	1	5	15673.349	$12570_{7/2} - 28243_{5/2}^{\circ}$
6501.819	0	8	15376.063	$26770_{11/2}^{\circ} - 42146_{11/2}$	6377.495	2	50	15675.804	$23187_{13/2}^{\circ} - 38862_{11/2}$
6493.531	3	3	15395.688	$30956_{9/2}^{\circ} - 46352_{7/2}$	6368.957	8	8	15696.818	$13818_{7/2}^{\circ} - 29515_{9/2}$
				$31928_{3/2}^{\circ} - 47324_{5/2}$	6363.271	8	5	15710.844	$0_{3/2} - 15710_{3/2}^{\circ}$
6491.269	0	8	15401.053	$37277_{7/2} - 52678_{5/2}^{\circ}$	6359.132	15	100	15721.070	$16033_{5/2}^{\circ} - 31754_{5/2}$
6490.583	5	10	15402.680	$9061_{5/2} - 24463_{5/2}^{\circ}$	6358.623	8	100	15722.328	$19880_{9/2} - 35602_{11/2}^{\circ}$
6485.370	4	5	15415.061	$6691_{3/2}^{\circ} - 22106_{5/2}$	6356.218	2	8	15728.277	$9711_{7/2} - 25440_{5/2}^{\circ}$
6481.226	0	5	15424.917	$30310_{11/2}^{\circ} - 45735_{11/2}$	6353.285	1	5	15735.538	$15236_{3/2} - 30972_{5/2}^{\circ}$
6480.607	3	10	15426.390	$15453_{7/2}^{\circ} - 30879_{7/2}$	6348.559	2	50	15747.252	$22642_{9/2}^{\circ} - 38389_{7/2}$
6479.558	0	5	15428.888	$30956_{9/2}^{\circ} - 46385_{7/2}$	6348.435	1	5	15747.559	$17983_{5/2}^{\circ} - 33730_{5/2}$
6478.940	2	10	15430.360	$20310_{5/2}^{\circ} - 35741_{5/2}$	6347.103	8	40	15750.864	$35156_{5/2}^{\circ} - 50907_{3/2}$
6471.345	0	8	15448.469	$32850_{5/2}^{\circ} - 48298_{7/2}$	6343.157	0	5	15760.663	$23697_{7/2}^{\circ} - 39458_{7/2}$
6471.205	20	50	15448.803	$12488_{9/2}^{\circ} - 27937_{11/2}$	6339.442	0	40	15769.898	$27357_{9/2}^{\circ} - 43127_{11/2}$
6470.289	1	4	15450.990	$18568_{1/2}^{\circ} - 34019_{3/2}$	6332.510	5	20	15787.161	$35741_{5/2} - 51528_{3/2}^{\circ}$
6468.090	0	5	15456.243	$25188_{3/2}^{\circ} - 40644_{5/2}$					$9400_{5/2} - 25188_{3/2}^{\circ}$
6467.558	2	1	15457.515	$26762_{3/2} - 42219_{5/2}^{\circ}$	6330.804	0	5	15791.415	$25607_{9/2}^{\circ} - 41398_{9/2}$
6462.622	200b	200b	15469.321	$29720_{3/2}^{\circ} - 45189_{5/2}$	6328.754	4	3	15796.530	$9585_{5/2}^{\circ} - 25381_{3/2}$
6455.482	1	5	15486.430	$17722_{9/2}^{\circ} - 33209_{7/2}$	6325.432	1	10	15804.826	$18214_{3/2}^{\circ} - 34019_{3/2}$
6450.369	15	10	15498.706	$26647_{13/2}^{\circ} - 42146_{11/2}$	6324.598	0	8	15806.910	$31924_{11/2}^{\circ} - 47731_{9/2}$
6448.726	3	8	15502.654	$7331_{5/2}^{\circ} - 22834_{7/2}$	6323.837	5	8	15808.813	$8605_{5/2} - 24414_{3/2}^{\circ}$
6438.372	2	8	15527.585	$13818_{7/2}^{\circ} - 29345_{5/2}$	6322.204	2	4	15812.896	$9061_{5/2} - 24873_{5/2}^{\circ}$
6432.950	1	4	15540.672	$12485_{7/2}^{\circ} - 28026_{5/2}$	6321.159	3	10	15815.510	$10673_{5/2}^{\circ} - 26488_{5/2}$
6430.229	2	10	15547.248	$22028_{15/2}^{\circ} - 37575_{13/2}$	6315.533	0	8	15829.599	$16906_{7/2}^{\circ} - 32736_{7/2}$
6428.524	1	2	15551.372	$25440_{5/2}^{\circ} - 40991_{3/2}$	6312.668	0	5	15836.783	$20288_{11/2}^{\circ} - 36125_{9/2}$
6427.011	0	8	15555.033	$26963_{7/2}^{\circ} - 42518_{7/2}$	6311.278	1	5	15840.271	$20969_{7/2}^{\circ} - 36809_{7/2}$
6424.809	5	200	15560.364	$22014_{11/2}^{\circ} - 37575_{13/2}$	6309.451	1	4	15844.858	$18816_{13/2}^{\circ} - 34661_{11/2}$
6423.402	1	2	15563.772	$28243_{5/2}^{\circ} - 43807_{3/2}$	6309.414	2	4	15844.951	$13250_{5/2} - 29095_{3/2}^{\circ}$
6421.673	1	3	15567.963	$20310_{5/2}^{\circ} - 35878_{7/2}$	6304.239	20	40	15857.957	$8605_{5/2} - 24463_{5/2}^{\circ}$
6421.417	0	8	15568.583	$24132_{3/2}^{\circ} - 39700_{5/2}$	6304.087	0	5	15858.340	$33637_{7/2} - 49495_{9/2}^{\circ}$
6416.097	25	75	15581.492	$9400_{5/2} - 24982_{7/2}^{\circ}$	6299.795	1	1	15869.144	$36809_{7/2} - 52678_{5/2}^{\circ}$
6408.869	0	8	15599.065	$30956_{9/2}^{\circ} - 46555_{11/2}$	6289.483	5	20	15895.162	$9711_{7/2} - 25607_{9/2}^{\circ}$
6408.193	2	4	15600.711	$1859_{3/2} - 17460_{5/2}^{\circ}$	6285.277	40	100	15905.799	$11725_{1/2}^{\circ} - 27631_{3/2}$
6406.278	4	3	15605.374	$37130_{1/2}^{\circ} - 52735_{3/2}$	6279.164	100	200	15921.283	$12902_{3/2}^{\circ} - 28823_{5/2}$
6405.870	0	8	15606.368	$22685_{7/2}^{\circ} - 38291_{7/2}$	6277.232	25	50	15926.183	$6213_{9/2} - 22139_{9/2}^{\circ}$
6404.390	0	8	15609.974	$24757_{9/2}^{\circ} - 40367_{9/2}$	6274.115	300	200	15934.096	$4146_{7/2} - 20080_{7/2}^{\circ}$
6402.932	3	8	15613.529	$13818_{7/2}^{\circ} - 29431_{7/2}$	6269.591	2	8	15945.593	$20120_{5/2}^{\circ} - 36065_{5/2}$
6401.729	0	40	15616.463	$25607_{9/2}^{\circ} - 41223_{11/2}$	6269.172	0	5	15946.659	$29788_{9/2}^{\circ} - 45735_{11/2}$
6399.797	0	10	15621.177	$20120_{5/2}^{\circ} - 35741_{5/2}$	6268.765	0	8	15947.694	$24463_{5/2}^{\circ} - 40411_{7/2}$
6388.731	0	8	15648.235	$22139_{9/2}^{\circ} - 37787_{7/2}$	6266.172	75	50	15954.294	$8460_{3/2} - 24414_{3/2}^{\circ}$
6388.136	2	8	15649.692	$22642_{9/2}^{\circ} - 38291_{7/2}$	6261.060	200	200	15967.320	$4113_{5/2} - 20080_{7/2}^{\circ}$
6387.865	2	15	15650.356	$22106_{5/2} - 37756_{7/2}^{\circ}$	6258.600	20	50	15973.596	$4146_{7/2} - 20120_{5/2}^{\circ}$
6387.473	0	8	15651.317	$15305_{9/2} - 30956_{9/2}^{\circ}$	6256.923	2	4	15977.877	$1859_{3/2} - 17837_{1/2}^{\circ}$
6386.386	0	40	15653.981	$24757_{9/2}^{\circ} - 40411_{7/2}$	6256.112	3	2	15979.948	$21297_{5/2}^{\circ} - 37277_{7/2}$
6384.094	5	5	15659.601	$22834_{7/2} - 38493_{5/2}^{\circ}$	6248.115	2	10	16000.401	$14484_{11/2}^{\circ} - 30484_{11/2}$
6383.342	5	40	15661.445	$17722_{9/2}^{\circ} - 33384_{9/2}$	6247.117	3	5	16002.957	$8378_{7/2}^{\circ} - 24381_{7/2}$
6383.222	5	40	15661.740	$14790_{7/2}^{\circ} - 30452_{9/2}$	6246.924	4	5	16003.451	$8460_{3/2} - 24463_{5/2}^{\circ}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
6245.601	50	15	16006.841	$4113_{5/2} - 20120^{\circ}_{5/2}$	6163.249	1	10	16220.719	$22642^{\circ}_{9/2} - 38862_{11/2}$
6245.034	5	15	16008.295	$9238^{\circ}_{9/2} - 25246_{9/2}$	6159.840	0	10	16229.696	$24414^{\circ}_{3/2} - 40644_{5/2}$
6244.117	1	1	16010.646	$7001_{3/2} - 23012^{\circ}_{3/2}$	6154.119	0	8b	16244.784	$21297^{\circ}_{5/2} - 37542_{3/2}$
6243.103	0	5	16013.246	$15786_{5/2} - 31800^{\circ}_{7/2}$	6147.454	3	2	16262.396	$21682^{\circ}_{7/2} - 37945_{5/2}$
6241.694	2	4	16016.861	$12570_{7/2} - 28587^{\circ}_{5/2}$	6146.272	1	3	16265.523	$24309^{\circ}_{11/2} - 40574_{11/2}$
6241.408	2	8	16017.595	$11576^{\circ}_{3/2} - 27593_{5/2}$	6145.287	20	50	16268.131	$8605_{5/2} - 24873^{\circ}_{5/2}$
6239.543	2	2	16022.382	$33354^{\circ}_{5/2} - 49377_{7/2}$	6138.650	3	40	16285.719	$11725^{\circ}_{1/2} - 28011_{3/2}$
6239.083	3	15	16023.564	$15786_{5/2} - 31810^{\circ}_{5/2}$	6138.526	0	8	16286.048	$20158_{5/2} - 36444^{\circ}_{3/2}$
6238.970	1	5	16023.854	$12219_{3/2} - 28243^{\circ}_{5/2}$	6134.794	2	5	16295.955	$17983^{\circ}_{5/2} - 34279_{7/2}$
6238.244	0	5	16025.719	$22139^{\circ}_{9/2} - 38165_{7/2}$	6132.228	2	5	16302.774	$16906^{\circ}_{7/2} - 33209_{7/2}$
6235.793	1	8	16032.018	$16818_{7/2} - 32850^{\circ}_{5/2}$	6131.967	3	1	16303.468	$7828_{1/2} - 24132^{\circ}_{3/2}$
6235.346	2	2	16033.167	$0_{3/2} - 16033^{\circ}_{5/2}$	6125.749	25	150	16320.017	$15453^{\circ}_{7/2} - 31773_{9/2}$
6234.295	1	10	16035.870	$17983^{\circ}_{5/2} - 34019_{3/2}$	6124.675	1	3	16322.879	$22513^{\circ}_{5/2} - 38836_{3/2}$
6232.970	25	50	16039.279	$9400_{5/2} - 25440^{\circ}_{5/2}$	6122.337	0	15	16329.112	$18214^{\circ}_{3/2} - 34543_{5/2}$
6231.380	4	40	16043.371	$15710^{\circ}_{3/2} - 31754_{5/2}$	6120.563	250	300	16333.845	$14545^{\circ}_{5/2} - 30879_{7/2}$
6231.116	4	10	16044.051	$9202^{\circ}_{7/2} - 25246_{9/2}$	6113.969	3	10	16351.461	$12472^{\circ}_{5/2} - 28823_{5/2}$
6229.597	5	3	16047.963	$25440^{\circ}_{5/2} - 41488_{7/2}$	6112.838	150	200	16354.486	$1859_{3/2} - 18214^{\circ}_{3/2}$
6226.927	2	4	16054.844	$11576^{\circ}_{3/2} - 27631_{3/2}$	6108.922	3	2	16364.970	$17272^{\circ}_{9/2} - 33637_{7/2}$
6226.619	0	5	16055.638	$13818^{\circ}_{7/2} - 29873_{7/2}$	6108.411	10	20	16366.339	$26647^{\circ}_{13/2} - 43014_{13/2}$
6223.516	2	25	16063.643	$20989^{\circ}_{9/2} - 37053_{11/2}$	6106.613	5	4	16371.158	$7001_{3/2} - 23372^{\circ}_{3/2}$
6221.575	2	50	16068.655	$30310^{\circ}_{11/2} - 46378_{13/2}$	6104.572	300	200	16376.631	$8605_{5/2} - 24982^{\circ}_{7/2}$
6216.441	4	1	16081.925	$25594^{\circ}_{1/2} - 41676_{3/2}$	6103.640	15	50	16379.132	$9061_{5/2} - 25440^{\circ}_{5/2}$
6213.650	2	5	16089.149	$10673^{\circ}_{5/2} - 26762_{3/2}$	6100.578	1	1	16387.353	$22106_{5/2} - 38493^{\circ}_{5/2}$
6211.663	3	75	16094.295	$20969^{\circ}_{7/2} - 37063_{9/2}$	6099.804	3	5	16389.432	$27787^{\circ}_{9/2} - 44177_{11/2}$
6211.607	0	5	16094.441	$26424^{\circ}_{5/2} - 42518_{7/2}$	6099.083	100	200	16391.370	$10379_{9/2} - 26770^{\circ}_{11/2}$
6207.477	2	2	16105.149	$21682^{\circ}_{7/2} - 37787_{7/2}$	6097.194	10	10	16396.448	$8018_{3/2} - 24414^{\circ}_{3/2}$
6206.820	0	5	16106.853	$24463^{\circ}_{5/2} - 40570_{7/2}$	6094.023	4	4	16404.980	$34330^{\circ}_{7/2} - 50735_{3/2}$
6205.254	3	5	16110.918	$6244_{1/2} - 22355^{\circ}_{1/2}$					$13468^{\circ}_{9/2} - 29873_{7/2}$
6204.767	1	8	16112.183	$17272^{\circ}_{9/2} - 33384_{9/2}$	6092.033	8	8	16410.338	$21131^{\circ}_{3/2} - 37542_{3/2}$
6204.123	4	8	16113.855	$8018_{3/2} - 24132^{\circ}_{3/2}$					$25266^{\circ}_{1/2} - 41676_{3/2}$
									$11116^{\circ}_{7/2} - 27526_{9/2}$
6200.551	0	10	16123.138	$20686^{\circ}_{5/2} - 36809_{7/2}$					
6200.427	40	40	16123.460	$1859_{3/2} - 17983^{\circ}_{3/2}$	6090.816	8	8	16413.617	$8460_{3/2} - 24873^{\circ}_{5/2}$
6199.054	2	5	16127.031	$9061_{5/2} - 25188^{\circ}_{3/2}$	6090.109	15	25	16415.523	$24309^{\circ}_{11/2} - 40724_{13/2}$
6196.396	5	10	16133.949	$6700^{\circ}_{9/2} - 22834_{7/2}$	6087.576	0	8	16422.353	$21682^{\circ}_{7/2} - 38105_{5/2}$
6194.315	0	5	16139.369	$16818_{7/2} - 32957^{\circ}_{7/2}$	6087.387	3	3	16422.863	$20158_{5/2} - 36581^{\circ}_{3/2}$
6193.978	0	5	16140.247	$25188^{\circ}_{3/2} - 41328_{5/2}$	6087.262	75	300	16423.200	$15349^{\circ}_{11/2} - 31773_{9/2}$
6193.858	50	200	16140.560	$11116^{\circ}_{7/2} - 27257_{7/2}$	6085.998	4	5	16426.611	$22642^{\circ}_{9/2} - 39068_{7/2}$
6189.417	0	50	16152.141	$22139^{\circ}_{9/2} - 38291_{7/2}$	6085.430	2	40	16428.144	$29788^{\circ}_{9/2} - 46216_{11/2}$
6188.051	20b	150	16155.707	$30223^{\circ}_{15/2} - 46378_{13/2}$	6085.257	40	75	16428.611	$6213_{9/2} - 22642^{\circ}_{9/2}$
6184.737	10b	8	16164.363	$4146_{7/2} - 20310^{\circ}_{5/2}$	6078.968	40	8	16445.607	$8018_{3/2} - 24463^{\circ}_{5/2}$
6184.469	2	15	16165.064	$22014^{\circ}_{11/2} - 38179_{9/2}$	6078.588	5	8	16446.636	$27357^{\circ}_{9/2} - 43803_{7/2}$
6184.390	8	10	16165.270	$23187^{\circ}_{13/2} - 39352_{11/2}$	6077.358	15	10	16449.964	$11576^{\circ}_{3/2} - 28026_{5/2}$
6179.847	8	50	16177.154	$14275^{\circ}_{9/2} - 30452_{9/2}$	6076.639	3	3	16451.911	$27357^{\circ}_{9/2} - 43809_{9/2}$
6178.885	3	2	16179.672	$27593_{5/2} - 43773^{\circ}_{7/2}$	6076.195	8	5	16453.113	$18568^{\circ}_{1/2} - 35021_{3/2}$
6178.549	0	8	16180.552	$24463^{\circ}_{5/2} - 40644_{5/2}$	6073.710	3	3	16459.844	$24463^{\circ}_{5/2} - 40923_{5/2}$
6172.044	1	2	16197.606	$4113_{5/2} - 20310^{\circ}_{5/2}$	6073.100	100	150	16461.498	$1521_{5/2} - 17983^{\circ}_{5/2}$
6168.580	2	2	16206.701	$31800^{\circ}_{7/2} - 48006_{9/2}$	6071.415	2	2	16466.066	$24757^{\circ}_{9/2} - 41223_{11/2}$
6167.907	0	5	16208.470	$20120^{\circ}_{3/2} - 36328_{3/2}$	6070.892	3	4	16467.485	$25414^{\circ}_{11/2} - 41882_{13/2}$
				$23730^{\circ}_{9/2} - 39939_{11/2}$	6070.034	4	10	16469.812	$13250_{5/2} - 29720^{\circ}_{3/2}$
6167.059	0	5	16210.698	$29095^{\circ}_{5/2} - 45306_{3/2}$	6068.043	2	2	16475.216	$22106_{5/2} - 38581^{\circ}_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
6067.077	20	100	16477.839	$16906^{\circ}_{7/2} - 33384_{9/2}$	6015.424	50	200	16619.329	$15305_{9/2} - 31924^{\circ}_{11/2}$
6066.496	40	200	16479.417	$26647^{\circ}_{13/2} - 43127_{11/2}$	6011.349	25	20	16630.595	$19248^{\circ}_{5/2} - 35878_{7/2}$
6066.330	4h	3	16479.868	$30101^{\circ}_{7/2} - 46581_{5/2}$	6009.113	5	8	16636.783	$23730^{\circ}_{9/2} - 40367_{9/2}$
6063.355	2	2	16487.954	$31810^{\circ}_{5/2} - 48298_{7/2}$	6007.591	4	8	16640.998	$24757^{\circ}_{9/2} - 41398_{9/2}$
6063.068	8	15	16488.735	$25188^{\circ}_{3/2} - 41676_{3/2}$	5998.655	3	8	16665.787	$6168^{\circ}_{7/2} - 22834_{7/2}$
6062.614	15	40	16489.969	$22028^{\circ}_{15/2} - 38517_{13/2}$	5993.268	3	8	16680.767	$37679_{11/2} - 54360^{\circ}_{9/2}$
6062.431	3	2	16490.467	$21297^{\circ}_{5/2} - 37787_{7/2}$	5991.711	2	2	16685.102	$10572^{\circ}_{9/2} - 27257_{7/2}$
6061.486	3	25	16493.038	$19248^{\circ}_{5/2} - 35741_{5/2}$	5990.792	0	20	16687.661	$30223^{\circ}_{15/2} - 46910_{13/2}$
6060.230	3	2	16496.456	$20969^{\circ}_{7/2} - 37465_{5/2}$					$31924^{\circ}_{11/2} - 48612_{13/2}$
6059.975	4		16497.150	$21682^{\circ}_{7/2} - 38179_{9/2}$	5990.267	3	40	16689.124	$20120^{\circ}_{5/2} - 36809_{7/2}$
6059.535	2	3	16498.348	$20310^{\circ}_{5/2} - 36809_{7/2}$	5989.987	1	4	16689.904	$20989^{\circ}_{9/2} - 37679_{11/2}$
6058.612	15	20	16500.862	$12219_{3/2} - 28720^{\circ}_{3/2}$	5989.893	1	8	16690.166	$21131^{\circ}_{3/2} - 37821_{3/2}$
6058.273	3	2	16501.785	$30101^{\circ}_{7/2} - 46603_{5/2}$	5989.200	0	5	16692.097	$15236_{3/2} - 31928^{\circ}_{3/2}$
6058.180	15	20	16502.038	$10855_{7/2} - 27357^{\circ}_{9/2}$	5989.045	400s	500	16692.529	$1521_{5/2} - 18214^{\circ}_{3/2}$
6055.160	3	3	16510.269	$31810^{\circ}_{5/2} - 48320_{5/2}$	5985.204	2	8	16703.242	$12219_{3/2} - 28923^{\circ}_{5/2}$
				$26586^{\circ}_{3/2} - 43096_{5/2}$	5983.991	4	75	16706.627	$21682^{\circ}_{7/2} - 38389_{7/2}$
6054.535	2	4	16511.973	$22355^{\circ}_{1/2} - 38867_{1/2}$	5983.378	5	15	16708.339	$1859_{3/2} - 18568^{\circ}_{1/2}$
6052.173	2	1	16518.417	$23697^{\circ}_{7/2} - 40216_{5/2}$	5981.880	15	20	16712.523	$9711_{7/2} - 26424^{\circ}_{5/2}$
6049.925	8	10	16524.555	$21297^{\circ}_{5/2} - 37821_{3/2}$	5981.385	1	5	16713.906	$17460^{\circ}_{5/2} - 34174_{5/2}$
6049.771	15	25	16524.975	$12570_{7/2} - 29095^{\circ}_{5/2}$	5978.069	5	15	16723.177	$22139^{\circ}_{9/2} - 38862_{11/2}$
6048.174	3	1	16529.339	$39861^{\circ}_{5/2} - 56391_{5/2}$	5976.437	3	3	16727.744	$8460_{3/2} - 25188^{\circ}_{3/2}$
6045.467	2	2	16536.740	$16818_{7/2} - 33354^{\circ}_{5/2}$	5976.118	1	4	16728.637	$20080^{\circ}_{7/2} - 36809_{7/2}$
6044.430	100	200	16539.577	$4146_{7/2} - 20686^{\circ}_{5/2}$	5975.404	5	50	16730.636	$16906^{\circ}_{7/2} - 33637_{7/2}$
6042.962	25	50	16543.595	$16033^{\circ}_{5/2} - 32576_{7/2}$					$24757^{\circ}_{9/2} - 41488_{7/2}$
6041.628	5h	3	16547.248	$17722^{\circ}_{9/2} - 34270_{9/2}$	5972.789	4l	75	16737.960	$24309^{\circ}_{11/2} - 41047_{9/2}$
6040.120	3	10	16551.379	$30310^{\circ}_{11/2} - 46861_{11/2}$	5972.436	15	15	16738.950	$27357^{\circ}_{9/2} - 44096_{9/2}$
6039.665	2	1	16552.626	$37945_{5/2} - 54497^{\circ}_{7/2}$	5961.970	25	50	16768.334	$9720^{\circ}_{7/2} - 26488_{5/2}$
6038.308	3	2	16556.346	$17722^{\circ}_{9/2} - 34279_{7/2}$	5960.372	4d	40	16772.830	$22685^{\circ}_{7/2} - 39458_{7/2}$
6036.088	2	3	16562.435	$27403^{\circ}_{3/2} - 43965_{1/2}$	5958.072	3	20	16779.304	$20686^{\circ}_{5/2} - 37465_{5/2}$
				$22834_{7/2} - 39396^{\circ}_{7/2}$	5957.736	5	2	16780.251	$42518_{7/2} - 59299^{\circ}_{5/2}$
6034.545	10	10	16566.670	$8460_{3/2} - 25027^{\circ}_{1/2}$	5957.091	2	15	16782.067	$25440^{\circ}_{5/2} - 42222_{7/2}$
6034.139	1	4	16567.785	$35602^{\circ}_{11/2} - 52170_{11/2}$	5956.813	2	5	16782.851	$17771^{\circ}_{11/2} - 34553_{9/2}$
6032.665	0	8	16571.833	$18973^{\circ}_{7/2} - 35545_{9/2}$	5955.952	2	10	16785.277	$25414^{\circ}_{11/2} - 42200_{9/2}$
6032.432	0	5	16572.473	$20989^{\circ}_{9/2} - 37562_{11/2}$	5952.350	5	8	16795.434	$22355^{\circ}_{1/2} - 39150_{3/2}$
6032.320	25b	15	16572.780	$4113_{5/2} - 20686^{\circ}_{5/2}$	5950.888	2	2	16799.560	$35878_{7/2} - 52678^{\circ}_{5/2}$
6031.911	10	25	16573.904	$15236_{3/2} - 31810^{\circ}_{5/2}$	5948.557	3	3	16806.143	$8460_{3/2} - 25266^{\circ}_{1/2}$
6030.808	1	2	16576.935	$24414^{\circ}_{3/2} - 40991_{3/2}$	5946.922	1	1	16810.764	$28011_{3/2} - 44821^{\circ}_{5/2}$
6028.863	10	5	16582.283	$8605_{5/2} - 25188^{\circ}_{3/2}$	5945.616	1	5	16814.456	$24873^{\circ}_{5/2} - 41688_{7/2}$
6028.273	10	3	16583.906	$18816^{\circ}_{13/2} - 35400_{13/2}$	5945.012	1	2	16816.165	$22642^{\circ}_{9/2} - 39458_{7/2}$
6028.240	2	10	16583.997	$10673^{\circ}_{5/2} - 27257_{7/2}$	5944.112	1	5	16818.711	$17460^{\circ}_{5/2} - 34279_{7/2}$
6027.952	2	2	16584.789	$10379_{9/2} - 26963^{\circ}_{7/2}$	5944.054	2	8	16818.875	$20969^{\circ}_{7/2} - 37787_{7/2}$
6027.481	5s	2	16586.085	$7828_{1/2} - 24414^{\circ}_{3/2}$	5942.792	40	50	16822.447	$4146_{7/2} - 20969^{\circ}_{7/2}$
6025.616	4	5	16591.219	$20686^{\circ}_{5/2} - 37277_{7/2}$	5942.120	3	40	16824.349	$16906^{\circ}_{7/2} - 33730_{5/2}$
6024.934	8	10	16593.097	$25607^{\circ}_{9/2} - 42200_{9/2}$	5938.571	20	40	16834.403	$8605_{5/2} - 25440^{\circ}_{5/2}$
6022.223	8	10	16600.566	$30310^{\circ}_{11/2} - 46910_{13/2}$	5936.602	1	15	16839.987	$23730^{\circ}_{9/2} - 40570_{7/2}$
6022.149	4	4	16600.771	$22139^{\circ}_{9/2} - 38740_{11/2}$	5934.714	1	25	16845.344	$26963^{\circ}_{7/2} - 43809_{9/2}$
6021.409	40	200	16602.811	$22014^{\circ}_{11/2} - 38617_{9/2}$	5932.701	0	5	16851.060	$20989^{\circ}_{9/2} - 37840_{9/2}$
6019.215	1	2	16608.862	$22834_{7/2} - 39443^{\circ}_{9/2}$	5932.128	4	10	16852.687	$13248_{9/2} - 30101^{\circ}_{7/2}$
6018.998	20	100	16609.461	$15144^{\circ}_{3/2} - 31754_{5/2}$	5930.957	2	10	16856.015	$20686^{\circ}_{5/2} - 37542_{3/2}$
6015.769	1	1	16618.376	$26626^{\circ}_{1/2} - 43244_{3/2}$	5929.479	8	40	16860.216	$12485^{\circ}_{7/2} - 29345_{5/2}$

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TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
5929.141	1	8	16861.178	$30310^{\circ}_{11/2}-47171_{9/2}$	5849.999	1	4	17089.283	$24309^{\circ}_{11/2}-41398_{9/2}$
5927.949	1	15	16864.568	$24463^{\circ}_{5/2}-41328_{5/2}$	5849.077	2	10	17091.976	$21297^{\circ}_{5/2}-38389_{7/2}$
5926.933	3	8	16867.459	$8378^{\circ}_{7/2}-25246_{9/2}$	5838.945	75	20	17121.635	$0_{3/2}-17121^{\circ}_{3/2}$
5926.780	3	10	16867.894	$18118_{3/2}-34986^{\circ}_{3/2}$	5837.485	0	5	17125.917	$23518^{\circ}_{7/2}-40644_{5/2}$
5924.389	3	150	16874.702	$32620_{11/2}-49495^{\circ}_{9/2}$	5836.674	2	2	17128.297	$6244_{1/2}-23372^{\circ}_{3/2}$
5918.808	15	5	16890.613	$17771^{\circ}_{11/2}-34661_{11/2}$	5835.881	5	5	17130.624	$7001_{3/2}-24132^{\circ}_{3/2}$
5916.347	1	4	16897.639	$17121^{\circ}_{3/2}-34019_{3/2}$	5832.941	1	1	17139.259	$27249^{\circ}_{7/2}-44388_{5/2}$
5914.387	200	200	16903.239	$9585^{\circ}_{5/2}-26488_{5/2}$	5830.492	10	20	17146.457	$27357^{\circ}_{9/2}-44503_{7/2}$
5912.104	4	5	16909.766	$11116^{\circ}_{7/2}-28026_{5/2}$	5822.522	10	5	17169.928	$8018_{3/2}-25188^{\circ}_{3/2}$
5911.360	5	5	16911.894	$25440^{\circ}_{5/2}-42352_{5/2}$	5820.381	15	25	17176.244	$16033^{\circ}_{5/2}-33209_{7/2}$
5910.507	5	40	16914.335	$24309^{\circ}_{11/2}-41223_{11/2}$	5820.168	5	10	17176.872	$9585^{\circ}_{5/2}-26762_{3/2}$
5910.041	5	2	16915.669	$32957^{\circ}_{7/2}-49873_{5/2}$	5817.733	15	5	17184.061	$4113_{5/2}-21297^{\circ}_{5/2}$
5908.403	25l	50	16920.358	$31924^{\circ}_{11/2}-48844_{9/2}$	5817.326	10	5	17185.264	$9400_{5/2}-26586^{\circ}_{3/2}$
5908.244	5	8	16920.814	$10673^{\circ}_{5/2}-27593_{5/2}$	5816.994	8	10	17186.244	$26586^{\circ}_{3/2}-43772_{5/2}$
5906.316	5	40	16926.337	$16033^{\circ}_{5/2}-32959_{3/2}$	5815.422	100	150	17190.890	$1859_{3/2}-19050^{\circ}_{3/2}$
5902.560	0	8b	16937.108	$36583^{\circ}_{7/2}-53520_{9/2}$	5812.107	1	1	17200.695	$27249^{\circ}_{7/2}-44450_{9/2}$
				$35741_{5/2}-52678^{\circ}_{5/2}$	5810.973	8	10	17204.052	$23012^{\circ}_{3/2}-40216_{5/2}$
5901.995	3	20	16938.729	$17722^{\circ}_{9/2}-34661_{11/2}$	5809.430	8	5	17208.621	$14545^{\circ}_{5/2}-31754_{5/2}$
5901.754	0	5	16939.421	$27787^{\circ}_{9/2}-44727_{11/2}$	5808.978	4	5	17209.960	$22685^{\circ}_{7/2}-39895_{9/2}$
5899.407	5	50	16946.160	$12485^{\circ}_{7/2}-29431_{7/2}$	5808.079	20	50	17212.624	$22139^{\circ}_{9/2}-39352_{11/2}$
5896.361	15	40	16954.914	$10572^{\circ}_{9/2}-27526_{9/2}$	5806.279	40	40	17217.960	$12570_{7/2}-29788^{\circ}_{9/2}$
5893.476	10	50	16963.214	$14790^{\circ}_{7/2}-31754_{5/2}$	5804.589	1	2	17222.973	$30101^{\circ}_{7/2}-47324_{5/2}$
5888.260	15	15	16978.240	$10379_{9/2}-27357^{\circ}_{9/2}$	5802.239	25	50	17229.948	$25414^{\circ}_{11/2}-42644_{13/2}$
5887.815	1	5	16979.523	$25266^{\circ}_{1/2}-42246_{1/2}$	5801.813	10	15	17231.214	$20310^{\circ}_{5/2}-37542_{3/2}$
5886.741	8	50	16982.621	$20080^{\circ}_{7/2}-37063_{9/2}$	5798.910	2	3	17239.840	$24982^{\circ}_{7/2}-42222_{7/2}$
5886.346	5	10	16983.761	$13468^{\circ}_{9/2}-30452_{9/2}$	5796.417	100	100	17247.254	$11576^{\circ}_{3/2}-28823_{5/2}$
5884.178	2	8	16990.018	$19050^{\circ}_{3/2}-36040_{1/2}$	5795.963	15	20	17248.605	$15710^{\circ}_{3/2}-32959_{3/2}$
5881.414	2	5	16998.003	$17272^{\circ}_{9/2}-34270_{9/2}$	5794.377	20	25	17253.326	$22642^{\circ}_{9/2}-39895_{9/2}$
5879.479	5h	15	17003.597	$17722^{\circ}_{9/2}-34726_{7/2}$	5793.209	5	15	17256.805	$29095^{\circ}_{5/2}-46352_{7/2}$
5879.049	0	15	17004.841	$35165^{\circ}_{13/2}-52170_{11/2}$	5790.136	3	4	17265.963	$17460^{\circ}_{5/2}-34726_{7/2}$
5878.279	8		17007.068	$17272^{\circ}_{9/2}-34279_{7/2}$	5788.193	10	15	17271.759	$23372^{\circ}_{3/2}-40644_{5/2}$
5875.501	2		17015.109	$22685^{\circ}_{7/2}-39700_{5/2}$	5787.541	10	10	17273.705	$20288^{\circ}_{11/2}-37562_{11/2}$
5875.279	1	4	17015.752	$13468^{\circ}_{9/2}-30484_{11/2}$	5786.678	15	10	17276.281	$14349_{1/2}-31625^{\circ}_{1/2}$
5874.348	20	10	17018.449	$4113_{5/2}-21131^{\circ}_{3/2}$	5785.498	3	8	17279.805	$42336_{5/2}-59616^{\circ}_{3/2}$
5872.604	15	40	17023.503	$9400_{5/2}-26424^{\circ}_{5/2}$	5784.866	75b	50	17281.692	$17272^{\circ}_{9/2}-34553_{9/2}$
5872.312	0	5	17024.349	$24463^{\circ}_{5/2}-41488_{7/2}$	5784.373	4	5	17283.165	$15453^{\circ}_{7/2}-32736_{7/2}$
5871.447	2	4	17026.857	$12488^{\circ}_{9/2}-29515_{9/2}$	5783.757	1	1	17285.006	$26488_{5/2}-43773^{\circ}_{7/2}$
5870.554	25	150	17029.447	$12485^{\circ}_{7/2}-29515_{9/2}$	5783.205	15l	200	17286.656	$20288^{\circ}_{11/2}-37575_{13/2}$
5867.621	2	5	17037.960	$17983^{\circ}_{5/2}-35021_{3/2}$	5782.499	1	1	17288.766	$14484^{\circ}_{11/2}-31773_{9/2}$
5867.348	0	5	17038.752	$26770^{\circ}_{11/2}-43809_{9/2}$	5782.047	5	10	17290.118	$22106_{5/2}-39396^{\circ}_{7/2}$
5864.882	1	4	17045.916	$21682^{\circ}_{7/2}-38728_{5/2}$	5778.082	15h	15	17301.983	$20989^{\circ}_{9/2}-38291_{7/2}$
5860.879	1h	1	17057.559	$22028^{\circ}_{15/2}-39085_{13/2}$	5777.094	10	4	17304.942	$6213_{9/2}-23518^{\circ}_{7/2}$
5859.666	50	150	17061.090	$13818^{\circ}_{7/2}-30879_{7/2}$	5775.795	1	2	17308.834	$33354^{\circ}_{5/2}-50663_{5/2}$
5859.524	15	40	17061.503	$13248_{9/2}-30310^{\circ}_{11/2}$	5775.035	2	5	17311.111	$25440^{\circ}_{5/2}-42751_{7/2}$
5856.379	2	5	17070.665	$22014^{\circ}_{11/2}-39085_{13/2}$	5773.204	3	4	17316.602	$23730^{\circ}_{9/2}-41047_{9/2}$
5855.032	2	8	17074.593	$21297^{\circ}_{5/2}-38372_{3/2}$	5772.529	4	4	17318.626	$22139^{\circ}_{9/2}-39458_{7/2}$
5853.762	3	4	17078.297	$13406^{\circ}_{13/2}-30484_{11/2}$	5771.144	20	25	17322.783	$20969^{\circ}_{7/2}-38291_{7/2}$
5853.059	5	20	17080.348	$19248^{\circ}_{5/2}-36328_{3/2}$	5770.145	15b	50	17325.782	$26770^{\circ}_{11/2}-44096_{9/2}$
5852.188	8	15	17082.890	$17460^{\circ}_{5/2}-34543_{5/2}$	5767.459	4	2	17333.851	$15242^{\circ}_{9/2}-32576_{7/2}$
5850.258	1	8	17088.526	$37756^{\circ}_{7/2}-54845_{9/2}$	5766.470	3	8	17336.824	$31353^{\circ}_{3/2}-48689_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
5766.101	20	10	17337.933	$10189^{\circ}_{11/2} - 27526_{9/2}$	5709.102	3	3	17511.031	$20310^{\circ}_{5/2} - 37821_{3/2}$
5765.947	10	15	17338.396	$27787^{\circ}_{9/2} - 45126_{9/2}$	5707.100	300	200	17517.174	$6213_{9/2} - 23730^{\circ}_{9/2}$
5765.697	1	2	17339.148	$26626^{\circ}_{1/2} - 43965_{1/2}$	5706.145	5	8	17520.105	$25607^{\circ}_{9/2} - 43127_{11/2}$
5764.766	1	2	17341.948	$30956^{\circ}_{9/2} - 48298_{7/2}$	5703.942	50	40	17526.872	$18214^{\circ}_{3/2} - 35741_{5/2}$
5763.645	10	15	17345.321	$20120^{\circ}_{5/2} - 37465_{5/2}$	5703.268	10	20	17528.943	$1521_{5/2} - 19050^{\circ}_{3/2}$
5762.237	3	5	17349.559	$23697^{\circ}_{7/2} - 41047_{9/2}$	5700.914	200b	200	17536.181	$4146_{7/2} - 21682^{\circ}_{7/2}$
5762.096	3b	5	17349.984	$22834_{7/2} - 40184^{\circ}_{7/2}$	5700.698	100	100	17536.846	$9720^{\circ}_{7/2} - 27257_{7/2}$
5761.018	4	3	17353.230	$10673^{\circ}_{5/2} - 28026_{5/2}$	5700.521	0	10	17537.390	$22014^{\circ}_{11/2} - 39552_{9/2}$
5758.920	10	5	17359.552	$7828_{1/2} - 25188^{\circ}_{3/2}$	5700.453	100	100	17537.599	$9711_{7/2} - 27249^{\circ}_{7/2}$
5757.648	5	4	17363.387	$9061_{5/2} - 26424^{\circ}_{5/2}$	5700.060	3	3	17538.809	$21297^{\circ}_{5/2} - 38836_{3/2}$
5757.551	5	5	17363.680	$16906^{\circ}_{7/2} - 34270_{9/2}$	5699.370	10	20	17540.932	$25414^{\circ}_{11/2} - 42955_{9/2}$
5757.099	15	10	17365.043	$10572^{\circ}_{9/2} - 27937_{11/2}$	5699.220	5	10	17541.394	$27357^{\circ}_{9/2} - 44898_{7/2}$
5754.551	50	40	17372.732	$16906^{\circ}_{7/2} - 34279_{7/2}$	5696.084	2	2	17551.051	$23372^{\circ}_{3/2} - 40923_{5/2}$
5752.303	5	8	17379.521	$26424^{\circ}_{5/2} - 43803_{7/2}$	5692.936	2	4	17560.756	$17460^{\circ}_{5/2} - 35021_{3/2}$
5751.173	2	4	17382.936	$29788^{\circ}_{9/2} - 47171_{9/2}$	5692.853	5	5	17561.012	$19248^{\circ}_{5/2} - 36809_{7/2}$
5750.556	25	20	17384.801	$20080^{\circ}_{7/2} - 37465_{5/2}$	5691.804	2	2	17564.248	$9400_{5/2} - 26965^{\circ}_{3/2}$
5750.268	15	10	17385.671	$12488^{\circ}_{9/2} - 29873_{7/2}$	5691.628	15	100	17564.792	$27257_{7/2} - 44821^{\circ}_{5/2}$
5750.117	2	3	17386.128	$27403^{\circ}_{3/2} - 44789_{1/2}$	5691.092	20	10	17566.446	$21297^{\circ}_{5/2} - 38863_{5/2}$
5749.582	40	50	17387.746	$23187^{\circ}_{13/2} - 40574_{11/2}$	5688.931	20	10	17573.119	$24309^{\circ}_{11/2} - 41882_{13/2}$
5749.383	200	200d	17388.348	$1859_{3/2} - 19248^{\circ}_{5/2}$	5687.682	10	20c	17576.978	$31800^{\circ}_{7/2} - 49377_{7/2}$
5749.157	3	8	17389.031	$24757^{\circ}_{9/2} - 42146_{11/2}$	5684.171	2h	2	17587.834	$17837^{\circ}_{1/2} - 35425_{1/2}$
5749.012	15	15	17389.470	$17272^{\circ}_{9/2} - 34661_{11/2}$	5682.436	5	5	17593.204	$22355^{\circ}_{1/2} - 39948_{1/2}$
5747.521	15	15	17393.981	$16818_{7/2} - 34212^{\circ}_{5/2}$	5681.249	8	8	17596.880	$21131^{\circ}_{3/2} - 38728_{5/2}$
5745.676	75	100	17399.566	$20989^{\circ}_{9/2} - 38389_{7/2}$	5680.489	2	2	17599.234	$25414^{\circ}_{11/2} - 43014_{13/2}$
5743.810	2	2	17405.219	$23518^{\circ}_{7/2} - 40923_{5/2}$	5680.211	8	5	17600.096	$24309^{\circ}_{11/2} - 41909_{9/2}$
5742.651	10	5	17408.731	$10379_{9/2} - 27787^{\circ}_{9/2}$	5678.920	15	20	17604.097	$31810^{\circ}_{5/2} - 49414_{3/2}$
5742.084	150	150	17410.450	$13468^{\circ}_{9/2} - 30879_{7/2}$					$16033^{\circ}_{5/2} - 33637_{7/2}$
5741.379	15	25	17412.588	$22139^{\circ}_{9/2} - 39552_{9/2}$	5676.763	1	3	17610.786	$29095^{\circ}_{3/2} - 46706_{7/2}$
5741.170	150	100	17413.222	$7001_{3/2} - 24414^{\circ}_{3/2}$	5675.019	75b	25	17616.198	$4490^{\circ}_{5/2} - 22106_{5/2}$
5738.819	3	4	17420.356	$20969^{\circ}_{7/2} - 38389_{7/2}$	5674.119	2	2	17618.992	$23372^{\circ}_{3/2} - 40991_{3/2}$
5738.515	1	2	17421.278	$30310^{\circ}_{11/2} - 47731_{9/2}$	5670.666	5	3	17629.720	$17771^{\circ}_{11/2} - 35400_{13/2}$
5738.306	25d	100b	17421.913	$17121^{\circ}_{3/2} - 34543_{5/2}$	5669.842	20	25	17632.283	$23012^{\circ}_{3/2} - 40644_{5/2}$
5738.271	1	10b	17422.019	$20120^{\circ}_{5/2} - 37542_{3/2}$	5669.232	1	1	17634.180	$20310^{\circ}_{5/2} - 37945_{5/2}$
				$8018_{3/2} - 25440^{\circ}_{5/2}$	5668.890	3	3	17635.243	$15324^{\circ}_{7/2} - 32959_{3/2}$
5736.142	4	3	17428.485	$15786_{5/2} - 33215^{\circ}_{3/2}$	5668.792	1	1	17635.548	$39443^{\circ}_{9/2} - 57078_{9/2}$
5734.526	1	2	17433.397	$31924^{\circ}_{11/2} - 49357_{11/2}$	5668.340	20	15	17636.955	$16906^{\circ}_{7/2} - 34543_{5/2}$
5732.977	200	200	17438.107	$17727_{11/2} - 35165^{\circ}_{13/2}$	5665.772	2	2	17644.949	$24873^{\circ}_{5/2} - 42518_{7/2}$
5732.043	8	8	17440.948	$13818^{\circ}_{7/2} - 31259_{5/2}$	5665.625	100	100	17645.406	$9711_{7/2} - 27357^{\circ}_{9/2}$
5731.466	10	15	17442.704	$24757^{\circ}_{9/2} - 42200_{9/2}$	5664.999	25	15	17647.356	$16906^{\circ}_{7/2} - 34553_{9/2}$
5726.151	2l	1	17458.894	$30994^{\circ}_{7/2} - 48453_{7/2}$	5663.441	0	20	17652.211	$15305_{9/2} - 32957^{\circ}_{7/2}$
5725.579	50	75	17460.639	$0_{3/2} - 17460^{\circ}_{5/2}$	5661.551	1	1	17658.104	$28923^{\circ}_{5/2} - 46581_{5/2}$
5725.011	40	40	17462.371	$7001_{3/2} - 24463^{\circ}_{5/2}$	5660.015	15	15	17662.896	$19912^{\circ}_{13/2} - 37575_{13/2}$
5721.655	1	1	17472.613	$18568^{\circ}_{1/2} - 36040_{1/2}$	5657.295	2	3	17671.388	$28026_{5/2} - 45697^{\circ}_{3/2}$
5721.618	2	1	17472.726	$24463^{\circ}_{5/2} - 41936_{3/2}$	5657.183	20	20	17671.738	$9585^{\circ}_{5/2} - 27257_{7/2}$
5719.847	3	5	17478.136	$24873^{\circ}_{5/2} - 42352_{5/2}$	5654.607	1	2	17679.788	$26770^{\circ}_{11/2} - 44450_{9/2}$
5717.328	5	10	17485.837	$29095^{\circ}_{5/2} - 46581_{5/2}$	5654.022	50	40	17681.617	$6700^{\circ}_{9/2} - 24381_{7/2}$
5714.894	8	10	17493.284	$15242^{\circ}_{9/2} - 32736_{7/2}$	5653.915	1	2	17681.952	$39396^{\circ}_{7/2} - 57078_{9/2}$
5713.828	1	2	17496.548	$30956^{\circ}_{9/2} - 48453_{7/2}$	5653.209	2	3	17684.160	$21682^{\circ}_{7/2} - 39366_{5/2}$
5713.519	3	2	17497.494	$14275^{\circ}_{9/2} - 31773_{9/2}$	5652.904	50	100	17685.114	$17771^{\circ}_{11/2} - 35456_{9/2}$
5712.588	40	20	17500.345	$12219_{3/2} - 29720^{\circ}_{3/2}$	5652.664	4	5	17685.865	$20686^{\circ}_{5/2} - 38372_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
5652.433	2	3	17686.588	$28011_{3/2} - 45697^{\circ}_{3/2}$	5611.775	3	2	17814.728	$15144^{\circ}_{3/2} - 32959_{3/2}$
5652.164	5	4	17687.430	$20158_{5/2} - 37846^{\circ}_{5/2}$	5611.144	1	2	17816.731	$36193^{\circ}_{9/2} - 54010_{7/2}$
5651.446	2	2	17689.677	$19880_{9/2} - 37569^{\circ}_{9/2}$	5609.300	20	15	17822.588	$17722^{\circ}_{9/2} - 35545_{9/2}$
5649.218	2	8	17696.653	$30310^{\circ}_{11/2} - 48006_{9/2}$	5608.100	8	10	17826.402	$18214^{\circ}_{3/2} - 36040_{1/2}$
5648.862	20	20	17697.769	$16033^{\circ}_{5/2} - 33730_{5/2}$	5606.539	8	10	17831.365	$24414^{\circ}_{3/2} - 42246_{1/2}$
5647.878	1	1	17700.852	$23697^{\circ}_{7/2} - 41398_{9/2}$	5605.247	15	10	17835.475	$18973^{\circ}_{7/2} - 36809_{7/2}$
5647.108	2	1	17703.266	$20686^{\circ}_{5/2} - 38389_{7/2}$	5604.666	15	20	17837.324	$24309^{\circ}_{11/2} - 42146_{11/2}$
5646.359	8	5	17705.614	$16564^{\circ}_{11/2} - 34270_{9/2}$	5604.514	100	40	17837.808	$0_{3/2} - 17837^{\circ}_{1/2}$
5645.894	100b	200d	17707.072	$11116^{\circ}_{7/2} - 28823_{5/2}$	5601.136	3	1	17848.566	$9400_{5/2} - 27249^{\circ}_{7/2}$
5645.856	20b	25b	17707.191	$20080^{\circ}_{7/2} - 37787_{7/2}$	5599.300	15b	15	17854.418	$20310^{\circ}_{5/2} - 38165_{7/2}$
5645.084	2	2	17709.613	$22513^{\circ}_{5/2} - 40222_{3/2}$	5596.152	10	15	17864.462	$20080^{\circ}_{7/2} - 37945_{5/2}$
5644.231	1	1	17712.289	$25414^{\circ}_{11/2} - 43127_{11/2}$	5595.610	50	75	17866.192	$17727_{11/2} - 35593^{\circ}_{9/2}$
5643.596	1	1	17714.282	$26586^{\circ}_{3/2} - 44300_{3/2}$	5594.583	20	25	17869.472	$21682^{\circ}_{7/2} - 39552_{9/2}$
5640.081	50	75	17725.322	$22642^{\circ}_{9/2} - 40367_{9/2}$	5593.612	100	50	17872.574	$7001_{3/2} - 24873^{\circ}_{5/2}$
5639.849	4	8	17726.051	$22685^{\circ}_{7/2} - 40411_{7/2}$	5593.480	15	25	17872.995	$20989^{\circ}_{9/2} - 38862_{11/2}$
5639.746	300	300	17726.375	$1521_{5/2} - 19248^{\circ}_{5/2}$	5593.266	25	15	17873.679	$9720^{\circ}_{7/2} - 27593_{5/2}$
5637.947	3	2	17732.031	$21131^{\circ}_{3/2} - 38863_{5/2}$	5592.796	5	5	17875.181	$17727_{11/2} - 35602^{\circ}_{11/2}$
				$10855_{7/2} - 28587^{\circ}_{5/2}$	5592.510	8	10	17876.095	$26424^{\circ}_{5/2} - 44300_{3/2}$
5635.409	2	8	17740.017	$37756^{\circ}_{7/2} - 55496_{9/2}$	5592.321	15	15	17876.700	$27249^{\circ}_{7/2} - 45126_{9/2}$
5634.221	15	15	17743.757	$13250_{5/2} - 30994^{\circ}_{7/2}$					$19880_{9/2} - 37756^{\circ}_{7/2}$
5633.649	20b	25	17745.559	$13248_{9/2} - 30994^{\circ}_{7/2}$	5592.125	3	5	17877.326	$24873^{\circ}_{5/2} - 42751_{7/2}$
5632.872	25l	20	17748.007	$10189^{\circ}_{11/2} - 27937_{11/2}$	5591.270	3	4	17880.060	$23518^{\circ}_{7/2} - 41398_{9/2}$
5632.036	15	25	17750.641	$20989^{\circ}_{9/2} - 38740_{11/2}$	5591.124	1	2	17880.527	$22014^{\circ}_{11/2} - 39895_{9/2}$
5631.111	3	8	17753.557	$35165^{\circ}_{13/2} - 52918_{13/2}$	5589.671	15	15	17885.174	$22685^{\circ}_{7/2} - 40570_{7/2}$
5630.922	8	4	17754.153	$17771^{\circ}_{11/2} - 35525_{11/2}$	5588.867	40	20	17887.747	$6244_{1/2} - 24132^{\circ}_{3/2}$
5630.589	3	3	17755.203	$22106_{5/2} - 39861^{\circ}_{5/2}$	5588.662	4	8l	17888.404	$30956^{\circ}_{9/2} - 48844_{9/2}$
5630.411	10	40	17755.764	$22139^{\circ}_{9/2} - 39895_{9/2}$	5587.857	25	25	17890.981	$24309^{\circ}_{11/2} - 42200_{9/2}$
5630.231	5	4	17756.332	$15453^{\circ}_{7/2} - 33209_{7/2}$	5587.734	75	10	17891.374	$20288^{\circ}_{11/2} - 38179_{9/2}$
5629.856	2	4	17757.514	$23730^{\circ}_{9/2} - 41488_{7/2}$	5586.658	8	10	17894.820	$20969^{\circ}_{7/2} - 38863_{5/2}$
5629.731	2	1	17757.909	$17983^{\circ}_{5/2} - 35741_{5/2}$	5586.453	40	20	17895.477	$17983^{\circ}_{5/2} - 35878_{7/2}$
5629.174	3	4	17759.666	$20969^{\circ}_{7/2} - 38728_{5/2}$	5585.610	20	4	17898.178	$22513^{\circ}_{5/2} - 40411_{7/2}$
5628.963	1	2	17760.331	$18568^{\circ}_{1/2} - 36328_{3/2}$	5585.121	4	1	17899.745	$17121^{\circ}_{3/2} - 35021_{3/2}$
5628.624	3	5	17761.401	$24757^{\circ}_{9/2} - 42518_{7/2}$	5584.161	15	75	17902.822	$9061_{5/2} - 26963^{\circ}_{7/2}$
5628.568	1	2	17761.578	$37277_{7/2} - 55038^{\circ}_{9/2}$	5583.758	100	15	17904.114	$9061_{5/2} - 26965^{\circ}_{3/2}$
5626.734	40	50	17767.367	$19912^{\circ}_{13/2} - 37679_{11/2}$	5583.073	2	15	17906.311	$38179_{9/2} - 56086^{\circ}_{9/2}$
5626.256	5	15	17768.877	$27357^{\circ}_{9/2} - 45126_{9/2}$	5581.283	20	20	17912.053	$23187^{\circ}_{13/2} - 41099_{15/2}$
				$24982^{\circ}_{7/2} - 42751_{7/2}$	5577.905	25	40	17922.901	$22355^{\circ}_{1/2} - 40278_{3/2}$
5626.085	3b	4b	17769.416	$22642^{\circ}_{9/2} - 40411_{7/2}$	5577.489	20	40	17924.238	$22014^{\circ}_{11/2} - 39939_{11/2}$
5626.057	10b	25b	17769.505	$11576^{\circ}_{3/2} - 29345_{5/2}$	5576.510	2	4	17927.384	$35593^{\circ}_{7/2} - 53520_{9/2}$
5625.495	1	1	17771.280	$21297^{\circ}_{5/2} - 39068_{7/2}$	5575.264	2	4	17931.391	$15453^{\circ}_{7/2} - 33384_{9/2}$
5624.146	10	10	17775.543	$21682^{\circ}_{7/2} - 39458_{7/2}$	5574.876	5b	50	17932.639	$22642^{\circ}_{9/2} - 40574_{11/2}$
5620.918	15	10	17785.751	$14790^{\circ}_{7/2} - 32576_{7/2}$	5573.873	40	25	17935.866	$13818^{\circ}_{7/2} - 31754_{5/2}$
5619.422	2	2	17790.486	$23697^{\circ}_{7/2} - 41488_{7/2}$	5568.000	300b	150	17954.784	$13818^{\circ}_{7/2} - 31773_{9/2}$
5615.728	75	100	17802.188	$17722^{\circ}_{9/2} - 35525_{11/2}$	5567.395	20	40	17956.735	$26770^{\circ}_{11/2} - 44727_{11/2}$
5615.635	15	20	17802.483	$26586^{\circ}_{3/2} - 44388_{5/2}$	5566.730	3	3	17958.880	$22685^{\circ}_{7/2} - 40644_{5/2}$
5615.008	10	8	17804.471	$24132^{\circ}_{3/2} - 41936_{3/2}$	5565.105	5	4	17964.124	$8460_{3/2} - 26424^{\circ}_{5/2}$
5614.515	5	1	17806.034	$36687^{\circ}_{5/2} - 54493_{5/2}$	5565.005	50	75	17964.447	$12488^{\circ}_{9/2} - 30452_{9/2}$
5614.337	3	5	17806.599	$25440^{\circ}_{5/2} - 43246_{7/2}$	5564.371	50	50	17966.494	$15242^{\circ}_{9/2} - 33209_{7/2}$
5614.187	3	4	17807.074	$29095^{\circ}_{5/2} - 46902_{5/2}$	5564.201	200	200	17967.043	$12485^{\circ}_{7/2} - 30452_{9/2}$
5613.471	1	4	17809.346	$33215^{\circ}_{3/2} - 51024_{3/2}$	5563.375	5	4	17969.710	$23518^{\circ}_{7/2} - 41488_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
5560.556	6	5	17978.820	$15236_{3/2} - 33215^{\circ}_{3/2}$	5495.806	75	75	18190.639	$14545^{\circ}_{5/2} - 32736_{7/2}$
5560.339	5	8	17979.522	$23012^{\circ}_{3/2} - 40991_{3/2}$	5494.556	50	50	18194.777	$19912^{\circ}_{13/2} - 38107_{15/2}$
5560.054	15	10	17980.443	$8605_{5/2} - 26586^{\circ}_{3/2}$	5493.931	2	4	18196.847	$25607^{\circ}_{9/2} - 43803_{7/2}$
5559.141	8	2	17983.396	$0_{3/2} - 17983^{\circ}_{5/2}$	5493.478	3	4	18198.348	$24757^{\circ}_{9/2} - 42955_{9/2}$
5557.311	75	75	17989.318	$16564^{\circ}_{11/2} - 34553_{9/2}$	5492.332	40	20	18202.145	$25607^{\circ}_{9/2} - 43809_{9/2}$
5556.146	40	10	17993.090	$4146_{7/2} - 22139^{\circ}_{9/2}$	5492.061	20	25	18203.043	$26586^{\circ}_{3/2} - 44789_{1/2}$
5555.115	2	1	17996.429	$12488^{\circ}_{9/2} - 30484_{11/2}$					$17837^{\circ}_{1/2} - 36040_{1/2}$
5551.515	3	4	18008.099	$33354^{\circ}_{5/2} - 51362_{5/2}$	5491.528	20	25	18204.810	$24132^{\circ}_{3/2} - 42336_{5/2}$
5551.370	100	75	18008.570	$9585^{\circ}_{5/2} - 27593_{5/2}$	5489.623	10	10	18211.127	$20080^{\circ}_{7/2} - 38291_{7/2}$
5548.516	20	25	18017.833	$21682^{\circ}_{7/2} - 39700_{5/2}$	5489.452	3	3	18211.694	$23697^{\circ}_{7/2} - 41909_{9/2}$
5547.824	3	2	18020.080	$15710^{\circ}_{3/2} - 33730_{5/2}$	5488.922	50	40	18213.453	$6168^{\circ}_{7/2} - 24381_{7/2}$
5546.490	20	20	18024.414	$20080^{\circ}_{7/2} - 38105_{5/2}$	5488.622	75	15	18214.448	$0_{3/2} - 18214^{\circ}_{3/2}$
5545.323	4	5	18028.207	$38863_{5/2} - 56892^{\circ}_{5/2}$	5488.518	2	3	18214.793	$28720^{\circ}_{3/2} - 46935_{3/2}$
5545.051	5	3	18029.092	$19248^{\circ}_{5/2} - 37277_{7/2}$	5487.426	1	3	18218.418	$29788^{\circ}_{9/2} - 48006_{9/2}$
5544.405	4	3	18031.192	$14545^{\circ}_{5/2} - 32576_{7/2}$	5487.133	2	4	18219.391	$30101^{\circ}_{7/2} - 48320_{5/2}$
5543.672	2	2	18033.576	$33902^{\circ}_{7/2} - 51935_{5/2}$	5486.917	20	40	18220.108	$24132^{\circ}_{3/2} - 42352_{5/2}$
5543.375	5	5	18034.543	$15349^{\circ}_{11/2} - 33384_{9/2}$	5486.180	2	2	18222.556	$24873^{\circ}_{5/2} - 43096_{5/2}$
5542.766	50	75	18036.524	$23187^{\circ}_{13/2} - 41223_{11/2}$	5484.615	3b	2	18227.756	$22139^{\circ}_{9/2} - 40367_{9/2}$
5542.472	5	5	18037.481	$31800^{\circ}_{7/2} - 49837_{9/2}$	5484.268	15h	15	18228.909	$29095^{\circ}_{5/2} - 47324_{5/2}$
5540.102	8	4	18045.197	$20120^{\circ}_{5/2} - 38165_{7/2}$	5484.138	150	200	18229.341	$11116^{\circ}_{7/2} - 29345_{5/2}$
5539.909	300	3000	18045.826	$9585^{\circ}_{5/2} - 27631_{3/2}$	5482.406	20	75	18235.100	$21131^{\circ}_{3/2} - 39366_{5/2}$
5538.500	50	20	18050.416	$7331^{\circ}_{5/2} - 25381_{3/2}$	5481.961	20	20	18236.580	$18816^{\circ}_{13/2} - 37053_{11/2}$
5537.663	1	1	18053.145	$29095^{\circ}_{5/2} - 47148_{3/2}$	5481.477	75	100	18238.190	$22685^{\circ}_{7/2} - 40923_{5/2}$
5537.131	75	50	18054.879	$9202^{\circ}_{7/2} - 27257_{7/2}$	5480.886	50	25	18240.157	$10855_{7/2} - 29095^{\circ}_{5/2}$
5533.146	20	10	18067.882	$10855_{7/2} - 28923^{\circ}_{5/2}$	5479.680	15	15	18244.171	$18568^{\circ}_{1/2} - 36812_{1/2}$
5532.179	15h	15	18071.040	$20686^{\circ}_{5/2} - 38757_{3/2}$	5479.310	1	2	18245.403	$24982^{\circ}_{7/2} - 43227_{5/2}$
5530.693	50	150	18075.896	$9711_{7/2} - 27787^{\circ}_{9/2}$	5477.380	2	1	18251.832	$20120^{\circ}_{5/2} - 38372_{3/2}$
5529.782	10	8	18078.874	$20989^{\circ}_{9/2} - 39068_{7/2}$	5477.046	50	50	18252.945	$17272^{\circ}_{9/2} - 35525_{11/2}$
5529.651	5	8	18079.302	$26424^{\circ}_{5/2} - 44503_{7/2}$	5474.856	50	20	18260.246	$1859_{3/2} - 20120^{\circ}_{5/2}$
5528.001	50	50	18084.698	$20080^{\circ}_{7/2} - 38165_{7/2}$	5473.616	3	4	18264.383	$24982^{\circ}_{7/2} - 43246_{7/2}$
5524.219	100	100	18097.079	$16564^{\circ}_{11/2} - 34661_{11/2}$	5473.404	25	40	18265.090	$7001_{3/2} - 25266^{\circ}_{1/2}$
5523.431	20	15	18099.661	$20969^{\circ}_{7/2} - 39068_{7/2}$	5471.387	50	75	18271.824	$22139^{\circ}_{9/2} - 40411_{7/2}$
5520.753	10	5	18108.441	$28243^{\circ}_{5/2} - 46352_{7/2}$					$18118_{3/2} - 36390^{\circ}_{3/2}$
5520.341	15	8	18109.792	$8378^{\circ}_{7/2} - 26488_{5/2}$	5470.937	15	20	18273.327	$17272^{\circ}_{9/2} - 35545_{9/2}$
5518.722	15	15	18115.105	$15786_{5/2} - 33902^{\circ}_{7/2}$	5469.708	2	2	18277.432	$20158_{5/2} - 38436^{\circ}_{3/2}$
5517.791	10	8	18118.161	$15236_{3/2} - 33354^{\circ}_{5/2}$	5468.742	20	15	18280.661	$17460^{\circ}_{5/2} - 35741_{5/2}$
5514.743	10	15	18128.175	$26424^{\circ}_{5/2} - 44552_{5/2}$	5466.685	2	2	18287.539	$24463^{\circ}_{5/2} - 42751_{7/2}$
5514.438	4	8	18129.178	$28026_{5/2} - 46155^{\circ}_{5/2}$	5466.266	4	2	18288.941	$9238^{\circ}_{9/2} - 27526_{9/2}$
5513.871	8	15	18131.042	$22513^{\circ}_{5/2} - 40644_{5/2}$	5464.784	5	5	18293.901	$19248^{\circ}_{5/2} - 37542_{3/2}$
5512.699	20	15	18134.897	$38757_{3/2} - 56892^{\circ}_{5/2}$	5462.611	150	150	18301.178	$14275^{\circ}_{9/2} - 32576_{7/2}$
5512.191	8h	5	18136.568	$14484^{\circ}_{11/2} - 32620_{11/2}$	5461.890	20	25	18303.594	$18973^{\circ}_{7/2} - 37277_{7/2}$
5510.680	50	40	18141.541	$15242^{\circ}_{9/2} - 33384_{9/2}$	5461.735	100	100	18304.113	$13468^{\circ}_{9/2} - 31773_{9/2}$
5507.948	50s	25	18150.539	$10673^{\circ}_{5/2} - 28823_{5/2}$	5461.151	10	8	18306.071	$9720^{\circ}_{7/2} - 28026_{5/2}$
5506.334	3	2	18155.859	$17722^{\circ}_{9/2} - 35878_{7/2}$	5458.403	4	2	18315.287	$11116^{\circ}_{7/2} - 29431_{7/2}$
5504.964	3	8	18160.378	$31800^{\circ}_{7/2} - 49960_{7/2}$	5458.105	20	40	18316.287	$23012^{\circ}_{3/2} - 41328_{5/2}$
5502.034	2	4	18170.049	$23518^{\circ}_{7/2} - 41688_{7/2}$	5453.355	2	3	18332.240	$25440^{\circ}_{5/2} - 43772_{5/2}$
5501.944	50	50	18170.346	$6244_{1/2} - 24414^{\circ}_{3/2}$	5452.518	5	4	18335.055	$20158_{5/2} - 38493^{\circ}_{5/2}$
5501.543	25	25	18171.670	$20120^{\circ}_{5/2} - 38291_{7/2}$	5452.334	15	20	18335.673	$24309^{\circ}_{11/2} - 42644_{13/2}$
5497.752	15	15	18184.200	$15453^{\circ}_{7/2} - 33637_{7/2}$	5449.895	20	10	18343.879	$4490^{\circ}_{5/2} - 22834_{7/2}$
5496.464	2	1	18188.461	$9061_{5/2} - 27249^{\circ}_{7/2}$	5449.479	200	200	18345.279	$14275^{\circ}_{9/2} - 32620_{11/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
5448.568	4h	5	18348.347	$28587^{\circ}_{5/2} - 46935_{3/2}$	5396.538	8	20	18525.248	$20310^{\circ}_{5/2} - 38836_{3/2}$
5447.313	50	20	18352.574	$22014^{\circ}_{11/2} - 40367_{9/2}$	5393.113	15b	75	18537.013	$20080^{\circ}_{7/2} - 38617_{9/2}$
5446.021	25	8	18356.928	$12902^{\circ}_{3/2} - 31259_{5/2}$	5392.569	200	75	18538.883	$4146_{7/2} - 22685^{\circ}_{7/2}$
5445.295	4	2	18359.375	$28243^{\circ}_{5/2} - 46603_{5/2}$	5392.356	20	40	18539.615	$19248^{\circ}_{5/2} - 37787_{7/2}$
				$8605_{5/2} - 26965^{\circ}_{3/2}$	5391.942	2	3	18541.038	$25266^{\circ}_{1/2} - 43807_{3/2}$
5444.792	5	4	18361.071	$27249^{\circ}_{7/2} - 45610_{5/2}$	5391.071	20	10	18544.034	$6213_{9/2} - 24757^{\circ}_{9/2}$
5444.589	2	4	18361.756	$22685^{\circ}_{7/2} - 41047_{9/2}$	5390.658	1	4	18545.454	$31924^{\circ}_{11/2} - 50470_{9/2}$
5444.371	3	4	18362.491	$20989^{\circ}_{9/2} - 39352_{11/2}$	5390.458	150b	75	18546.142	$6700^{\circ}_{9/2} - 25246_{9/2}$
5443.999	3	5	18363.746	$25440^{\circ}_{5/2} - 43803_{7/2}$	5390.197	10	25	18547.040	$27357^{\circ}_{9/2} - 45904_{9/2}$
5443.114	100	50	18366.731	$4146_{7/2} - 22513^{\circ}_{5/2}$	5389.913	2	2	18548.018	$22106_{5/2} - 40654^{\circ}_{5/2}$
5442.943	1	3	18367.308	$25440^{\circ}_{5/2} - 43807_{3/2}$	5389.453	50h	50	18549.601	$16906^{\circ}_{7/2} - 35456_{9/2}$
5441.298	5	15	18372.861	$24873^{\circ}_{5/2} - 43246_{7/2}$	5389.126	15	50	18550.726	$27249^{\circ}_{7/2} - 45800_{5/2}$
5437.385	50	50	18386.083	$12570_{7/2} - 30956^{\circ}_{9/2}$	5388.903	20	15	18551.494	$13248_{9/2} - 31800^{\circ}_{7/2}$
5436.499	20	75	18389.079	$30223^{\circ}_{15/2} - 48612_{13/2}$	5386.783	15	10	18558.795	$1521_{5/2} - 20080^{\circ}_{7/2}$
5435.893	150	200	18391.129	$12488^{\circ}_{9/2} - 30879_{7/2}$	5386.476	8b	10b	18559.853	$22014^{\circ}_{11/2} - 40574_{11/2}$
5435.722	20	25	18391.708	$9202^{\circ}_{7/2} - 27593_{5/2}$	5386.425	8g	10b	18560.029	$13250_{5/2} - 31810^{\circ}_{5/2}$
5435.126	100	100	18393.725	$12485^{\circ}_{7/2} - 30879_{7/2}$	5385.731	8	10	18562.420	$20989^{\circ}_{9/2} - 39552_{9/2}$
5434.947	25	50	18394.330	$25414^{\circ}_{11/2} - 43809_{9/2}$	5384.031	50	15	18568.281	$0_{3/2} - 18568^{\circ}_{1/2}$
				$15242^{\circ}_{9/2} - 33637_{7/2}$	5383.899	2	1	18568.736	$21131^{\circ}_{3/2} - 39700_{5/2}$
5433.699	75	75	18398.555	$11116^{\circ}_{7/2} - 29515_{9/2}$	5383.746	2	2	18569.264	$18118_{3/2} - 36687^{\circ}_{5/2}$
5433.287	20	8	18399.950	$4113_{5/2} - 22513^{\circ}_{5/2}$	5382.923	100	50	18572.103	$4113_{5/2} - 22685^{\circ}_{7/2}$
5432.580	10	25	18402.345	$17722^{\circ}_{9/2} - 36125_{9/2}$	5380.211	8	20	18581.465	$22642^{\circ}_{9/2} - 41223_{11/2}$
5431.774	10	25	18405.076	$22642^{\circ}_{9/2} - 41047_{9/2}$	5379.700	8	15	18583.229	$20969^{\circ}_{7/2} - 39552_{9/2}$
5431.418	8	4	18406.282	$8018_{3/2} - 26424^{\circ}_{5/2}$	5379.374	2	10	18584.356	$25188^{\circ}_{3/2} - 43772_{5/2}$
5428.961	10	20	18414.612	$19050^{\circ}_{3/2} - 37465_{5/2}$	5375.767	100	100	18596.825	$15305_{9/2} - 33902^{\circ}_{7/2}$
5428.048	8	10	18417.709	$20310^{\circ}_{5/2} - 38728_{5/2}$	5375.349	200	100	18598.271	$1521_{5/2} - 20120^{\circ}_{5/2}$
5426.526	1	1	18422.875	$20158_{5/2} - 38581^{\circ}_{5/2}$	5373.223	8	15	18605.630	$19912^{\circ}_{13/2} - 38517_{13/2}$
5426.261	15	15	18423.775	$12570_{7/2} - 30994^{\circ}_{7/2}$	5373.148	4	8	18605.890	$20158_{5/2} - 38764^{\circ}_{7/2}$
5425.678	300	300	18425.754	$9585^{\circ}_{5/2} - 28011_{3/2}$	5372.938	20	50l	18606.617	$17272^{\circ}_{9/2} - 35878_{7/2}$
5424.793	3	2	18428.760	$27787^{\circ}_{9/2} - 46216_{11/2}$	5372.456	10	8	18608.286	$8018_{3/2} - 26626^{\circ}_{1/2}$
5424.135	50	75	18430.996	$22139^{\circ}_{9/2} - 40570_{7/2}$	5372.397	2	3	18608.491	$20120^{\circ}_{5/2} - 38728_{5/2}$
5421.837	75	75	18438.808	$7001_{3/2} - 25440^{\circ}_{5/2}$	5369.170	40h	50	18619.675	$17121^{\circ}_{3/2} - 35741_{5/2}$
5421.205	10	10	18440.957	$9585^{\circ}_{5/2} - 28026_{5/2}$	5364.363	5	10	18636.359	$22355^{\circ}_{1/2} - 40991_{3/2}$
5419.658	3	4	18446.221	$20310^{\circ}_{5/2} - 38757_{3/2}$	5364.175	20	50	18637.013	$20120^{\circ}_{5/2} - 38757_{3/2}$
5415.434	200b	200	18460.609	$33215^{\circ}_{3/2} - 51676_{3/2}$	5363.611	25	40	18638.972	$16906^{\circ}_{7/2} - 35545_{9/2}$
				$14275^{\circ}_{9/2} - 32736_{7/2}$	5362.257	20	20	18643.679	$8605_{5/2} - 27249^{\circ}_{7/2}$
5414.530	40h	40	18463.691	$15710^{\circ}_{3/2} - 34174_{5/2}$	5361.766	2	4	18645.386	$26965^{\circ}_{3/2} - 45610_{5/2}$
5413.805	20	25	18466.163	$17727_{11/2} - 36193^{\circ}_{9/2}$	5361.409	75	100	18646.627	$24309^{\circ}_{11/2} - 42955_{9/2}$
5413.128	3	4	18468.473	$20989^{\circ}_{9/2} - 39458_{7/2}$	5360.998	15	15	18648.057	$20080^{\circ}_{7/2} - 38728_{5/2}$
5412.808	15	50	18469.565	$23730^{\circ}_{9/2} - 42200_{9/2}$	5357.832	5	2	18659.076	$41328_{5/2} - 59987^{\circ}_{3/2}$
5411.005	2	10	18475.719	$33354^{\circ}_{5/2} - 51830_{7/2}$	5357.446	1	3	18660.421	$33902^{\circ}_{7/2} - 52562_{7/2}$
5410.258	10b	15	18478.270	$22513^{\circ}_{5/2} - 40991_{3/2}$	5356.471	10h	10	18663.817	$14545^{\circ}_{5/2} - 33209_{7/2}$
5407.078	2b	2	18489.137	$25607^{\circ}_{9/2} - 44096_{9/2}$	5356.199	3b	10	18664.765	$23012^{\circ}_{3/2} - 41676_{3/2}$
5406.336	20	50	18491.674	$23730^{\circ}_{9/2} - 42222_{7/2}$	5354.747	2	5	18669.826	$31800^{\circ}_{7/2} - 50470_{9/2}$
				$18973^{\circ}_{7/2} - 37465_{5/2}$	5352.334	3b	3	18678.243	$13250_{5/2} - 31928^{\circ}_{3/2}$
5405.207	10	3	18495.537	$4146_{7/2} - 22642^{\circ}_{9/2}$	5351.614	4	10	18680.756	$20686^{\circ}_{5/2} - 39366_{5/2}$
5402.780	1	8	18503.845	$34174_{5/2} - 52678^{\circ}_{5/2}$	5351.452	8	40	18681.321	$25414^{\circ}_{11/2} - 44096_{9/2}$
5400.872	4	4	18510.382	$33354^{\circ}_{5/2} - 51865_{5/2}$	5351.325	10	20	18681.765	$23518^{\circ}_{7/2} - 42200_{9/2}$
				$16033^{\circ}_{5/2} - 34543_{5/2}$	5350.495	2	10	18684.663	$21682^{\circ}_{7/2} - 40367_{9/2}$
5396.705	3	3	18524.674	$23697^{\circ}_{7/2} - 42222_{7/2}$	5349.401	1	10	18688.484	$35156^{\circ}_{5/2} - 53845_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
5347.432	10	15	18695.365	$23187^{\circ}_{13/2} - 41882_{13/2}$	5292.919	15	20	18887.911	$21682^{\circ}_{7/2} - 40570_{7/2}$
5347.036	100w	150	18696.750	$22028^{\circ}_{15/2} - 40724_{13/2}$	5291.895	10	8	18891.565	$16564^{\circ}_{11/2} - 35456_{9/2}$
5346.375	50	40	18699.061	$9238^{\circ}_{9/2} - 27937_{11/2}$	5291.133	3	3	18894.286	$19050^{\circ}_{3/2} - 37945_{5/2}$
5345.000	15	25	18703.871	$23518^{\circ}_{7/2} - 42222_{7/2}$	5290.665	4	5	18895.958	$27357^{\circ}_{9/2} - 46253_{9/2}$
5344.244	4	20	18706.517	$31924^{\circ}_{11/2} - 50631_{11/2}$	5289.895	50	25	18898.708	$4113_{5/2} - 23012^{\circ}_{3/2}$
5343.297	15	50	18709.833	$22014^{\circ}_{11/2} - 40724_{13/2}$	5289.503	5h	5	18900.109	$14484^{\circ}_{11/2} - 33384_{9/2}$
5342.373	2	3	18713.069	$22685^{\circ}_{7/2} - 41398_{9/2}$	5287.963	3	3	18905.613	$20989^{\circ}_{9/2} - 39895_{9/2}$
5339.960	10b	10	18721.524	$15453^{\circ}_{7/2} - 34174_{5/2}$	5284.758	8	15	18917.078	$19248^{\circ}_{5/2} - 38165_{7/2}$
5333.163	15	10	18745.384	$18816^{\circ}_{13/2} - 37562_{11/2}$	5284.542	50	50	18917.851	$13818^{\circ}_{7/2} - 32736_{7/2}$
5331.226	2	1	18752.195	$12219_{3/2} - 30972^{\circ}_{5/2}$	5284.305	4	5	18918.700	$21297^{\circ}_{5/2} - 40216_{5/2}$
5329.758	25	25	18757.360	$11116^{\circ}_{7/2} - 29873_{7/2}$	5280.286	5	5	18933.099	$10855_{7/2} - 29788^{\circ}_{9/2}$
5329.651	5	8	18757.737	$20310^{\circ}_{5/2} - 39068_{7/2}$	5278.375	3	5	18939.954	$14790^{\circ}_{7/2} - 33730_{5/2}$
5329.476	40	50	18758.352	$18816^{\circ}_{13/2} - 37575_{13/2}$	5278.228	2b	10	18940.481	$26963^{\circ}_{7/2} - 45904_{9/2}$
5329.373	50	50	18758.715	$10673^{\circ}_{5/2} - 29431_{7/2}$	5277.500	300	200	18943.094	$10572^{\circ}_{9/2} - 29515_{9/2}$
5328.339	5	15	18762.355	$25414^{\circ}_{11/2} - 44177_{11/2}$	5277.219	10	50	18944.103	$17121^{\circ}_{3/2} - 36065_{5/2}$
5325.559	3	4	18772.149	$20686^{\circ}_{5/2} - 39458_{7/2}$	5276.407	40	15	18947.018	$8018_{3/2} - 26965^{\circ}_{3/2}$
5325.145	200	200	18773.609	$12485^{\circ}_{7/2} - 31259_{5/2}$	5276.293	1	10	18947.427	$33730_{5/2} - 52678^{\circ}_{5/2}$
5324.650	20b	20	18775.354	$16818_{7/2} - 35593^{\circ}_{9/2}$	5275.775	3	4	18949.287	$20989^{\circ}_{9/2} - 39939_{11/2}$
5324.043	3	20	18777.494	$25188^{\circ}_{3/2} - 43965_{1/2}$	5275.447	3	5	18950.466	$19912^{\circ}_{13/2} - 38862_{11/2}$
5322.464	3b	10b	18783.065	$24463^{\circ}_{5/2} - 43246_{7/2}$	5272.643	75	75	18960.543	$16564^{\circ}_{11/2} - 35525_{11/2}$
5322.432	4	20b	18783.178	$20080^{\circ}_{7/2} - 38863_{5/2}$	5271.614	8	15	18964.244	$23372^{\circ}_{3/2} - 42336_{5/2}$
5321.315	15	75	18787.121	$12472^{\circ}_{5/2} - 31259_{5/2}$	5270.744	5	50	18967.375	$30101^{\circ}_{7/2} - 49068_{5/2}$
5320.991	8	15	18788.265	$23730^{\circ}_{9/2} - 42518_{7/2}$	5270.124	2	8	18969.606	$29720^{\circ}_{3/2} - 48689_{3/2}$
5320.494	2	4	18790.020	$24982^{\circ}_{7/2} - 43772_{5/2}$	5269.650	15	20	18971.312	$18973^{\circ}_{7/2} - 37945_{5/2}$
5318.423	50	20	18797.337	$8605_{5/2} - 27403^{\circ}_{3/2}$	5269.385	40	50	18972.266	$16906^{\circ}_{7/2} - 35878_{7/2}$
5315.755	1	3	18806.771	$31928^{\circ}_{3/2} - 50735_{3/2}$	5268.932	15	20	18973.898	$18568^{\circ}_{1/2} - 37542_{3/2}$
5313.671	10	15b	18814.147	$18973^{\circ}_{7/2} - 37787_{7/2}$	5268.737	15	25	18974.600	$17837^{\circ}_{1/2} - 36812_{1/2}$
5313.612	8	20	18814.356	$30310^{\circ}_{11/2} - 49124_{11/2}$	5268.716	2c	8	18974.675	$17837^{\circ}_{1/2} - 36812_{1/2}$
5310.864	15	15	18824.091	$9202^{\circ}_{7/2} - 28026_{5/2}$	5267.365	10	40	18979.542	$23372^{\circ}_{3/2} - 42352_{5/2}$
5310.260	200	100	18826.232	$1859_{3/2} - 20686^{\circ}_{5/2}$	5267.030	4b	5	18980.749	$21297^{\circ}_{5/2} - 40278_{3/2}$
5310.103	4	15	18826.788	$24982^{\circ}_{7/2} - 43809_{9/2}$	5264.956	50	50	18988.226	$16033^{\circ}_{5/2} - 35021_{3/2}$
5309.728	15	20	18828.118	$19912^{\circ}_{13/2} - 38740_{11/2}$	5263.118	8	25	18994.857	$27357^{\circ}_{9/2} - 46352_{7/2}$
5308.430	20	50	18832.722	$15710^{\circ}_{3/2} - 34543_{5/2}$	5260.867	20	20	19002.985	$22685^{\circ}_{7/2} - 41688_{7/2}$
5308.154	15	40	18833.701	$23518^{\circ}_{7/2} - 42352_{5/2}$	5258.471	8	4	19011.643	$18118_{3/2} - 37130^{\circ}_{1/2}$
5307.710	2	200	18835.276	$35525_{41/2} - 54360^{\circ}_{9/2}$	5255.972	50	50	19020.682	$23730^{\circ}_{9/2} - 42751_{7/2}$
5307.466	100	150	18836.142	$16564^{\circ}_{11/2} - 35400_{13/2}$	5253.939	2	4	19028.042	$27357^{\circ}_{9/2} - 46385_{7/2}$
5306.033	1	5	18841.229	$27526_{9/2} - 46368^{\circ}_{9/2}$	5253.443	100	75	19029.839	$15144^{\circ}_{3/2} - 34174_{5/2}$
5305.577	75	50	18842.849	$9400_{5/2} - 28243^{\circ}_{5/2}$	5253.249	5	75	19030.541	$20120^{\circ}_{5/2} - 39150_{3/2}$
5305.495	4	5	18843.140	$25607^{\circ}_{9/2} - 44450_{9/2}$	5252.766	50	75	19032.291	$22014^{\circ}_{11/2} - 41047_{9/2}$
5304.675	15b	20b	18846.053	$22642^{\circ}_{9/2} - 41488_{7/2}$	5252.280	3	10	19034.052	$25266^{\circ}_{1/2} - 44300_{3/2}$
5304.620	25	25	18846.248	$14790^{\circ}_{7/2} - 33637_{7/2}$	5251.930	4	10	19035.321	$25414^{\circ}_{11/2} - 44450_{9/2}$
5303.048	50	40	18851.835	$12902^{\circ}_{5/2} - 31754_{5/2}$	5249.853	2	8	19042.852	$30452_{9/2} - 49495^{\circ}_{9/2}$
5302.698	3	4	18853.079	$31810^{\circ}_{5/2} - 50663_{5/2}$	5249.657	3	2	19043.563	$19248^{\circ}_{5/2} - 38291_{7/2}$
				$17272^{\circ}_{9/2} - 36125_{9/2}$	5248.855	3		19046.472	$24757^{\circ}_{9/2} - 43803_{7/2}$
5301.649	3	3	18856.809	$19248^{\circ}_{5/2} - 38105_{5/2}$	5247.654	500	100	19050.831	$0_{3/2} - 19050^{\circ}_{3/2}$
5301.403	100	100	18857.684	$14101^{\circ}_{1/2} - 32959_{3/2}$	5242.091	3	200	19071.048	$22028^{\circ}_{15/2} - 41099_{15/2}$
5300.969	2	5	18859.228	$27357^{\circ}_{9/2} - 46216_{11/2}$	5240.200	8	75	19077.930	$6168^{\circ}_{7/2} - 25246_{9/2}$
5296.676	10	40	18874.513	$15144^{\circ}_{3/2} - 34019_{3/2}$	5237.907	5	500	19086.282	$17722^{\circ}_{9/2} - 36809_{7/2}$
5295.617	20h	15	18878.288	$8378^{\circ}_{7/2} - 27257_{7/2}$	5237.626	2	300	19087.306	$26647^{\circ}_{13/2} - 45735_{11/2}$
5294.826	2	3	18881.108	$30956^{\circ}_{9/2} - 49837_{9/2}$	5236.425	4	10	19091.684	$14545^{\circ}_{5/2} - 33637_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
5233.225	150	175	19103.358	$9720^{\circ}_{7/2} - 28823_{5/2}$	5148.212	200	1500	19418.810	$15242^{\circ}_{9/2} - 34661_{11/2}$
5232.985	0	25	19104.234	$37787_{7/2} - 56892^{\circ}_{5/2}$	5145.035	150s	200	19430.800	$26965^{\circ}_{3/2} - 46395_{3/2}$
5231.715	3	4	19108.871	$14275^{\circ}_{9/2} - 33384_{9/2}$					$7331^{\circ}_{5/2} - 26762_{3/2}$
5227.642	2	10	19123.759	$19248^{\circ}_{5/2} - 38372_{3/2}$	5143.268	300l	500	19437.476	$1859_{3/2} - 21297^{\circ}_{5/2}$
5225.579	3	75	19131.309	$18973^{\circ}_{7/2} - 38105_{5/2}$	5137.708	20	25	19458.511	$25440^{\circ}_{5/2} - 44898_{7/2}$
5225.074	3	2	19133.158	$12219_{3/2} - 31353^{\circ}_{3/2}$	5135.232	10	10	19467.893	$31800^{\circ}_{7/2} - 51268_{7/2}$
5224.116	5	2	19136.666	$7828_{1/2} - 26965^{\circ}_{3/2}$	5132.236	8	8	19479.257	$14790^{\circ}_{7/2} - 34270_{9/2}$
5219.960	4	8	19151.902	$13468^{\circ}_{9/2} - 32620_{11/2}$	5131.490	4	5	19482.089	$17983^{\circ}_{5/2} - 37465_{5/2}$
5218.527	75	100	19157.162	$7331^{\circ}_{5/2} - 26488_{5/2}$	5131.072	25	250	19483.676	$15242^{\circ}_{9/2} - 34726_{7/2}$
5216.593	200	1	19164.264	$1521_{5/2} - 20686^{\circ}_{5/2}$	5129.844	5h	20	19488.340	$14790^{\circ}_{7/2} - 34279_{7/2}$
5214.156	5	100	19173.221	$19912^{\circ}_{13/2} - 39085_{13/2}$	5124.430	3h	10	19508.929	$19248^{\circ}_{5/2} - 38757_{3/2}$
5211.574	5	8	19182.720	$9061_{5/2} - 28243^{\circ}_{5/2}$	5123.477	2	10	19512.558	$21131^{\circ}_{3/2} - 40644_{5/2}$
5210.572	3	1	19186.408	$9400_{5/2} - 28587^{\circ}_{5/2}$	5122.896	3	3	19514.771	$24873^{\circ}_{5/2} - 44388_{5/2}$
5206.659	15	50	19200.828	$25607^{\circ}_{9/2} - 44807_{7/2}$					$22685^{\circ}_{7/2} - 42200_{9/2}$
				$10673^{\circ}_{5/2} - 29873_{7/2}$	5119.564	0	15	19527.472	$30310^{\circ}_{11/2} - 49837_{9/2}$
5206.489	25	20	19201.454	$6213_{9/2} - 25414^{\circ}_{11/2}$	5113.379	15	25	19551.091	$4146_{7/2} - 23697^{\circ}_{7/2}$
5205.776	20	400	19204.084	$15349^{\circ}_{11/2} - 34553_{9/2}$	5110.863	15	300	19560.716	$16564^{\circ}_{11/2} - 36125_{9/2}$
5204.998	5	20	19206.955	$17121^{\circ}_{3/2} - 36328_{3/2}$	5108.743	0	25	19568.833	$28923^{\circ}_{5/2} - 48492_{5/2}$
5196.042	15	15	19240.060	$12570_{7/2} - 31810^{\circ}_{5/2}$	5107.235	3	2	19574.611	$7828_{1/2} - 27403^{\circ}_{3/2}$
5194.250	0	10	19246.698	$20120^{\circ}_{5/2} - 39366_{5/2}$	5104.778	2	1	19584.032	$4146_{7/2} - 23730^{\circ}_{9/2}$
5193.822	75	100	19248.284	$0_{3/2} - 19248^{\circ}_{5/2}$	5104.563	3b	2	19584.857	$7001_{3/2} - 26586^{\circ}_{3/2}$
5190.867	100	100	19259.241	$4113_{5/2} - 23372^{\circ}_{3/2}$	5103.765	5	100	19587.919	$19248^{\circ}_{5/2} - 38836_{3/2}$
5189.674	10	300	19263.668	$20288^{\circ}_{11/2} - 39552_{9/2}$	5098.657	4h	2	19607.543	$18214^{\circ}_{3/2} - 37821_{3/2}$
5188.721	2	25	19267.206	$22642^{\circ}_{9/2} - 41909_{9/2}$	5098.039	100	75	19609.920	$1521_{5/2} - 21131^{\circ}_{3/2}$
				$13468^{\circ}_{9/2} - 32736_{7/2}$	5093.086	3	20	19628.990	$14545^{\circ}_{5/2} - 34174_{5/2}$
5188.364	20	150	19268.532	$12485^{\circ}_{7/2} - 31754_{5/2}$	5090.752	300	400	19637.989	$26965^{\circ}_{3/2} - 46603_{5/2}$
5184.730	10	75	19282.037	$12472^{\circ}_{5/2} - 31754_{5/2}$					$8605_{5/2} - 28243^{\circ}_{5/2}$
5184.660	0	10	19282.298	$28587^{\circ}_{5/2} - 47869_{3/2}$	5089.224	3	1	19643.886	$18973^{\circ}_{7/2} - 38617_{9/2}$
5183.987	100	250	19284.801	$12488^{\circ}_{9/2} - 31773_{9/2}$	5087.503	2	50	19650.531	$20288^{\circ}_{11/2} - 39939_{11/2}$
5183.601	3	2	19286.237	$20080^{\circ}_{7/2} - 39366_{5/2}$	5085.117	2	10	19659.751	$9061_{5/2} - 28720^{\circ}_{3/2}$
5182.527	20	30	19290.234	$18816^{\circ}_{13/2} - 38107_{15/2}$	5079.138	8	15	19682.893	$11576^{\circ}_{3/2} - 31259_{5/2}$
5178.988	2	1	19303.415	$36193^{\circ}_{9/2} - 55496_{9/2}$	5076.600	5	50	19692.734	$24757^{\circ}_{9/2} - 44450_{9/2}$
5177.097	0	25	19310.466	$31353^{\circ}_{3/2} - 50663_{5/2}$	5076.196	0	5	19694.301	$29720^{\circ}_{3/2} - 49414_{3/2}$
5176.735	4	8	19311.816	$15349^{\circ}_{11/2} - 34661_{11/2}$	5075.470	15	150	19697.118	$15324^{\circ}_{1/2} - 35021_{3/2}$
5175.073	2	5	19318.018	$18973^{\circ}_{7/2} - 38291_{7/2}$	5073.981	4	5	19702.898	$20158_{5/2} - 39861^{\circ}_{5/2}$
5172.912	10	25	19326.088	$10189^{\circ}_{11/2} - 29515_{9/2}$	5073.080	5s	25	19706.397	$19050^{\circ}_{3/2} - 38757_{3/2}$
5170.220	10	100	19336.151	$11116^{\circ}_{7/2} - 30452_{9/2}$	5072.930	0	1	19706.980	$13250_{5/2} - 32957^{\circ}_{7/2}$
5169.684	2h	1	19338.155	$20120^{\circ}_{5/2} - 39458_{7/2}$	5072.627	10	150	19708.157	$16033^{\circ}_{5/2} - 35741_{5/2}$
5169.160	1	25	19340.116	$23012^{\circ}_{3/2} - 42352_{5/2}$	5072.480	3	125	19708.728	$12219_{3/2} - 31928^{\circ}_{3/2}$
5166.923	2b	25	19348.489	$29720^{\circ}_{3/2} - 49068_{5/2}$					$13248_{9/2} - 32957^{\circ}_{7/2}$
				$22139^{\circ}_{9/2} - 41488_{7/2}$					
					5072.331	0	25	19709.307	$40278_{3/2} - 59987^{\circ}_{3/2}$
5166.875	3	20	19348.669	$17460^{\circ}_{5/2} - 36809_{7/2}$	5068.239	0	15	19725.220	$31928^{\circ}_{3/2} - 51653_{1/2}$
5160.678	50	25	19371.903	$4146_{7/2} - 23518^{\circ}_{7/2}$	5064.330	20b	50	19740.445	$13468^{\circ}_{9/2} - 33209_{7/2}$
5159.781	0	25	19375.270	$28923^{\circ}_{5/2} - 48298_{7/2}$	5061.219	25	200	19752.579	$14790^{\circ}_{7/2} - 34543_{5/2}$
5159.153	3		19377.629	$20989^{\circ}_{9/2} - 40367_{9/2}$	5058.589	1b	2	19762.848	$11116^{\circ}_{7/2} - 30879_{7/2}$
				$20080^{\circ}_{7/2} - 39458_{7/2}$	5058.563	40h	200	19762.950	$14790^{\circ}_{7/2} - 34553_{9/2}$
5154.893	8	8	19393.642	$6213_{9/2} - 25607^{\circ}_{9/2}$	5057.848	2		19765.743	$16818_{7/2} - 36583^{\circ}_{7/2}$
5154.867	0	5	19393.740	$40222_{3/2} - 59616^{\circ}_{3/2}$	5056.331	0	15	19771.673	$30101^{\circ}_{7/2} - 49873_{5/2}$
5153.516	4	25	19398.824	$15144^{\circ}_{3/2} - 34543_{5/2}$	5055.338	300	50	19775.557	$1521_{5/2} - 21297^{\circ}_{5/2}$
5151.855	50	20	19405.078	$4113_{5/2} - 23518^{\circ}_{7/2}$	5053.309	4	2	19783.497	$8460_{3/2} - 28243^{\circ}_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
5051.331	5	75	19791.244	$17771^{\circ}_{11/2} - 37562_{11/2}$	4979.135	5	15	20078.207	$20969^{\circ}_{7/2} - 41047_{9/2}$
5049.799	500	300	19797.248	$6691^{\circ}_{3/2} - 26488_{5/2}$	4978.308	2	8	20081.543	$17460^{\circ}_{5/2} - 37542_{3/2}$
5047.431	3	100	19806.536	$15786_{5/2} - 35593^{\circ}_{7/2}$	4978.034	10	50	20082.648	$22139^{\circ}_{9/2} - 42222_{7/2}$
5044.935	2	10	19816.335	$19050^{\circ}_{3/2} - 38867_{1/2}$	4976.591	50	75	20088.471	$12488^{\circ}_{9/2} - 32576_{7/2}$
5040.555	8	5	19833.554	$24132^{\circ}_{3/2} - 43965_{1/2}$	4975.947	100	100	20091.071	$12485^{\circ}_{7/2} - 32576_{7/2}$
5037.729	2	3	19844.680	$36390^{\circ}_{3/2} - 56235_{3/2}$	4975.572	3	4	20092.585	$15453^{\circ}_{7/2} - 35545_{9/2}$
5037.285	1	4	19846.429	$9585^{\circ}_{5/2} - 29431_{7/2}$	4974.998	4	5	20094.903	$18973^{\circ}_{7/2} - 39068_{7/2}$
5033.902	1	10	19859.767	$21131^{\circ}_{3/2} - 40991_{3/2}$	4974.737	1	5	20095.958	$20120^{\circ}_{5/2} - 40216_{5/2}$
5029.632	5	75	19876.627	$15144^{\circ}_{3/2} - 35021_{3/2}$	4974.441	1	3	20097.154	$28720^{\circ}_{3/2} - 48817_{3/2}$
5028.613	150b	200b	19880.655	$10572^{\circ}_{9/2} - 30452_{9/2}$	4973.769	5	10	20099.869	$19050^{\circ}_{3/2} - 39150_{3/2}$
5023.049	3	50	19902.676	$16906^{\circ}_{7/2} - 36809_{7/2}$	4973.596	5	10	20100.568	$20310^{\circ}_{5/2} - 40411_{7/2}$
5021.758	4	25	19907.793	$26647^{\circ}_{13/2} - 46555_{11/2}$	4973.384	100l	150	20101.425	$15324^{\circ}_{1/2} - 35425_{1/2}$
5020.541	50	40	19912.618	$13818^{\circ}_{7/2} - 33730_{5/2}$	4973.092	5b	20b	20102.605	$28587^{\circ}_{5/2} - 48689_{3/2}$
5019.614	2	10	19916.296	$24982^{\circ}_{7/2} - 44898_{7/2}$	4973.050	8	50	20102.775	$20120^{\circ}_{5/2} - 40222_{3/2}$
5019.324	150	150	19917.446	$14101^{\circ}_{1/2} - 34019_{3/2}$	4972.668	5	10	20104.319	$13250_{5/2} - 33354^{\circ}_{5/2}$
5018.220	2	10	19921.828	$27249^{\circ}_{7/2} - 47171_{9/2}$	4972.174	50	150	20106.316	$23697^{\circ}_{7/2} - 43803_{7/2}$
5017.255	300	400	19925.660	$7331^{\circ}_{5/2} - 27257_{7/2}$					$15349^{\circ}_{11/2} - 35456_{9/2}$
5015.888	100	100	19931.090	$10379_{9/2} - 30310^{\circ}_{11/2}$	4971.186	2	3	20110.312	$22834_{7/2} - 42944^{\circ}_{7/2}$
5014.751	50	50	19935.609	$30972^{\circ}_{5/2} - 50907_{3/2}$	4970.029	15b	75	20114.994	$8605_{5/2} - 28720^{\circ}_{3/2}$
5013.994	1	3	19938.619	$26963^{\circ}_{7/2} - 46902_{5/2}$	4968.377	2l	3	20121.682	$17983^{\circ}_{5/2} - 38105_{5/2}$
5013.600	20l	50	19940.186	$23187^{\circ}_{13/2} - 43127_{11/2}$	4967.058	5	3	20127.025	$8460_{3/2} - 28587^{\circ}_{5/2}$
5012.729	2	5	19943.650	$27787^{\circ}_{9/2} - 47731_{9/2}$	4964.982	15	20b	20135.441	$20080^{\circ}_{7/2} - 40216_{5/2}$
5009.976	50b	100	19954.609	$20969^{\circ}_{7/2} - 40923_{5/2}$	4964.116	100	150	20138.953	$10855_{7/2} - 30994^{\circ}_{7/2}$
5009.442	10	20	19956.736	$17722^{\circ}_{9/2} - 37679_{11/2}$	4963.791	0	5	20140.272	$26770^{\circ}_{11/2} - 46910_{13/2}$
5009.078	2	3	19958.187	$20686^{\circ}_{5/2} - 40644_{5/2}$	4963.550	3	25	20141.250	$24757^{\circ}_{9/2} - 44898_{7/2}$
5008.377	1	3	19960.980	$26424^{\circ}_{5/2} - 46385_{7/2}$	4963.184	75	100	20142.735	$11116^{\circ}_{7/2} - 31259_{5/2}$
5008.190	100	150	19961.725	$17983^{\circ}_{5/2} - 37945_{5/2}$	4962.959	25b	100b	20143.648	$9202^{\circ}_{7/2} - 29345_{5/2}$
5007.377	8	8	19964.966	$13250_{5/2} - 33215^{\circ}_{3/2}$	4962.925	40b	75b	20143.786	$24982^{\circ}_{7/2} - 45126_{9/2}$
5006.821	3	5	19967.183	$20310^{\circ}_{5/2} - 40278_{3/2}$	4960.492	25b	20	20153.666	$9720^{\circ}_{7/2} - 29873_{7/2}$
5005.738	2	2	19971.503	$26424^{\circ}_{5/2} - 46395_{3/2}$	4959.738	1	1	20156.730	$16906^{\circ}_{7/2} - 37063_{9/2}$
5003.503	2	10	19980.424	$29515_{9/2} - 49495^{\circ}_{9/2}$	4959.438	3	10	20157.949	$20120^{\circ}_{5/2} - 40278_{3/2}$
5002.567	15	20	19984.162	$17837^{\circ}_{1/2} - 37821_{3/2}$	4958.974	1	8	20159.835	$30310^{\circ}_{11/2} - 50470_{9/2}$
4999.937	100	100	19994.674	$14275^{\circ}_{9/2} - 34270_{9/2}$	4958.717	10	5	20160.880	$1521_{5/2} - 21682^{\circ}_{7/2}$
4999.105	20	20	19998.002	$14545^{\circ}_{5/2} - 34543_{5/2}$	4956.836	5b	75	20168.531	$24132^{\circ}_{3/2} - 44300_{3/2}$
4997.669	40	50	20003.748	$14275^{\circ}_{9/2} - 34279_{7/2}$	4956.370	1	2	20170.427	$25440^{\circ}_{5/2} - 45610_{5/2}$
4997.326	40	50	20005.121	$17272^{\circ}_{9/2} - 37277_{7/2}$	4955.960	2	10	20172.096	$29788^{\circ}_{9/2} - 49960_{7/2}$
4996.982	3	4	20006.498	$22106_{5/2} - 42112^{\circ}_{3/2}$	4954.657	150b	200	20177.401	$14484^{\circ}_{11/2} - 34661_{11/2}$
4996.873	5	10	20006.934	$31928^{\circ}_{3/2} - 51935_{5/2}$	4954.555	50	150	20177.816	$11576^{\circ}_{3/2} - 31754_{5/2}$
4992.275	2	4	20025.361	$20158_{5/2} - 40184^{\circ}_{7/2}$	4954.336	3	10	20178.708	$26424^{\circ}_{5/2} - 46603_{5/2}$
4991.925	3	5	20026.765	$19912^{\circ}_{13/2} - 39939_{11/2}$	4951.826	8	15	20188.936	$18568^{\circ}_{1/2} - 38757_{3/2}$
4991.007	10b	20	20030.448	$15710^{\circ}_{3/2} - 35741_{5/2}$	4951.385	8	15	20190.734	$21297^{\circ}_{5/2} - 41488_{7/2}$
4990.472	5	4	20032.596	$16033^{\circ}_{5/2} - 36065_{5/2}$	4950.621	150	100	20193.850	$9238^{\circ}_{9/2} - 29431_{7/2}$
4990.030	20	15	20034.370	$9061_{5/2} - 29095^{\circ}_{5/2}$	4950.167	10	20	20195.702	$15349^{\circ}_{11/2} - 35545_{9/2}$
4987.149	200	300	20045.944	$18816^{\circ}_{13/2} - 38862_{11/2}$	4949.961	8	40	20196.542	$21131^{\circ}_{3/2} - 41328_{5/2}$
4986.029	4	25	20050.446	$24757^{\circ}_{9/2} - 44807_{7/2}$	4947.315	4	10	20207.344	$35878_{7/2} - 56086^{\circ}_{9/2}$
4984.301	1	1	20057.397	$20989^{\circ}_{9/2} - 41047_{9/2}$	4946.661	100	100	20210.016	$19248^{\circ}_{5/2} - 39458_{7/2}$
4981.228	3b	4	20069.771	$17771^{\circ}_{11/2} - 37840_{9/2}$	4945.863	15	20	20213.277	$15242^{\circ}_{9/2} - 35456_{9/2}$
4980.949	50	40	20070.895	$6691^{\circ}_{3/2} - 26762_{3/2}$	4945.249	2	3b	20215.786	$23012^{\circ}_{3/2} - 43227_{5/2}$
4979.976	3	10	20074.817	$23697^{\circ}_{7/2} - 43772_{5/2}$	4942.844	15	15	20225.622	$8018_{3/2} - 28243^{\circ}_{5/2}$
4979.438	1	4	20076.986	$28243^{\circ}_{5/2} - 48320_{5/2}$	4942.616	3	15	20226.555	$21682^{\circ}_{7/2} - 41909_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4941.621	1	2h	20230.628	$28587^{\circ}_{5/2} - 48817_{3/2}$	4885.985	2b	3	20460.988	$13818^{\circ}_{7/2} - 34279_{7/2}$
4939.948	8	15	20237.479	$20686^{\circ}_{5/2} - 40923_{5/2}$	4885.529	1	3	20462.898	$18118_{3/2} - 38581^{\circ}_{5/2}$
4939.808	5	15	20238.053	$22513^{\circ}_{5/2} - 42751_{7/2}$	4884.684	2	3	20466.437	$27403^{\circ}_{3/2} - 47869_{3/2}$
4937.962	2	5	20245.618	$31924^{\circ}_{11/2} - 52170_{11/2}$	4882.446	4	10	20475.819	$14545^{\circ}_{5/2} - 35021_{3/2}$
4937.405	2	2b	20247.902	$12488^{\circ}_{9/2} - 32736_{7/2}$	4881.106	0	1	20481.440	$28587^{\circ}_{5/2} - 49068_{5/2}$
4934.534	3	4	20259.683	$20310^{\circ}_{5/2} - 40570_{7/2}$	4880.230	3b	4	20485.116	$22642^{\circ}_{9/2} - 43127_{11/2}$
4933.850	15b	75	20262.491	$7331^{\circ}_{5/2} - 27593_{5/2}$	4879.349	5	20	20488.815	$16564^{\circ}_{11/2} - 37053_{11/2}$
4933.563	4b	5b	20263.670	$10189^{\circ}_{11/2} - 30452_{9/2}$	4879.186	0	1	20489.499	$25414^{\circ}_{11/2} - 45904_{9/2}$
4933.480	3b	5b	20264.011	$12472^{\circ}_{5/2} - 32736_{7/2}$	4879.154	5	4	20489.634	$8605_{5/2} - 29095^{\circ}_{5/2}$
4932.587	0	3	20267.680	$30956^{\circ}_{9/2} - 51224_{9/2}$	4877.809	15	5	20495.283	$1859_{3/2} - 22355^{\circ}_{1/2}$
4932.532	8h	5h	20267.906	$18568^{\circ}_{1/2} - 38836_{3/2}$	4877.704	1	2	20495.725	$20158_{5/2} - 40654^{\circ}_{5/2}$
4932.345	1	2	20268.674	$18816^{\circ}_{13/2} - 39085_{13/2}$	4877.002	25	150	20498.675	$16564^{\circ}_{11/2} - 37063_{9/2}$
				$24381_{7/2} - 44650^{\circ}_{7/2}$	4874.152	2	3	20510.661	$27787^{\circ}_{9/2} - 48298_{7/2}$
4929.985	10	100	20278.377	$14275^{\circ}_{9/2} - 34553_{9/2}$	4874.030	1	2	20511.174	$26424^{\circ}_{5/2} - 46935_{3/2}$
4929.378	2	15	20280.874	$15144^{\circ}_{3/2} - 35425_{1/2}$	4873.351	2	3	20514.032	$27357^{\circ}_{9/2} - 47871_{7/2}$
4927.587	4	15	20288.245	$15453^{\circ}_{7/2} - 35741_{5/2}$	4872.971	0	8	20515.631	$17272^{\circ}_{9/2} - 37787_{7/2}$
				$15305_{9/2} - 35593^{\circ}_{7/2}$	4872.537	1	1	20517.459	$21682^{\circ}_{7/2} - 42200_{9/2}$
4926.969	1	1	20290.790	$23518^{\circ}_{7/2} - 43809_{9/2}$	4872.138	3	5	20519.139	$20969^{\circ}_{7/2} - 41488_{7/2}$
4925.795	2b	3	20295.626	$10189^{\circ}_{11/2} - 30484_{11/2}$	4868.274	5	25	20535.425	$18816^{\circ}_{13/2} - 39352_{11/2}$
4925.418	5	50	20297.179	$15305_{9/2} - 35602^{\circ}_{11/2}$	4863.163	300d	1000	20557.006	$6213_{9/2} - 26770^{\circ}_{11/2}$
4925.002	3	75	20298.893	$18568^{\circ}_{1/2} - 38867_{1/2}$	4862.203	0	2	20561.065	$35525_{11/2} - 56086^{\circ}_{9/2}$
4924.798	2	8	20299.734	$7331^{\circ}_{5/2} - 27631_{3/2}$	4862.128	1	3	20561.382	$22685^{\circ}_{7/2} - 43246_{7/2}$
4924.420	15	50	20301.293	$4113_{5/2} - 24414^{\circ}_{3/2}$	4861.932	1	5	20562.211	$30101^{\circ}_{7/2} - 50663_{5/2}$
4923.421	1	2	20305.412	$20686^{\circ}_{5/2} - 40991_{3/2}$	4860.421	3	200	20568.603	$17272^{\circ}_{9/2} - 37840_{9/2}$
4922.946	15	100	20307.371	$10572^{\circ}_{9/2} - 30879_{7/2}$	4858.332	40	500	20577.448	$10379_{9/2} - 30956^{\circ}_{9/2}$
4921.876	0	2	20311.786	$22106_{5/2} - 42418^{\circ}_{3/2}$	4858.241	0	5	20577.833	$23518^{\circ}_{7/2} - 44096_{9/2}$
4921.612	50b	150	20312.875	$9202^{\circ}_{7/2} - 29515_{9/2}$	4858.096	5	300	20578.447	$18973^{\circ}_{7/2} - 39552_{9/2}$
4920.554	2b	3	20317.243	$4146_{7/2} - 24463^{\circ}_{5/2}$	4857.159	2	75	20582.417	$18568^{\circ}_{1/2} - 39150_{3/2}$
4920.526	10b	100	20317.358	$8605_{5/2} - 28923^{\circ}_{5/2}$	4856.957	1	2	20583.273	$22513^{\circ}_{5/2} - 43096_{5/2}$
4919.816	500	500	20320.290	$6168^{\circ}_{7/2} - 26488_{5/2}$	4856.273	3	40	20586.172	$10673^{\circ}_{5/2} - 31259_{5/2}$
4917.468	2	2b	20329.993	$15710^{\circ}_{3/2} - 36040_{1/2}$	4854.647	1	1	20593.067	$23372^{\circ}_{3/2} - 43965_{1/2}$
4914.119	5	100	20343.847	$17121^{\circ}_{3/2} - 37465_{5/2}$	4851.898	2	40	20604.734	$22642^{\circ}_{9/2} - 43246_{7/2}$
4912.526	50	100	20350.444	$4113_{5/2} - 24463^{\circ}_{5/2}$	4850.437	100	300	20610.941	$4146_{7/2} - 24757^{\circ}_{9/2}$
4911.447	2	4	20354.915	$15710^{\circ}_{3/2} - 36065_{5/2}$	4850.263	0	2	20611.680	$22139^{\circ}_{9/2} - 42751_{7/2}$
4911.147	8	75	20356.159	$13818^{\circ}_{7/2} - 34174_{5/2}$	4850.024	3	100	20612.696	$20310^{\circ}_{5/2} - 40923_{5/2}$
4910.418	0	1	20359.180	$26965^{\circ}_{3/2} - 47324_{5/2}$					$15453^{\circ}_{7/2} - 36065_{5/2}$
4910.312	1	1	20359.620	$10189^{\circ}_{11/2} - 30548_{13/2}$	4849.439	3	15	20615.182	$10379_{9/2} - 30994^{\circ}_{7/2}$
4906.680	3	1	20374.690	$24414^{\circ}_{3/2} - 44789_{1/2}$	4849.043	20	500	20616.866	$22028^{\circ}_{15/2} - 42644_{13/2}$
4903.122	1	1	20389.475	$9711_{7/2} - 30101^{\circ}_{7/2}$	4848.826	1	2	20617.789	$15710^{\circ}_{3/2} - 36328_{3/2}$
4899.158	2	8	20405.972	$17983^{\circ}_{5/2} - 38389_{7/2}$	4847.887	2	3	20621.782	$18214^{\circ}_{3/2} - 38836_{3/2}$
4898.802	5l	75	20407.455	$17272^{\circ}_{9/2} - 37679_{11/2}$	4845.936	3	100	20630.084	$12219_{3/2} - 32850^{\circ}_{5/2}$
4898.457	8	100	20408.893	$17771^{\circ}_{11/2} - 38179_{9/2}$	4844.755	4	100	20635.113	$8460_{3/2} - 29095^{\circ}_{5/2}$
4897.928	2	10	20411.097	$22685^{\circ}_{7/2} - 43096_{5/2}$	4844.559	8	200	20635.948	$15242^{\circ}_{9/2} - 35878_{7/2}$
4895.660	2	5	20420.553	$17121^{\circ}_{3/2} - 37542_{3/2}$					$9238^{\circ}_{9/2} - 29873_{7/2}$
4894.397	1	1	20425.822	$15453^{\circ}_{7/2} - 35878_{7/2}$	4844.257	3	100b	20637.234	$14349_{1/2} - 34986^{\circ}_{3/2}$
4894.351	0	1	20426.014	$24463^{\circ}_{5/2} - 44889_{3/2}$	4844.164	50	300b	20637.631	$11116^{\circ}_{7/2} - 31754_{5/2}$
4893.517	1	2	20429.495	$20969^{\circ}_{7/2} - 41398_{9/2}$	4843.815	0	1	20639.118	$21297^{\circ}_{5/2} - 41936_{3/2}$
4889.853	8	5	20444.803	$8378^{\circ}_{7/2} - 28823_{5/2}$	4842.562	1	1	20644.458	$17460^{\circ}_{5/2} - 38105_{5/2}$
4888.498	2	2	20450.470	$20120^{\circ}_{5/2} - 40570_{7/2}$	4841.385	1	3	20649.477	$27357^{\circ}_{9/2} - 48006_{9/2}$
4888.365	2	2	20451.026	$14275^{\circ}_{9/2} - 34726_{7/2}$	4841.320	2	20	20649.754	$19050^{\circ}_{3/2} - 39700_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4841.037	0	3	20650.961	$33843^{\circ}_{3/2} - 54493_{5/2}$	4800.921	0	1	20823.516	$17121^{\circ}_{3/2} - 37945_{5/2}$
4840.471	40	300	20653.376	$13248_{9/2} - 33902^{\circ}_{7/2}$	4800.168	20	200	20826.782	$6700^{\circ}_{9/2} - 27526_{9/2}$
				$1859_{3/2} - 22513^{\circ}_{5/2}$	4800.050	0	2	20827.295	$28587^{\circ}_{5/2} - 49414_{3/2}$
4839.738	3	75	20656.504	$11116^{\circ}_{7/2} - 31773_{9/2}$	4799.756	3	40	20828.570	$12902^{\circ}_{3/2} - 33730_{5/2}$
4839.563	0	1	20657.251	$24132^{\circ}_{3/2} - 44789_{1/2}$	4799.158	0	1	20831.165	$17460^{\circ}_{5/2} - 38291_{7/2}$
4838.353	8	300	20662.417	$19912^{\circ}_{13/2} - 40574_{11/2}$	4797.569	2	10	20838.065	$22106_{5/2} - 42944^{\circ}_{7/2}$
4837.701	3	100	20665.202	$14790^{\circ}_{7/2} - 35456_{9/2}$	4796.511	0	2	20842.661	$29788^{\circ}_{9/2} - 50631_{11/2}$
4836.725	0	2	20669.372	$25594^{\circ}_{1/2} - 46264_{3/2}$	4796.448	0	2	20842.935	$20080^{\circ}_{7/2} - 40923_{5/2}$
				$21682^{\circ}_{7/2} - 42352_{5/2}$	4794.918	2	4	20849.585	$14349_{1/2} - 35198^{\circ}_{1/2}$
4836.179	2	15	20671.705	$9202^{\circ}_{7/2} - 29873_{7/2}$	4794.175	1	2	20852.817	$17983^{\circ}_{5/2} - 38836_{3/2}$
4833.872	0	3	20681.571	$29788^{\circ}_{9/2} - 50470_{9/2}$	4793.669	2	40	20855.018	$23697^{\circ}_{7/2} - 44552_{5/2}$
4833.826	25	40b	20681.767	$31625^{\circ}_{1/2} - 52307_{3/2}$	4792.910	4	2	20858.321	$30972^{\circ}_{5/2} - 51830_{7/2}$
4832.799	75	300	20686.162	$0_{3/2} - 20686^{\circ}_{5/2}$	4790.434	5	40	20869.101	$4113_{5/2} - 24982^{\circ}_{7/2}$
4831.645	0	3	20691.103	$23697^{\circ}_{7/2} - 44388_{5/2}$	4790.148	0	2	20870.347	$23518^{\circ}_{7/2} - 44388_{5/2}$
4829.884	1	25	20698.647	$20989^{\circ}_{9/2} - 41688_{7/2}$	4789.903	2	40	20871.415	$20120^{\circ}_{5/2} - 40991_{3/2}$
4828.952	2	8	20702.642	$8018_{3/2} - 28720^{\circ}_{3/2}$	4788.375	2	2	20878.075	$19594_{1/2} - 40472^{\circ}_{3/2}$
4828.463	4	200	20704.738	$17460^{\circ}_{5/2} - 38165_{7/2}$	4787.827	2	50	20880.464	$17983^{\circ}_{5/2} - 38863_{5/2}$
4824.647	5	100	20721.114	$12488^{\circ}_{9/2} - 33209_{7/2}$	4787.372	4	150	20882.449	$15242^{\circ}_{9/2} - 36125_{9/2}$
4824.044	1	2	20723.704	$12485^{\circ}_{7/2} - 33209_{7/2}$	4785.721	1	2	20889.653	$22355^{\circ}_{1/2} - 43244_{3/2}$
4823.692	2	5	20725.217	$13818^{\circ}_{7/2} - 34543_{5/2}$	4785.295	0	4b	20891.513	$24414^{\circ}_{3/2} - 45306_{3/2}$
4823.319	3	75	20726.820	$18973^{\circ}_{7/2} - 39700_{5/2}$	4784.929	5	200	20893.110	$17272^{\circ}_{9/2} - 38165_{7/2}$
4823.179	8b	200	20727.421	$4146_{7/2} - 24873^{\circ}_{5/2}$	4784.565	2	8	20894.700	$17722^{\circ}_{9/2} - 38617_{9/2}$
4821.272	10	500	20735.620	$13818^{\circ}_{7/2} - 34553_{9/2}$	4784.237	1	3	20896.132	$15144^{\circ}_{3/2} - 36040_{1/2}$
4821.035	0	2	20736.639	$24873^{\circ}_{5/2} - 45610_{5/2}$					$12488^{\circ}_{9/2} - 33384_{9/2}$
4820.693	0	3	20738.110	$26586^{\circ}_{3/2} - 47324_{5/2}$	4783.904	8	15	20897.587	$19050^{\circ}_{3/2} - 39948_{1/2}$
4819.017	3	40	20745.322	$17983^{\circ}_{5/2} - 38728_{5/2}$	4783.636	3	200	20898.758	$12485^{\circ}_{7/2} - 33384_{9/2}$
4818.644	50	500	20746.928	$17771^{\circ}_{11/2} - 38517_{13/2}$	4783.167	0	2	20900.807	$27631_{3/2} - 48532^{\circ}_{1/2}$
4817.826	2	8	20750.451	$6213_{9/2} - 26963^{\circ}_{7/2}$	4782.759	20	200	20902.590	$6691^{\circ}_{3/2} - 27593_{5/2}$
4817.320	2	40	20752.630	$23697^{\circ}_{7/2} - 44450_{9/2}$	4782.204	2	2	20905.016	$8018_{3/2} - 28923^{\circ}_{5/2}$
4816.859	3b	100	20754.616	$14790^{\circ}_{7/2} - 35545_{9/2}$	4781.584	3	5	20907.726	$17272^{\circ}_{9/2} - 38179_{9/2}$
4816.129	1	10	20757.762	$24132^{\circ}_{3/2} - 44889_{3/2}$	4779.587	5	2	20916.462	$14484^{\circ}_{11/2} - 35400_{13/2}$
4815.927	0	2	20758.633	$20288^{\circ}_{11/2} - 41047_{9/2}$	4778.921	1	4	20919.377	$17837^{\circ}_{1/2} - 38757_{3/2}$
4815.460	8	3	20760.646	$4113_{5/2} - 24873^{\circ}_{5/2}$	4778.883	4	200	20919.543	$20989^{\circ}_{9/2} - 41909_{9/2}$
4813.591	0	1	20768.707	$34270_{9/2} - 55038^{\circ}_{9/2}$	4778.547	1	3	20921.014	$15144^{\circ}_{3/2} - 36065_{5/2}$
4812.562	1	3	20773.147	$23730^{\circ}_{9/2} - 44503_{7/2}$	4777.649	3	75	20924.946	$39068_{7/2} - 59993^{\circ}_{9/2}$
4812.449	1	5	20773.635	$25381_{3/2} - 46155^{\circ}_{5/2}$	4777.350	0	2	20926.256	$24873^{\circ}_{5/2} - 45800_{5/2}$
4812.020	3	50	20775.487	$15349^{\circ}_{11/2} - 36125_{9/2}$	4776.779	50	150	20928.757	$17460^{\circ}_{5/2} - 38389_{7/2}$
4811.867	4	75	20776.147	$16033^{\circ}_{5/2} - 36809_{7/2}$	4776.076	0	2	20931.838	$23518^{\circ}_{7/2} - 44450_{9/2}$
4811.369	2	25	20778.298	$25607^{\circ}_{9/2} - 46385_{7/2}$	4775.357	3b	40	20934.989	$20288^{\circ}_{11/2} - 41223_{11/2}$
4810.874	2	1	20780.436	$38836_{3/2} - 59616^{\circ}_{3/2}$	4775.067	2	50	20936.261	$18214^{\circ}_{3/2} - 39150_{3/2}$
4807.079	3	50	20796.841	$15786_{5/2} - 36583^{\circ}_{7/2}$	4774.499	2	50	20938.751	$16818_{7/2} - 37756^{\circ}_{7/2}$
4806.050	3	75	20801.294	$13468^{\circ}_{9/2} - 34270_{9/2}$	4774.331	2	5	20939.488	$22834_{7/2} - 43773^{\circ}_{7/2}$
4805.963	4	200	20801.670	$25414^{\circ}_{11/2} - 46216_{11/2}$	4774.254	50b	200	20939.826	$6691^{\circ}_{3/2} - 27631_{3/2}$
4805.880	2	15b	20802.029	$20686^{\circ}_{5/2} - 41488_{7/2}$	4773.991	1	3	20940.979	$22014^{\circ}_{11/2} - 42955_{9/2}$
4805.547	3	50	20803.471	$20120^{\circ}_{5/2} - 40923_{5/2}$	4773.955	1	3	20941.137	$27357^{\circ}_{9/2} - 48298_{7/2}$
4805.290	0	2	20804.583	$35878_{7/2} - 56683^{\circ}_{7/2}$	4773.482	0	1	20943.212	$33902^{\circ}_{7/2} - 54845_{9/2}$
4803.954	8	200	20810.369	$13468^{\circ}_{9/2} - 34279_{7/2}$	4773.104	3	50	20944.871	$10855_{7/2} - 31800^{\circ}_{7/2}$
4803.483	50	300	20812.410	$19912^{\circ}_{13/2} - 40724_{13/2}$	4771.952	1	4	20949.927	$28923^{\circ}_{5/2} - 49873_{5/2}$
4802.612	0	3	20816.184	$22139^{\circ}_{9/2} - 42955_{9/2}$	4771.862	2	10	20950.322	$14790^{\circ}_{7/2} - 35741_{5/2}$
4802.422	1	3	20817.008	$24309^{\circ}_{11/2} - 45126_{9/2}$	4771.123	1h	2	20953.567	$23012^{\circ}_{3/2} - 43965_{1/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4770.945	0	2	20954.349	$31353^{\circ}_{3/2} - 52307_{3/2}$	4726.254	2	4	21152.488	$18214^{\circ}_{3/2} - 39366_{5/2}$
4770.744	2b	100	20955.232	$10855_{7/2} - 31810^{\circ}_{5/2}$	4725.943	5	100	21153.880	$15236_{3/2} - 36390^{\circ}_{3/2}$
4769.429	1	3	20961.009	$26770^{\circ}_{11/2} - 47731_{9/2}$	4725.305	3	15	21156.736	$20989^{\circ}_{9/2} - 42146_{11/2}$
4768.761	3	100	20963.945	$25414^{\circ}_{11/2} - 46378_{13/2}$	4724.822	5b	40b	21158.899	$6244_{1/2} - 27403^{\circ}_{3/2}$
4768.170	3	75	20966.544	$20080^{\circ}_{7/2} - 41047_{9/2}$	4724.771	40b	300	21159.127	$9720^{\circ}_{7/2} - 30879_{7/2}$
4768.054	5	100	20967.054	$8378^{\circ}_{7/2} - 29345_{5/2}$	4724.553	2	8	21160.104	$32850^{\circ}_{5/2} - 54010_{7/2}$
4767.871	1	10	20967.859	$19248^{\circ}_{5/2} - 40216_{5/2}$	4724.155	2	50	21161.886	$22642^{\circ}_{9/2} - 43803_{7/2}$
4766.961	5	150	20971.861	$14484^{\circ}_{11/2} - 35456_{9/2}$	4723.783	300	500	21163.553	$1521_{5/2} - 22685^{\circ}_{7/2}$
4766.016	0b	25	20976.020	$33384_{9/2} - 54360^{\circ}_{9/2}$	4722.974	2b	25	21167.178	$22642^{\circ}_{9/2} - 43809_{9/2}$
4765.655	5b	25	20977.608	$24757^{\circ}_{9/2} - 45735_{11/2}$	4722.948	1b	10b	21167.294	$17983^{\circ}_{5/2} - 39150_{3/2}$
4763.890	1	5	20985.380	$23518^{\circ}_{7/2} - 44503_{7/2}$	4721.882	3	100	21172.073	$19050^{\circ}_{3/2} - 40222_{3/2}$
4763.718	2	20	20986.138	$22028^{\circ}_{15/2} - 43014_{13/2}$	4719.979	20l	400	21180.609	$14275^{\circ}_{9/2} - 35456_{9/2}$
4763.398	0	2	20987.548	$22139^{\circ}_{9/2} - 43127_{11/2}$	4719.251	3	50	21183.877	$15144^{\circ}_{3/2} - 36328_{3/2}$
4762.519	5	20	20991.422	$1521_{5/2} - 22513^{\circ}_{5/2}$	4718.616	25	300	21186.727	$19912^{\circ}_{13/2} - 41099_{15/2}$
4761.854	4	100	20994.353	$31924^{\circ}_{11/2} - 52918_{13/2}$	4717.277	1	5	21192.741	$13468^{\circ}_{9/2} - 34661_{11/2}$
4761.631	0	1	20995.336	$32850^{\circ}_{5/2} - 53845_{5/2}$	4716.606	2	8	21195.756	$14545^{\circ}_{5/2} - 35741_{5/2}$
4761.353	1	8	20996.562	$23730^{\circ}_{9/2} - 44727_{11/2}$	4715.998	3b	75	21198.488	$16906^{\circ}_{7/2} - 38105_{5/2}$
4761.106	75	500	20997.651	$16564^{\circ}_{11/2} - 37562_{11/2}$	4715.429	20	200	21201.046	$10572^{\circ}_{9/2} - 31773_{9/2}$
4760.937	3	75	20998.396	$17837^{\circ}_{1/2} - 38836_{3/2}$	4714.867	3	50	21203.573	$27249^{\circ}_{7/2} - 48453_{7/2}$
4760.052	2	20	21002.301	$20686^{\circ}_{5/2} - 41688_{7/2}$	4713.839	2	8	21208.198	$20120^{\circ}_{5/2} - 41328_{5/2}$
									$15236_{3/2} - 36444^{\circ}_{3/2}$
4759.582	3	75	21004.375	$15324^{\circ}_{1/2} - 36328_{3/2}$					
4756.619	3	50	21017.458	$17722^{\circ}_{9/2} - 38740_{11/2}$	4712.393	50b	150	21214.705	$9238^{\circ}_{9/2} - 30452_{9/2}$
4754.403	3	2	21027.254	$26647^{\circ}_{13/2} - 47675_{11/2}$	4711.141	2	10	21220.343	$21131^{\circ}_{3/2} - 42352_{5/2}$
4754.208	2	40	21028.117	$16818_{7/2} - 37846^{\circ}_{5/2}$	4709.598	2	8	21227.295	$19050^{\circ}_{3/2} - 40278_{3/2}$
4753.810	2	25	21029.877	$19248^{\circ}_{5/2} - 40278_{3/2}$	4708.102	50	200	21234.040	$11725^{\circ}_{1/2} - 32959_{3/2}$
4752.414	200	500	21036.055	$6213_{9/2} - 27249^{\circ}_{7/2}$	4707.581	2	25	21236.390	$26770^{\circ}_{11/2} - 48006_{9/2}$
4751.328	2	20	21040.863	$14484^{\circ}_{11/2} - 35525_{11/2}$	4706.250	50	200b	21242.396	$7001_{3/2} - 28243^{\circ}_{5/2}$
4751.117	2	1	21041.797	$25381_{3/2} - 46423^{\circ}_{3/2}$	4705.758	200	500	21244.617	$9711_{7/2} - 30956^{\circ}_{9/2}$
4748.585	3b	75	21053.017	$8378^{\circ}_{7/2} - 29431_{7/2}$	4705.615	50	200	21245.262	$12485^{\circ}_{7/2} - 33730_{5/2}$
4747.550	2	2	21057.606	$24132^{\circ}_{3/2} - 45189_{5/2}$	4705.294	2	10	21246.712	$9238^{\circ}_{9/2} - 30484_{11/2}$
4743.693	150w	300	21074.728	$4113_{5/2} - 25188^{\circ}_{3/2}$	4705.084	1	4	21247.660	$20080^{\circ}_{7/2} - 41328_{5/2}$
4743.112	2	10	21077.309	$23730^{\circ}_{9/2} - 44807_{7/2}$	4704.657	2	25	21249.589	$14275^{\circ}_{9/2} - 35525_{11/2}$
4742.259	10s	100	21081.100	$10673^{\circ}_{5/2} - 31754_{5/2}$	4703.844	2	5	21253.261	$20969^{\circ}_{7/2} - 42222_{7/2}$
4741.384	5	200	21084.991	$13468^{\circ}_{9/2} - 34553_{9/2}$	4703.577	1	3	21254.467	$25607^{\circ}_{9/2} - 46861_{11/2}$
4740.529	500	500	21088.793	$6168^{\circ}_{7/2} - 27257_{7/2}$	4703.404	3	4	21255.249	$13406^{\circ}_{13/2} - 34661_{11/2}$
4739.860	5	100	21091.770	$17771^{\circ}_{11/2} - 38862_{11/2}$	4702.624	3	25	21258.775	$16906^{\circ}_{7/2} - 38165_{7/2}$
4737.656	4	100	21101.582	$15710^{\circ}_{3/2} - 36812_{1/2}$					$12472^{\circ}_{5/2} - 33730_{5/2}$
4736.399	4	200	21107.182	$22139^{\circ}_{9/2} - 43246_{7/2}$	4702.359	3	25b	21259.973	$8460_{3/2} - 29720^{\circ}_{3/2}$
4735.780	2	5	21109.941	$20288^{\circ}_{11/2} - 41398_{9/2}$	4702.309	8	200	21260.199	$9711_{7/2} - 30972^{\circ}_{5/2}$
4735.702	2	8	21110.288	$23697^{\circ}_{7/2} - 44807_{7/2}$	4700.574	1	4	21268.046	$17460^{\circ}_{5/2} - 38728_{5/2}$
4735.245	2	15	21112.326	$22014^{\circ}_{11/2} - 43127_{11/2}$	4700.137	75	200	21270.023	$14275^{\circ}_{9/2} - 35545_{9/2}$
4734.757	2	10	21114.502	$8605_{5/2} - 29720^{\circ}_{3/2}$	4699.460	1	10	21273.087	$21682^{\circ}_{7/2} - 42955_{9/2}$
4734.626	2	10	21115.086	$16564^{\circ}_{11/2} - 37679_{11/2}$	4699.091	2	20	21274.758	$14790^{\circ}_{7/2} - 36065_{5/2}$
4733.023	3	50h	21122.237	$18816^{\circ}_{13/2} - 39939_{11/2}$	4698.767	4	100	21276.225	$16564^{\circ}_{11/2} - 37840_{9/2}$
4732.668	8	200	21123.821	$22685^{\circ}_{7/2} - 43809_{9/2}$	4698.270	2	50	21278.475	$33215^{\circ}_{3/2} - 54493_{5/2}$
4730.877	4	10	21131.818	$0_{3/2} - 21131^{\circ}_{3/2}$	4695.835	1	5	21289.509	$23518^{\circ}_{7/2} - 44807_{7/2}$
4729.875	50	200	21136.295	$8378^{\circ}_{7/2} - 29515_{9/2}$	4694.921	10	200	21293.654	$4146_{7/2} - 25440^{\circ}_{5/2}$
4729.084	50b	40	21139.830	$17722^{\circ}_{9/2} - 38862_{11/2}$	4694.844	1	3	21294.003	$9585^{\circ}_{5/2} - 30879_{7/2}$
4726.462	4	200	21151.558	$12485^{\circ}_{7/2} - 33637_{7/2}$	4694.783	5l	40l	21294.280	$22513^{\circ}_{5/2} - 43807_{3/2}$
4726.333	5	40	21152.135	$1859_{3/2} - 23012^{\circ}_{3/2}$	4694.282	1	25	21296.552	$17460^{\circ}_{5/2} - 38757_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4694.090	400	300	21297.423	$0_{3/2} - 21297^{\circ}_{5/2}$	4647.913	2	4	21509.010	$16033^{\circ}_{5/2} - 37542_{3/2}$
4691.050	10	400	21311.225	$19912^{\circ}_{13/2} - 41223_{11/2}$	4646.140	1	3	21517.218	$23372^{\circ}_{3/2} - 44889_{3/2}$
4690.680	10	200	21312.906	$17837^{\circ}_{1/2} - 39150_{3/2}$	4645.495	2	20	21520.205	$14545^{\circ}_{5/2} - 36065_{5/2}$
4690.331	3	100	21314.492	$17771^{\circ}_{11/2} - 39085_{13/2}$	4642.889	1	5	21532.284	$34553_{9/2} - 56086^{\circ}_{9/2}$
4689.596	1	5	21317.832	$20080^{\circ}_{7/2} - 41398_{9/2}$	4642.272	1	5	21535.146	$22642^{\circ}_{9/2} - 44177_{11/2}$
4689.170	100	300b	21319.769	$6691^{\circ}_{3/2} - 28011_{3/2}$	4642.055	3	75	21536.153	$20686^{\circ}_{5/2} - 42222_{7/2}$
4688.276	3	100	21323.834	$14101^{\circ}_{1/2} - 35425_{1/2}$	4641.435	2	3	21539.029	$9720^{\circ}_{7/2} - 31259_{5/2}$
4686.568	4	75	21331.605	$12570_{7/2} - 33902^{\circ}_{7/2}$	4641.181	50	200	21540.208	$23187^{\circ}_{13/2} - 44727_{11/2}$
4685.963	3	50	21334.359	$14790^{\circ}_{7/2} - 36125_{9/2}$	4640.045	50	200b	21545.482	$10379_{9/2} - 31924^{\circ}_{11/2}$
4685.827	3	8	21334.979	$6691^{\circ}_{3/2} - 28026_{5/2}$	4639.704	75	300	21547.065	$12472^{\circ}_{5/2} - 34019_{3/2}$
4685.494	2	200	21336.495	$24463^{\circ}_{5/2} - 45800_{5/2}$	4639.094	3	100	21549.898	$20969^{\circ}_{7/2} - 42518_{7/2}$
4685.448	1	5	21336.704	$27787^{\circ}_{9/2} - 49124_{11/2}$	4633.830	40b	40	21574.378	$6213_{9/2} - 27787^{\circ}_{9/2}$
4684.127	2	25	21342.722	$35602^{\circ}_{11/2} - 56945_{11/2}$	4631.760	150	400	21584.020	$10189^{\circ}_{11/2} - 31773_{9/2}$
4683.533	1	2	21345.428	$17272^{\circ}_{9/2} - 38617_{9/2}$	4631.348	2	4	21585.940	$7001_{3/2} - 28587^{\circ}_{5/2}$
4683.484	2	3	21345.652	$17722^{\circ}_{9/2} - 39068_{7/2}$	4630.353	2	50	21590.579	$17272^{\circ}_{9/2} - 38862_{11/2}$
4681.649	2	2	21354.018	$37945_{5/2} - 59299^{\circ}_{5/2}$	4629.769	10	75	21593.302	$9400_{5/2} - 30994^{\circ}_{7/2}$
4681.163	2	20	21356.235	$15453^{\circ}_{7/2} - 36809_{7/2}$	4629.375	25	200	21595.140	$24309^{\circ}_{11/2} - 45904_{9/2}$
4680.640	40b	150b	21358.621	$6168^{\circ}_{7/2} - 27526_{9/2}$	4629.005	2	75	21596.866	$18973^{\circ}_{7/2} - 40570_{7/2}$
4679.045	1	20	21365.902	$20310^{\circ}_{5/2} - 41676_{3/2}$	4627.628	3	75	21603.292	$14275^{\circ}_{9/2} - 35878_{7/2}$
4678.594	1	2	21367.962	$20120^{\circ}_{5/2} - 41488_{7/2}$	4626.818	1	2	21607.074	$17121^{\circ}_{3/2} - 38728_{5/2}$
4678.200	4	10	21369.761	$24982^{\circ}_{7/2} - 46352_{7/2}$	4626.666	2	50	21607.784	$20080^{\circ}_{7/2} - 41688_{7/2}$
4676.936	3	5	21375.537	$17460^{\circ}_{5/2} - 38836_{3/2}$	4626.604	2	10	21608.074	$17460^{\circ}_{5/2} - 39068_{7/2}$
4676.680	1	5	21376.707	$23012^{\circ}_{3/2} - 44388_{5/2}$	4626.133	2	4	21610.274	$15453^{\circ}_{7/2} - 37063_{9/2}$
4676.502	2	75	21377.520	$20310^{\circ}_{5/2} - 41688_{7/2}$	4625.054	10	300	21615.315	$16564^{\circ}_{11/2} - 38179_{9/2}$
4675.934	2	75	21380.117	$18568^{\circ}_{1/2} - 39948_{1/2}$	4624.136	10	200	21619.606	$11116^{\circ}_{7/2} - 32736_{7/2}$
4675.290	2	15	21383.062	$11576^{\circ}_{3/2} - 32959_{3/2}$	4623.892	5	400	21620.747	$24982^{\circ}_{7/2} - 46603_{5/2}$
4674.816	1	3	21385.230	$16906^{\circ}_{7/2} - 38291_{7/2}$					$20288^{\circ}_{11/2} - 41909_{9/2}$
4674.730	1	3	21385.624	$24414^{\circ}_{3/2} - 45800_{5/2}$	4623.397	1	5	21623.062	$12219_{3/2} - 33843^{\circ}_{3/2}$
4670.889	1	2	21403.209	$17460^{\circ}_{5/2} - 38863_{5/2}$	4622.065	2	5	21629.293	$28243^{\circ}_{5/2} - 49873_{5/2}$
4666.991	4	20	21421.085	$10379_{9/2} - 31800^{\circ}_{7/2}$					$17722^{\circ}_{9/2} - 39352_{11/2}$
4666.002	40	200	21425.626	$6168^{\circ}_{7/2} - 27593_{5/2}$	4620.725	3	20	21635.565	$17121^{\circ}_{3/2} - 38757_{3/2}$
4665.955	2	25	21425.842	$24309^{\circ}_{11/2} - 45735_{11/2}$	4619.561	50	300	21641.017	$14484^{\circ}_{11/2} - 36125_{9/2}$
4664.542	1	3	21432.332	$16033^{\circ}_{5/2} - 37465_{5/2}$	4619.480	100b	400	21641.396	$9238^{\circ}_{9/2} - 30879_{7/2}$
4663.372	1	5	21437.709	$18973^{\circ}_{7/2} - 40411_{7/2}$	4613.978	2	100	21667.202	$22106_{5/2} - 43773^{\circ}_{7/2}$
4661.423	2	100	21446.672	$25414^{\circ}_{11/2} - 46861_{11/2}$	4613.875	2	25	21667.686	$15144^{\circ}_{3/2} - 36812_{1/2}$
4659.846	1	3	21453.930	$21297^{\circ}_{5/2} - 42751_{7/2}$	4613.762	2	50	21668.217	$24132^{\circ}_{3/2} - 45800_{5/2}$
4659.799	5	3	21454.147	$22642^{\circ}_{9/2} - 44096_{9/2}$	4613.468	3	100	21669.598	$22139^{\circ}_{9/2} - 43809_{9/2}$
4658.727	2	15	21459.083	$24757^{\circ}_{9/2} - 46216_{11/2}$	4613.263	2	8	21670.561	$18973^{\circ}_{7/2} - 40644_{5/2}$
4658.492	10b	10b	21460.166	$11116^{\circ}_{7/2} - 32576_{7/2}$	4612.544	200	150	21673.938	$9585^{\circ}_{5/2} - 31259_{5/2}$
4656.748	2	8	21468.203	$17272^{\circ}_{9/2} - 38740_{11/2}$	4612.168	2	20	21675.705	$16818_{7/2} - 38493^{\circ}_{5/2}$
4655.727	1	3	21472.911	$19050^{\circ}_{3/2} - 40523_{1/2}$	4611.859	50	300	21677.158	$9202^{\circ}_{7/2} - 30879_{7/2}$
4654.272	2	2	21479.623	$29788^{\circ}_{9/2} - 51268_{7/2}$	4609.370	50	400	21688.863	$12485^{\circ}_{7/2} - 34174_{5/2}$
4653.084	2	15	21485.107	$35593^{\circ}_{9/2} - 57078_{9/2}$	4606.501	25	200	21702.371	$12472^{\circ}_{5/2} - 34174_{5/2}$
4652.851	2	15	21486.183	$18214^{\circ}_{3/2} - 39700_{5/2}$	4606.299	2	50	21703.322	$22685^{\circ}_{7/2} - 44388_{5/2}$
4652.415	3	8	21488.197	$15324^{\circ}_{1/2} - 36812_{1/2}$	4605.232	2	75	21708.351	$25440^{\circ}_{5/2} - 47148_{3/2}$
4651.986	75	200	21490.178	$1521_{5/2} - 23012^{\circ}_{3/2}$	4604.651	2	25	21711.090	$16906^{\circ}_{7/2} - 38617_{9/2}$
4651.554	150b	500	21492.174	$7331^{\circ}_{5/2} - 28823_{5/2}$	4604.160	2	8	21713.405	$15349^{\circ}_{11/2} - 37063_{9/2}$
4650.918	8	75	21495.113	$8378^{\circ}_{7/2} - 29873_{7/2}$	4603.907	2	100	21714.599	$17121^{\circ}_{3/2} - 38836_{3/2}$
4650.815	50	75	21495.589	$8605_{5/2} - 30101^{\circ}_{7/2}$	4602.885	75	300	21719.420	$7001_{3/2} - 28720^{\circ}_{3/2}$
4650.757	2	75	21495.857	$25414^{\circ}_{11/2} - 46910_{13/2}$	4601.952	2	50	21723.823	$24982^{\circ}_{7/2} - 46706_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4599.522	2	5	21735.300	$17722^{\circ}_{9/2} - 39458_{7/2}$	4556.806	2	10	21939.046	$14101^{\circ}_{1/2} - 36040_{1/2}$
4599.353	8	10	21736.099	$13250_{5/2} - 34986^{\circ}_{3/2}$	4555.063	2	50	21947.441	$21297^{\circ}_{5/2} - 43244_{3/2}$
4598.055	1	5	21742.235	$17121^{\circ}_{3/2} - 38863_{5/2}$	4554.792	3	75	21948.747	$24757^{\circ}_{9/2} - 46706_{7/2}$
4597.915	1	50	21742.897	$30564^{\circ}_{1/2} - 52307_{3/2}$	4554.657	2	50	21949.397	$21297^{\circ}_{5/2} - 43246_{7/2}$
4597.357	1	3	21745.536	$17121^{\circ}_{3/2} - 38867_{1/2}$	4554.565	3	25	21949.840	$18973^{\circ}_{7/2} - 40923_{5/2}$
4596.937	1	5	21747.522	$25188^{\circ}_{3/2} - 46935_{3/2}$	4554.082	3	10	21952.169	$9400_{5/2} - 31353^{\circ}_{3/2}$
4594.749	1	3	21757.878	$18816^{\circ}_{13/2} - 40574_{11/2}$	4553.837	4	100	21953.350	$16564^{\circ}_{11/2} - 38517_{13/2}$
4593.979	3	75	21761.525	$20989^{\circ}_{9/2} - 42751_{7/2}$	4553.162	2	15	21956.604	$22139^{\circ}_{9/2} - 44096_{9/2}$
4593.553	5	75	21763.543	$16818_{7/2} - 38581^{\circ}_{5/2}$	4553.118	2	40	21956.816	$34726_{7/2} - 56683^{\circ}_{7/2}$
4593.283	3	200	21764.822	$22685^{\circ}_{7/2} - 44450_{9/2}$	4553.027	3b	200	21957.255	$16906^{\circ}_{7/2} - 38863_{5/2}$
4592.781	8	25	21767.201	$27357^{\circ}_{9/2} - 49124_{11/2}$	4552.359	2	20	21960.477	$25188^{\circ}_{3/2} - 47148_{3/2}$
4589.835	2	100	21781.172	$17771^{\circ}_{11/2} - 39552_{9/2}$	4551.541	3	20	21964.423	$26647^{\circ}_{13/2} - 48612_{13/2}$
4589.667	50b	150	21781.970	$12488^{\circ}_{9/2} - 34270_{9/2}$	4551.205	1	8	21966.045	$20989^{\circ}_{9/2} - 42955_{9/2}$
4589.445	1	3	21783.023	$14545^{\circ}_{5/2} - 36328_{3/2}$	4550.429	2	4	21969.791	$15786_{5/2} - 37756^{\circ}_{7/2}$
4589.121	20	200	21784.561	$12485^{\circ}_{7/2} - 34270_{9/2}$	4550.377	1	4	21970.042	$19912^{\circ}_{13/2} - 41882_{13/2}$
4588.226	10	300	21788.810	$16033^{\circ}_{5/2} - 37821_{3/2}$	4546.832	25	15	21987.171	$13468^{\circ}_{9/2} - 35456_{9/2}$
4587.756	20	75	21791.043	$12488^{\circ}_{9/2} - 34279_{7/2}$	4546.132	10	40	21990.556	$22513^{\circ}_{5/2} - 44503_{7/2}$
4587.209	3	50	21793.641	$12485^{\circ}_{7/2} - 34279_{7/2}$	4545.824	2	25	21992.046	$12219_{3/2} - 34212^{\circ}_{5/2}$
4586.620	3	75	21796.440	$17272^{\circ}_{9/2} - 39068_{7/2}$	4545.348	3b	3	21994.349	$13406^{\circ}_{13/2} - 35400_{13/2}$
4586.267	4	200	21798.117	$24757^{\circ}_{9/2} - 46555_{11/2}$	4545.270	2	4	21994.727	$10855_{7/2} - 32850^{\circ}_{5/2}$
4586.061	50b	50	21799.097	$21297^{\circ}_{5/2} - 43096_{5/2}$	4544.895	8	15	21996.541	$1521_{5/2} - 23518^{\circ}_{7/2}$
4584.368	8	200	21807.147	$12472^{\circ}_{5/2} - 34279_{7/2}$	4544.512	150	200	21998.395	$4490^{\circ}_{5/2} - 26488_{5/2}$
4584.159	1	5	21808.141	$22642^{\circ}_{9/2} - 44450_{9/2}$	4543.208	4	20	22004.709	$10572^{\circ}_{9/2} - 32576_{7/2}$
4583.654	2	40	21810.544	$15242^{\circ}_{9/2} - 37053_{11/2}$	4542.427	2	15	22008.493	$18214^{\circ}_{3/2} - 40222_{3/2}$
4582.778	2	50	21814.712	$15786_{5/2} - 37601^{\circ}_{3/2}$	4541.615	3	40	22012.427	$15453^{\circ}_{7/2} - 37465_{5/2}$
4582.436	3	50	21816.341	$22834_{7/2} - 44650^{\circ}_{7/2}$	4541.204	4	10	22014.420	$7331^{\circ}_{5/2} - 29345_{5/2}$
4581.815	1	1	21819.297	$27249^{\circ}_{7/2} - 49068_{5/2}$	4540.403	40	200	22018.303	$14790^{\circ}_{7/2} - 36809_{7/2}$
4581.581	20	200	21820.412	$15242^{\circ}_{9/2} - 37063_{9/2}$	4540.087	4	15	22019.836	$27357^{\circ}_{9/2} - 49377_{7/2}$
4581.229	25b	150	21822.088	$16906^{\circ}_{7/2} - 38728_{5/2}$	4538.844	4	25	22025.866	$20310^{\circ}_{5/2} - 42336_{5/2}$
4580.758	2	15	21824.332	$15453^{\circ}_{7/2} - 37277_{7/2}$	4538.182	1	2	22029.079	$17121^{\circ}_{3/2} - 39150_{3/2}$
4579.292	3	75	21831.319	$15710^{\circ}_{3/2} - 37542_{3/2}$	4537.072	20	200	22034.468	$15242^{\circ}_{9/2} - 37277_{7/2}$
4578.995	3	25	21832.735	$20686^{\circ}_{5/2} - 42518_{7/2}$	4536.427	1	4	22037.601	$22139^{\circ}_{9/2} - 44177_{11/2}$
4575.425	10	200	21849.770	$14275^{\circ}_{9/2} - 36125_{9/2}$	4535.708	2b	5	22041.094	$14349_{1/2} - 36390^{\circ}_{3/2}$
4573.703	25	150	21857.996	$6168^{\circ}_{7/2} - 28026_{5/2}$	4534.117	75	200	22048.828	$10572^{\circ}_{9/2} - 32620_{11/2}$
4572.935	1	8	21861.667	$22642^{\circ}_{9/2} - 44503_{7/2}$	4533.302	50	300	22052.792	$9720^{\circ}_{7/2} - 31773_{9/2}$
4570.614	2	75	21872.768	$19050^{\circ}_{3/2} - 40923_{5/2}$	4533.240	50	40b	22053.094	$16564^{\circ}_{11/2} - 38617_{9/2}$
4569.812	2	5	21876.607	$23518^{\circ}_{7/2} - 45395_{7/2}$	4532.430	3	50	22057.035	$9202^{\circ}_{7/2} - 31259_{5/2}$
4568.236	2	10	21884.154	$25440^{\circ}_{5/2} - 47324_{5/2}$	4532.256	50	300	22057.882	$12485^{\circ}_{7/2} - 34543_{5/2}$
4566.650	20	200	21891.754	$7828_{1/2} - 29720^{\circ}_{3/2}$	4531.713	8	300	22060.525	$13818^{\circ}_{7/2} - 35878_{7/2}$
4566.282	1	50	21893.519	$29788^{\circ}_{9/2} - 51681_{9/2}$	4531.611	2	10	22061.021	$20158_{5/2} - 42219^{\circ}_{5/2}$
4566.247	2		21893.686	$15236_{3/2} - 37130^{\circ}_{1/2}$	4531.196	3b	50	22063.042	$10673^{\circ}_{5/2} - 32736_{7/2}$
4564.178	15	200	21903.611	$10673^{\circ}_{5/2} - 32576_{7/2}$	4530.656	1	1	22065.671	$12488^{\circ}_{9/2} - 34553_{9/2}$
4563.727	3	8	21905.775	$26586^{\circ}_{3/2} - 48492_{5/2}$	4529.484	4	200	22071.381	$12472^{\circ}_{5/2} - 34543_{5/2}$
4563.291	50	500b	21907.868	$18816^{\circ}_{13/2} - 40724_{13/2}$	4529.376	2	3	22071.907	$16033^{\circ}_{5/2} - 38105_{5/2}$
4563.219	10	300	21908.214	$23187^{\circ}_{13/2} - 45095_{15/2}$	4528.973	3	50	22073.871	$8378^{\circ}_{7/2} - 30452_{9/2}$
4562.632	2	5	21911.032	$9061_{5/2} - 30972^{\circ}_{5/2}$	4528.409	2	50	22076.620	$13468^{\circ}_{9/2} - 35545_{9/2}$
4562.565	2	15	21911.354	$20310^{\circ}_{5/2} - 42222_{7/2}$	4527.710	2b	150	22080.028	$17272^{\circ}_{9/2} - 39352_{11/2}$
4562.439	3	25	21911.959	$16033^{\circ}_{5/2} - 37945_{5/2}$	4526.028	4	50	22088.234	$9711_{7/2} - 31800^{\circ}_{7/2}$
4560.394	3	10	21921.785	$7001_{3/2} - 28923^{\circ}_{5/2}$	4525.090	10	200	22092.812	$11116^{\circ}_{7/2} - 33209_{7/2}$
4558.029	2	10	21933.159	$9061_{5/2} - 30994^{\circ}_{7/2}$	4524.838	25	150	22094.043	$7001_{3/2} - 29095^{\circ}_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4524.560	1	2	22095.400	$14349_{1/2} - 36444^{\circ}_{3/2}$	4471.978	8	20	22355.196	$0_{3/2} - 22355^{\circ}_{1/2}$
4524.432	1	2	22096.025	$21131^{\circ}_{3/2} - 43227_{5/2}$	4471.764	2	200	22356.266	$16033^{\circ}_{5/2} - 38389_{7/2}$
4522.783	2	150	22104.081	$24757^{\circ}_{9/2} - 46861_{11/2}$					$20288^{\circ}_{11/2} - 42644_{13/2}$
4521.458	1	5	22110.559	$12219_{3/2} - 34330^{\circ}_{1/2}$	4470.005	2	75	22365.063	$15236_{3/2} - 37601^{\circ}_{3/2}$
				$17837^{\circ}_{1/2} - 39948_{1/2}$	4469.754	2	3	22366.319	$8605_{5/2} - 30972^{\circ}_{5/2}$
4520.949	2	75	22113.048	$21131^{\circ}_{3/2} - 43244_{3/2}$	4465.931	2	2	22385.465	$22513^{\circ}_{5/2} - 44898_{7/2}$
4520.034	3	15	22117.524	$24463^{\circ}_{5/2} - 46581_{5/2}$	4465.341	200	200	22388.423	$8605_{5/2} - 30994^{\circ}_{7/2}$
4519.621	1	2	22119.546	$20080^{\circ}_{7/2} - 42200_{9/2}$	4463.190	2	20	22399.213	$9400_{5/2} - 31800^{\circ}_{7/2}$
4518.636	3b	100	22124.367	$25607^{\circ}_{9/2} - 47731_{9/2}$	4463.080	1	25	22399.765	$25607^{\circ}_{9/2} - 48006_{9/2}$
				$17771^{\circ}_{11/2} - 39895_{9/2}$	4461.705	4	200	22406.668	$18816^{\circ}_{13/2} - 41223_{11/2}$
4517.036	4b	200	22132.204	$24132^{\circ}_{3/2} - 46264_{3/2}$	4461.125	4	150	22409.581	$9400_{5/2} - 31810^{\circ}_{5/2}$
				$16033^{\circ}_{5/2} - 38165_{7/2}$	4461.065	4	200	22409.882	$13468^{\circ}_{9/2} - 35878_{7/2}$
4512.483	8	200	22154.535	$11576^{\circ}_{3/2} - 33730_{5/2}$	4457.082	2	4	22429.908	$18214^{\circ}_{3/2} - 40644_{5/2}$
4510.946	2	3	22162.083	$16906^{\circ}_{7/2} - 39068_{7/2}$	4456.708	4	150	22431.790	$10189^{\circ}_{11/2} - 32620_{11/2}$
4510.526	200	600	22164.147	$10572^{\circ}_{9/2} - 32736_{7/2}$	4455.715	2	100	22436.789	$15242^{\circ}_{9/2} - 37679_{11/2}$
4509.581	2		22168.791	$9585^{\circ}_{5/2} - 31754_{5/2}$	4455.576	3	2	22437.489	$28587^{\circ}_{5/2} - 51024_{3/2}$
4508.841	1	2	22172.429	$17722^{\circ}_{9/2} - 39895_{9/2}$	4455.424	2	2	22438.255	$20080^{\circ}_{7/2} - 42518_{7/2}$
4508.639	1	2	22173.423	$12488^{\circ}_{9/2} - 34661_{11/2}$	4455.294	5	20	22438.909	$19880_{9/2} - 42319^{\circ}_{9/2}$
4508.163	5	40	22175.764	$1521_{5/2} - 23697^{\circ}_{7/2}$	4455.045	3	200	22440.164	$19248^{\circ}_{5/2} - 41688_{7/2}$
4506.071	2	2	22186.059	$17272^{\circ}_{9/2} - 39458_{7/2}$	4455.005	2	10	22440.365	$20310^{\circ}_{5/2} - 42751_{7/2}$
4498.108	1	1	22225.335	$15349^{\circ}_{11/2} - 37575_{13/2}$	4454.513	8	300	22442.844	$11576^{\circ}_{3/2} - 34019_{3/2}$
4496.315	8	200	22234.197	$19912^{\circ}_{13/2} - 42146_{11/2}$	4452.791	1	8	22451.522	$15305_{9/2} - 37756^{\circ}_{7/2}$
4495.489	3	100	22238.282	$12488^{\circ}_{9/2} - 34726_{7/2}$	4451.268	5	4	22459.204	$23187^{\circ}_{13/2} - 45646_{15/2}$
4495.241	3	150	22239.509	$17983^{\circ}_{5/2} - 40222_{3/2}$	4451.051	2	100	22460.299	$16906^{\circ}_{7/2} - 39366_{5/2}$
4494.964	4	200	22240.880	$12485^{\circ}_{7/2} - 34726_{7/2}$	4448.555	5	100	22472.901	$4113_{5/2} - 26586^{\circ}_{3/2}$
4494.076	4	40	22245.274	$17121^{\circ}_{3/2} - 39366_{5/2}$	4448.133	1	2	22475.033	$21297^{\circ}_{5/2} - 43772_{5/2}$
4493.651	1	2	22247.378	$13818^{\circ}_{7/2} - 36065_{5/2}$	4447.834	100	400	22476.544	$6244_{1/2} - 28720^{\circ}_{3/2}$
4492.236	4	200	22254.386	$12472^{\circ}_{5/2} - 34726_{7/2}$	4447.787	8	20	22476.781	$26647^{\circ}_{13/2} - 49124_{11/2}$
4491.884	2	100	22256.130	$20080^{\circ}_{7/2} - 42336_{5/2}$	4444.987	4	150	22490.940	$15349^{\circ}_{11/2} - 37840_{9/2}$
4491.708	2	100	22257.002	$20989^{\circ}_{9/2} - 43246_{7/2}$	4443.086	20	300	22500.562	$8378^{\circ}_{7/2} - 30879_{7/2}$
4491.378	2	100	22258.637	$16033^{\circ}_{5/2} - 38291_{7/2}$	4442.370	1	15	22504.189	$22685^{\circ}_{7/2} - 45189_{5/2}$
4490.354	2	50	22263.713	$14545^{\circ}_{5/2} - 36809_{7/2}$	4441.905	2	25	22506.545	$21297^{\circ}_{5/2} - 43803_{7/2}$
4490.198	2	150	22264.486	$15305_{9/2} - 37569^{\circ}_{9/2}$	4440.866	200	200	22511.810	$8460_{3/2} - 30972^{\circ}_{5/2}$
4489.611	2	2	22267.397	$29095^{\circ}_{5/2} - 51362_{5/2}$	4440.574	150	200	22513.291	$0_{3/2} - 22513^{\circ}_{5/2}$
4489.527	2	40	22267.814	$11116^{\circ}_{7/2} - 33384_{9/2}$	4439.124	150	400	22520.644	$11116^{\circ}_{7/2} - 33637_{7/2}$
4488.678	100	500	22272.026	$4490^{\circ}_{5/2} - 26762_{3/2}$	4437.722	20	20	22527.759	$9400_{5/2} - 31928^{\circ}_{3/2}$
4488.628	3	20	22272.274	$14790^{\circ}_{7/2} - 37063_{9/2}$	4436.553	75	8	22533.695	$14275^{\circ}_{9/2} - 36809_{7/2}$
4487.495	100	300	22277.897	$4146_{7/2} - 26424^{\circ}_{5/2}$	4436.375	1	8	22534.599	$22355^{\circ}_{1/2} - 44889_{3/2}$
4486.631	15	300	22282.187	$18816^{\circ}_{13/2} - 41099_{15/2}$	4436.286	50	200	22535.051	$9238^{\circ}_{9/2} - 31773_{9/2}$
4485.795	8	200	22286.340	$10673^{\circ}_{5/2} - 32959_{3/2}$	4436.145	1	15	22535.767	$18118_{3/2} - 40654^{\circ}_{5/2}$
4484.291	4	75	22293.814	$11725^{\circ}_{1/2} - 34019_{3/2}$	4436.049	20	200	22536.255	$10673^{\circ}_{5/2} - 33209_{7/2}$
4484.235	2	2	22294.092	$23012^{\circ}_{3/2} - 45306_{3/2}$	4434.829	4	50	22542.455	$7331^{\circ}_{5/2} - 29873_{7/2}$
4484.106	2	25	22294.734	$17983^{\circ}_{5/2} - 40278_{3/2}$	4434.516	1	5	22544.046	$22106_{5/2} - 44650^{\circ}_{7/2}$
4481.640	3	150	22307.001	$13818^{\circ}_{7/2} - 36125_{9/2}$	4434.332	4	75	22544.981	$15242^{\circ}_{9/2} - 37787_{7/2}$
4481.178	2	150	22309.301	$18214^{\circ}_{3/2} - 40523_{1/2}$	4433.723	2	75	22548.078	$23187^{\circ}_{13/2} - 45735_{11/2}$
4480.909	2	2	22310.640	$22139^{\circ}_{9/2} - 44450_{9/2}$	4432.962	500	800	22551.948	$9202^{\circ}_{7/2} - 31754_{5/2}$
4479.158	3	150	22319.362	$15242^{\circ}_{9/2} - 37562_{11/2}$	4432.420	2	4	22554.706	$1859_{3/2} - 24414^{\circ}_{3/2}$
4474.073	20	200	22344.728	$13248_{9/2} - 35593^{\circ}_{9/2}$	4431.628	1	5	22558.737	$20686^{\circ}_{5/2} - 43244_{3/2}$
4472.275	5	200	22353.711	$13248_{9/2} - 35602^{\circ}_{11/2}$	4429.594	3	75	22569.095	$14484^{\circ}_{11/2} - 37053_{11/2}$
4472.105	1	1	22354.561	$18973^{\circ}_{7/2} - 41328_{5/2}$	4429.258	50	100	22570.807	$9202^{\circ}_{7/2} - 31773_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4427.786	4	50	22578.311	$10379_{9/2}-32957^{\circ}_{7/2}$	4396.477	75	300	22739.097	$9061_{5/2}-31800^{\circ}_{7/2}$
4427.655	50	300	22578.979	$17121^{\circ}_{3/2}-39700_{5/2}$	4394.894	100	300	22747.287	$8605_{5/2}-31353^{\circ}_{3/2}$
				$14484^{\circ}_{11/2}-37063_{9/2}$	4393.059	40l	400	22756.788	$26770^{\circ}_{11/2}-49527_{13/2}$
4426.050	1	50	22587.166	$29720^{\circ}_{3/2}-52307_{3/2}$	4392.611	1	8	22759.109	$22139^{\circ}_{9/2}-44898_{7/2}$
4425.983	8	200	22587.508	$26770^{\circ}_{11/2}-49357_{11/2}$	4391.110	600	1000	22766.889	$4490^{\circ}_{5/2}-27257_{7/2}$
4425.114	2	25	22591.944	$25414^{\circ}_{11/2}-48006_{9/2}$	4390.580	1	50	22769.637	$29095^{\circ}_{5/2}-51865_{5/2}$
4423.933	25b	50b	22597.975	$15242^{\circ}_{9/2}-37840_{9/2}$	4390.409	2	15	22770.524	$24132^{\circ}_{3/2}-46902_{5/2}$
4423.903	20b	40b	22598.128	$11576^{\circ}_{3/2}-34174_{5/2}$	4389.438	1		22775.561	$28587^{\circ}_{5/2}-51362_{5/2}$
4422.781	50	100	22603.861	$1859_{3/2}-24463^{\circ}_{5/2}$	4388.999	3		22777.839	$14275^{\circ}_{9/2}-37053_{11/2}$
4421.831	5	100	22608.717	$30310^{\circ}_{11/2}-52918_{13/2}$	4388.402	10	150	22780.938	$14349_{1/2}-37130^{\circ}_{1/2}$
4421.664	1	5	22609.571	$15236_{3/2}-37846^{\circ}_{5/2}$	4387.502	2	50	22785.611	$20310^{\circ}_{5/2}-43096_{5/2}$
4421.544	400l	200	22610.184	$1521_{5/2}-24132^{\circ}_{3/2}$	4387.479	3		22785.730	$20158_{5/2}-42944^{\circ}_{7/2}$
4420.737	5	4	22614.312	$11116^{\circ}_{7/2}-33730_{5/2}$	4387.104	5	100	22787.678	$16564^{\circ}_{11/2}-39352_{11/2}$
4419.322	2	10	22621.552	$23730^{\circ}_{9/2}-46352_{7/2}$	4386.107	2		22792.857	$22513^{\circ}_{5/2}-45306_{3/2}$
4419.006	5	200	22623.170	$17272^{\circ}_{9/2}-39895_{9/2}$	4384.019	5	5	22803.713	$17771^{\circ}_{11/2}-40574_{11/2}$
4418.661	40	200	22624.936	$16818_{7/2}-39443^{\circ}_{9/2}$	4383.933	1	3	22804.160	$36812_{1/2}-59616^{\circ}_{3/2}$
4416.236	100	300	22637.360	$10572^{\circ}_{9/2}-33209_{7/2}$	4382.007	2		22814.183	$20989^{\circ}_{9/2}-43803_{7/2}$
4415.592	3	10h	22640.662	$21131^{\circ}_{3/2}-43772_{5/2}$	4381.860	800	1000	22814.949	$6700^{\circ}_{9/2}-29515_{9/2}$
4414.853	1	8	22644.451	$17722^{\circ}_{9/2}-40367_{9/2}$	4381.402	75	200	22817.333	$4146_{7/2}-26963^{\circ}_{7/2}$
4414.623	15	200	22645.631	$16906^{\circ}_{7/2}-39552_{9/2}$	4380.144	2		22823.887	$19594_{1/2}-42418^{\circ}_{3/2}$
4413.373	5b	150	22652.045	$15453^{\circ}_{7/2}-38105_{5/2}$	4379.941	2	1	22824.944	$23730^{\circ}_{9/2}-46555_{11/2}$
4412.891	100	200	22654.519	$6691^{\circ}_{3/2}-29345_{5/2}$	4379.587	3	8	22826.789	$17121^{\circ}_{3/2}-39948_{1/2}$
4412.797	50	100	22655.001	$22834_{7/2}-45489^{\circ}_{9/2}$	4378.957	3	4	22830.073	$15349^{\circ}_{11/2}-38179_{9/2}$
4412.739	300	400	22655.299	$6168^{\circ}_{7/2}-28823_{5/2}$	4378.833	4	15	22830.720	$16033^{\circ}_{5/2}-38863_{5/2}$
4412.533	50b	400b	22656.357	$13468^{\circ}_{9/2}-36125_{9/2}$	4377.313	40	200	22838.647	$20288^{\circ}_{11/2}-43127_{11/2}$
4411.641	3	50	22660.938	$17983^{\circ}_{5/2}-40644_{5/2}$	4377.261	3	25	22838.919	$12902^{\circ}_{3/2}-35741_{5/2}$
4410.488	20	200	22666.862	$17272^{\circ}_{9/2}-39939_{11/2}$	4375.588	10	100	22847.651	$17722^{\circ}_{9/2}-40570_{7/2}$
4410.410	5	200	22667.263	$20288^{\circ}_{11/2}-42955_{9/2}$	4375.022	8	15	22850.607	$4113_{5/2}-26963^{\circ}_{7/2}$
4409.005	15	50	22674.486	$14790^{\circ}_{7/2}-37465_{5/2}$	4374.785	150	400	22851.845	$4113_{5/2}-26965^{\circ}_{3/2}$
4408.769	1	8	22675.700	$21131^{\circ}_{3/2}-43807_{3/2}$	4373.901	100	200	22856.463	$9720^{\circ}_{7/2}-32576_{7/2}$
4407.510	1	4	22682.177	$27787^{\circ}_{9/2}-50470_{9/2}$	4372.814	2	20	22862.145	$24309^{\circ}_{11/2}-47171_{9/2}$
4406.997	1	8	22684.817	$24463^{\circ}_{5/2}-47148_{3/2}$	4371.767	4	4	22867.620	$9061_{5/2}-31928^{\circ}_{3/2}$
4406.785	2	20	22685.908	$17837^{\circ}_{1/2}-40523_{1/2}$	4370.773	4	2	22872.820	$34019_{3/2}-56892^{\circ}_{5/2}$
4406.429	2	50	22687.741	$23697^{\circ}_{7/2}-46385_{7/2}$	4370.011	4	2	22876.809	$33209_{7/2}-56086^{\circ}_{9/2}$
4406.329	1	10	22688.256	$19248^{\circ}_{5/2}-41936_{3/2}$	4369.317	50b	200b	22880.442	$33354^{\circ}_{5/2}-56235_{3/2}$
4405.724	1	25	22691.371	$25607^{\circ}_{9/2}-48298_{7/2}$					$8378^{\circ}_{7/2}-31259_{5/2}$
4404.917	2	25	22695.529	$16033^{\circ}_{5/2}-38728_{5/2}$	4369.061	5	20	22881.783	$22513^{\circ}_{5/2}-45395_{7/2}$
4402.736	4	100	22706.771	$15786_{5/2}-38493^{\circ}_{5/2}$	4368.706	2		22883.642	$23697^{\circ}_{7/2}-46581_{5/2}$
4401.992	2	25	22710.609	$14101^{\circ}_{1/2}-36812_{1/2}$	4368.314	1		22885.695	$19050^{\circ}_{3/2}-41936_{3/2}$
4401.658	10	200	22712.332	$15453^{\circ}_{7/2}-38165_{7/2}$	4366.961	75	50	22892.786	$8460_{3/2}-31353^{\circ}_{3/2}$
4401.209	3	100	22714.649	$18973^{\circ}_{7/2}-41688_{7/2}$	4364.187	2	25	22907.337	$28923^{\circ}_{5/2}-51830_{7/2}$
4401.050	1	8	22715.470	$22106_{5/2}-44821^{\circ}_{5/2}$	4362.361	5	25	22916.925	$20310^{\circ}_{5/2}-43227_{5/2}$
4400.646	1	2	22717.555	$34174_{5/2}-56892^{\circ}_{5/2}$	4361.792	10	100	22919.915	$14545^{\circ}_{5/2}-37465_{5/2}$
4400.384	20	150	22718.908	$7001_{3/2}-29720^{\circ}_{3/2}$	4361.307	100l	200	22922.464	$15242^{\circ}_{9/2}-38165_{7/2}$
4399.093	10	300	22725.575	$20288^{\circ}_{11/2}-43014_{13/2}$	4359.804	1		22930.366	$37063_{9/2}-59993^{\circ}_{9/2}$
4398.837	1	5	22726.897	$15453^{\circ}_{7/2}-38179_{9/2}$	4359.127	5	25	22933.927	$20310^{\circ}_{5/2}-43244_{3/2}$
4398.020	1	25	22731.119	$24414^{\circ}_{3/2}-47145_{1/2}$	4358.815	5	40	22935.569	$18973^{\circ}_{7/2}-41909_{9/2}$
4397.914	75	300	22731.667	$6700^{\circ}_{9/2}-29431_{7/2}$	4358.668	4		22936.342	$15453^{\circ}_{7/2}-38389_{7/2}$
4397.752	2	1	22732.504	$19912^{\circ}_{13/2}-42644_{13/2}$	4358.549	50s	100	22936.968	$12219_{3/2}-35156^{\circ}_{5/2}$
4397.260	1	15	22735.048	$29095^{\circ}_{5/2}-51830_{7/2}$	4357.928	2		22940.237	$17983^{\circ}_{5/2}-40923_{5/2}$
									$37053_{11/2}-59993^{\circ}_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark		
4357.614	100b	150	22941.890	$1521_{5/2} - 24463^{\circ}_{5/2}$
4357.074	4	8	22944.733	$13248_{9/2} - 36193^{\circ}_{9/2}$
4355.911	2	8	22950.859	$17460^{\circ}_{5/2} - 40411_{7/2}$
4355.320	100	300	22953.973	$8018_{3/2} - 30972^{\circ}_{5/2}$
4353.405	75b	200	22964.070	$10673^{\circ}_{5/2} - 33637_{7/2}$
4352.818	40	75	22967.167	$11576^{\circ}_{3/2} - 34543_{5/2}$
4352.677	50	200	22967.911	$12488^{\circ}_{9/2} - 35456_{9/2}$
4352.182	5	10	22970.523	$36328_{3/2} - 59299^{\circ}_{5/2}$
4351.073	3		22976.378	$20120^{\circ}_{5/2} - 43096_{5/2}$
4350.572	4	8	22979.024	$12219_{3/2} - 35198^{\circ}_{1/2}$
4348.943	4s	8	22987.631	$16564^{\circ}_{11/2} - 39552_{9/2}$
4348.713	3		22988.847	$16906^{\circ}_{7/2} - 39895_{9/2}$
4348.312	20	40	22990.967	$13818^{\circ}_{7/2} - 36809_{7/2}$
4348.236	5	8	22991.368	$9585^{\circ}_{5/2} - 32576_{7/2}$
4347.430	1		22995.631	$24873^{\circ}_{5/2} - 47869_{3/2}$
4347.239	25h	200	22996.641	$26963^{\circ}_{7/2} - 49960_{7/2}$
4347.193	20	200	22996.885	$14790^{\circ}_{7/2} - 37787_{7/2}$
4347.092	1		22997.419	$24873^{\circ}_{5/2} - 47871_{7/2}$
4346.262	5	15	23001.811	$14275^{\circ}_{9/2} - 37277_{7/2}$
4345.052	10	40	23008.216	$17983^{\circ}_{5/2} - 40991_{3/2}$
4344.984	3	20	23008.576	$23697^{\circ}_{7/2} - 46706_{7/2}$
4344.326	400	300	23012.061	$0_{3/2} - 23012^{\circ}_{3/2}$
4343.951	200	300	23014.048	$1859_{3/2} - 24873^{\circ}_{5/2}$
4343.602	50	200	23015.897	$30994^{\circ}_{7/2} - 54010_{7/2}$
				$9720^{\circ}_{7/2} - 32736_{7/2}$
4343.238	10	20	23017.826	$15710^{\circ}_{5/2} - 38728_{5/2}$
4342.255	100	200	23023.036	$12570_{7/2} - 35593^{\circ}_{7/2}$
4341.992	1		23024.431	$24982^{\circ}_{7/2} - 48006_{9/2}$
4341.030	50	300	23029.533	$23187^{\circ}_{13/2} - 46216_{11/2}$
4339.650	4h	8	23036.856	$12488^{\circ}_{9/2} - 35525_{11/2}$
4338.383	4	10	23043.584	$16818_{7/2} - 39861^{\circ}_{5/2}$
4337.860	5	10	23046.362	$15710^{\circ}_{5/2} - 38757_{3/2}$
4337.384	100	800	23048.891	$15242^{\circ}_{5/2} - 38291_{7/2}$
4336.494	3		23053.621	$30956^{\circ}_{5/2} - 54010_{7/2}$
4335.797	50	200	23057.327	$12488^{\circ}_{9/2} - 35545_{9/2}$
4335.687	25b	200b	23057.912	$11116^{\circ}_{7/2} - 34174_{5/2}$
4335.312	25b	200	23059.907	$12485^{\circ}_{7/2} - 35545_{9/2}$
4334.316	5	5	23065.206	$10572^{\circ}_{9/2} - 33637_{7/2}$
4334.254	5	5	23065.536	$18816^{\circ}_{13/2} - 41882_{13/2}$
4333.933	50	150	23067.244	$22028^{\circ}_{5/2} - 45095_{15/2}$
4331.924	75l	200	23077.942	$14484^{\circ}_{11/2} - 37562_{11/2}$
4330.351	2		23086.325	$20686^{\circ}_{5/2} - 43772_{5/2}$
4329.907	3	10	23088.692	$28587^{\circ}_{5/2} - 51676_{3/2}$
4329.489	40	100	23090.921	$14484^{\circ}_{11/2} - 37575_{13/2}$
4329.107	10	50	23092.959	$22642^{\circ}_{9/2} - 45735_{11/2}$
4328.686	40	100	23095.205	$17272^{\circ}_{9/2} - 40367_{9/2}$
4328.286	15	50	23097.339	$22513^{\circ}_{5/2} - 45610_{5/2}$
4327.546	5	50	23101.288	$17121^{\circ}_{3/2} - 40222_{3/2}$
4327.448	4	50	23101.811	$19912^{\circ}_{13/2} - 43014_{13/2}$
4327.228	50	75	23102.986	$4146_{7/2} - 27249^{\circ}_{7/2}$
4327.091	25	75	23103.717	$4490^{\circ}_{5/2} - 27593_{5/2}$
4326.576	2	2	23106.467	$20989^{\circ}_{9/2} - 44096_{9/2}$
4326.341	2	5	23107.722	$20120^{\circ}_{5/2} - 43227_{5/2}$
4326.179	3	8	23108.588	$18568^{\circ}_{1/2} - 41676_{3/2}$
4325.920	2		23109.971	$17460^{\circ}_{5/2} - 40570_{7/2}$
4325.663	2		23111.344	$22014^{\circ}_{11/2} - 45126_{9/2}$
4325.189	2		23113.877	$24757^{\circ}_{9/2} - 47871_{7/2}$
4324.958	4		23115.112	$22106_{5/2} - 45221^{\circ}_{5/2}$
4324.442	4	4	23117.870	$20686^{\circ}_{5/2} - 43803_{7/2}$
4323.165	1		23124.698	$20120^{\circ}_{5/2} - 43244_{3/2}$
4323.043	8	25	23125.351	$15710^{\circ}_{3/2} - 38836_{3/2}$
4322.788	1	1	23126.715	$20120^{\circ}_{5/2} - 43246_{7/2}$
4322.386	2	1	23128.866	$20158_{5/2} - 43287^{\circ}_{3/2}$
4322.001	3	10	23130.926	$23730^{\circ}_{9/2} - 46861_{11/2}$
4321.012	8	20	23136.220	$4113_{5/2} - 27249^{\circ}_{7/2}$
4320.657	3	20	23138.121	$9711_{7/2} - 32850^{\circ}_{5/2}$
4320.590	50	300	23138.480	$12902^{\circ}_{3/2} - 36040_{1/2}$
4320.449	5	200	23139.235	$17272^{\circ}_{9/2} - 40411_{7/2}$
4320.126	200	500	23140.965	$4490^{\circ}_{5/2} - 27631_{3/2}$
4319.097	10	300	23146.478	$15242^{\circ}_{9/2} - 38389_{7/2}$
4318.959	2	50	23147.218	$20080^{\circ}_{7/2} - 43227_{5/2}$
4318.293	50	300	23150.787	$9585^{\circ}_{5/2} - 32736_{7/2}$
4317.756	2	8	23153.667	$11116^{\circ}_{7/2} - 34270_{9/2}$
4317.670	2	10	23154.128	$14790^{\circ}_{7/2} - 37945_{5/2}$
4317.222	3	20	23156.531	$17121^{\circ}_{3/2} - 40278_{3/2}$
4315.946	25	100	23163.377	$12902^{\circ}_{3/2} - 36065_{5/2}$
4315.706	4	25	23164.665	$15453^{\circ}_{7/2} - 38617_{9/2}$
4315.579	4	8	23165.347	$8460_{3/2} - 31625^{\circ}_{1/2}$
4314.010	5	8	23173.771	$6700^{\circ}_{9/2} - 29873_{7/2}$
4313.308	15	50	23177.543	$6168^{\circ}_{7/2} - 29345_{5/2}$
4312.156	3	5	23183.735	$17460^{\circ}_{5/2} - 40644_{5/2}$
4310.644	2	40	23191.867	$23187^{\circ}_{13/2} - 46378_{13/2}$
4310.550	1		23192.372	$24132^{\circ}_{3/2} - 47324_{5/2}$
4310.179	5	25	23194.369	$8605_{5/2} - 31800^{\circ}_{7/2}$
4309.991	100	800	23195.380	$14484^{\circ}_{11/2} - 37679_{11/2}$
				$10189^{\circ}_{11/2} - 33384_{9/2}$
4309.215	1		23199.557	$15236_{3/2} - 38436^{\circ}_{3/2}$
4308.255	8	15	23204.727	$8605_{5/2} - 31810^{\circ}_{5/2}$
4307.956	2	10	23206.337	$21297^{\circ}_{5/2} - 44503_{7/2}$
4306.365	200b	200b	23214.911	$19912^{\circ}_{13/2} - 43127_{11/2}$
4306.159	1	5	23216.021	$21682^{\circ}_{7/2} - 44898_{7/2}$
4305.328	2	100	23220.502	$27249^{\circ}_{7/2} - 50470_{9/2}$
4304.070	2	5	23227.289	$15144^{\circ}_{3/2} - 38372_{3/2}$
4302.109	2	40	23237.876	$25607^{\circ}_{9/2} - 48844_{9/2}$
4301.280	3	10	23242.355	$14545^{\circ}_{5/2} - 37787_{7/2}$
4300.793	8	150	23244.987	$13818^{\circ}_{7/2} - 37063_{9/2}$
4300.700	2	3	23245.489	$9711_{7/2} - 32957^{\circ}_{7/2}$
4300.135	2	10	23248.544	$18973^{\circ}_{7/2} - 42222_{7/2}$
4299.435	3	50	23252.329	$14349_{1/2} - 37601^{\circ}_{3/2}$

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TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark		
4298.891	25	50	23255.271	$21297^{\circ}_{5/2} - 44552_{5/2}$
4298.826	20	200b	23255.623	$12485^{\circ}_{7/2} - 35741_{5/2}$
4298.283	1		23258.560	$14349_{1/2} - 37607^{\circ}_{1/2}$
4297.365	25b	75	23263.529	$6168^{\circ}_{7/2} - 29431_{7/2}$
4296.580	3	10	23267.779	$15349^{\circ}_{11/2} - 38617_{9/2}$
4295.125	8	100	23275.661	$15453^{\circ}_{7/2} - 38728_{5/2}$
4295.035	20		23276.149	$17771^{\circ}_{11/2} - 41047_{9/2}$
4293.218	1		23286.000	$19050^{\circ}_{3/2} - 42336_{5/2}$
4293.089	1	3	23286.700	$14275^{\circ}_{9/2} - 37562_{11/2}$
4292.509	10b	8	23289.846	$4113_{5/2} - 27403^{\circ}_{3/2}$
4291.382	4	40	23295.962	$11725^{\circ}_{7/2} - 35021_{3/2}$
4290.829	1		23298.965	$33384_{9/2} - 56683^{\circ}_{7/2}$
4290.169	15	50	23302.549	$17272^{\circ}_{9/2} - 40574_{11/2}$
4288.047	20	200	23314.080	$14790^{\circ}_{7/2} - 38105_{5/2}$
4287.683	4	75	23316.059	$24982^{\circ}_{7/2} - 48298_{7/2}$
4286.699	5	200	23321.411	$22834_{7/2} - 46155^{\circ}_{5/2}$
4286.187	15b	200b	23324.197	$17722^{\circ}_{9/2} - 41047_{9/2}$
4285.450	3	8	23328.208	$1859_{3/2} - 25188^{\circ}_{3/2}$
4285.181	15	200	23329.672	$18816^{\circ}_{13/2} - 42146_{11/2}$
4284.975	50	200	23330.794	$16564^{\circ}_{11/2} - 39895_{9/2}$
4284.927	3	5	23331.056	$13250_{5/2} - 36581^{\circ}_{3/2}$
4284.514	10b	10	23333.305	$13250_{5/2} - 36583^{\circ}_{7/2}$
4284.431	3	8	23333.756	$16033^{\circ}_{5/2} - 39366_{5/2}$
4284.215	2	8	23334.933	$8018_{3/2} - 31353^{\circ}_{3/2}$
4284.181	3	1	23335.118	$13248_{9/2} - 36583^{\circ}_{7/2}$
4283.519	150	400	23338.724	$9238^{\circ}_{9/2} - 32576_{7/2}$
4282.370	10l	200	23344.986	$17983^{\circ}_{5/2} - 41328_{5/2}$
				$15236_{3/2} - 38581^{\circ}_{5/2}$
4282.042	300b	500b	23346.774	$6168^{\circ}_{7/2} - 29515_{9/2}$
4281.758	2	2	23348.323	$28587^{\circ}_{5/2} - 51935_{5/2}$
4281.416	150	400	23350.188	$8460_{3/2} - 31810^{\circ}_{5/2}$
4281.068	200	500	23352.086	$1521_{5/2} - 24873^{\circ}_{5/2}$
4280.253	3	8	23356.532	$14484^{\circ}_{11/2} - 37840_{9/2}$
4280.221	5	8	23356.707	$10855_{7/2} - 34212^{\circ}_{5/2}$
4278.507	5	50	23366.064	$16818_{7/2} - 40184^{\circ}_{7/2}$
4278.110	1		23368.232	$18568^{\circ}_{7/2} - 41936_{3/2}$
4277.313	600	500	23372.586	$0_{3/2} - 23372^{\circ}_{3/2}$
4277.039	40	100	23374.083	$9585^{\circ}_{5/2} - 32959_{3/2}$
4276.966	100l	300	23374.482	$16564^{\circ}_{11/2} - 39939_{11/2}$
				$9202^{\circ}_{7/2} - 32576_{7/2}$
4276.909	4		23374.794	$15242^{\circ}_{9/2} - 38617_{9/2}$
4276.808	100	400	23375.346	$8378^{\circ}_{7/2} - 31754_{5/2}$
4275.439	3	3	23382.830	$9238^{\circ}_{9/2} - 32620_{11/2}$
4275.240	2		23383.919	$23012^{\circ}_{3/2} - 46395_{3/2}$
4275.203	2		23384.121	$23518^{\circ}_{7/2} - 46902_{5/2}$
4274.321	50		23388.947	$14790^{\circ}_{7/2} - 38179_{9/2}$
4274.024	100	300	23390.572	$12488^{\circ}_{9/2} - 35878_{7/2}$
				$15349^{\circ}_{11/2} - 38740_{11/2}$
4273.357	300	800	23394.223	$8378^{\circ}_{7/2} - 31773_{9/2}$
4271.913	3	25	23402.130	$17121^{\circ}_{3/2} - 40523_{1/2}$
4271.546	3	20	23404.141	$14275^{\circ}_{9/2} - 37679_{11/2}$
4271.240	3	50	23405.818	$24463^{\circ}_{5/2} - 47869_{3/2}$
4271.103	40b	200	23406.568	$1859_{3/2} - 25266^{\circ}_{1/2}$
4271.084	20b		23406.672	$12472^{\circ}_{5/2} - 35878_{7/2}$
4270.911	1	10	23407.620	$24463^{\circ}_{5/2} - 47871_{7/2}$
4270.326	50	200	23410.827	$15453^{\circ}_{7/2} - 38863_{5/2}$
4267.716	4	15	23425.144	$16033^{\circ}_{5/2} - 39458_{7/2}$
4267.518	20	50	23426.231	$12902^{\circ}_{3/2} - 36328_{3/2}$
4267.381	2	5	23426.983	$11116^{\circ}_{7/2} - 34543_{5/2}$
4266.823	1		23430.047	$25414^{\circ}_{11/2} - 48844_{9/2}$
4265.661	1		23436.429	$27787^{\circ}_{9/2} - 51224_{9/2}$
4265.488	8	15	23437.380	$11116^{\circ}_{7/2} - 34553_{9/2}$
4265.034	5	25	23439.874	$18568^{\circ}_{1/2} - 42008_{1/2}$
4264.943	5		23440.375	$14101^{\circ}_{1/2} - 37542_{3/2}$
4264.374	4l	100	23443.502	$21682^{\circ}_{7/2} - 45126_{9/2}$
4264.105	20	50	23444.981	$11576^{\circ}_{3/2} - 35021_{3/2}$
4263.355	200	75	23449.105	$9400_{5/2} - 32850^{\circ}_{5/2}$
4262.739	5	3	23452.494	$17771^{\circ}_{11/2} - 41223_{11/2}$
4261.273	50	4	23460.562	$1521_{5/2} - 24982^{\circ}_{7/2}$
4260.936	4		23462.418	$18214^{\circ}_{3/2} - 41676_{3/2}$
4259.857	3		23468.360	$8460_{3/2} - 31928^{\circ}_{3/2}$
4258.828	2		23474.031	$33209_{7/2} - 56683^{\circ}_{7/2}$
4258.466	3		23476.026	$6244_{1/2} - 29720^{\circ}_{3/2}$
4256.094	50	10	23489.109	$9720^{\circ}_{7/2} - 33209_{7/2}$
4254.739	1		23496.590	$20310^{\circ}_{5/2} - 43807_{3/2}$
4254.451	75	8	23498.180	$9238^{\circ}_{9/2} - 32736_{7/2}$
4254.169	1		23499.738	$30994^{\circ}_{7/2} - 54493_{5/2}$
4254.021	5		23500.555	$17722^{\circ}_{9/2} - 41223_{11/2}$
4253.975	2		23500.810	$14790^{\circ}_{7/2} - 38291_{7/2}$
4253.867	15	8	23501.406	$10673^{\circ}_{5/2} - 34174_{5/2}$
4253.259	3b		23504.766	$17983^{\circ}_{5/2} - 41488_{7/2}$
4253.239	2b		23504.876	$16906^{\circ}_{7/2} - 40411_{7/2}$
4253.017	1		23506.103	$26963^{\circ}_{7/2} - 50470_{9/2}$
4252.876	1		23506.883	$21682^{\circ}_{7/2} - 45189_{5/2}$
4251.958	1		23511.957	$15324^{\circ}_{1/2} - 38836_{3/2}$
4251.781	1		23512.936	$15349^{\circ}_{11/2} - 38862_{11/2}$
4251.592	2		23513.982	$20989^{\circ}_{9/2} - 44503_{7/2}$
4250.341	100b		23520.902	$4490^{\circ}_{5/2} - 28011_{3/2}$
4250.014	1		23522.712	$17121^{\circ}_{3/2} - 40644_{5/2}$
4249.969	3		23522.961	$10379_{9/2} - 33902^{\circ}_{7/2}$
4249.678	75	10	23524.572	$7828_{1/2} - 31353^{\circ}_{3/2}$
4247.989	150	100	23533.925	$9202^{\circ}_{7/2} - 32736_{7/2}$
4247.598	50	5	23536.091	$4490^{\circ}_{5/2} - 28026_{5/2}$
4246.363	3		23542.936	$15324^{\circ}_{1/2} - 38867_{1/2}$
4244.824	2		23551.472	$25266^{\circ}_{1/2} - 48817_{3/2}$
4243.925	75	15	23556.461	$9400_{5/2} - 32957^{\circ}_{7/2}$
4243.674	1		23557.854	$35741_{5/2} - 59299^{\circ}_{5/2}$
4243.375	2		23559.514	$14545^{\circ}_{5/2} - 38105_{5/2}$
4242.720	15	4	23563.151	$7001_{3/2} - 30564^{\circ}_{1/2}$
4242.338	5	3	23565.272	$14275^{\circ}_{9/2} - 37840_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4241.865	2		23567.900	$22685^{\circ}_{7/2} - 46253_{9/2}$	4214.073	1		23723.329	$20080^{\circ}_{7/2} - 43803_{7/2}$
4240.676	4	1	23574.508	$22642^{\circ}_{9/2} - 46216_{11/2}$	4213.994	3		23723.773	$23187^{\circ}_{13/2} - 46910_{13/2}$
4240.594	40	5	23574.964	$6213_{9/2} - 29788^{\circ}_{9/2}$	4213.146	1	2	23728.548	$20080^{\circ}_{7/2} - 43809_{9/2}$
4239.673	5	1	23580.085	$12485^{\circ}_{7/2} - 36065_{5/2}$	4212.452	2		23732.457	$29788^{\circ}_{9/2} - 53520_{9/2}$
4239.030	2		23583.662	$20969^{\circ}_{7/2} - 44552_{5/2}$	4211.514	10	10	23737.743	$16906^{\circ}_{7/2} - 40644_{5/2}$
4238.978	5	4	23583.951	$15144^{\circ}_{3/2} - 38728_{5/2}$	4210.400	1		23744.023	$30101^{\circ}_{7/2} - 53845_{5/2}$
4238.884	1		23584.474	$13468^{\circ}_{9/2} - 37053_{11/2}$	4208.890	200b	200	23752.542	$6700^{\circ}_{9/2} - 30452_{9/2}$
4237.685	2		23591.147	$23012^{\circ}_{3/2} - 46603_{5/2}$	4207.922	1		23758.006	$21131^{\circ}_{3/2} - 44889_{3/2}$
4237.657	1		23591.303	$22106_{5/2} - 45697^{\circ}_{3/2}$	4206.656	5	10	23765.156	$17722^{\circ}_{9/2} - 41488_{7/2}$
4237.113	5	5	23594.332	$13468^{\circ}_{9/2} - 37063_{9/2}$	4201.847	20	100	23792.354	$8018_{3/2} - 31810^{\circ}_{5/2}$
4236.915	2		23595.434	$22139^{\circ}_{9/2} - 45735_{11/2}$	4201.602	8	8	23793.742	$18214^{\circ}_{3/2} - 42008_{1/2}$
4236.390	8	3	23598.358	$14790^{\circ}_{7/2} - 38389_{7/2}$	4201.005	1		23797.123	$7828_{1/2} - 31625^{\circ}_{1/2}$
4235.849	1		23601.372	$21297^{\circ}_{5/2} - 44898_{7/2}$	4199.015	3	10	23808.401	$13468^{\circ}_{9/2} - 37277_{7/2}$
4234.984	25	5	23606.193	$10673^{\circ}_{5/2} - 34279_{7/2}$	4197.936	2	2	23814.520	$9400_{5/2} - 33215^{\circ}_{3/2}$
4234.752	5		23607.486	$8018_{3/2} - 31625^{\circ}_{1/2}$	4195.949	3	15	23825.797	$15242^{\circ}_{9/2} - 39068_{7/2}$
4234.375	3		23609.588	$15786_{5/2} - 39396^{\circ}_{7/2}$	4195.832	4	75	23826.462	$14545^{\circ}_{5/2} - 38372_{3/2}$
4234.302	8	3	23609.995	$11116^{\circ}_{7/2} - 34726_{7/2}$	4195.557	4	75	23828.023	$18816^{\circ}_{13/2} - 42644_{13/2}$
4234.083	1		23611.216	$22642^{\circ}_{9/2} - 46253_{9/2}$	4194.082	2	4	23836.403	$16818_{7/2} - 40654^{\circ}_{5/2}$
4233.511	2		23614.406	$20686^{\circ}_{5/2} - 44300_{3/2}$	4191.995	1		23848.270	$19248^{\circ}_{5/2} - 43096_{5/2}$
4233.287	25	20	23615.656	$15453^{\circ}_{7/2} - 39068_{7/2}$	4191.826	5	10	23849.231	$11576^{\circ}_{3/2} - 35425_{1/2}$
4232.525	3b		23619.907	$15242^{\circ}_{9/2} - 38862_{11/2}$	4190.562	1		23856.425	$12472^{\circ}_{5/2} - 36328_{3/2}$
4231.983	3		23622.932	$12570_{7/2} - 36193^{\circ}_{9/2}$	4188.580	2	5	23867.713	$17460^{\circ}_{5/2} - 41328_{5/2}$
4231.794	4		23623.987	$9585^{\circ}_{5/2} - 33209_{7/2}$	4188.103	1	2	23870.432	$10673^{\circ}_{5/2} - 34543_{5/2}$
4231.174	3		23627.449	$17771^{\circ}_{11/2} - 41398_{9/2}$	4185.035	1	2	23887.931	$6213_{9/2} - 30101^{\circ}_{7/2}$
4229.454	75	15	23637.057	$12488^{\circ}_{9/2} - 36125_{9/2}$	4184.903	3	4	23888.684	$20288^{\circ}_{11/2} - 44177_{11/2}$
4228.988	5	4	23639.662	$12485^{\circ}_{7/2} - 36125_{9/2}$	4184.709	4	25	23889.791	$14275^{\circ}_{9/2} - 38165_{7/2}$
4228.701	10b		23641.266	$4146_{7/2} - 27787^{\circ}_{9/2}$	4184.282	2		23892.229	$21297^{\circ}_{5/2} - 45189_{5/2}$
4227.654	4b	5	23647.121	$13818^{\circ}_{7/2} - 37465_{5/2}$	4183.562	5	15	23896.341	$9061_{5/2} - 32957^{\circ}_{7/2}$
4226.726	3		23652.312	$20120^{\circ}_{5/2} - 43772_{5/2}$	4183.414	1		23897.186	$27631_{3/2} - 51528^{\circ}_{3/2}$
4225.803	5		23657.479	$21131^{\circ}_{3/2} - 44789_{1/2}$	4182.155	5	50	23904.380	$14275^{\circ}_{9/2} - 38179_{9/2}$
4224.614	15	5	23664.137	$9720^{\circ}_{7/2} - 33384_{9/2}$	4181.348	2	4	23908.994	$22355^{\circ}_{1/2} - 46264_{3/2}$
4224.238	10	5	23666.243	$1521_{5/2} - 25188^{\circ}_{3/2}$					$20989^{\circ}_{9/2} - 44898_{7/2}$
4224.142	2		23666.781	$22685^{\circ}_{7/2} - 46352_{7/2}$	4181.161	2	5	23910.063	$12902^{\circ}_{3/2} - 36812_{1/2}$
4222.749	4		23674.588	$23187^{\circ}_{13/2} - 46861_{11/2}$	4181.077	2	3	23910.543	$8018_{3/2} - 31928^{\circ}_{3/2}$
4222.579	3		23675.541	$17722^{\circ}_{9/2} - 41398_{9/2}$	4181.041	2	1	23910.749	$27357^{\circ}_{9/2} - 51268_{7/2}$
4222.185	2		23677.750	$18568^{\circ}_{1/2} - 42246_{1/2}$	4179.958	75	150	23916.944	$9720^{\circ}_{7/2} - 33637_{7/2}$
4219.678	4		23691.818	$20080^{\circ}_{7/2} - 43772_{5/2}$	4179.713	100	150	23918.346	$1521_{5/2} - 25440^{\circ}_{5/2}$
4219.414	2		23693.300	$19594_{1/2} - 43287^{\circ}_{3/2}$	4178.060	150	300	23927.809	$7331^{\circ}_{5/2} - 31259_{5/2}$
4219.380	5	5	23693.491	$17983^{\circ}_{5/2} - 41676_{3/2}$	4176.895	2		23934.483	$27593_{5/2} - 51528^{\circ}_{3/2}$
4218.998	3		23695.636	$14484^{\circ}_{11/2} - 38179_{9/2}$	4176.333	2	5	23937.703	$14790^{\circ}_{7/2} - 38728_{5/2}$
				$24757^{\circ}_{9/2} - 48453_{7/2}$					
					4175.482	1		23942.582	$26965^{\circ}_{3/2} - 50907_{3/2}$
4218.820	1		23696.636	$31800^{\circ}_{7/2} - 55496_{9/2}$	4173.959	1		23951.318	$17272^{\circ}_{9/2} - 41223_{11/2}$
4218.636	2		23697.669	$24309^{\circ}_{11/2} - 48006_{9/2}$	4173.530	4l	4	23953.780	$9400_{5/2} - 33354^{\circ}_{5/2}$
4218.539	10	10	23698.214	$10572^{\circ}_{9/2} - 34270_{9/2}$	4170.783	4	25	23969.556	$13818^{\circ}_{7/2} - 37787_{7/2}$
4218.224	3		23699.984	$22685^{\circ}_{7/2} - 46385_{7/2}$	4170.469	25	50	23971.361	$9238^{\circ}_{9/2} - 33209_{7/2}$
4218.187	8	5	23700.192	$11725^{\circ}_{1/2} - 35425_{1/2}$	4168.633	10	100	23981.919	$10572^{\circ}_{9/2} - 34553_{9/2}$
4217.759	4	1	23702.597	$20686^{\circ}_{5/2} - 44388_{5/2}$	4167.275	2	15	23989.733	$15710^{\circ}_{3/2} - 39700_{5/2}$
4214.629	4		23720.199	$22014^{\circ}_{11/2} - 45735_{11/2}$	4166.493	2h	2	23994.236	$18118_{3/2} - 42112^{\circ}_{3/2}$
4214.537	5	8	23720.717	$17727_{11/2} - 41447^{\circ}_{11/2}$	4165.070	3	10	24002.434	$15349^{\circ}_{11/2} - 39352_{11/2}$
4214.227	1		23722.462	$15144^{\circ}_{3/2} - 38867_{1/2}$	4164.253	10	50	24007.143	$9202^{\circ}_{7/2} - 33209_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4163.733	5	75	24010.141	$16564^{\circ}_{11/2} - 40574_{11/2}$	4132.979	1		24188.800	$24132^{\circ}_{3/2} - 48320_{5/2}$
4163.645	20	200	24010.648	$9720^{\circ}_{7/2} - 33730_{5/2}$	4132.754	150	200	24190.116	$9711_{7/2} - 33902^{\circ}_{7/2}$
4163.179	3	15	24013.336	$12570_{7/2} - 36583^{\circ}_{7/2}$	4132.287	2		24192.850	$20310^{\circ}_{5/2} - 44503_{7/2}$
4162.678	10	100	24016.226	$14275^{\circ}_{9/2} - 38291_{7/2}$	4132.090	2		24194.003	$19050^{\circ}_{3/2} - 43244_{3/2}$
4161.587	2	5	24022.522	$13818^{\circ}_{7/2} - 37840_{9/2}$	4131.529	5	10	24197.289	$18816^{\circ}_{13/2} - 43014_{13/2}$
4159.657	10	100	24033.668	$14484^{\circ}_{11/2} - 38517_{13/2}$	4131.425	50	100	24197.898	$8378^{\circ}_{7/2} - 32576_{7/2}$
4156.987	1		24049.104	$22106_{5/2} - 46155^{\circ}_{5/2}$	4130.663	5	3	24202.361	$15349^{\circ}_{11/2} - 39552_{9/2}$
4156.512	100b	150	24051.852	$9585^{\circ}_{5/2} - 33637_{7/2}$	4129.914	3b	4	24206.751	$17121^{\circ}_{3/2} - 41328_{5/2}$
4156.235	50	100	24053.455	$10673^{\circ}_{5/2} - 34726_{7/2}$	4128.912	1		24212.625	$20686^{\circ}_{5/2} - 44898_{7/2}$
4155.474	1		24057.860	$21131^{\circ}_{3/2} - 45189_{5/2}$	4128.300	3	3	24216.215	$17460^{\circ}_{5/2} - 41676_{3/2}$
4153.722	2		24068.007	$22513^{\circ}_{5/2} - 46581_{5/2}$	4127.289	3		24222.146	$15144^{\circ}_{3/2} - 39366_{5/2}$
4151.447	4	5	24081.196	$10189^{\circ}_{11/2} - 34270_{9/2}$	4126.607	1		24226.149	$24463^{\circ}_{5/2} - 48689_{3/2}$
4150.482	4	5	24086.795	$14349_{1/2} - 38436^{\circ}_{3/2}$	4124.666	5	15	24237.549	$15710^{\circ}_{3/2} - 39948_{1/2}$
4150.369	4	8	24087.451	$24757^{\circ}_{9/2} - 48844_{9/2}$	4124.513	5	10	24238.449	$22014^{\circ}_{11/2} - 46253_{9/2}$
4149.986	200b	300	24089.674	$10572^{\circ}_{9/2} - 34661_{11/2}$	4123.953	2		24241.740	$20310^{\circ}_{5/2} - 44552_{5/2}$
4149.711	4	5	24091.270	$15305_{9/2} - 39396^{\circ}_{7/2}$	4123.530	40	25	24244.226	$8605_{5/2} - 32850^{\circ}_{5/2}$
4148.773	2		24096.717	$6213_{9/2} - 30310^{\circ}_{11/2}$	4123.401	2		24244.985	$16033^{\circ}_{5/2} - 40278_{3/2}$
4148.684	4		24097.234	$4146_{7/2} - 28243^{\circ}_{5/2}$	4123.270	2		24245.755	$22139^{\circ}_{9/2} - 46385_{7/2}$
4148.425	2		24098.738	$17837^{\circ}_{1/2} - 41936_{3/2}$	4122.965	8	15	24247.549	$15453^{\circ}_{7/2} - 39700_{5/2}$
4148.344	20	50	24099.209	$15453^{\circ}_{7/2} - 39552_{9/2}$	4122.673	5b		24249.266	$25246_{9/2} - 49495^{\circ}_{9/2}$
4148.180	200	150	24100.162	$7828_{1/2} - 31928^{\circ}_{3/2}$	4121.857	5	10	24254.067	$18973^{\circ}_{7/2} - 43227_{5/2}$
4148.026	4	10	24101.056	$18118_{3/2} - 42219^{\circ}_{5/2}$	4120.014	3	4	24264.916	$19912^{\circ}_{13/2} - 44177_{11/2}$
4146.664	2		24108.972	$26626^{\circ}_{1/2} - 50735_{3/2}$	4119.390	2	2	24268.592	$20120^{\circ}_{5/2} - 44388_{5/2}$
4146.256	1		24111.345	$17771^{\circ}_{11/2} - 41882_{13/2}$	4118.594	5	10	24273.282	$13406^{\circ}_{13/2} - 37679_{11/2}$
4146.069	2		24112.432	$25414^{\circ}_{11/2} - 49527_{13/2}$	4117.839	4	4	24277.732	$35021_{3/2} - 59299^{\circ}_{5/2}$
4145.836	2b		24113.787	$14275^{\circ}_{9/2} - 38389_{7/2}$					$14790^{\circ}_{7/2} - 39068_{7/2}$
4145.664	1		24114.788	$35878_{7/2} - 59993^{\circ}_{9/2}$	4116.714	500b	400	24284.367	$6168^{\circ}_{7/2} - 30452_{9/2}$
4145.197	1		24117.504	$12570_{7/2} - 36687^{\circ}_{5/2}$	4116.311	4	4	24286.744	$13818^{\circ}_{7/2} - 38105_{5/2}$
4144.453	5	2	24121.834	$20686^{\circ}_{5/2} - 44807_{7/2}$	4115.144	8l		24293.632	$9061_{5/2} - 33354^{\circ}_{5/2}$
4143.603	3	5	24126.782	$13818^{\circ}_{7/2} - 37945_{5/2}$	4114.145	2		24299.530	$18118_{3/2} - 42418^{\circ}_{3/2}$
4142.970	5	3	24130.468	$4113_{5/2} - 28243^{\circ}_{5/2}$	4113.557	5		24303.004	$24309^{\circ}_{11/2} - 48612_{13/2}$
4142.700	300	100	24132.041	$0_{3/2} - 24132^{\circ}_{3/2}$	4112.485	1		24309.339	$15242^{\circ}_{9/2} - 39552_{9/2}$
4142.475	50	150	24133.352	$14484^{\circ}_{11/2} - 38617_{9/2}$	4112.313	5	15	24310.355	$18816^{\circ}_{13/2} - 43127_{11/2}$
4141.947	1		24136.428	$20989^{\circ}_{9/2} - 45126_{9/2}$	4111.986	3		24312.288	$23012^{\circ}_{3/2} - 47324_{5/2}$
4141.631	50	75	24138.269	$17771^{\circ}_{11/2} - 41909_{9/2}$	4111.458	3		24315.411	$11725^{\circ}_{1/2} - 36040_{1/2}$
4141.225	2		24140.636	$16906^{\circ}_{7/2} - 41047_{9/2}$	4111.427	3	2	24315.594	$27631_{3/2} - 51946^{\circ}_{5/2}$
4140.385	50	100	24145.533	$9585^{\circ}_{5/2} - 33730_{5/2}$	4111.133	4	5	24317.333	$22106_{5/2} - 46423^{\circ}_{3/2}$
4140.235	200	150	24146.408	$9238^{\circ}_{9/2} - 33384_{9/2}$	4110.968	4	4	24318.309	$14545^{\circ}_{5/2} - 38863_{5/2}$
4139.934	2		24148.164	$25266^{\circ}_{1/2} - 49414_{3/2}$	4110.633	15	15	24320.291	$6244_{1/2} - 30564^{\circ}_{1/2}$
4139.758	1		24149.190	$26586^{\circ}_{3/2} - 50735_{3/2}$	4110.512	40	25	24321.006	$12488^{\circ}_{9/2} - 36809_{7/2}$
4138.841	5	5	24154.541	$10572^{\circ}_{9/2} - 34726_{7/2}$	4110.075	5	4	24323.592	$12485^{\circ}_{7/2} - 36809_{7/2}$
4137.886	2		24160.115	$16564^{\circ}_{11/2} - 40724_{13/2}$	4108.420	500	150	24333.391	$4490^{\circ}_{5/2} - 28823_{5/2}$
4137.612	2		24161.715	$20288^{\circ}_{11/2} - 44450_{9/2}$	4107.793	5	8	24337.105	$12472^{\circ}_{5/2} - 36809_{7/2}$
4137.068	2		24164.892	$11576^{\circ}_{3/2} - 35741_{5/2}$	4107.370	20	8	24339.611	$11116^{\circ}_{7/2} - 35456_{9/2}$
4136.393	75b	20b	24168.836	$13406^{\circ}_{13/2} - 37575_{13/2}$	4106.950	4		24342.100	$14275^{\circ}_{9/2} - 38617_{9/2}$
4136.101	2		24170.542	$12219_{3/2} - 36390^{\circ}_{3/2}$	4106.120	5b	5b	24347.020	$13818^{\circ}_{7/2} - 38165_{7/2}$
4134.989	2		24177.042	$19050^{\circ}_{3/2} - 43227_{5/2}$	4105.911	25b	50	24348.260	$10673^{\circ}_{5/2} - 35021_{3/2}$
4134.414	1		24180.404	$20120^{\circ}_{5/2} - 44300_{3/2}$	4105.037	2b		24353.444	$17983^{\circ}_{5/2} - 42336_{5/2}$
4134.106	100b	100b	24182.205	$9202^{\circ}_{7/2} - 33384_{9/2}$					$25607^{\circ}_{9/2} - 49960_{7/2}$
4133.396	2		24186.359	$17722^{\circ}_{9/2} - 41909_{9/2}$	4104.381	150	75	24357.336	$8378^{\circ}_{7/2} - 32736_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4103.669	5b		24361.562	$13818^{\circ}_{7/2} - 38179_{9/2}$	4075.709	5	8	24528.682	$9202^{\circ}_{7/2} - 33730_{5/2}$
				$12219_{3/2} - 36581^{\circ}_{3/2}$	4074.642	1		24535.106	$30310^{\circ}_{11/2} - 54845_{9/2}$
4103.264	5	15	24363.966	$22014^{\circ}_{11/2} - 46378_{13/2}$	4074.245	2	4	24537.496	$35456_{9/2} - 59993^{\circ}_{9/2}$
4103.112	4		24364.869	$10189^{\circ}_{11/2} - 34553_{9/2}$					$16033^{\circ}_{5/2} - 40570_{7/2}$
4102.462	2		24368.729	$17983^{\circ}_{5/2} - 42352_{5/2}$	4073.708	10	40	24540.731	$22014^{\circ}_{11/2} - 46555_{11/2}$
4101.326	4	5	24375.479	$17771^{\circ}_{11/2} - 42146_{11/2}$	4072.907	10	5	24545.557	$15349^{\circ}_{11/2} - 39895_{9/2}$
4100.847	10b		24378.326	$16033^{\circ}_{5/2} - 40411_{7/2}$	4072.178	3	1	24549.951	$9720^{\circ}_{7/2} - 34270_{9/2}$
4100.820	50b	75	24378.486	$14484^{\circ}_{11/2} - 38862_{11/2}$	4071.466	5		24554.244	$30484_{11/2} - 55038^{\circ}_{9/2}$
4098.932	50	20	24389.715	$8460_{3/2} - 32850^{\circ}_{5/2}$	4071.302	1		24555.233	$17121^{\circ}_{3/2} - 41676_{3/2}$
4098.093	2		24394.708	$24982^{\circ}_{7/2} - 49377_{7/2}$	4070.671	15	3	24559.040	$9720^{\circ}_{7/2} - 34279_{7/2}$
4097.691	15b	10	24397.102	$15786_{5/2} - 40184^{\circ}_{7/2}$	4069.757	15	3	24564.555	$1859_{3/2} - 26424^{\circ}_{5/2}$
4096.332	8	2	24405.196	$20989^{\circ}_{9/2} - 45395_{7/2}$	4069.299	4		24567.320	$15710^{\circ}_{3/2} - 40278_{3/2}$
4094.747	500	200	24414.642	$0_{3/2} - 24414^{\circ}_{3/2}$	4069.202	300	200	24567.905	$6691^{\circ}_{3/2} - 31259_{5/2}$
4094.490	3		24416.174	$17272^{\circ}_{9/2} - 41688_{7/2}$	4068.025	5	3	24575.013	$12488^{\circ}_{9/2} - 37063_{9/2}$
4093.556	3	3	24421.745	$16906^{\circ}_{7/2} - 41328_{5/2}$	4067.876	10		24575.913	$14790^{\circ}_{7/2} - 39366_{5/2}$
4093.392	20	10	24422.724	$7331^{\circ}_{5/2} - 31754_{5/2}$	4067.594	15	4	24577.617	$12485^{\circ}_{7/2} - 37063_{9/2}$
4093.327	2		24423.111	$20080^{\circ}_{7/2} - 44503_{7/2}$	4066.169	1		24586.230	$30452_{9/2} - 55038^{\circ}_{9/2}$
4093.255	2		24423.541	$17722^{\circ}_{9/2} - 42146_{11/2}$	4066.003	8	4	24587.234	$14275^{\circ}_{9/2} - 38862_{11/2}$
4092.338	2s		24429.014	$11116^{\circ}_{7/2} - 35545_{9/2}$	4065.687	40l	8	24589.145	$9585^{\circ}_{5/2} - 34174_{5/2}$
4092.314	1		24429.157	$17771^{\circ}_{11/2} - 42200_{9/2}$	4065.254	4	4	24591.764	$17727_{11/2} - 42319^{\circ}_{9/2}$
4091.530	5	4	24433.838	$9585^{\circ}_{5/2} - 34019_{3/2}$	4064.610	4	2	24595.660	$13250_{5/2} - 37846^{\circ}_{5/2}$
4091.347	50	8	24434.931	$9202^{\circ}_{7/2} - 33637_{7/2}$	4063.755	3		24600.835	$23697^{\circ}_{7/2} - 48298_{7/2}$
4090.367	3		24440.785	$4146_{7/2} - 28587^{\circ}_{5/2}$	4063.691	5	4	24601.222	$14484^{\circ}_{11/2} - 39085_{13/2}$
4090.103	2l		24442.362	$15453^{\circ}_{7/2} - 39895_{9/2}$	4063.054	100		24605.079	$14545^{\circ}_{5/2} - 39150_{3/2}$
4088.108	1		24454.290	$9720^{\circ}_{7/2} - 34174_{5/2}$	4062.661	20		24607.459	$4113_{5/2} - 28720^{\circ}_{3/2}$
4086.520	500	150	24463.793	$0_{3/2} - 24463^{\circ}_{5/2}$	4062.305	8		24609.616	$8605_{5/2} - 33215^{\circ}_{3/2}$
4086.412	5	8	24464.439	$11576^{\circ}_{3/2} - 36040_{1/2}$	4059.888	50		24624.267	$7001_{3/2} - 31625^{\circ}_{1/2}$
4086.336	3		24464.894	$14275^{\circ}_{9/2} - 38740_{11/2}$	4059.815	4		24624.709	$11116^{\circ}_{7/2} - 35741_{5/2}$
4085.815	8	8	24468.014	$12219_{3/2} - 36687^{\circ}_{5/2}$	4059.766	3		24625.007	$15236_{3/2} - 39861^{\circ}_{5/2}$
4085.042	300	200	24472.644	$10189^{\circ}_{11/2} - 34661_{11/2}$	4057.776	25	50	24637.083	$17272^{\circ}_{9/2} - 41909_{9/2}$
4084.953	10	10	24473.177	$27357^{\circ}_{9/2} - 51830_{7/2}$	4057.327	50		24639.809	$12902^{\circ}_{3/2} - 37542_{3/2}$
4084.815	2b		24474.004	$4113_{5/2} - 28587^{\circ}_{5/2}$	4057.034	4		24641.589	$20969^{\circ}_{7/2} - 45610_{5/2}$
4084.499	2	2	24475.897	$17460^{\circ}_{5/2} - 41936_{3/2}$	4054.765	3	2	24655.377	$14101^{\circ}_{1/2} - 38757_{3/2}$
4084.278	3	3	24477.221	$17722^{\circ}_{9/2} - 42200_{9/2}$	4054.185	4	20	24658.905	$16564^{\circ}_{11/2} - 41223_{11/2}$
4084.008	1		24478.840	$21131^{\circ}_{3/2} - 45610_{5/2}$	4052.443	8	10	24669.504	$21682^{\circ}_{7/2} - 46352_{7/2}$
4083.388	4b	8	24482.556	$16564^{\circ}_{11/2} - 41047_{9/2}$	4051.277	2		24676.604	$18568^{\circ}_{1/2} - 43244_{3/2}$
4082.256	20		24489.345	$11576^{\circ}_{3/2} - 36065_{5/2}$	4049.825	8	8	24685.452	$15786_{5/2} - 40472^{\circ}_{3/2}$
4081.853	3	20h	24491.763	$20158_{5/2} - 44650^{\circ}_{7/2}$	4049.747	10	2	24685.927	$24132^{\circ}_{3/2} - 48817_{3/2}$
4081.829	4		24491.907	$16906^{\circ}_{7/2} - 41398_{9/2}$	4048.030	15	50	24696.398	$13468^{\circ}_{9/2} - 38165_{7/2}$
4080.975	3		24497.032	$20310^{\circ}_{5/2} - 44807_{7/2}$	4045.627	75	50	24711.066	$6168^{\circ}_{7/2} - 30879_{7/2}$
				$23372^{\circ}_{3/2} - 47869_{3/2}$					
					4043.852	1		24721.913	$22139^{\circ}_{9/2} - 46861_{11/2}$
4080.590	2		24499.343	$17722^{\circ}_{9/2} - 42222_{7/2}$	4043.128	200	40	24726.340	$1859_{3/2} - 26586^{\circ}_{3/2}$
4080.470	2		24500.064	$9711_{7/2} - 34212^{\circ}_{5/2}$	4042.973	8	75	24727.288	$20080^{\circ}_{7/2} - 44807_{7/2}$
4080.297	5	4	24501.102	$9400_{5/2} - 33902^{\circ}_{7/2}$	4041.811	10	15	24734.396	$14101^{\circ}_{1/2} - 38836_{3/2}$
4079.900	4	8	24503.486	$20686^{\circ}_{5/2} - 45189_{5/2}$	4041.207	200	400	24738.093	$10855_{7/2} - 35593^{\circ}_{9/2}$
4079.603	4	5	24505.270	$15710^{\circ}_{3/2} - 40216_{5/2}$	4040.391	40	20	24743.089	$6213_{9/2} - 30956^{\circ}_{9/2}$
4079.434	1		24506.286	$13250_{5/2} - 37756^{\circ}_{7/2}$	4039.431	40	15	24748.969	$8605_{5/2} - 33354^{\circ}_{5/2}$
4079.135	4	4	24508.082	$13248_{9/2} - 37756^{\circ}_{7/2}$	4038.903	1		24752.205	$11576^{\circ}_{3/2} - 36328_{3/2}$
4077.103	1		24520.296	$25440^{\circ}_{5/2} - 49960_{7/2}$	4038.427	8		24755.122	$8460_{3/2} - 33215^{\circ}_{3/2}$
4076.633	2		24523.123	$14545^{\circ}_{5/2} - 39068_{7/2}$	4038.351	50	25	24755.588	$34543_{5/2} - 59299^{\circ}_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
4037.434	4	4	24761.210	$14790^{\circ}_{7/2} - 39552_{9/2}$	4007.019	200	300	24949.155	$11116^{\circ}_{7/2} - 36065_{5/2}$
4037.259	25	50	24762.284	$11116^{\circ}_{7/2} - 35878_{7/2}$	4006.874	1		24950.058	$17272^{\circ}_{9/2} - 42222_{7/2}$
4037.132	8	4	24763.063	$15453^{\circ}_{7/2} - 40216_{5/2}$	4006.378	200	100	24953.146	$10572^{\circ}_{9/2} - 35525_{11/2}$
4036.565	300b	300	24766.541	$1859_{3/2} - 26626^{\circ}_{1/2}$	4005.571	50	100	24958.173	$9585^{\circ}_{5/2} - 34543_{5/2}$
4035.236	3		24774.698	$27787^{\circ}_{9/2} - 52562_{7/2}$	4005.528	50	500b	24958.441	$15453^{\circ}_{7/2} - 40411_{7/2}$
4034.919	75	25	24776.644	$4146_{7/2} - 28923^{\circ}_{5/2}$					$16033^{\circ}_{5/2} - 40991_{3/2}$
4034.364	2		24780.052	$23518^{\circ}_{7/2} - 48298_{7/2}$	4003.307	300	600	24972.288	$9202^{\circ}_{7/2} - 34174_{5/2}$
4034.246	200	200	24780.777	$6213_{9/2} - 30994^{\circ}_{7/2}$	4003.104	100	200	24973.554	$10572^{\circ}_{9/2} - 35545_{9/2}$
4032.893	10	10	24789.091	$12488^{\circ}_{9/2} - 37277_{7/2}$	4002.106	3	2	24979.782	$12485^{\circ}_{7/2} - 37465_{5/2}$
4032.238	2		24793.117	$14275^{\circ}_{9/2} - 39068_{7/2}$	4001.732	100	20	24982.116	$4113_{5/2} - 29095^{\circ}_{5/2}$
4032.035	2		24794.366	$23697^{\circ}_{7/2} - 48492_{5/2}$	3999.944	20	10	24993.283	$12472^{\circ}_{5/2} - 37465_{5/2}$
4031.781	3		24795.928	$17722^{\circ}_{9/2} - 42518_{7/2}$	3997.977	15	15	25005.580	$8378^{\circ}_{7/2} - 33384_{9/2}$
4031.225	3		24799.347	$13818^{\circ}_{7/2} - 38617_{9/2}$	3997.865	200	200	25006.280	$9720^{\circ}_{7/2} - 34726_{7/2}$
4029.518	20	10	24809.853	$4113_{5/2} - 28923^{\circ}_{5/2}$	3997.467	40b	100	25008.770	$11116^{\circ}_{7/2} - 36125_{9/2}$
4029.322	25	40	24811.060	$9400_{5/2} - 34212^{\circ}_{5/2}$	3996.061	150	300	25017.569	$15349^{\circ}_{11/2} - 40367_{9/2}$
4029.025	10	50	24812.889	$15710^{\circ}_{3/2} - 40523_{1/2}$	3995.701	2		25019.823	$34279_{7/2} - 59299^{\circ}_{5/2}$
4028.629	50	40	24815.328	$24309^{\circ}_{11/2} - 49124_{11/2}$	3995.030	2		25024.025	$25607^{\circ}_{9/2} - 50631_{11/2}$
4027.651	15	75	24821.353	$14545^{\circ}_{5/2} - 39366_{5/2}$	3994.549	600	200	25027.038	$0_{3/2} - 25027^{\circ}_{1/2}$
4027.412	8	25	24822.826	$13468^{\circ}_{9/2} - 38291_{7/2}$	3994.341	10	200	25028.341	$17722^{\circ}_{9/2} - 42751_{7/2}$
4027.341	50	75	24823.264	$9720^{\circ}_{7/2} - 34543_{5/2}$	3993.722	20l	10	25032.221	$9238^{\circ}_{9/2} - 34270_{9/2}$
4026.043	10		24831.267	$20969^{\circ}_{7/2} - 45800_{5/2}$	3992.273	100h	150	25041.306	$9238^{\circ}_{9/2} - 34279_{7/2}$
4025.944	10	3	24831.877	$8018_{3/2} - 32850^{\circ}_{5/2}$	3992.046	8	20	25042.730	$12902^{\circ}_{3/2} - 37945_{5/2}$
4025.654	100b	300b	24833.666	$9720^{\circ}_{7/2} - 34553_{9/2}$	3991.601	4b		25045.521	$13818^{\circ}_{7/2} - 38863_{5/2}$
4025.620	25	8b	24833.876	$16564^{\circ}_{11/2} - 41398_{9/2}$	3991.066	10	15	25048.879	$14101^{\circ}_{1/2} - 39150_{3/2}$
4024.467	25	40	24840.990	$9061_{5/2} - 33902^{\circ}_{7/2}$	3990.118	2		25054.830	$21297^{\circ}_{5/2} - 46352_{7/2}$
4023.765	1		24845.324	$29515_{9/2} - 54360^{\circ}_{9/2}$	3989.568	2		25058.284	$17460^{\circ}_{5/2} - 42518_{7/2}$
4023.542	2b		24846.701	$22014^{\circ}_{11/2} - 46861_{11/2}$	3988.845	200	200	25062.826	$6691^{\circ}_{3/2} - 31754_{5/2}$
4022.091	100b	75	24855.665	$4490^{\circ}_{5/2} - 29345_{5/2}$	3988.599	100	25	25064.371	$1521_{5/2} - 26586^{\circ}_{3/2}$
4020.915	3		24862.934	$25607^{\circ}_{9/2} - 50470_{9/2}$	3988.025	200b	500b	25067.979	$9202^{\circ}_{7/2} - 34270_{9/2}$
4020.100	5	10	24867.974	$14484^{\circ}_{11/2} - 39352_{11/2}$	3987.706	50	50	25069.984	$12472^{\circ}_{5/2} - 37542_{3/2}$
4019.129	1000b	800	24873.982	$0_{3/2} - 24873^{\circ}_{5/2}$	3987.483	10	15	25071.386	$15144^{\circ}_{3/2} - 40216_{5/2}$
4018.768	5	50	24876.216	$17460^{\circ}_{5/2} - 42336_{5/2}$	3987.219	200b	75	25073.046	$34543_{5/2} - 59616^{\circ}_{3/2}$
4017.709	2		24882.773	$22028^{\circ}_{15/2} - 46910_{13/2}$	3987.071	5	3	25073.977	$12488^{\circ}_{9/2} - 37562_{11/2}$
4017.486	75	50	24884.155	$10572^{\circ}_{9/2} - 35456_{9/2}$	3985.464	15	40	25084.087	$20310^{\circ}_{5/2} - 45395_{7/2}$
4016.459	1		24890.517	$16033^{\circ}_{5/2} - 40923_{5/2}$	3985.408	2		25084.439	$27593_{5/2} - 52678^{\circ}_{5/2}$
4016.438	1		24890.647	$24982^{\circ}_{7/2} - 49873_{5/2}$	3985.065	2	8	25086.598	$24873^{\circ}_{5/2} - 49960$
4016.299	5	50	24891.509	$17460^{\circ}_{5/2} - 42352_{5/2}$	3984.620	10		25089.400	$22642^{\circ}_{9/2} - 47731_{9/2}$
4015.826	15	15	24894.441	$8460_{3/2} - 33354^{\circ}_{5/2}$	3984.373	50	25	25090.955	$6168^{\circ}_{7/2} - 31259_{5/2}$
4015.589	2	10	24895.910	$22014^{\circ}_{11/2} - 46910_{13/2}$	3982.232	75	25	25104.445	$14790^{\circ}_{7/2} - 39895_{9/2}$
4015.142	2l		24898.681	$15324^{\circ}_{1/2} - 40222_{3/2}$	3982.100	200	40	25105.277	$1859_{3/2} - 26965^{\circ}_{3/2}$
4014.937	1		24899.952	$26965^{\circ}_{3/2} - 51865_{5/2}$	3981.534	10	20	25108.846	$6244_{1/2} - 31353^{\circ}_{3/2}$
4014.511	75	25	24902.595	$1521_{5/2} - 26424^{\circ}_{5/2}$	3981.105	150	200	25111.551	$13406^{\circ}_{13/2} - 38517_{13/2}$
4013.257	15	40	24910.376	$12219_{3/2} - 37130^{\circ}_{1/2}$	3980.753	8	100	25113.772	$24381_{7/2} - 49495^{\circ}_{9/2}$
4011.775	50b	100b	24919.578	$12902^{\circ}_{3/2} - 37821_{3/2}$	3980.143	5	15	25117.621	$15453^{\circ}_{7/2} - 40570_{7/2}$
4010.984	2		24924.492	$20686^{\circ}_{5/2} - 45610_{5/2}$	3979.038	200	200	25124.596	$34174_{5/2} - 59299^{\circ}_{5/2}$
4010.531	15	8	24927.307	$7001_{3/2} - 31928^{\circ}_{3/2}$	3977.795	3	15	25132.447	$21131^{\circ}_{3/2} - 46264_{3/2}$
4010.427	4	20	24927.954	$17272^{\circ}_{9/2} - 42200_{9/2}$	3976.414	100	200	25141.175	$9585^{\circ}_{5/2} - 34726_{7/2}$
4010.326	1		24928.582	$29431_{7/2} - 54360^{\circ}_{9/2}$	3975.222	20	75	25148.714	$13468^{\circ}_{9/2} - 38617_{9/2}$
4009.535	4	10	24933.499	$15710^{\circ}_{3/2} - 40644_{5/2}$	3974.873	1		25150.922	$9061_{5/2} - 34212^{\circ}_{5/2}$
4008.743	2		24938.425	$26424^{\circ}_{5/2} - 51362_{5/2}$	3974.391	20	50	25153.972	$31924^{\circ}_{11/2} - 57078_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3974.224	15	100	25155.029	$14545^{\circ}_{5/2} - 39700_{5/2}$	3945.818	75	300	25336.116	$10189^{\circ}_{11/2} - 35525_{11/2}$
3973.993	1		25156.491	$22014^{\circ}_{11/2} - 47171_{9/2}$	3945.506	200	300	25338.120	$10855_{7/2} - 36193^{\circ}_{9/2}$
3969.854	5	50	25182.719	$14275^{\circ}_{9/2} - 39458_{7/2}$	3943.688	100	200	25349.800	$12472^{\circ}_{5/2} - 37821_{3/2}$
3969.826	3	10	25182.896	$19912^{\circ}_{13/2} - 45095_{15/2}$	3943.395	100	300	25351.684	$9202^{\circ}_{7/2} - 34553_{9/2}$
3969.561	75	50	25184.577	$26762_{3/2} - 51946^{\circ}_{5/2}$	3943.258	20	100	25352.564	$12488^{\circ}_{9/2} - 37840_{9/2}$
3969.529	5	50	25184.780	$17771^{\circ}_{11/2} - 42955_{9/2}$	3942.855	8	40	25355.155	$12485^{\circ}_{7/2} - 37840_{9/2}$
3969.337	5	50	25185.999	$20120^{\circ}_{5/2} - 45306_{3/2}$	3942.700	5b	10	25356.152	$17771^{\circ}_{11/2} - 43127_{11/2}$
3969.289	10	10	25186.303	$12570_{7/2} - 37756^{\circ}_{7/2}$	3942.668	100b	50	25356.358	$22513^{\circ}_{5/2} - 47869_{3/2}$
3969.002	200	150	25188.124	$0_{3/2} - 25188^{\circ}_{3/2}$	3942.639	50	50	25356.544	$10189^{\circ}_{11/2} - 35545_{9/2}$
3968.484	100	400	25191.412	$12488^{\circ}_{9/2} - 37679_{11/2}$	3942.042	5b	10	25360.385	$18816^{\circ}_{13/2} - 44177_{11/2}$
3967.212	50	200	25199.489	$15324^{\circ}_{1/2} - 40523_{1/2}$	3941.725	25	25	25362.424	$20989^{\circ}_{9/2} - 46352_{7/2}$
3966.707	3		25202.697	$12902^{\circ}_{3/2} - 38105_{5/2}$	3941.360	3	40	25364.773	$22642^{\circ}_{9/2} - 48006_{9/2}$
3966.231	15	25	25205.722	$10673^{\circ}_{5/2} - 35878_{7/2}$	3940.369	2	25	25371.152	$23697^{\circ}_{7/2} - 49068_{5/2}$
3966.054	1		25206.847	$30879_{7/2} - 56086^{\circ}_{9/2}$	3939.793	15	50	25374.861	$15349^{\circ}_{11/2} - 40724_{13/2}$
3964.865	40	75	25214.406	$10379_{9/2} - 35593^{\circ}_{7/2}$	3938.779	100	100	25381.393	$6244_{1/2} - 31625^{\circ}_{1/2}$
3964.738	200	200d	25215.213	$17121^{\circ}_{3/2} - 42336_{5/2}$	3938.726	20	100	25381.735	$12219_{3/2} - 37601^{\circ}_{3/2}$
3963.468	40	100	25223.293	$10379_{9/2} - 35602^{\circ}_{11/2}$	3938.580	5b		25382.676	$8460_{3/2} - 33843^{\circ}_{3/2}$
3963.220	40	200	25224.871	$15349^{\circ}_{11/2} - 40574_{11/2}$	3938.421	15	15	25383.701	$4490^{\circ}_{5/2} - 29873_{7/2}$
3962.921	3	20	25226.774	$20989^{\circ}_{9/2} - 46216_{11/2}$	3937.923	100	200	25386.910	$7828_{1/2} - 33215^{\circ}_{3/2}$
3962.336	50	200b	25230.498	$17121^{\circ}_{3/2} - 42352_{5/2}$	3937.040	200s	300	25392.604	$10673^{\circ}_{5/2} - 36065_{5/2}$
3961.966	4	75	25232.855	$17722^{\circ}_{9/2} - 42955_{9/2}$	3936.838	1		25393.907	$23730^{\circ}_{9/2} - 49124_{11/2}$
3961.503	2		25235.804	$15236_{3/2} - 40472^{\circ}_{3/2}$	3936.604	75	40	25395.416	$30101^{\circ}_{7/2} - 55496_{9/2}$
3960.955	2b		25239.295	$18568^{\circ}_{1/2} - 43807_{3/2}$	3936.125	1		25398.507	$29095^{\circ}_{5/2} - 54493_{5/2}$
3960.360	4b	25b	25243.087	$17771^{\circ}_{11/2} - 43014_{13/2}$	3935.945	10h	200	25399.668	$26770^{\circ}_{11/2} - 52170_{11/2}$
3960.333	100b	200b	25243.259	$13250_{5/2} - 38493^{\circ}_{5/2}$	3935.631	20	200	25401.695	$16818_{7/2} - 42219^{\circ}_{5/2}$
3960.019	8	8	25245.260	$7331^{\circ}_{5/2} - 32576_{7/2}$	3935.240	2	20	25404.219	$17722^{\circ}_{9/2} - 43127_{11/2}$
3959.222	8	40	25250.342	$13818^{\circ}_{7/2} - 39068_{7/2}$	3934.175	5	50	25411.096	$14484^{\circ}_{11/2} - 39895_{9/2}$
3959.024	1	10	25251.605	$26424^{\circ}_{5/2} - 51676_{3/2}$	3933.571	2b		25414.997	$18973^{\circ}_{7/2} - 44388_{5/2}$
3958.014	1		25258.049	$28587^{\circ}_{5/2} - 53845_{5/2}$	3933.353	5	50	25416.406	$20969^{\circ}_{7/2} - 46385_{7/2}$
3957.480	2		25261.457	$17983^{\circ}_{5/2} - 43244_{3/2}$	3932.226	200	250	25423.690	$9238^{\circ}_{9/2} - 34661_{11/2}$
3957.157	10		25263.519	$20989^{\circ}_{9/2} - 46253_{9/2}$	3932.002	15	300	25425.138	$14790^{\circ}_{7/2} - 40216_{5/2}$
3956.690	300	300	25266.500	$0_{3/2} - 25266^{\circ}_{1/2}$	3931.257	2	100	25429.957	$25594^{\circ}_{1/2} - 51024_{3/2}$
3956.593	100	500	25267.120	$10189^{\circ}_{11/2} - 35456_{9/2}$	3929.669	800	500	25440.233	$0_{3/2} - 25440^{\circ}_{5/2}$
3955.252	25		25275.686	$12570_{7/2} - 37846^{\circ}_{5/2}$	3929.192	2		25443.321	$1521_{5/2} - 26965^{\circ}_{3/2}$
3955.101	5	15	25276.651	$14275^{\circ}_{9/2} - 39552_{9/2}$	3928.940	5b		25444.953	$9711_{7/2} - 35156^{\circ}_{5/2}$
3954.591	1		25279.911	$34019_{3/2} - 59299^{\circ}_{5/2}$	3928.698	4	20	25446.520	$20288^{\circ}_{11/2} - 45735_{11/2}$
3954.464	10	25	25280.723	$15710^{\circ}_{3/2} - 40991_{3/2}$	3928.239	1		25449.493	$21131^{\circ}_{3/2} - 46581_{5/2}$
3953.970	2		25283.881	$21297^{\circ}_{5/2} - 46581_{5/2}$	3927.421	50	300	25454.794	$14484^{\circ}_{11/2} - 39939_{11/2}$
3953.900	2		25284.329	$20969^{\circ}_{7/2} - 46253_{9/2}$	3927.176	100	300	25456.382	$13406^{\circ}_{13/2} - 38862_{11/2}$
3952.901	2		25290.719	$17460^{\circ}_{5/2} - 42751_{7/2}$	3926.706	50	200	25459.429	$12485^{\circ}_{7/2} - 37945_{5/2}$
3952.448	3	8	25293.617	$16906^{\circ}_{7/2} - 42200_{9/2}$	3924.987	20	40	25470.579	$15453^{\circ}_{7/2} - 40923_{5/2}$
3951.515	300	400	25299.589	$12488^{\circ}_{9/2} - 37787_{7/2}$	3924.628	3	2	25472.909	$12472^{\circ}_{5/2} - 37945_{5/2}$
3951.107	40	200	25302.202	$12485^{\circ}_{7/2} - 37787_{7/2}$	3922.218	50	50	25488.560	$9238^{\circ}_{9/2} - 34726_{7/2}$
3950.088	1		25308.729	$23012^{\circ}_{3/2} - 48320_{5/2}$	3922.098	8	40	25489.340	$20310^{\circ}_{5/2} - 45800_{5/2}$
3949.206	4	25	25314.381	$20080^{\circ}_{7/2} - 45395_{7/2}$	3921.019	5	10	25496.354	$12219_{3/2} - 37716^{\circ}_{1/2}$
3948.999	8b		25315.708	$16906^{\circ}_{7/2} - 42222_{7/2}$	3920.951	15	25	25496.796	$24463^{\circ}_{5/2} - 49960_{7/2}$
				$12472^{\circ}_{5/2} - 37787_{7/2}$	3920.520	5b		25499.599	$15144^{\circ}_{3/2} - 40644_{5/2}$
3948.964	200b	500	25315.932	$9238^{\circ}_{9/2} - 34553_{9/2}$	3920.312	50	300	25500.952	$16818_{7/2} - 42319^{\circ}_{9/2}$
3946.596	2		25331.122	$13250_{5/2} - 38581^{\circ}_{5/2}$	3920.170	1		25501.876	$19050^{\circ}_{3/2} - 44552_{5/2}$
3946.144	150	500	25334.023	$13406^{\circ}_{13/2} - 38740_{11/2}$	3918.285	10	75	25514.144	$13250_{5/2} - 38764^{\circ}_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3918.011	20	100	25515.928	$13248_{9/2} - 38764^{\circ}_{7/2}$	3888.460	3b	8	25709.836	$20686^{\circ}_{5/2} - 46395_{3/2}$
3916.796	50	300	25523.843	$17722^{\circ}_{9/2} - 43246_{7/2}$	3888.048	2		25712.561	$24757^{\circ}_{9/2} - 50470_{9/2}$
3916.724	75	200	25524.312	$9202^{\circ}_{7/2} - 34726_{7/2}$	3887.434	3	15	25716.622	$22014^{\circ}_{11/2} - 47731_{9/2}$
3915.770	8	40	25530.531	$20158_{5/2} - 45689^{\circ}_{7/2}$	3885.766	75	50	25727.661	$1521_{5/2} - 27249^{\circ}_{7/2}$
3914.470	10	75	25539.009	$20158_{5/2} - 45697^{\circ}_{3/2}$	3885.639	8	20	25728.501	$10855_{7/2} - 36583^{\circ}_{7/2}$
3913.823	75	20	25543.231	$1859_{3/2} - 27403^{\circ}_{3/2}$	3885.151	3	50	25731.733	$22139^{\circ}_{9/2} - 47871_{7/2}$
3913.195	1		25547.330	$25188^{\circ}_{3/2} - 50735_{3/2}$	3884.949	2		25733.071	$27787^{\circ}_{9/2} - 53520_{9/2}$
3913.005	75	300	25548.571	$13818^{\circ}_{7/2} - 39366_{5/2}$	3884.819	500	500	25733.932	$19912^{\circ}_{13/2} - 45646_{15/2}$
3912.282	75	200	25553.292	$10572^{\circ}_{9/2} - 36125_{9/2}$	3884.523	50	200	25735.893	$9720^{\circ}_{7/2} - 35456_{9/2}$
3911.299	15	25	25559.714	$19248^{\circ}_{5/2} - 44807_{7/2}$	3884.318	2	10	25737.251	$20969^{\circ}_{7/2} - 46706_{7/2}$
3908.488	3	50	25578.096	$20686^{\circ}_{5/2} - 46264_{3/2}$	3882.214	1		25751.199	$18214^{\circ}_{3/2} - 43965_{1/2}$
3907.905	10	50	25581.912	$16564^{\circ}_{11/2} - 42146_{11/2}$	3882.142	100	150	25751.677	$8460_{3/2} - 34212^{\circ}_{5/2}$
3907.336	10	10	25585.637	$9400_{5/2} - 34986^{\circ}_{3/2}$	3881.497	50		25755.956	$9400_{5/2} - 35156^{\circ}_{5/2}$
3906.828	3		25588.964	$15236_{3/2} - 40825^{\circ}_{1/2}$	3879.796	15	15	25767.248	$17460^{\circ}_{5/2} - 43227_{5/2}$
3906.033	3		25594.172	$15453^{\circ}_{7/2} - 41047_{9/2}$	3878.047	20	15	25778.869	$15144^{\circ}_{3/2} - 40923_{5/2}$
3905.924	15	25	25594.886	$0_{3/2} - 25594^{\circ}_{1/2}$	3877.238	5	15	25784.247	$17460^{\circ}_{5/2} - 43244_{3/2}$
3905.356	3	50	25598.609	$26963^{\circ}_{7/2} - 52562_{7/2}$	3876.946	1		25786.189	$17460^{\circ}_{5/2} - 43246_{7/2}$
3905.186	150	300	25599.723	$13468^{\circ}_{9/2} - 39068_{7/2}$	3876.510	2		25789.089	$17983^{\circ}_{5/2} - 43772_{5/2}$
3904.200	10	15	25606.188	$8605_{5/2} - 34212^{\circ}_{5/2}$	3875.518	4	5	25795.690	$8378^{\circ}_{7/2} - 34174_{5/2}$
3904.082	200	200	25606.962	$4113_{5/2} - 29720^{\circ}_{3/2}$	3873.981	1	10	25805.925	$23012^{\circ}_{3/2} - 48817_{3/2}$
3903.764	2		25609.048	$19880_{9/2} - 45489^{\circ}_{9/2}$	3873.950	5	10	25806.131	$12485^{\circ}_{7/2} - 38291_{7/2}$
3902.731	3		25615.826	$20288^{\circ}_{11/2} - 45904_{9/2}$	3872.721	200	600	25814.320	$10379_{9/2} - 36193^{\circ}_{9/2}$
3902.474	8	40	25617.513	$15710^{\circ}_{3/2} - 41328_{5/2}$	3872.358	25	100	25816.740	$11725^{\circ}_{1/2} - 37542_{3/2}$
3902.120	20	100	25619.837	$14275^{\circ}_{9/2} - 39895_{9/2}$	3871.925	3	10	25819.627	$12472^{\circ}_{5/2} - 38291_{7/2}$
3901.152	75	200	25626.194	$12219_{3/2} - 37846^{\circ}_{5/2}$	3871.781	1		25820.587	$17983^{\circ}_{5/2} - 43803_{7/2}$
3900.878	400	400	25627.994	$7331^{\circ}_{5/2} - 32959_{3/2}$	3871.455	8	200	25822.762	$19912^{\circ}_{13/2} - 45735_{11/2}$
3900.131	50s	100	25632.902	$12472^{\circ}_{5/2} - 38105_{5/2}$	3871.245	5	25	25824.163	$17983^{\circ}_{5/2} - 43807_{3/2}$
3900.037	1	40b	25633.520	$30452_{9/2} - 56086^{\circ}_{9/2}$	3871.142	3		25824.850	$8018_{3/2} - 33843^{\circ}_{3/2}$
3899.674	2		25635.906	$17460^{\circ}_{3/2} - 43096_{3/2}$	3871.073	25	15	25825.310	$9720^{\circ}_{7/2} - 35545_{9/2}$
3899.318	1		25638.247	$21297^{\circ}_{5/2} - 46935_{3/2}$	3870.923	5	8	25826.311	$12902^{\circ}_{3/2} - 38728_{5/2}$
3898.488	4b		25643.705	$16033^{\circ}_{5/2} - 41676_{3/2}$	3869.971	75	100	25832.664	$10855_{7/2} - 36687^{\circ}_{5/2}$
3898.062	1		25646.507	$23730^{\circ}_{9/2} - 49377_{7/2}$	3868.161	1		25844.751	$16906^{\circ}_{7/2} - 42751_{7/2}$
3897.456	1		25650.495	$19248^{\circ}_{5/2} - 44898_{7/2}$	3867.883	2		25846.609	$14101^{\circ}_{1/2} - 39948_{1/2}$
3895.982	1		25660.199	$22014^{\circ}_{11/2} - 47675_{11/2}$	3867.849	20	300	25846.836	$15144^{\circ}_{3/2} - 40991_{3/2}$
3895.854	1		25661.042	$25607^{\circ}_{9/2} - 51268_{7/2}$	3867.696	1	8	25847.858	$26424^{\circ}_{5/2} - 52272_{7/2}$
3894.899	15	40	25667.334	$15324^{\circ}_{1/2} - 40991_{3/2}$	3867.577	50	75	25848.654	$7001_{3/2} - 32850^{\circ}_{5/2}$
3894.408	10	40	25670.570	$14545^{\circ}_{5/2} - 40216_{5/2}$	3867.197	1		25851.193	$21297^{\circ}_{5/2} - 47148_{3/2}$
3893.423	10	75	25677.064	$12488^{\circ}_{9/2} - 38165_{7/2}$	3866.876	15b	50	25853.339	$14790^{\circ}_{7/2} - 40644_{5/2}$
3893.111	20	75	25679.122	$13406^{\circ}_{13/2} - 39085_{13/2}$	3866.657	1		25854.803	$12902^{\circ}_{3/2} - 38757_{3/2}$
3893.046	1b		25679.551	$23697^{\circ}_{7/2} - 49377_{7/2}$	3866.632	3	5	25854.971	$17272^{\circ}_{9/2} - 43127_{11/2}$
3893.026	20	75	25679.683	$20158_{3/2} - 45838^{\circ}_{3/2}$	3866.064	5	200	25858.769	$23518^{\circ}_{7/2} - 49377_{7/2}$
				$12485^{\circ}_{7/2} - 38165_{7/2}$	3864.993	3b		25865.935	$14545^{\circ}_{5/2} - 40411_{7/2}$
3892.432	4	15	25683.601	$17272^{\circ}_{9/2} - 42955_{9/2}$	3864.370	25b	75	25870.105	$8460_{3/2} - 34330^{\circ}_{1/2}$
3892.307	75	100	25684.426	$6244_{1/2} - 31928^{\circ}_{3/2}$	3864.118	2	25	25871.792	$20989^{\circ}_{9/2} - 46861_{11/2}$
3891.053	75	100	25692.704	$11116^{\circ}_{7/2} - 36809_{7/2}$	3863.593	4		25875.307	$15453^{\circ}_{7/2} - 41328_{5/2}$
3890.981	10	50	25693.179	$12472^{\circ}_{5/2} - 38165_{7/2}$	3863.405	500	600	25876.566	$6700^{\circ}_{9/2} - 32576_{7/2}$
3890.821	15l	25	25694.236	$12485^{\circ}_{7/2} - 38179_{9/2}$	3863.205	5	5	25877.906	$7331^{\circ}_{5/2} - 33209_{7/2}$
3890.351	4b	10	25697.340	$15349^{\circ}_{11/2} - 41047_{9/2}$	3862.701	20b	25	25881.282	$1521_{5/2} - 27403^{\circ}_{3/2}$
3890.057	1		25699.282	$20686^{\circ}_{5/2} - 46385_{7/2}$	3862.654	200b	200	25881.597	$9711_{7/2} - 35593^{\circ}_{7/2}$
3888.673	50	100h	25708.428	$25027^{\circ}_{1/2} - 50735_{3/2}$	3862.557	5		25882.247	$13818^{\circ}_{7/2} - 39700_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3862.398	100b	150b	25883.312	$13468^{\circ}_{9/2} - 39352_{11/2}$	3826.022	10	75	26129.393	$12488^{\circ}_{9/2} - 38617_{9/2}$
3862.052	2	100	25885.631	$33730_{5/2} - 59616^{\circ}_{3/2}$	3825.546	2		26132.644	$14790^{\circ}_{7/2} - 40923_{5/2}$
3861.540	25b	50	25889.063	$11576^{\circ}_{3/2} - 37465_{5/2}$	3825.034	150	400	26136.142	$10673^{\circ}_{5/2} - 36809_{7/2}$
3859.931	50	200	25899.855	$12472^{\circ}_{5/2} - 38372_{3/2}$	3824.759	5	50	26138.021	$26424^{\circ}_{5/2} - 52562_{7/2}$
3859.840	300	500	25900.466	$8378^{\circ}_{7/2} - 34279_{7/2}$	3824.645	5	25	26138.800	$19050^{\circ}_{3/2} - 45189_{5/2}$
3859.747	50	200	25901.090	$12488^{\circ}_{9/2} - 38389_{7/2}$	3823.873	1		26144.077	$20120^{\circ}_{5/2} - 46264_{3/2}$
3857.507	4	200	25916.130	$26762_{3/2} - 52678^{\circ}_{5/2}$	3823.584	75	300	26146.053	$13250_{5/2} - 39396^{\circ}_{7/2}$
3857.347	10	50	25917.205	$12472^{\circ}_{5/2} - 38389_{7/2}$	3823.321	15	100	26147.852	$13248_{9/2} - 39396^{\circ}_{7/2}$
3856.188	3	25	25924.994	$18973^{\circ}_{7/2} - 44898_{7/2}$	3822.149	300b	200b	26155.869	$9585^{\circ}_{5/2} - 35741_{5/2}$
3856.113	5	10	25925.498	$9061_{5/2} - 34986^{\circ}_{3/2}$	3821.755	20	50	26158.566	$9720^{\circ}_{7/2} - 35878_{7/2}$
3856.060	2		25925.855	$28243^{\circ}_{5/2} - 54169_{7/2}$	3821.431	200	500	26160.784	$11116^{\circ}_{7/2} - 37277_{7/2}$
3854.920	3		25933.521	$20969^{\circ}_{7/2} - 46902_{5/2}$	3821.032	2		26163.515	$27357^{\circ}_{9/2} - 53520_{9/2}$
3854.876	10	150	25933.817	$12902^{\circ}_{3/2} - 38836_{3/2}$	3819.941	3b	40	26170.988	$23187^{\circ}_{13/2} - 49357_{11/2}$
3854.510	300	600	25936.280	$10189^{\circ}_{11/2} - 36125_{9/2}$	3819.339	8	8	26175.113	$8378^{\circ}_{7/2} - 34553_{9/2}$
3854.319	2b	8	25937.565	$23187^{\circ}_{13/2} - 49124_{11/2}$	3819.286	3	8	26175.476	$23697^{\circ}_{7/2} - 49873_{5/2}$
3853.437	1		25943.502	$24463^{\circ}_{5/2} - 50407_{7/2}$	3819.161	2		26176.332	$14101^{\circ}_{1/2} - 40278_{3/2}$
3853.083	2		25945.885	$13406^{\circ}_{13/2} - 39352_{11/2}$	3818.099	5	25	26183.613	$15144^{\circ}_{3/2} - 41328_{5/2}$
3852.958	40	200	25946.727	$11116^{\circ}_{7/2} - 37063_{9/2}$	3817.366	8	100	26188.641	$21682^{\circ}_{7/2} - 47871_{7/2}$
3850.768	2		25961.483	$12902^{\circ}_{3/2} - 38863_{5/2}$	3817.291	5	40	26189.155	$16033^{\circ}_{5/2} - 42222_{7/2}$
3850.281	20	150	25964.767	$20288^{\circ}_{11/2} - 46253_{9/2}$	3816.793	10	40	26192.572	$9400_{5/2} - 35593^{\circ}_{7/2}$
				$12902^{\circ}_{3/2} - 38867_{1/2}$					$21131^{\circ}_{3/2} - 47324_{5/2}$
3850.132	75	200	25965.771	$11576^{\circ}_{3/2} - 37542_{3/2}$	3816.607	5	10	26193.849	$8018_{3/2} - 34212^{\circ}_{5/2}$
3850.092	2		25966.041	$15710^{\circ}_{3/2} - 41676_{3/2}$	3816.561	8	75	26194.164	$12570_{7/2} - 38764^{\circ}_{7/2}$
3849.542	1		25969.751	$17837^{\circ}_{1/2} - 43807_{3/2}$	3815.026	75	200	26204.704	$10379_{9/2} - 36583^{\circ}_{7/2}$
3848.823	2		25974.602	$17272^{\circ}_{9/2} - 43246_{7/2}$	3813.666	100	150	26214.048	$7001_{3/2} - 33215^{\circ}_{3/2}$
3846.832	10	8	25988.046	$4113_{5/2} - 30101^{\circ}_{7/2}$	3813.400	1		26215.877	$18973^{\circ}_{7/2} - 45189_{5/2}$
3846.753	2		25988.579	$30956^{\circ}_{9/2} - 56945_{11/2}$	3813.324	5	200	26216.399	$20686^{\circ}_{5/2} - 46902_{5/2}$
3846.247	10	200	25991.998	$22014^{\circ}_{11/2} - 48006_{9/2}$	3813.068	400	500	26218.159	$9238^{\circ}_{9/2} - 35456_{9/2}$
3845.535	8	300	25996.810	$20158_{5/2} - 46155^{\circ}_{5/2}$	3812.300	1		26223.441	$25607^{\circ}_{9/2} - 51830_{7/2}$
3845.223	10	15	25998.920	$28923^{\circ}_{5/2} - 54922_{3/2}$	3811.975	3		26225.677	$15710^{\circ}_{3/2} - 41936_{3/2}$
3843.415	4	10	26011.150	$12570_{7/2} - 38581^{\circ}_{5/2}$	3811.355	3	20	26229.943	$23730^{\circ}_{9/2} - 49960_{7/2}$
3842.919	25b		26014.507	$7828_{1/2} - 33843^{\circ}_{3/2}$	3810.558	2		26235.429	$15453^{\circ}_{7/2} - 41688_{7/2}$
3841.960	300	800	26021.000	$9720^{\circ}_{7/2} - 35741_{5/2}$	3810.497	2		26235.849	$25440^{\circ}_{5/2} - 51676_{3/2}$
3841.358	4b	10	26025.078	$14545^{\circ}_{5/2} - 40570_{7/2}$	3810.295	15	5	26237.239	$10572^{\circ}_{9/2} - 36809_{7/2}$
3839.744	1000b	800b	26036.017	$6700^{\circ}_{9/2} - 32736_{7/2}$	3809.834	75	300	26240.414	$14484^{\circ}_{11/2} - 40724_{13/2}$
3838.964	1		26041.307	$20310^{\circ}_{5/2} - 46352_{7/2}$	3809.629	1		26241.826	$24982^{\circ}_{7/2} - 51224_{9/2}$
3838.850	2		26042.080	$23372^{\circ}_{3/2} - 49414_{3/2}$	3809.457	1		26243.011	$12485^{\circ}_{7/2} - 38728_{5/2}$
3837.794	2		26049.246	$16906^{\circ}_{7/2} - 42955_{9/2}$	3809.132	3	25	26245.250	$15242^{\circ}_{9/2} - 41488_{7/2}$
3834.080	2		26074.479	$20310^{\circ}_{5/2} - 46385_{7/2}$	3809.081	1		26245.601	$11576^{\circ}_{3/2} - 37821_{3/2}$
3833.693	50	100	26077.111	$13818^{\circ}_{7/2} - 39895_{9/2}$	3808.688	4		26248.310	$12902^{\circ}_{3/2} - 39150_{3/2}$
3833.231	10	50	26080.254	$16564^{\circ}_{11/2} - 42644_{13/2}$	3808.512	3		26249.523	$20686^{\circ}_{5/2} - 46935_{3/2}$
3832.789	25	200	26083.261	$13468^{\circ}_{9/2} - 39552_{9/2}$	3808.128	50	200	26252.169	$12488^{\circ}_{9/2} - 38740_{11/2}$
3832.347	2		26086.270	$17722^{\circ}_{9/2} - 43809_{9/2}$	3807.875	300	800	26253.914	$9202^{\circ}_{7/2} - 35456_{9/2}$
3831.737	100	500	26090.422	$14484^{\circ}_{11/2} - 40574_{11/2}$	3807.671	3	100	26255.320	$19050^{\circ}_{3/2} - 45306_{3/2}$
3831.525	8	25	26091.866	$14275^{\circ}_{9/2} - 40367_{9/2}$	3807.500	3		26256.499	$12472^{\circ}_{5/2} - 38728_{5/2}$
3830.946	25	50	26095.809	$9061_{5/2} - 35156^{\circ}_{5/2}$	3806.266	5	75	26265.011	$20158_{5/2} - 46423^{\circ}_{3/2}$
3830.836	25b	100	26096.558	$11725^{\circ}_{1/2} - 37821_{3/2}$	3806.230	2		26265.260	$20120^{\circ}_{5/2} - 46385_{7/2}$
3830.511	25	100	26098.773	$14545^{\circ}_{5/2} - 40644_{5/2}$	3805.969	8	200	26267.061	$20288^{\circ}_{11/2} - 46555_{11/2}$
3829.415	50b	40	26106.242	$17121^{\circ}_{3/2} - 43227_{5/2}$					$25414^{\circ}_{11/2} - 51681_{9/2}$
3826.949	100	400	26123.064	$14349_{1/2} - 40472^{\circ}_{3/2}$	3805.820	200	400	26268.089	$6691^{\circ}_{3/2} - 32959_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3805.341	2b	50b	26271.396	$27249^{\circ}_{7/2} - 53520_{9/2}$	3783.012	150	400	26426.457	$13468^{\circ}_{9/2} - 39895_{9/2}$
3805.314	500l	400b	26271.582	$20080^{\circ}_{7/2} - 46352_{7/2}$	3782.108	5		26432.774	$15786_{5/2} - 42219^{\circ}_{5/2}$
3804.995	100	200	26273.785	$12219_{3/2} - 38493^{\circ}_{5/2}$	3780.282	3		26445.541	$15242^{\circ}_{9/2} - 41688_{7/2}$
3804.335	8h	20	26278.343	$18816^{\circ}_{13/2} - 45095_{15/2}$	3779.712	1		26449.529	$16564^{\circ}_{11/2} - 43014_{13/2}$
3803.369	2		26285.017	$12472^{\circ}_{5/2} - 38757_{3/2}$	3778.744	10	75	26456.305	$15453^{\circ}_{7/2} - 41909_{9/2}$
3802.320	1		26292.268	$20310^{\circ}_{5/2} - 46603_{5/2}$	3777.286	3	40	26466.516	$19912^{\circ}_{13/2} - 46378_{13/2}$
3802.147	25	75	26293.465	$9585^{\circ}_{5/2} - 35878_{7/2}$	3775.901	8	200	26476.224	$14349_{1/2} - 40825^{\circ}_{1/2}$
3801.916	10	50	26295.062	$14275^{\circ}_{9/2} - 40570_{7/2}$	3775.312	10	25	26480.354	$9585^{\circ}_{5/2} - 36065_{5/2}$
3801.324	15	150	26299.157	$14275^{\circ}_{9/2} - 40574_{11/2}$	3774.924	1		26483.076	$20120^{\circ}_{5/2} - 46603_{5/2}$
3800.588	10	400	26304.250	$19912^{\circ}_{13/2} - 46216_{11/2}$	3774.202	100b	500	26488.142	$19880_{9/2} - 46368^{\circ}_{9/2}$
3800.371	75	200	26305.752	$7331^{\circ}_{5/2} - 33637_{7/2}$	3773.758	300	400	26491.259	$10572^{\circ}_{9/2} - 37063_{9/2}$
3800.113	20	20	26307.538	$9238^{\circ}_{9/2} - 35545_{9/2}$	3772.429	1		26500.591	$20080^{\circ}_{7/2} - 46581_{5/2}$
3799.489	3		26311.858	$17460^{\circ}_{5/2} - 43772_{5/2}$	3772.236	100	200	26501.947	$7828_{1/2} - 34330^{\circ}_{1/2}$
3799.422	2		26312.322	$8018_{3/2} - 34330^{\circ}_{1/2}$	3771.201	1		26509.220	$6700^{\circ}_{9/2} - 33209_{7/2}$
3798.459	4	15	26318.993	$16033^{\circ}_{5/2} - 42352_{5/2}$	3768.778	3	10	26526.263	$8460_{3/2} - 34986^{\circ}_{3/2}$
3798.426	200	75	26319.221	$23518^{\circ}_{7/2} - 49837_{9/2}$	3768.435	20	100	26528.677	$11576^{\circ}_{3/2} - 38105_{5/2}$
3797.718	2		26324.128	$21682^{\circ}_{7/2} - 48006_{9/2}$	3768.003	3	5	26531.719	$17272^{\circ}_{9/2} - 43803_{7/2}$
3797.564	2		26325.195	$17771^{\circ}_{11/2} - 44096_{9/2}$	3767.946	8b	50	26532.120	$15144^{\circ}_{3/2} - 41676_{3/2}$
3797.453	15	200	26325.965	$15786_{5/2} - 42112^{\circ}_{3/2}$	3767.898	300s	500	26532.458	$9061_{5/2} - 35593^{\circ}_{7/2}$
3796.185	1	5	26334.758	$28587^{\circ}_{5/2} - 54922_{3/2}$	3767.868	4		26532.669	$13406^{\circ}_{13/2} - 39939_{11/2}$
				$22355^{\circ}_{1/2} - 48689_{3/2}$					
					3767.513	2		26535.169	$15710^{\circ}_{3/2} - 42246_{1/2}$
3795.678	3	75	26338.276	$18214^{\circ}_{3/2} - 44552_{5/2}$	3767.252	2		26537.007	$17272^{\circ}_{9/2} - 43809_{9/2}$
3794.951	2		26343.321	$9202^{\circ}_{7/2} - 35545_{9/2}$	3767.201	10	200	26537.367	$14790^{\circ}_{7/2} - 41328_{5/2}$
3794.646	4	20	26345.438	$9720^{\circ}_{7/2} - 36065_{5/2}$	3765.535	8h	20	26549.108	$13818^{\circ}_{7/2} - 40367_{9/2}$
3794.428	2		26346.952	$17460^{\circ}_{5/2} - 43807_{3/2}$	3765.129	3	10	26551.970	$19248^{\circ}_{5/2} - 45800_{5/2}$
3794.316	150	100	26347.730	$8378^{\circ}_{7/2} - 34726_{7/2}$	3764.070	2	50	26559.440	$15349^{\circ}_{11/2} - 41909_{9/2}$
3794.150	100	200	26348.882	$11116^{\circ}_{7/2} - 37465_{5/2}$	3763.581	15	300b	26562.891	$14484^{\circ}_{11/2} - 41047_{9/2}$
3793.309	2		26354.724	$23518^{\circ}_{7/2} - 49873_{5/2}$	3763.554	2	25	26563.082	$25607^{\circ}_{9/2} - 52170_{11/2}$
3792.312	15b	200	26361.652	$12219_{3/2} - 38581^{\circ}_{5/2}$	3763.320	40	300	26564.733	$16818_{7/2} - 43382^{\circ}_{5/2}$
3791.972	15	100	26364.016	$12472^{\circ}_{5/2} - 38836_{3/2}$	3762.885	400b	600	26567.804	$6168^{\circ}_{7/2} - 32736_{7/2}$
3791.296	100	300	26368.717	$11576^{\circ}_{3/2} - 37945_{5/2}$	3762.679	1		26569.259	$17983^{\circ}_{5/2} - 44552_{5/2}$
3790.459	3		26374.539	$12488^{\circ}_{9/2} - 38862_{11/2}$	3762.417	1	20	26571.109	$29515_{9/2} - 56086^{\circ}_{9/2}$
3789.951	25	200	26378.075	$14545^{\circ}_{5/2} - 40923_{5/2}$	3762.012	1		26573.969	$21297^{\circ}_{5/2} - 47871_{7/2}$
3789.610	2	15	26380.448	$24982^{\circ}_{7/2} - 51362_{5/2}$	3761.887	2		26574.852	$18214^{\circ}_{3/2} - 44789_{1/2}$
3789.563	4		26380.775	$8605_{5/2} - 34986^{\circ}_{3/2}$	3761.101	50	200	26580.406	$12488^{\circ}_{9/2} - 39068_{7/2}$
3789.413	2		26381.819	$27787^{\circ}_{9/2} - 54169_{7/2}$	3760.733	1		26583.007	$12485^{\circ}_{7/2} - 39068_{7/2}$
3789.122	500b	400	26383.845	$1859_{3/2} - 28243^{\circ}_{5/2}$	3760.295	3b		26586.103	$20120^{\circ}_{5/2} - 46706_{7/2}$
3788.358	50	100	26389.166	$4490^{\circ}_{5/2} - 30879_{7/2}$	3760.271	50b	25b	26586.273	$0_{3/2} - 26586^{\circ}_{3/2}$
3788.062	1		26391.228	$16564^{\circ}_{11/2} - 42955_{9/2}$	3758.822	4	40	26596.521	$12472^{\circ}_{5/2} - 39068_{7/2}$
3787.995	1		26391.695	$12472^{\circ}_{5/2} - 38863_{5/2}$	3757.276	1		26607.465	$14790^{\circ}_{7/2} - 41398_{9/2}$
3787.478	10	100	26395.297	$20310^{\circ}_{5/2} - 46706_{7/2}$	3756.889	1		26610.205	$24414^{\circ}_{3/2} - 51024_{3/2}$
3787.116	8	200	26397.820	$13818^{\circ}_{7/2} - 40216_{5/2}$	3756.757	8	50	26611.141	$13250_{5/2} - 39861^{\circ}_{5/2}$
3786.881	100	200	26399.458	$7331^{\circ}_{5/2} - 33730_{5/2}$	3754.843	1		26624.705	$20310^{\circ}_{5/2} - 46935_{3/2}$
3786.076	2		26405.071	$9720^{\circ}_{7/2} - 36125_{9/2}$	3754.592	200	200	26626.485	$0_{3/2} - 26626^{\circ}_{1/2}$
3785.913	100	300	26406.208	$17771^{\circ}_{11/2} - 44177_{11/2}$	3752.568	500	800	26640.846	$9238^{\circ}_{9/2} - 35878_{7/2}$
3785.600	500	500	26408.391	$6168^{\circ}_{7/2} - 32576_{7/2}$	3751.758	8	40	26646.597	$11725^{\circ}_{1/2} - 38372_{3/2}$
3785.428	2		26409.591	$25266^{\circ}_{1/2} - 51676_{3/2}$	3750.658	2	40	26654.412	$29431_{7/2} - 56086^{\circ}_{9/2}$
3783.752	4	10	26421.289	$18973^{\circ}_{7/2} - 45395_{7/2}$	3748.975	200	100	26666.378	$15242^{\circ}_{9/2} - 41909_{9/2}$
3783.660	100b	100	26421.932	$14101^{\circ}_{1/2} - 40523_{1/2}$	3748.282	50	200	26671.308	$11116^{\circ}_{7/2} - 37787_{7/2}$
3783.295	200	300	26424.481	$0_{3/2} - 26424^{\circ}_{5/2}$	3747.706	2	20	26675.407	$18214^{\circ}_{3/2} - 44889_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3747.539	300	500	26676.595	$9202^{\circ}_{7/2} - 35878_{7/2}$	3721.824	800b	500	26860.906	$1859_{3/2} - 28720^{\circ}_{3/2}$
3747.270	1		26678.511	$12472^{\circ}_{5/2} - 39150_{3/2}$	3721.344	8	40	26864.371	$10189^{\circ}_{11/2} - 37053_{11/2}$
3747.170	3	10	26679.222	$17771^{\circ}_{11/2} - 44450_{9/2}$	3721.137	2b	2	26865.865	$16906^{\circ}_{7/2} - 43772_{5/2}$
3746.463	25	50	26684.257	$6700^{\circ}_{9/2} - 33384_{9/2}$	3720.700	10	75	26869.020	$10673^{\circ}_{5/2} - 37542_{3/2}$
3746.227	5	75	26685.938	$17121^{\circ}_{3/2} - 43807_{3/2}$	3720.307	200s	400	26871.859	$9711_{7/2} - 36583^{\circ}_{7/2}$
3745.968	400	500	26687.783	$7331^{\circ}_{5/2} - 34019_{3/2}$	3720.214	150	100	26872.530	$12570_{7/2} - 39443^{\circ}_{9/2}$
3744.735	200	200	26696.570	$8460_{3/2} - 35156^{\circ}_{5/2}$	3719.976	300b	500	26874.249	$10189^{\circ}_{11/2} - 37063_{9/2}$
3744.652	15	200	26697.162	$14790^{\circ}_{7/2} - 41488_{7/2}$	3719.693	20	200	26876.294	$15236_{3/2} - 42112^{\circ}_{3/2}$
3743.806	100	200	26703.194	$18118_{3/2} - 44821^{\circ}_{5/2}$	3719.152	1	1	26880.204	$26965^{\circ}_{3/2} - 53845_{5/2}$
3743.506	20	200	26705.334	$10572^{\circ}_{9/2} - 37277_{7/2}$	3719.057	10	5	26880.890	$4113_{5/2} - 30994^{\circ}_{7/2}$
3742.228	5	200	26714.454	$10855_{7/2} - 37569^{\circ}_{9/2}$	3719.012	3	5	26881.215	$12485^{\circ}_{7/2} - 39366_{5/2}$
3741.183	1000r	600	26721.916	$1521_{5/2} - 28243^{\circ}_{5/2}$	3718.806	1	2	26882.704	$24982^{\circ}_{7/2} - 51865_{5/2}$
3740.854	40o	300	26724.266	$11116^{\circ}_{7/2} - 37840_{9/2}$	3718.656	10	200	26883.789	$15453^{\circ}_{7/2} - 42336_{5/2}$
3740.411	15	20	26727.431	$1859_{3/2} - 28587^{\circ}_{5/2}$	3718.168	75	200	26887.317	$9238^{\circ}_{9/2} - 36125_{9/2}$
3738.847	300	300	26738.611	$8460_{3/2} - 35198^{\circ}_{1/2}$	3717.830	15	200	26889.762	$14101^{\circ}_{1/2} - 40991_{3/2}$
3738.758	3b	400	26739.248	$14484^{\circ}_{11/2} - 41223_{11/2}$	3716.773	4	5	26897.408	$16906^{\circ}_{7/2} - 43803_{7/2}$
3738.103	8b		26743.933	$6213_{9/2} - 32957^{\circ}_{7/2}$	3716.542	2b		26899.080	$15453^{\circ}_{7/2} - 42352_{5/2}$
3737.647	3		26747.196	$15453^{\circ}_{7/2} - 42200_{9/2}$	3716.214	4	2	26901.454	$10855_{7/2} - 37756^{\circ}_{7/2}$
3737.334	1		26749.435	$19050^{\circ}_{3/2} - 45800_{5/2}$	3716.088	1		26902.366	$20969^{\circ}_{7/2} - 47871_{7/2}$
3736.936	15	200	26752.284	$13818^{\circ}_{7/2} - 40570_{7/2}$	3715.911	3	2	26903.648	$15242^{\circ}_{9/2} - 42146_{11/2}$
3735.511	3	15	26762.490	$20969^{\circ}_{7/2} - 47731_{9/2}$	3715.721	3	25	26905.023	$17272^{\circ}_{9/2} - 44177_{11/2}$
3734.698	1	2	26768.315	$30310^{\circ}_{11/2} - 57078_{9/2}$	3714.455	1		26914.193	$14484^{\circ}_{11/2} - 41398_{9/2}$
3734.598	100b	200b	26769.032	$4490^{\circ}_{5/2} - 31259_{5/2}$	3714.338	2	3	26915.041	$24309^{\circ}_{11/2} - 51224_{9/2}$
3734.566	3b	10b	26769.261	$15453^{\circ}_{7/2} - 42222_{7/2}$	3714.291	8b	200	26915.382	$17983^{\circ}_{5/2} - 44898_{7/2}$
3734.414	1		26770.351	$21682^{\circ}_{7/2} - 48453_{7/2}$	3712.533	40b	25b	26928.127	$17460^{\circ}_{5/2} - 44388_{3/2}$
3734.232	1		26771.656	$14275^{\circ}_{9/2} - 41047_{9/2}$	3711.780	3	2	26933.589	$13250_{5/2} - 40184^{\circ}_{7/2}$
3734.128	1		26772.401	$23697^{\circ}_{7/2} - 50470_{9/2}$	3711.304	300	500	26937.044	$6700^{\circ}_{9/2} - 33637_{7/2}$
3732.736	2		26782.385	$20120^{\circ}_{5/2} - 46902_{5/2}$	3710.552	5	50	26942.503	$13468^{\circ}_{9/2} - 40411_{7/2}$
3732.679	3	20	26782.794	$14545^{\circ}_{5/2} - 41328_{5/2}$	3709.817	3	8	26947.841	$7331^{\circ}_{5/2} - 34279_{7/2}$
3732.473	1		26784.272	$33209_{7/2} - 59993^{\circ}_{9/2}$	3709.624	5	200	26949.242	$19912^{\circ}_{13/2} - 46861_{11/2}$
3731.425	8	75	26791.794	$15144^{\circ}_{3/2} - 41936_{3/2}$	3709.310	2		26951.524	$17837^{\circ}_{1/2} - 44789_{1/2}$
3731.354	4b		26792.304	$10673^{\circ}_{5/2} - 37465_{5/2}$	3708.754	5	150	26955.564	$16818_{7/2} - 43773^{\circ}_{7/2}$
3730.748	75	500	26796.656	$15349^{\circ}_{11/2} - 42146_{11/2}$	3708.671	5b	75	26956.167	$17771^{\circ}_{11/2} - 44727_{11/2}$
3730.532	2		26798.207	$12902^{\circ}_{3/2} - 39700_{5/2}$	3707.428	75	75	26965.205	$0_{3/2} - 26965^{\circ}_{3/2}$
3729.678	25	50	26804.343	$24463^{\circ}_{5/2} - 51268_{7/2}$	3706.046	8	200	26975.260	$18214^{\circ}_{3/2} - 45189_{5/2}$
3728.990	1		26809.289	$21682^{\circ}_{7/2} - 48492_{5/2}$	3705.942	5	50	26976.017	$9711_{7/2} - 36687^{\circ}_{5/2}$
3728.965	1		26809.468	$29873_{7/2} - 56683^{\circ}_{7/2}$	3704.966	25	200	26983.123	$15236_{3/2} - 42219^{\circ}_{5/2}$
3726.946	1		26823.991	$17272^{\circ}_{9/2} - 44096_{9/2}$	3704.342	20h	100	26987.668	$8605_{5/2} - 35593^{\circ}_{7/2}$
3726.724	200	200	26825.589	$4146_{7/2} - 30972^{\circ}_{5/2}$	3704.085	100	200	26989.541	$9400_{5/2} - 36390^{\circ}_{3/2}$
3726.659	25	50	26826.057	$12570_{7/2} - 39396^{\circ}_{7/2}$	3703.990	100	300	26990.233	$10572^{\circ}_{9/2} - 37562_{11/2}$
3726.197	3	50	26829.383	$18816^{\circ}_{13/2} - 45646_{15/2}$	3703.907	75	200	26990.838	$10855_{7/2} - 37846^{\circ}_{5/2}$
3726.099	2	1	26830.089	$22014^{\circ}_{11/2} - 48844_{9/2}$	3702.864	10	300	26998.440	$19912^{\circ}_{13/2} - 46910_{13/2}$
3725.875	3	100	26831.702	$19594_{1/2} - 46426^{\circ}_{1/2}$	3702.067	3	15	27004.252	$17722^{\circ}_{9/2} - 44727_{11/2}$
3725.822	1	3	26832.084	$25440^{\circ}_{5/2} - 52272_{7/2}$	3700.766	50	500	27013.745	$15305_{9/2} - 42319^{\circ}_{9/2}$
3724.733	40	200	26839.928	$17460^{\circ}_{5/2} - 44300_{3/2}$	3700.526	1	2	27015.497	$22106_{5/2} - 49121^{\circ}_{7/2}$
3724.498	75	50	26841.622	$7001_{3/2} - 33843^{\circ}_{3/2}$	3700.462	25	75	27015.964	$19248^{\circ}_{5/2} - 46264_{3/2}$
3724.299	3	1	26843.056	$7331^{\circ}_{5/2} - 34174_{5/2}$	3698.755	5	200	27028.432	$20120^{\circ}_{5/2} - 47148_{3/2}$
3723.657	100	200	26847.684	$4146_{7/2} - 30994^{\circ}_{7/2}$	3698.301	10b	8	27031.750	$11725^{\circ}_{1/2} - 38757_{3/2}$
3723.291	20	200	26850.323	$15349^{\circ}_{11/2} - 42200_{9/2}$	3697.234	2		27039.551	$6691^{\circ}_{3/2} - 33730_{5/2}$
3722.115	300b	500	26858.806	$4113_{5/2} - 30972^{\circ}_{5/2}$	3697.030	100	200	27041.043	$6168^{\circ}_{7/2} - 33209_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3696.647	50	200	27043.845	$9400_{5/2} - 36444^{\circ}_{3/2}$	3672.205	2		27223.842	$9585^{\circ}_{5/2} - 36809_{7/2}$
3696.316	1	1	27046.266	$26963^{\circ}_{7/2} - 54010_{7/2}$	3671.164	10	50	27231.562	$17272^{\circ}_{9/2} - 44503_{7/2}$
3695.974	100	300	27048.769	$11116^{\circ}_{7/2} - 38165_{7/2}$	3670.057	300	150	27239.775	$4113_{5/2} - 31353^{\circ}_{3/2}$
3694.785	1	2	27057.473	$27787^{\circ}_{9/2} - 54845_{9/2}$	3669.403	4	10l	27244.630	$16564^{\circ}_{11/2} - 43809_{9/2}$
3693.901	50	300	27063.948	$12488^{\circ}_{9/2} - 39552_{9/2}$	3666.373	3b	2	27267.146	$17121^{\circ}_{3/2} - 44388_{5/2}$
3693.693	100	100	27065.472	$1521_{5/2} - 28587^{\circ}_{5/2}$	3666.150	2	2	27268.804	$10572^{\circ}_{9/2} - 37840_{9/2}$
3693.640	1		27065.860	$15453^{\circ}_{7/2} - 42518_{7/2}$	3665.723	20	100	27271.980	$10673^{\circ}_{5/2} - 37945_{5/2}$
3693.544	4b		27066.564	$12485^{\circ}_{7/2} - 39552_{9/2}$	3665.181	15	100	27276.013	$15242^{\circ}_{9/2} - 42518_{7/2}$
3692.075	50	200	27077.333	$8378^{\circ}_{7/2} - 35456_{9/2}$	3663.702	300b	500b	27287.024	$9400_{5/2} - 36687^{\circ}_{5/2}$
3690.486	150	300	27088.991	$9720^{\circ}_{7/2} - 36809_{7/2}$	3663.318	2	3	27289.884	$24982^{\circ}_{7/2} - 52272_{7/2}$
3690.070	5b	20	27092.045	$17460^{\circ}_{5/2} - 44552_{5/2}$	3662.631	2	1	27295.003	$15349^{\circ}_{11/2} - 42644_{13/2}$
3688.812	8	40	27101.284	$15144^{\circ}_{3/2} - 42246_{1/2}$	3662.562	2	3	27295.517	$25440^{\circ}_{5/2} - 52735_{3/2}$
3688.756	100b	150b	27101.695	$13468^{\circ}_{9/2} - 40570_{7/2}$	3662.191	15l	25	27298.282	$15453^{\circ}_{7/2} - 42751_{7/2}$
3688.266	3	2	27105.296	$13818^{\circ}_{7/2} - 40923_{5/2}$	3660.117	4b	3	27313.750	$12902^{\circ}_{3/2} - 40216_{5/2}$
3688.198	4	10	27105.796	$13468^{\circ}_{9/2} - 40574_{11/2}$	3659.508	300l	500s	27318.296	$13406^{\circ}_{13/2} - 40724_{13/2}$
3687.671	10h	75	27109.669	$22014^{\circ}_{11/2} - 49124_{11/2}$	3659.208	1		27320.535	$12902^{\circ}_{3/2} - 40222_{3/2}$
3687.524	100b	100	27110.750	$11725^{\circ}_{1/2} - 38836_{3/2}$	3658.226	100	200	27327.869	$6691^{\circ}_{3/2} - 34019_{3/2}$
3686.980	20	100	27114.750	$10673^{\circ}_{3/2} - 37787_{7/2}$	3658.063	100b	200b	27329.087	$7001_{3/2} - 34330^{\circ}_{1/2}$
3686.494	1		27118.325	$14790^{\circ}_{7/2} - 41909_{9/2}$	3656.199	50	300	27343.019	$9720^{\circ}_{7/2} - 37063_{9/2}$
3685.867	8	100	27122.937	$14275^{\circ}_{9/2} - 41398_{9/2}$	3655.624	1		27347.320	$17460^{\circ}_{5/2} - 44807_{7/2}$
3683.936	5	75	27137.154	$19248^{\circ}_{5/2} - 46385_{7/2}$	3655.027	2	2	27351.786	$20969^{\circ}_{7/2} - 48320_{5/2}$
3683.723	5	1	27138.723	$8018_{3/2} - 35156^{\circ}_{5/2}$	3654.605	2	2	27354.945	$19248^{\circ}_{5/2} - 46603_{5/2}$
3683.313	20	200	27141.744	$11725^{\circ}_{7/2} - 38867_{1/2}$	3654.572	4	20	27355.192	$17771^{\circ}_{11/2} - 45126_{9/2}$
3682.846	2	2	27145.185	$23518^{\circ}_{7/2} - 50663_{5/2}$	3653.602	50	50	27362.454	$8378^{\circ}_{7/2} - 35741_{5/2}$
3682.350	25	200	27148.842	$10673^{\circ}_{5/2} - 37821_{3/2}$	3652.536	100	300	27370.440	$7828_{1/2} - 35198^{\circ}_{1/2}$
3681.880	100	200	27152.307	$11576^{\circ}_{3/2} - 38728_{5/2}$	3652.224	1	20	27372.778	$32620_{11/2} - 59993^{\circ}_{9/2}$
3681.180	10	200	27157.470	$15786_{5/2} - 42944^{\circ}_{7/2}$					$24309^{\circ}_{11/2} - 51681_{9/2}$
3681.103	5	10	27158.038	$7828_{1/2} - 34986^{\circ}_{3/2}$	3652.167	200	500	27373.205	$10189^{\circ}_{11/2} - 37562_{11/2}$
3680.540	2	3	27162.192	$21682^{\circ}_{7/2} - 48844_{9/2}$	3651.825	5	50	27375.768	$12902^{\circ}_{3/2} - 40278_{3/2}$
3679.710	200	500	27168.319	$29515_{9/2} - 56683^{\circ}_{7/2}$	3651.468	4	75	27378.445	$18973^{\circ}_{7/2} - 46352_{7/2}$
				$13406^{\circ}_{13/2} - 40574_{11/2}$					
					3650.765	100	300	27383.717	$9061_{5/2} - 36444^{\circ}_{3/2}$
3678.776	4	2	27175.217	$11116^{\circ}_{7/2} - 38291_{7/2}$	3650.502	4b	3	27385.689	$15710^{\circ}_{3/2} - 43096_{5/2}$
3678.273	5	20	27178.933	$17121^{\circ}_{3/2} - 44300_{3/2}$	3649.249	200	400	27395.092	$7331^{\circ}_{5/2} - 34726_{7/2}$
3678.047	150	150	27180.603	$9400_{5/2} - 36581^{\circ}_{3/2}$	3648.634	5	300	27399.710	$18816^{\circ}_{13/2} - 46216_{11/2}$
3678.021	150	150	27180.795	$8018_{3/2} - 35198^{\circ}_{1/2}$	3648.420	100b	150	27401.317	$1521_{5/2} - 28923^{\circ}_{5/2}$
				$11576^{\circ}_{3/2} - 38757_{3/2}$	3648.172	150	200	27403.180	$0_{3/2} - 27403^{\circ}_{3/2}$
3677.915	200	300	27181.578	$15236_{3/2} - 42418^{\circ}_{3/2}$	3647.646	200b	200	27407.131	$12488^{\circ}_{9/2} - 39895_{9/2}$
3677.742	100	200	27182.857	$9400_{5/2} - 36583^{\circ}_{7/2}$	3647.369	10	100	27409.213	$14790^{\circ}_{7/2} - 42200_{9/2}$
3677.089	2	2	27187.684	$22685^{\circ}_{7/2} - 49873_{5/2}$	3647.299	15	100	27409.739	$12485^{\circ}_{7/2} - 39895_{9/2}$
3676.823	2	2	27189.651	$16906^{\circ}_{7/2} - 44096_{9/2}$	3647.046	10	40	27411.640	$18973^{\circ}_{7/2} - 46385_{7/2}$
									$17983^{\circ}_{5/2} - 45395_{7/2}$
3676.690	20	100	27190.634	$10379_{9/2} - 37569^{\circ}_{9/2}$					
3675.567	500	500	27198.942	$1521_{5/2} - 28720^{\circ}_{3/2}$	3646.883	15	100	27412.865	$14275^{\circ}_{9/2} - 41688_{7/2}$
3674.648	2	2	27205.744	$26963^{\circ}_{7/2} - 54169_{7/2}$	3645.268	1	2	27425.010	$14484^{\circ}_{11/2} - 41909_{9/2}$
3673.793	150	300	27212.075	$7331^{\circ}_{5/2} - 34543_{5/2}$	3645.235	2		27425.258	$11725^{\circ}_{1/2} - 39150_{3/2}$
3673.615	2		27213.394	$19050^{\circ}_{3/2} - 46264_{3/2}$	3644.714	8	200	27429.178	$17460^{\circ}_{5/2} - 44889_{3/2}$
3673.411	2		27214.905	$12485^{\circ}_{7/2} - 39700_{5/2}$	3644.461	1		27431.082	$17121^{\circ}_{3/2} - 44552_{5/2}$
3673.283	400b	300b	27215.853	$10572^{\circ}_{9/2} - 37787_{7/2}$	3644.431	15	5	27431.308	$14790^{\circ}_{7/2} - 42222_{7/2}$
3673.255	40b	75b	27216.061	$6168^{\circ}_{7/2} - 33384_{9/2}$	3644.348	20	150	27431.933	$10673^{\circ}_{5/2} - 38105_{5/2}$
3672.950	5	20	27218.321	$22139^{\circ}_{9/2} - 49357_{11/2}$	3642.888	3	8	27442.927	$20288^{\circ}_{11/2} - 47731_{9/2}$
3672.466	1	2	27221.908	$13250_{5/2} - 40472^{\circ}_{3/2}$	3641.882	1	10	27450.507	$24414^{\circ}_{3/2} - 51865_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3641.841	10	300	27450.816	$12488^{\circ}_{9/2} - 39939_{11/2}$	3617.731	8b	2	27633.755	$14275^{\circ}_{9/2} - 41909_{9/2}$
3641.287	3	20	27454.993	$17272^{\circ}_{9/2} - 44727_{11/2}$	3617.615	1	2	27634.641	$20686^{\circ}_{5/2} - 48320_{5/2}$
3641.113	15	200	27456.305	$13250_{5/2} - 40706^{\circ}_{7/2}$	3617.117	200	500	27638.445	$10855_{7/2} - 38493^{\circ}_{5/2}$
3640.873	3	2	27458.115	$13248_{9/2} - 40706^{\circ}_{7/2}$	3617.017	100	500	27639.209	$15305_{9/2} - 42944^{\circ}_{7/2}$
3640.184	1	1	27463.312	$20989^{\circ}_{9/2} - 48453_{7/2}$	3616.697	8	200	27641.655	$12219_{3/2} - 39861^{\circ}_{5/2}$
3639.587	2	3	27467.816	$28923^{\circ}_{5/2} - 56391_{5/2}$	3615.372	25	150	27651.785	$10189^{\circ}_{11/2} - 37840_{9/2}$
3639.446	300	500	27468.880	$6168^{\circ}_{7/2} - 33637_{7/2}$	3615.132	400	500	27653.621	$4146_{7/2} - 31800^{\circ}_{7/2}$
3637.686	5	100	27482.170	$16906^{\circ}_{7/2} - 44388_{5/2}$	3615.040	2		27654.324	$19248^{\circ}_{5/2} - 46902_{5/2}$
3637.555	75	200	27483.160	$6691^{\circ}_{3/2} - 34174_{5/2}$	3614.009	75	500	27662.213	$14484^{\circ}_{11/2} - 42146_{11/2}$
3636.918	1	2	27487.973	$27357^{\circ}_{9/2} - 54845_{9/2}$	3613.778	100	150	27663.981	$4146_{7/2} - 31810^{\circ}_{5/2}$
3636.566	20	200	27490.634	$10189^{\circ}_{11/2} - 37679_{11/2}$	3613.611	2	3	27665.260	$23697^{\circ}_{7/2} - 51362_{5/2}$
3636.357	4	2	27492.214	$10673^{\circ}_{5/2} - 38165_{7/2}$	3612.113	4	25	27676.733	$14545^{\circ}_{5/2} - 42222_{7/2}$
3636.172	5	50	27493.613	$23730^{\circ}_{9/2} - 51224_{9/2}$	3610.793	100	200	27686.850	$4113_{5/2} - 31800^{\circ}_{7/2}$
3635.420	15	400	27499.299	$22028^{\circ}_{15/2} - 49527_{13/2}$	3610.562	2		27688.622	$6213_{9/2} - 33902^{\circ}_{7/2}$
3635.327	8	10	27500.003	$8378^{\circ}_{7/2} - 35878_{7/2}$	3610.398	75	200	27689.879	$7331^{\circ}_{5/2} - 35021_{3/2}$
3635.242	20	400	27500.646	$15786_{5/2} - 43287^{\circ}_{3/2}$	3610.125	50	200	27691.973	$9585^{\circ}_{5/2} - 37277_{7/2}$
3634.953	1		27502.832	$15453^{\circ}_{7/2} - 42955_{9/2}$	3610.036	200b	300	27692.656	$13406^{\circ}_{13/2} - 41099_{15/2}$
3634.214	10		27508.425	$15242^{\circ}_{9/2} - 42751_{7/2}$	3609.444	1000	600	27697.198	$4113_{5/2} - 31810^{\circ}_{5/2}$
3634.002	1		27510.029	$13818^{\circ}_{7/2} - 41328_{5/2}$	3609.224	100	300	27698.886	$10673^{\circ}_{5/2} - 38372_{3/2}$
3633.740	1	2	27512.013	$27526_{9/2} - 55038^{\circ}_{9/2}$	3607.910	2		27708.974	$27787^{\circ}_{9/2} - 55496_{9/2}$
3633.683	1	2	27512.445	$22014^{\circ}_{11/2} - 49527_{13/2}$	3607.392	10	150	27712.952	$15242^{\circ}_{9/2} - 42955_{9/2}$
3633.369	2	15	27514.822	$24757^{\circ}_{9/2} - 52272_{7/2}$	3607.009	2		27715.895	$14484^{\circ}_{11/2} - 42200_{9/2}$
3633.077	3	2	27517.034	$15710^{\circ}_{3/2} - 43227_{5/2}$	3606.963	2		27716.248	$10673^{\circ}_{5/2} - 38389_{7/2}$
3632.625	75	100	27520.457	$9061_{5/2} - 36581^{\circ}_{3/2}$	3606.696	3		27718.300	$20288^{\circ}_{11/2} - 48006_{9/2}$
3631.151	4	5	27531.629	$16564^{\circ}_{11/2} - 44096_{9/2}$	3606.505	2		27719.768	$10572^{\circ}_{9/2} - 38291_{7/2}$
3630.677	2		27535.223	$23372^{\circ}_{3/2} - 50907_{3/2}$	3605.654	20	200	27726.310	$10855_{7/2} - 38581^{\circ}_{5/2}$
3630.613	15	15	27535.708	$17272^{\circ}_{9/2} - 44807_{7/2}$	3605.440	15	20	27727.956	$14790^{\circ}_{7/2} - 42518_{7/2}$
3629.278	4	2	27545.837	$14790^{\circ}_{7/2} - 42336_{5/2}$	3605.296	2		27729.063	$17460^{\circ}_{5/2} - 45189_{5/2}$
3627.799	5	40	27557.066	$9720^{\circ}_{7/2} - 37277_{7/2}$	3605.117	3		27730.440	$12485^{\circ}_{7/2} - 40216_{5/2}$
3627.658	2	1	27558.138	$21131^{\circ}_{3/2} - 48689_{3/2}$	3604.039	8b		27738.734	$18816^{\circ}_{13/2} - 46555_{11/2}$
3627.591	4	50	27558.646	$20310^{\circ}_{5/2} - 47869_{3/2}$	3603.620	10	100	27741.959	$12902^{\circ}_{3/2} - 40644_{5/2}$
3627.265	10	50	27561.123	$14790^{\circ}_{7/2} - 42352_{5/2}$	3603.362	50	200	27743.946	$12472^{\circ}_{5/2} - 40216_{5/2}$
3627.150	8	75	27561.997	$18816^{\circ}_{13/2} - 46378_{13/2}$	3603.204	300	300	27745.162	$9720^{\circ}_{7/2} - 37465_{5/2}$
3627.073	15	20	27562.582	$6168^{\circ}_{7/2} - 33730_{5/2}$	3603.031	20	50	27746.494	$8378^{\circ}_{7/2} - 36125_{9/2}$
3626.090	25	50	27570.054	$6700^{\circ}_{9/2} - 34270_{9/2}$	3602.936	5		27747.226	$11116^{\circ}_{7/2} - 38863_{5/2}$
3625.931	75b	75b	27571.263	$9238^{\circ}_{9/2} - 36809_{7/2}$	3602.646	1		27749.459	$20120^{\circ}_{5/2} - 47869_{3/2}$
3625.628	500	300	27573.567	$1521_{5/2} - 29095^{\circ}_{5/2}$	3602.478	4	5	27750.754	$12472^{\circ}_{5/2} - 40222_{3/2}$
3625.536	5	20	27574.267	$11576^{\circ}_{3/2} - 39150_{3/2}$	3601.980	5	50	27754.590	$13468^{\circ}_{9/2} - 41223_{11/2}$
3624.896	300	400	27579.135	$6700^{\circ}_{9/2} - 34279_{7/2}$	3601.034	100	500	27761.881	$17727_{11/2} - 45489^{\circ}_{9/2}$
3624.776	2	2	27580.048	$24982^{\circ}_{7/2} - 52562_{7/2}$	3600.816	8	100	27763.562	$14349_{1/2} - 42112^{\circ}_{3/2}$
3624.014	3	4	27585.847	$18214^{\circ}_{3/2} - 45800_{5/2}$	3600.606	2	3	27765.181	$22642^{\circ}_{9/2} - 50407_{7/2}$
3623.847	1	3	27587.118	$31800^{\circ}_{7/2} - 59387_{7/2}$	3599.872	5	75	27770.842	$16033^{\circ}_{5/2} - 43803_{7/2}$
3623.034	8	20	27593.308	$10572^{\circ}_{9/2} - 38165_{7/2}$	3599.355	10	100	27774.831	$15453^{\circ}_{7/2} - 43227_{5/2}$
3621.168	3	5	27607.527	$18973^{\circ}_{7/2} - 46581_{5/2}$	3599.030	5	50	27777.339	$15349^{\circ}_{11/2} - 43127_{11/2}$
3621.118	200	500	27607.908	$10572^{\circ}_{9/2} - 38179_{9/2}$	3596.901	8	20	27793.780	$15453^{\circ}_{7/2} - 43246_{7/2}$
3620.569	4	1	27612.094	$11116^{\circ}_{7/2} - 38728_{5/2}$	3595.326	20	100	27805.955	$12472^{\circ}_{5/2} - 40278_{3/2}$
3620.502	25b	4	27612.605	$16564^{\circ}_{11/2} - 44177_{11/2}$	3594.110	50	75	27815.363	$4113_{5/2} - 31928^{\circ}_{3/2}$
3620.370	100	200	27613.612	$12570_{7/2} - 40184^{\circ}_{7/2}$	3593.880	25	300	27817.143	$13406^{\circ}_{13/2} - 41223_{11/2}$
3619.709	20	100	27618.654	$10673^{\circ}_{5/2} - 38291_{7/2}$	3593.855	8b		27817.336	$10572^{\circ}_{9/2} - 38389_{7/2}$
3619.356	4	40	27621.348	$12902^{\circ}_{3/2} - 40523_{1/2}$	3593.392	1	2	27820.920	$22139^{\circ}_{9/2} - 49960_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3593.150	2	3	27822.794	$22014^{\circ}_{11/2} - 49837_{9/2}$	3559.964	50b	25b	28082.151	$8605_{5/2} - 36687^{\circ}_{5/2}$
3592.826	150b	100	27825.303	$9238^{\circ}_{9/2} - 37063_{9/2}$	3559.940	50b	500	28082.340	$12488^{\circ}_{9/2} - 40570_{7/2}$
3592.487	2	50	27827.929	$22642^{\circ}_{9/2} - 50470_{9/2}$	3559.730	25	100	28083.997	$12570_{7/2} - 40654^{\circ}_{5/2}$
3591.906	3		27832.430	$16818_{7/2} - 44650^{\circ}_{7/2}$	3559.614	150	200	28084.912	$12485^{\circ}_{7/2} - 40570_{7/2}$
3591.607	3	3	27834.747	$14101^{\circ}_{1/2} - 41936_{3/2}$	3559.450	300b	500	28086.206	$6244_{1/2} - 34330^{\circ}_{1/2}$
3589.358	150	300	27852.187	$6691^{\circ}_{3/2} - 34543_{5/2}$	3559.415	25b	50b	28086.482	$4490^{\circ}_{5/2} - 32576_{7/2}$
3589.153	50b	200	27853.777	$6700^{\circ}_{9/2} - 34553_{9/2}$					$12488^{\circ}_{9/2} - 40574_{11/2}$
3589.127	5b		27853.979	$17272^{\circ}_{9/2} - 45126_{9/2}$	3558.842	3	25	28091.004	$13818^{\circ}_{7/2} - 41909_{9/2}$
3588.974	1		27855.167	$20989^{\circ}_{9/2} - 48844_{9/2}$	3558.471	2	50	28093.933	$18816^{\circ}_{13/2} - 46910_{13/2}$
3588.640	3	2	27857.759	$9711_{7/2} - 37569^{\circ}_{9/2}$	3558.344	2	3	28094.935	$19050^{\circ}_{3/2} - 47145_{1/2}$
3588.300	50	75	27860.399	$1859_{3/2} - 29720^{\circ}_{3/2}$	3558.120	1		28096.704	$15710^{\circ}_{3/2} - 43807_{3/2}$
3588.216	20	75	27861.051	$9202^{\circ}_{7/2} - 37063_{9/2}$	3557.898	1		28098.457	$12472^{\circ}_{5/2} - 40570_{7/2}$
3587.051	2		27870.099	$13818^{\circ}_{7/2} - 41688_{7/2}$	3557.727	2		28099.808	$20969^{\circ}_{7/2} - 49068_{5/2}$
3586.941	4	50	27870.954	$14275^{\circ}_{9/2} - 42146_{11/2}$	3557.464	100	300	28101.885	$6168^{\circ}_{7/2} - 34270_{9/2}$
3585.884	10	40	27879.169	$12488^{\circ}_{9/2} - 40367_{9/2}$	3556.313	15	100	28110.980	$6168^{\circ}_{7/2} - 34279_{7/2}$
3585.769	40	75	27880.063	$9585^{\circ}_{5/2} - 37465_{5/2}$	3555.101	75	100	28120.563	$9720^{\circ}_{7/2} - 37840_{9/2}$
3585.549	5	20	27881.774	$12485^{\circ}_{7/2} - 40367_{9/2}$	3554.823	5	15b	28122.762	$17272^{\circ}_{9/2} - 45395_{7/2}$
3585.050	20	40	27885.655	$16564^{\circ}_{11/2} - 44450_{9/2}$	3554.644	4	8	28124.178	$11576^{\circ}_{3/2} - 39700_{5/2}$
3583.036	8	200	27901.328	$16906^{\circ}_{7/2} - 44807_{7/2}$	3553.377	50	200	28134.206	$9711_{7/2} - 37846^{\circ}_{5/2}$
3582.391	3	2	27906.352	$14101^{\circ}_{1/2} - 42008_{1/2}$	3553.110	100	300	28136.320	$12570_{7/2} - 40706^{\circ}_{7/2}$
3582.217	1		27907.707	$26586^{\circ}_{3/2} - 54493_{5/2}$	3551.869	8	150	28146.151	$15236_{3/2} - 43382^{\circ}_{5/2}$
3582.006	100	300	27909.351	$10855_{7/2} - 38764^{\circ}_{7/2}$	3550.292	50	200	28158.653	$12485^{\circ}_{7/2} - 40644_{5/2}$
3580.226	25b	200	27923.227	$12488^{\circ}_{9/2} - 40411_{7/2}$	3549.736	40	200	28163.063	$10673^{\circ}_{5/2} - 38836_{3/2}$
3580.043	3	10	27924.654	$14275^{\circ}_{9/2} - 42200_{9/2}$	3549.179	1		28167.483	$23697^{\circ}_{7/2} - 51865_{5/2}$
3579.414	5		27929.561	$13468^{\circ}_{9/2} - 41398_{9/2}$	3548.589	2		28172.166	$12472^{\circ}_{5/2} - 40644_{5/2}$
3579.334	100l	200	27930.185	$8460_{3/2} - 36390^{\circ}_{3/2}$	3548.175	1		28175.453	$24132^{\circ}_{3/2} - 52307_{3/2}$
3578.164	20	200	27939.318	$12472^{\circ}_{5/2} - 40411_{7/2}$	3545.390	50	200	28197.585	$7001_{3/2} - 35198^{\circ}_{1/2}$
3577.214	10	5	27946.737	$14275^{\circ}_{9/2} - 42222_{7/2}$					$18973^{\circ}_{7/2} - 47171_{9/2}$
3575.930	2	4	27956.772	$9585^{\circ}_{5/2} - 37542_{3/2}$	3545.284	100	75	28198.428	$1521_{5/2} - 29720^{\circ}_{3/2}$
3575.320	300b	400	27961.541	$6700^{\circ}_{9/2} - 34661_{11/2}$	3545.180	50	200	28199.255	$13248_{9/2} - 41447^{\circ}_{11/2}$
3573.811	2	2	27973.347	$14545^{\circ}_{5/2} - 42518_{7/2}$	3544.993	40b	75	28200.742	$9400_{5/2} - 37601^{\circ}_{3/2}$
3573.508	40	100	27975.719	$8605_{5/2} - 36581^{\circ}_{3/2}$	3544.775	10	40	28202.477	$9585^{\circ}_{5/2} - 37787_{7/2}$
3573.220	100	300	27977.974	$8605_{5/2} - 36583^{\circ}_{7/2}$	3544.361	10	50	28205.771	$14545^{\circ}_{5/2} - 42751_{7/2}$
3572.392	150	400	27984.459	$8460_{3/2} - 36444^{\circ}_{3/2}$	3542.639	40b	50	28219.481	$13468^{\circ}_{9/2} - 41688_{7/2}$
3572.299	40	150	27985.187	$7001_{3/2} - 34986^{\circ}_{3/2}$	3542.620	40b	50	28219.632	$16906^{\circ}_{7/2} - 45126_{9/2}$
3571.810	2	2	27989.018	$22642^{\circ}_{9/2} - 50631_{11/2}$	3542.301	4		28222.173	$22513^{\circ}_{5/2} - 50735_{3/2}$
3571.572	40	200	27990.883	$10189^{\circ}_{11/2} - 38179_{9/2}$	3542.201	15	25	28222.970	$11725^{\circ}_{1/2} - 39948_{1/2}$
3569.918	3	4	28003.852	$16818_{7/2} - 44821^{\circ}_{5/2}$	3541.969	10	4	28224.818	$9720^{\circ}_{7/2} - 37945_{5/2}$
3569.620	50	150	28006.189	$6168^{\circ}_{7/2} - 34174_{5/2}$	3541.615	100	200	28227.640	$8460_{3/2} - 36687^{\circ}_{5/2}$
3567.965	10	150	28019.180	$13468^{\circ}_{9/2} - 41488_{7/2}$	3540.312	1		28238.028	$23697^{\circ}_{7/2} - 51935_{5/2}$
3567.701	50b	75	28021.253	$12902^{\circ}_{3/2} - 40923_{5/2}$	3540.047	5	2	28240.142	$20080^{\circ}_{7/2} - 48320_{5/2}$
3567.047	40	150	28026.390	$6700^{\circ}_{9/2} - 34726_{7/2}$	3539.587	1000	500	28243.812	$0_{3/2} - 28243^{\circ}_{5/2}$
3565.721	10	5	28036.812	$18118_{3/2} - 46155^{\circ}_{5/2}$	3539.322	800	400	28245.927	$4490^{\circ}_{5/2} - 32736_{7/2}$
3565.398	75b	200	28039.352	$9238^{\circ}_{9/2} - 37277_{7/2}$	3538.501	15	10	28252.480	$12219_{3/2} - 40472^{\circ}_{3/2}$
3564.712	25b		28044.748	$18816^{\circ}_{13/2} - 46861_{11/2}$	3538.211	50	100	28254.796	$15710^{\circ}_{3/2} - 43965_{1/2}$
3564.706	50	200	28044.795	$9711_{7/2} - 37756^{\circ}_{7/2}$	3537.158	400	300	28263.207	$9202^{\circ}_{7/2} - 37465_{5/2}$
3564.599	8	40	28045.637	$10572^{\circ}_{9/2} - 38617_{9/2}$	3536.632	50b	100	28267.410	$16033^{\circ}_{5/2} - 44300_{3/2}$
3561.571	10	4	28069.480	$26424^{\circ}_{5/2} - 54493_{5/2}$	3536.609	3		28267.594	$22139^{\circ}_{9/2} - 50407_{7/2}$
3560.857	5		28075.109	$9202^{\circ}_{7/2} - 37277_{7/2}$	3535.863	1		28273.558	$19050^{\circ}_{3/2} - 47324_{5/2}$
3560.264	2	2	28079.785	$21297^{\circ}_{5/2} - 49377_{7/2}$	3535.329	8	2	28277.828	$21682^{\circ}_{7/2} - 49960_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3533.710	50	25	28290.784	$10572^{\circ}_{9/2} - 38862_{11/2}$	3512.351	10	25	28462.818	$17272^{\circ}_{9/2} - 45735_{11/2}$
3532.984	10	100	28296.597	$24381_{7/2} - 52678^{\circ}_{5/2}$	3511.562	400	150	28469.213	$4490^{\circ}_{5/2} - 32959_{3/2}$
3531.928	50	300	28305.057	$18118_{3/2} - 46423^{\circ}_{3/2}$	3511.387	3		28470.632	$16033^{\circ}_{5/2} - 44503_{7/2}$
3531.867	40	4	28305.546	$14790^{\circ}_{7/2} - 43096_{5/2}$	3511.277	20	50	28471.524	$14484^{\circ}_{11/2} - 42955_{9/2}$
3531.645	100	150	28307.325	$18118_{3/2} - 46426^{\circ}_{1/2}$	3510.755	8b		28475.757	$14275^{\circ}_{9/2} - 42751_{7/2}$
3531.049	3		28312.103	$23518^{\circ}_{7/2} - 51830_{7/2}$	3510.535	50	40	28477.542	$10673^{\circ}_{5/2} - 39150_{3/2}$
3530.134	8		28319.441	$15453^{\circ}_{7/2} - 43772_{5/2}$	3509.953	10	25	28482.263	$17771^{\circ}_{11/2} - 46253_{9/2}$
3529.922	2		28321.142	$24414^{\circ}_{3/2} - 52735_{3/2}$	3509.824	5		28483.310	$15324^{\circ}_{1/2} - 43807_{3/2}$
3528.953	300	400	28328.918	$10189^{\circ}_{11/2} - 38517_{13/2}$	3509.189	25	40	28488.464	$16906^{\circ}_{7/2} - 45395_{7/2}$
3528.819	150	40	28329.994	$6691^{\circ}_{3/2} - 35021_{3/2}$	3509.123	10		28489.000	$17121^{\circ}_{3/2} - 45610_{5/2}$
3528.092	8	2	28335.831	$26586^{\circ}_{3/2} - 54922_{3/2}$	3508.819	1		28491.468	$22139^{\circ}_{9/2} - 50631_{11/2}$
3527.361	10		28341.704	$11116^{\circ}_{7/2} - 39458_{7/2}$	3508.687	5	25	28492.540	$23372^{\circ}_{3/2} - 51865_{5/2}$
3526.253	25	75	28350.609	$18973^{\circ}_{7/2} - 47324_{5/2}$	3508.180	20	40	28496.658	$10572^{\circ}_{9/2} - 39068_{7/2}$
3525.868	5h	75	28353.704	$21131^{\circ}_{3/2} - 49485_{1/2}$	3506.903	8		28507.034	$20310^{\circ}_{5/2} - 48817_{3/2}$
3525.629	40h	75	28355.626	$16033^{\circ}_{5/2} - 44388_{5/2}$	3506.852	50	300	28507.449	$15236_{3/2} - 43744^{\circ}_{1/2}$
3525.605	8b		28355.819	$9400_{5/2} - 37756^{\circ}_{7/2}$	3505.493	100	200	28518.500	$13818^{\circ}_{7/2} - 42336_{5/2}$
3525.551	8h	4h	28356.254	$15453^{\circ}_{7/2} - 43809_{9/2}$	3505.384	10	15	28519.387	$12472^{\circ}_{5/2} - 40991_{3/2}$
3525.122	25		28359.704	$9585^{\circ}_{5/2} - 37945_{5/2}$	3505.350	5	10	28519.663	$9585^{\circ}_{5/2} - 38105_{5/2}$
3524.230	3		28366.882	$18214^{\circ}_{3/2} - 46581_{5/2}$	3504.100	2		28529.837	$14484^{\circ}_{11/2} - 43014_{13/2}$
3524.068	2		28368.186	$20989^{\circ}_{9/2} - 49357_{11/2}$	3504.037	25	75	28530.350	$17722^{\circ}_{9/2} - 46253_{9/2}$
3523.615	8	8	28371.833	$20120^{\circ}_{5/2} - 48492_{5/2}$	3503.615	100	200	28533.786	$13818^{\circ}_{7/2} - 42352_{5/2}$
3523.196	10	8	28375.207	$6168^{\circ}_{7/2} - 34543_{5/2}$	3502.778	100b	200	28540.604	$9061_{5/2} - 37601^{\circ}_{3/2}$
3522.569	3		28380.258	$22355^{\circ}_{1/2} - 50735_{3/2}$	3502.701	10	10	28541.232	$10855_{7/2} - 39396^{\circ}_{7/2}$
3522.367	5b		28381.885	$13818^{\circ}_{7/2} - 42200_{9/2}$	3502.648	1		28541.663	$23730^{\circ}_{9/2} - 52272_{7/2}$
3521.912	800	300	28385.552	$10379_{9/2} - 38764^{\circ}_{7/2}$	3501.945	25	25	28547.393	$7331^{\circ}_{5/2} - 35878_{7/2}$
3521.688	4		28387.357	$20989^{\circ}_{9/2} - 49377_{7/2}$	3501.642	15	25	28549.863	$9238^{\circ}_{9/2} - 37787_{7/2}$
3521.514	4		28388.760	$18214^{\circ}_{3/2} - 46603_{5/2}$	3501.455	200	200	28551.388	$10189^{\circ}_{11/2} - 38740_{11/2}$
3520.801	1		28394.509	$22513^{\circ}_{5/2} - 50907_{3/2}$	3500.843	20	100	28556.379	$20288^{\circ}_{11/2} - 48844_{9/2}$
3519.869	1		28402.027	$17983^{\circ}_{5/2} - 46385_{7/2}$	3500.531	40	75	28558.924	$12488^{\circ}_{9/2} - 41047_{9/2}$
3519.741	5		28403.060	$25607^{\circ}_{9/2} - 54010_{7/2}$	3500.267	25	200	28561.078	$15242^{\circ}_{9/2} - 43803_{7/2}$
3519.688	50	200	28403.488	$16818_{7/2} - 45221^{\circ}_{5/2}$	3500.206	10	4	28561.575	$16564^{\circ}_{11/2} - 45126_{9/2}$
3519.482	1		28405.150	$25440^{\circ}_{5/2} - 53845_{5/2}$	3499.986	200	200	28563.371	$8018_{3/2} - 36581^{\circ}_{3/2}$
3518.902	25b		28409.832	$7331^{\circ}_{5/2} - 35741_{5/2}$	3498.989	75b	100b	28571.509	$9720^{\circ}_{7/2} - 38291_{7/2}$
3518.713	4		28411.357	$20080^{\circ}_{7/2} - 48492_{5/2}$	3498.478	1		28575.682	$21297^{\circ}_{5/2} - 49873_{5/2}$
3518.558	4s		28412.609	$17983^{\circ}_{5/2} - 46395_{3/2}$	3498.008	100	75	28579.522	$1521_{5/2} - 30101^{\circ}_{7/2}$
3516.903	15		28425.979	$12902^{\circ}_{3/2} - 41328_{5/2}$	3497.955	15	50	28579.955	$9585^{\circ}_{5/2} - 38165_{7/2}$
3516.823	200	75	28426.626	$8018_{3/2} - 36444^{\circ}_{3/2}$	3497.686	15	200	28582.153	$22642^{\circ}_{9/2} - 51224_{9/2}$
3516.576	50	40	28428.623	$10189^{\circ}_{11/2} - 38617_{9/2}$	3497.460	8	40	28584.000	$11116^{\circ}_{7/2} - 39700_{5/2}$
3516.354	200	300	28430.417	$8378^{\circ}_{7/2} - 36809_{7/2}$	3497.262	50	200	28585.618	$9202^{\circ}_{7/2} - 37787_{7/2}$
3515.849	15	25	28434.501	$12219_{3/2} - 40654^{\circ}_{5/2}$	3497.010	40	200	28587.678	$10855_{7/2} - 39443^{\circ}_{9/2}$
3515.706	75	100	28435.657	$11116^{\circ}_{7/2} - 39552_{9/2}$	3496.762	8	15	28589.705	$15710^{\circ}_{3/2} - 44300_{3/2}$
3515.555	8		28436.879	$14790^{\circ}_{7/2} - 43227_{5/2}$	3495.158	25	4	28602.825	$9238^{\circ}_{9/2} - 37840_{9/2}$
3515.424	10		28437.938	$12485^{\circ}_{7/2} - 40923_{5/2}$	3494.815	25	10	28605.632	$12219_{3/2} - 40825^{\circ}_{1/2}$
3515.224	15		28439.556	$23730^{\circ}_{9/2} - 52170_{11/2}$	3493.518	500	200	28616.252	$7828_{1/2} - 36444^{\circ}_{3/2}$
3514.960	100	100	28441.692	$9238^{\circ}_{9/2} - 37679_{11/2}$	3493.084	8	20	28619.807	$17983^{\circ}_{5/2} - 46603_{5/2}$
3514.526	300b	200	28445.204	$9400_{5/2} - 37846^{\circ}_{5/2}$	3492.898	5	10	28621.331	$19248^{\circ}_{5/2} - 47869_{3/2}$
3513.755	20	75	28451.445	$12472^{\circ}_{5/2} - 40923_{5/2}$	3492.680	8	25	28623.118	$19248^{\circ}_{5/2} - 47871_{7/2}$
3513.299	15	40	28455.138	$22014^{\circ}_{11/2} - 50470_{9/2}$	3492.327	4	5	28626.011	$22642^{\circ}_{9/2} - 51268_{7/2}$
3513.213	50	75	28455.835	$14790^{\circ}_{7/2} - 43246_{7/2}$	3492.117	4	3	28627.732	$15144^{\circ}_{3/2} - 43772_{5/2}$
3512.742	100b	200	28459.650	$9720^{\circ}_{7/2} - 38179_{9/2}$	3491.580	75	100	28632.135	$17272^{\circ}_{9/2} - 45904_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3490.795	1b		28638.574	$9202^{\circ}_{7/2} - 37840_{9/2}$	3473.092	4		28784.545	$17771^{\circ}_{11/2} - 46555_{11/2}$
3490.656	5	4	28639.714	$11576^{\circ}_{3/2} - 40216_{5/2}$	3473.027	150b	100	28785.084	$9061_{5/2} - 37846^{\circ}_{5/2}$
3490.504	8	25	28640.961	$17727_{11/2} - 46368^{\circ}_{9/2}$	3472.842	15	10	28786.618	$9585^{\circ}_{5/2} - 38372_{3/2}$
3490.452	50	100	28641.388	$15324^{\circ}_{1/2} - 43965_{1/2}$	3472.759	3		28787.306	$21682^{\circ}_{7/2} - 50470_{9/2}$
3490.389	2		28641.905	$23012^{\circ}_{3/2} - 51653_{1/2}$	3470.788	4		28803.653	$17460^{\circ}_{5/2} - 46264_{3/2}$
3490.269	20	100	28642.889	$14484^{\circ}_{11/2} - 43127_{11/2}$	3469.919	2000h	800	28810.866	$4146_{7/2} - 32957^{\circ}_{7/2}$
3490.230	8	10	28643.209	$15453^{\circ}_{7/2} - 44096_{9/2}$	3468.966	3	8	28818.781	$19050^{\circ}_{3/2} - 47869_{3/2}$
3489.829	25	20	28646.501	$11576^{\circ}_{3/2} - 40222_{3/2}$	3468.714	25	10	28820.875	$15144^{\circ}_{3/2} - 43965_{1/2}$
3487.884	5		28662.475	$17722^{\circ}_{9/2} - 46385_{7/2}$	3468.219	800	300	28824.988	$6700^{\circ}_{9/2} - 35525_{11/2}$
3487.845	75	100	28662.795	$15144^{\circ}_{3/2} - 43807_{3/2}$	3467.301	3		28832.619	$17722^{\circ}_{9/2} - 46555_{11/2}$
3487.805	1		28663.124	$21297^{\circ}_{5/2} - 49960_{7/2}$	3466.896	20	15	28835.987	$20288^{\circ}_{11/2} - 49124_{11/2}$
3487.700	3		28663.987	$23012^{\circ}_{3/2} - 51676_{3/2}$	3465.924	200	15	28844.074	$4113_{5/2} - 32957^{\circ}_{7/2}$
3487.081	20	75	28669.075	$9720^{\circ}_{7/2} - 38389_{7/2}$	3465.764	1000	200	28845.406	$6700^{\circ}_{9/2} - 35545_{9/2}$
3486.971	40	100	28669.979	$8460_{3/2} - 37130^{\circ}_{1/2}$	3465.471	8	15	28847.844	$20989^{\circ}_{9/2} - 49837_{9/2}$
3486.841	8		28671.048	$16818_{7/2} - 45489^{\circ}_{9/2}$	3465.262	3	10	28849.584	$22513^{\circ}_{5/2} - 51362_{5/2}$
3486.514	500b	200	28673.737	$10189^{\circ}_{11/2} - 38862_{11/2}$	3465.017	50b	75	28851.624	$14275^{\circ}_{9/2} - 43127_{11/2}$
3486.050	3l		28677.554	$13468^{\circ}_{9/2} - 42146_{11/2}$	3464.841	8	20h	28853.090	$23012^{\circ}_{3/2} - 51865_{5/2}$
3485.917	4		28678.648	$17121^{\circ}_{3/2} - 45800_{5/2}$	3464.471	15	8	28856.171	$12472^{\circ}_{5/2} - 41328_{5/2}$
3485.721	5	5	28680.260	$14275^{\circ}_{9/2} - 42955_{9/2}$	3464.409	40	50	28856.687	$16033^{\circ}_{5/2} - 44889_{3/2}$
3485.473	15	50	28682.301	$14545^{\circ}_{5/2} - 43227_{5/2}$	3464.228	2		28858.195	$18816^{\circ}_{13/2} - 47675_{11/2}$
3485.212	100b	150	28684.449	$8378^{\circ}_{7/2} - 37063_{9/2}$	3463.719	500	400	28862.436	$13250_{5/2} - 42112^{\circ}_{3/2}$
3484.414	5	25	28691.018	$20686^{\circ}_{5/2} - 49377_{7/2}$	3463.592	20	8	28863.494	$15786_{5/2} - 44650^{\circ}_{7/2}$
3484.080	100	100	28693.768	$10673^{\circ}_{5/2} - 39366_{5/2}$	3463.424	1		28864.894	$23697^{\circ}_{7/2} - 52562_{7/2}$
3483.589	3		28697.813	$20120^{\circ}_{5/2} - 48817_{3/2}$	3462.850	800	400	28869.678	$9711_{7/2} - 38581^{\circ}_{5/2}$
3483.409	20b	50	28699.295	$14545^{\circ}_{5/2} - 43244_{3/2}$	3460.223	3		28891.596	$17460^{\circ}_{5/2} - 46352_{7/2}$
3483.254	10	25	28700.572	$13818^{\circ}_{7/2} - 42518_{7/2}$	3459.974	5	15	28893.675	$16906^{\circ}_{7/2} - 45800_{5/2}$
3483.169	15	100	28701.273	$14545^{\circ}_{5/2} - 43246_{7/2}$	3459.641	75b	10	28896.456	$10189^{\circ}_{11/2} - 39085_{13/2}$
3483.113	8	5	28701.734	$11576^{\circ}_{3/2} - 40278_{3/2}$	3459.397	5	4	28898.494	$8378^{\circ}_{7/2} - 37277_{7/2}$
3482.834	20	150	28704.033	$16906^{\circ}_{7/2} - 45610_{5/2}$	3458.882	5	8	28902.797	$9202^{\circ}_{7/2} - 38105_{5/2}$
3482.761	100	100	28704.635	$1859_{3/2} - 30564^{\circ}_{1/2}$	3458.724	3		28904.117	$20969^{\circ}_{7/2} - 49873_{5/2}$
3482.547	200	100	28706.399	$9585^{\circ}_{5/2} - 38291_{7/2}$	3457.683	15	8	28912.819	$12485^{\circ}_{7/2} - 41398_{9/2}$
3481.003	20	200	28719.131	$4490^{\circ}_{5/2} - 33209_{7/2}$	3456.928	8	3	28919.133	$17983^{\circ}_{5/2} - 46902_{5/2}$
3480.798	50	4	28720.822	$0_{3/2} - 28720^{\circ}_{3/2}$	3456.253	1		28924.781	$17460^{\circ}_{5/2} - 46385_{7/2}$
3480.750	2		28721.219	$18214^{\circ}_{3/2} - 46935_{3/2}$	3455.951	20	40	28927.308	$9238^{\circ}_{9/2} - 38165_{7/2}$
3480.549	5l	5	28722.877	$17983^{\circ}_{5/2} - 46706_{7/2}$	3455.469	1		28931.343	$18214^{\circ}_{3/2} - 47145_{1/2}$
3480.350	4	4	28724.519	$21682^{\circ}_{7/2} - 50407_{7/2}$	3455.273	20	5	28932.984	$13818^{\circ}_{7/2} - 42751_{7/2}$
3479.912	1		28728.135	$31259_{5/2} - 59987^{\circ}_{3/2}$	3455.131	4b		28934.173	$18214^{\circ}_{3/2} - 47148_{3/2}$
3479.172	500b	200	28734.245	$6691^{\circ}_{3/2} - 35425_{1/2}$	3455.112	4b	20	28934.332	$15242^{\circ}_{9/2} - 44177_{11/2}$
				$7331^{\circ}_{5/2} - 36065_{5/2}$	3455.044	3		28934.902	$23372^{\circ}_{3/2} - 52307_{3/2}$
3478.463	150	150	28740.101	$13406^{\circ}_{13/2} - 42146_{11/2}$	3454.992	8	25b	28935.337	$17460^{\circ}_{5/2} - 46395_{3/2}$
3478.131	150	150	28742.845	$9202^{\circ}_{7/2} - 37945_{5/2}$	3454.946	8	20	28935.723	$15453^{\circ}_{7/2} - 44388_{5/2}$
3477.704	100	150	28746.374	$15349^{\circ}_{11/2} - 44096_{9/2}$	3454.715	50	20	28937.657	$19594_{1/2} - 48532^{\circ}_{1/2}$
3476.902	15	8	28753.004	$7828_{1/2} - 36581^{\circ}_{3/2}$	3454.646	10	15	28938.235	$14349_{1/2} - 43287^{\circ}_{3/2}$
3476.540	150b	100	28755.998	$6700^{\circ}_{9/2} - 35456_{9/2}$	3454.206	200	15	28941.921	$9238^{\circ}_{9/2} - 38179_{9/2}$
3476.332	5	8	28757.719	$18973^{\circ}_{7/2} - 47731_{9/2}$	3453.920	15	5	28944.318	$17272^{\circ}_{9/2} - 46216_{11/2}$
3475.537	25	10	28764.297	$20080^{\circ}_{7/2} - 48844_{9/2}$	3453.559	50b	50	28947.343	$11576^{\circ}_{3/2} - 40523_{1/2}$
3474.270	10	50b	28774.786	$16033^{\circ}_{5/2} - 44807_{7/2}$	3453.404	5		28948.643	$20120^{\circ}_{5/2} - 49068_{5/2}$
3473.780	20	8	28778.845	$11116^{\circ}_{7/2} - 39895_{9/2}$	3452.970	4		28952.281	$17983^{\circ}_{5/2} - 46935_{3/2}$
3473.610	5	3	28780.253	$10572^{\circ}_{9/2} - 39352_{11/2}$	3452.682	400	200	28954.696	$6244_{1/2} - 35198^{\circ}_{1/2}$
3473.422	150	150	28781.811	$9711_{7/2} - 38493^{\circ}_{5/2}$	3450.948	100	15	28969.244	$13250_{5/2} - 42219^{\circ}_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3450.769	1		28970.747	$20989^{\circ}_{9/2} - 49960_{7/2}$	3430.124	20	8	29145.109	$22685^{\circ}_{7/2} - 51830_{7/2}$
3450.710	15	4	28971.242	$14275^{\circ}_{9/2} - 43246_{7/2}$	3429.903	100b	200	29146.987	$4490^{\circ}_{5/2} - 33637_{7/2}$
3450.108	5	10	28976.297	$15324^{\circ}_{1/2} - 44300_{3/2}$	3429.827	5		29147.633	$8460_{3/2} - 37607^{\circ}_{1/2}$
3449.949	200	5	28977.633	$9202^{\circ}_{7/2} - 38179_{9/2}$	3429.433	4		29150.981	$8605_{5/2} - 37756^{\circ}_{7/2}$
3449.566	2b		28980.850	$21682^{\circ}_{7/2} - 50663_{5/2}$	3429.390	75	100	29151.347	$9238^{\circ}_{9/2} - 38389_{7/2}$
3449.543	3b		28981.043	$17272^{\circ}_{9/2} - 46253_{9/2}$	3427.993	25	50	29163.226	$10189^{\circ}_{11/2} - 39352_{11/2}$
3449.493	8	4	28981.463	$14790^{\circ}_{7/2} - 43772_{5/2}$	3427.464	8	40	29167.727	$13250_{5/2} - 42418^{\circ}_{3/2}$
3449.286	50	300	28983.202	$23187^{\circ}_{13/2} - 52170_{11/2}$	3426.988	10	25	29171.778	$9585^{\circ}_{5/2} - 38757_{3/2}$
3448.737	5		28987.816	$27403^{\circ}_{3/2} - 56391_{5/2}$	3426.177	2		29178.683	$6700^{\circ}_{9/2} - 35878_{7/2}$
3448.296	1		28991.523	$20969^{\circ}_{7/2} - 49960_{7/2}$	3426.144	8	75	29178.964	$15710^{\circ}_{3/2} - 44889_{3/2}$
3447.632	8	2	28997.107	$7331^{\circ}_{5/2} - 36328_{3/2}$	3426.058	4	10	29179.697	$22685^{\circ}_{7/2} - 51865_{5/2}$
3446.997	8	4	29002.448	$12485^{\circ}_{7/2} - 41488_{7/2}$	3425.944	100	100	29180.668	$9400_{5/2} - 38581^{\circ}_{5/2}$
3446.288	8	2	29008.415	$9720^{\circ}_{7/2} - 38728_{5/2}$	3425.185	100b	200	29187.134	$9202^{\circ}_{7/2} - 38389_{7/2}$
3445.743	300	200	29013.003	$14790^{\circ}_{7/2} - 43803_{7/2}$	3423.356	5	3	29202.727	$12485^{\circ}_{7/2} - 41688_{7/2}$
3445.389	150l	150	29015.984	$12472^{\circ}_{5/2} - 41488_{7/2}$	3423.129	150	150	29204.664	$12472^{\circ}_{5/2} - 41676_{3/2}$
3445.217	200	100	29017.432	$10379_{9/2} - 39396^{\circ}_{7/2}$	3422.809	3		29207.394	$15242^{\circ}_{9/2} - 44450_{9/2}$
3445.121	8	3	29018.241	$14790^{\circ}_{7/2} - 43809_{9/2}$	3422.576	25		29209.382	$22014^{\circ}_{11/2} - 51224_{9/2}$
3444.028	25	100	29027.450	$10673^{\circ}_{5/2} - 39700_{5/2}$	3422.306	2		29211.687	$24309^{\circ}_{11/2} - 53520_{9/2}$
3443.139	50b	20b	29034.944	$15786_{5/2} - 44821^{\circ}_{5/2}$	3422.245	1		29212.207	$19912^{\circ}_{13/2} - 49124_{11/2}$
3443.110	40b	75b	29035.189	$9400_{5/2} - 38436^{\circ}_{3/2}$	3421.770	3		29216.262	$12472^{\circ}_{5/2} - 41688_{7/2}$
3441.365	200	25	29049.911	$6691^{\circ}_{3/2} - 35741_{5/2}$	3419.173	500	300	29238.453	$13406^{\circ}_{13/2} - 42644_{13/2}$
3441.036	100	20	29052.688	$9711^{\circ}_{7/2} - 38764_{7/2}$	3418.952	150b	40b	29240.342	$8605_{5/2} - 37846^{\circ}_{5/2}$
3440.909	10	20	29053.761	$9238^{\circ}_{9/2} - 38291_{7/2}$	3418.914	100b	40b	29240.667	$4490^{\circ}_{5/2} - 33730_{5/2}$
				$25440^{\circ}_{5/2} - 54493_{5/2}$	3418.776	200	300	29241.848	$19880_{9/2} - 49121^{\circ}_{7/2}$
3439.711	500b	400	29063.879	$10379_{9/2} - 39443^{\circ}_{9/2}$	3418.523	4		29244.012	$15144^{\circ}_{3/2} - 44388_{5/2}$
3439.232	10	5	29067.927	$11576^{\circ}_{3/2} - 40644_{5/2}$	3418.333	3		29245.637	$17460^{\circ}_{5/2} - 46706_{7/2}$
3439.056	10	4	29069.415	$20288^{\circ}_{11/2} - 49357_{11/2}$	3417.794	1		29250.249	$22685^{\circ}_{7/2} - 51935_{5/2}$
3438.951	500	300	29070.302	$13248_{9/2} - 42319^{\circ}_{9/2}$	3417.724	50	75	29250.848	$11116^{\circ}_{7/2} - 40367_{9/2}$
3438.689	4	10	29072.517	$19248^{\circ}_{5/2} - 48320_{5/2}$	3417.126	15	15	29255.967	$8460_{3/2} - 37716^{\circ}_{1/2}$
3437.808	8	20	29079.967	$17272^{\circ}_{9/2} - 46352_{7/2}$	3417.001	1		29257.037	$20120^{\circ}_{5/2} - 49377_{7/2}$
3437.024	100	150b	29086.600	$8378^{\circ}_{7/2} - 37465_{5/2}$	3416.551	1		29260.891	$15242^{\circ}_{9/2} - 44503_{7/2}$
3436.679	75b	100b	29089.520	$9202^{\circ}_{7/2} - 38291_{7/2}$	3416.421	40b	50	29262.004	$14545^{\circ}_{5/2} - 43807_{3/2}$
3436.288	3	2	29092.830	$9400_{5/2} - 38493^{\circ}_{5/2}$	3415.487	3b		29270.006	$19050^{\circ}_{3/2} - 48320_{5/2}$
3435.975	800b	200	29095.480	$0_{3/2} - 29095^{\circ}_{5/2}$					$26965^{\circ}_{3/2} - 56235_{3/2}$
3435.695	3l	5	29097.851	$17837^{\circ}_{1/2} - 46935_{3/2}$	3414.979	3		29274.360	$17121^{\circ}_{3/2} - 46395_{3/2}$
3435.193	15	10	29102.103	$4113_{5/2} - 33215^{\circ}_{3/2}$	3414.503	100	200	29278.441	$9585^{\circ}_{5/2} - 38863_{5/2}$
3435.004	2		29103.705	$20310^{\circ}_{5/2} - 49414_{3/2}$	3413.634	3b		29285.894	$30101^{\circ}_{7/2} - 59387_{7/2}$
3434.759	100b	40	29105.780	$12902^{\circ}_{3/2} - 42008_{1/2}$	3413.408	100	75	29287.833	$6168^{\circ}_{7/2} - 35456_{9/2}$
3434.266	4	8	29109.959	$18214^{\circ}_{3/2} - 47324_{5/2}$	3412.632	4		29294.492	$20120^{\circ}_{5/2} - 49414_{3/2}$
3433.999	1000h	300	29112.222	$1859_{3/2} - 30972^{\circ}_{5/2}$	3412.521	3		29295.445	$23012^{\circ}_{3/2} - 52307_{3/2}$
3433.946	40	15	29112.671	$22834_{7/2} - 51946^{\circ}_{5/2}$	3412.399	25	4	29296.493	$20080^{\circ}_{7/2} - 49377_{7/2}$
3433.890	15	100	29113.146	$17272^{\circ}_{9/2} - 46385_{7/2}$	3411.785	200b	100	29301.765	$7828_{1/2} - 37130^{\circ}_{1/2}$
3432.085	5	40	29128.457	$22139^{\circ}_{9/2} - 51268_{7/2}$	3411.312	2	5	29305.827	$25188^{\circ}_{3/2} - 54493_{5/2}$
3431.811	50	200	29130.782	$20158_{5/2} - 49289^{\circ}_{5/2}$	3411.061	3		29307.984	$17837^{\circ}_{1/2} - 47145_{1/2}$
3431.019	15	75	29137.506	$13818^{\circ}_{7/2} - 42955_{9/2}$	3409.986	3		29317.223	$22513^{\circ}_{5/2} - 51830_{7/2}$
3430.761	5	2	29139.698	$17771^{\circ}_{11/2} - 46910_{13/2}$	3409.562	3		29320.868	$22355^{\circ}_{1/2} - 51676_{3/2}$
3430.567	15	75	29141.345	$8460_{3/2} - 37601^{\circ}_{3/2}$	3409.270	400	200	29323.380	$10572^{\circ}_{9/2} - 39895_{9/2}$
3430.419	8	75	29142.603	$17460^{\circ}_{5/2} - 46603_{5/2}$	3409.112	3b		29324.739	$18973^{\circ}_{7/2} - 48298_{7/2}$
				$17121^{\circ}_{3/2} - 46264_{3/2}$	3408.644	200	150	29328.765	$10855_{7/2} - 40184^{\circ}_{7/2}$
3430.339	8b	15	29143.282	$9585^{\circ}_{5/2} - 38728_{5/2}$	3407.631	40	200	29337.483	$16818_{7/2} - 46155^{\circ}_{5/2}$

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TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3407.221	3s		29341.013	$17983^{\circ}_{5/2} - 47324_{5/2}$	3387.532	2		29511.544	$24982^{\circ}_{7/2} - 54493_{5/2}$
3406.730	3		29345.242	$15305_{9/2} - 44650^{\circ}_{7/2}$	3386.763	10	75	29518.244	$18973^{\circ}_{7/2} - 48492_{5/2}$
3406.365	8	8	29348.386	$9720^{\circ}_{7/2} - 39068_{7/2}$	3386.500	500	300	29520.537	$9061_{5/2} - 38581^{\circ}_{5/2}$
3406.242	150	100	29349.446	$6691^{\circ}_{3/2} - 36040_{1/2}$	3385.825	8	15	29526.422	$9202^{\circ}_{7/2} - 38728_{5/2}$
3405.607	50		29354.918	$15453^{\circ}_{7/2} - 44807_{7/2}$	3385.596	8	2	29528.419	$14275^{\circ}_{9/2} - 43803_{7/2}$
3404.798	8	15	29361.893	$16033^{\circ}_{5/2} - 45395_{7/2}$	3385.531	800	200	29528.986	$4490^{\circ}_{5/2} - 34019_{3/2}$
3404.651	200	100	29363.161	$10189^{\circ}_{11/2} - 39552_{9/2}$	3385.206	2		29531.821	$21131^{\circ}_{3/2} - 50663_{5/2}$
				$23372^{\circ}_{3/2} - 52735_{3/2}$	3384.991	100	100	29533.696	$14275^{\circ}_{9/2} - 43809_{9/2}$
3404.592	40	40	29363.669	$9400_{5/2} - 38764^{\circ}_{7/2}$	3384.095	2		29541.516	$21682^{\circ}_{7/2} - 51224_{9/2}$
3404.198	4		29367.068	$10572^{\circ}_{9/2} - 39939_{11/2}$	3384.001	8	40	29542.336	$22139^{\circ}_{9/2} - 51681_{9/2}$
3403.353	100	25	29374.359	$6691^{\circ}_{3/2} - 36065_{5/2}$	3383.149	25b	25b	29549.776	$10673^{\circ}_{5/2} - 40222_{3/2}$
3403.271	200	200b	29375.067	$9061_{5/2} - 38436^{\circ}_{3/2}$	3383.107	100b	200	29550.143	$16818_{7/2} - 46368^{\circ}_{9/2}$
3403.006	15	40	29377.354	$15349^{\circ}_{11/2} - 44727_{11/2}$	3381.374	50b	40b	29565.287	$9585^{\circ}_{5/2} - 39150_{3/2}$
3402.698	800b	400b	29380.013	$6213_{9/2} - 35593^{\circ}_{7/2}$	3381.343	50b	50b	29565.558	$15324^{\circ}_{1/2} - 44889_{3/2}$
3402.027	200	200	29385.808	$8460_{3/2} - 37846^{\circ}_{5/2}$	3380.500	3	2	29572.931	$6168^{\circ}_{7/2} - 35741_{5/2}$
3401.647	150	150	29389.090	$7001_{3/2} - 36390^{\circ}_{3/2}$	3379.981	8	15	29577.472	$16033^{\circ}_{5/2} - 45610_{5/2}$
3400.998	10	15	29394.699	$14349_{1/2} - 43744^{\circ}_{1/2}$	3379.292	8		29583.502	$8018_{3/2} - 37601^{\circ}_{3/2}$
3400.350	8		29400.300	$17771^{\circ}_{11/2} - 47171_{9/2}$	3379.090	15	50	29585.270	$15236_{3/2} - 44821^{\circ}_{5/2}$
3399.466	5	2	29407.945	$15144^{\circ}_{3/2} - 44552_{5/2}$	3378.905	4		29586.890	$22685^{\circ}_{7/2} - 52272_{7/2}$
3399.344	25b	75b	29409.001	$8378^{\circ}_{7/2} - 37787_{7/2}$	3378.803	5	3	29587.783	$27357^{\circ}_{9/2} - 56945_{11/2}$
3399.284	20	40	29409.520	$13818^{\circ}_{7/2} - 43227_{5/2}$	3378.573	500	300	29589.797	$8018_{3/2} - 37607^{\circ}_{1/2}$
3397.953	15	25	29421.039	$12488^{\circ}_{9/2} - 41909_{9/2}$	3377.943	2b		29595.316	$15710^{\circ}_{3/2} - 45306_{3/2}$
3397.844	20	150	29421.983	$22106_{5/2} - 51528^{\circ}_{3/2}$	3377.661	10b	15	29597.786	$14790^{\circ}_{7/2} - 44388_{5/2}$
3397.255	3		29427.084	$26963^{\circ}_{7/2} - 56391_{5/2}$	3377.538	3		29598.864	$29788^{\circ}_{9/2} - 59387_{7/2}$
3397.092	15b	40	29428.496	$13818^{\circ}_{7/2} - 43246_{7/2}$	3376.840	75	50	29604.982	$10673^{\circ}_{5/2} - 40278_{3/2}$
3396.874	2		29430.384	$25414^{\circ}_{11/2} - 54845_{9/2}$	3376.529	4	5	29607.709	$13406^{\circ}_{13/2} - 43014_{13/2}$
3396.612	100	100	29432.654	$9061_{5/2} - 38493^{\circ}_{5/2}$	3376.411	2		29608.744	$26626^{\circ}_{1/2} - 56235_{3/2}$
3396.456	50	100	29434.006	$17272^{\circ}_{9/2} - 46706_{7/2}$	3376.049	3	3	29611.918	$14484^{\circ}_{11/2} - 44096_{9/2}$
3396.394	50	100	29434.543	$15786_{5/2} - 45221^{\circ}_{5/2}$	3374.582	300	300	29624.791	$9238^{\circ}_{9/2} - 38862_{11/2}$
3395.966	8b		29438.253	$20969^{\circ}_{7/2} - 50407_{7/2}$	3373.964	2		29630.217	$22642^{\circ}_{9/2} - 52272_{7/2}$
3395.628	8	50	29441.183	$19050^{\circ}_{3/2} - 48492_{5/2}$	3373.165	2		29637.235	$6691^{\circ}_{3/2} - 36328_{3/2}$
3395.573	3		29441.660	$19248^{\circ}_{5/2} - 48689_{3/2}$	3372.955	8	20	29639.081	$19050^{\circ}_{3/2} - 48689_{3/2}$
3395.545	2		29441.903	$17460^{\circ}_{5/2} - 46902_{5/2}$	3372.702	50	100	29641.304	$20989^{\circ}_{9/2} - 50631_{11/2}$
3395.372	100	150	29443.403	$7001_{3/2} - 36444^{\circ}_{3/2}$	3372.334	10	15	29644.538	$15144^{\circ}_{3/2} - 44789_{1/2}$
3395.112	20	100	29445.658	$19912^{\circ}_{13/2} - 49357_{11/2}$	3372.097	1		29646.622	$9720^{\circ}_{7/2} - 39366_{5/2}$
3394.797	150	200	29448.390	$17722^{\circ}_{9/2} - 47171_{9/2}$	3371.795	500b	300	29649.277	$12570_{7/2} - 42219^{\circ}_{5/2}$
3394.640	8	10	29449.752	$12902^{\circ}_{3/2} - 42352_{5/2}$	3371.492	10	50	29651.941	$16564^{\circ}_{11/2} - 46216_{11/2}$
3394.583	15	3	29450.246	$1521_{5/2} - 30972^{\circ}_{5/2}$	3371.123	2		29655.187	$18214^{\circ}_{3/2} - 47869_{3/2}$
3394.145	150	200	29454.047	$11116^{\circ}_{7/2} - 40570_{7/2}$	3371.043	1		29655.891	$15242^{\circ}_{9/2} - 44898_{7/2}$
3393.500	5	3	29459.645	$17121^{\circ}_{3/2} - 46581_{5/2}$	3370.656	2		29659.296	$14790^{\circ}_{7/2} - 44450_{9/2}$
3393.230	50	100	29461.989	$8378^{\circ}_{7/2} - 37840_{9/2}$	3370.397	10		29661.575	$9202^{\circ}_{7/2} - 38863_{5/2}$
3392.958	150b	50b	29464.350	$12472^{\circ}_{5/2} - 41936_{3/2}$	3369.077	8		29673.196	$15453^{\circ}_{7/2} - 45126_{9/2}$
3392.878	3		29465.045	$15324^{\circ}_{1/2} - 44789_{1/2}$	3368.908	5	10	29674.684	$16906^{\circ}_{7/2} - 46581_{5/2}$
3392.035	1000d	1000	29472.368	$1521_{5/2} - 30994^{\circ}_{7/2}$	3367.819	500b	150b	29684.279	$4490^{\circ}_{5/2} - 34174_{5/2}$
3391.296	5	8	29478.790	$15710^{\circ}_{3/2} - 45189_{5/2}$	3367.784	100b	50b	29684.588	$9711_{7/2} - 39396^{\circ}_{7/2}$
3391.131	2		29480.224	$20989^{\circ}_{9/2} - 50470_{9/2}$	3367.399	8	5	29687.982	$17460^{\circ}_{5/2} - 47148_{3/2}$
3390.780	25	50	29483.276	$9585^{\circ}_{5/2} - 39068_{7/2}$	3367.318	5		29688.696	$16564^{\circ}_{11/2} - 46253_{9/2}$
3389.640	500	300	29493.191	$1859_{3/2} - 31353^{\circ}_{3/2}$	3367.073	2h	12	29690.856	$22139^{\circ}_{9/2} - 51830_{7/2}$
3388.578	100	75	29502.434	$9238^{\circ}_{9/2} - 38740_{11/2}$	3366.721	40	100	29693.960	$13250^{\circ}_{5/2} - 42944_{7/2}$
3387.834	4		29508.913	$30484_{11/2} - 59993^{\circ}_{9/2}$	3366.649	8	200	29694.595	$20969^{\circ}_{7/2} - 50663_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3366.517	200	200	29695.759	$13248_{9/2} - 42944^{\circ}_{7/2}$	3351.150	50b	50b	29831.928	$9720^{\circ}_{7/2} - 39552_{9/2}$
3366.423	10	20	29696.588	$16906^{\circ}_{7/2} - 46603_{5/2}$	3350.308	5	4	29839.425	$10572^{\circ}_{9/2} - 40411_{7/2}$
3365.633	15	15	29703.559	$9061_{5/2} - 38764^{\circ}_{7/2}$	3350.202	5h	4	29840.369	$22106_{5/2} - 51946^{\circ}_{5/2}$
3365.318	25b		29706.339	$10189^{\circ}_{11/2} - 39895_{9/2}$	3349.883	10	8	29843.210	$14545^{\circ}_{5/2} - 44388_{5/2}$
3364.846	15	15	29710.506	$6168^{\circ}_{7/2} - 35878_{7/2}$	3348.992	5b		29851.150	$12485^{\circ}_{7/2} - 42336_{5/2}$
3364.685	75b	200b	29711.928	$12488^{\circ}_{9/2} - 42200_{9/2}$	3348.953	100	400	29851.497	$10855_{7/2} - 40706^{\circ}_{7/2}$
3364.587	20	75	29712.793	$14790^{\circ}_{7/2} - 44503_{7/2}$	3347.678	2		29862.866	$24982^{\circ}_{7/2} - 54845_{9/2}$
3364.388	15	25	29714.550	$12485^{\circ}_{7/2} - 42200_{9/2}$	3347.576	15	15	29863.776	$17460^{\circ}_{5/2} - 47324_{5/2}$
3363.733	50	10	29720.336	$0_{3/2} - 29720^{\circ}_{3/2}$	3347.478	3		29864.651	$12472^{\circ}_{5/2} - 42336_{5/2}$
3363.682	200	100	29720.787	$13406^{\circ}_{13/2} - 43127_{11/2}$	3346.746	8	10	29871.182	$18973^{\circ}_{7/2} - 48844_{9/2}$
3363.066	100	100	29726.231	$8378^{\circ}_{7/2} - 38105_{5/2}$	3346.555	150	150	29872.887	$9585^{\circ}_{5/2} - 39458_{7/2}$
3362.674	100	50	29729.696	$4113_{5/2} - 33843^{\circ}_{3/2}$	3345.384	5	8	29883.343	$15242^{\circ}_{9/2} - 45126_{9/2}$
3362.521	50b	100	29731.049	$9711_{7/2} - 39443^{\circ}_{9/2}$	3345.060	5h	8	29886.238	$17983^{\circ}_{5/2} - 47869_{3/2}$
3362.427	15b	5	29731.880	$23187^{\circ}_{13/2} - 52918_{13/2}$	3344.872	50b	50	29887.917	$8605_{5/2} - 38493^{\circ}_{5/2}$
3362.184	75	200	29734.029	$12488^{\circ}_{9/2} - 42222_{7/2}$	3344.670	1	3	29889.722	$25607^{\circ}_{9/2} - 55496_{9/2}$
3361.890	10	40	29736.628	$15453^{\circ}_{7/2} - 45189_{5/2}$	3343.813	75s	20	29897.383	$6168^{\circ}_{7/2} - 36065_{5/2}$
				$12485^{\circ}_{7/2} - 42222_{7/2}$	3343.617	100	150	29899.135	$17272^{\circ}_{9/2} - 47171_{9/2}$
3361.734	150	150	29738.008	$9720^{\circ}_{7/2} - 39458_{7/2}$	3343.545	3	5b	29899.779	$15710^{\circ}_{3/2} - 45610_{5/2}$
3361.617	100	200	29739.043	$17727_{11/2} - 47466^{\circ}_{11/2}$	3343.258	25b	50b	29902.346	$15786_{5/2} - 45689^{\circ}_{7/2}$
3360.937	3b		29745.060	$15144^{\circ}_{3/2} - 44889_{3/2}$	3342.069	200	10	29912.984	$8378^{\circ}_{7/2} - 38291_{7/2}$
3360.371	150	100	29750.070	$10189^{\circ}_{11/2} - 39939_{11/2}$	3340.097	2		29930.644	$11116^{\circ}_{7/2} - 41047_{9/2}$
3360.156	100	50	29751.974	$11576^{\circ}_{3/2} - 41328_{5/2}$	3338.828	10	40	29942.019	$15453^{\circ}_{7/2} - 45395_{7/2}$
3360.043	3		29752.974	$20120^{\circ}_{5/2} - 49873_{5/2}$	3338.396	150	200	29945.894	$7331^{\circ}_{5/2} - 37277_{7/2}$
3359.755	20	40	29755.524	$4146_{7/2} - 33902^{\circ}_{7/2}$	3337.870	800	150	29950.613	$1859_{3/2} - 31810^{\circ}_{5/2}$
3359.059	15	25	29761.690	$14790^{\circ}_{7/2} - 44552_{5/2}$	3337.780	10	10	29951.420	$11725^{\circ}_{1/2} - 41676_{3/2}$
3358.602	500	300	29765.739	$1859_{3/2} - 31625^{\circ}_{1/2}$	3337.684	2b		29952.282	$22355^{\circ}_{1/2} - 52307_{3/2}$
3358.446	10	15	29767.122	$16033^{\circ}_{5/2} - 45800_{5/2}$	3337.478	5	50	29954.130	$13818^{\circ}_{7/2} - 43772_{5/2}$
				$19050^{\circ}_{3/2} - 48817_{3/2}$	3337.159	50	20	29956.994	$6168^{\circ}_{7/2} - 36125_{9/2}$
3357.765	8	10	29773.159	$7828_{1/2} - 37601^{\circ}_{3/2}$	3337.019	1		29958.250	$14545^{\circ}_{5/2} - 44503_{7/2}$
3357.403	15	40	29776.369	$15349^{\circ}_{11/2} - 45126_{9/2}$	3336.775	8	25	29960.441	$17771^{\circ}_{11/2} - 47731_{9/2}$
3357.233	50b	50	29777.877	$13468^{\circ}_{9/2} - 43246_{7/2}$	3336.161	50	40	29965.955	$14484^{\circ}_{11/2} - 44450_{9/2}$
3357.056	25	40	29779.447	$7828_{1/2} - 37607^{\circ}_{1/2}$	3335.576	2	2	29971.210	$10673^{\circ}_{5/2} - 40644_{5/2}$
3356.888	10	40	29780.937	$17121^{\circ}_{3/2} - 46902_{5/2}$	3335.064	100b	100	29975.811	$8460_{3/2} - 38436^{\circ}_{3/2}$
3356.821	75	75	29781.531	$9585^{\circ}_{5/2} - 39366_{5/2}$					$8605_{5/2} - 38581^{\circ}_{5/2}$
3356.262	8		29786.491	$8378^{\circ}_{7/2} - 38165_{7/2}$	3334.879	4	20	29977.474	$20686^{\circ}_{5/2} - 50663_{5/2}$
3356.005	4		29788.772	$4113_{5/2} - 33902^{\circ}_{7/2}$	3334.603	600l	300	29979.955	$6213_{9/2} - 36193^{\circ}_{9/2}$
3355.970	10	10	29789.083	$4490^{\circ}_{5/2} - 34279_{7/2}$	3334.053	10	25	29984.900	$15236_{3/2} - 45221^{\circ}_{5/2}$
3355.567	50	200	29792.661	$25246_{9/2} - 55038^{\circ}_{9/2}$	3333.969	8	10	29985.656	$13818^{\circ}_{7/2} - 43803_{7/2}$
3355.256	100	100	29795.422	$10572^{\circ}_{9/2} - 40367_{9/2}$	3333.383	15	15	29990.927	$13818^{\circ}_{7/2} - 43809_{9/2}$
3354.836	5	5	29799.152	$10855_{7/2} - 40654^{\circ}_{5/2}$	3332.532	5	3b	29998.585	$10572^{\circ}_{9/2} - 40570_{7/2}$
3354.780	8	10	29799.649	$16906^{\circ}_{7/2} - 46706_{7/2}$	3332.460	3b	8	29999.234	$21682^{\circ}_{7/2} - 51681_{9/2}$
3354.616	150	100	29801.106	$8378^{\circ}_{7/2} - 38179_{9/2}$	3332.399	75	50	29999.783	$12219_{3/2} - 42219^{\circ}_{5/2}$
3354.180	500	200	29804.980	$10379_{9/2} - 40184^{\circ}_{7/2}$	3332.074	20	5	30002.709	$10572^{\circ}_{9/2} - 40574_{11/2}$
3353.948	100	100	29807.041	$11116^{\circ}_{7/2} - 40923_{5/2}$	3331.429	2	1	30008.517	$17722^{\circ}_{9/2} - 47731_{9/2}$
3353.160	4b		29814.046	$17121^{\circ}_{3/2} - 46935_{3/2}$	3331.207	15	15	30010.517	$8378^{\circ}_{7/2} - 38389_{7/2}$
3353.141	25b	50b	29814.215	$16564^{\circ}_{11/2} - 46378_{13/2}$	3330.379	0	2	30017.978	$19050^{\circ}_{3/2} - 49068_{5/2}$
3352.415	5	2	29820.671	$14275^{\circ}_{9/2} - 44096_{9/2}$	3329.380	3	15	30026.985	$17121^{\circ}_{3/2} - 47148_{3/2}$
3351.594	20s	25	29827.976	$8018_{3/2} - 37846^{\circ}_{5/2}$	3328.976	20	20	30030.629	$12488^{\circ}_{9/2} - 42518_{7/2}$
3351.288	50	25	29830.699	$9238^{\circ}_{9/2} - 39068_{7/2}$	3328.845	2	3	30031.811	$17837^{\circ}_{1/2} - 47869_{3/2}$
3351.228	800b	200b	29831.233	$1521_{5/2} - 31353^{\circ}_{3/2}$	3328.688	1b		30033.227	$12485^{\circ}_{7/2} - 42518_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3328.668	5	8	30033.407	$8460_{3/2} - 38493^{\circ}_{5/2}$	3303.481	100	100	30262.386	$14545^{\circ}_{5/2} - 44807_{7/2}$
3328.255	100	75	30037.134	$13250_{5/2} - 43287^{\circ}_{5/2}$	3303.410	5	5	30263.036	$12488^{\circ}_{9/2} - 42751_{7/2}$
3327.392	4	5	30044.924	$15144^{\circ}_{3/2} - 45189_{5/2}$	3303.126	3	4	30265.638	$12485^{\circ}_{7/2} - 42751_{7/2}$
3327.041	2		30048.094	$24873^{\circ}_{5/2} - 54922_{3/2}$	3301.823	2		30277.582	$18214^{\circ}_{3/2} - 48492_{5/2}$
3326.913	5	15	30049.250	$22513^{\circ}_{5/2} - 52562_{7/2}$	3301.785	10	50	30277.930	$13818^{\circ}_{7/2} - 44096_{9/2}$
3326.670	1	5	30051.445	$15786_{5/2} - 45838^{\circ}_{3/2}$	3301.743	15	20	30278.315	$1521_{5/2} - 31800^{\circ}_{7/2}$
3326.465	150	40	30053.297	$4490^{\circ}_{5/2} - 34543_{5/2}$					$20989^{\circ}_{9/2} - 51268_{7/2}$
3325.120	1000	500	30065.453	$4146_{7/2} - 34212^{\circ}_{5/2}$	3301.651	1500r	150	30279.159	$12472^{\circ}_{5/2} - 42751_{7/2}$
3324.752	800	400	30068.780	$1859_{3/2} - 31928^{\circ}_{3/2}$	3301.349	300	300	30281.929	$11116^{\circ}_{7/2} - 41398_{9/2}$
3323.583	2	5	30079.356	$24414^{\circ}_{3/2} - 54493_{5/2}$	3301.264	100	100	30282.708	$11725^{\circ}_{1/2} - 42008_{1/2}$
3322.470	10	15	30089.432	$15710^{\circ}_{3/2} - 45800_{5/2}$	3300.616	100b	5b	30288.653	$1521_{5/2} - 31810^{\circ}_{5/2}$
3321.707	4	5	30096.344	$20310^{\circ}_{5/2} - 50407_{7/2}$	3299.707	2		30296.997	$16564^{\circ}_{11/2} - 46861_{11/2}$
3321.451	800	800	30098.663	$4113_{5/2} - 34212^{\circ}_{5/2}$	3299.670	50	200	30297.337	$26647^{\circ}_{13/2} - 56945_{11/2}$
3321.254	10	15	30100.448	$11576^{\circ}_{3/2} - 41676_{3/2}$	3299.478	1		30299.100	$20969^{\circ}_{7/2} - 51268_{7/2}$
3320.301	600	500	30109.088	$6700^{\circ}_{9/2} - 36809_{7/2}$	3298.542	1		30307.697	$18816^{\circ}_{13/2} - 49124_{11/2}$
3319.629	25	100	30115.183	$9585^{\circ}_{5/2} - 39700_{5/2}$	3298.019	8	10	30312.503	$23697^{\circ}_{7/2} - 54010_{7/2}$
3318.984	75	200	30121.035	$6691^{\circ}_{3/2} - 36812_{1/2}$	3297.833	200	500	30314.213	$9238^{\circ}_{9/2} - 39552_{9/2}$
3318.958	50	50	30121.271	$8460_{3/2} - 38581^{\circ}_{5/2}$	3297.735	3h	3	30315.114	$17983^{\circ}_{5/2} - 48298_{7/2}$
3318.915	4	10b	30121.661	$18568^{\circ}_{1/2} - 48689_{3/2}$	3297.374	150	300	30318.432	$10673^{\circ}_{5/2} - 40991_{3/2}$
3318.118	5h	8	30128.896	$19248^{\circ}_{5/2} - 49377_{7/2}$	3297.305	5	8	30319.067	$16033^{\circ}_{5/2} - 46352_{7/2}$
3318.018	2l	1	30129.804	$26762_{3/2} - 56892^{\circ}_{5/2}$	3296.607	150	200	30325.486	$12902^{\circ}_{3/2} - 43227_{5/2}$
3317.746	75	200	30132.274	$13250_{5/2} - 43382^{\circ}_{5/2}$	3296.485	5	10	30326.609	$20080^{\circ}_{7/2} - 50407_{7/2}$
3317.560	50	100	30133.963	$7331^{\circ}_{5/2} - 37465_{5/2}$	3296.445	4	8	30326.976	$23518^{\circ}_{7/2} - 53845_{5/2}$
3316.215	100	40	30146.185	$6244_{1/2} - 36390^{\circ}_{3/2}$	3295.571	10b	20	30335.019	$13468^{\circ}_{9/2} - 43803_{7/2}$
3316.042	3	5	30147.757	$23697^{\circ}_{7/2} - 53845_{5/2}$	3295.523	75l	100l	30335.461	$9061_{5/2} - 39396^{\circ}_{7/2}$
3315.971	4	10	30148.403	$17722^{\circ}_{9/2} - 47871_{7/2}$	3295.325	200b	500	30337.283	$6244_{1/2} - 36581^{\circ}_{3/2}$
3315.832	25	20	30149.667	$9711_{7/2} - 39861^{\circ}_{5/2}$	3294.998	100	300	30340.294	$13468^{\circ}_{9/2} - 43809_{9/2}$
3315.560	10	50	30152.140	$15242^{\circ}_{9/2} - 45395_{7/2}$	3294.753	40	100	30342.550	$20288^{\circ}_{11/2} - 50631_{11/2}$
3315.210	5	10	30155.323	$22014^{\circ}_{11/2} - 52170_{11/2}$	3294.568	75	50	30344.254	$14545^{\circ}_{5/2} - 44889_{3/2}$
3314.827	300b	300	30158.807	$8605_{5/2} - 38764^{\circ}_{7/2}$	3294.362	4	8	30346.151	$16564^{\circ}_{11/2} - 46910_{13/2}$
3314.541	3		30161.410	$15144^{\circ}_{3/2} - 45306_{3/2}$	3294.244	100	200	30347.238	$15453^{\circ}_{7/2} - 45800_{5/2}$
3314.187	2h	1	3Q164.631	$9202^{\circ}_{7/2} - 39366_{5/2}$	3293.948	500	500	30349.965	$9202^{\circ}_{7/2} - 39552_{9/2}$
3313.996	10h	50	30166.369	$19248^{\circ}_{5/2} - 49414_{3/2}$	3293.698	100	200	30352.269	$16033^{\circ}_{5/2} - 46385_{7/2}$
3313.036	8	5b	30175.110	$9720^{\circ}_{7/2} - 39895_{9/2}$	3293.654	3		30352.674	$20310^{\circ}_{5/2} - 50663_{5/2}$
3312.680	20	15	30178.353	$10189^{\circ}_{11/2} - 40367_{9/2}$	3293.595	100	300	30353.218	$14545^{\circ}_{5/2} - 44898_{7/2}$
3312.076	20	150	30183.856	$15305_{9/2} - 45489^{\circ}_{9/2}$	3292.844	5	4	30360.140	$11576^{\circ}_{3/2} - 41936_{3/2}$
3310.946	5	8	30194.157	$12902^{\circ}_{3/2} - 43096_{5/2}$	3292.551	50b	5w	30362.842	$16033^{\circ}_{5/2} - 46395_{3/2}$
3310.497	75	100	30198.252	$12219_{3/2} - 42418^{\circ}_{3/2}$	3292.520	1000b	1000b	30363.128	$6700^{\circ}_{9/2} - 37063_{9/2}$
3310.249	150b	200	30200.515	$6244_{1/2} - 36444^{\circ}_{3/2}$	3291.932	15	40	30368.551	$15786_{5/2} - 46155^{\circ}_{5/2}$
3310.001	4	8	30202.777	$17121^{\circ}_{3/2} - 47324_{5/2}$	3291.739	1000	800	30370.331	$6213_{9/2} - 36583^{\circ}_{7/2}$
3309.135	150	200	30210.681	$7331^{\circ}_{5/2} - 37542_{3/2}$	3291.606	50	15	30371.559	$11116^{\circ}_{7/2} - 41488_{7/2}$
3309.016	8	15	30211.768	$11116^{\circ}_{7/2} - 41328_{5/2}$	3291.343	8	100	30373.986	$12570_{7/2} - 42944^{\circ}_{7/2}$
3308.085	10b	40	30220.270	$9238^{\circ}_{9/2} - 39458_{7/2}$	3290.633	2		30380.539	$22355^{\circ}_{1/2} - 52735_{3/2}$
3307.215	3h	8	30228.219	$14275^{\circ}_{9/2} - 44503_{7/2}$	3290.250	15	15	30384.075	$15305_{9/2} - 45689^{\circ}_{7/2}$
3306.389	1b	40	30235.771	$17771^{\circ}_{11/2} - 48006_{9/2}$	3290.126	150	40	30385.220	$15349^{\circ}_{11/2} - 45735_{11/2}$
3306.054	10	20	30238.835	$8378^{\circ}_{7/2} - 38617_{9/2}$	3289.675	0	2	30389.386	$20080^{\circ}_{7/2} - 50470_{9/2}$
3305.607	8	20	30242.923	$14484^{\circ}_{11/2} - 44727_{11/2}$	3288.159	50	400	30403.396	$18973^{\circ}_{7/2} - 49377_{7/2}$
3304.780	3	4	30250.491	$10673^{\circ}_{5/2} - 40923_{5/2}$	3287.789	800	1000	30406.818	$1521_{5/2} - 31928^{\circ}_{3/2}$
3304.512	4	10	30252.945	$21682^{\circ}_{7/2} - 51935_{5/2}$	3287.363	4		30410.758	$17460^{\circ}_{5/2} - 47871_{7/2}$
3304.176	50b	25	30256.021	$9202^{\circ}_{7/2} - 39458_{7/2}$	3287.083	50	50	30413.348	$18118_{3/2} - 48532^{\circ}_{1/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3286.583	400	500	30417.975	$8018_{3/2} - 38436^{\circ}_{3/2}$	3263.626	15	150	30631.934	$13818^{\circ}_{7/2} - 44450_{9/2}$
3284.776	3		30434.708	$19050^{\circ}_{3/2} - 49485_{1/2}$	3263.111	4		30636.768	$15786_{5/2} - 46423^{\circ}_{3/2}$
3284.310	2		30439.026	$23730^{\circ}_{9/2} - 54169_{7/2}$	3263.032	100	200	30637.510	$9585^{\circ}_{5/2} - 40222_{3/2}$
3282.979	100	500	30451.366	$15453^{\circ}_{7/2} - 45904_{9/2}$	3262.952	8	15	30638.261	$21297^{\circ}_{5/2} - 51935_{5/2}$
3282.948	5		30451.654	$14275^{\circ}_{9/2} - 44727_{11/2}$	3262.882	5	5	30638.918	$12488^{\circ}_{9/2} - 43127_{11/2}$
3282.231	2	50	30458.306	$24463^{\circ}_{5/2} - 54922_{3/2}$	3262.669	800	800	30640.918	$6168^{\circ}_{7/2} - 36809_{7/2}$
3282.130	15	50	30459.243	$17272^{\circ}_{9/2} - 47731_{9/2}$	3262.564	15	50	30641.905	$14484^{\circ}_{11/2} - 45126_{9/2}$
3281.976	25		30460.672	$9400_{5/2} - 39861^{\circ}_{5/2}$	3262.005	2	5	30647.155	$9720^{\circ}_{7/2} - 40367_{9/2}$
3281.604	2		30464.125	$28923^{\circ}_{5/2} - 59387_{7/2}$	3261.541	100	200	30651.515	$10572^{\circ}_{9/2} - 41223_{11/2}$
3281.414	100b		30465.889	$15144^{\circ}_{3/2} - 45610_{5/2}$	3261.148	4	20	30655.209	$10673^{\circ}_{5/2} - 41328_{5/2}$
3281.234	5		30467.560	$12488^{\circ}_{9/2} - 42955_{9/2}$	3261.114	10	100	30655.528	$15144^{\circ}_{3/2} - 45800_{5/2}$
3281.000	3		30469.733	$17983^{\circ}_{5/2} - 48453_{7/2}$	3260.941	20b		30657.155	$24381_{7/2} - 55038^{\circ}_{9/2}$
3280.954	10	25	30470.160	$12485^{\circ}_{7/2} - 42955_{9/2}$	3260.915	50b	200b	30657.399	$9238^{\circ}_{9/2} - 39895_{9/2}$
3280.740	25	40	30472.148	$9711_{7/2} - 40184^{\circ}_{7/2}$	3260.478	4		30661.508	$15242^{\circ}_{9/2} - 45904_{9/2}$
3280.415	50b	75	30475.166	$10572^{\circ}_{9/2} - 41047_{9/2}$	3259.616	100	200	30669.616	$11576^{\circ}_{3/2} - 42246_{1/2}$
3280.372	150	500	30475.566	$8018_{3/2} - 38493^{\circ}_{5/2}$	3259.245	50b	50	30673.107	$16033^{\circ}_{5/2} - 46706_{7/2}$
3279.357	10	25	30484.998	$8378^{\circ}_{7/2} - 38863_{5/2}$	3257.934	100	200	30685.450	$13818^{\circ}_{7/2} - 44503_{7/2}$
3278.767	150	75	30490.484	$7331^{\circ}_{5/2} - 37821_{3/2}$	3257.718	4	5	30687.484	$14101^{\circ}_{1/2} - 44789_{1/2}$
3278.630	3		30491.758	$23518^{\circ}_{7/2} - 54010_{7/2}$	3257.162	300	400	30692.722	$9585^{\circ}_{5/2} - 40278_{3/2}$
3278.193	10	25	30495.822	$9720^{\circ}_{7/2} - 40216_{5/2}$	3256.274	800	800	30701.092	$9238^{\circ}_{9/2} - 39939_{11/2}$
3277.925	20	25	30498.316	$9202^{\circ}_{7/2} - 39700_{5/2}$	3255.691	3		30706.589	$17983^{\circ}_{5/2} - 48689_{3/2}$
3276.941	8		30507.473	$24414^{\circ}_{3/2} - 54922_{3/2}$	3255.509	200	200	30708.306	$13468^{\circ}_{9/2} - 44177_{11/2}$
3276.814	3h		30508.656	$17983^{\circ}_{5/2} - 48492_{5/2}$	3255.283	8	400	30710.438	$18816^{\circ}_{13/2} - 49527_{13/2}$
3275.365	1		30522.152	$21131^{\circ}_{3/2} - 51653_{1/2}$	3255.014	3		30712.976	$20969^{\circ}_{7/2} - 51681_{9/2}$
3275.261	25	40	30523.121	$13250_{5/2} - 43773^{\circ}_{7/2}$	3254.810	150	200	30714.901	$7001_{3/2} - 37716^{\circ}_{1/2}$
3275.068	300b	800	30524.920	$13248_{9/2} - 43773^{\circ}_{7/2}$	3254.398	3		30718.789	$19912^{\circ}_{13/2} - 50631_{11/2}$
3274.404	50	25	30531.110	$4490^{\circ}_{5/2} - 35021_{3/2}$	3252.750	15	75	30734.352	$13818^{\circ}_{7/2} - 44552_{5/2}$
3274.266	4		30532.396	$14275^{\circ}_{9/2} - 44807_{7/2}$	3252.721	15	100	30734.626	$17272^{\circ}_{9/2} - 48006_{9/2}$
3274.192	4		30533.086	$21297^{\circ}_{5/2} - 51830_{7/2}$	3251.308	5	20	30747.983	$17121^{\circ}_{3/2} - 47869_{3/2}$
3273.916	400	800	30535.660	$10189^{\circ}_{11/2} - 40724_{13/2}$	3250.494	2		30755.683	$12472^{\circ}_{5/2} - 43227_{5/2}$
3272.995	2		30544.252	$21131^{\circ}_{3/2} - 51676_{3/2}$	3250.191	10	50	30758.550	$12488^{\circ}_{9/2} - 43246_{7/2}$
3272.577	8	100	30548.154	$16033^{\circ}_{5/2} - 46581_{5/2}$	3249.973	10b	40	30760.613	$14545^{\circ}_{5/2} - 45306_{3/2}$
3271.121	20	150	30561.750	$29431_{7/2} - 59993^{\circ}_{9/2}$	3249.916	75b	100	30761.152	$12485^{\circ}_{7/2} - 43246_{7/2}$
3270.940	5		30563.441	$8018_{3/2} - 38581^{\circ}_{5/2}$	3248.893	100b	200	30770.838	$13406^{\circ}_{13/2} - 44177_{11/2}$
3270.818	150	100	30564.582	$0_{3/2} - 30564^{\circ}_{1/2}$	3248.602	40	40	30773.594	$7331^{\circ}_{5/2} - 38105_{5/2}$
3270.234	15	100	30570.039	$16033^{\circ}_{5/2} - 46603_{5/2}$	3248.490	75	100	30774.655	$12472^{\circ}_{5/2} - 43246_{7/2}$
3270.193	3	8	30570.423	$13818^{\circ}_{7/2} - 44388_{5/2}$	3248.376	50	100	30775.735	$11576^{\circ}_{3/2} - 42352_{5/2}$
3270.041	1		30571.844	$11116^{\circ}_{7/2} - 41688_{7/2}$	3247.594	150	300	30783.146	$9400_{5/2} - 40184^{\circ}_{7/2}$
3269.470	100	100	30577.183	$6700^{\circ}_{9/2} - 37277_{7/2}$	3247.081	4		30788.009	$14101^{\circ}_{1/2} - 44889_{3/2}$
3268.855	5		30582.935	$20080^{\circ}_{7/2} - 50663_{5/2}$	3246.795	15b	25	30790.720	$8605_{5/2} - 39396^{\circ}_{7/2}$
3268.146	2		30589.570	$21682^{\circ}_{7/2} - 52272_{7/2}$	3246.581	20	50	30792.750	$11116^{\circ}_{7/2} - 41909_{9/2}$
3267.368	1		30596.853	$20310^{\circ}_{5/2} - 50907_{3/2}$	3246.558	1b		30792.968	$28823_{5/2} - 59616^{\circ}_{3/2}$
3267.003	200	300	30600.272	$7001_{3/2} - 37601^{\circ}_{3/2}$	3246.345	5		30794.989	$25440^{\circ}_{5/2} - 56235_{3/2}$
3266.601	5		30604.037	$14790^{\circ}_{7/2} - 45395_{7/2}$	3245.761	200b	1000	30800.529	$9061_{5/2} - 39861^{\circ}_{5/2}$
3266.330	5b		30606.576	$7001_{3/2} - 37607^{\circ}_{1/2}$	3244.522	15		30812.291	$12570_{7/2} - 43382^{\circ}_{5/2}$
3266.313	40b	100	30606.736	$16564^{\circ}_{11/2} - 47171_{9/2}$	3244.236	10	25	30815.007	$10673^{\circ}_{5/2} - 41488_{7/2}$
3265.578	150l	200	30613.624	$7331^{\circ}_{5/2} - 37945_{5/2}$	3243.748	5	50	30819.643	$14790^{\circ}_{7/2} - 45610_{5/2}$
3264.434	100	500	30624.352	$12472^{\circ}_{5/2} - 43096_{5/2}$	3243.469	1		30822.294	$19050^{\circ}_{3/2} - 49873_{5/2}$
3264.121	100	200	30627.289	$13468^{\circ}_{9/2} - 44096_{9/2}$	3243.195	2		30824.898	$16906^{\circ}_{7/2} - 47731_{9/2}$
3263.756	40	40	30630.714	$9585^{\circ}_{5/2} - 40216_{5/2}$	3243.070	10	25	30826.086	$9585^{\circ}_{5/2} - 40411_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3243.029	50	25	30826.475	$10572^{\circ}_{9/2} - 41398_{9/2}$	3224.488	3	3	31003.723	$10673^{\circ}_{5/2} - 41676_{3/2}$
3242.251	75l	800	30833.872	$7331^{\circ}_{5/2} - 38165_{7/2}$	3223.911	5	20	31009.272	$14790^{\circ}_{7/2} - 45800_{5/2}$
3242.176	4		30834.585	$17983^{\circ}_{5/2} - 48817_{3/2}$	3223.800	25	20	31010.340	$4146_{7/2} - 35156^{\circ}_{5/2}$
3241.830	4		30837.876	$17460^{\circ}_{5/2} - 48298_{7/2}$	3223.435	4	5	31013.851	$9202^{\circ}_{7/2} - 40216_{5/2}$
3241.612	5	25	30839.950	$25246_{9/2} - 56086^{\circ}_{9/2}$	3223.285	20	15	31015.294	$10673^{\circ}_{5/2} - 41688_{7/2}$
3241.533	15l	200	30840.702	$20989^{\circ}_{9/2} - 51830_{7/2}$	3221.864	20	150	31028.973	$15349^{\circ}_{11/2} - 46378_{13/2}$
3241.484	5	3	30841.168	$17771^{\circ}_{11/2} - 48612_{13/2}$	3221.291	400b	40	31034.492	$10189^{\circ}_{11/2} - 41223_{11/2}$
3241.108	400	500	30844.746	$7001_{3/2} - 37846^{\circ}_{5/2}$	3220.351	200	300	31043.550	$4113_{5/2} - 35156^{\circ}_{5/2}$
3240.521	15	75	30850.333	$9720^{\circ}_{7/2} - 40570_{7/2}$	3218.866	75	150	31057.872	$7331^{\circ}_{5/2} - 38389_{7/2}$
3240.475	100	150	30850.771	$6691^{\circ}_{3/2} - 37542_{3/2}$	3218.755	100	40	31058.943	$9585^{\circ}_{5/2} - 40644_{5/2}$
3240.330	8	75	30852.151	$17837^{\circ}_{1/2} - 48689_{3/2}$	3218.340	4		31062.948	$15305_{9/2} - 46368^{\circ}_{9/2}$
3240.090	8	3	30854.436	$18214^{\circ}_{3/2} - 49068_{5/2}$	3218.309	10	40	31063.247	$12902^{\circ}_{3/2} - 43965_{1/2}$
3239.700	4		30858.150	$10189^{\circ}_{11/2} - 41047_{9/2}$	3218.123	5	15	31065.042	$14545^{\circ}_{5/2} - 45610_{5/2}$
3239.288	100	200	30862.075	$6700^{\circ}_{9/2} - 37562_{11/2}$	3217.853	40	100	31067.649	$12219_{3/2} - 43287^{\circ}_{3/2}$
3238.802	10	75	30866.706	$15349^{\circ}_{11/2} - 46216_{11/2}$	3217.730	75	150	31068.836	$10379_{9/2} - 41447^{\circ}_{11/2}$
3238.445	4	5	30870.109	$12902^{\circ}_{3/2} - 43772_{5/2}$	3217.456	100b	300	31071.482	$9400_{5/2} - 40472^{\circ}_{3/2}$
3238.408	5	4	30870.461	$15710^{\circ}_{3/2} - 46581_{5/2}$	3217.432	15b		31071.714	$15324^{\circ}_{1/2} - 46395_{3/2}$
3238.116	1000	800	30873.245	$4113_{5/2} - 34986^{\circ}_{3/2}$	3216.634	20		31079.422	$8378^{\circ}_{7/2} - 39458_{7/2}$
3237.534	2b		30878.795	$22642^{\circ}_{9/2} - 53520_{9/2}$	3216.530	8		31080.427	$13818^{\circ}_{7/2} - 44898_{7/2}$
3236.773	8	100	30886.054	$6244_{1/2} - 37130^{\circ}_{1/2}$	3216.013	5	10	31085.423	$17983^{\circ}_{5/2} - 49068_{5/2}$
3236.261	8		30890.941	$22028^{\circ}_{15/2} - 52918_{13/2}$	3215.778	100	100	31087.694	$6700^{\circ}_{9/2} - 37787_{7/2}$
3236.113	5	5	30892.353	$15710^{\circ}_{3/2} - 46603_{5/2}$	3214.478	2		31100.267	$16906^{\circ}_{7/2} - 48006_{9/2}$
3235.841	800r	500	30894.950	$6168^{\circ}_{7/2} - 37063_{9/2}$	3213.574	200	300	31109.015	$6168^{\circ}_{7/2} - 37277_{7/2}$
3235.397	5b	50	30899.190	$15453^{\circ}_{7/2} - 46352_{7/2}$	3212.812	10	15b	31116.393	$10572^{\circ}_{9/2} - 41688_{7/2}$
3235.381	2b		30899.342	$18973^{\circ}_{7/2} - 49873_{5/2}$	3212.494	3		31119.473	$14275^{\circ}_{9/2} - 45395_{7/2}$
3234.888	10	100	30904.051	$22014^{\circ}_{11/2} - 52918_{13/2}$	3212.241	2		31121.924	$17722^{\circ}_{9/2} - 48844_{9/2}$
3234.771	2		30905.169	$12902^{\circ}_{3/2} - 43807_{3/2}$	3212.131	20	75	31122.990	$9061_{5/2} - 40184^{\circ}_{7/2}$
3233.626	10	25	30916.112	$10572^{\circ}_{9/2} - 41488_{7/2}$	3211.467	8	50	31129.424	$9238^{\circ}_{9/2} - 40367_{9/2}$
3233.506	3		30917.259	$18568^{\circ}_{1/2} - 49485_{1/2}$	3210.309	300	300	31140.653	$6700^{\circ}_{9/2} - 37840_{9/2}$
3233.334	20	50	30918.904	$15236_{3/2} - 46155^{\circ}_{5/2}$	3209.332	10	50	31150.132	$15453^{\circ}_{7/2} - 46603_{5/2}$
3232.797	50l	100	30924.040	$9720^{\circ}_{7/2} - 40644_{5/2}$	3208.418	2		31159.006	$19248^{\circ}_{5/2} - 50407_{7/2}$
3231.925	5		30932.383	$15453^{\circ}_{7/2} - 46385_{7/2}$	3208.026	100	150	31162.813	$12219_{3/2} - 43382^{\circ}_{5/2}$
3231.579	2		30935.695	$20288^{\circ}_{11/2} - 51224_{9/2}$	3207.784	100	200	31165.164	$9202^{\circ}_{7/2} - 40367_{9/2}$
3230.867	500	400	30942.512	$9711_{7/2} - 40654^{\circ}_{5/2}$	3207.202	5	15	31170.819	$18118_{3/2} - 49289^{\circ}_{5/2}$
3229.336	4		30957.181	$20310^{\circ}_{5/2} - 51268_{7/2}$	3206.933	75b	100	31173.434	$9238^{\circ}_{9/2} - 4041\text{i}_{7/2}$
3229.010	1000	1000	30960.306	$7331^{\circ}_{5/2} - 38291_{7/2}$					$8378^{\circ}_{7/2} - 39552_{9/2}$
3228.542	5		30964.794	$16906^{\circ}_{7/2} - 47871_{7/2}$	3206.218	8	20	31180.386	$20989^{\circ}_{9/2} - 52170_{11/2}$
3228.342	5	15	30966.712	$20969^{\circ}_{7/2} - 51935_{5/2}$	3206.170	10	50	31180.852	$17272^{\circ}_{9/2} - 48453_{7/2}$
3227.774	150b	100b	30972.161	$0_{3/2} - 30972^{\circ}_{5/2}$	3205.480	5	50	31187.564	$24309^{\circ}_{11/2} - 55496_{9/2}$
3227.488	2b		30974.906	$21297^{\circ}_{5/2} - 52272_{7/2}$	3205.290	25	150	31189.412	$15236_{3/2} - 46426^{\circ}_{1/2}$
3227.419	2		30975.568	$23518^{\circ}_{7/2} - 54493_{5/2}$	3205.056	5		31191.690	$15710^{\circ}_{3/2} - 46902_{5/2}$
3227.008	100	200	30979.513	$6700^{\circ}_{9/2} - 37679_{11/2}$	3204.180	10	50	31200.217	$18214^{\circ}_{3/2} - 49414_{3/2}$
3226.940	3		30980.166	$17837^{\circ}_{1/2} - 48817_{3/2}$	3203.881	50	200	31203.128	$12570_{7/2} - 43773^{\circ}_{7/2}$
3226.817	1		30981.347	$13468^{\circ}_{9/2} - 44450_{9/2}$	3203.755	1		31204.356	$14101^{\circ}_{1/2} - 45306_{3/2}$
3226.413	100	200	30985.226	$9585^{\circ}_{5/2} - 40570_{7/2}$	3203.616	10	150	31205.710	$15349^{\circ}_{11/2} - 46555_{11/2}$
3226.119	100	200	30988.050	$8378^{\circ}_{7/2} - 39366_{5/2}$	3203.255	8b	20b	31209.226	$9202^{\circ}_{7/2} - 40411_{7/2}$
3225.957	3		30989.606	$13818^{\circ}_{7/2} - 44807_{7/2}$	3203.233	20b	100b	31209.441	$10189^{\circ}_{11/2} - 41398_{9/2}$
3225.902	50	50	30990.134	$1859_{3/2} - 32850^{\circ}_{5/2}$	3202.125	10	15	31220.239	$11116^{\circ}_{7/2} - 42336_{5/2}$
3225.657	75	100	30992.488	$17460^{\circ}_{5/2} - 48453_{7/2}$	3201.655	2b		31224.822	$15710^{\circ}_{3/2} - 46935_{3/2}$
3225.412	400	400	30994.842	$9711_{7/2} - 40706^{\circ}_{7/2}$	3201.194	8	20	31229.319	$17460^{\circ}_{5/2} - 48689_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3200.556	10	25	31235.544	$11116^{\circ}_{7/2} - 42352_{5/2}$	3181.758	8	50	31420.078	$14484^{\circ}_{11/2} - 45904_{9/2}$
3199.123	2		31249.535	$20686^{\circ}_{5/2} - 51935_{5/2}$	3181.189	200	300	31425.698	$7331^{\circ}_{5/2} - 38757_{3/2}$
3198.969	75s		31251.039	$4490^{\circ}_{5/2} - 35741_{5/2}$	3180.773	3	8	31429.808	$13468^{\circ}_{9/2} - 44898_{7/2}$
3198.694	50b		31253.726	$6691^{\circ}_{3/2} - 37945_{5/2}$	3180.194	1000r	1500	31435.530	$1521_{5/2} - 32957^{\circ}_{7/2}$
3198.596	4	4	31254.683	$14545^{\circ}_{5/2} - 45800_{5/2}$	3179.969	40	100	31437.754	$15710^{\circ}_{3/2} - 47148_{3/2}$
3198.482	100	100	31255.797	$8605_{5/2} - 39861^{\circ}_{5/2}$	3179.531	2	5	31442.085	$9202^{\circ}_{7/2} - 40644_{5/2}$
3198.229	100	200	31258.270	$13468^{\circ}_{9/2} - 44727_{11/2}$	3179.048	500s	500	31446.862	$4146_{7/2} - 35593^{\circ}_{9/2}$
3197.704	8	2	31263.401	$10673^{\circ}_{5/2} - 41936_{3/2}$	3178.781	20	200	31449.503	$15453^{\circ}_{7/2} - 46902_{5/2}$
3197.530	3		31265.103	$21297^{\circ}_{5/2} - 52562_{7/2}$	3177.876	20	100	31458.459	$15144^{\circ}_{3/2} - 46603_{5/2}$
3195.313	25		31286.795	$12485^{\circ}_{7/2} - 43772_{5/2}$	3177.769	8	75	31459.518	$14275^{\circ}_{9/2} - 45735_{11/2}$
3194.859	4		31291.240	$16033^{\circ}_{5/2} - 47324_{5/2}$	3177.485	8	100	31462.330	$14790^{\circ}_{7/2} - 46253_{9/2}$
3194.260	5	40	31297.108	$6168^{\circ}_{7/2} - 37465_{5/2}$	3177.382	3		31463.350	$15242^{\circ}_{9/2} - 46706_{7/2}$
3193.624	1		31303.340	$20969^{\circ}_{7/2} - 52272_{7/2}$	3177.346	2		31463.706	$10855_{7/2} - 42319^{\circ}_{9/2}$
3193.368	50	200	31305.850	$9400_{5/2} - 40706^{\circ}_{7/2}$	3177.198	50		31465.172	$6700^{\circ}_{9/2} - 38165_{7/2}$
3193.159	75	200	31307.899	$13818^{\circ}_{7/2} - 45126_{9/2}$	3176.568	5		31471.412	$25607^{\circ}_{9/2} - 57078_{9/2}$
3192.364	8	20	31315.695	$12488^{\circ}_{9/2} - 43803_{7/2}$	3176.506	100	150	31472.026	$6244_{1/2} - 37716^{\circ}_{1/2}$
3192.099	50	150	31318.295	$12485^{\circ}_{7/2} - 43803_{7/2}$	3175.726	400	500	31479.756	$6700^{\circ}_{9/2} - 38179_{9/2}$
3191.843	10b	150	31320.807	$13406^{\circ}_{13/2} - 44727_{11/2}$	3175.057	5	50	31486.388	$12902^{\circ}_{3/2} - 44388_{5/2}$
3191.749	5	5	31321.729	$8378^{\circ}_{7/2} - 39700_{5/2}$	3174.975	2	2	31487.201	$19248^{\circ}_{3/2} - 50735_{3/2}$
3191.560	2	4	31323.584	$12485^{\circ}_{7/2} - 43809_{9/2}$	3174.457	100	200	31492.339	$7001_{3/2} - 38493^{\circ}_{5/2}$
3191.221	150	300	31326.911	$9720^{\circ}_{7/2} - 41047_{9/2}$	3174.204	300	200	31494.849	$1859_{3/2} - 33354^{\circ}_{5/2}$
3191.093	300	200	31328.168	$1521_{5/2} - 32850^{\circ}_{5/2}$	3174.062	2		31496.258	$18973^{\circ}_{7/2} - 50470_{9/2}$
3190.360	75	200	31335.365	$12472^{\circ}_{5/2} - 43807_{3/2}$	3173.211	15	100	31504.705	$7331^{\circ}_{5/2} - 38836_{3/2}$
3190.220	10	100	31336.740	$9238^{\circ}_{9/2} - 40574_{11/2}$	3173.078	4		31506.025	$22014^{\circ}_{11/2} - 53520_{9/2}$
3190.164	200	400	31337.290	$10572^{\circ}_{9/2} - 41909_{9/2}$	3172.506	10	100	31511.705	$15349^{\circ}_{11/2} - 46861_{11/2}$
3190.070	300	300	31338.213	$9585^{\circ}_{5/2} - 40923_{5/2}$	3172.017	5	8	31516.563	$8378^{\circ}_{7/2} - 39895_{9/2}$
3189.038	5	25	31348.355	$14349_{1/2} - 45697^{\circ}_{3/2}$	3171.727	15b	200	31519.445	$11725^{\circ}_{1/2} - 43244_{3/2}$
3188.552	10	20	31353.132	$0_{3/2} - 31353^{\circ}_{3/2}$	3171.658	10	100	31520.130	$11576^{\circ}_{3/2} - 43096_{5/2}$
3188.515	5		31353.496	$17771^{\circ}_{11/2} - 49124_{11/2}$	3170.428	200l	150l	31532.358	$7331^{\circ}_{5/2} - 38863_{5/2}$
3188.307	500	800	31355.542	$1859_{3/2} - 33215^{\circ}_{3/2}$	3169.328	300	300	31543.302	$6213_{9/2} - 37756^{\circ}_{7/2}$
3188.234	500b	1000	31356.259	$6213_{9/2} - 37569^{\circ}_{9/2}$	3168.705	4		31549.504	$23372^{\circ}_{3/2} - 54922_{3/2}$
3188.118	300	300	31357.400	$6244_{1/2} - 37601^{\circ}_{3/2}$	3168.234	1		31554.194	$20310^{\circ}_{5/2} - 51865_{5/2}$
3187.478	50	50	31363.696	$6244_{1/2} - 37607^{\circ}_{1/2}$	3167.560	50b	400b	31560.908	$15349^{\circ}_{11/2} - 46910_{13/2}$
3187.403	100	150	31364.434	$10855_{7/2} - 42219^{\circ}_{5/2}$	3167.529	8b	100b	31561.217	$14790^{\circ}_{7/2} - 46352_{7/2}$
3187.332	3		31365.133	$20310^{\circ}_{5/2} - 51676_{3/2}$	3166.816	5	25	31568.322	$17121^{\circ}_{3/2} - 48689_{3/2}$
3187.033	5b		31368.076	$22642^{\circ}_{9/2} - 54010_{7/2}$	3166.376	5	5	31572.709	$17272^{\circ}_{9/2} - 48844_{9/2}$
3187.003	50	100	31368.371	$9202^{\circ}_{7/2} - 40570_{7/2}$					$20989^{\circ}_{9/2} - 52562_{7/2}$
3186.704	3		31371.314	$13818^{\circ}_{7/2} - 45189_{5/2}$	3166.197	10	50	31574.494	$10572^{\circ}_{9/2} - 42146_{11/2}$
3184.949	400	800	31388.600	$4490^{\circ}_{5/2} - 35878_{7/2}$	3166.098	300	300	31575.481	$4490^{\circ}_{5/2} - 36065_{5/2}$
3184.615	10	150	31391.892	$16906^{\circ}_{7/2} - 48298_{7/2}$	3165.819	200	500	31578.264	$8605_{5/2} - 40184^{\circ}_{7/2}$
3183.977	15	150	31398.182	$12902^{\circ}_{3/2} - 44300_{3/2}$	3165.624	150	200	31580.209	$7001_{3/2} - 38581^{\circ}_{5/2}$
3183.795	200	200	31399.976	$13250_{5/2} - 44650^{\circ}_{7/2}$	3164.952	3	25	31586.914	$17771^{\circ}_{11/2} - 49357_{11/2}$
3183.611	3	40	31401.791	$13248_{9/2} - 44650^{\circ}_{7/2}$	3164.482	200	200	31591.605	$6700^{\circ}_{9/2} - 38291_{7/2}$
3183.556	75	200	31402.334	$11116^{\circ}_{7/2} - 42518_{7/2}$	3164.306	20	50	31593.362	$9061_{5/2} - 40654^{\circ}_{5/2}$
3183.167	4	8	31406.171	$9585^{\circ}_{5/2} - 40991_{3/2}$	3164.201	2		31594.411	$14790^{\circ}_{7/2} - 46385_{7/2}$
3182.924	1		31408.568	$24982^{\circ}_{7/2} - 56391_{5/2}$	3163.510	4	8	31601.311	$20080^{\circ}_{7/2} - 51681_{9/2}$
3182.642	100	200	31411.351	$9061_{5/2} - 40472^{\circ}_{3/2}$	3163.248	5	20	31603.929	$21131^{\circ}_{3/2} - 52735_{3/2}$
3182.405	200b	200	31413.691	$6691^{\circ}_{3/2} - 38105_{5/2}$	3163.096	5	100	31605.447	$28011_{3/2} - 59616^{\circ}_{3/2}$
3182.357	8b	40	31414.164	$16906^{\circ}_{7/2} - 48320_{5/2}$	3162.839	150w	300	31608.015	$9720^{\circ}_{7/2} - 41328_{5/2}$
3182.236	2		31415.359	$19248^{\circ}_{5/2} - 50663_{5/2}$					$12488^{\circ}_{9/2} - 44096_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3162.583	20	50	31610.574	$12485^{\circ}_{7/2} - 44096_{9/2}$	3140.064	15	75	31837.261	$8378^{\circ}_{7/2} - 40216_{5/2}$
3162.362	2		31612.783	$19050^{\circ}_{3/2} - 50663_{5/2}$	3139.964	2s		31838.275	$16033^{\circ}_{5/2} - 47871_{7/2}$
3162.286	2		31613.542	$15710^{\circ}_{3/2} - 47324_{5/2}$	3139.866	15		31839.268	$11116^{\circ}_{7/2} - 42955_{9/2}$
3161.687	75	200	31619.531	$6168^{\circ}_{7/2} - 37787_{7/2}$	3139.306	500b	800	31844.948	$9202^{\circ}_{7/2} - 41047_{9/2}$
3161.511	1		31621.292	$20686^{\circ}_{5/2} - 52307_{3/2}$	3139.225	100b	200	31845.769	$10673^{\circ}_{5/2} - 42518_{7/2}$
3161.072	10	15	31625.683	$0_{3/2} - 31625^{\circ}_{1/2}$	3138.767	5	10	31850.416	$14545^{\circ}_{5/2} - 46395_{3/2}$
3160.823	15	50	31628.174	$10572^{\circ}_{9/2} - 42200_{9/2}$	3138.580	3	8	31852.314	$17272^{\circ}_{9/2} - 49124_{11/2}$
3160.758	2	4	31628.825	$14275^{\circ}_{9/2} - 45904_{9/2}$	3138.314	10	100	31855.013	$20080^{\circ}_{7/2} - 51935_{5/2}$
3160.167	15	100	31634.740	$11116^{\circ}_{7/2} - 42751_{7/2}$	3137.172	25	100	31866.609	$8605_{5/2} - 40472^{\circ}_{3/2}$
3159.071	50	200	31645.714	$9061_{5/2} - 40706^{\circ}_{7/2}$	3136.705	40	150	31871.353	$15453^{\circ}_{7/2} - 47324_{5/2}$
3158.871	5	10	31647.718	$17837^{\circ}_{1/2} - 49485_{1/2}$	3135.696	1		31881.608	$20288^{\circ}_{11/2} - 52170_{11/2}$
3158.617	75b	100b	31650.263	$10572^{\circ}_{9/2} - 42222_{7/2}$	3134.896	5h	10	31889.744	$17983^{\circ}_{5/2} - 49873_{5/2}$
3157.918	20	100	31657.268	$13468^{\circ}_{9/2} - 45126_{9/2}$	3134.425	150	500	31894.536	$14484^{\circ}_{11/2} - 46378_{13/2}$
3157.296	8b		31663.505	$22834_{7/2} - 54497^{\circ}_{7/2}$	3133.618	150	200	31902.749	$9585^{\circ}_{5/2} - 41488_{7/2}$
3157.277	3b		31663.695	$10673^{\circ}_{5/2} - 42336_{5/2}$	3132.902	2b		31910.040	$23012^{\circ}_{3/2} - 54922_{3/2}$
3156.400	150	200	31672.493	$6168^{\circ}_{7/2} - 37840_{9/2}$	3132.389	8	20	31915.266	$14790^{\circ}_{7/2} - 46706_{7/2}$
3155.830	200	500	31678.213	$9720^{\circ}_{7/2} - 41398_{9/2}$	3132.259	50	25	31916.590	$12472^{\circ}_{5/2} - 44388_{5/2}$
3155.754	2		31678.976	$10673^{\circ}_{5/2} - 42352_{5/2}$	3132.169	8b	8	31917.507	$6700^{\circ}_{9/2} - 38617_{9/2}$
3155.589	10		31680.632	$6691^{\circ}_{3/2} - 38372_{3/2}$	3131.093	15b		31928.475	$15242^{\circ}_{9/2} - 47171_{9/2}$
3155.189	4s	10	31684.649	$19050^{\circ}_{3/2} - 50735_{3/2}$	3131.069	300b	200b	31928.720	$0_{3/2} - 31928^{\circ}_{3/2}$
3154.774	300b	500	31688.816	$13406^{\circ}_{13/2} - 45095_{15/2}$	3130.539	2		31934.125	$19594_{1/2} - 51528^{\circ}_{3/2}$
3154.760	200b	300	31688.957	$12488^{\circ}_{9/2} - 44177_{11/2}$	3130.284	5	50	31936.727	$6168^{\circ}_{7/2} - 38105_{5/2}$
3154.325	15b		31693.327	$10189^{\circ}_{11/2} - 41882_{13/2}$	3130.124	2		31938.359	$16906^{\circ}_{7/2} - 48844_{9/2}$
3154.301	500b	600	31693.568	$1521_{5/2} - 33215^{\circ}_{3/2}$	3129.973	150	200	31939.900	$10379_{9/2} - 42319^{\circ}_{9/2}$
3154.024	8	20	31696.352	$17121^{\circ}_{3/2} - 48817_{3/2}$	3129.863	2h		31941.022	$14275^{\circ}_{9/2} - 46216_{11/2}$
3153.218	25	50	31704.453	$24381_{7/2} - 56086^{\circ}_{9/2}$	3129.289	10	100	31946.881	$10572^{\circ}_{9/2} - 42518_{7/2}$
3152.631	1		31710.356	$20120^{\circ}_{5/2} - 51830_{7/2}$	3129.258	3		31947.197	$17121^{\circ}_{3/2} - 49068_{5/2}$
3151.836	5h	25b	31718.354	$15453^{\circ}_{7/2} - 47171_{9/2}$	3128.588	5	100	31954.039	$17460^{\circ}_{5/2} - 49414_{3/2}$
3151.647	100	200	31720.256	$10189^{\circ}_{11/2} - 41909_{9/2}$	3128.251	2h		31957.481	$10189^{\circ}_{11/2} - 42146_{11/2}$
3151.538	8b	25	31721.353	$9202^{\circ}_{7/2} - 40923_{5/2}$	3127.872	8	20	31961.353	$20310^{\circ}_{5/2} - 52272_{7/2}$
3150.455	200	400	31732.257	$14484^{\circ}_{11/2} - 46216_{11/2}$	3127.554	15	100	31964.603	$12485^{\circ}_{7/2} - 44450_{9/2}$
3149.963	20	100	31737.213	$7331^{\circ}_{5/2} - 39068_{7/2}$	3127.207	150	300	31968.149	$9720^{\circ}_{7/2} - 41688_{7/2}$
3149.395	3	2	31742.937	$9585^{\circ}_{5/2} - 41328_{5/2}$	3126.924	5	10	31971.042	$13250_{5/2} - 45221^{\circ}_{5/2}$
3146.926	2		31767.841	$9720^{\circ}_{7/2} - 41488_{7/2}$	3126.635	3	8	31973.998	$19050^{\circ}_{3/2} - 51024_{3/2}$
3146.880	3b		31768.305	$17727_{11/2} - 49495^{\circ}_{9/2}$	3126.267	5	15	31977.761	$14275^{\circ}_{9/2} - 46253_{9/2}$
3146.811	10	50	31769.002	$14484^{\circ}_{11/2} - 46253_{9/2}$	3126.204	1		31978.405	$23518^{\circ}_{7/2} - 55496_{9/2}$
3146.043	500	500	31776.757	$6168^{\circ}_{7/2} - 37945_{5/2}$	3126.052	50	150	31979.960	$11116^{\circ}_{7/2} - 43096_{5/2}$
3145.281	5	50	31784.455	$20080^{\circ}_{7/2} - 51865_{5/2}$	3125.982	1		31980.677	$22513^{\circ}_{5/2} - 54493_{5/2}$
3144.702	10	25	31790.307	$14790^{\circ}_{7/2} - 46581_{5/2}$	3125.858	10	40	31981.945	$13818^{\circ}_{7/2} - 45800_{5/2}$
3144.641	1		31790.924	$15144^{\circ}_{3/2} - 46935_{3/2}$	3125.745	200	200	31983.101	$1859_{3/2} - 33843^{\circ}_{3/2}$
3144.506	10		31792.288	$13818^{\circ}_{7/2} - 45610_{5/2}$	3125.507	500	1000	31985.537	$9238^{\circ}_{9/2} - 41223_{11/2}$
3143.084	8	20	31806.671	$14545^{\circ}_{5/2} - 46352_{7/2}$	3125.321	4	5	31987.440	$12902^{\circ}_{3/2} - 44889_{3/2}$
3142.836	400	600	31809.181	$9238^{\circ}_{9/2} - 41047_{9/2}$	3125.208	300	600	31988.597	$8378^{\circ}_{7/2} - 40367_{9/2}$
3142.701	50	40	31810.548	$0_{3/2} - 31810^{\circ}_{5/2}$	3124.387	500	600	31997.002	$6168^{\circ}_{7/2} - 38165_{7/2}$
3142.538	10	100	31812.197	$14790^{\circ}_{7/2} - 46603_{5/2}$	3123.994	8		32001.027	$15144^{\circ}_{3/2} - 47145_{1/2}$
3142.209	1		31815.528	$20120^{\circ}_{5/2} - 51935_{5/2}$	3123.004	100b	150	32011.171	$10189^{\circ}_{11/2} - 42200_{9/2}$
3141.847	200	300	31819.194	$7331^{\circ}_{5/2} - 39150_{3/2}$	3122.963	600b	800b	32011.591	$6168^{\circ}_{7/2} - 38179_{9/2}$
3141.337	10	100	31824.359	$15324^{\circ}_{1/2} - 47148_{3/2}$	3122.914	8g		32012.094	$8460_{3/2} - 40472^{\circ}_{3/2}$
3140.940	50	150	31828.382	$12472^{\circ}_{5/2} - 44300_{3/2}$	3122.582	3		32015.497	$12488^{\circ}_{9/2} - 44503_{7/2}$
3140.494	10	8	31832.902	$1521_{5/2} - 33354^{\circ}_{5/2}$	3122.327	10		32018.112	$12485^{\circ}_{7/2} - 44503_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3122.158	2		32019.845	$19248^{\circ}_{5/2} - 51268_{7/2}$	3100.937	300	500	32238.961	$12488^{\circ}_{9/2} - 44727_{11/2}$
3121.888	1		32022.614	$27593_{5/2} - 59616^{\circ}_{3/2}$	3100.797	200b	200	32240.417	$13248_{9/2} - 45489^{\circ}_{9/2}$
3121.169	1		32029.990	$22139^{\circ}_{9/2} - 54169_{7/2}$	3099.863	150	200	32250.131	$9238^{\circ}_{9/2} - 41488_{7/2}$
3121.011	25	100	32031.612	$12472^{\circ}_{5/2} - 44503_{7/2}$	3099.740	100	200	32251.410	$12570_{7/2} - 44821^{\circ}_{5/2}$
3120.912	5		32032.628	$8378^{\circ}_{7/2} - 40411_{7/2}$	3099.118	1		32257.883	$19912^{\circ}_{13/2} - 52170_{11/2}$
3120.639	5	10	32035.430	$7331^{\circ}_{5/2} - 39366_{5/2}$	3098.387	40	100	32265.493	$8378^{\circ}_{7/2} - 40644_{5/2}$
3120.607	1		32035.759	$14545^{\circ}_{5/2} - 46581_{5/2}$	3098.325	20	75	32266.139	$13468^{\circ}_{9/2} - 45735_{11/2}$
3120.455	75	8	32037.319	$6691^{\circ}_{3/2} - 38728_{5/2}$	3097.267	200	300	32277.160	$4113_{5/2} - 36390^{\circ}_{3/2}$
3120.168	8		32040.266	$6700^{\circ}_{9/2} - 38740_{11/2}$	3097.142	20		32278.463	$15453^{\circ}_{7/2} - 47731_{9/2}$
3119.526	600b	100	32046.859	$4146_{7/2} - 36193^{\circ}_{9/2}$	3096.991	5	10b	32280.037	$14275^{\circ}_{9/2} - 46555_{11/2}$
3119.354	150	200	32048.626	$8605_{5/2} - 40654^{\circ}_{5/2}$	3096.963	5	10b	32280.328	$16564^{\circ}_{11/2} - 48844_{9/2}$
3118.478	25b		32057.629	$14545^{\circ}_{5/2} - 46603_{5/2}$	3096.430	150	200	32285.885	$9202^{\circ}_{7/2} - 41488_{7/2}$
3117.683	400	300	32065.803	$6691^{\circ}_{3/2} - 38757_{3/2}$	3096.295	10b	15b	32287.292	$12902^{\circ}_{3/2} - 45189_{5/2}$
3117.150	15	50	32071.286	$14484^{\circ}_{11/2} - 46555_{11/2}$	3096.260	40b	100	32287.657	$16033^{\circ}_{5/2} - 48320_{5/2}$
3116.626	2	3	32076.678	$14275^{\circ}_{9/2} - 46352_{7/2}$	3095.744	10	75	32293.039	$17121^{\circ}_{3/2} - 49414_{3/2}$
				$14349_{1/2} - 46426^{\circ}_{1/2}$	3095.634	3b		32294.186	$14101^{\circ}_{1/2} - 46395_{3/2}$
3116.478	200	150	32078.201	$10673^{\circ}_{5/2} - 42751_{7/2}$	3095.620	10b	75	32294.333	$18973^{\circ}_{7/2} - 51268_{7/2}$
3116.303	150b	400	32080.002	$12570_{7/2} - 44650^{\circ}_{7/2}$	3094.706	40b	100	32303.870	$16818_{7/2} - 49121^{\circ}_{7/2}$
3115.745	40	200	32085.747	$17272^{\circ}_{9/2} - 49357_{11/2}$	3093.254	8p	8	32319.033	$4490^{\circ}_{5/2} - 36809_{7/2}$
3115.715	2		32086.056	$13818^{\circ}_{7/2} - 45904_{9/2}$	3093.196	5	8	32319.639	$12488^{\circ}_{9/2} - 44807_{7/2}$
3115.415	8	40	32089.146	$10855_{7/2} - 42944^{\circ}_{7/2}$	3093.051	150	100	32321.154	$1521_{5/2} - 33843^{\circ}_{3/2}$
3115.191	5	8	32091.453	$9585^{\circ}_{5/2} - 41676_{3/2}$	3092.945	40	100	32322.262	$12485^{\circ}_{7/2} - 44807_{7/2}$
3114.744	3h		32096.059	$24982^{\circ}_{7/2} - 57078_{9/2}$	3092.452	2		32327.414	$21682^{\circ}_{7/2} - 54010_{7/2}$
3114.266	100	200	32100.985	$8605_{5/2} - 40706^{\circ}_{7/2}$	3092.332	20	100	32328.669	$13406^{\circ}_{13/2} - 45735_{11/2}$
3114.067	100	100	32103.036	$9585^{\circ}_{5/2} - 41688_{7/2}$	3091.653	50b	75	32335.769	$12472^{\circ}_{5/2} - 44807_{7/2}$
3113.408	8		32109.831	$14275^{\circ}_{9/2} - 46385_{7/2}$	3091.290	1		32339.566	$18568^{\circ}_{1/2} - 50907_{3/2}$
3113.242	8		32111.543	$14790^{\circ}_{7/2} - 46902_{5/2}$	3090.184	20	25	32351.140	$9585^{\circ}_{5/2} - 41936_{3/2}$
3112.941	4	10	32114.647	$19248^{\circ}_{5/2} - 51362_{5/2}$	3090.094	300	300	32352.082	$1859_{3/2} - 34212^{\circ}_{5/2}$
				$17722^{\circ}_{9/2} - 49837_{9/2}$	3089.699	1		32356.218	$27631_{3/2} - 59987^{\circ}_{3/2}$
3112.088	75	100	32123.449	$6168^{\circ}_{7/2} - 38291_{7/2}$	3089.626	75	75	32356.982	$14545^{\circ}_{5/2} - 46902_{5/2}$
3111.832	50	100	32126.092	$9202^{\circ}_{7/2} - 41328_{5/2}$	3088.967	4		32363.885	$17121^{\circ}_{3/2} - 49485_{1/2}$
3111.762	50	100	32126.815	$7331^{\circ}_{5/2} - 39458_{7/2}$	3088.839	100	100	32365.226	$8460_{3/2} - 40825^{\circ}_{1/2}$
3111.429	15	75	32130.253	$11116^{\circ}_{7/2} - 43246_{7/2}$	3088.526	25b		32368.506	$6700^{\circ}_{9/2} - 39068_{7/2}$
3110.020	600	500	32144.809	$6691^{\circ}_{3/2} - 38836_{3/2}$	3088.470	500	500	32369.093	$7331^{\circ}_{5/2} - 39700_{5/2}$
3108.671	5		32158.758	$15710^{\circ}_{3/2} - 47869_{3/2}$	3087.691	15	10	32377.259	$14484^{\circ}_{11/2} - 46861_{11/2}$
3108.454	40b	200	32161.003	$15305_{9/2} - 47466^{\circ}_{11/2}$	3087.275	8	15	32381.622	$15349^{\circ}_{11/2} - 47731_{9/2}$
3108.297	1000	1000	32162.627	$6700^{\circ}_{9/2} - 38862_{11/2}$	3087.067	2		32383.803	$10572^{\circ}_{9/2} - 42955_{9/2}$
3107.855	2		32167.201	$18568^{\circ}_{1/2} - 50735_{3/2}$	3086.466	3	2	32390.109	$14545^{\circ}_{5/2} - 46935_{3/2}$
3107.345	20	25	32172.480	$6691^{\circ}_{3/2} - 38863_{5/2}$	3086.361	8		32391.211	$22106_{5/2} - 54497^{\circ}_{7/2}$
3107.026	500	500	32175.783	$6691^{\circ}_{3/2} - 38867_{1/2}$	3086.147	2		32393.457	$27593_{5/2} - 59987^{\circ}_{3/2}$
3106.687	50	200b	32179.294	$10572^{\circ}_{9/2} - 42751_{7/2}$	3085.165	4		32403.767	$12902^{\circ}_{3/2} - 45306_{3/2}$
3106.652	8	100	32179.657	$15144^{\circ}_{3/2} - 47324_{5/2}$	3084.689	1		32408.767	$22513^{\circ}_{5/2} - 54922_{3/2}$
3105.747	800b	600	32189.033	$9720^{\circ}_{7/2} - 41909_{9/2}$	3084.524	2b		32410.501	$12488^{\circ}_{9/2} - 44898_{7/2}$
3105.473	100	150	32191.874	$6244_{1/2} - 38436^{\circ}_{3/2}$	3084.335	3		32412.487	$17460^{\circ}_{5/2} - 49873_{5/2}$
3105.257	8	5	32194.113	$8460_{3/2} - 40654^{\circ}_{5/2}$	3084.279	2		32413.075	$12485^{\circ}_{7/2} - 44898_{7/2}$
3105.050	100	150	32196.259	$9202^{\circ}_{7/2} - 41398_{9/2}$	3083.845	20	20	32417.637	$12472^{\circ}_{5/2} - 44889_{3/2}$
3104.381	5	25	32203.197	$22642^{\circ}_{9/2} - 54845_{9/2}$	3083.777	1		32418.351	$15453^{\circ}_{7/2} - 47871_{7/2}$
3102.664	500	500	32221.017	$6168^{\circ}_{7/2} - 38389_{7/2}$	3083.624	8	15	32419.960	$16033^{\circ}_{5/2} - 48453_{7/2}$
3101.688	100	200	32231.156	$11576^{\circ}_{3/2} - 43807_{3/2}$	3083.298	400	200	32423.387	$10673^{\circ}_{5/2} - 43096_{5/2}$
3101.069	2		32237.589	$17722^{\circ}_{9/2} - 49960_{7/2}$	3082.995	100b	200	32426.574	$12472^{\circ}_{5/2} - 44898_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3082.606	2		32430.666	$14275^{\circ}_{9/2} - 46706_{7/2}$	3063.126	200b	100	32636.901	$9585^{\circ}_{5/2} - 42222_{7/2}$
3082.194	75	150	32435.001	$13818^{\circ}_{7/2} - 46253_{9/2}$	3063.029	300	150	32637.934	$12488^{\circ}_{9/2} - 45126_{9/2}$
3082.153	75	100	32435.432	$13468^{\circ}_{9/2} - 45904_{9/2}$	3062.784	5	3	32640.545	$12485^{\circ}_{7/2} - 45126_{9/2}$
3081.982	400	200	32437.232	$4146_{7/2} - 36583^{\circ}_{7/2}$	3061.700	800	200	32652.101	$6700^{\circ}_{9/2} - 39352_{11/2}$
3081.660	150	100	32440.621	$13248_{9/2} - 45689^{\circ}_{7/2}$	3061.345	40	25	32655.887	$11116^{\circ}_{7/2} - 43772_{5/2}$
3080.834	50		32449.318	$6168^{\circ}_{7/2} - 38617_{9/2}$	3061.259	10b		32656.805	$16033^{\circ}_{5/2} - 48689_{3/2}$
3080.730	8		32450.413	$9238^{\circ}_{9/2} - 41688_{7/2}$	3061.241	50b	40l	32656.997	$15349^{\circ}_{11/2} - 48006_{9/2}$
3080.217	800	600	32455.818	$10189^{\circ}_{11/2} - 42644_{13/2}$	3060.178	400	200	32668.340	$8378^{\circ}_{7/2} - 41047_{9/2}$
3079.888	150	75	32459.285	$6691^{\circ}_{3/2} - 39150_{3/2}$	3059.899	3		32671.319	$9238^{\circ}_{9/2} - 41909_{9/2}$
3079.042	20		32468.203	$4113_{5/2} - 36581^{\circ}_{3/2}$	3059.505	3		32675.526	$6691^{\circ}_{3/2} - 39366_{5/2}$
3078.829	100w	200	32470.449	$4113_{5/2} - 36583^{\circ}_{7/2}$	3059.321	3		32677.491	$16818_{7/2} - 49495^{\circ}_{9/2}$
3078.734	50	15b	32471.451	$16818_{7/2} - 49289^{\circ}_{5/2}$	3059.063	8b		32680.247	$17983^{\circ}_{5/2} - 50663_{5/2}$
3077.932	200	150	32479.911	$9720^{\circ}_{7/2} - 42200_{9/2}$	3058.685	3		32684.285	$17722^{\circ}_{9/2} - 50407_{7/2}$
3077.339	300	200	32486.170	$9202^{\circ}_{7/2} - 41688_{7/2}$	3058.426	100b	100b	32687.053	$14484^{\circ}_{11/2} - 47171_{9/2}$
3077.271	4		32486.888	$21682^{\circ}_{7/2} - 54169_{7/2}$	3058.395	8b	4b	32687.385	$11116^{\circ}_{7/2} - 43803_{7/2}$
3076.035	75	100	32499.941	$17460^{\circ}_{5/2} - 49960_{7/2}$	3058.307	8	5	32688.325	$17272^{\circ}_{9/2} - 49960_{7/2}$
3075.840	75		32502.001	$9720^{\circ}_{7/2} - 42222_{7/2}$	3058.139	50	8	32690.121	$1521_{5/2} - 34212^{\circ}_{5/2}$
3075.293	8		32507.782	$9711_{7/2} - 42219^{\circ}_{5/2}$	3057.901	25	10	32692.665	$11116^{\circ}_{7/2} - 43809_{9/2}$
3075.057	50	150	32510.277	$24381_{7/2} - 56892^{\circ}_{5/2}$	3057.837	4		32693.349	$18214^{\circ}_{3/2} - 50907_{3/2}$
3074.171	1		32519.647	$20158_{5/2} - 52678^{\circ}_{5/2}$					$23697^{\circ}_{7/2} - 56391_{5/2}$
3074.041	1		32521.022	$18214^{\circ}_{3/2} - 50735_{3/2}$	3057.637	100	50	32695.488	$6168^{\circ}_{7/2} - 38863_{5/2}$
3073.432	50	15	32527.465	$10855_{7/2} - 43382^{\circ}_{5/2}$	3057.311	2		32698.974	$17771^{\circ}_{11/2} - 50470_{9/2}$
3073.089	2		32531.096	$20989^{\circ}_{9/2} - 53520_{9/2}$	3056.845	15	10	32703.958	$12485^{\circ}_{7/2} - 45189_{5/2}$
3072.825	400	200	32533.890	$13818^{\circ}_{7/2} - 46352_{7/2}$	3056.555	5	2	32707.061	$9202^{\circ}_{7/2} - 41909_{9/2}$
3072.115	800	300	32541.409	$4146_{7/2} - 36687^{\circ}_{5/2}$	3056.445	20	10	32708.238	$12902^{\circ}_{3/2} - 45610_{5/2}$
3071.798	5	10	32544.767	$8378^{\circ}_{7/2} - 40923_{5/2}$	3056.097	50	15	32711.963	$9400_{5/2} - 42112^{\circ}_{3/2}$
3071.496	1		32547.967	$21297^{\circ}_{5/2} - 53845_{5/2}$	3056.024	2		32712.744	$21297^{\circ}_{5/2} - 54010_{7/2}$
3071.195	15	5	32551.157	$6213_{9/2} - 38764^{\circ}_{7/2}$	3055.944	4		32713.600	$21131^{\circ}_{3/2} - 53845_{5/2}$
3071.124	1		32551.909	$20969^{\circ}_{7/2} - 53520_{9/2}$	3055.582	5		32717.476	$12472^{\circ}_{5/2} - 45189_{5/2}$
3070.943	150	150	32553.828	$15453^{\circ}_{7/2} - 48006_{9/2}$	3054.959	10	8	32724.147	$11576^{\circ}_{3/2} - 44300_{3/2}$
3070.817	800	400	32555.164	$10572^{\circ}_{9/2} - 43127_{11/2}$	3054.892	5	4	32724.865	$15144^{\circ}_{3/2} - 47869_{3/2}$
3070.330	5		32560.327	$6168^{\circ}_{7/2} - 38728_{5/2}$	3052.771	8	5	32747.601	$13468^{\circ}_{3/2} - 46216_{11/2}$
3069.851	5	5	32565.407	$17272^{\circ}_{9/2} - 49837_{9/2}$	3052.414	10	4	32751.431	$9585^{\circ}_{5/2} - 42336_{5/2}$
3069.694	5		32567.073	$13818^{\circ}_{7/2} - 46385_{7/2}$	3052.353	1b		32752.085	$17983^{\circ}_{5/2} - 50735_{3/2}$
3069.255	150	150	32571.731	$10673^{\circ}_{5/2} - 43244_{3/2}$	3051.792	150	40	32758.106	$6700^{\circ}_{9/2} - 39458_{7/2}$
3069.070	50s	15	32573.694	$10673^{\circ}_{5/2} - 43246_{7/2}$	3051.340	2		32762.958	$13818^{\circ}_{7/2} - 46581_{5/2}$
3068.981	300b	150	32574.639	$4113_{5/2} - 36687^{\circ}_{5/2}$	3050.985	150b	100	32766.770	$10189^{\circ}_{11/2} - 42955_{9/2}$
3068.935	20b		32575.127	$11725^{\circ}_{1/2} - 44300_{3/2}$	3049.863	100	50	32778.824	$14545^{\circ}_{5/2} - 47324_{5/2}$
3068.263	15b	15b	32582.261	$19248^{\circ}_{5/2} - 51830_{7/2}$	3049.643	100	100	32781.188	$15710^{\circ}_{3/2} - 48492_{5/2}$
3067.909	5	4	32586.021	$14275^{\circ}_{9/2} - 46861_{11/2}$	3049.347	5	3	32784.370	$13468^{\circ}_{9/2} - 46253_{9/2}$
3067.729	800	500	32587.932	$13250_{5/2} - 45838^{\circ}_{3/2}$	3049.302	10	5	32784.854	$13818^{\circ}_{7/2} - 46603_{5/2}$
3066.412	150	100	32601.928	$12219_{3/2} - 44821^{\circ}_{5/2}$	3049.092	500b	200	32787.112	$4490^{\circ}_{5/2} - 37277_{7/2}$
3066.307	4	50	32603.044	$14545^{\circ}_{5/2} - 47148_{3/2}$	3048.023	5	3	32798.611	$9720^{\circ}_{7/2} - 42518_{7/2}$
3065.930	300	150	32607.053	$9711_{7/2} - 42319^{\circ}_{9/2}$	3047.206	5	3	32807.404	$8018_{3/2} - 40825^{\circ}_{1/2}$
3065.038	50	10	32616.543	$9720^{\circ}_{7/2} - 42336_{5/2}$	3046.952	300	200	32810.139	$13406^{\circ}_{13/2} - 46216_{11/2}$
3063.916	2		32628.486	$15242^{\circ}_{9/2} - 47871_{7/2}$	3046.745	5	2	32812.368	$11576^{\circ}_{3/2} - 44388_{5/2}$
3063.744	1		32630.318	$20288^{\circ}_{11/2} - 52918_{13/2}$	3046.564	1		32814.317	$19050^{\circ}_{5/2} - 51865_{5/2}$
3063.602	8b		32631.830	$9720^{\circ}_{7/2} - 42352_{5/2}$	3046.149	15	5	32818.788	$9400_{5/2} - 42219^{\circ}_{5/2}$
3063.217	5		32635.931	$24309^{\circ}_{11/2} - 56945_{11/2}$	3045.565	200	100	32825.080	$10189^{\circ}_{11/2} - 43014_{13/2}$
3063.185	10		32636.272	$8018_{3/2} - 40654^{\circ}_{5/2}$	3045.069	8	15	32830.427	$22014^{\circ}_{11/2} - 54845_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3044.750	20	8	32833.867	$14101^{\circ}_{1/2} - 46935_{3/2}$	3025.845	10	2	33038.999	$15453^{\circ}_{7/2} - 48492_{5/2}$
3043.671	2		32845.506	$15453^{\circ}_{7/2} - 48298_{7/2}$	3025.647	4	4	33041.161	$20969^{\circ}_{7/2} - 54010_{7/2}$
3043.248	100	5	32850.071	$0_{3/2} - 32850^{\circ}_{5/2}$	3025.623	2		33041.423	$17983^{\circ}_{3/2} - 51024_{3/2}$
3043.065	200	100	32852.046	$6700^{\circ}_{9/2} - 39552_{9/2}$	3025.391	40b	25	33043.957	$14101^{\circ}_{1/2} - 47145_{1/2}$
3042.630	4	4	32856.743	$18973^{\circ}_{7/2} - 51830_{7/2}$	3025.131	10	5	33046.796	$14101^{\circ}_{1/2} - 47148_{3/2}$
3042.308	10	4	32860.220	$7001_{3/2} - 39861^{\circ}_{5/2}$	3024.669	50b	20	33051.844	$9061_{5/2} - 42112^{\circ}_{3/2}$
3042.086	1		32862.618	$23372^{\circ}_{3/2} - 56235_{3/2}$	3024.475	5	2	33053.964	$16906^{\circ}_{7/2} - 49960_{7/2}$
3041.608	2		32867.783	$15453^{\circ}_{7/2} - 48320_{5/2}$	3023.570	8	3	33063.857	$11725^{\circ}_{1/2} - 44789_{1/2}$
3041.163	2		32872.592	$23518^{\circ}_{7/2} - 56391_{5/2}$	3022.095	200	100	33079.994	$7331^{\circ}_{5/2} - 40411_{7/2}$
3040.177	8	4	32883.253	$13468^{\circ}_{9/2} - 46352_{7/2}$	3022.062	1		33080.355	$14790^{\circ}_{7/2} - 47871_{7/2}$
3040.049	150	50	32884.637	$7331^{\circ}_{5/2} - 40216_{5/2}$	3021.709	2		33084.219	$13818^{\circ}_{7/2} - 46902_{5/2}$
3039.425	8	5	32891.388	$7331^{\circ}_{5/2} - 40222_{3/2}$	3021.488	100b	20	33086.639	$13468^{\circ}_{9/2} - 46555_{11/2}$
				$18973^{\circ}_{7/2} - 51865_{5/2}$	3020.329	3	2	33099.335	$10673^{\circ}_{5/2} - 43772_{5/2}$
3039.017	2		32895.804	$14275^{\circ}_{9/2} - 47171_{9/2}$	3019.421	200	100	33109.289	$8378^{\circ}_{7/2} - 41488_{7/2}$
3038.825	40	20	32897.882	$12902^{\circ}_{3/2} - 45800_{5/2}$	3018.549	4	3	33118.853	$12570_{7/2} - 45689^{\circ}_{7/2}$
3038.598	200	75	32900.340	$6168^{\circ}_{7/2} - 39068_{7/2}$	3018.490	150	150	33119.500	$13248_{9/2} - 46368^{\circ}_{9/2}$
3038.164	2		32905.039	$13250_{5/2} - 46155^{\circ}_{5/2}$	3017.457	4	2	33130.838	$10673^{\circ}_{5/2} - 43803_{7/2}$
3038.007	40	25	32906.740	$12488^{\circ}_{9/2} - 45395_{7/2}$	3017.132	100	75	33134.406	$10673^{\circ}_{5/2} - 43807_{3/2}$
3037.842	2		32908.527	$9238^{\circ}_{9/2} - 42146_{11/2}$	3016.763	4	2	33138.459	$12472^{\circ}_{5/2} - 45610_{5/2}$
3037.766	3	3	32909.350	$12485^{\circ}_{7/2} - 45395_{7/2}$	3015.725	100	40	33149.865	$9202^{\circ}_{7/2} - 42352_{5/2}$
3037.111	8	5	32916.448	$13468^{\circ}_{9/2} - 46385_{7/2}$	3014.926	75	10	33158.650	$9061_{5/2} - 42219^{\circ}_{5/2}$
3036.938	8b	3b	32918.323	$10855_{7/2} - 43773^{\circ}_{7/2}$	3014.405	10	5	33164.380	$11725^{\circ}_{1/2} - 44889_{3/2}$
3036.910	25	8b	32918.626	$12570_{7/2} - 45489^{\circ}_{9/2}$	3013.599	100	50	33173.250	$13250_{5/2} - 46423^{\circ}_{3/2}$
3035.764	20	20	32931.052	$16906^{\circ}_{7/2} - 49837_{9/2}$	3013.343	2	2	33176.068	$15144^{\circ}_{3/2} - 48320_{5/2}$
3035.536	100	20	32933.526	$9585^{\circ}_{5/2} - 42518_{7/2}$	3013.000	5	4	33179.845	$20989^{\circ}_{9/2} - 54169_{7/2}$
3035.110	300	150	32938.148	$10189^{\circ}_{11/2} - 43127_{11/2}$	3012.707	100	75	33183.071	$6213_{9/2} - 39396^{\circ}_{7/2}$
3034.893	10	10	32940.503	$14790^{\circ}_{7/2} - 47731_{9/2}$	3012.347	2		33187.037	$17837^{\circ}_{1/2} - 51024_{3/2}$
3034.327	40	15	32946.647	$7331^{\circ}_{5/2} - 40278_{3/2}$	3012.014	1		33190.706	$14484^{\circ}_{11/2} - 47675_{11/2}$
				$17460^{\circ}_{5/2} - 50407_{7/2}$	3011.602	200	40	33195.246	$6700^{\circ}_{9/2} - 39895_{9/2}$
3034.065	500	300	32949.492	$8378^{\circ}_{7/2} - 41328_{5/2}$	3011.481	2		33196.580	$21297^{\circ}_{5/2} - 54493_{5/2}$
3032.895	15	5	32962.203	$9238^{\circ}_{9/2} - 42200_{9/2}$	3011.370	1		33197.804	$17272^{\circ}_{9/2} - 50470_{9/2}$
3032.834	2		32962.865	$26424^{\circ}_{5/2} - 59387_{7/2}$	3011.302	5	8	33198.553	$6168^{\circ}_{7/2} - 39366_{5/2}$
3031.955	100	75	32972.422	$13406^{\circ}_{13/2} - 46378_{13/2}$	3010.899	8b	8	33202.997	$17460^{\circ}_{5/2} - 50663_{5/2}$
3031.699	50b	8	32975.205	$4490^{\circ}_{5/2} - 37465_{5/2}$	3010.245	2		33210.210	$15242^{\circ}_{9/2} - 48453_{7/2}$
3031.600	5	2	32976.282	$11576^{\circ}_{3/2} - 44552_{5/2}$	3010.002	20	20	33212.891	$11576^{\circ}_{3/2} - 44789_{1/2}$
3031.339	10	4	32979.122	$15710^{\circ}_{3/2} - 48689_{3/2}$	3009.857	5		33214.491	$23730^{\circ}_{9/2} - 56945_{11/2}$
3031.287	75	10	32979.687	$11116^{\circ}_{7/2} - 44096_{9/2}$	3009.768	200	50	33215.473	$0_{3/2} - 33215^{\circ}_{3/2}$
3030.864	50b	15	32984.290	$9238^{\circ}_{9/2} - 42222_{7/2}$	3009.733	2		33215.859	$14790^{\circ}_{7/2} - 48006_{9/2}$
3029.692	5	2	32997.049	$7828_{1/2} - 40825^{\circ}_{1/2}$	3008.497	300	150	33229.505	$6213_{9/2} - 39443^{\circ}_{9/2}$
3029.609	10		32997.953	$9202^{\circ}_{7/2} - 42200_{9/2}$	3008.277	75	75	33231.935	$10572^{\circ}_{9/2} - 43803_{7/2}$
3029.414	8	4	33000.077	$15453^{\circ}_{7/2} - 48453_{7/2}$	3008.226	3	3	33232.498	$9711_{7/2} - 42944^{\circ}_{7/2}$
3029.278	2		33001.558	$12219_{3/2} - 45221^{\circ}_{5/2}$	3007.950	100	50	33235.547	$9720^{\circ}_{7/2} - 42955_{9/2}$
3028.577	200	150	33009.197	$6691^{\circ}_{3/2} - 39700_{5/2}$	3007.799	75	100	33237.216	$10572^{\circ}_{9/2} - 43809_{9/2}$
3027.837	2		33017.263	$9400_{5/2} - 42418^{\circ}_{3/2}$	3007.643	50b	40b	33238.940	$6700^{\circ}_{9/2} - 39939_{11/2}$
3027.617	15	5	33019.663	$8378^{\circ}_{7/2} - 41398_{9/2}$	3007.625	100b	50b	33239.139	$7331^{\circ}_{5/2} - 40570_{7/2}$
3027.583	8	3	33020.033	$9202^{\circ}_{7/2} - 42222_{7/2}$	3006.932	200	150	33246.799	$12488^{\circ}_{9/2} - 45735_{11/2}$
3027.554	1		33020.350	$20989^{\circ}_{9/2} - 54010_{7/2}$	3006.008	50	15	33257.018	$6691^{\circ}_{3/2} - 39948_{1/2}$
3027.216	4b		33024.036	$19248^{\circ}_{5/2} - 52272_{7/2}$	3005.527	10	8	33262.340	$15349^{\circ}_{11/2} - 48612_{13/2}$
3026.575	300	200	33031.030	$9720^{\circ}_{7/2} - 42751_{7/2}$	3004.637	20	5	33272.192	$11116^{\circ}_{7/2} - 44388_{5/2}$
3026.150	20	20	33035.669	$16033^{\circ}_{5/2} - 49068_{5/2}$	3004.562	2		33273.023	$16564^{\circ}_{11/2} - 49837_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
3004.398	2		33274.839	$17460^{\circ}_{5/2} - 50735_{3/2}$	2983.817	300	150	33504.344	$13406^{\circ}_{13/2} - 46910_{13/2}$
3003.851	8	3	33280.898	$9238^{\circ}_{9/2} - 42518_{7/2}$	2983.664	50	25	33506.062	$13818^{\circ}_{7/2} - 47324_{5/2}$
3003.036	8	5	33289.930	$6168^{\circ}_{7/2} - 39458_{7/2}$	2983.572	150b	75	33507.095	$8605_{5/2} - 42112^{\circ}_{3/2}$
3002.401	200b	100	33296.970	$1859_{3/2} - 35156^{\circ}_{5/2}$	2983.531	10b	3	33507.555	$9720^{\circ}_{7/2} - 43227_{5/2}$
3002.259	2	3	33298.545	$18973^{\circ}_{7/2} - 52272_{7/2}$	2983.213	15	4	33511.127	$9585^{\circ}_{5/2} - 43096_{5/2}$
3001.264	200	100	33309.584	$8378^{\circ}_{7/2} - 41688_{7/2}$	2983.018	100	25	33513.317	$9238^{\circ}_{9/2} - 42751_{7/2}$
3000.969	10	8	33312.858	$7331^{\circ}_{5/2} - 40644_{5/2}$	2982.198	10	5	33522.532	$14484^{\circ}_{11/2} - 48006_{9/2}$
3000.920	15	10	33313.402	$11576^{\circ}_{3/2} - 44889_{3/2}$	2982.048	50	8	33524.218	$10572^{\circ}_{9/2} - 44096_{9/2}$
3000.845	15	3	33314.235	$19248^{\circ}_{5/2} - 52562_{7/2}$	2982.003	40	5	33524.724	$6691^{\circ}_{3/2} - 40216_{5/2}$
3000.814	3		33314.579	$12485^{\circ}_{7/2} - 45800_{5/2}$	2981.843	100	25	33526.523	$9720^{\circ}_{7/2} - 43246_{7/2}$
3000.627	3	2	33316.655	$9202^{\circ}_{7/2} - 42518_{7/2}$	2981.550	15g	4	33529.818	$14790^{\circ}_{7/2} - 48320_{5/2}$
2999.962	1		33324.040	$20686^{\circ}_{5/2} - 54010_{7/2}$	2981.492	200	100	33530.470	$8378^{\circ}_{7/2} - 41909_{9/2}$
				$14545^{\circ}_{5/2} - 47869_{3/2}$	2981.399	100	25	33531.516	$6691^{\circ}_{3/2} - 40222_{3/2}$
2999.801	100	100	33325.828	$14545^{\circ}_{5/2} - 47871_{7/2}$	2981.337	100	40	33532.213	$6168^{\circ}_{7/2} - 39700_{5/2}$
2999.272	75	10	33331.706	$4490^{\circ}_{5/2} - 37821_{3/2}$	2981.139	3		33534.440	$20310^{\circ}_{5/2} - 53845_{5/2}$
2999.094	400	150	33333.684	$11116^{\circ}_{7/2} - 44450_{9/2}$	2980.335	150	25	33543.486	$9400_{5/2} - 42944^{\circ}_{7/2}$
2998.611	8		33339.053	$1859_{3/2} - 35198^{\circ}_{1/2}$	2980.185	15		33545.174	$15144^{\circ}_{3/2} - 48689_{3/2}$
2997.871	1	1	33347.282	$15144^{\circ}_{3/2} - 48492_{5/2}$					$17722^{\circ}_{9/2} - 51268_{7/2}$
2997.819	2	3	33347.861	$23730^{\circ}_{9/2} - 57078_{9/2}$	2979.837	8	2	33549.092	$9202^{\circ}_{7/2} - 42751_{7/2}$
2997.354	2		33353.034	$13818^{\circ}_{7/2} - 47171_{9/2}$	2978.860	2		33560.094	$23518^{\circ}_{7/2} - 57078_{9/2}$
2997.327	1		33353.334	$18816^{\circ}_{13/2} - 52170_{11/2}$	2978.564	2		33563.429	$16906^{\circ}_{7/2} - 50470_{9/2}$
2996.986	200s	100	33357.129	$9061_{5/2} - 42418^{\circ}_{3/2}$	2978.497	3		33564.184	$17460^{\circ}_{5/2} - 51024_{3/2}$
2996.911	5	4	33357.964	$15710^{\circ}_{3/2} - 49068_{5/2}$	2977.030	8	2	33580.723	$11725^{\circ}_{1/2} - 45306_{3/2}$
2996.829	1		33358.877	$17272^{\circ}_{9/2} - 50631_{11/2}$	2976.648	100	10	33585.032	$12570_{7/2} - 46155^{\circ}_{5/2}$
2996.561	1		33361.860	$12902^{\circ}_{3/2} - 46264_{3/2}$	2976.497	8b		33586.736	$6691^{\circ}_{3/2} - 40278_{3/2}$
2996.216	8		33365.701	$15324^{\circ}_{1/2} - 48689_{3/2}$	2976.320	2		33588.733	$18973^{\circ}_{7/2} - 52562_{7/2}$
2995.270	50	15	33376.239	$9720^{\circ}_{7/2} - 43096_{5/2}$	2976.019	200	75	33592.130	$7331^{\circ}_{5/2} - 40923_{5/2}$
2994.980	1		33379.470	$17983^{\circ}_{5/2} - 51362_{5/2}$	2974.860	4		33605.217	$10572^{\circ}_{9/2} - 44177_{11/2}$
2994.585	8	2	33383.873	$6168^{\circ}_{7/2} - 39552_{9/2}$	2974.418	10	1	33610.211	$4146_{7/2} - 37756^{\circ}_{7/2}$
2994.283	1		33387.240	$11116^{\circ}_{7/2} - 44503_{7/2}$	2974.091	75	20	33613.906	$8605_{5/2} - 42219^{\circ}_{5/2}$
2993.801	400	200	33392.615	$13468^{\circ}_{9/2} - 46861_{11/2}$	2974.011	500	100	33614.810	$4490^{\circ}_{5/2} - 38105_{5/2}$
2993.631	150	100	33394.511	$10379_{9/2} - 43773^{\circ}_{7/2}$	2973.926	2	2	33615.771	$15453^{\circ}_{7/2} - 49068_{5/2}$
2991.696	100	75	33416.110	$12488^{\circ}_{9/2} - 45904_{9/2}$	2973.536	400	100	33620.180	$10189^{\circ}_{11/2} - 43809_{9/2}$
2991.461	1		33418.735	$12485^{\circ}_{7/2} - 45904_{9/2}$	2972.895	8b	4	33627.429	$10673^{\circ}_{5/2} - 44300_{3/2}$
2991.062	400b	75	33423.192	$4146_{7/2} - 37569^{\circ}_{9/2}$	2972.224	400b	100	33635.020	$1521_{5/2} - 35156^{\circ}_{5/2}$
2989.907	50	15	33436.103	$11116^{\circ}_{7/2} - 44552_{5/2}$	2971.481	400	40	33643.430	$4113_{5/2} - 37756^{\circ}_{7/2}$
2989.599	1		33439.548	$18214^{\circ}_{3/2} - 51653_{1/2}$	2970.632	20		33653.045	$7001_{3/2} - 40654^{\circ}_{5/2}$
2989.537	3		33440.241	$20080^{\circ}_{7/2} - 53520_{9/2}$	2970.066	10	3	33659.457	$9585^{\circ}_{5/2} - 43244_{3/2}$
2988.232	500b	200	33454.845	$4490^{\circ}_{5/2} - 37945_{5/2}$	2970.011	10	2	33660.081	$7331^{\circ}_{5/2} - 40991_{3/2}$
2987.350	8	2	33464.721	$1521_{5/2} - 34986^{\circ}_{3/2}$	2969.892	50b	8	33661.429	$9585^{\circ}_{5/2} - 43246_{7/2}$
2986.786	100b	40	33471.040	$7001_{3/2} - 40472^{\circ}_{3/2}$	2969.378	100	8	33667.256	$6700^{\circ}_{9/2} - 40367_{9/2}$
2985.815	2		33481.925	$22014^{\circ}_{11/2} - 55496_{9/2}$	2969.064	75	8	33670.816	$9711_{7/2} - 43382^{\circ}_{5/2}$
2985.321	1b		33487.465	$19248^{\circ}_{5/2} - 52735_{3/2}$	2968.687	800	150	33675.092	$4490^{\circ}_{5/2} - 38165_{7/2}$
2985.243	400	75	33488.340	$4113_{5/2} - 37601^{\circ}_{3/2}$	2968.348	10l	1	33678.938	$12902^{\circ}_{3/2} - 46581_{5/2}$
2984.774	10b		33493.602	$12902^{\circ}_{3/2} - 46395_{3/2}$	2967.823	10l	4	33684.895	$19050^{\circ}_{3/2} - 52735_{3/2}$
2984.765	8b	8	33493.703	$15324^{\circ}_{1/2} - 48817_{3/2}$	2967.254	8	2	33691.354	$11116^{\circ}_{7/2} - 44807_{7/2}$
2984.642	8	3	33495.083	$15349^{\circ}_{11/2} - 48844_{9/2}$	2966.561	2		33699.224	$20310^{\circ}_{5/2} - 54010_{7/2}$
2984.145	3	2	33500.661	$16906^{\circ}_{7/2} - 50407_{7/2}$	2966.530	5		33699.576	$4146_{7/2} - 37846^{\circ}_{5/2}$
2984.090	4	3	33501.279	$17722^{\circ}_{9/2} - 51224_{9/2}$	2966.423	5		33700.792	$12902^{\circ}_{3/2} - 46603_{5/2}$
2983.979	2		33502.525	$15786_{5/2} - 49289^{\circ}_{5/2}$	2966.405	2		33700.996	$14790^{\circ}_{7/2} - 48492_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2966.282	2		33702.394	$13468^{\circ}_{9/2} - 47171_{9/2}$	2950.576	10	50	33881.785	$4490^{\circ}_{5/2} - 38372_{3/2}$
2966.005	4		33705.541	$22685^{\circ}_{7/2} - 56391_{5/2}$	2950.437	200	300	33883.381	$9061_{5/2} - 42944^{\circ}_{7/2}$
2965.500	300	75	33711.281	$6700^{\circ}_{9/2} - 40411_{7/2}$	2950.150	1		33886.677	$9400_{5/2} - 43287^{\circ}_{3/2}$
2965.118	75	10	33715.624	$10673^{\circ}_{5/2} - 44388_{5/2}$	2949.930	300	300	33889.204	$9238^{\circ}_{9/2} - 43127_{11/2}$
2964.924	200	50	33717.829	$9238^{\circ}_{9/2} - 42955_{9/2}$	2949.487	10	25	33894.294	$9202^{\circ}_{7/2} - 43096_{5/2}$
2964.624	2		33721.242	$18214^{\circ}_{3/2} - 51935_{5/2}$	2949.240	50	150	33897.133	$12488^{\circ}_{9/2} - 46385_{7/2}$
2964.112	100b	20	33727.066	$6168^{\circ}_{7/2} - 39895_{9/2}$	2949.068	500	300	33899.109	$4490^{\circ}_{5/2} - 38389_{7/2}$
2964.005	75	15	33728.283	$12488^{\circ}_{9/2} - 46216_{11/2}$	2948.793	8	100	33902.271	$17460^{\circ}_{5/2} - 51362_{5/2}$
2963.876	50	20	33729.751	$11576^{\circ}_{3/2} - 45306_{3/2}$	2948.711	1		33903.213	$17121^{\circ}_{3/2} - 51024_{3/2}$
2963.608	75	8	33732.801	$4113_{5/2} - 37846^{\circ}_{5/2}$	2948.518	2	2	33905.432	$16564^{\circ}_{11/2} - 50470_{9/2}$
2963.046	5	2	33739.199	$18568^{\circ}_{7/2} - 52307_{3/2}$	2948.362	5	50	33907.226	$10189^{\circ}_{11/2} - 44096_{9/2}$
2961.842	1		33752.914	$14545^{\circ}_{5/2} - 48298_{7/2}$	2948.332	4	1	33907.571	$14545^{\circ}_{5/2} - 48453_{7/2}$
2961.783	4b		33753.586	$9202^{\circ}_{7/2} - 42955_{9/2}$	2947.843	8	150	33913.196	$12472^{\circ}_{5/2} - 46385_{7/2}$
2961.273	8		33759.399	$8460_{3/2} - 42219^{\circ}_{5/2}$					$13818^{\circ}_{7/2} - 47731_{9/2}$
2960.806	5		33764.724	$20080^{\circ}_{7/2} - 53845_{5/2}$	2946.922	2		33923.794	$12472^{\circ}_{5/2} - 46395_{3/2}$
2960.779	15	5	33765.032	$12488^{\circ}_{9/2} - 46253_{9/2}$	2946.896	4	25	33924.094	$15144^{\circ}_{3/2} - 49068_{5/2}$
2960.549	2b		33767.654	$12485^{\circ}_{7/2} - 46253_{9/2}$	2946.607	20	200	33927.421	$16033^{\circ}_{5/2} - 49960_{7/2}$
2960.536	5b		33767.803	$14101^{\circ}_{1/2} - 47869_{3/2}$	2946.231	10		33931.750	$10572^{\circ}_{9/2} - 44503_{7/2}$
2959.934	8		33774.670	$15710^{\circ}_{3/2} - 49485_{1/2}$	2945.899	5		33935.574	$12219_{3/2} - 46155^{\circ}_{5/2}$
				$15349^{\circ}_{11/2} - 49124_{11/2}$	2944.950	75	150	33946.509	$14545^{\circ}_{5/2} - 48492_{5/2}$
2959.883	15	100b	33775.252	$14545^{\circ}_{5/2} - 48320_{5/2}$	2944.471	10	150b	33952.031	$17272^{\circ}_{9/2} - 51224_{9/2}$
2959.449	4		33780.205	$25607^{\circ}_{9/2} - 59387_{7/2}$	2944.448	4		33952.297	$17983^{\circ}_{5/2} - 51935_{5/2}$
2959.275	10	75	33782.191	$11116^{\circ}_{7/2} - 44898_{7/2}$	2944.391	5	3	33952.954	$6691^{\circ}_{3/2} - 40644_{5/2}$
2958.565	8	200	33790.298	$21131^{\circ}_{3/2} - 54922_{3/2}$	2943.962	25	75	33957.901	$8460_{3/2} - 42418^{\circ}_{3/2}$
2958.409	10	50	33792.080	$12472^{\circ}_{5/2} - 46264_{3/2}$	2943.867	3		33958.997	$17722^{\circ}_{9/2} - 51681_{9/2}$
2958.139	200b	200	33795.164	$10855_{7/2} - 44650^{\circ}_{7/2}$	2943.210	8	10	33966.577	$10855_{7/2} - 44821^{\circ}_{5/2}$
2957.916	300	400	33797.712	$12570_{7/2} - 46368^{\circ}_{9/2}$	2942.860	800h	500h	33970.617	$6213_{9/2} - 40184^{\circ}_{7/2}$
2957.580	500	500	33801.551	$4490^{\circ}_{5/2} - 38291_{7/2}$	2942.628	200b	200	33973.295	$8378^{\circ}_{7/2} - 42352_{5/2}$
2957.059	10	150	33807.506	$17460^{\circ}_{5/2} - 51268_{7/2}$	2941.890	75	200	33981.817	$9400_{5/2} - 43382^{\circ}_{5/2}$
2956.631	40	150	33812.400	$8605_{5/2} - 42418^{\circ}_{3/2}$	2941.337	100	200	33988.206	$10189^{\circ}_{11/2} - 44177_{11/2}$
2956.484	1		33814.081	$21682^{\circ}_{7/2} - 55496_{9/2}$	2940.674	100	300	33995.868	$17272^{\circ}_{9/2} - 51268_{7/2}$
2956.257	8	2	33816.678	$15305_{9/2} - 49121^{\circ}_{7/2}$	2940.587	100	300	33996.874	$7331^{\circ}_{5/2} - 41328_{5/2}$
2955.847	100	200	33821.368	$8378^{\circ}_{7/2} - 42200_{9/2}$	2940.303	10	50	34000.158	$12902^{\circ}_{5/2} - 46902_{5/2}$
2955.601	100s	300	33824.183	$7001_{3/2} - 40825^{\circ}_{1/2}$	2939.616	75b	300	34008.103	$15349^{\circ}_{11/2} - 49357_{11/2}$
2955.255	2		33828.143	$18118_{3/2} - 51946^{\circ}_{5/2}$	2939.555	100b	300	34008.809	$9238^{\circ}_{9/2} - 43246_{7/2}$
2955.036	150	300	33830.650	$10673^{\circ}_{5/2} - 44503_{7/2}$	2938.336	10	75	34022.917	$14275^{\circ}_{9/2} - 48298_{7/2}$
2954.887	100	200	33832.356	$6691^{\circ}_{3/2} - 40523_{1/2}$	2938.104	100	150	34025.604	$9202^{\circ}_{7/2} - 43227_{5/2}$
2954.369	8h	2	33838.287	$17837^{\circ}_{1/2} - 51676_{3/2}$	2937.441	100b	300	34033.283	$12902^{\circ}_{3/2} - 46935_{3/2}$
2954.218	3		33840.017	$16033^{\circ}_{5/2} - 49873_{5/2}$	2937.361	20	200	34034.210	$11576^{\circ}_{3/2} - 45610_{5/2}$
2953.917	5	1	33843.465	$8378^{\circ}_{7/2} - 42222_{7/2}$	2936.467	400b	500b	34044.571	$9202^{\circ}_{7/2} - 43246_{7/2}$
2953.595	10	100	33847.154	$17983^{\circ}_{5/2} - 51830_{7/2}$	2936.192	400	300	34047.760	$6168^{\circ}_{7/2} - 40216_{5/2}$
2952.584	4	2	33858.743	$20310^{\circ}_{5/2} - 54169_{7/2}$	2935.812	40	200	34052.166	$9720^{\circ}_{7/2} - 43772_{5/2}$
2952.129	50	200	33863.962	$12488^{\circ}_{9/2} - 46352_{7/2}$	2935.752	20	100	34052.862	$15236_{3/2} - 49289^{\circ}_{5/2}$
2951.902	20	50	33866.566	$12485^{\circ}_{7/2} - 46352_{7/2}$	2935.658	50	200	34053.953	$14790^{\circ}_{7/2} - 48844_{9/2}$
2951.562	25	150	33870.467	$6700^{\circ}_{9/2} - 40570_{7/2}$	2934.992	150	200	34061.680	$9711_{7/2} - 43773^{\circ}_{7/2}$
2951.203	200	300	33874.587	$6700^{\circ}_{9/2} - 40574_{11/2}$	2934.578	5	20	34066.485	$16564^{\circ}_{11/2} - 50631_{11/2}$
2951.052	4	75l	33876.320	$20969^{\circ}_{7/2} - 54845_{9/2}$	2934.507	5	50	34067.309	$12488^{\circ}_{9/2} - 46555_{11/2}$
2950.883	4		33878.260	$10572^{\circ}_{9/2} - 44450_{9/2}$	2934.135	200	200	34071.628	$1521_{5/2} - 35593^{\circ}_{7/2}$
2950.769	10	50	33879.569	$10673^{\circ}_{5/2} - 44552_{5/2}$	2934.012	10	100	34073.056	$11116^{\circ}_{7/2} - 45189_{5/2}$
2950.725	10	50	33880.074	$12472^{\circ}_{5/2} - 46352_{7/2}$	2933.099	200b	200	34083.662	$9720^{\circ}_{7/2} - 43803_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2932.644	100	400	34088.950	$9720^{\circ}_{7/2} - 43809_{9/2}$	2916.429	10		34278.472	$11116^{\circ}_{7/2} - 45395_{7/2}$
2932.293	3		34093.030	$18214^{\circ}_{3/2} - 52307_{3/2}$	2915.926	3	2	34284.385	$7828_{1/2} - 42112^{\circ}_{3/2}$
2932.147	50	100	34094.727	$8018_{3/2} - 42112^{\circ}_{3/2}$	2915.536	3		34288.970	$17983^{\circ}_{5/2} - 52272_{7/2}$
2932.073	3	3	34095.588	$12485^{\circ}_{7/2} - 46581_{5/2}$	2914.582	50	20	34300.193	$6691^{\circ}_{3/2} - 40991_{3/2}$
2931.519	4		34102.031	$18816^{\circ}_{13/2} - 52918_{13/2}$	2914.342	300	100	34303.018	$22642^{\circ}_{9/2} - 56945_{11/2}$
2931.045	4h	2	34107.546	$17722^{\circ}_{9/2} - 51830_{7/2}$	2913.097	3		34317.678	$16906^{\circ}_{7/2} - 51224_{9/2}$
2930.911	300	300	34109.105	$12472^{\circ}_{5/2} - 46581_{5/2}$	2912.756	150	200	34321.695	$9061_{5/2} - 43382^{\circ}_{5/2}$
2930.190	5	10	34117.497	$12485^{\circ}_{7/2} - 46603_{5/2}$	2912.661	100	75	34322.814	$4113_{5/2} - 38436^{\circ}_{3/2}$
2929.297	100	150	34127.898	$14484^{\circ}_{11/2} - 48612_{13/2}$	2912.328	3		34326.739	$10572^{\circ}_{9/2} - 44898_{7/2}$
2929.027	1		34131.044	$12472^{\circ}_{5/2} - 46603_{5/2}$	2912.009	400b	200	34330.499	$0_{3/2} - 34330^{\circ}_{1/2}$
2928.254	600	500	34140.053	$8378^{\circ}_{7/2} - 42518_{7/2}$	2911.321	200	150	34338.611	$8605_{5/2} - 42944^{\circ}_{7/2}$
2927.883	5b	25	34144.379	$14545^{\circ}_{5/2} - 48689_{3/2}$	2911.137	4	3	34340.782	$15144^{\circ}_{3/2} - 49485_{1/2}$
2926.956	15	50	34155.192	$10572^{\circ}_{9/2} - 44727_{11/2}$	2910.747	20	20	34345.383	$7331^{\circ}_{5/2} - 41676_{3/2}$
2926.831	10		34156.651	$7331^{\circ}_{5/2} - 41488_{7/2}$	2910.596	400l	300	34347.164	$4146_{7/2} - 38493^{\circ}_{5/2}$
2926.435	10	50	34161.273	$15324^{\circ}_{1/2} - 49485_{1/2}$	2909.767	25	40	34356.950	$7331^{\circ}_{5/2} - 41688_{7/2}$
2926.349	5	3	34162.277	$15710^{\circ}_{3/2} - 49873_{5/2}$	2909.456	8	15	34360.622	$14484^{\circ}_{11/2} - 48844_{9/2}$
2925.903	3		34167.484	$18568^{\circ}_{1/2} - 52735_{3/2}$	2909.378	8	5	34361.543	$16906^{\circ}_{7/2} - 51268_{7/2}$
2925.051	600b	600	34177.436	$15349^{\circ}_{11/2} - 49527_{13/2}$	2908.984	10	50	34366.197	$10855_{7/2} - 45221^{\circ}_{5/2}$
2924.604	1		34182.659	$14349_{1/2} - 48532^{\circ}_{1/2}$	2908.672	4	10	34369.883	$17460^{\circ}_{5/2} - 51830_{7/2}$
2924.572	8	50b	34183.033	$20310^{\circ}_{5/2} - 54493_{5/2}$	2908.436	2g		34372.672	$9400_{5/2} - 43773^{\circ}_{7/2}$
2924.228	5	8	34187.054	$9585^{\circ}_{5/2} - 43772_{5/2}$	2908.383	10b		34373.298	$12488^{\circ}_{9/2} - 46861_{11/2}$
2924.103	75	100	34188.516	$13818^{\circ}_{7/2} - 48006_{9/2}$	2908.359	150b	100	34373.582	$4490^{\circ}_{5/2} - 38863_{5/2}$
2923.950	5b		34190.304	$15305^{\circ}_{9/2} - 49495^{\circ}_{9/2}$	2908.314	10b	50b	34374.114	$16033^{\circ}_{5/2} - 50407_{7/2}$
2923.199	4	3	34199.088	$6168^{\circ}_{7/2} - 40367_{9/2}$	2908.156	8	4	34375.981	$9720^{\circ}_{7/2} - 44096_{9/2}$
2922.990	100	100	34201.533	$8018_{3/2} - 42219^{\circ}_{5/2}$	2907.781	40	10	34380.414	$4113_{5/2} - 38493^{\circ}_{5/2}$
2922.799	150	150	34203.768	$12219_{3/2} - 46423^{\circ}_{3/2}$	2906.122	50	200	34400.040	$8018_{3/2} - 42418^{\circ}_{3/2}$
2922.602	300	300	34206.073	$12219_{3/2} - 46426^{\circ}_{1/2}$	2905.931	75	100	34402.301	$6168^{\circ}_{7/2} - 40570_{7/2}$
				$13468^{\circ}_{9/2} - 47675_{11/2}$	2905.745	4	8	34404.503	$17460^{\circ}_{5/2} - 51865_{5/2}$
2922.094	10	3	34212.020	$0_{3/2} - 34212^{\circ}_{5/2}$	2905.303	4	8	34409.737	$17272^{\circ}_{9/2} - 51681_{9/2}$
2921.802	3		34215.439	$17460^{\circ}_{5/2} - 51676_{3/2}$	2904.999	50	40	34413.338	$20080^{\circ}_{7/2} - 54493_{5/2}$
2921.622	200	300	34217.546	$13248_{9/2} - 47466^{\circ}_{11/2}$	2904.702	5	15	34416.856	$12485^{\circ}_{7/2} - 46902_{5/2}$
2921.534	100b	150	34218.58	$9585^{\circ}_{5/2} - 43803_{7/2}$	2904.429	5		34420.091	$15453^{\circ}_{7/2} - 49873_{5/2}$
2921.365	100	200	34220.56	$12485^{\circ}_{7/2} - 46706_{7/2}$	2904.267	10	50b	34422.011	$12902^{\circ}_{3/2} - 47324_{5/2}$
2921.083	75	100	34223.860	$11576^{\circ}_{3/2} - 45800_{5/2}$	2903.166	200	150	34435.064	$4146_{7/2} - 38581^{\circ}_{5/2}$
2920.932	200	200	34225.629	$10673^{\circ}_{5/2} - 44898_{7/2}$	2903.052	8	20	34436.416	$22642^{\circ}_{9/2} - 57078_{9/2}$
2920.856	5	3	34226.520	$9061_{5/2} - 43287^{\circ}_{3/2}$	2902.144	2	5	34447.190	$17722^{\circ}_{9/2} - 52170_{11/2}$
2920.717	8	5	34228.148	$6244_{1/2} - 40472^{\circ}_{3/2}$	2901.378	3		34456.284	$16906^{\circ}_{7/2} - 51362_{5/2}$
2920.369	150b	100	34232.227	$6691^{\circ}_{3/2} - 40923_{5/2}$	2900.772	4	10	34463.482	$12472^{\circ}_{5/2} - 46935_{3/2}$
2920.212	8	5	34234.067	$12472^{\circ}_{5/2} - 46706_{7/2}$	2900.367	5	8	34468.294	$4113_{5/2} - 38581^{\circ}_{5/2}$
2920.056	40	40	34235.896	$10572^{\circ}_{9/2} - 44807_{7/2}$	2899.720	600	400	34475.985	$6168^{\circ}_{7/2} - 40644_{5/2}$
2919.841	400	300	34238.417	$4490^{\circ}_{5/2} - 38728_{5/2}$	2899.369	50	150	34480.158	$13818^{\circ}_{7/2} - 48298_{7/2}$
2919.597	1		34241.279	$17121^{\circ}_{3/2} - 51362_{5/2}$	2898.729	1		34487.771	$15349^{\circ}_{11/2} - 49837_{9/2}$
2919.439	15b	8	34243.132	$6168^{\circ}_{7/2} - 40411_{7/2}$	2898.262	20	40	34493.327	$6213_{9/2} - 40706^{\circ}_{7/2}$
2919.175	20	100b	34246.228	$12902^{\circ}_{3/2} - 47148_{3/2}$	2898.202	10	15	34494.042	$11116^{\circ}_{7/2} - 45610_{5/2}$
2917.898	150	200	34261.215	$10189^{\circ}_{11/2} - 44450_{9/2}$	2897.493	3	5	34502.481	$13818^{\circ}_{7/2} - 48320_{5/2}$
2917.787	150	150b	34262.519	$13468^{\circ}_{5/2} - 47731_{9/2}$	2897.112	40b	20b	34507.019	$20989^{\circ}_{9/2} - 55496_{9/2}$
2917.411	800r	300	34266.934	$4490^{\circ}_{5/2} - 38757_{3/2}$	2897.069	75b	100b	34507.531	$15453^{\circ}_{7/2} - 49960_{7/2}$
2917.034	150	200	34271.363	$10379_{9/2} - 44650^{\circ}_{7/2}$	2896.315	4	10	34516.514	$10673^{\circ}_{5/2} - 45189_{5/2}$
2916.945	10	15	34272.408	$14545^{\circ}_{5/2} - 48817_{3/2}$	2895.913	2	5	34521.305	$18214^{\circ}_{3/2} - 52735_{3/2}$
2916.484	40	50	34277.825	$14790^{\circ}_{7/2} - 49068_{5/2}$	2895.747	4	10	34523.284	$14545^{\circ}_{5/2} - 49068_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2895.370	1		34527.779	$20969^{\circ}_{7/2} - 55496_{9/2}$	2874.753	2	3	34775.392	$16906^{\circ}_{7/2} - 51681_{9/2}$
2895.136	300	150	34530.570	$1859_{3/2} - 36390^{\circ}_{3/2}$	2874.624	15	40	34776.952	$8605_{5/2} - 43382^{\circ}_{5/2}$
2894.988	3	75	34532.335	$17121^{\circ}_{3/2} - 51653_{1/2}$	2873.714	25b	75	34787.965	$6700^{\circ}_{9/2} - 41488_{7/2}$
2894.501	25b	20b	34538.145	$10189^{\circ}_{11/2} - 44727_{11/2}$	2873.168	2		34794.575	$19050^{\circ}_{3/2} - 53845_{5/2}$
2894.446	10	8	34538.801	$11725^{\circ}_{1/2} - 46264_{3/2}$	2872.441	2l		34803.381	$9585^{\circ}_{5/2} - 44388_{5/2}$
2893.747	2	5	34547.143	$18973^{\circ}_{7/2} - 53520_{9/2}$	2872.267	2		34805.489	$22139^{\circ}_{9/2} - 56945_{11/2}$
2893.157	3	5	34554.188	$10572^{\circ}_{9/2} - 45126_{9/2}$	2871.754	3		34811.706	$17460^{\circ}_{5/2} - 52272_{7/2}$
2892.815	1		34558.273	$17272^{\circ}_{9/2} - 51830_{7/2}$	2871.105	5	10	34819.575	$11576^{\circ}_{3/2} - 46395_{3/2}$
2892.171	50	100	34565.968	$9238^{\circ}_{9/2} - 43803_{7/2}$	2870.822	40	75	34823.007	$10572^{\circ}_{9/2} - 45395_{7/2}$
2891.815	150	100	34570.223	$9202^{\circ}_{7/2} - 43772_{5/2}$	2870.406	800r	300	34828.054	$1859_{3/2} - 36687^{\circ}_{5/2}$
2891.730	150	150	34571.239	$9238^{\circ}_{9/2} - 43809_{9/2}$	2870.285	8h	8	34829.522	$13468^{\circ}_{9/2} - 48298_{7/2}$
2891.249	300	300	34576.990	$22106_{5/2} - 56683^{\circ}_{7/2}$	2870.049	15	10	34832.386	$9720^{\circ}_{7/2} - 44552_{5/2}$
				$8378^{\circ}_{7/2} - 42955_{9/2}$	2869.916	100	200	34834.000	$10855_{7/2} - 45689^{\circ}_{7/2}$
2891.128	15	10	34578.438	$4490^{\circ}_{5/2} - 39068_{7/2}$	2869.528	2	3	34838.710	$12485^{\circ}_{7/2} - 47324_{5/2}$
2890.888	15	20	34581.308	$6244_{1/2} - 40825^{\circ}_{1/2}$	2868.679	40	100	34849.020	$8378^{\circ}_{7/2} - 43227_{5/2}$
2890.589	3		34584.885	$1859_{3/2} - 36444^{\circ}_{3/2}$	2868.416	5		34852.215	$12472^{\circ}_{5/2} - 47324_{5/2}$
2890.480	5b	10b	34586.189	$14790^{\circ}_{7/2} - 49377_{7/2}$	2867.920	5	10	34858.242	$9238^{\circ}_{9/2} - 44096_{9/2}$
2890.316	1		34588.151	$14101^{\circ}_{1/2} - 48689_{3/2}$	2867.120	5		34867.968	$8378^{\circ}_{7/2} - 43246_{7/2}$
2890.188	5	4	34589.683	$7828_{1/2} - 42418^{\circ}_{3/2}$	2867.067	10	5	34868.613	$1521_{5/2} - 36390^{\circ}_{3/2}$
2889.564	1		34597.152	$19248^{\circ}_{5/2} - 53845_{5/2}$	2867.029	5	5	34869.075	$14545^{\circ}_{5/2} - 49414_{3/2}$
2889.181	100r	25	34601.739	$9202^{\circ}_{7/2} - 43803_{7/2}$	2866.652	15	150	34873.660	$14484^{\circ}_{11/2} - 49357_{11/2}$
2888.904	5	5b	34605.056	$7331^{\circ}_{5/2} - 41936_{3/2}$	2866.407	25	20	34876.641	$4490^{\circ}_{5/2} - 39366_{5/2}$
2887.818	600	500	34618.069	$4146_{7/2} - 38764^{\circ}_{7/2}$	2865.242	15	20	34890.821	$7331^{\circ}_{5/2} - 42222_{7/2}$
2886.785	2	2	34630.456	$16033^{\circ}_{5/2} - 50663_{5/2}$	2864.980	2		34894.012	$9202^{\circ}_{7/2} - 44096_{9/2}$
2886.506	100	150	34633.803	$10855_{7/2} - 45489^{\circ}_{9/2}$	2864.657	50	200	34897.946	$17837^{\circ}_{1/2} - 52735_{3/2}$
2886.242	100	100	34636.971	$6691^{\circ}_{3/2} - 41328_{5/2}$					$17272^{\circ}_{9/2} - 52170_{11/2}$
2885.968	5	10	34640.260	$14484^{\circ}_{11/2} - 49124_{11/2}$	2863.069	1		34917.301	$24381_{7/2} - 59299^{\circ}_{5/2}$
2885.048	800	500	34651.305	$4113_{5/2} - 38764^{\circ}_{7/2}$	2862.732	1		34921.412	$19248^{\circ}_{5/2} - 54169_{7/2}$
2884.289	600	400	34660.423	$4490^{\circ}_{5/2} - 39150_{3/2}$	2862.646	3		34922.461	$8460_{3/2} - 43382^{\circ}_{5/2}$
2883.618	50b	20	34668.488	$9720^{\circ}_{7/2} - 44388_{5/2}$	2862.610	300r	20	34922.900	$1521_{5/2} - 36444^{\circ}_{3/2}$
2883.446	5	4	34670.556	$11725^{\circ}_{1/2} - 46395_{3/2}$	2862.527	8b	75	34923.912	$16906^{\circ}_{7/2} - 51830_{7/2}$
2883.184	2		34673.707	$13818^{\circ}_{7/2} - 48492_{5/2}$	2862.007	5		34930.257	$22014^{\circ}_{11/2} - 56945_{11/2}$
2882.959	2		34676.412	$12472^{\circ}_{5/2} - 47148_{3/2}$	2861.442	8b		34937.154	$10189^{\circ}_{11/2} - 45126_{9/2}$
2882.511	100	50	34681.802	$8605_{5/2} - 43287^{\circ}_{3/2}$	2861.415	300	300	34937.484	$10673^{\circ}_{5/2} - 45610_{5/2}$
2882.402	1		34683.113	$12488^{\circ}_{9/2} - 47171_{9/2}$	2861.331	100b	150b	34938.509	$9711_{7/2} - 44650^{\circ}_{7/2}$
2882.354	8	8	34683.691	$11116^{\circ}_{7/2} - 45800_{5/2}$	2861.271	15b	25b	34939.242	$9238^{\circ}_{9/2} - 44177_{11/2}$
2882.191	1		34685.652	$12485^{\circ}_{7/2} - 47171_{9/2}$	2859.691	1		34958.545	$16906^{\circ}_{7/2} - 51865_{5/2}$
2882.008	300s	300	34687.854	$11576^{\circ}_{3/2} - 46264_{3/2}$	2858.979	5	3	34967.251	$12902^{\circ}_{3/2} - 47869_{3/2}$
2881.137	100	150	34698.341	$6700^{\circ}_{9/2} - 41398_{9/2}$					$9585^{\circ}_{5/2} - 44552_{5/2}$
2880.803	1		34702.363	$16033^{\circ}_{5/2} - 50735_{3/2}$	2858.915	15	10	34968.034	$4490^{\circ}_{5/2} - 39458_{7/2}$
2880.313	1		34708.267	$21682^{\circ}_{7/2} - 56391_{5/2}$	2857.599	2	3	34984.137	$13468^{\circ}_{9/2} - 48453_{7/2}$
2879.958	2		34712.545	$9061_{5/2} - 43773^{\circ}_{7/2}$	2857.491	50	75	34985.459	$6691^{\circ}_{3/2} - 41676_{3/2}$
2879.531	40	75	34717.692	$8378^{\circ}_{7/2} - 43096_{5/2}$	2857.398	8	4	34986.597	$0_{3/2} - 34986^{\circ}_{3/2}$
2879.203	50b	20b	34721.647	$1859_{3/2} - 36581^{\circ}_{3/2}$	2857.262	2		34988.263	$6700^{\circ}_{9/2} - 41688_{7/2}$
2879.181	10b	10b	34721.912	$10673^{\circ}_{5/2} - 45395_{7/2}$	2856.300	2		35000.046	$17272^{\circ}_{9/2} - 52272_{7/2}$
2878.644	50b	75	34728.389	$15144^{\circ}_{3/2} - 49873_{5/2}$	2855.904	15b	100	35004.899	$11576^{\circ}_{3/2} - 46581_{5/2}$
2877.390	5		34743.523	$17121^{\circ}_{3/2} - 51865_{5/2}$	2855.867	10b	50b	35005.352	$7331^{\circ}_{5/2} - 42336_{5/2}$
2876.658	3		34752.364	$17983^{\circ}_{5/2} - 52735_{3/2}$	2854.918	10	100	35016.988	$15453^{\circ}_{7/2} - 50470_{9/2}$
2876.417	200b	150	34755.275	$6168^{\circ}_{7/2} - 40923_{5/2}$	2854.620	5	10	35020.643	$7331^{\circ}_{5/2} - 42352_{5/2}$
2875.641	25	200	34764.654	$20080^{\circ}_{7/2} - 54845_{9/2}$	2854.297	2		35024.606	$15710^{\circ}_{3/2} - 50735_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2854.134	100	200	35026.606	$13818^{\circ}_{7/2} - 48844_{9/2}$	2832.314	1000r	400	35296.436	$4146_{7/2} - 39443^{\circ}_{9/2}$
2853.933	2		35029.073	$16906^{\circ}_{7/2} - 51935_{5/2}$	2832.012	10	25	35300.200	$10855_{7/2} - 46155^{\circ}_{5/2}$
2853.338	1		35036.377	$18973^{\circ}_{7/2} - 54010_{7/2}$	2831.206	15	100b	35310.249	$10379_{9/2} - 45689^{\circ}_{7/2}$
2852.799	1		35042.996	$14484^{\circ}_{11/2} - 49527_{13/2}$	2830.997	3		35312.855	$14101^{\circ}_{1/2} - 49414_{3/2}$
2852.501	15	150	35046.657	$14790^{\circ}_{7/2} - 49837_{9/2}$	2830.955	3		35313.380	$9585^{\circ}_{5/2} - 44898_{7/2}$
2851.443	200	150	35059.660	$1521_{5/2} - 36581^{\circ}_{3/2}$	2830.905	1		35314.003	$15710^{\circ}_{3/2} - 51024_{3/2}$
2851.260	600r	300	35061.910	$1521_{5/2} - 36583^{\circ}_{7/2}$	2830.683	5	8	35316.772	$6691^{\circ}_{3/2} - 42008_{1/2}$
2849.592	2	2	35082.433	$14275^{\circ}_{9/2} - 49357_{11/2}$	2830.441	200	150	35319.792	$6168^{\circ}_{7/2} - 41488_{7/2}$
2849.169	8		35087.641	$9720^{\circ}_{7/2} - 44807_{7/2}$	2829.932	25	100	35326.144	$11576^{\circ}_{3/2} - 46902_{5/2}$
2848.686	1		35093.590	$21297^{\circ}_{5/2} - 56391_{5/2}$	2829.645	3		35329.727	$16033^{\circ}_{5/2} - 51362_{5/2}$
2848.013	10b	75	35101.882	$17460^{\circ}_{5/2} - 52562_{7/2}$	2829.433	20	50	35332.374	$10572^{\circ}_{9/2} - 45904_{9/2}$
2847.890	2		35103.398	$21131^{\circ}_{3/2} - 56235_{3/2}$	2827.988	100	150	35350.427	$9202^{\circ}_{7/2} - 44552_{5/2}$
2847.354	150	200	35110.006	$10379_{9/2} - 45489^{\circ}_{9/2}$	2827.755	20	150	35353.339	$14484^{\circ}_{11/2} - 49837_{9/2}$
2847.231	5b		35111.523	$7001_{3/2} - 42112^{\circ}_{3/2}$	2827.280	10	75	35359.279	$11576^{\circ}_{3/2} - 46935_{3/2}$
2846.757	1		35117.369	$16564^{\circ}_{11/2} - 51681_{9/2}$	2826.855	500	200	35364.594	$8018_{3/2} - 43382^{\circ}_{5/2}$
2846.531	15	50	35120.157	$15349^{\circ}_{11/2} - 50470_{9/2}$	2825.941	15b	100	35376.032	$13468^{\circ}_{9/2} - 48844_{9/2}$
2845.966	3		35127.129	$10673^{\circ}_{5/2} - 45800_{5/2}$	2825.375	25	100l	35383.119	$12488^{\circ}_{9/2} - 47871_{7/2}$
2845.835	15b	75	35128.746	$16818_{7/2} - 51946^{\circ}_{5/2}$	2825.172	10	5	35385.661	$12485^{\circ}_{7/2} - 47871_{7/2}$
2845.186	15	50	35136.758	$11116^{\circ}_{7/2} - 46253_{9/2}$	2824.536	8	2	35393.628	$8378^{\circ}_{7/2} - 43772_{5/2}$
2843.553	8	2	35156.936	$0_{3/2} - 35156^{\circ}_{5/2}$	2824.365	1		35395.771	$21682^{\circ}_{7/2} - 57078_{9/2}$
2843.304	15b	75b	35160.015	$6168^{\circ}_{7/2} - 41328_{5/2}$	2824.232	8	10	35397.438	$12472^{\circ}_{5/2} - 47869_{3/2}$
2843.056	10	20	35163.081	$10572^{\circ}_{9/2} - 45735_{11/2}$	2824.091	4		35399.205	$12472^{\circ}_{5/2} - 47871_{7/2}$
2842.812	800	200	35166.099	$1521_{5/2} - 36687^{\circ}_{5/2}$	2823.553	50	100	35405.950	$9720^{\circ}_{7/2} - 45126_{9/2}$
2842.674	20	50	35167.806	$8605_{5/2} - 43773^{\circ}_{7/2}$	2823.132	25	75	35411.229	$15324^{\circ}_{1/2} - 50735_{3/2}$
2842.530	2		35169.588	$14790^{\circ}_{7/2} - 49960_{7/2}$	2822.832	15	40	35414.992	$14545^{\circ}_{5/2} - 49960_{7/2}$
2841.811	200	50	35178.485	$9720^{\circ}_{7/2} - 44898_{7/2}$	2822.741	2		35416.134	$20080^{\circ}_{7/2} - 55496_{9/2}$
2841.162	200	200	35186.521	$9202^{\circ}_{7/2} - 44388_{5/2}$	2822.688	25	150	35416.799	$7001_{3/2} - 42418^{\circ}_{3/2}$
2841.087	8	3	35187.450	$7331^{\circ}_{5/2} - 42518_{7/2}$	2822.559	20	150	35418.418	$12902^{\circ}_{3/2} - 48320_{5/2}$
2840.154	200	150	35199.008	$0_{3/2} - 35198^{\circ}_{1/2}$	2822.446	15	50	35419.835	$7331^{\circ}_{5/2} - 42751_{7/2}$
2839.605	20	100	35205.813	$13406^{\circ}_{13/2} - 48612_{13/2}$	2822.407	10	10b	35420.325	$11725^{\circ}_{1/2} - 47145_{1/2}$
2839.335	25	40	35209.161	$6700^{\circ}_{9/2} - 41909_{9/2}$	2822.359	20	25	35420.927	$9400_{5/2} - 44821^{\circ}_{5/2}$
2839.240	200	150	35210.339	$4490^{\circ}_{5/2} - 39700_{5/2}$	2822.275	2		35421.982	$20969^{\circ}_{7/2} - 56391_{5/2}$
2839.084	10	10	35212.273	$9238^{\circ}_{9/2} - 44450_{9/2}$	2822.181	15b	75	35423.161	$11725^{\circ}_{1/2} - 47148_{3/2}$
2838.593	8	5	35218.364	$7001_{3/2} - 42219^{\circ}_{5/2}$	2822.025	200	200	35425.119	$8378^{\circ}_{7/2} - 43803_{7/2}$
2838.255	10	15	35222.558	$9585^{\circ}_{5/2} - 44807_{7/2}$	2821.602	100b	200	35430.430	$8378^{\circ}_{7/2} - 43809_{9/2}$
2837.886	3		35227.138	$15242^{\circ}_{9/2} - 50470_{9/2}$	2820.589	2		35443.154	$19050^{\circ}_{3/2} - 54493_{5/2}$
2837.641	10b	5	35230.179	$6168^{\circ}_{7/2} - 41398_{9/2}$	2820.335	200	150	35446.346	$6700^{\circ}_{9/2} - 42146_{11/2}$
2837.295	1000r	500	35234.475	$6213_{9/2} - 41447^{\circ}_{11/2}$	2819.322	200	200	35459.081	$7828_{1/2} - 43287^{\circ}_{3/2}$
2837.201	8b	5	35235.642	$11116^{\circ}_{7/2} - 46352_{7/2}$	2818.875	3	2	35464.704	$11116^{\circ}_{7/2} - 46581_{5/2}$
2836.593	2		35243.194	$12488^{\circ}_{9/2} - 47731_{9/2}$	2818.505	5		35469.359	$9720^{\circ}_{7/2} - 45189_{5/2}$
2836.435	75b	20	35245.157	$6691^{\circ}_{3/2} - 41936_{3/2}$	2817.135	20	50	35486.607	$11116^{\circ}_{7/2} - 46603_{5/2}$
2836.205	25	15	35248.015	$9202^{\circ}_{7/2} - 44450_{9/2}$	2816.927	20	50	35489.228	$9238^{\circ}_{9/2} - 44727_{11/2}$
2836.047	500	300	35249.979	$4146_{7/2} - 39396^{\circ}_{7/2}$	2816.070	100	150	35500.027	$6700^{\circ}_{9/2} - 42200_{9/2}$
2835.305	2		35259.203	$21131^{\circ}_{3/2} - 56391_{5/2}$	2815.312	5	4	35509.585	$9711_{7/2} - 45221^{\circ}_{5/2}$
2834.776	25	40	35265.783	$9238^{\circ}_{9/2} - 44503_{7/2}$	2815.050	10	15	35512.890	$10855_{7/2} - 46368^{\circ}_{9/2}$
2834.530	50	75	35268.843	$11116^{\circ}_{7/2} - 46385_{7/2}$	2814.576	50	150	35518.870	$15144^{\circ}_{3/2} - 50663_{5/2}$
2834.482	150	100	35269.441	$8018_{3/2} - 43287^{\circ}_{3/2}$	2814.480	25b	75	35520.081	$6168^{\circ}_{7/2} - 41688_{7/2}$
2834.025	3	3	35275.128	$17460^{\circ}_{5/2} - 52735_{3/2}$	2814.473	2b		35520.170	$18973^{\circ}_{7/2} - 54493_{5/2}$
2833.532	15	150	35281.265	$15349^{\circ}_{11/2} - 50631_{11/2}$	2814.319	300	200	35522.114	$6700^{\circ}_{9/2} - 42222_{7/2}$
2833.334	200	100	35283.730	$8460_{3/2} - 43744^{\circ}_{1/2}$	2812.424	15b	100	35546.047	$10189^{\circ}_{11/2} - 45735_{11/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2812.187	2		35549.042	$20686^{\circ}_{5/2} - 56235_{3/2}$	2788.687	10	50	35848.596	$12472^{\circ}_{5/2} - 48320_{5/2}$
2811.744	8b		35554.643	$6691^{\circ}_{3/2} - 42246_{1/2}$	2788.077	10	15	35856.439	$1859_{3/2} - 37716^{\circ}_{1/2}$
2811.413	5	10	35558.829	$13818^{\circ}_{7/2} - 49377_{7/2}$	2787.666	5	50	35861.725	$14545^{\circ}_{5/2} - 50407_{7/2}$
2811.157	3	5	35562.067	$14275^{\circ}_{9/2} - 49837_{9/2}$	2787.131	50	75	35868.608	$6244_{1/2} - 42112^{\circ}_{3/2}$
2810.580	4	20	35569.367	$11576^{\circ}_{3/2} - 47145_{1/2}$	2786.915	10	150	35871.388	$13250_{5/2} - 49121^{\circ}_{7/2}$
2810.358	4		35572.177	$11576^{\circ}_{3/2} - 47148_{3/2}$	2786.684	8	75	35874.362	$15349^{\circ}_{11/2} - 51224_{9/2}$
2809.460	1		35583.547	$15324^{\circ}_{1/2} - 50907_{3/2}$	2786.239	4	50	35880.091	$15144^{\circ}_{3/2} - 51024_{3/2}$
2808.996	200b	200	35589.424	$9061_{5/2} - 44650^{\circ}_{7/2}$	2785.603	4	20b	35888.282	$9238^{\circ}_{9/2} - 45126_{9/2}$
2808.894	8		35590.716	$15144^{\circ}_{3/2} - 50735_{3/2}$	2785.544	5	15b	35889.042	$13468^{\circ}_{9/2} - 49357_{11/2}$
2808.864	25	20	35591.096	$10673^{\circ}_{3/2} - 46264_{3/2}$	2784.975	15	75	35896.375	$7331^{\circ}_{5/2} - 43227_{5/2}$
2807.827	200	200	35604.240	$9585^{\circ}_{5/2} - 45189_{5/2}$	2784.060	8	75	35908.172	$10673^{\circ}_{5/2} - 46581_{5/2}$
2807.715	100	100	35605.661	$9202^{\circ}_{7/2} - 44807_{7/2}$	2783.924	5	10	35909.926	$15453^{\circ}_{7/2} - 51362_{5/2}$
2807.048	10	50	35614.121	$17121^{\circ}_{3/2} - 52735_{3/2}$	2783.662	0	15	35913.306	$7331^{\circ}_{5/2} - 43244_{3/2}$
2806.879	10	25	35616.265	$14790^{\circ}_{7/2} - 50407_{7/2}$	2783.489	10b	75	35915.537	$7828_{1/2} - 43744^{\circ}_{1/2}$
2805.721	4		35630.964	$18214^{\circ}_{3/2} - 53845_{5/2}$	2783.053	50	75	35921.164	$4490^{\circ}_{5/2} - 40411_{7/2}$
2804.652	10	3	35644.544	$10572^{\circ}_{9/2} - 46216_{11/2}$	2782.824	0	20	35924.119	$9202^{\circ}_{7/2} - 45126_{9/2}$
2804.580	10	3	35645.459	$6691^{\circ}_{3/2} - 42336_{5/2}$	2782.364	4	15	35930.058	$10673^{\circ}_{5/2} - 46603_{5/2}$
2803.760	2		35655.883	$16906^{\circ}_{7/2} - 52562_{7/2}$	2781.353	2	8	35943.118	$15710^{\circ}_{3/2} - 51653_{1/2}$
2803.376	50b	50	35660.767	$9238^{\circ}_{9/2} - 44898_{7/2}$	2780.694	15b	75	35951.636	$13406^{\circ}_{13/2} - 49357_{11/2}$
2802.278	40	20	35674.739	$9720^{\circ}_{7/2} - 45395_{7/2}$	2780.410	3	75	35955.308	$20989^{\circ}_{9/2} - 56945_{11/2}$
2801.938	50	25	35679.068	$10673^{\circ}_{5/2} - 46352_{7/2}$	2779.671	2b	10b	35964.867	$12488^{\circ}_{9/2} - 48453_{7/2}$
				$14790^{\circ}_{7/2} - 50470_{9/2}$	2779.646	1	10b	35965.190	$15710^{\circ}_{3/2} - 51676_{3/2}$
2801.766	8		35681.258	$10572^{\circ}_{9/2} - 46253_{9/2}$	2779.476	2	10	35967.389	$12485^{\circ}_{7/2} - 48453_{7/2}$
2800.569	200	100	35696.508	$9202^{\circ}_{7/2} - 44898_{7/2}$	2778.704	10	75	35977.382	$9711_{7/2} - 45689^{\circ}_{7/2}$
2800.249	10	15	35700.587	$15324^{\circ}_{1/2} - 51024_{3/2}$	2778.426	1	5	35980.981	$12472^{\circ}_{5/2} - 48453_{7/2}$
2799.334	0	8	35712.256	$10673^{\circ}_{5/2} - 46385_{7/2}$	2778.401	1	5	35981.305	$15242^{\circ}_{9/2} - 51224_{9/2}$
2799.110	50	75	35715.114	$4146_{7/2} - 39861^{\circ}_{5/2}$	2778.055	5b	15	35985.786	$14484^{\circ}_{11/2} - 50470_{9/2}$
2798.921	3	10	35717.525	$8378^{\circ}_{7/2} - 44096_{9/2}$	2778.020	10	25	35986.240	$1859_{3/2} - 37846^{\circ}_{5/2}$
2798.866	2	10	35718.227	$13406^{\circ}_{13/2} - 49124_{11/2}$	2777.929	3	50	35987.419	$9202^{\circ}_{7/2} - 45189_{5/2}$
2798.661	50	50	35720.843	$9585^{\circ}_{5/2} - 45306_{3/2}$	2777.807	0	4	35988.999	$10379_{9/2} - 46368^{\circ}_{9/2}$
2798.499	5	15	35722.911	$10673^{\circ}_{5/2} - 46395_{3/2}$	2776.470	0	4	36006.328	$12485^{\circ}_{7/2} - 48492_{5/2}$
2798.263	20	100	35725.924	$8018_{3/2} - 43744^{\circ}_{1/2}$	2776.196	3	5	36009.882	$8378^{\circ}_{7/2} - 44388_{5/2}$
2797.736	200	150	35732.653	$4490^{\circ}_{5/2} - 40222_{3/2}$	2775.459	0	75	36019.443	$13818^{\circ}_{7/2} - 49837_{9/2}$
2797.020	50	150	35741.800	$1859_{3/2} - 37601^{\circ}_{3/2}$	2774.840	10	75	36027.478	$10189^{\circ}_{11/2} - 46216_{11/2}$
2796.509	20	25	35748.330	$4113_{5/2} - 39861^{\circ}_{5/2}$	2774.498	20	8	36031.919	$6168^{\circ}_{7/2} - 42200_{9/2}$
2795.528	5	25	35760.874	$9061_{5/2} - 44821^{\circ}_{5/2}$	2774.411	1	5	36033.048	$10673^{\circ}_{5/2} - 46706_{7/2}$
2795.195	10	25	35765.134	$7331^{\circ}_{5/2} - 43096_{5/2}$	2774.065	50	50	36037.54	$4146_{7/2} - 40184^{\circ}_{7/2}$
2794.716	0	3	35771.264	$15453^{\circ}_{7/2} - 51224_{9/2}$	2773.951	5	75	36039.024	$13250_{5/2} - 49289^{\circ}_{5/2}$
2794.255	25	100	35777.165	$9711_{7/2} - 45489^{\circ}_{9/2}$	2773.523	3	8	36044.585	$8605_{5/2} - 44650^{\circ}_{7/2}$
2794.012	4	50	35780.277	$10572^{\circ}_{9/2} - 46352_{7/2}$	2773.022	10	25	36051.096	$6700^{\circ}_{9/2} - 42751_{7/2}$
2793.567	4	15p	35785.976	$11116^{\circ}_{7/2} - 46902_{5/2}$	2772.808	1	4	36053.879	$6168^{\circ}_{7/2} - 42222_{7/2}$
2793.432	1	8	35787.705	$12902^{\circ}_{3/2} - 48689_{3/2}$	2772.741	2	8	36054.750	$13818^{\circ}_{7/2} - 49873_{5/2}$
2792.674	2	8	35797.418	$16033^{\circ}_{5/2} - 51830_{7/2}$					$11116^{\circ}_{7/2} - 47171_{9/2}$
2791.670	3	10	35810.292	$12488^{\circ}_{9/2} - 48298_{7/2}$	2772.010	50	25	36064.257	$10189^{\circ}_{11/2} - 46253_{9/2}$
2791.432	8b	75	35813.345	$10572^{\circ}_{9/2} - 46385_{7/2}$	2771.515	50b	100b	36070.698	$4113_{5/2} - 40184^{\circ}_{7/2}$
2791.007	50	75	35818.799	$6700^{\circ}_{9/2} - 42518_{7/2}$	2771.469	20b	100b	36071.297	$8378^{\circ}_{7/2} - 44450_{9/2}$
2790.868	3	10	35820.582	$9400_{5/2} - 45221^{\circ}_{5/2}$	2770.815	75	100	36079.810	$1521_{5/2} - 37601^{\circ}_{3/2}$
2790.420	5	50	35826.333	$12472^{\circ}_{5/2} - 48298_{7/2}$	2770.134	2	20	36088.680	$20989^{\circ}_{9/2} - 57078_{9/2}$
2789.981	1	4	35831.970	$16033^{\circ}_{5/2} - 51865_{5/2}$	2768.841	50	150	36105.531	$6213_{9/2} - 42319^{\circ}_{9/2}$
2789.729	0	5	35835.206	$12485^{\circ}_{7/2} - 48320_{5/2}$	2768.106	0	3	36115.118	$20120^{\circ}_{5/2} - 56235_{3/2}$

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TABLE 3. *Classified lines of* Th II – Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2767.884	3	15	36118.014	$14545^{\circ}_{5/2} - 50663_{5/2}$	2738.816	15	20	36501.327	$4490^{\circ}_{5/2} - 40991_{3/2}$
2767.669	0	4l	36120.820	$13406^{\circ}_{13/2} - 49527_{13/2}$	2738.324	20	50	36507.885	$4146_{7/2} - 40654^{\circ}_{5/2}$
2767.357	4	25	36124.892	$8378^{\circ}_{7/2} - 44503_{7/2}$	2738.224	1	10	36509.218	$15144^{\circ}_{3/2} - 51653_{1/2}$
2766.637	3	5	36134.293	$10572^{\circ}_{9/2} - 46706_{7/2}$	2738.119	1	8	36510.618	$17983^{\circ}_{5/2} - 54493_{5/2}$
2765.124	50	150	36154.064	$4490^{\circ}_{5/2} - 40644_{5/2}$	2737.422	15	75	36519.914	$8378^{\circ}_{7/2} - 44898_{7/2}$
2764.640	20	150	36160.393	$9061_{5/2} - 45221^{\circ}_{5/2}$	2737.185	0	3	36523.076	$18973^{\circ}_{7/2} - 55496_{9/2}$
2764.180	2	5b	36166.410	$12902^{\circ}_{3/2} - 49068_{5/2}$	2736.710	2	25	36529.415	$16033^{\circ}_{5/2} - 52562_{7/2}$
2763.605	50b	100	36173.934	$6244_{1/2} - 42418^{\circ}_{3/2}$	2736.439	8	20	36533.032	$9720^{\circ}_{7/2} - 46253_{9/2}$
2762.835	3	15l	36184.016	$9720^{\circ}_{7/2} - 45904_{9/2}$	2736.177	4	5	36536.530	$6691^{\circ}_{3/2} - 43227_{5/2}$
2762.402	8	25	36189.687	$10189^{\circ}_{11/2} - 46378_{13/2}$	2735.837	20	500	36541.070	$4113_{5/2} - 40654^{\circ}_{5/2}$
2762.041	1	3	36194.417	$14275^{\circ}_{9/2} - 50470_{9/2}$	2735.197	1	10	36549.620	$17460^{\circ}_{5/2} - 54010_{7/2}$
2761.021	2	8	36207.787	$11116^{\circ}_{7/2} - 47324_{5/2}$	2735.060	4	15	36551.451	$12570_{7/2} - 49121^{\circ}_{7/2}$
2760.391	20	200	36216.051	$8605_{5/2} - 44821^{\circ}_{5/2}$	2734.907	3	4	36553.495	$6691^{\circ}_{3/2} - 43244_{3/2}$
2759.720	3	15	36224.856	$15710^{\circ}_{3/2} - 51935_{5/2}$	2734.405	50	75	36560.206	$4146_{7/2} - 40706^{\circ}_{7/2}$
2759.405	5	75	36228.991	$15453^{\circ}_{7/2} - 51681_{9/2}$	2733.529	3	15	36571.922	$14790^{\circ}_{7/2} - 51362_{5/2}$
2758.958	15	15	36234.860	$1521_{5/2} - 37756^{\circ}_{7/2}$	2733.205	15	25	36576.257	$1859_{3/2} - 38436^{\circ}_{3/2}$
2757.900	0	8	36248.760	$17272^{\circ}_{9/2} - 53520_{9/2}$	2732.808	50	50	36581.570	$0_{3/2} - 36581^{\circ}_{3/2}$
2757.382	8	15	36255.569	$6700^{\circ}_{9/2} - 42955_{9/2}$	2732.702	15	50	36582.989	$6168^{\circ}_{7/2} - 42751_{7/2}$
2756.855	2	8	36262.499	$10673^{\circ}_{5/2} - 46935_{3/2}$	2731.918	10	25	36593.487	$4113_{5/2} - 40706^{\circ}_{7/2}$
2755.955	4	50	36274.341	$16033^{\circ}_{5/2} - 52307_{3/2}$	2730.308	8b	150b	36615.064	$11116^{\circ}_{7/2} - 47731_{9/2}$
2755.561	0	3	36279.527	$18214^{\circ}_{3/2} - 54493_{5/2}$	2730.261	15b	150b	36615.694	$8605_{5/2} - 45221^{\circ}_{5/2}$
2755.051	4	15	36286.243	$7001_{3/2} - 43287^{\circ}_{3/2}$	2729.327	15	150	36628.224	$9061_{5/2} - 45689^{\circ}_{7/2}$
2754.890	2	10	36288.363	$9400_{5/2} - 45689^{\circ}_{7/2}$	2729.053	4	5	36631.901	$9720^{\circ}_{7/2} - 46352_{7/2}$
2754.801	1	10	36289.536	$10572^{\circ}_{9/2} - 46861_{11/2}$	2728.909	20	25	36633.834	$1859_{3/2} - 38493^{\circ}_{5/2}$
2754.520	2	5b	36293.238	$11576^{\circ}_{3/2} - 47869_{3/2}$	2728.701	0	10b	36636.626	$9061_{5/2} - 45697^{\circ}_{3/2}$
2754.252	4	15	36296.769	$9400_{5/2} - 45697^{\circ}_{3/2}$	2727.578	0	3	36651.709	$13818^{\circ}_{7/2} - 50470_{9/2}$
2753.092	5	50	36312.061	$12219_{3/2} - 48532^{\circ}_{1/2}$	2727.231	5	20	36656.373	$9711_{7/2} - 46368^{\circ}_{9/2}$
2752.166	75	100	36324.279	$1521_{5/2} - 37846^{\circ}_{5/2}$	2726.482	15	75	36666.442	$9238^{\circ}_{9/2} - 45904_{9/2}$
2751.754	2	50	36329.717	$15324^{\circ}_{1/2} - 51653_{1/2}$	2726.027	2	10	36672.562	$10189^{\circ}_{11/2} - 46861_{11/2}$
2751.572	4	3	36332.120	$15349^{\circ}_{11/2} - 51681_{9/2}$	2725.559	4	15	36678.858	$9585^{\circ}_{5/2} - 46264_{3/2}$
2750.538	1	4	36345.777	$12472^{\circ}_{5/2} - 48817_{3/2}$	2724.881	50	200	36687.984	$0_{3/2} - 36687^{\circ}_{5/2}$
2750.174	2	4	36350.587	$6168^{\circ}_{7/2} - 42518_{7/2}$	2723.821	0	10d	36702.261	$9202^{\circ}_{7/2} - 45904_{9/2}$
2749.713	8	100	36356.681	$12488^{\circ}_{9/2} - 48844_{9/2}$	2723.416	0	5	36707.719	$18214^{\circ}_{3/2} - 54922_{3/2}$
2749.531	50	100	36359.088	$4113_{5/2} - 40472^{\circ}_{3/2}$	2723.317	4	75	36709.053	$17460^{\circ}_{5/2} - 54169_{7/2}$
2749.355	25	25	36361.415	$8460_{3/2} - 44821^{\circ}_{5/2}$	2722.571	0	10	36719.111	$12570_{7/2} - 49289^{\circ}_{5/2}$
2748.805	5	50b	36368.690	$13468^{\circ}_{9/2} - 49837_{9/2}$	2722.468	3	10	36720.500	$15144^{\circ}_{3/2} - 51865_{5/2}$
2748.137	2	10	36377.530	$15453^{\circ}_{7/2} - 51830_{7/2}$	2722.380	25b	50b	36721.687	$1859_{3/2} - 38581^{\circ}_{5/2}$
2747.847	8	50	36381.369	$7001_{3/2} - 43382^{\circ}_{5/2}$					$10189^{\circ}_{11/2} - 46910_{13/2}$
2747.586	3	50	36384.825	$17460^{\circ}_{5/2} - 53845_{5/2}$	2722.313	5	50	36722.591	$14545^{\circ}_{5/2} - 51268_{7/2}$
2747.156	75	100	36390.520	$0_{3/2} - 36390^{\circ}_{3/2}$	2722.216	0	20b	36723.899	$17121^{\circ}_{3/2} - 53845_{5/2}$
2745.527	25	25	36412.110	$15453^{\circ}_{7/2} - 51865_{5/2}$	2721.691	20	200b	36730.982	$6213_{9/2} - 42944^{\circ}_{7/2}$
2744.247	3	4	36429.093	$8378^{\circ}_{7/2} - 44807_{7/2}$	2721.172	1	5	36737.988	$17272^{\circ}_{9/2} - 54010_{7/2}$
2743.499	1	5	36439.025	$15242^{\circ}_{9/2} - 51681_{9/2}$	2721.022	0	4	36740.013	$14484^{\circ}_{11/2} - 51224_{9/2}$
2743.155	3b	10	36443.594	$9711_{7/2} - 46155^{\circ}_{5/2}$	2720.822	0	15	36742.713	$7001_{3/2} - 43744^{\circ}_{1/2}$
2743.063	50	50	36444.816	$0_{3/2} - 36444^{\circ}_{3/2}$	2720.687	0	4	36744.536	$11576^{\circ}_{3/2} - 48320_{5/2}$
2740.712	1	4	36476.077	$7331^{\circ}_{5/2} - 43807_{3/2}$	2720.627	0	10	36745.347	$22642^{\circ}_{9/2} - 59387_{7/2}$
2740.469	3	50	36479.311	$14545^{\circ}_{5/2} - 51024_{3/2}$	2720.471	5	15	36747.454	$8378^{\circ}_{7/2} - 45126_{9/2}$
2740.218	1	15	36482.653	$15453^{\circ}_{7/2} - 51935_{5/2}$	2719.929	15	75	36754.776	$11116^{\circ}_{7/2} - 47871_{7/2}$
2739.545	0	50	36491.614	$13468^{\circ}_{9/2} - 49960_{7/2}$	2719.449	4	25	36761.263	$8460_{3/2} - 45221^{\circ}_{5/2}$
2739.133	2	4	36497.103	$9238^{\circ}_{9/2} - 45735_{11/2}$	2717.251	3	15	36790.998	$15144^{\circ}_{3/2} - 51935_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2716.578	5	25	36800.112	$9585^{\circ}_{5/2} - 46385_{7/2}$	2690.311	25	20	37159.392	$10572^{\circ}_{9/2} - 47731_{9/2}$
2716.328	50	100	36803.499	$19880_{9/2} - 56683^{\circ}_{7/2}$	2690.102	1	15b	37162.279	$13468^{\circ}_{9/2} - 50631_{11/2}$
				$8018_{3/2} - 44821^{\circ}_{5/2}$	2690.064	3	15b	37162.804	$15144^{\circ}_{3/2} - 52307_{3/2}$
2715.156	0	10b	36819.384	$15453^{\circ}_{7/2} - 52272^{*}_{7/2}$	2689.371	2	5	37172.379	$7331^{\circ}_{5/2} - 44503_{7/2}$
2715.082	8	100b	36820.387	$15349^{\circ}_{11/2} - 52170_{11/2}$	2688.667	3	15	37182.112	$9720^{\circ}_{7/2} - 46902_{5/2}$
2713.768	0	25b	36838.215	$4490^{\circ}_{5/2} - 41328_{5/2}$	2688.582	2	3	37183.287	$9202^{\circ}_{7/2} - 46385_{7/2}$
2713.243	4	50	36845.342	$13818^{\circ}_{7/2} - 50663_{5/2}$	2688.337	8	15	37186.676	$4490^{\circ}_{5/2} - 41676_{3/2}$
2712.084	3	20	36861.087	$9720^{\circ}_{7/2} - 46581_{5/2}$	2687.903	3	20	37192.679	$22106_{5/2} - 59299^{\circ}_{5/2}$
2711.448	15b	75	36869.733	$12488^{\circ}_{9/2} - 49357_{11/2}$	2687.533	3b	8b	37197.800	$14484^{\circ}_{11/2} - 51681_{9/2}$
2711.130	0	5s	36874.057	$22513^{\circ}_{5/2} - 59387_{7/2}$	2687.500	5	10b	37198.257	$10673^{\circ}_{5/2} - 47871_{7/2}$
2710.474	5	50	36882.981	$9720^{\circ}_{7/2} - 46603_{5/2}$	2687.125	50b	100	37203.447	$8018_{3/2} - 45221^{\circ}_{5/2}$
2710.034	2	25	36888.969	$12488^{\circ}_{9/2} - 49377_{7/2}$	2685.586	3	15	37224.766	$13406^{\circ}_{13/2} - 50631_{11/2}$
2709.934	2	8	36890.331	$11116^{\circ}_{7/2} - 48006_{9/2}$	2685.024	0	8b	37232.557	$8605_{5/2} - 45838^{\circ}_{3/2}$
2709.843	3	25	36891.569	$12485^{\circ}_{7/2} - 49377_{7/2}$	2684.669	5	8	37237.480	$8460_{3/2} - 45697^{\circ}_{3/2}$
2709.407	2	25l	36897.505	$17272^{\circ}_{9/2} - 54169_{7/2}$	2684.288	50	100	37242.765	$1521_{5/2} - 38764^{\circ}_{7/2}$
2708.176	50	100	36914.276	$1521_{5/2} - 38436^{\circ}_{3/2}$	2682.018	0	5	37274.285	$6691^{\circ}_{3/2} - 43965_{1/2}$
2708.071	5	25b	36915.707	$11576^{\circ}_{3/2} - 48492_{5/2}$	2680.210	3	10	37299.428	$10572^{\circ}_{9/2} - 47871_{7/2}$
2707.525	8	10	36923.152	$14101^{\circ}_{1/2} - 51024_{3/2}$	2678.934	15	50	37317.193	$9585^{\circ}_{5/2} - 46902_{5/2}$
2706.408	2	25	36938.390	$13468^{\circ}_{9/2} - 50407_{7/2}$	2678.752	0	20	37319.728	$15242^{\circ}_{9/2} - 52562_{7/2}$
2704.489	3	50	36964.598	$11725^{\circ}_{1/2} - 48689_{3/2}$	2677.544	2	10	37336.564	$11116^{\circ}_{7/2} - 48453_{7/2}$
2703.957	75	200	36971.871	$1521_{5/2} - 38493^{\circ}_{5/2}$	2676.623	3	25	37349.411	$12488^{\circ}_{9/2} - 49837_{9/2}$
2703.189	3	15	36982.374	$10189^{\circ}_{11/2} - 47171_{9/2}$	2676.559	3	25	37350.304	$9585^{\circ}_{5/2} - 46935_{3/2}$
2702.922	5	25	36986.027	$9720^{\circ}_{7/2} - 46706_{7/2}$	2676.440	3	25s	37351.964	$12485^{\circ}_{7/2} - 49837_{9/2}$
2702.852	2	15	36986.985	$19248^{\circ}_{5/2} - 56235_{3/2}$	2675.670	5	50	37362.713	$9061_{5/2} - 46423^{\circ}_{3/2}$
2702.202	2	4b	36995.882	$9585^{\circ}_{5/2} - 46581_{5/2}$	2674.988	0	10d	37372.238	$17121^{\circ}_{3/2} - 54493_{5/2}$
2702.052	4	5	36997.935	$4490^{\circ}_{5/2} - 41488_{7/2}$	2674.580	0	5	37377.939	$8460_{3/2} - 45838^{\circ}_{3/2}$
2701.818	8	75	37001.139	$13468^{\circ}_{9/2} - 50470_{9/2}$	2673.281	2	4	37396.100	$6700^{\circ}_{9/2} - 44096_{9/2}$
2700.602	4	15	37017.799	$9585^{\circ}_{5/2} - 46603_{5/2}$	2672.945	50	40	37400.80	$9202^{\circ}_{7/2} - 46603_{5/2}$
2700.080	0	100	37024.955	$15710^{\circ}_{3/2} - 52735_{3/2}$	2672.171	4	5	37411.634	$15324^{\circ}_{1/2} - 52735_{3/2}$
2699.012	3	50	37039.605	$14790^{\circ}_{7/2} - 51830_{7/2}$	2671.469	4	50	37421.464	$8378^{\circ}_{7/2} - 45800_{5/2}$
2698.730	15b	75	37043.475	$6244_{1/2} - 43287^{\circ}_{3/2}$	2669.695	3	5	37446.329	$4490^{\circ}_{5/2} - 41936_{3/2}$
2698.169	5	15s	37051.177	$9202^{\circ}_{7/2} - 46253_{9/2}$	2669.447	3	25	37449.808	$13818^{\circ}_{7/2} - 51268_{7/2}$
2697.720	3	8	37057.343	$7331^{\circ}_{5/2} - 44388_{5/2}$	2667.544	8	15	37476.522	$7331^{\circ}_{5/2} - 44807_{7/2}$
2697.546	25	75	37059.733	$1521_{5/2} - 38581^{\circ}_{5/2}$	2667.504	2	4	37477.084	$6700^{\circ}_{9/2} - 44177_{11/2}$
2696.827	8	75	37069.613	$12219_{3/2} - 49289^{\circ}_{5/2}$	2667.193	0	5	37481.454	$14790^{\circ}_{7/2} - 52272_{7/2}$
2696.174	10	25	37078.591	$6168^{\circ}_{7/2} - 43246_{7/2}$	2666.412	2	5	37492.432	$11576^{\circ}_{3/2} - 49068_{5/2}$
2695.988	2	3	37081.149	$6691^{\circ}_{3/2} - 43772_{5/2}$	2665.884	5	50	37499.857	$6244_{1/2} - 43744^{\circ}_{1/2}$
2695.810	25	75	37083.597	$8605_{5/2} - 45689^{\circ}_{7/2}$	2664.051	5	15b	37525.657	$8378^{\circ}_{7/2} - 45904_{9/2}$
2695.553	50	150	37087.132	$10379_{9/2} - 47466^{\circ}_{11/2}$	2662.861	20	75	37542.426	$10189^{\circ}_{11/2} - 47731_{9/2}$
2695.203	50	100	37091.948	$8605_{5/2} - 45697^{\circ}_{3/2}$	2662.343	10	75	37549.730	$8605_{5/2} - 46155^{\circ}_{5/2}$
2695.017	8	50	37094.508	$9061_{5/2} - 46155^{\circ}_{5/2}$	2662.171	1	8	37552.156	$14101^{\circ}_{1/2} - 51653_{1/2}$
2694.341	5	15	37103.814	$6700^{\circ}_{9/2} - 43803_{7/2}$	2661.969	0	5	37555.005	$14275^{\circ}_{9/2} - 51830_{7/2}$
2693.959	30	30	37109.07	$6700^{\circ}_{9/2} - 43809_{9/2}$	2661.724	0	4	37558.462	$7331^{\circ}_{5/2} - 44889_{3/2}$
2693.628	2	100b	37113.635	$11576^{\circ}_{3/2} - 48689_{3/2}$	2661.386	15	75	37563.232	$9585^{\circ}_{5/2} - 47148_{3/2}$
2693.099	3	8	37120.925	$9585^{\circ}_{5/2} - 46706_{7/2}$	2661.090	1	25	37567.410	$7331^{\circ}_{5/2} - 44898_{7/2}$
2692.416	75	200	37130.341	$0_{3/2} - 37130^{\circ}_{1/2}$	2660.965	1	8	37569.174	$15349^{\circ}_{11/2} - 52918_{13/2}$
2691.513	0	8l	37142.798	$19248^{\circ}_{5/2} - 56391_{5/2}$	2660.680	0	4	37573.198	$17272^{\circ}_{9/2} - 54845_{9/2}$
2691.374	8b	15	37144.716	$14790^{\circ}_{7/2} - 51935_{5/2}$	2660.596	15	25	37574.384	$14101^{\circ}_{1/2} - 51676_{3/2}$
2691.172	10	75	37147.504	$9238^{\circ}_{9/2} - 46385_{7/2}$	2659.417	1	5	37591.041	$15144^{\circ}_{3/2} - 52735_{3/2}$
2690.994	8b	20	37149.961	$9202^{\circ}_{7/2} - 46352_{7/2}$	2658.664	25	75	37601.687	$0_{3/2} - 37601^{\circ}_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2658.490	4	10b	37604.149	$9720^{\circ}_{7/2} - 47324_{5/2}$	2629.620	3	50	38016.971	$14545^{\circ}_{5/2} - 52562_{7/2}$
				$6168^{\circ}_{7/2} - 43772_{5/2}$	2629.365	0	3	38020.658	$18214^{\circ}_{3/2} - 56235_{3/2}$
2658.216	8	15	37608.024	$0_{3/2} - 37607^{\circ}_{1/2}$	2628.918	0	8	38027.122	$6700^{\circ}_{9/2} - 44727_{11/2}$
2656.262	4	8	37635.688	$6168^{\circ}_{7/2} - 43803_{7/2}$	2628.811	20	100	38028.670	$4490^{\circ}_{5/2} - 42518_{7/2}$
2655.887	3	20	37641.002	$6168^{\circ}_{7/2} - 43809_{9/2}$	2627.557	2	50	38046.818	$13818^{\circ}_{7/2} - 51865_{5/2}$
2655.408	0	10	37647.791	$10673^{\circ}_{5/2} - 48320_{5/2}$	2626.394	15	25	38063.665	$7331^{\circ}_{5/2} - 45395_{7/2}$
2653.163	2	25	37679.645	$16818_{7/2} - 54497^{\circ}_{7/2}$	2626.098	0	20	38067.955	$15453^{\circ}_{7/2} - 53520_{9/2}$
2652.065	15	50	37695.244	$8460_{3/2} - 46155^{\circ}_{5/2}$	2625.737	25	100	38073.188	$4146_{7/2} - 42219^{\circ}_{5/2}$
2651.907	4	3	37697.490	$6691^{\circ}_{3/2} - 44388_{5/2}$	2624.582	0	3b	38089.942	$21297^{\circ}_{5/2} - 59387_{7/2}$
2651.703	2	20	37700.390	$9202^{\circ}_{7/2} - 46902_{5/2}$	2624.033	2	3	38097.911	$6691^{\circ}_{3/2} - 44789_{1/2}$
2651.402	1	4	37704.670	$21682^{\circ}_{7/2} - 59387_{7/2}$	2623.448	25	100	38106.406	$4113_{5/2} - 42219^{\circ}_{5/2}$
2650.583	25	200	37716.319	$0_{3/2} - 37716^{\circ}_{1/2}$	2622.686	10	8	38117.477	$13818^{\circ}_{7/2} - 51935_{5/2}$
2649.866	15	100	37726.524	$10572^{\circ}_{9/2} - 48298_{7/2}$	2622.361	4	50	38122.201	$9202^{\circ}_{7/2} - 47324_{5/2}$
2649.736	1	5	37728.375	$11116^{\circ}_{7/2} - 48844_{9/2}$	2621.506	0	10	38134.633	$15710^{\circ}_{3/2} - 53845_{5/2}$
2649.477	10	25	37732.063	$4490^{\circ}_{5/2} - 42222_{7/2}$	2621.376	2	50	38136.524	$16033^{\circ}_{5/2} - 54169_{7/2}$
2648.994	1	8	37738.942	$9585^{\circ}_{5/2} - 47324_{5/2}$	2620.942	2	15	38142.839	$12488^{\circ}_{9/2} - 50631_{11/2}$
2648.210	3	20	37750.114	$6700^{\circ}_{9/2} - 44450_{9/2}$	2620.375	1	8	38151.092	$9720^{\circ}_{7/2} - 47871_{7/2}$
2647.844	0	4l	37755.332	$13468^{\circ}_{9/2} - 51224_{9/2}$	2619.008	10	75	38171.004	$15349^{\circ}_{11/2} - 53520_{9/2}$
2647.507	2	15b	37760.138	$11725^{\circ}_{7/2} - 49485_{1/2}$	2618.912	25b	100	38172.403	$4146_{7/2} - 42319^{\circ}_{9/2}$
2647.423	4	8	37761.335	$12902^{\circ}_{3/2} - 50663_{5/2}$	2618.625	0	3	38176.586	$18214^{\circ}_{3/2} - 56391_{5/2}$
2647.382	2	15	37761.920	$14545^{\circ}_{5/2} - 52307_{3/2}$	2617.114	20	15	38198.626	$6700^{\circ}_{9/2} - 44898_{7/2}$
2646.543	1	3	37773.891	$17722^{\circ}_{9/2} - 55496_{9/2}$	2616.850	10	15	38202.480	$8378^{\circ}_{7/2} - 46581_{5/2}$
2644.775	2	15	37799.141	$13468^{\circ}_{9/2} - 51268_{7/2}$	2616.631	1	10	38205.677	$14101^{\circ}_{1/2} - 52307_{3/2}$
2644.681	2	25	37800.484	$17121^{\circ}_{3/2} - 54922_{3/2}$	2615.641	2	5	38220.137	$7001_{3/2} - 45221^{\circ}_{5/2}$
2644.460	2	5	37803.643	$6700^{\circ}_{9/2} - 44503_{7/2}$	2615.345	3	50	38224.462	$17272^{\circ}_{9/2} - 55496_{9/2}$
2643.461	3	20	37817.929	$8605_{5/2} - 46423^{\circ}_{3/2}$					$8378^{\circ}_{7/2} - 46603_{5/2}$
2643.385	0	5	37819.016	$10673^{\circ}_{5/2} - 48492_{5/2}$	2612.875	3	25	38260.594	$11116^{\circ}_{7/2} - 49377_{7/2}$
2643.280	4	20	37820.518	$7001_{3/2} - 44821^{\circ}_{5/2}$	2612.688	2	10	38263.332	$12472^{\circ}_{5/2} - 50735_{3/2}$
2642.401	3	15	37833.098	$12902^{\circ}_{3/2} - 50735_{3/2}$	2612.465	0	10	38266.598	$10855_{7/2} - 49121^{\circ}_{7/2}$
2642.037	0	4	37838.311	$11576^{\circ}_{3/2} - 49414_{3/2}$	2612.031	0	4	38272.956	$10572^{\circ}_{9/2} - 48844_{9/2}$
2641.488	75	150	37846.174	$0_{3/2} - 37846^{\circ}_{5/2}$	2611.688	4	50	38277.982	$13250_{5/2} - 51528^{\circ}_{3/2}$
2640.424	2	5	37861.424	$6691^{\circ}_{3/2} - 44552_{5/2}$					$15242^{\circ}_{9/2} - 53520_{9/2}$
2640.391	5	10	37861.897	$4490^{\circ}_{5/2} - 42352_{5/2}$	2611.420	2	5	38281.910	$6168^{\circ}_{7/2} - 44450_{9/2}$
2640.269	10	25	37863.646	$13818^{\circ}_{7/2} - 51681_{9/2}$	2611.263	2	8	38284.212	$9585^{\circ}_{5/2} - 47869_{3/2}$
2639.879	4	50	37869.240	$7828_{1/2} - 45697^{\circ}_{3/2}$	2611.134	2b	10b	38286.103	$9585^{\circ}_{5/2} - 47871_{7/2}$
2639.503	25	50	37874.634	$1521_{5/2} - 39396^{\circ}_{7/2}$	2610.412	1	3	38296.692	$11576^{\circ}_{3/2} - 49873_{5/2}$
2639.053	1	5	37881.092	$10572^{\circ}_{9/2} - 48453_{7/2}$	2609.857	25	75	38304.835	$4113_{5/2} - 42418^{\circ}_{3/2}$
2637.098	0	8	37909.173	$11576^{\circ}_{3/2} - 49485_{1/2}$	2608.321	4	25	38327.391	$8378^{\circ}_{7/2} - 46706_{7/2}$
2635.414	3	10	37933.395	$9238^{\circ}_{9/2} - 47171_{9/2}$	2607.775	3	8	38335.415	$6168^{\circ}_{7/2} - 44503_{7/2}$
2635.290	3	15	37935.180	$12472^{\circ}_{5/2} - 50407_{7/2}$	2607.481	8	25	38339.738	$1521_{5/2} - 39861^{\circ}_{5/2}$
2635.043	0	5	37938.736	$16906^{\circ}_{7/2} - 54845_{9/2}$	2605.994	4	25	38361.613	$13468^{\circ}_{9/2} - 51830_{7/2}$
2634.108	2	20	37952.202	$11116^{\circ}_{7/2} - 49068_{5/2}$	2603.909	3	25	38392.328	$15453^{\circ}_{7/2} - 53845_{5/2}$
2633.327	10	50	37963.457	$8460_{3/2} - 46423^{\circ}_{3/2}$	2603.560	0	15	38397.474	$17837^{\circ}_{1/2} - 56235_{3/2}$
2632.925	2	10	37969.253	$9202^{\circ}_{7/2} - 47171_{9/2}$					$20989^{\circ}_{9/2} - 59387_{7/2}$
2632.641	2	15	37973.349	$8378^{\circ}_{7/2} - 46352_{7/2}$	2603.014	3	25b	38405.528	$8018_{3/2} - 46423^{\circ}_{3/2}$
2632.050	0	3	37981.875	$12488^{\circ}_{9/2} - 50470_{9/2}$	2602.154	0	4	38418.220	$20969^{\circ}_{7/2} - 59387_{7/2}$
2630.817	10	50	37999.675	$4113_{5/2} - 42112^{\circ}_{3/2}$	2601.820	3	10	38423.151	$10189^{\circ}_{11/2} - 48612_{13/2}$
2630.671	10	8	38001.784	$1859_{3/2} - 39861^{\circ}_{5/2}$	2601.630	2	3	38425.957	$6700^{\circ}_{9/2} - 45126_{9/2}$
2630.107	0	5	38009.932	$7828_{1/2} - 45838^{\circ}_{3/2}$	2601.045	2	5	38434.599	$14484^{\circ}_{11/2} - 52918_{13/2}$
2630.015	5	75	38011.262	$9720^{\circ}_{7/2} - 47731_{9/2}$	2600.935	8b	10	38436.225	$0_{3/2} - 38436^{\circ}_{3/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2600.880	25b	25	38437.037	$9238^{\circ}_{9/2} - 47675_{11/2}$	2552.923	0	3	39159.036	$11576^{\circ}_{3/2} - 50735_{3/2}$
2598.741	0	10	38468.673	$7331^{\circ}_{5/2} - 45800_{5/2}$	2552.281	0	8	39168.885	$10189^{\circ}_{11/2} - 49357_{11/2}$
2597.046	50b	150b	38493.778	$0_{3/2} - 38493^{\circ}_{5/2}$	2551.934	3	10	39174.211	$4113_{5/2} - 43287^{\circ}_{3/2}$
2595.036	8	20	38523.592	$8378^{\circ}_{7/2} - 46902_{5/2}$	2551.234	5	10	39184.96	$1521_{5/2} - 40706^{\circ}_{7/2}$
2594.662	2	20	38529.145	$9202^{\circ}_{7/2} - 47731_{9/2}$	2550.749	0	8	39192.409	$15305_{9/2} - 54497^{\circ}_{7/2}$
2592.786	0	15	38557.020	$15453^{\circ}_{7/2} - 54010_{7/2}$	2550.255	0	3	39200.000	$10673^{\circ}_{5/2} - 49873_{5/2}$
2591.370	2	5	38578.088	$9720^{\circ}_{7/2} - 48298_{7/2}$	2549.987	5	15	39204.120	$6700^{\circ}_{9/2} - 45904_{9/2}$
2590.229	4	20	38595.080	$7828_{1/2} - 46423^{\circ}_{3/2}$	2548.134	8l	50	39232.62	$9585^{\circ}_{5/2} - 48817_{3/2}$
2590.070	2	5	38597.449	$7828_{1/2} - 46426^{\circ}_{1/2}$	2547.898	15	75	39236.261	$4146_{7/2} - 43382^{\circ}_{5/2}$
2589.485	3	8	38606.169	$4490^{\circ}_{5/2} - 43096_{5/2}$	2547.016	0	3	39249.847	$7331^{\circ}_{5/2} - 46581_{5/2}$
2589.059	50	100	38612.520	$1859_{3/2} - 40472^{\circ}_{3/2}$	2546.953	0	8	39250.818	$9202^{\circ}_{7/2} - 48453_{7/2}$
2588.916	8	20	38614.653	$6691^{\circ}_{3/2} - 45306_{3/2}$	2545.744	8	25	39269.458	$4113_{5/2} - 43382^{\circ}_{5/2}$
2587.615	0	4	38634.067	$14101^{\circ}_{1/2} - 52735_{3/2}$	2545.339	8	50	39275.70	$6213_{9/2} - 45489^{\circ}_{9/2}$
2587.252	3	20	38639.486	$6168^{\circ}_{7/2} - 44807_{7/2}$	2544.364	0	8	39290.755	$11116^{\circ}_{7/2} - 50407_{7/2}$
2587.246	0	20	38639.576	$6168^{\circ}_{7/2} - 44807_{7/2}$	2543.217	0	8	39308.474	$12219_{3/2} - 51528^{\circ}_{3/2}$
2586.158	3	25b	38655.831	$10189^{\circ}_{11/2} - 48844_{9/2}$	2542.871	0	4l	39313.822	$4490^{\circ}_{5/2} - 43803_{7/2}$
2585.726	4	5	38662.289	$1521_{5/2} - 40184^{\circ}_{7/2}$	2542.642	4	25	39317.36	$4490^{\circ}_{5/2} - 43807_{3/2}$
2583.456	4	20	38696.258	$13250_{5/2} - 51946^{\circ}_{5/2}$	2540.865	0	3	39344.858	$12485^{\circ}_{7/2} - 51830_{7/2}$
				$7001_{3/2} - 45697^{\circ}_{3/2}$	2540.360	2	10b	39352.679	$8378^{\circ}_{7/2} - 47731_{9/2}$
2582.939	0	4b	38704.003	$10673^{\circ}_{5/2} - 49377_{7/2}$	2540.309	0	8b	39353.469	$11116^{\circ}_{7/2} - 50470_{9/2}$
2582.099	2	20	38716.593	$15453^{\circ}_{7/2} - 54169_{7/2}$	2538.931	10	20	39374.827	$7331^{\circ}_{5/2} - 46706_{7/2}$
2580.844	0	5	38735.419	$9585^{\circ}_{5/2} - 48320_{5/2}$	2538.832	0	5	39376.362	$12570^{\circ}_{7/2} - 51946^{\circ}_{5/2}$
2580.699	10	50	38737.595	$4490^{\circ}_{5/2} - 43227_{5/2}$	2538.680	0	3s	39378.719	$14790^{\circ}_{7/2} - 54169_{7/2}$
2580.354	5	50	38742.774	$10379_{9/2} - 49121^{\circ}_{7/2}$	2538.047	0	3	39388.540	$10572^{\circ}_{9/2} - 49960_{7/2}$
2580.264	0	15	38744.125	$13818^{\circ}_{7/2} - 52562_{7/2}$	2537.759	0	10l	39393.010	$12472^{\circ}_{5/2} - 51865_{5/2}$
2579.768	0	5	38751.574	$12902^{\circ}_{3/2} - 51653_{1/2}$	2535.873	4	20	39422.306	$7001_{3/2} - 46423^{\circ}_{3/2}$
2579.437	15	75b	38756.55	$4490^{\circ}_{5/2} - 43246_{7/2}$	2534.589	4	10	39442.275	$6168^{\circ}_{7/2} - 45610_{5/2}$
2578.958	2	25	38763.744	$13406^{\circ}_{13/2} - 52170_{11/2}$	2534.193	0	3	39448.438	$11576^{\circ}_{3/2} - 51024_{3/2}$
2578.619	0	10	38768.840	$9238^{\circ}_{9/2} - 48006_{9/2}$	2534.091	0	20	39450.026	$12485^{\circ}_{7/2} - 51935_{5/2}$
2578.238	0	4	38774.569	$17460^{\circ}_{5/2} - 56235_{3/2}$	2533.871	0	15	39453.451	$6244_{1/2} - 45697^{\circ}_{3/2}$
2576.910	10	50	38794.550	$1859_{3/2} - 40654^{\circ}_{5/2}$	2533.224	0	10	39463.527	$12472^{\circ}_{5/2} - 51935_{5/2}$
2576.688	25	75	38797.892	$4146_{7/2} - 42944^{\circ}_{7/2}$	2533.152	0	5	39464.648	$14545^{\circ}_{5/2} - 54010_{7/2}$
2576.322	0	75	38803.404	$13468^{\circ}_{9/2} - 52272_{7/2}$	2532.432	5	25	39475.86	$6213_{9/2} - 45689^{\circ}_{7/2}$
2576.209	0	8	38805.105	$10572^{\circ}_{9/2} - 49377_{7/2}$	2531.883	0	10	39484.427	$16906^{\circ}_{7/2} - 56391_{5/2}$
2574.485	15	5	38831.10	$4113_{5/2} - 42944^{\circ}_{7/2}$	2527.877	0	15	39546.995	$11116^{\circ}_{7/2} - 50663_{5/2}$
2573.631	0	10	38843.974	$11116^{\circ}_{7/2} - 49960_{7/2}$	2526.343	3	25	39571.007	$7331^{\circ}_{5/2} - 46902_{5/2}$
2570.653	0	50	38888.970	$16033^{\circ}_{5/2} - 54922_{3/2}$	2526.223	3b	15	39572.88	$6691^{\circ}_{3/2} - 46264_{3/2}$
2566.916	0	25	38945.583	$8378^{\circ}_{7/2} - 47324_{5/2}$	2525.925	0	25	39577.554	$9711_{7/2} - 49289^{\circ}_{5/2}$
2566.588	50	100	38950.559	$1521_{5/2} - 40472^{\circ}_{3/2}$	2524.229	2l	3	39604.144	$7331^{\circ}_{5/2} - 46935_{3/2}$
2565.593	75	100	38965.665	$1859_{3/2} - 40825^{\circ}_{1/2}$	2522.775	5	15	39626.969	$4146_{7/2} - 43773^{\circ}_{7/2}$
2562.675	0	8	39010.030	$11725^{\circ}_{1/2} - 50735_{3/2}$	2522.713	0	4	39627.942	$8378^{\circ}_{7/2} - 48006_{9/2}$
2561.938	0	75	39021.251	$6168^{\circ}_{7/2} - 45189_{5/2}$	2521.777	0	5	39642.650	$9202^{\circ}_{7/2} - 48844_{9/2}$
2561.149	0	25	39033.272	$12902^{\circ}_{3/2} - 51935_{5/2}$	2520.660	8	75	39660.216	$4113_{5/2} - 43773^{\circ}_{7/2}$
2560.934	2	75	39036.549	$14484^{\circ}_{11/2} - 53520_{9/2}$	2519.848	0	20	39672.995	$17272^{\circ}_{9/2} - 56945_{11/2}$
2559.793	0	10	39053.947	$7331^{\circ}_{5/2} - 46385_{7/2}$	2519.288	0	3	39681.813	$12488^{\circ}_{9/2} - 52170_{11/2}$
2558.328	0	10b	39076.310	$20310^{\circ}_{5/2} - 59387_{7/2}$	2519.070	0	15	39685.247	$6700^{\circ}_{9/2} - 46385_{7/2}$
2557.024	0	4	39096.236	$9202^{\circ}_{7/2} - 48298_{7/2}$	2516.430	0	50	39726.878	$12219_{3/2} - 51946^{\circ}_{5/2}$
2556.480	0	10	39104.555	$9585^{\circ}_{5/2} - 48689_{3/2}$	2515.997	0	3	39733.715	$15305_{9/2} - 55038^{\circ}_{9/2}$
2554.649	5	2	39132.58	$1521_{5/2} - 40654^{\circ}_{5/2}$	2515.853	0	5	39735.989	$6168^{\circ}_{7/2} - 45904_{9/2}$
2553.243	4	25	39154.128	$7001_{3/2} - 46155^{\circ}_{5/2}$	2511.414	0	8	39806.219	$17272^{\circ}_{9/2} - 57078_{9/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2511.159	5	10	39810.261	$4490^{\circ}_{5/2} - 44300_{3/2}$	2460.168	0	2	40635.335	$9202^{\circ}_{7/2} - 49837_{9/2}$
2509.969	3	20	39829.134	$9585^{\circ}_{5/2} - 49414_{3/2}$	2459.008	8	25	40654.503	$0_{3/2} - 40654^{\circ}_{5/2}$
2509.707	0	8	39833.291	$12902^{\circ}_{3/2} - 52735_{3/2}$	2458.015	0	5	40670.925	$9202^{\circ}_{7/2} - 49873_{5/2}$
2507.924	10	25l	39861.609	$0_{3/2} - 39861^{\circ}_{5/2}$	2457.746	2b	10	40675.376	$4146_{7/2} - 44821^{\circ}_{5/2}$
2505.611	8	25	39898.404	$4490^{\circ}_{5/2} - 44388_{5/2}$	2456.865	3	25	40689.961	$8378^{\circ}_{7/2} - 49068_{5/2}$
2504.279	10b	75	39919.62	$8378^{\circ}_{7/2} - 48298_{7/2}$	2456.380	5	10	40697.994	$1521_{5/2} - 42219^{\circ}_{5/2}$
2502.339	0	4	39950.570	$11725^{\circ}_{1/2} - 51676_{3/2}$	2456.290	4b	50	40699.485	$4490^{\circ}_{5/2} - 45189_{5/2}$
2499.696	0	5	39992.808	$7331^{\circ}_{5/2} - 47324_{5/2}$	2455.904	0	5	40705.882	$14790^{\circ}_{7/2} - 55496_{9/2}$
2498.873	8	75	40005.979	$6700^{\circ}_{9/2} - 46706_{7/2}$	2454.890	5	5	40722.694	$9238^{\circ}_{9/2} - 49960_{7/2}$
2498.405	8	20	40013.472	$4490^{\circ}_{5/2} - 44503_{7/2}$	2454.195	0	3	40734.225	$6168^{\circ}_{7/2} - 46902_{5/2}$
2496.522	2	10	40043.650	$15453^{\circ}_{7/2} - 55496_{9/2}$	2449.087	5	20	40819.178	$11116^{\circ}_{7/2} - 51935_{5/2}$
2496.014	1	5	40051.800	$13468^{\circ}_{9/2} - 53520_{9/2}$	2448.694	0	4	40825.729	$0_{3/2} - 40825^{\circ}_{1/2}$
2495.563	0	4	40059.038	$10572^{\circ}_{9/2} - 50631_{11/2}$	2444.463	10	25	40896.386	$15786_{5/2} - 56683^{\circ}_{7/2}$
2495.454	0	4	40060.787	$9061_{5/2} - 49121^{\circ}_{7/2}$					$1521_{5/2} - 42418^{\circ}_{3/2}$
2495.354	8	75	40062.39	$4490^{\circ}_{5/2} - 44552_{5/2}$	2443.953	10	15	40904.920	$4490^{\circ}_{5/2} - 45395_{7/2}$
2494.775	1	10	40071.690	$8460_{3/2} - 48532^{\circ}_{1/2}$	2437.536	0	75	41012.597	$14484^{\circ}_{11/2} - 55496_{9/2}$
2494.452	0	3	40076.878	$12485^{\circ}_{7/2} - 52562_{7/2}$	2436.353	0	5	41032.510	$12488^{\circ}_{9/2} - 53520_{9/2}$
2494.416	0	4	40077.457	$11576^{\circ}_{3/2} - 51653_{1/2}$	2432.847	8	50	41091.638	$10855_{7/2} - 51946^{\circ}_{5/2}$
2493.616	2	10	40090.313	$12472^{\circ}_{5/2} - 52562_{7/2}$	2431.140	8	8	41120.488	$4490^{\circ}_{5/2} - 45610_{5/2}$
2492.538	0	8	40107.651	$11116^{\circ}_{7/2} - 51224_{9/2}$	2429.041	0	8	41156.019	$6168^{\circ}_{7/2} - 47324_{5/2}$
2490.596	2	8	40138.921	$19248^{\circ}_{5/2} - 59387_{7/2}$	2426.927	0	10	41191.865	$10673^{\circ}_{5/2} - 51865_{5/2}$
2490.104	0	15	40146.852	$15349^{\circ}_{11/2} - 55496_{9/2}$	2423.665	0	75	41247.301	$13250_{5/2} - 54497^{\circ}_{7/2}$
2489.736	4	15	40152.785	$9720^{\circ}_{7/2} - 49873_{5/2}$	2422.457	2	3	41267.868	$9202^{\circ}_{7/2} - 50470_{9/2}$
2489.607	10	100	40154.866	$6213_{9/2} - 46368^{\circ}_{9/2}$	2422.246	3	8	41271.463	$8018_{3/2} - 49289^{\circ}_{5/2}$
2488.554	0	5	40171.856	$16906^{\circ}_{7/2} - 57078_{9/2}$	2419.979	0	5	41310.122	$4490^{\circ}_{5/2} - 45800_{5/2}$
2488.087	2	15	40179.395	$6244_{1/2} - 46423^{\circ}_{3/2}$	2418.074	5	10	41342.665	$4146_{7/2} - 45489^{\circ}_{9/2}$
2487.322	0	8	40191.752	$13818^{\circ}_{7/2} - 54010_{7/2}$	2413.407	25	50	41422.606	$1521_{5/2} - 42944^{\circ}_{7/2}$
2486.691	0	4	40201.950	$16033^{\circ}_{5/2} - 56235_{3/2}$	2412.043	0	4	41446.029	$11116^{\circ}_{7/2} - 52562_{7/2}$
2486.126	3	25	40211.085	$6691^{\circ}_{3/2} - 46902_{5/2}$	2411.291	0	25	41458.954	$8378^{\circ}_{7/2} - 49837_{9/2}$
2485.764	0	5	40216.941	$6168^{\circ}_{7/2} - 46385_{7/2}$	2411.143	0	4	41461.498	$9202^{\circ}_{7/2} - 50663_{5/2}$
2485.055	2	20	40228.42	$9061_{5/2} - 49289^{\circ}_{5/2}$	2407.574	5	8b	41522.956	$1859_{3/2} - 43382^{\circ}_{5/2}$
2484.330	0	4	40240.153	$9720^{\circ}_{7/2} - 49960_{7/2}$	2407.480	0	4b	41524.577	$12485^{\circ}_{7/2} - 54010_{7/2}$
2484.074	0	10	40244.300	$6691^{\circ}_{3/2} - 46935_{3/2}$	2407.137	10	10	41530.494	$7001_{3/2} - 48532^{\circ}_{1/2}$
2483.955	2	10	40246.228	$11116^{\circ}_{7/2} - 51362_{5/2}$	2406.704	0	10b	41537.965	$12472^{\circ}_{5/2} - 54010_{7/2}$
2483.489	0	4	40253.779	$15242^{\circ}_{9/2} - 55496_{9/2}$	2404.497	0	50	41576.088	$4113_{5/2} - 45689^{\circ}_{7/2}$
2482.892	0	5	40263.457	$12472^{\circ}_{5/2} - 52735_{3/2}$	2404.171	10	50	41581.72	$8378^{\circ}_{7/2} - 49960_{7/2}$
2481.813	2	5	40280.961	$10189^{\circ}_{11/2} - 50470_{9/2}$	2401.635	0	3	41625.630	$15453^{\circ}_{7/2} - 57078_{9/2}$
2481.405	2	25	40287.584	$9585^{\circ}_{5/2} - 49873_{5/2}$	2401.413	0	3	41629.478	$6691^{\circ}_{3/2} - 48320_{5/2}$
2479.557	0	8	40317.608	$4490^{\circ}_{5/2} - 44807_{7/2}$	2401.139	0	4	41634.228	$10673^{\circ}_{5/2} - 52307_{3/2}$
2477.087	0	15	40357.807	$16033^{\circ}_{5/2} - 56391_{5/2}$	2398.341	0	4	41682.796	$9585^{\circ}_{5/2} - 51268_{7/2}$
2476.971	8	25	40359.697	$1859_{3/2} - 42219^{\circ}_{5/2}$	2398.267	0	5	41684.083	$12485^{\circ}_{7/2} - 54169_{7/2}$
2476.898	0	25	40360.886	$14484^{\circ}_{11/2} - 54845_{9/2}$	2397.491	1	4	41697.573	$12472^{\circ}_{5/2} - 54169_{7/2}$
2471.005	1	5	40457.135	$6691^{\circ}_{3/2} - 47148_{3/2}$	2395.200	0	3	41737.454	$7331^{\circ}_{5/2} - 49068_{5/2}$
2470.148	0	15	40471.170	$6700^{\circ}_{9/2} - 47171_{9/2}$	2393.574	5	3	41765.805	$1521_{5/2} - 43287^{\circ}_{3/2}$
2468.151	5	100	40503.913	$4146_{7/2} - 44650^{\circ}_{7/2}$	2393.111	50	25	41773.88	$4490^{\circ}_{5/2} - 46264_{3/2}$
2467.416	2	15	40515.978	$8605_{5/2} - 49121^{\circ}_{7/2}$	2388.143	10	10	41860.779	$1521_{5/2} - 43382^{\circ}_{5/2}$
2466.904	0	5	40524.386	$15710^{\circ}_{3/2} - 56235_{3/2}$	2388.073	8	8	41862.006	$4490^{\circ}_{5/2} - 46352_{7/2}$
2466.128	10r	50	40537.14	$4113_{5/2} - 44650^{\circ}_{7/2}$	2386.179	0	3	41895.231	$4490^{\circ}_{5/2} - 46385_{7/2}$
2466.065	5	8	40538.172	$7331^{\circ}_{5/2} - 47869_{3/2}$	2384.358	5	20	41927.23	$12570_{7/2} - 54497^{\circ}_{7/2}$
2462.333	0	3	40599.609	$9238^{\circ}_{9/2} - 49837_{9/2}$	2379.751	0	4	42008.386	$12485^{\circ}_{7/2} - 54493_{5/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2377.830	25	100	42042.321	$4113_{5/2} - 46155^{\circ}_{5/2}$	2290.644	0	20	43642.388	$10855_{7/2} - 54497^{\circ}_{7/2}$
2375.076	15	25	42091.067	$4490^{\circ}_{5/2} - 46581_{5/2}$	2287.248	0	4	43707.181	$6700^{\circ}_{9/2} - 50407_{7/2}$
2373.991	1	4	42110.302	$9720^{\circ}_{7/2} - 51830_{7/2}$	2285.315	5	5	43744.147	$0_{3/2} - 43744^{\circ}_{1/2}$
2373.840	15	50	42112.981	$0_{3/2} - 42112^{\circ}_{3/2}$	2282.362	0	5	43800.739	$9720^{\circ}_{7/2} - 53520_{9/2}$
				$4490^{\circ}_{5/2} - 46603_{5/2}$	2281.965	4	20	43808.359	$4490^{\circ}_{5/2} - 48298_{7/2}$
2373.723	0	50	42115.057	$17272^{\circ}_{9/2} - 59387_{7/2}$	2280.425	20	50	43837.941	$1859_{3/2} - 45697^{\circ}_{3/2}$
2372.043	2	8	42144.882	$9720^{\circ}_{7/2} - 51865_{5/2}$	2277.538	0	3	43893.504	$8378^{\circ}_{7/2} - 52272_{7/2}$
2371.155	0	5	42160.664	$9202^{\circ}_{7/2} - 51362_{5/2}$	2276.922	0	5	43905.378	$12485^{\circ}_{7/2} - 56391_{5/2}$
2368.047	15	25	42215.994	$4490^{\circ}_{5/2} - 46706_{7/2}$	2275.594	0	3	43930.998	$6700^{\circ}_{9/2} - 50631_{11/2}$
2367.842	50	100	42219.649	$0_{3/2} - 42219^{\circ}_{5/2}$	2271.931	5	8	44001.821	$4490^{\circ}_{5/2} - 48492_{5/2}$
2367.725	0	3	42221.735	$4146_{7/2} - 46368^{\circ}_{9/2}$	2270.403	0	3	44031.431	$7331^{\circ}_{5/2} - 51362_{5/2}$
2366.991	10	100	42234.83	$9711_{7/2} - 51946^{\circ}_{5/2}$	2265.919	3	20b	44118.557	$10379_{9/2} - 54497^{\circ}_{7/2}$
2366.040	10	20	42251.801	$1521_{5/2} - 43773^{\circ}_{7/2}$	2263.408	5	15	44167.497	$1521_{5/2} - 45689^{\circ}_{7/2}$
2364.194	3	10	42284.789	$6168^{\circ}_{7/2} - 48453_{7/2}$	2261.759	0	4	44199.695	$4490^{\circ}_{5/2} - 48689_{3/2}$
				$8378^{\circ}_{7/2} - 50663_{5/2}$	2255.536	0	3	44321.630	$12570_{7/2} - 56892^{\circ}_{5/2}$
2364.025	0	25	42287.812	$6244_{1/2} - 48532^{\circ}_{1/2}$	2245.131	0	3	44527.018	$7001_{3/2} - 51528^{\circ}_{3/2}$
2362.759	3	5	42310.469	$4113_{5/2} - 46423^{\circ}_{3/2}$	2243.275	8	20	44563.855	$1859_{3/2} - 46423^{\circ}_{3/2}$
2362.021	0	4	42323.687	$6168^{\circ}_{7/2} - 48492_{5/2}$	2238.629	0	4	44656.333	$10189^{\circ}_{11/2} - 54845_{9/2}$
2360.533	0	3	42350.365	$9585^{\circ}_{5/2} - 51935_{5/2}$	2230.360	10	20	44821.879	$0_{3/2} - 44821^{\circ}_{5/2}$
2356.758	10	10	42418.20	$0_{3/2} - 42418^{\circ}_{3/2}$	2225.268	0	5	44924.433	$4490^{\circ}_{5/2} - 49414_{3/2}$
2355.242	15	20	42445.496	$4490^{\circ}_{5/2} - 46935_{3/2}$	2222.430	0	3	44981.795	$6700^{\circ}_{9/2} - 51681_{9/2}$
2355.003	0	4	42449.803	$12472^{\circ}_{5/2} - 54922_{3/2}$	2222.287	0	3	44984.689	$6691^{\circ}_{3/2} - 51676_{3/2}$
2354.030	8	25	42467.348	$9061_{5/2} - 51528^{\circ}_{3/2}$	2216.767	0	5	45096.695	$9400_{5/2} - 54497^{\circ}_{7/2}$
2349.686	0	4	42545.853	$9400_{5/2} - 51946^{\circ}_{5/2}$	2215.115	0	3	45130.324	$6700^{\circ}_{9/2} - 51830_{7/2}$
2349.344	0	3	42552.046	$9720^{\circ}_{7/2} - 52272_{7/2}$	2214.539	1	15	45142.061	$8378^{\circ}_{7/2} - 53520_{9/2}$
2343.494	0	10	42658.259	$4490^{\circ}_{5/2} - 47148_{3/2}$	2212.980	0	3	45173.859	$6691^{\circ}_{3/2} - 51865_{5/2}$
2343.242	1	5	42662.846	$9202^{\circ}_{7/2} - 51865_{5/2}$	2210.648	5	20	45221.508	$0_{3/2} - 45221^{\circ}_{5/2}$
2342.873	0	5	42669.565	$14275^{\circ}_{9/2} - 56945_{11/2}$	2207.592	0	5	45284.102	$6244_{1/2} - 51528^{\circ}_{3/2}$
2339.566	0	4	42729.873	$10189^{\circ}_{11/2} - 52918_{13/2}$	2206.445	0	5	45307.641	$10189^{\circ}_{11/2} - 55496_{9/2}$
2336.051	0	3	42794.163	$6691^{\circ}_{3/2} - 49485_{1/2}$	2200.186	2	10	45436.517	$9061_{5/2} - 54497^{\circ}_{7/2}$
2333.684	0	3	42837.564	$13248_{9/2} - 56086^{\circ}_{9/2}$	2198.736	1	10q	45466.478	$8378^{\circ}_{7/2} - 53845_{5/2}$
2333.258	3	10	42845.385	$8378^{\circ}_{7/2} - 51224_{9/2}$	2178.354	0	8	45891.845	$8605_{5/2} - 54497^{\circ}_{7/2}$
2330.868	4	25	42889.313	$8378^{\circ}_{7/2} - 51268_{7/2}$	2177.158	2	15	45917.053	$4490^{\circ}_{5/2} - 50407_{7/2}$
2329.057	0	10	42922.660	$8605_{5/2} - 51528^{\circ}_{3/2}$	2167.808	0	10	46115.076	$8378^{\circ}_{7/2} - 54493_{5/2}$
2326.920	50	50	42962.075	$1859_{3/2} - 44821^{\circ}_{5/2}$	2159.403	0	3	46294.549	$9202^{\circ}_{7/2} - 55496_{9/2}$
2325.729	0	8	42984.074	$8378^{\circ}_{7/2} - 51362_{5/2}$	2153.397	2	10	46423.655	$0_{3/2} - 46423^{\circ}_{3/2}$
2317.451	0	3	43137.602	$6700^{\circ}_{9/2} - 49837_{9/2}$	2151.412	0	10	46466.483	$8378^{\circ}_{7/2} - 54845_{9/2}$
2308.754	0	3	43300.085	$1521_{5/2} - 44821^{\circ}_{5/2}$	2148.266	0	5	46534.522	$4490^{\circ}_{5/2} - 51024_{3/2}$
2308.590	4	15	43303.161	$8378^{\circ}_{7/2} - 51681_{9/2}$	2141.930	0	4	46672.160	$1859_{3/2} - 48532^{\circ}_{1/2}$
2306.573	1	8	43341.025	$8605_{5/2} - 51946^{\circ}_{5/2}$	2132.770	2	15	46872.588	$4490^{\circ}_{5/2} - 51362_{5/2}$
2305.545	0	8	43360.348	$9202^{\circ}_{7/2} - 52562_{7/2}$	2118.875	0	3	47179.930	$9711_{7/2} - 56892^{\circ}_{5/2}$
2305.474	25	25	43361.683	$1859_{3/2} - 45221^{\circ}_{5/2}$	2118.604	0	3	47185.964	$4490^{\circ}_{5/2} - 51676_{3/2}$
2304.534	2	4	43379.368	$4490^{\circ}_{5/2} - 47869_{3/2}$	2111.708	0	10	47340.036	$4490^{\circ}_{5/2} - 51830_{7/2}$
2300.695	0	10	43451.746	$8378^{\circ}_{7/2} - 51830_{7/2}$	2110.148	0	4	47375.030	$4490^{\circ}_{5/2} - 51865_{5/2}$
2298.855	3	15	43486.521	$8460_{3/2} - 51946^{\circ}_{5/2}$	2092.794	0	3	47767.828	$1521_{5/2} - 49289^{\circ}_{5/2}$
2298.732	0	4	43488.848	$12902^{\circ}_{3/2} - 56391_{5/2}$	2091.383	0	4	47800.052	$4146_{7/2} - 51946^{\circ}_{5/2}$
2297.596	0	5	43510.348	$8018_{3/2} - 51528^{\circ}_{3/2}$	2090.632	0	15	47817.221	$4490^{\circ}_{5/2} - 52307_{3/2}$
2297.491	0	75	43512.337	$15786_{5/2} - 59299^{\circ}_{5/2}$	2089.920	0	15	47833.509	$4113_{5/2} - 51946^{\circ}_{5/2}$
2295.141	0	3	43556.885	$8378^{\circ}_{7/2} - 51935_{5/2}$	2088.053	0	2	47876.273	$9202^{\circ}_{7/2} - 57078_{9/2}$
2291.974	0	4	43617.066	$9061_{5/2} - 52678^{\circ}_{5/2}$	2079.541	0	5	48072.217	$4490^{\circ}_{5/2} - 52562_{7/2}$

TABLE 3. *Classified lines of* Th II—Continued

Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification	Wavelength Å	Intensity		Wavenumber cm^{-1}	Classification
	Lamp	Spark				Lamp	Spark		
2072.081	0	3	48245.266	$4490^{\circ}_{5/2} - 52735_{3/2}$					
2059.848	0	8	48531.747	$4146_{7/2} - 52678^{\circ}_{5/2}$					
2028.185	0	3	49289.296	$0_{3/2} - 49289^{\circ}_{5/2}$					
1999.098	0	3	50006.353	$1521_{5/2} - 51528^{\circ}_{3/2}$					
1995.888	0	10	50086.766	$1859_{3/2} - 51946^{\circ}_{5/2}$					