TERM ANALYSIS OF THE FIRST SPECTRUM OF VANADIUM (V I)

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ABSTRACT

All available data on 2525 V I lines (wave lengths, intensities, temperature classes, Zeeman effects, and absorption observations) subjected to analysis have aided in the identification of 60 doublet, 60 quartet, and 28 sextet terms. Combinations between these give 634 multiplets and account for 2,186 observed lines. Complete tables of lines and terms are presented.

The lowest term is $(d^3s^2)a^4F_{1\frac{1}{2}}$, but the strongest line (raie ultime of V I) is $(d^4s)a^6D_{4\frac{1}{2}}-(d^4p)y^6F^\circ_{5\frac{1}{2}}$ with wave length 4379.24 A, involving the simple s-p transition.

Line intensities, level intervals, and Zeeman effects indicate that this five-electron spectrum is governed, in the main, by LS coupling. The terms are all regular except for a few inversions, some of which appear to be explained by perturbations also accompanied by abnormal magnetic splitting.

Absorption data and temperature classification confirm the orientation of the terms and agree qualitatively with their energies of excitation.

Zeeman-effect observations for more than 900 lines greatly facilitated the analysis, and constitute convincing evidence for its correctness.

With the aid of the quantum theory, and comparisons with other spectra, the electronic configurations responsible for the observed terms have been identified in nearly all cases, but a few terms are left unassigned for various reasons.

A number of two-member series have been recognized; from them a corrected ionization potential of 6.71 volts has been computed for neutral vanadium atoms.

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I. INTRODUCTION

A contribution of far-reaching importance to the term analysis of complex spectra was made by Catalán [1] [1] in 1922, when he announced new types of regularities (multiplets) in the spectra of manganese. Similar regularities were eagerly sought in other spectra, especially those of elements in the same period as manganese, primarily for the purpose of testing the alternation and displacement laws of spectral structure. Thus, after multiplets had been identified for scandium, titanium, chromium, manganese, and iron, to vanadium fell the distinction of disclosing the first spectral regularities in the 5th group of elements, thereby proving the general validity of the alternation law.

The first regularities in the arc spectrum of vanadium were announced in 1923, simultaneously by Meggers [2] and by Laporte [3]. Both recognized quartet and sextet multiplets accounting for several hundred lines. A paper on Zeeman effect and multiplet structure by Landé [4] gave further impetus to such analysis, and further results based on interpretations of observed Zeeman effects for vanadium lines were published by Meggers [5] and by Bechert and Sommer [6]. The analysis was continued by Meggers during the development of the theory of complex spectra [7] until the identified terms [8] accounted for about 1,000 lines. Except for a series-forming term identified in 1927 by Russell [9], the analysis rested until 1932, when it was resumed and carried to its present state of completion by cooperation of the present authors. A summary of the identified terms was published in 1934 by Miss Moore [10].

In order to bring this analysis to its present state, it was necessary to reobserve certain regions of the spectrum and to reexamine spectrograms for faint lines. By postponing this presentation, it was possible to exploit new photographic plates and spectrographs, which added much to the completeness and quality of the data. Most of the new observing was done at the National Bureau of Standards, while the extensions to the analysis all emanate from Princeton University. Since practically all conveniently observable data for V I lines have now been satisfactorily interpreted and correlated, the time has come for publication of final results.

II. OBSERVATIONAL DATA

The observed facts upon which this analysis of the V I spectrum is based consist of wave-length measurements, intensity estimates, temperature classification, Zeeman effects and absorption data, all of which are collected in table 1.

1. WAVE LENGTHS

Although a considerable number of spectroscopists have measured wave lengths of vanadium lines [11], no one has given satisfactory results for the entire spectrum, so, in lieu of remeasuring all lines, it has been necessary to use a composite list. The most complete table of vanadium arc spectrum measurements (1,642 lines, 2311.53 to 6812.63 A) was published in 1911 by Exner and Haschek [12], but the values are on Rowland's scale and the relative errors are rathe

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[1] Numbers in brackets refer to references at the end of this paper.

large.   More precise values on the International Scale were obtained by Kilby [13] (3126.224 to 3943.666 A), and especially by Ludwig [14] (2207.1 to 4646.402 A), whose results as tested by subsequently found spectral regularities appear to be correct within a few thousandths angstrom.   These observers, however, measured only short intervals of the spectrum and omitted many faint lines.   The region of longer waves (5500 to 9500 A) was explored in 1920 by Kiess and Meggers [15].

Efforts to advance the structural analysis of vanadium spectra soon indicated the necessity of remeasuring portions of them and extending observations in both directions.   At the National Bureau of Standards the interval 4456 to 6700 A was remeasured in 1923, new observations in the ultraviolet (2081 to 2440 A) were made in 1925, new measurements in the infrared (6700 to 10500 A) in 1933 were extended to 12000 A in 1935, and finally, the ultraviolet (2081 to 2700 A) was once more observed with larger dispersion in 1936. These last observations were suggested by the term analysis which indicated that the earlier ultraviolet measurements were affected by systematic error.   This systematic error was probably due to the fact that the iron lines used as standards below 2400 A were quite unreliable until new values by Burns and Walters [16] become available in 1929.

Since these new values of vanadium wave lengths are here being published for the first time, it may be justifiable to give some details of their measurement.   Large concave grating spectrographs were employed, except in the ultraviolet, for which an exceptionally powerful quartz spectrograph became available in 1931.   Dispersion constants of the spectrograms are as follows: 0.4 to 1.1 A/mm in the interval 2100 to 2700 A; 3.5 A/mm from 4456 to 9100 A; 10.2 A/mm from 8600 to 12000 A.   All measurements were made relative to the international iron-arc secondary standards [17], supplemented in the ultraviolet by the above-mentioned values of Burns and Walters [16]. The earlier observations were made with vanadium chloride on graphite, but those since 1932 were secured with solid metal electrodes of highly purified vanadium kindly presented for these spectroscopic investigations by Jerome K. Strauss of the Vanadium Corporation of America.

A major difficulty encountered when describing the atomic spectra emitted by conventional sources is due to the confusing presence of molecular spectra arising from metallic oxides.   In the arc spectrum of vanadium at atmospheric pressure partially resolved rotation structure of such bands [18] extending from the blue to the limit of observation in the infrared, inevitably masks many faint atomic lines and may in some cases falsify the wave-length measurements. The vanadium furnace spectrograms obtained by King [19] being free from oxide bands, were reexamined at Princeton for faint lines. Thus, in the range 2632 to 6607 A on King's plates, about 130 new lines were measured, the wave lengths of 155 others were checked, and 11 close doubles were resolved, including vanadium lines near strong iron lines or other impurities.   Unfortunately, the infrared has not been observed without molecular spectra.

The hyperfine structure of some V I lines has been investigated by White [20], and by Kopfermann and Rasmussen [21], the latter definitely deducing from their measurements a nuclear-spin moment

of $I=9/2$ for vanadium atoms. In table 1 the symbol "*cm*" meaning "complex hyperfine structure measured", is attached to the 17 lines investigated with interferometers. No hyperfine structure in vanadium spectra has been resolved with ordinary spectrographs, but some infrared lines showing considerable width may merit further study with greater resolving power. For example, the line with mean wave length 8116.80 A appears to have a width of the order of 0.5 A. The present term analysis of the V I spectrum is quite independent of hyperfine structure, but further work in the latter field may be suggested and aided by it.

2. INTENSITIES

Except for four multiplets in each of which the relative intensities of lines have been measured by Frerichs [22] to test intensity rules, no quantitative measurements of intensities have been made in vanadium spectra and the usual practice of estimating such relative intensities has been followed. In the present case, we have quoted King's [19] arc-intensity estimates for the most part and attempted to supply the remainder on the same scale. Whereas other observers usually employ a scale of 1 to 10, King's scale has much greater range (1 to 200 for vanadium), and although empirical, it has been shown to be remarkably homogeneous and in possession of considerable quantitative value [23].

3. TEMPERATURE CLASSES

Comparison of the spectra of vanadium excited in a vacuum furnace at various temperatures enabled King [19] to separate some 1,600 vanadium lines (2340 to 6842 A) into a half dozen different classes corresponding closely to successive energy stages required for their excitation. This classification was of primary importance in the first search for regularities among vanadium lines and has been of great value in simplifying and generally confirming the complete analysis. King's temperature classes in roman numerals are quoted together with estimated arc intensities in the following list of lines. In the interval 2400 to 3200 A, King measured about 130 V I lines not mentioned before 1924.

4. ZEEMAN EFFECT

In 1911 the Zeeman effect for several hundred vanadium lines from 3665 to 6625 A was published by Babcock [24]. These observations were improved and extended and in 1923 were lent in manuscript form to those actively engaged in multiplet analysis. Except for a few patterns published by Bechert and Sommer [6] these data have remained in obscurity, but with the kind consent of Mr. Babcock, they are now fully presented, together with their interpretation in the following list of V I lines. A report on magnetic splitting factors (g and g sums) resulting from the present analysis was published last year by Russell and Babcock [25] so further details of this phase will be omitted here. The Zeeman effect observations quoted in table 1 are given in the usual form (normal triplet units) p components in parentheses followed by n components, the strongest in complex patterns being distinguished by boldface type. The same applies to calculated patterns, except that in some cases these are simplified to make their relation to the observations more obvious.

The calculated patterns are derived from the *observed* g-values obtained from Babcock's material and listed in table 1. When the observed components are wholly or partially resolved the full computed pattern is given. When only blends of the components of a given polarization are measurable, the calculated position of the blend is given. For the stronger lines this is assumed to coincide with the center of gravity of the theoretical group, as determined by the formulas of Shenstone and Blair [26]. Such cases are marked *b* in the list. For weaker lines, it is probable that the measurement applies more nearly to the strongest component of the group, which is, therefore, tabulated with the notation *s*.

The observed Zeeman effects have been most helpful in the identification of spectral terms and they afford the most convincing confirmation of the correctness of this analysis of the V I spectrum. "From the magnetic standpoint, this complex spectrum is conspicuously regular and orderly. Landé's formulas for the g-factors are closely followed, showing (as does the regular multiplet structure) that the departures from LS coupling are small. Most of the discordances are explicable as a result of simple perturbations between adjacent levels [25]."

5. ABSORPTION

Before the theory of complex spectra had been fully developed the apparent prominence of large azimuthal quantum numbers was regarded skeptically by many, and it was necessary to devise experimental proofs. The absorption spectrum of vanadium was promptly investigated by Gieseler and Grotrian [27] to determine the normal state of the atoms. They observed 52 absorption lines (2914.92 to 6251.81 A) when vanadium was vaporized in a furnace at 2,000° C. Since all of these lines originated either from a low quartet F or a slightly higher sextet D term, it was concluded that the normal state of vanadium atoms is described by a $^4F_{1\frac{1}{2}}$ level. Evidence of a similar nature, but less refined, is found in the self-reversal of lines in the vanadium arc.

King [28] extended his temperature classification of vanadium lines in the ultraviolet from 2340 to 2700 A by comparing arc intensities with those appearing in absorption by vapor at about 2,600° C.

The only other absorption data for vanadium are those of the solar spectrum. More than 600 vanadium lines have been identified in the spectrum of the solar disk, and most of these are enhanced two or more intensity units in the spot spectrum, so that many faint lines of vanadium appear only in sun spots [29].

III. TERM ANALYSIS OF V I (Z=23)

Since the terms of the V I spectrum are deduced directly from observed properties of the lines, we present in the following numbered subsections (1) a complete list of observational data in table 1, to which are added the term combinations for all classified lines, and calculated Zeeman effects to compare with observed; (2) the intrinsic facts concerning the established spectral terms in table 2; (3) discussions of electron configurations and terms; and (4) spectral series and ionization potentials.

1. LINES OF THE V I SPECTRUM

Table 1 exhibits in successive columns (1) the observer; (2) measured wave length; (3) intensity; (4) temperature class; (5) vacuum wave number; (6) term combination; (7) observed Zeeman effect; and (8) calculated pattern.

The key to the numerals in column (1) is as follows: 1=W. F. Meggers; 2=H. N. Russell; 3=Solar or sun-spot spectrum; 4=Exner and Haschek [12, 19]; 5=C. E. Moore; 6=W. Ludwig [14]; 7=C. M. Kilby [13]; and 8=A. S. King [28].

All wave lengths listed here are on the International Scale.

The letters a, b, c, etc., attached to wave lengths in column (2) have the following meaning:

$a = g$ for higher level calculated from this line.
$b =$ Observed and calculated Zeeman effects discordant.
$c =$ Fe masks V line.
$d =$ Blend with V II line.
$e =$ Masked by V II line.
$f =$ Ni masks V line.
$g =$ Zeeman effect pattern changed by self-reversal.

The third and fourth columns contain the intensity and temperature class, respectively. For lines of known temperature class King's [19] intensities are given unless the intensity is in parenthesis, in which case it belongs to the observer in column (1). This is generally true of waves longer than 6400, and shorter than 2755 A. For all lines of unknown temperature class, the intensity is that of the author referred to in column (1). A few cases of temperature classes not published by King are given in parentheses. Intensities less than 0, i. e., 00, 000, and 0000, are entered as -1, -2, and -3, respectively. The intensities quoted from furnace spectra are inclosed in brackets.

Symbols accompanying some of the intensity numbers in column (3) have the following significance:

$a =$ Absorption [27].
$c =$ Complex, hyperfine structure *(hfs)*.
$cm =$ Complex *hfs* measured [20, 21].
$d =$ Double.
$E =$ Enhanced in spark.
$h =$ Hazy, nebulous, or diffuse.
$H =$ Very hazy.
$l =$ Shaded to longer waves.
$p =$ Part of band.
$r =$ Self-reversed.
$R =$ Strongly self-reversed.
$w =$ Wide hyperfine structure.
$W =$ Very wide hyperfine structure.

The vacuum wave numbers in column (5) were derived from the measured wave lengths with the aid of Kayser's Schwingungszahlen [30], except beyond 10000 A, where either Babcock's [31] method of using Kayser's table was employed or reciprocals were calculated from wave lengths corrected to vacuum by extrapolation of Meggers and Peters [32] dispersion formula for air.

The term combinations entered in column (6) show the quantum theoretical interpretation of the observed lines, the notation being that which is in general use [33]. In the case of blends, an attempt has been made to list the more important term combination first.

Lines which are completely masked have their multiplet designations in parentheses.

Symbols attached to Babcock's unresolved complex magnetic patterns in column (7) have the following meanings:

w_1=slightly widened; w_2=moderately widened;

w_3=greatly widened, while the apparent intensity distribution in such cases is qualitatively represented by letters as follows:

For unresolved p components B=⟈⟋; D=⊓; E=∧.

For unresolved n components A=⟋⟈; B=⟈⟋; C=⊓⊓.

As already explained, the letters b and s, with calculated patterns in column (8), indicate blended and strongest component values, respectively. Discordances are pointed out and often explained in footnotes. In such a complex spectrum, it would not be surprising if a few discordances arose from errors of observation or of judgment in separating overlapping Zeeman patterns of V I or of V I and V II lines. The recorded Zeeman data may be compared with values computed from Landé g-values by referring to a publication by Kiess and Meggers [34]. Considerable departures from such calculated values are usually accounted for by perturbation of adjacent levels [25].

The total number of classified lines is 2,186, divided among multiplicities as follows: 365 doublets, 1,173 quartets, 323 sextets, 277 doublet-quartet, 145 quartet-sextet, 12 doublet-sextet, and 13 from combinations with the three miscellaneous levels. The total number of assigned multiplet designations is 2,308, 120 lines being blended. Of the blends 118 have two designations each and 2 have three each. In addition, 73 lines which would otherwise appear in multiplets are masked; 61 by V I, 4 by V II, 2 by Ni, and 6 by Fe.

The combinations between sextets and doublets are of special interest, as this is the smallest atomic number for which they have been found. The combination $a^6D - z^2G°$ exhibits all five possible members of the multiplet, three of which (λλ 4200.19, 4179.42, 4159.70) have completely resolved Zeeman patterns, of very unusual type, which put their nature beyond any question. The remaining lines recorded as doublet-sextet combinations are sporadic and faint.

TABLE 1.—*Arc spectrum of vanadium* (V I)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
1	11911.8	2		8392.7	$a^2F_{3\frac{1}{2}} - z^2F_{2\frac{1}{2}}$		
1	11263.8	3		8875.6	$a^4G_{2\frac{1}{2}} - y^4F_{1\frac{1}{2}}$		
1	11249.0	5		8887.2	$a^4G_{3\frac{1}{2}} - y^4F_{2\frac{1}{2}}$		
1	11195.4	5		8929.8	$a^4G_{5\frac{1}{2}} - y^4F_{4\frac{1}{2}}$		
1	11182.6	5		8940.0	$a^4G_{4\frac{1}{2}} - y^4F_{3\frac{1}{2}}$		
1	11107.7	10		9000.3	$a^6S_{2\frac{1}{2}} - y^6P_{1\frac{1}{2}}$		
1	10993.4	15		9093.9	$a^6S_{2\frac{1}{2}} - y^6P_{2\frac{1}{2}}$		
1	10982.5	5hp?		9102.9	$a^4G_{5\frac{1}{2}} - z^2G_{4\frac{1}{2}}$		
1	10848.0	20		9215.8	$a^6S_{2\frac{1}{2}} - y^6P_{3\frac{1}{2}}$		
1	10824.8	6		9235.5			
1	10523.3	2p?		9500.1	$b^4P_{1\frac{1}{2}} - z^4P_{0\frac{1}{2}}$		
1	10479.4	4h		9539.9			
1	10458.4	2		9559.1	$b^4P_{2\frac{1}{2}} - z^4P_{2\frac{1}{2}}$		
1	10392.4	2		9619.8	$a^4D_{2\frac{1}{2}} - z^6D_{3\frac{1}{2}}$		
1	10383.72	3h		9627.83			
1	10283.4	1?		9721.7	$a^4D_{1\frac{1}{2}} - z^6D_{2\frac{1}{2}}$		
1	10251.5	1?		9752.0	$b^2G_{3\frac{1}{2}} - x^4G_{2\frac{1}{2}}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm^{-1}	Term combinations	Observed	Computed
1	10203.45	10		9797.93	$a^2P_{0\frac12} - z^2D^\circ_{1\frac12}$		
1	10193.66	5		9807.33	$a^2P_{1\frac12} - z^2D^\circ_{1\frac12}$		
1	10163.00	2		9836.92	$b^4P_{0\frac12} - z^4P^\circ_{1\frac12}$		
1	10138.82	5h		9860.38	$b^4P^\circ_{1\frac12} - z^4P_{3\frac12}$		
1	9865.44	10		10133.62	$a^2P^\circ_{1\frac12} - z^2D_{2\frac12}$		
1	9772.98	5+p		10229.49			
1	9738.50	15		10265.71	$b^4F^\circ_{1\frac12} - y^4F^\circ_{1\frac12}$		
1	9708.36	10		10297.58	$b^4F_{3\frac12} - z^2G^\circ_{3\frac12}$		
1	9691.58	40		10315.41	$b^4F_{2\frac12} - y^4F_{2\frac12}$		
1	9684.19	7		10323.28			
1	9670.9	5dp?		10337.5	$y^6D_{4\frac12} - e^4F_{4\frac12}$		
1	9668.9	3p?		10339.6	$b^4F_{1\frac12} - y^4F_{2\frac12}$		
1	9614.68	50		10397.92	$b^4F_{3\frac12} - y^4F_{3\frac12}$		
1	9611.60	80		10401.24	$b^4F_{4\frac12} - y^4F_{4\frac12}$		
1	9593.04	3p?		10421.37	$y^6D_{3\frac12} - e^4F_{3\frac12}$?		
1	9582.28	6h+p		10433.07	$b^4F_{2\frac12} - y^4F_{3\frac12}$		
1	9540.31	5		10478.97	$b^4D_{2\frac12} - x^4F_{3\frac12}$		
1	9536.53	3p?		10483.12	$y^6D_{2\frac12} - e^4F_{2\frac12}$		
1	9511.37	5h		10510.85			
1	9509.11	5h		10513.35	$1^\circ - f^0P_{2\frac12}$		
1	9482.64	4		10542.70			
1	9480.25	5h		10545.36	$\begin{cases} y^4D_{3\frac12} - e^4F_{3\frac12} \\ y^6D_{1\frac12} - e^4F_{1\frac12} \end{cases}$		
1	9476.14	10		10549.93	$\begin{cases} b^4D_{3\frac12} - x^4F_{3\frac12} \\ b^4P_{2\frac12} - y^4F_{3\frac12} \end{cases}$		
1	9467.92	3h		10559.08			
1	9466.32	8h		10560.87	$b^4F_{2\frac12} - y^4D_{1\frac12}$		
1	9454.44	10		10574.14	$b^4F_{4\frac12} - z^2G_{4\frac12}$		
1	9445.74	10		10583.88	$y^6D_{4\frac12} - e^6D_{3\frac12}$		
1	9439.80	8h		10590.54			
1	9435.52	80		10595.35	$y^4D_{3\frac12} - e^4F_{4\frac12}$		
1	9411.32	30		10622.59	$y^6D_{3\frac12} - e^6D_{2\frac12}$		
1	9406.02	4h		10628.58	$b^4F_{3\frac12} - y^4D_{2\frac12}$		
1	9398.92	10		10636.60	$y^4D_{2\frac12} - e^4F_{2\frac12}$		
1	9384.83	30		10652.59	$y^6D_{2\frac12} - e^6D_{1\frac12}$		
1	9380.50	4		10657.49			
1	9369.80	5		10669.66			
1	9366.86	50		10673.01	$y^4D_{2\frac12} - e^4F_{3\frac12}$		
1	9362.76	2		10677.68	$b^4P_{2\frac12} - y^4D_{1\frac12}$		
1	9361.58	6		10679.03	$y^6D_{1\frac12} - e^6D_{0\frac12}$		
1	9341.10	100		10702.44	$y^6D_{4\frac12} - e^6D_{4\frac12}$		
1	9334.91	5h		10709.54	$b^4F_{4\frac12} - y^4D_{3\frac12}$		
1	9328.14	40		10717.31	$y^6D_{3\frac12} - e^6D_{3\frac12}$		
1	9324.46	5		10721.54	$y^6D_{2\frac12} - e^6D_{2\frac12}$		
1	9316.50	3		10730.70	$z^2G_{4\frac12} - e^4F_{4\frac12}$		
1	9313.54	4		10734.11	$\begin{cases} y^4D_{1\frac12} - e^4F_{1\frac12} \\ b^4P_{1\frac12} - y^4F_{2\frac12} \end{cases}$		
1	9308.64	20		10739.76	$y^4D_{1\frac12} - e^4F_{2\frac12}$		
1	9290.34	10		10760.92	$y^6D_{0\frac12} - e^6D_{1\frac12}$		
1	9273.31	15		10780.68	$b^4P_{2\frac12} - y^4D_{2\frac12}$		
1	9265.59	20		10789.66	$y^6D_{1\frac12} - e^6D_{2\frac12}$		
1	9255.84	10		10801.03	$y^4D_{0\frac12} - e^4F_{1\frac12}$		
1	9242.89	30		10816.16	$y^6D_{2\frac12} - e^6D_{3\frac12}$		
1	9226.09	20		10835.87	$y^6D_{3\frac12} - e^6D_{4\frac12}$		
1	9217.22	4h		10846.28	$a^2P_{1\frac12} - z^6P^\circ_{1\frac12}$?		
1	9202.88	4		10863.18	$a^4P_{2\frac12} - z^4D^\circ_{1\frac12}$		
1	9168.76	20		10903.61	$\begin{cases} y^4F^\circ_{3\frac12} - e^4F_{4\frac12} \\ y^4F^\circ_{2\frac12} - e^4F_{3\frac12} \end{cases}$		
1	9165.80	4		10907.13	$a^2H_{5\frac12} - y^4F^\circ_{3\frac12}$		
1	9164.84	40		10908.27	$b^4P_{2\frac12} - y^4D^\circ_{3\frac12}$		
1	9156.54	20		10918.16	$a^2H_{4\frac12} - z^2G^\circ_{3\frac12}$		
1	9113.74	6		10969.44	$a^4P_{1\frac12} - z^4D^\circ_{0\frac12}$		
1	9105.86	10		10978.93	$b^4P_{1\frac12} - y^4D^\circ_{1\frac12}$		
1	9100.78	8		10985.06	$y^4F^\circ_{1\frac12} - e^4F_{2\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1) Ref.	(2) λ_{air} A	(3) Int. arc	(4) Temp. class	(5) ν_{vac} cm^{-1}	(6) Term combinations	(7) Zeeman effect Observed	(8) Zeeman effect Computed
1	9085.26	40		11003.82	$a^4P_{2\frac12} - z^4D^o_{3\frac12}$		
1	9073.34	4		11018.28	$a^2H_{4\frac12} - y^4F^o_{3\frac12}$		
1	9046.68	50		11050.75	$a^4P_{1\frac12} - z^4D^o_{1\frac12}$		
1	9037.58	30		11061.87	$a^4P_{0\frac12} - z^4D^o_{0\frac12}$		
1	9022.70	20		11080.12	$a^2H_{5\frac12} - z^2G^o_{4\frac12}$		
1	9021.08	20		11082.11	$b^4P_{1\frac12} - y^4D^o_{2\frac12}$		
1	9003.08	5		11104.26	$b^4P_{0\frac12} - y^4D^o_{0\frac12}$		
1	8999.10	4		11109.17	$y^6D^o_{2\frac12} - e^6F_{3\frac12}$		
1	8971.62	40		11143.20	$a^4D_{0\frac12} - z^4D^o_{1\frac12}$		
1	8963.6	5		11153.2	$y^6D^o_{3\frac12} - e^6F_{4\frac12}$		
1	8949.2	4		11171.1	$b^4P_{0\frac12} - y^4D^o_{1\frac12}$		
1	8932.95	50cw		11191.44	$a^4P_{1\frac12} - z^4D^o_{2\frac12}$		
1	8931.62	7hp?		11193.11	$y^6D^o_{4\frac12} - e^6F_{5\frac12}$		
1	8919.85	100cw		11207.88	$a^4P_{2\frac12} - z^4D^o_{3\frac12}$		
1	8916.35	2p?		11212.27	$a^4H_{3\frac12} - y^4F^o_{3\frac12}$?		
1	8642.61	5+p?		11567.40			
1	8598.92	4+p		11626.18	$y^4D^o_{3\frac12} - e^4D_{2\frac12}$		
1	8580.37	8h		11651.31	$y^4D^o_{2\frac12} - e^4D_{1\frac12}$		
1	8551.48	3+p?		11690.67	$y^4D^o_{1\frac12} - e^4D_{0\frac12}$		
1	8541.98	20		11703.67	$b^2G_{4\frac12} - y^2G^o_{4\frac12}$		
1	8534.50	30		11713.93	$b^2G_{3\frac12} - y^2G^o_{3\frac12}$		
1	8505.63	10		11753.69	$y^4D^o_{2\frac12} - e^4D_{2\frac12}$		
1	8505.06	4		11754.48	$y^4D^o_{1\frac12} - e^4D_{1\frac12}$		
1	8502.94	5d?		11757.41	$\begin{cases} y^4D^o_{0\frac12} - e^4D_{0\frac12} \\ b^2G_{4\frac12} - y^2G^o_{3\frac12} \end{cases}$		
1	8499.50	50		11762.17	$y^4D^o_{2\frac12} - e^4D_{3\frac12}$		
1	8493.61	5		11770.32	$z^2F^o_{3\frac12} - f^4D_{2\frac12}$?		
1	8431.63	10h+p?		11856.85	$y^4D^o_{1\frac12} - e^4D_{2\frac12}$		
1	8421.39	5		11871.27	$b^4D_{2\frac12} - x^4D^o_{2\frac12}$?		
1	8416.53	5		11878.12	$b^2G_{4\frac12} - y^2F^o_{3\frac12}$		
1	8414.39	5		11881.14	$b^2G_{3\frac12} - y^2F^o_{2\frac12}$		
1	8408.23	3		11889.85	$y^4D^o_{2\frac12} - e^4D_{3\frac12}$		
1	8402.79	15		11897.54			
1	8342.04	60		11984.19	$y^4F^o_{3\frac12} - e^4D_{2\frac12}$		
1	8331.21	40		11999.76	$y^4F^o_{2\frac12} - e^4D_{1\frac12}$		
1	8324.40	30		12009.58	$y^4F^o_{1\frac12} - e^4D_{0\frac12}$		
1	8282.35	100		12070.55	$y^4F^o_{4\frac12} - e^4D_{3\frac12}$		
1	8280.39	20		12073.41	$y^4F^o_{1\frac12} - e^4D_{1\frac12}$		
1	8267.61	2		12092.07	$b^2G_{4\frac12} - z^2H^o_{3\frac12}$		
1	8255.90	100c		12109.22	$a^4D_{2\frac12} - z^4D^o_{1\frac12}$		
1	8253.51	100cw		12112.73	$a^4D_{3\frac12} - z^4D^o_{2\frac12}$		
1	8241.61	60		12130.22	$a^4D_{1\frac12} - z^4D^o_{0\frac12}$		
1	8203.05	100		12187.24	$y^6F^o_{5\frac12} - e^6D_{4\frac12}$		
1	8198.87	80		12193.45	$a^4D_{0\frac12} - z^4D^o_{0\frac12}$		
1	8194.82	5		12199.48	$b^4D_{2\frac12} - w^4F^o_{3\frac12}$		
1	8187.33	70		12210.64	$y^6F^o_{4\frac12} - e^6D_{3\frac12}$		
1	8186.73	100		12211.54	$a^4D_{1\frac12} - z^4D^o_{1\frac12}$		
1	8180.19	15h		12221.30	$b^4D_{3\frac12} - w^4F^o_{3\frac12}$		
1	8171.34	40		12234.53	$y^6F^o_{3\frac12} - e^6D_{2\frac12}$		
1	8168.89	7h		12238.20	$y^4F^o_{2\frac12} - e^4D_{3\frac12}$		
1	8161.06	150cw		12249.95	$a^4D_{2\frac12} - z^4D^o_{2\frac12}$		
1	8154.55	20		12259.72	$y^6F^o_{2\frac12} - e^6D_{1\frac12}$		
1	8144.58	50		12274.73	$a^4D_{0\frac12} - z^4D^o_{1\frac12}$		
1	8136.80	20+p		12286.47	$y^6F^o_{1\frac12} - e^6D_{0\frac12}$		
1	8116.80	200cW		12316.74	$a^4D_{3\frac12} - z^4D^o_{3\frac12}$		
1	8109.88	15		12327.25	$y^6F^o_{0\frac12} - e^6D_{0\frac12}$		
1	8109.07	20d?		12328.49	$\begin{cases} y^6F^o_{2\frac12} - e^6D_{2\frac12} \\ y^6F^o_{1\frac12} - e^6D_{1\frac12} \end{cases}$		
1	8108.60	30		12329.20	$\begin{cases} y^6F^o_{4\frac12} - e^6D_{4\frac12} \\ y^6F^o_{3\frac12} - e^6D_{3\frac12} \end{cases}$		
1	8102.42	40		12338.60			
1	8093.48	100c		12352.23	$a^4D_{1\frac12} - z^4D^o_{2\frac12}$		
1	8028.13	20cw		12452.76			
1	8027.36	100cw		12453.97	$a^4D_{2\frac12} - z^4D^o_{3\frac12}$		
1	7947.36	6		12579.34	$z^6P^o_{1\frac12} - e^6D_{2\frac12}$		
1	7937.90	30		12594.33	$z^6P^o_{2\frac12} - e^6D_{3\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (VI)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
1	7932.99	6		12602.13	$z^6P_{3½} - e^6D_{4½}$		
1	7826.88	3		12772.97	$b^2P_{1½} - y^2S_{0½}$		
1	7787.81	1		12837.05	$x^4F_{2½} - e^2F_{3½}$		
1	7736.63	1		12921.97	$a^2D_{2½} - z^2F_{3½}$		
1	7704.81	3		12975.34	$z^4P_{2½} - e^4D_{2½}$		
1	7701.36	2		12981.15	$b^2P_{0½} - z^2S_{0½}$		
1	7676.14	2		13023.80	$b^4P_{2½} - x^6D_{3½}$		
1	7662.97	2h		13046.17	$y^4D_{2½} - f^4F_{3½}$		
1	7661.02	2h		13049.51	$b^4P_{2½} - z^4S_{1½}$		
1	7638.03	3h		13088.78	$z^4P_{1½} - e^4D_{1½}$		
1	7624.80	15		13111.49	$z^4P_{2½} - e^4D_{3½}$		
1	7621.85	4dp?		13116.57	$y^4D_{3½} - f^4F_{4½}$		
1	7613.55	2h		13130.87	$y^6F_{4½} - e^4D_{3½}$		
1	7598.28	3h		13157.26	$b^2P_{0½} - y^2S_{0½}$		
1	7596.92	3p?		13159.61	$b^2P_{1½} - x^4D_{0½}$		
1	7591.24	3h		13169.46	$z^4P_{0½} - e^4D_{0½}$		
1	7578.75	5h		13191.16	$z^4P_{1½} - e^4D_{2½}$		
1	7573.93	2		13199.55	$b^4D_{0½} - v^4F_{1½}$?		
1	7570.26	2		13205.96	$b^4D_{1½} - 1°$		
1	7554.63	2		13233.27	$z^4P_{0½} - e^4D_{1½}$		
1	7488.08	3h		13350.89	$b^4P_{1½} - z^4S_{1½}°$		
1	7485.88	2h		13354.81	$b^4D_{1½} - v^4F_{2½}°$		
1	7398.64	1		13512.29	$a^4G_{4½} - y^4G_{3½}°$		
1	7395.20	3h		13518.58	$a^4G_{3½} - y^4G_{2½}°$		
1	7389.14	2		13529.65	$a^4G_{5½} - y^4G_{4½}°$		
1	7385.95	3		13535.50	$b^2P_{1½} - z^2P_{0½}°$		
1	7381.95	1		13542.84	$b^4P_{1½} - z^4S_{1½}°$		
1	7363.16	15		13577.39	$a^4G_{3½} - y^4G_{3½}°$		
1	7362.49	4		13578.62	$\begin{cases} b^2P_{1½} - z^2P_{1½}° \\ b^2G_{3½} - u^4D_{2½}° \end{cases}$		
1	7361.39	10		13580.65	$a^4G_{2½} - y^4G_{2½}°$		
1	7358.64	4		13585.73	$b^4D_{2½} - v^4F_{3½}°$		
1	7356.51	20		13589.66	$a^4G_{4½} - y^4G_{4½}°$		
1	7338.92	30		13622.23	$a^4G_{5½} - y^4G_{5½}°$		
1	7329.66	2		13639.44	$a^4G_{2½} - y^4G_{3½}°$		
1	7327.76	1-		13643.00	$b^2H_{5½} - z^4H_{4½}°$		
1	7321.44	4		13654.76	$a^4G_{3½} - y G_{4½}°$		
1	7306.71	2		13682.28	$a^4G_{4½} - y^4G_{5½}°$		
1	7291.90	1-		13710.07	$a^2F_{3½} - z^4H_{3½}°$		
1	7264.28	8		13762.20	$b^4D_{3½} - v^4F_{4½}°$		
1	7255.68	2		13778.51	$z^4F_{2½} - e^4F_{2½}°$		
1	7239.26	1-		13809.77	$x^6D_{4½} - f^6F_{5½}°$		
1	7228.36	1-		13830.58	$b^4D_{2½} - v^4D_{2½}°$		
1	7186.79	1		13910.59	$\begin{cases} x^6D_{3½} - f^8F_{4½}° \\ a^2F_{3½} - w^4F_{3½}° \end{cases}$		
1	7182.04	2		13919.78	$b^2P_{0½} - z^2P_{0½}°$		
1	7159.90	1-		13962.84	$b^2P_{0½} - z^2P_{1½}°$		
1	7151.36	2		13979.50	$b^4D_{3½} - v^4D_{3½}°$		
1	7148.15	6		13985.78			
1	7102.53	2h		14075.62	$a^4G_{5½} - x^4F_{4½}°$		
1	7092.08	4h		14096.36			
1	7063.69	1-		14153.02	$a^2G_{4½} - y^6F_{3½}°$		
1	7026.05	10+p		14228.83	$a^2F_{3½} - y^2G_{4½}°$		
1	6974.50	5		14334.00	$a^2F_{2½} - y^2G_{3½}°$		
1	6940.92	2		14403.35	$a^2F_{3½} - y^2F_{3½}°$		
1	6916.06	2		14455.12	$a^2F_{2½} - y^2F_{3½}°$		
1	6893.99	3		14501.39	$a^2F_{2½} - y^2F_{2½}°$		
1	6883.92	2		14522.60	$b^4P_{2½} - y^4P_{1½}°$		
1	6871.53	4		14548.79	$b^4P_{2½} - y^4P_{2½}°$		
1	6870.86	8		14550.21	$b^2H_{5½} - z^2H_{3½}°$		
1	6841.89	(7)	III A	14611.82	$a^4D_{1½} - z^4F_{1½}°$		
1	6839.58	6		14616.75	$b^2H_{4½} - z^2H_{4½}°$		
1	6832.44	(10)	III A	14632.03	$a^4D_{2½} - z^4F_{2½}°$		
1	6829.94	(10)	III A	14637.39	$a^4D_{3½} - z^4F_{3½}°$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm^{-1}	Term combinations	Observed	Computed
1	6819.13	2d?		14660.59	$a^2P_{1\frac12}-x^6D_{3\frac12}$		
1	6812.40	(20)	III A	14675.07	$a^4D_{0\frac12}-z^4F_{1\frac12}$		
1	6786.32	6		14731.47			
1	6784.98	(40)	III A	14734.38	$a^4D_{1\frac12}-z^4F_{2\frac12}$		
1	6777.29	2		14751.09	$b^4P_{1\frac12}-y^4P_{0\frac12}$		
1	6766.49	(60)	III A	14774.64	$a^4D_{2\frac12}-z^4F_{3\frac12}$		
1	6760.12	4		14788.56			
1	6753.00	(80c)	III A	14804.15	$a^4D_{3\frac12}-z^4F_{4\frac12}$		
1	6744.20	1		14823.47	$\begin{cases}b^4P_{1\frac12}-y^4P_{1\frac12}\\a^4P_{2\frac12}-z^6P_{1\frac12}\end{cases}$		
1	6732.02	2		14850.29	$b^4P_{1\frac12}-y^4P_{2\frac12}$		
1	6708.07	4		14903.31	$a^4P_{2\frac12}-z^6P_{2\frac12}$		
1	6693.66	1h		14935.40	$b^2G_{4\frac12}-x^2G_{3\frac12}$		
1	6677.82	1−		14970.82	$b^4F_{1\frac12}-y^4G_{2\frac12}$		
1	6662.38	(1)	IV A	15005.50	$b^4F_{2\frac12}-y^4G_{3\frac12}$		
1	6657.62	1−		15016.25	$b^4P_{0\frac12}-y^4P_{1\frac12}$		
1	6643.79	(2)	IV A	15047.50	$b^4F_{3\frac12}-y^4G_{4\frac12}$		
1	6633.26	(2)	III A	15071.38	$a^2G_{4\frac12}-y^4F_{3\frac12}$		
1	6624.86	(7)	III A	15090.49	$a^4P_{2\frac12}-z^4P_{1\frac12}$	(0? w_1) 1.50	(0) 1.43b
1	6623.51	(8)	IV A	15093.57	$b^4F_{4\frac12}-y^4G_{5\frac12}$		
1	6607.82	(3)	III A	15129.42	$a^2G_{3\frac12}-z^2G_{3\frac12}$		
2	6606.445	[0]		15132.56	$a^4D_{1\frac12}-z^2D_{1\frac12}$		
1	6605.98	(10)	III A	15133.63	$a^4P_{1\frac12}-z^4P_{0\frac12}$	(0.43) **1.32**, 2.12	(0.42) **1.28**, 2.12
1	6578.96	(2)	III A	15195.79	$a^4D_{0\frac12}-z^2D_{1\frac12}$		
1	6568.73	1h		15219.45	$\begin{cases}a^4D_{3\frac12}-z^2D_{3\frac12}\\b^2G_{4\frac12}-w^4G_{3\frac12}\end{cases}$		
1	6565.88	(3)	III A	15226.05	$a^4P_{0\frac12}-z^4P_{1\frac12}$	(0) 2.61	(0.02) 2.56b
2	6564.350	[2]		15229.60	$a^2G_{3\frac12}-y^4F_{3\frac12}$		
1	6558.02	(5)	III A	15244.30	$a^2G_{4\frac12}-z^2G_{4\frac12}$	(0.24) 1.11	(0.00) 1.13b
1	6550.02	(2)	IV	15262.91		(0) 1.08	
1	6543.51	(5)	III A	15278.12	$a^4P_{1\frac12}-z^4P_{1\frac12}$	(0) 1.74	(0.01) 1.70b
1	6531.44	(15)	II	15306.34	$a^4P_{2\frac12}-z^4P_{2\frac12}$	(0) 1.59	(0.09) 1.57b
2	6510.076	[−1]		15356.57	$a^4D_{2\frac12}-z^2D_{2\frac12}$		
1	6508.736	(2)	III	15359.73			
1	6504.164	(9)	II A	15370.54	$a^4P_{0\frac12}-z^4P_{1\frac12}$	(0.47) **1.30**, 2.20	(0.44) **1.27**, 2.15
1	6490.68	(2)	IV	15402.46	$a^2F_{2\frac12}-y^2D_{1\frac12}$		
1	6488.05	(4)	IV	15408.70	$a^2F_{3\frac12}-y^2D_{2\frac12}$	(0) 1.08	(0) 1.08b
1	6480.52	2h		15426.60	$y^6D_{4\frac12}-e^6P_{3\frac12}$		
1	6466.97	(2)	III A	15458.94	$a^4D_{1\frac12}-z^2D_{2\frac12}$		
1	6452.354	(10)	II A	15493.95	$a^4P_{1\frac12}-z^4P_{2\frac12}$	(0) 1.48	(0) 1.51b
1	6450.947	(2)	IV A	15497.33	$b^4F_{4\frac12}-x^4F_{3\frac12}$		
1	6447.82	(3)	IV A	15504.84	$b^4F_{3\frac12}-x^4F_{3\frac12}$		
1	6445.14	(1)	IV A	15511.38	$b^4F_{2\frac12}-x^4F_{1\frac12}$		
1	6438.08	(1)	IV A	15528.29	$b^2G_{3\frac12}-v^2G_{3\frac12}$		
1	6435.148	(2)	III A	15535.37	$b^4F_{1\frac12}-x^4F_{1\frac12}$	(?) 0.41	(0.01) 0.38b
1	6433.17	(3)	III A	15540.16	$b^4F_{2\frac12}-x^4F_{2\frac12}$	(0) 1.07	(0.09) 1.03b
1	6431.620	(4)	III A	15543.89	$b^4F_{3\frac12}-x^4F_{3\frac12}$	(0) 1.22	(0.03) 1.22b
1	6430.471	(5)	III	15546.67	$b^4F_{4\frac12}-x^4F_{4\frac12}$	(0) 1.32	(0.04) 1.32b
1	6424.96	(1h)	IV	15560.02	$y^6D_{3\frac12}-e^6P_{3\frac12}$		
1	6423.219	(1)	IV A	15564.22	$b^4F_{1\frac12}-x^4F_{2\frac12}$		
1	6420.23	1−		15571.47	$b^2G_{4\frac12}-v^2G_{3\frac12}$		
1	6418.71	(1)	IV A	15575.16	$a^4G_{3\frac12}-z^4H_{3\frac12}$		
1	6417.017	(2)	IV A	15579.27	$b^4F_{2\frac12}-x^4F_{3\frac12}$		
1	6411.26	1		15593.26	$\begin{cases}b^4F_{3\frac12}-x^4F_{4\frac12}\\a^2F_{2\frac12}-v^4D_{2\frac12}?\end{cases}$		
1	6407.07	2		15603.45	$b^4D_{1\frac12}-z^2D_{1\frac12}$		
1	6405.961	1		15606.16	$\begin{cases}a^4G_{4\frac12}-z^4H_{4\frac12}\\a^2D_{1\frac12}-y^4P_{2\frac12}?\end{cases}$		
1	6393.270	2	III	15637.14	$a^4G_{2\frac12}-z^4H_{3\frac12}$	(0?w_1) 0.78	(0) 0.79b
1	6385.62	1		15655.87	$a^4G_{5\frac12}-z^4H_{5\frac12}$		
1	6384.46	1h		15658.71	$y^6D_{2\frac12}-e^6P_{3\frac12}$		
1	6381.26	2h		15666.56	$y^6D_{4\frac12}-f^6D_{3\frac12}$		
1	6379.338	3	III	15671.28	$a^4G_{3\frac12}-z^4H_{4\frac12}$	(0) 0.97	(0) 1.02b
1	6374.484	1	III A	15683.21	$a^4G_{2\frac12}-w^4F_{1\frac12}$	(0) 0.64	(0) 0.64b

Table 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm^{-1}	Term combinations	Observed	Computed
2	6369.217	[−3]		15696.19	$b^2G_{3\frac12}-w^2F_{2\frac12}$		
1	6361.259	3	III	15715.82	$\{a^4G_{4\frac12}-z^4H_{5\frac12}$ / $(b^2G_{3\frac12}-v^2G_{1\frac12})\}$	(0) 1.03	(0) 1.05b
1	6358.819	3	III	15721.85	$a^4G_{5\frac12}-z^4H_{6\frac12}$	(0) 1.09	(0) 1.04b
1	6357.297	4	III	15725.61	$a^4H_{3\frac12}-y^4G_{2\frac12}$	(0) 0.80	(0) 0.80b
1	6355.582	1	II A	15729.86	$a^4G_{3\frac12}-w^4F_{2\frac12}$	(0) 0.90	(0) 0.90b
2	6354.306	[−1]		15733.02	$b^4F_{1\frac12}-x^4G_{2\frac12}$?		
1	6349.477	5	III	15744.98	$a^4H_{4\frac12}-y^4G_{3\frac12}$	(0) 0.94	(0) 0.95b
1	6343.944	1	IV	15758.71	$\{b^2G_{4\frac12}-v^2G_{4\frac12}$ / $y^6D_{3\frac12}-f^6F_{3\frac12}\}$		
1	6340.18	1h		15768.07	$y^6D_{4\frac12}-f^6F_{4\frac12}$		
1	6339.090	5	III	15770.78	$a^4H_{5\frac12}-y^4G_{4\frac12}$	(0) 1.03	(0) 1.03b
2	6333.634	[0]		15784.37	$a^4H_{3\frac12}-y^4G_{3\frac12}$		
1	6326.845	6	III	15801.31	$a^4H_{6\frac12}-y^4G_{5\frac12}$	(0) 1.09	(0) 1.10b
1	6324.675	2	III	15806.73	$a^4G_{4\frac12}-w^4F_{2\frac12}$	(0) 1.11	(0) 1.06b
1	6321.229	2	IV	15815.35	$y^6D_{1\frac12}-f^6D_{4\frac12}$	(0) 1.54	(0. 41) 1.55b
1	6318.367	tr	IV A	15822.50	$\{a^4H_{4\frac12}-y^4G_{4\frac12}$ / $b^4D_{2\frac12}-x^4P_{2\frac12}\}$		
1	6311.53	3	III	15839.66	$y^6D_{1\frac12}-f^6F_{5\frac12}$	(0) $1.06w_2$	(0) 1.14b
1	6309.718	1	IV	15844.19	$b^4D_{3\frac12}-x^4P_{2\frac12}$	(0) $1.34w_1$	(0) 1.33b
2	6306.499	[0]		15852.28	$b^4F_{2\frac12}-x^4G_{3\frac12}$		
1	6304.334	2	IV	15857.72	$y^6D_{2\frac12}-f^6F_{3\frac12}$		
1	6298.69	tr	IV A	15871.93	$\{b^2G_{4\frac12}-w^2F_{3\frac12}$ / $a^4G_{3\frac12}-w^4F_{3\frac12}\}$		
1	6296.518	15	I	15877.41	$\{a^6D_{4\frac12}-z^6D_{3\frac12}$ / $(z^4F_{4\frac12}-f^4F_{3\frac12})\}$	(0) 1.50	(0) 1.46b
1	6292.858	20		15886.64	$a^6D_{3\frac12}-z^6D_{2\frac12}$	(0) 1.52	(0) 1.47b
1	6286.94	2		15901.59	$y^6D_{3\frac12}-f^6F_{4\frac12}$		
1	6285.185	20	I	15906.04	$a^6D_{2\frac12}-z^6D_{1\frac12}$	(0) 1.50	(0) 1.50b
1	6282.36	2	III	15913.21	$a^4G_{5\frac12}-w^4F_{3\frac12}$	(0) 1.16	(0) **1.13**s
1	6280.93	2h		15916.82	$z^4F_{2\frac12}-f^4F_{1\frac12}$		
1	6274.670	15	I	15932.70	$a^6D_{1\frac12}-z^6D_{0\frac12}$	(0.60) **1.26**, 2.49	(0.69) **1.13**, 2.51
1	6268.841	8	II A	15947.51	$\{a^6D_{4\frac12}-z^6F_{5\frac12}$ / $a^6D_{3\frac12}-z^6F_{3\frac12}\}$		
1	6266.32	7	II A	15953.92	$a^6D_{2\frac12}-z^6F_{1\frac12}$	(0.25, 0.67) 1.41, 1.92, 2.39.	(**0.23**, 0.70) 0.91, **1.27**, 1.84, **2.31**
1	6261.236	5	II A	15966.88	$a^6D_{1\frac12}-z^6F_{0\frac12}$	(1.12) 0.78, 3.06	(1.13) 0.69, **2.95**
1	6258.595	8	II A	15973.62	$\{a^6D_{0\frac12}-z^6D_{0\frac12}$ / $(a^4G_{4\frac12}-w^4F_{3\frac12})\}$	(0) 3.20	(0.05) 3.25b
1	6256.906	8	II A	15977.92	$a^6D_{2\frac12}-z^6D_{2\frac12}$	(0) 1.61	(0.07) 1.60b
1	6251.83	30a	I	15990.89	$a^6D_{3\frac12}-z^6D_{3\frac12}$	(0) 1.55	(0.09) 1.54b
1	6249.30	tr	IV A	15997.39	$b^4F_{3\frac12}-z^4G_{4\frac12}$		
1	6247.544	2h		16001.87	$b^4D_{1\frac12}-x^4P_{1\frac12}$		
1	6245.214	2	II A	16007.84	$a^6D_{0\frac12}-z^6F_{0\frac12}$	(1.94) 1.47	(1.86) 1.42b
1	6243.49	3	III A	16012.27	$a^6D_{3\frac12}-z^6P_{2\frac12}$		
1	6243.11	30a	I	16013.24	$a^6D_{4\frac12}-z^6D_{4\frac12}$	(0) $1.54w_2$ C	(0.09) 1.54b
1	6242.80	15	I	16014.04	$a^6D_{0\frac12}-z^6D_{1\frac12}$	(0.80) 0.96	(0.77) **0.99**, 2.53
1	6240.137	6	II A	16020.86	$a^6D_{1\frac12}-z^6F_{1\frac12}$	(1.05) 0.85, **1.51**, 2.12	(0.34, 1.02) 0.80, **1.48**, 2.16
1	6238.22	tr	IV	16025.80	$b^4D_{2\frac12}-x^4P_{1\frac12}$		
1	6236.278	1	IV	16030.78	$z^4F_{2\frac12}-f^4F_{2\frac12}$	$(0?w_2$ D) $1.02w_2$ A	(0.12) 1.01b
1	6233.187	12	I A	16038.73	$\{a^6D_{2\frac12}-z^6F_{2\frac12}$ / $(z^4F_{1\frac12}-f^4F_{1\frac12})\}$	(0.74) $1.44w_3$ C	(0.72) 1.44b
1	6230.736	30	I	16045.04	$\{a^6D_{1\frac12}-z^6D_{2\frac12}$ / $(z^4F_{3\frac12}-f^4F_{3\frac12})\}$		
1	6224.507	15	I	16061.10	$\{a^6D_{3\frac12}-z^6F_{3\frac12}$ / $(a^6D_{0\frac12}-$ $z^6F_{1\frac12}?)\}$		
1	6221.216	1	III A	16069.59	$a^4D_{2\frac12}-z^6P_{1\frac12}$	(0.55)?	(**0.49**, 1.48) **−0.13**, 0.86 1.85, 2.83
1	a6218.328	3	IV	16077.06	$z^4F_{3\frac12}-f^4F_{4\frac12}$	(0) 1.32	(0.07) 1.32b
1	6216.368	30	I	16082.12	$a^6D_{2\frac12}-z^6D_{3\frac12}$	(0) 1.45	(0) **1.44**s
1	6214.743	1	IV	16086.33			
1	6213.874	15	I	16088.58	$a^6D_{4\frac12}-z^6F_{4\frac12}$	(0.45) 1.48	(0.52) 1.45b
2	6207.251	[5]		16105.75	$a^6D_{1\frac12}-z^6F_{2\frac12}$		
2	6200.644	[0]		16122.91	$a^4D_{3\frac12}-z^6P_{3\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
1	6199.202	30	I	16126.65	$\begin{cases}a^6D_{3\frac{1}{2}}-z^6D^o_{4\frac{1}{2}}\\(a^4F_{3\frac{1}{2}}-z^6G^o_{2\frac{1}{2}})\end{cases}$	(0) 1.47	(0) 1.58b
1	6190.490	1	III A	16149.35	$a^4D_{2\frac{1}{2}}-z^6P^o_{2\frac{1}{2}}$	(1.17)?	(1.09) 1.60b
1	b6189.350	3	II A	16152.32	$a^6D_{2\frac{1}{2}}-z^6F^o_{3\frac{1}{2}}$	(?) 1.00w_2 A	(0) 0.87b
1	6184.93	1h		16163.87	$x^6D^o_{1\frac{1}{2}}-f^6P_{2\frac{1}{2}}$		
2	6184.026	[−1?]		16166.23	$b^4F_{4\frac{1}{2}}-x^4G^o_{5\frac{1}{2}}$		
1	6181.841	1	III A	16171.95	$a^4D_{1\frac{1}{2}}-z^6P^o_{1\frac{1}{2}}$		
1	6170.340	8	I A	16202.09	$a^6D_{3\frac{1}{2}}-z^6F^o_{4\frac{1}{2}}$		
2	6161.913	[0]		16224.25	$a^4F_{2\frac{1}{2}}-z^6G^o_{1\frac{1}{2}}$		
2	6157.763	[1]		16235.18	$a^4D_{0\frac{1}{2}}-z^6P^o_{1\frac{1}{2}}$		
2	6152.416	[1]		16249.29	$a^4F_{3\frac{1}{2}}-z^6G^o_{3\frac{1}{2}}$		
2	6151.509	[1]		16251.68	$\begin{cases}a^4D_{1\frac{1}{2}}-z^6P^o_{2\frac{1}{2}}\\a^4D_{2\frac{1}{2}}-y^6F^o_{1\frac{1}{2}}\end{cases}$		
1	6150.132	15	I	16255.33	$a^6D_{4\frac{1}{2}}-z^6F^o_{5\frac{1}{2}}$	(? w_3 D) 1.15w_3 A	(0) 1.18b
1	6135.36	15	II	16294.47	$a^4D_{1\frac{1}{2}}-z^4P^o_{0\frac{1}{2}}$	(0.63) **0.51**, 1.80	(0.67) **0.52**, 1.87
1	6135.07	2	III A	16295.25	$a^2G_{3\frac{1}{2}}-z^2F^o_{2\frac{1}{2}}$		
2	6128.543	[0]		16312.58	$a^4F_{2\frac{1}{2}}-z^6G^o_{2\frac{1}{2}}$	(0.88) **0**, 2.12	(0.89) 0.31, **2.08**
1	6128.30	2	III A	16313.24	$a^4D_{1\frac{1}{2}}-y^6F^o_{0\frac{1}{2}}$		
1	6119.505	40	I	16336.68	$a^4D_{2\frac{1}{2}}-z^4P^o_{1\frac{1}{2}}$	(0.19, 0.55) **0.81**, 1.20, 1.56, —	(**0.18**, 0.54) **0.81**, 1.17, 1.54, 1.89
1	6111.622	25	II	16357.75	$a^4D_{0\frac{1}{2}}-z^4P^o_{0\frac{1}{2}}$	(1.27) 1.27	(1.27) 1.27b
2	6110.214	[3]		16361.52	$a^4F_{1\frac{1}{2}}-z^6G^o_{1\frac{1}{2}}$		
2	6109.176	[1]		16364.30	$a^4F_{4\frac{1}{2}}-z^6G^o_{5\frac{1}{2}}$		
1	b6106.967	2	III A	16370.23	$a^2G_{4\frac{1}{2}}-z^2F^o_{3\frac{1}{2}}$	(0) 1.02	(0) 1.34b
1	6104.669	tr	III A	16376.38	$a^4D_{0\frac{1}{2}}-y^6F^o_{0\frac{1}{2}}$		
1	6097.42	1		16395.86	$a^4D_{3\frac{1}{2}}-y^6F^o_{4\frac{1}{2}}$		
2	6093.866	[3]		16405.42	$a^4F_{3\frac{1}{2}}-z^6G^o_{4\frac{1}{2}}$		
3	6090.515	−3		16414.44	$a^4D_{2\frac{1}{2}}-y^6F^o_{3\frac{1}{2}}$		
1	6090.184	50	I	16415.33	$a^4D_{3\frac{1}{2}}-z^4P^o_{2\frac{1}{2}}$		
2	6089.473	[3]		16417.24	$a^4D_{0\frac{1}{2}}-y^6F^o_{1\frac{1}{2}}$		
1	6087.485	1	III A	16422.61	$a^4D_{1\frac{1}{2}}-y^6F^o_{2\frac{1}{2}}$		
1	6086.55	2		16425.14	$a^4D_{2\frac{1}{2}}-y^4D^o_{1\frac{1}{2}}$		
2	6082.789	[2]		16435.29	$a^4F_{2\frac{1}{2}}-z^6G^o_{3\frac{1}{2}}$		
1	6081.421	25	I	16439.00	$a^4D_{1\frac{1}{2}}-z^4P^o_{1\frac{1}{2}}$	(−, **0.79**) 0.90, 1.45, 1.99	(0.25, **0.77**) 0.94, **1.45**, 1.96
2	6077.367	[2]		16449.95	$a^4F_{1\frac{1}{2}}-z^6G^o_{2\frac{1}{2}}$	(0) 0.94	(0) 0.92b
1	6067.245	1	III	16477.40	$b^2G_{3\frac{1}{2}}-x^2H^o_{4\frac{1}{2}}$	(0) 0.76	(0) 0.80b
1	6063.372	tr	III A	16487.92	$a^4H_{5\frac{1}{2}}-x^4G^o_{6\frac{1}{2}}$	(0.83) 0.86, **2.56**	(0.85) 0.85, **2.56**
1	6058.113	5	II A	16502.23	$a^4D_{0\frac{1}{2}}-z^4P^o_{1\frac{1}{2}}$	(?) 0.90	(0) 0.68b
1	b6054.445	2		16512.24	$b^2G_{4\frac{1}{2}}-t^4D^o_{3\frac{1}{2}}$		
1	6048.636	tr	III A	16528.10	$a^4P_{2\frac{1}{2}}-y^4D^o_{2\frac{1}{2}}$	(0.51w_2B) 1.46w_2 C	(0.52) 1.47b
1	6039.690	25	I	16552.57	$a^4D_{2\frac{1}{2}}-z^4P^o_{2\frac{1}{2}}$	(0) 0.92	(0) 0.92b
1	6025.384	1	III A	16591.87	$a^4H_{4\frac{1}{2}}-x^4G^o_{3\frac{1}{2}}$		
1	6024.161	1		16595.24	$z^2F^o_{3\frac{1}{2}}-e^2F_{3\frac{1}{2}}$		
1	6021.725	tr	IV	16601.96		(0) 1.04	
1	b6017.90	tr	III A	16612.51	$a^4P_{1\frac{1}{2}}-y^4D^o_{1\frac{1}{2}}$	(0.74) 0	(0.74) 1.43b
1	6016.093	1	IV	16617.50	$b^2G_{4\frac{1}{2}}-x^2H^o_{3\frac{1}{2}}$	(0) 1.05	(0) 1.08b
1	6008.648	tr	III A	16638.08	$a^4P_{0\frac{1}{2}}-y^4D^o_{0\frac{1}{2}}$	(1.41) 1.24.	(1.32) 1.26b
1	6002.601	4	II A	16654.84	$a^4D_{1\frac{1}{2}}-z^4P^o_{2\frac{1}{2}}$	(?) 2.03w_1	(0) 1.89b
1	6002.273	2	II A	16655.76	$a^4P_{2\frac{1}{2}}-y^4D^o_{3\frac{1}{2}}$	(0) 1.16	(0) 1.19b
1	5984.602	1	III A	16704.93	$a^4P_{0\frac{1}{2}}-y^4D^o_{1\frac{1}{2}}$		
1	5980.748	2	III A	16715.70	$a^4P_{1\frac{1}{2}}-y^4D^o_{2\frac{1}{2}}$	(0) 1.02	(0) 1.07b
1	5978.881	2	III A	16720.92	$a^4H_{5\frac{1}{2}}-x^4G^o_{4\frac{1}{2}}$	(0) 1.02	(0) **1.01**s
1	5975.323	2		16730.87	$z^2F^o_{2\frac{1}{2}}-e^2F_{2\frac{1}{2}}$		
1	5924.560	2	III A	16874.23	$a^4H_{4\frac{1}{2}}-x^4G^o_{5\frac{1}{2}}$	(0) 1.11	(0) 1.12b
1	5879.41	1−		17003.82	$y^6F^o_{5\frac{1}{2}}-e^6G_{5\frac{1}{2}}$		
1	5863.16	tr	IV A	17050.94	$a^4G_{3\frac{1}{2}}-v^4F^o_{2\frac{1}{2}}$		
1	5858.13	1h		17065.57	$y^6F^o_{2\frac{1}{2}}-e^6G_{4\frac{1}{2}}$		
4	5855.49	tr	IV A	17073.27	$b^4F_{1\frac{1}{2}}-w^4F^o_{1\frac{1}{2}}$		
4	5853.75	1	IV A	17078.34	$b^4P_{1\frac{1}{2}}-x^4D^o_{0\frac{1}{2}}$		
1	5850.286	2	III A	17088.46	$b^4P_{2\frac{1}{2}}-x^4D^o_{2\frac{1}{2}}$	(0.56) 1.52	(0.55) 1.42b
1	5846.306	8	III	17100.09	$y^6F^o_{5\frac{1}{2}}-e^6G_{6\frac{1}{2}}$	(0) 1.18	(0) 1.18b
2	5839.357	0h		17120.44	$b^4F_{4\frac{1}{2}}-x^4D^o_{3\frac{1}{2}}$		
2	5839.043	[1]		17121.36	$y^6F^o_{3\frac{1}{2}}-e^6G_{3\frac{1}{2}}$		

TABLE 1.—Arc spectrum of vanadium (V I)—Continued

(1) Ref.	(2) λ_{air} A	(3) Int. arc	(4) Temp. class	(5) ν_{vac} cm^{-1}	(6) Term combinations	(7) Zeeman effect Observed	(8) Zeeman effect Computed
1	5830.719	7	III	17145.80	$y^6F^\circ_{4\frac12}-e^6G_{5\frac12}$	(0) 1.10	(0) 1.12b
1	5826.59	1	III	17157.96	$b^4F_{2\frac12}-w^4F^\circ_{2\frac12}$		
1	5817.532	5	III	17184.67	$y^6F^\circ_{3\frac12}-e^6G_{4\frac12}$	(?w_2) 1.00w_2	(0) 0.98b
1	b5817.063	3	III	17186.05	$b^4P_{1\frac12}-x^4D^\circ_{1\frac12}$	(0.79) 0.77	(0.26, **0.77**) 0.91, **1.42**, 1.94
1	5814.76	1	IV	17192.86	$a^4G_{4\frac12}-v^4F^\circ_{3\frac12}$		
1	5807.14	3	III	17215.44	$y^6F^\circ_{2\frac12}-e^6G_{3\frac12}$	(?) 0.87	(0) 0.89b
1	5798.905	2	IV	17239.87	$y^6F^\circ_{1\frac12}-e^6G_{2\frac12}$		
1	5797.352	1–		17244.48	$y^6F^\circ_{0\frac12}-e^6G_{1\frac12}$		
1	5790.533	1	III A	17264.80	$b^4F_{3\frac12}-w^4F^\circ_{3\frac12}$	(0? w_3D) 1.13	(0.12) 1.20b
1	5788.549	3	III	17270.71	$b^4P_{0\frac12}-x^4D^\circ_{0\frac12}$	(1.31) 1.39	(1.26) 1.34b
1	5786.153	7	III	17277.86	{ $z^4G^\circ_{3\frac12}-f^4F_{2\frac12}$; $z^4G^\circ_{4\frac12}-f^4F_{3\frac12}$ }	(0? w_1D) 0.98w_1A	{ (0) 0.86b ; (0) 1.05b }
1	5784.360	5	III	17283.22	$z^4G^\circ_{5\frac12}-f^4F_{4\frac12}$	(0? w_1D) 1.12w_1A	(0) 1.04b
1	5783.509	2	III	17285.76	$z^4G^\circ_{2\frac12}-f^4F_{1\frac12}$		
1	5782.842	1	IV	17287.75	$a^4G_{5\frac12}-v^4F^\circ_{4\frac12}$		
1	5782.601	2	III A	17288.48	{ $a^4D_{3\frac12}-y^4F^\circ_{2\frac12}$; $b^2P_{1\frac12}-y^2P^\circ_{0\frac12}$ }		
1	b5776.670	4	II A	17306.23	$a^4D_{3\frac12}-z^2G^\circ_{3\frac12}$	(1.41) 0.91	(1.39) 1.15b
1	5772.402	6	III	17319.03	$b^4P_{2\frac12}-x^4D^\circ_{3\frac12}$	(0? w_2D) 1.12w_2A	(0) 1.11b
1	5770.55	3		17324.60	$y^6F^\circ_{5\frac12}-f^6F_{5\frac12}$	(0) 1.42	(0.09) 1.40b
1	5770.02	1h		17326.19	$z^6P^\circ_{2\frac12}-e^6P_{3\frac12}$		
1	5761.411	2	III A	17352.06	$a^4D_{2\frac12}-y^4F^\circ_{1\frac12}$	(**0.53**, 1.32) 2.91	(**0.47**, 1.40) –0.05, 0.89, 1.82, **2.75**
1	5755.085	3H		17371.13			
1	5752.711	3	III	17378.30	$b^4P_{0\frac12}-x^4D^\circ_{1\frac12}$	(0.60) **0.47**, 1.97	(0.72) **0.45**, 1.88
1	5750.643	2	III	17384.55	$b^4F_{4\frac12}-w^4F^\circ_{3\frac12}$	(0) 1.34	(0.04) 1.30b
1	5748.860	4	III	17389.94	{ $b^4P_{1\frac12}-x^4D^\circ_{2\frac12}$; $a^2F_{2\frac12}-x^2D^\circ_{1\frac12}$? }	(0) 0.82	{ (0) 1.00b ; (0) 0.84b }
1	5748.412	1		17391.30	$b^2P_{1\frac12}-y^2P^\circ_{1\frac12}$		
1	5747.706	2	III	17393.43	$b^2H_{4\frac12}-x^2G^\circ_{4\frac12}$	(0) 1.06	(0) 1.15b
1	5743.438	18	II	17406.39	$a^4D_{3\frac12}-y^4F^\circ_{3\frac12}$	(0.78 w_2 D) 1.26 w_2 A	(0.71) 1.27b
1	5737.040	25	II	17425.77	$a^4D_{2\frac12}-y^4F^\circ_{2\frac12}$	(0.56, **0.85**) 0.49, 0.85, 1.18, 1.55	(0.19, 0.56, **0.93**) 0.42, 0.79, **1.17**, 1.54, 1.91
1	5734.004	5	III	17435.00	{ $a^2F_{2\frac12}-x^2G^\circ_{3\frac12}$; $z^4G^\circ_{3\frac12}-f^4F_{3\frac12}$ }	(0) 0.94	
1	5733.403	1	IV	17436.82	$z^6P^\circ_{2\frac12}-e^6P_{3\frac12}$?		
1	5733.099	1	IV	17437.74	$b^2H_{4\frac12}-x^2G^\circ_{3\frac12}$	(0) 0.94	(0) 1.01b
1	5731.257	30	II	17443.35	$a^4D_{2\frac12}-z^2G^\circ_{3\frac12}$	(0.20, 0.64, 1.07) **0.72**, 1.14, 1.59	(**0.22**, 0.65, 1.08) **0.16**, 0.27, 0.70, 1.14, 1.57, 2.00
4	5729.89	tr.	IV A	17447.51	$a^2D_{1\frac12}-y^2S^\circ_{0\frac12}$		
1	5727.662	20	II	17454.30	$a^4D_{1\frac12}-y^4F^\circ_{1\frac12}$	(0.37, **1.17**) 0, 0.82, 1.57	(0.39, **1.16**) 0.03, **0.81**, 1.58
1	5727.024	60	I	17456.25	$a^4D_{3\frac12}-y^4F^\circ_{4\frac12}$	(?w_3 D) 0.94 w_3 C	(0) 0.95b
1	b5725.633	6	III	17460.49	$a^2F_{3\frac12}-x^2G^\circ_{4\frac12}$	(0) 1.03	(0) 0.89b
1	5720.578	1		17475.92	$z^4G^\circ_{4\frac12}-f^4F_{4\frac12}$		
1	5716.219	3	IV	17489.24		(0) 1.16	
1	5713.582	1		17497.31	$b^4P_{1\frac12}-z^2P^\circ_{1\frac12}$		
1	5711.92	1–		17502.41	$a^4G_{3\frac12}-v^4D^\circ_{2\frac12}$		
1	5708.959	2	III	17511.48	$b^2P_{1\frac12}-x^2D^\circ_{3\frac12}$	(0) 0.93	(0) 0.95b
1	5707.765	1	IV	17515.15	$b^2H_{4\frac12}-x^2G^\circ_{3\frac12}$		
1	5706.973	30	I	17517.58	$a^4D_{0\frac12}-y^4F^\circ_{1\frac12}$	(0.25) 0.22, **0.59**	(0.21) 0.21, **0.63**
1	5706.135	2	IV	17520.15			
1	5704.374	2	IV	17525.56			
1	b5703.562	40	I	17528.06	$a^4D_{1\frac12}-y^4F^\circ_{2\frac12}$	(?w_3 D) 0.94	(0) 0.82b
1	5698.509	60	I	17543.59	$a^4D_{2\frac12}-y^4F^\circ_{3\frac12}$		
1	5691.125	1	IV	17566.36	$z^6P^\circ_{2\frac12}-f^6D_{3\frac12}$		
1	5687.764	1	IV	17576.73	$b^2P_{1\frac12}-x^2F^\circ_{2\frac12}$		
2	5683.658	1		17589.43	$b^4F_{4\frac12}-y^2G^\circ_{3\frac12}$		
1	5683.230	2	III	17590.76			
1	5676.529	1–		17611.52	$b^2P_{0\frac12}-x^2D^\circ_{1\frac12}$		
1	5670.827	30cm	I	17629.23	$a^4D_{3\frac12}-y^4D^\circ_{3\frac12}$		
1	5668.369	12	II	17636.88	$a^4D_{3\frac12}-y^4D^\circ_{2\frac12}$	(0) 1.48	(0) 1.45b
1	5665.246	1	IV	17646.53	{ $b^4P_{0\frac12}-z^2P^\circ_{0\frac12}$; $a^4P_{2\frac12}-z^2F^\circ_{3\frac12}$ }		
1	5658.432	1–		17667.84	$z^6P^\circ_{3\frac12}-f^6F_{4\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
1	5657.449	12	II	17670.92	$a^4D_{2\frac{1}{2}}-y^4D^{\circ}_{1\frac{1}{2}}$	$(0w_1)$ 1.49w_1	(0) 1.48b
1	5656.895	1	IV	17672.65	$b^2P_{0\frac{1}{2}}-y^2P^{\circ}_{\frac{1}{2}}$	(0) 0.75	(0.04) 0.70b
1	5656.29	2h		17674.55	$a^2F_{2\frac{1}{2}}-x^2D^{\circ}_{2\frac{1}{2}}$	(0.59) 0.93	(0.59) 1.00b
1	5652.030	1		17686.61		(0) 0.93w_1	
1	5651.50	1	IV	17689.53	$b^4P_{0\frac{1}{2}}-z^2P^{\circ}_{1\frac{1}{2}}$		
1	5646.112	10	II	17706.40	$a^4D_{1\frac{1}{2}}-y^4D^{\circ}_{0\frac{1}{2}}$	(0.60) 0.60, **1.80**	(0.63) 0.57, **1.82**
1	5643.363	1h		17715.03	$z^6P^{\circ}_{3\frac{1}{2}}-f^{b6}D_{4\frac{1}{2}}$		
1	5635.516	3		17739.69	$a^2F_{2\frac{1}{2}}-x^2F^{\circ}_{2\frac{1}{2}}$	(0) 0.87w_1	(0.07) 0.88b
1	5633.900	2		17744.77	$a^2F_{3\frac{1}{2}}-w^4G^{\circ}_{3\frac{1}{2}}$	(0.38) 1.09	(0.24) 1.10b
1	5632.469	1	II A	17749.30	$a^4F_{4\frac{1}{2}}-z^6D^{\circ}_{3\frac{1}{2}}$		
1	5627.628	30	I	17764.55	$a^4D_{3\frac{1}{2}}-y^4D^{\circ}_{3\frac{1}{2}}$	$(0w_1)$ 1.42w_1	(0) 1.39b
1	5626.014	8	II	17769.65	$a^4D_{0\frac{1}{2}}-y^4D^{\circ}_{0\frac{1}{2}}$	Unaffected	(0.03) 0.03
1	5624.895	10	II	17773.19	$a^4D_{1\frac{1}{2}}-y^4D^{\circ}_{1\frac{1}{2}}$	(0) 1.20	(0.03) 1.18b
1	5624.605	20	I	17774.11	$a^4D_{2\frac{1}{2}}-y^4D^{\circ}_{2\frac{1}{2}}$	(0) 1.36	(0) 1.34b
1	5624.223	2		17775.31	$b^2P_{0\frac{1}{2}}-y^2P^{\circ}_{1\frac{1}{2}}$	(0) 1.46	(0) **1.42**s
1	5622.075	2		17782.09	$a^4H_{3\frac{1}{2}}-z^4H^{\circ}_{3\frac{1}{2}}$	(0) 0.67	(0.09) 0.66b
1	^{b}5620.46	1h		17787.20	$\left\{\begin{array}{l}a^4H_{5\frac{1}{2}}-z^4H^{\circ}_{4\frac{1}{2}}\\b^3G_{4\frac{1}{2}}-u^4F^{\circ}_{4\frac{1}{2}}?\end{array}\right\}$	(0.38)? w_1	$\left\{\begin{array}{l}(0)\ 1.37b\\(0.71)\ 1.20b\end{array}\right.$
1	5619.56	1		17790.08	$a^4D_{3\frac{1}{2}}-y^6D^{\circ}_{2\frac{1}{2}}$		
1	^{b}5616.66	1		17799.27	$b^2H_{4\frac{1}{2}}-w^4G^{\circ}_{3\frac{1}{2}}$	(0) 0.76	(0) 0.65b
1	5610.20	1		17819.75	$\left\{\begin{array}{l}a^4F_{4\frac{1}{2}}-z^6F^{\circ}_{3\frac{1}{2}}\\a^2F_{3\frac{1}{2}}-w^4G^{\circ}_{4\frac{1}{2}}\end{array}\right.$		
1	5604.943	8	II	17836.46	$a^4D_{0\frac{1}{2}}-y^4D^{\circ}_{1\frac{1}{2}}$	(0.58) 0.60, **1.81**	(0.58) 0.58, **1.75**
1	5604.205	1	IV	17838.81	$\left\{\begin{array}{l}b^4F_{2\frac{1}{2}}-y^2F^{\circ}_{3\frac{1}{2}}\\a^4H_{4\frac{1}{2}}-z^4H^{\circ}_{4\frac{1}{2}}\end{array}\right.$	(0) 0.97	$\left\{\begin{array}{l}(0.44)\ 0.95b\\(0.15)\ 0.96b\end{array}\right.$
1	5601.380	2	III	17847.80	$a^2F_{3\frac{1}{2}}-x^2F^{\circ}_{3\frac{1}{2}}$	(0.27) 1.08w_1	(0.27) 1.10b
1	5597.822	1	III A	17859.15	$a^4D_{2\frac{1}{2}}-y^6D^{\circ}_{1\frac{1}{2}}$		
1	5592.962	1	II A	17874.67	$\left\{\begin{array}{l}a^4F_{3\frac{1}{2}}-z^6D^{\circ}_{2\frac{1}{2}}\\b^2H_{4\frac{1}{2}}-w^4G^{\circ}_{4\frac{1}{2}}?\end{array}\right.$		
1	5592.409	12	I	17876.44	$a^4D_{1\frac{1}{2}}-y^4D^{\circ}_{2\frac{1}{2}}$	$(0?w_1$ D) 1.50w_1 A	(0) 1.45b
1	5588.487	1	III A	17888.98	$a^4D_{3\frac{1}{2}}-y^6D^{\circ}_{3\frac{1}{2}}$	(0.48) 1.55w_2 C	(0.56) 1.49b
1	5586.007	2	III	17896.92	$a^4H_{5\frac{1}{2}}-z^4H^{\circ}_{5\frac{1}{2}}$	(0) 1.11	(0.04) 1.10b
1	5584.738	3		17900.99	$a^4H_{6\frac{1}{2}}-z^4H^{\circ}_{5\frac{1}{2}}$	(0) 1.17	(0.16) 1.20b
1	5584.490	10	I	17901.78	$a^4D_{2\frac{1}{2}}-y^4D^{\circ}_{3\frac{1}{2}}$	(0) 1.50	(0) **1.49**s
1	5582.638	1		17907.72	$a^2D_{2\frac{1}{2}}-x^4D^{\circ}_{1\frac{1}{2}}$	(0) 1.16	(0) 1.17b
1	5579.35	1—		17918.27		(0) 1.02	
1	5578.400	1h		17921.33	$a^4D_{1\frac{1}{2}}-y^6D^{\circ}_{0\frac{1}{2}}$	(1.06) 0	(1.02) **0.17**, 2.22
1	5576.510	2		17927.40	$a^4D_{2\frac{1}{2}}-y^6D^{\circ}_{2\frac{1}{2}}$		
1	5573.992	1	II A	17935.50	$a^4F_{3\frac{1}{2}}-z^6F^{\circ}_{2\frac{1}{2}}$	(0) 1.11w_1	(0) 1.10b
1	5565.93	1		17961.48	$a^4D_{1\frac{1}{2}}-y^6D^{\circ}_{1\frac{1}{2}}$	$(?w_1)$ 1.60	(0.94) 1.52b
1	5561.670	2	III A	17975.24	$a^2P_{0\frac{1}{2}}-z^2S^{\circ}_{0\frac{1}{2}}$	(0.81) 1.47	(0.83) 1.47b
3	5560.56	−2		17978.82	$a^4F_{3\frac{1}{2}}-z^6D^{\circ}_{3\frac{1}{2}}$		
1	5558.752	3	III	17984.67	$\left\{\begin{array}{l}a^2P_{1\frac{1}{2}}-z^2S^{\circ}_{0\frac{1}{2}}\\a^4D_{0\frac{1}{2}}-y^6D^{\circ}_{0\frac{1}{2}}\end{array}\right.$	(0.58) **0.63**, 1.74	(0.55) **0.65**, 1.75
1	5557.453	1	II A	17988.87	$a^4F_{2\frac{1}{2}}-z^6D^{\circ}_{1\frac{1}{2}}$	(0.38) 0,—	**(0.38**,1.13) **−0.12,** 0.63, 1.38, 2.14
1	5547.080	8	II	18022.51	$a^4D_{3\frac{1}{2}}-y^6D^{\circ}_{4\frac{1}{2}}$	$(0?w_1)$ 1.78w_1	(0) 1.69b
1	5545.933	2	III A	18026.24	$a^4D_{2\frac{1}{2}}-y^6D^{\circ}_{3\frac{1}{2}}$	$(0?w_1$ D) 1.97w_1 B?	(0) 1.87b
4	5544.89	1		18029.64	$a^4D_{1\frac{1}{2}}-y^6D^{\circ}_{2\frac{1}{2}}$		
4	5542.69	1	II A	18036.77	$a^4F_{2\frac{1}{2}}-z^6F^{\circ}_{1\frac{1}{2}}$	(0) 0.96	(0) 0.91b
1	^{b}5535.382	1		18060.60	$a^4F_{2\frac{1}{2}}-z^6D^{\circ}_{2\frac{1}{2}}$	(0) 1.14	(1.24) 1.30b
1	5533.833	1	IV	18065.65	$b^2H_{5\frac{1}{2}}-y^2H^{\circ}_{5\frac{1}{2}}$	(0) 1.09	(0) 1.08b
1	5527.72	1		18085.63	$a^4F_{1\frac{1}{2}}-z^6D^{\circ}_{0\frac{1}{2}}$		
1	5517.198	1	II A	18120.13	$a^4F_{1\frac{1}{2}}-z^6F^{\circ}_{0\frac{1}{2}}$	(0.42) 0, 0.79	(0.42) −0.02, **0.82**
2	5516.807	[2]		18121.40	$a^4F_{2\frac{1}{2}}-z^6F^{\circ}_{2\frac{1}{2}}$		
2	5515.371	[4]		18126.12	$a^4F_{1\frac{1}{2}}-z^6D^{\circ}_{1\frac{1}{2}}$		
1	5515.083	1	II A	18127.08	$a^4F_{4\frac{1}{2}}-z^6F^{\circ}_{3\frac{1}{2}}$	(0) 1.75	(0) 1.73b
1	5511.181	1	IV	18139.91	$b^2H_{5\frac{1}{2}}-z^4I^{\circ}_{4\frac{1}{2}}$	$(?w_1$ D) 1.69w_2 B	(0) 1.55b
1	5508.610	1		18148.37	$a^2F_{2\frac{1}{2}}-v^2G^{\circ}_{3\frac{1}{2}}$	(0) 1.19	(0) 1.15b
1	5507.753	8	III	18151.22	$\left\{\begin{array}{l}b^2H_{4\frac{1}{2}}-v^2G^{\circ}_{3\frac{1}{2}}\\a^2P_{0\frac{1}{2}}-y^2S^{\circ}_{0\frac{1}{2}}\end{array}\right.$	$(0w_1$ D) 0.75	(0) 0.77b
1	^{b}5505.881	1		18157.37	$a^2H_{4\frac{1}{2}}-y^2H^{\circ}_{4\frac{1}{2}}$	(0.45)	(0.67) 0.82b
1	5504.838	2	III	18160.81	$a^2P_{1\frac{1}{2}}-y^2S^{\circ}_{0\frac{1}{2}}$	(0.52) **0.70**, 1.71	(0.50) **0.70**, 1.70
2	5500.816	[2]		18174.09	$a^4F_{1\frac{1}{2}}-z^6F^{\circ}_{1\frac{1}{2}}$		
2	5496.020	[3]		18189.94	$a^4F_{3\frac{1}{2}}-z^6F^{\circ}_{2\frac{1}{2}}$		
1	5489.940	2	III	18210.09	$a^2D_{1\frac{1}{2}}-z^2P^{\circ}_{0\frac{1}{2}}$	(0?) 1.03	(0) 1.03b
1	5487.915	10	III	18216.81	$b^2H_{5\frac{1}{2}}-v^2G^{\circ}_{4\frac{1}{2}}$	(0) 1.14	(0) 1.15b

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm^{-1}	Term combinations	Observed	Computed
1	5487.220	2	III	18219.12	$a^2D_{2\frac12}-z^2P_{1\frac12}$	(0) 1.14	(0) 1.13b
2	5482.471	[1]		18234.90	$a^4F_{2\frac12}-z^6F_{3\frac12}$		
1	5467.792	2		18283.86	$a^2F_{3\frac12}-v^2G_{4\frac12}$	(0) 0.92	(0) 0.89b
1	5463.996	1		18296.56		(?w_1 D) 1.54w_2 B	
1	5458.133	1	IV	18316.20	$a^2F_{2\frac12}-w^2F_{2\frac12}^o$	(0) 0.85	(0.04) 0.85b
1	5454.822	2		18327.32		(0) 1.28	
1	5450.68	1—		18341.25	$\begin{cases} b^4F_{3\frac12}-w^4D_{2\frac12}^o \\ b^4F_{2\frac12}-v^4F_{1\frac12}^o \end{cases}$	(0) 1.16	$\begin{cases}(0)\ 1.12b \\ (0)\ 1.19b\end{cases}$
1	5445.86	1h		18357.48	$b^4F_{4\frac12}-w^4D_{3\frac12}^o$	(?w_2 D) 1.22w_1 A?	(0) 1.24b
1	5443.235	2		18366.33	$z^4D_{3\frac12}^o-f^4F_{3\frac12}$		
1	5437.659	1	IV	18385.18	$b^2H_{5\frac12}-z^2I_{5\frac12}^o$	(0.79?) 1.06	(0.63) 1.01b
1	5434.168	3	IV	18396.98	$a^2F_{3\frac12}-w^2F_{3\frac12}^o$	(?w_1 D) 1.10w_1 B?	(0.18) 1.11b
1	5429.484	2		18412.86	$z^4D_{2\frac12}^o-f^4F_{2\frac12}$		
1	5424.106	4	III	18431.11	$\begin{cases} a^2F_{2\frac12}-w^2D_{1\frac12}^o \\ a^2H_{5\frac12}-z^2I_{5\frac12}^o \end{cases}$	(0?w_1 D) 0.93	(0) 6.95s
1	5421.654	1		18439.45	$z^4D_{1\frac12}^o-f^4F_{1\frac12}$		
1	5420.040	1		18444.93		(0?w_1 D) 1.56	
1	5418.076	2	IV	18451.63	$b^2H_{4\frac12}-w^2F_{3\frac12}^o$	(?w_2 D) 0.52w_3 A	(0) 0.61b
1	5415.277	10	III	18461.16	$b^2H_{5\frac12}-z^2I_{6\frac12}^o$	(0) 1.06 diffuse	(0) 1.00b
1	5401.945	8	III	18506.72	$\begin{cases} b^2H_{4\frac12}-z^2I_{5\frac12}^o \\ b^2G_{3\frac12}-v^2F_{2\frac12}^o \end{cases}$	(? w_2 D) 0.97	(0) 1.01b
1	^{b}5397.873	1	IV	18520.68	$z^4D_{0\frac12}^o-f^4F_{1\frac12}$	(0.21) 0.58	(0.25) 0.21, 0.71
	^{c}5393.185	10 Fe	IV	18536.78	$a^2H_{4\frac12}-z^2H_{4\frac12}^o$		
1	5388.296	1	III	18553.60	$z^4D_{1\frac12}^o-f^4F_{2\frac12}$	(0?) 0.87 diffuse	(0) 0.90b
1	5385.134	3	III	18564.50	$z^4D_{3\frac12}^o-f^4F_{4\frac12}$	(0 w_1 D) 1.14 w_1 B	(0) 1.12b
1	^{a}5383.436	2	IV	18570.37	$z^4D_{2\frac12}^o-f^4F_{3\frac12}$	(0?) 1.07 diffuse	(0) 1.06b
1	5363.530	1		18639.27	$a_4H_{5\frac12}-z^2H_{4\frac12}^o$		
1	5353.420	5	III	18674.47	$a^2F_{3\frac12}-w^2D_{2\frac12}^o$	(0) 1.08	(0) 1.08b
1	5338.61	1		18726.28	$a^2F_{2\frac12}-w^2D_{2\frac12}^o$		
1	5335.588	2h		18736.89		(?w_2 D) 1.10w_1	
1	5334.309	1		18741.37	$b^2H_{4\frac12}-v^2G_{5\frac12}^o$		
1	5330.425	1	III A	18755.02	$a^4D_{3\frac12}-z^4F_{3\frac12}^o$		
1	^{b}5329.281	1		18759.05	$b^4F_{4\frac12}-v^4F_{4\frac12}^o$	(0) 1.36	(0.37) 1.36b
1	5328.823	2		18760.66	$z^6F_{3\frac12}^o-e^6D_{4\frac12}$	(? w_2 D) 1.29 w_2 C?	(0) 1.28 b
1	5319.087	2h		18795.00	$b^4P_{1\frac12}-w^4D_{2\frac12}^o$?	(0) 0.82 w_1 A	(0) 0.73s
1	5316.885	2		18802.79	$b^4P_{2\frac12}-v^4F_{3\frac12}^o$	(0? w_1 D) 0.38 w_3 A	(0) 0.38s
1	^{b}5315.219	4		18808.67	$z^6F_{1\frac12}^o-e^6D_{0\frac12}$	(? w_2) 1.10 w_2B	(0) 0.92b
1	5314.462	2		18811.36	$a^2D_{2\frac12}-y^2G_{3\frac12}^o$		
1	5302.157	5		18855.02	$z^6F_{3\frac12}^o-e^6D_{2\frac12}$	(0) 1.48	
1	5294.04	3h		18883.92	$z^6D_{4\frac12}^o-e^6D_{3\frac12}$	(0) 1.28	(0) 1.24s
1	5290.724	2		18895.77		(0) 1.20	
1	5290.289	2h		18897.32	$b^4P_{1\frac12}-v^4F_{2\frac12}^o$	(0) 0.75	(0) 0.78s
1	5287.640	5		18906.78		(0) 1.00	
1	5282.516	1	IV	18925.13	$z^6D_{3\frac12}^o-e^6D_{2\frac12}$	(? w_2 D) 1.47 w_1 C	(0) 1.50b
1	5281.910	2		18927.30	$z^6F_{3\frac12}^o-e^6D_{4\frac12}$		
1	5280.435	2h		18932.58	$a^2D_{2\frac12}-y^2F_{3\frac12}^o$	(0) 0.82w_1	(0) 0.96s
1	^{b}5275.69	2h		18949.62	$z^6F_{3\frac12}^o-e^6D_{3\frac12}$	(0.61) 1.27?	(1.06) 1.46b
1	5272.697	1	IV	18960.36	$z^6D_{2\frac12}^o-e^6D_{1\frac12}$	(?w_1) 1.38w_1	(0) 1.36b
1	5271.049	1	IV	18966.29	$a^2P_{1\frac12}-z^2P_{1\frac12}^o$	(0) 1.22	(0.03) 1.21b
1	5270.35	3d?		18968.81	$z^6F_{2\frac12}^o-e^6D_{2\frac12}$		
1	^{b}5266.118	4		18984.05	$\begin{cases} b^2G_{4\frac12}-v^2F_{3\frac12}^o \\ z^6F_{1\frac12}^o-e^6D_{1\frac12} \end{cases}$	(0?) w_2 D 1.08	(0) 1.28b
1	5264.34	2h		18990.47	$z^6D_{1\frac12}^o-e^6D_{0\frac12}$	(0? w_2 D) 1.04	(0) 1.10s
1	5260.978	1	IV	19002.61	$z^6D_{4\frac12}^o-e^6D_{4\frac12}$	(0) 1.56	(0.26) 1.52b
1	5260.350	3		19004.86		(0) 0.79	
1	5258.162	1		19012.77	$a^2D_{1\frac12}-y^2F_{2\frac12}^o$	(0) 0.68	(0) 0.67s
1	5256.24	1h		19019.72	$z^6D_{3\frac12}^o-e^6D_{3\frac12}$	(0) 1.58	(0.24) 1.60b
1	5248.593	1		19047.44	$b^4P_{2\frac12}-v^4D_{2\frac12}^o$?		
1	5240.878	9	III	19075.48	$b^2H_{5\frac12}-x^2H_{5\frac12}^o$	(0) 1.11	(0.09) 1.09b
1	^{b}5240.198	1	III	19077.95	$z^6F_{5\frac12}^o-e^6F_{4\frac12}$	(0) 1.56	(0) 1.39b
1	5234.088	8	III	19100.22	$b^2H_{4\frac12}-x^2H_{4\frac12}^o$	(0? w_1 D) 0.89	(0.11) 0.90b
1	5233.752	2	IV	19101.45	$z^6F_{4\frac12}^o-e^6F_{3\frac12}$	(0) 1.59	(0) 1.55s
1	5227.592	1h		19123.96	$z^6D_{2\frac12}^o-e^6D_{3\frac12}$		
1	^{b}5225.767	3	III	19130.64	$z^6F_{3\frac12}^o-e^6F_{2\frac12}$	(0) 1.52	(0) 1.26b

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1) Ref.	(2) λ_{air} A	(3) Int. arc	(4) Temp. class	(5) ν_{vac} cm⁻¹	(6) Term combinations	(7) Zeeman effect Observed	(8) Zeeman effect Computed
1	b5223.636	1		19138.45	$z^6D_{3\frac{1}{2}}-e^6D_{4\frac{1}{2}}$	(0) 1.51	(0) 1.34b
1	5216.595	3	IV	19164.27	$z^6F_{2\frac{1}{2}}-e^6F_{1\frac{1}{2}}$	(0) 1.64	(0) 1.62s
1	5213.651	1	III	19175.10	$b^4P_{2\frac{1}{2}}-v^4D_{3\frac{1}{2}}$	(0w₁) 1.14w₁	(0) 1.11b
1	5212.237	3h		19180.30		(0) 1.01	
1	5207.683	3		19197.07	$b^2H_{4\frac{1}{2}}-x^2H_{5\frac{1}{2}}$	(0) 1.53	(0) 1.53b
1	5206.621	1	III	19200.99	{ $z^6F_{1\frac{1}{2}}-e^6F_{0\frac{1}{2}}$ / $z^6D_{3\frac{1}{2}}-e^6F_{2\frac{1}{2}}$ }	(0.90) 2.08	(0.93) 0.21, **2.07**
1	5200.344	2		19224.16		(0) 0.41	
1	5195.394	5	III	19242.48	$z^6F_{3\frac{1}{2}}-e^6F_{3\frac{1}{2}}$	(0) 1.42	(0.15) 1.30b
1	5194.824	10	III	19244.59	{ $z^6F_{2\frac{1}{2}}-e^6F_{2\frac{1}{2}}$ / $z^6F_{4\frac{1}{2}}-e^6F_{4\frac{1}{2}}$ }	(?) 1.55	{ (0.04) 1.29b / (0.19) 1.40b }
1	5193.626	1	III	19249.03	$z^6F_{1\frac{1}{2}}-e^6F_{1\frac{1}{2}}$	(0?) 1.12	(0.13) 1.09b
1	b5193.004	7	III	19251.33	$z^6F_{5\frac{1}{2}}-e^6F_{5\frac{1}{2}}$	(0) 1.45	(0.45) 1.47b
1	5192.022	1	IV	19254.98	$z^6F_{0\frac{1}{2}}-e^6F_{0\frac{1}{2}}$	(w₁) 0.57	(0.14) 0.58b
1	5190.684	1—		19259.94	$b^2H_{5\frac{1}{2}}-x^4H_{5\frac{1}{2}}$	(?) 1.10	(0.13) 1.10b
1	5188.882	1h		19266.63	$b^4P_{1\frac{1}{2}}-v^4D_{1\frac{1}{2}}$		
1	5182.828	1	IV	19289.13	$z^6D_{0\frac{1}{2}}-e^6F_{0\frac{1}{2}}$	(1.93) 1.22	(1.96) 1.24b
1	5180.752	1	IV	19296.86	$z^6D_{1\frac{1}{2}}-e^6F_{1\frac{1}{2}}$	(1.10) 0.68, **1.39**, 2.15	(0.36, **1.07**) 0.69, **1.40**, 2.12
1	5179.800	1—		19300.41		(0) 0.66	
1	5179.100	1	IV	19303.02	$z^6F_{0\frac{1}{2}}-e^6F_{1\frac{1}{2}}$	(0.75) 1.77	(0.74) 0.30, **1.79**
1	5178.554	1	IV	19305.05	$z^6D_{2\frac{1}{2}}-e^6F_{2\frac{1}{2}}$	(0.71) 1.55w₂	(0.61) 1.44b
1	5176.781	4	III	19311.67		(?w₃ D) 1.03	
1	5176.494	3		19312.74	$z^6D_{3\frac{1}{2}}-e^6F_{3\frac{1}{2}}$		
1	5174.533	2		19320.05	$z^6D_{4\frac{1}{2}}-e^6F_{4\frac{1}{2}}$	(0.43) 1.56w₁	(0.45) 1.49b
1	5172.110	3		19329.10	$z^6F_{1\frac{1}{2}}-e^6F_{2\frac{1}{2}}$	(0) 1.47	(0) 1.42b
1	5169.944	1	III	19337.19	$z^6D_{0\frac{1}{2}}-e^6F_{1\frac{1}{2}}$	(1.01) 0, 2.09	(1.08) **0.03**, 2.12
1	5166.789	1	IV	19349.01	$b^4P_{1\frac{1}{2}}-v^4D_{2\frac{1}{2}}$	(?w₁D) 0.90w₂A	(0) 0 98b
1	5164.892	4		19356.11	$z^6F_{3\frac{1}{2}}-e^6F_{3\frac{1}{2}}$	(0?w₂D) 1.48	(0) **1.46s**
1	5159.350	3	III?	19376.91	$z^6D_{1\frac{1}{2}}-e^6F_{2\frac{1}{2}}$	(0.25, 0.73) 0.60w₃ A	(**0.23**, 0.69) **0.61**, 1.07, 1.53, 1.99
1	b5157.026	3		19385.64	$z^6F_{3\frac{1}{2}}-e^6F_{4\frac{1}{2}}$	(0) 1.50	(0) 1.69b
1	5148.724	4	III?	19416.89	$z^6D_{2\frac{1}{2}}-e^6F_{3\frac{1}{2}}$	(?w₂ D) 0.98w₂ A	(0) 1.02b
1	5148.428	2h		19418.00	$z^6F_{4\frac{1}{2}}-e^6F_{5\frac{1}{2}}$		
1	5139.536	6		19451.61	$a^2F_{3\frac{1}{2}}-u^2G_{4\frac{1}{2}}$	(?w₁ D) 0.86	(0) 0.73b
1	5138.431	5	III	19455.79	$z^6D_{3\frac{1}{2}}-e^6F_{4\frac{1}{2}}$	(?w₂) 1.18 w₁	(0) 1.20b
1	b5137.591	1		19458.97	$b^4P_{0\frac{1}{2}}-v^4D_{1\frac{1}{2}}$	(0.73?)	(0) 0.66b
1	5128.530	7	III	19493.35	$z^6D_{4\frac{1}{2}}-e^6F_{5\frac{1}{2}}$	(0?w₂) 1.53w₂	(0) 1.45b
1	5105.171	2	III?	19582.54		(0) 0.96	
1	b5086.847	1h		19653.09	{ $b^4P_{2\frac{1}{2}}-u^4D_{2\frac{1}{2}}$ / $a^2D_{1\frac{1}{2}}-v^4F_{2\frac{1}{2}}$ }	(0) 1.39w₁	{ (0.48) 1.43b / (0) 1.58b }
1	5075.672	2—		19696.35	$a^4G_{5\frac{1}{2}}-w^4G_{5\frac{1}{2}}$	(0) 1.27	(0.04) 1.26b
1	b5073.188	1—		19706.00	$a^4G_{3\frac{1}{2}}-w^4G_{3\frac{1}{2}}$	(0) 1.03	(0.30) 1.01b
1	5070.622	1		19715.97	$a^4G_{4\frac{1}{2}}-w^4G_{4\frac{1}{2}}$	(0) 1.17	(0.11) 1.16b
1	5064.131	3	V	19741.24		(0) 1.06	
1	5051.607	2	IV	19790.18	$b^2G_{3\frac{1}{2}}-t^2G_{3\frac{1}{2}}$	(0) 0.92	(0.12) 0.88b
1	5047.240	1	III A	19807.30	$b^4P_{2\frac{1}{2}}-u^4D_{3\frac{1}{2}}$	(0) 1.05	(0) 1.07b
1	5046.806	1—		19809.00	$a^4G_{3\frac{1}{2}}-x^2F_{3\frac{1}{2}}$		
1	5043.510	1—h		19821.95	$b^4P_{1\frac{1}{2}}-u^4D_{1\frac{1}{2}}$		
1	5032.956	1h		19863.52	{ $b^4D_{0\frac{1}{2}}-w^2P_{1\frac{1}{2}}$ / $b^2H_{5\frac{1}{2}}-y^2I_{5\frac{1}{2}}$ }		
1	b5024.162	1h		19898.28	$b^2G_{4\frac{1}{2}}-v^2H_{4\frac{1}{2}}$	(?) 1.15w₁	(0.89) 0.99b
1	5014.620	5	III	19936.14	{ $b^2G_{5\frac{1}{2}}-y^2I_{6\frac{1}{2}}$ / $b^2G_{4\frac{1}{2}}-t^2G_{4\frac{1}{2}}$ }	(0) 1.05	{ (0) 1.00b / (0.26) 1.08b }
1	5010.018	1		19954.46	$b^4P_{1\frac{1}{2}}-u^4D_{2\frac{1}{2}}$	(0) 0.98	(0) 1.05b
1	5006.393	1—		19968.91	$a^4G_{3\frac{1}{2}}-y^2H_{3\frac{1}{2}}$		
1	5005.615	2		19972.01	$a^2D_{1\frac{1}{2}}-y^2D_{2\frac{1}{2}}$		
1	5002.320	4	IV	19985.17	$b^2H_{4\frac{1}{2}}-y^2I_{5\frac{1}{2}}$	(0?w₂D) 0.94	(0) 0.94b
2	4995.019	[3p?]		20014.37	$b^4P_{0\frac{1}{2}}-u^4D_{1\frac{1}{2}}?$		
1	4991.824	1—		20027.19		(0) 1.18	
1	4984.528	1—		20056.50	$b^2G_{4\frac{1}{2}}-v^2H_{5\frac{1}{2}}$		
1	4981.726	1—		20067.79		(0) 1.17	
1	4966.123	2	IV	20130.84	$z^2D_{3\frac{1}{2}}-e^2F_{3\frac{1}{2}}$	(0) 1.15	(0) 1.00b
1	4957.648	2		20165.25	{ $a^2P_{1\frac{1}{2}}-w^4D_{0\frac{1}{2}}$ / $a^2P_{0\frac{1}{2}}-w^4D_{1\frac{1}{2}}$ }		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
1	4944.996	1h		20216.83	$a^2G_{4\frac{1}{2}}-x^4F_{4\frac{1}{2}}^4$		
1	4944.415	1—		20219.22	$a^2P_{0\frac{1}{2}}-v^4F_{1\frac{1}{2}}^4$	(0) 0.94	(0) 0.92b
1	4942.802	1	IV A	20225.82	$a^4G_{3\frac{1}{2}}-w^2F_{2\frac{1}{2}}^2$	(0.85) 1.01w_2C	(0) 1.11b
1	4935.101	1—		20257.37	$b^2G_{4\frac{1}{2}}-t^4G_{4\frac{1}{2}}^4$		
1	4933.616	1	IV	20263.47	$a^2F_{3\frac{1}{2}}-u^4F_{3\frac{1}{2}}^4?$	(0) 1.10	(0.21) 1.18b
1	4932.029	4	III A	20270.00	$a^4F_{2\frac{1}{2}}-y^4P_{1\frac{1}{2}}^4$	(0) 1.52	(0) 1.41b
1	4927.733	1—		20287.66	$a^4G_{2\frac{1}{2}}-w^2F_{2\frac{1}{2}}^2$		
1	4925.657	10	III	20296.22	$a^4P_{2\frac{1}{2}}-y^4P_{2\frac{1}{2}}^4$	(0) 1.62	(0.26) 1.61b
1	4923.785	1		20303.92	$b^2G_{3\frac{1}{2}}-u^2P_{2\frac{1}{2}}^2$	(? w_1D) 0.95	(0) 0.91s
1	4922.379	4		20309.72	$z^2D_{1\frac{1}{2}}^1-e^2F_{2\frac{1}{2}}^2$	(? w_2 D) 0.95	(0) 0.99b
1	4918.980	2		20323.76	$a^4G_{5\frac{1}{2}}-y^4H_{5\frac{1}{2}}^4$		
1	b4916.265	2	IV	20334.99	$a^4G_{4\frac{1}{2}}-y^4H_{4\frac{1}{2}}^4?$	(0) 0.91	(0.33) 1.09b
1	4913.093	2		20348.11		(? w_2 D) 1.19	
1	4909.18	1		20364.32	$\begin{cases}a^4G_{3\frac{1}{2}}-y^4H_{3\frac{1}{2}}^4\\a^4G_{1\frac{1}{2}}-z^2I_{6\frac{1}{2}}^2\end{cases}$		
1	4908.684	1	IV A	20366.40	$a^2P_{1\frac{1}{2}}-v^4F_{2\frac{1}{2}}^4$	(0) 1.01	
1	4906.90	1—		20373.82	$a^4G_{4\frac{1}{2}}-v^4G_{3\frac{1}{2}}^4$		
5	4906.718	1		20374.55	$b^2G_{3\frac{1}{2}}-u^2F_{3\frac{1}{2}}^2$		
1	4905.84	tr	IV A	20378.22			
1	4904.875	3	IV	20382.20		(0) 0.78	
2	4904.447	[7]	}III d	$\begin{cases}20383.97\\20384.39\end{cases}$	$a^4G_{4\frac{1}{2}}-y^4H_{5\frac{1}{2}}^4$		
2	4904.350	[9]			$a^4G_{5\frac{1}{2}}-y^4H_{5\frac{1}{2}}^4$		
1	4904.285	8		20384.66	$a^4P_{1\frac{1}{2}}-y^4P_{0\frac{1}{2}}^4$	(0) 1.17	(0) 1.22s
1	4900.624	6	IV	20399.89	$a^4G_{3\frac{1}{2}}-y^4H_{4\frac{1}{2}}^4$	(0? w_1 D) 1.11	(0) 1.21b
1	4900.004	tr	IV A	20402.19	$a^4G_{5\frac{1}{2}}-v^4G_{4\frac{1}{2}}^4$	(0) 1.57	(0) 1.54b
1	4896.35	1	IV A	20417.71	$b^2G_{4\frac{1}{2}}-u^2F_{3\frac{1}{2}}^2$	(0) 1.07	(0) 1.10b
1	4894.218	4	III	20426.59	$a^4G_{2\frac{1}{2}}-y^4H_{3\frac{1}{2}}^4$	(0) 0.98	(0) 0.97b
1	4892.722	1h		20432.84	$b^2G_{3\frac{1}{2}}-u^2H_{4\frac{1}{2}}^2$	(0) 0.86	(0) 0.83b
1	4891.602	4	III	20437.52			
1	4891.222	1	IV	20439.10	$a^4G_{3\frac{1}{2}}-v^4G_{3\frac{1}{2}}^4$	(0) 1.00	(0.18) 0.99b
1	4890.090	1	IV	20443.84	$a^4G_{2\frac{1}{2}}-v^4G_{2\frac{1}{2}}^4$	(0) 0.60	(0.02) 0.60b
1	4886.821	2	III A	20457.51	$a^4P_{1\frac{1}{2}}-y^4P_{1\frac{1}{2}}^4$	(0) 1.74	(0.06) 1.72b
1	4885.649	2	IV	20462.41	$a^4G_{4\frac{1}{2}}-v^4G_{4\frac{1}{2}}^4$	(0) 1.17	(0.04) 1.14b
1	4882.183	2	III A	20476.94	$a^4P_{0\frac{1}{2}}-y^4P_{0\frac{1}{2}}^4$		
1	b4881.554	50acm	I	20479.58	$a^4F_{4\frac{1}{2}}-z^4D_{3\frac{1}{2}}^4$	(?w_3 D) 1.18w_3 C	(0) 0.98b
1	b4880.560	8	III	20483.75	$a^4P_{1\frac{1}{2}}-y^4P_{2\frac{1}{2}}^4$	(0) 0.90, 1.65	(**0.01**, 0.04) **1.63** 1.66, 1.69, 1.71
1	4877.219	tr	IV A	20497.77			
1	4875.462	40acm	I	20515.17	$a^4F_{3\frac{1}{2}}-z^4D_{2\frac{1}{2}}^4$	(?w_3D) 1.08w_3 C	(0) 1.01b
1	4873.00	1		20515.52		(?w_1D) 0.76	
1	4871.264	7		20522.84	$a^4G_{5\frac{1}{2}}-v^4G_{5\frac{1}{2}}^4$	(?w_1D) 1.25w_1 A	(0.22) 1.24b
1	4870.134	1		20527.60	$a^4G_{3\frac{1}{2}}-v^4G_{4\frac{1}{2}}^4$		
1	4867.986	2		20536.67		(?w_1D) 1.04w_1 C	
3	4864.85	—1		20549.90	$a^4P_{0\frac{1}{2}}-y^4P_{1\frac{1}{2}}^4$		
1	4864.741	40acm	1	20550.36	$a^4F_{2\frac{1}{2}}-z^4D_{1\frac{1}{2}}^4$	(?w_2D) 0.91w_3 A	(0) 0.86b
1	4862.625	5	IV	20559.30	$(b^4D_{\frac{1}{2}}-{}^{64}F_{1\frac{1}{2}}^4?)$	(0) 1.10	
1	4859.135	2	IV	20574.07		(0) 1.21	
1	4857.02	1—		20583.04	$a^4G_{4\frac{1}{2}}-v^4G_{5\frac{1}{2}}^4$	(0) 1.33	(0) 1.40b
1	4855.35	1—		20590.11		(0) 0.84	
1	4851.483	40acm	I	20606.52	$a^4F_{1\frac{1}{2}}-z^4D_{0\frac{1}{2}}^4$	(0.25w_2D) 0.19, **0.63**	(0.22) 0.18, **0.62**
1	4848.821	1	IV	20617.84	$\begin{cases}b^2G_{0\frac{1}{2}}-u^2H_{4\frac{1}{2}}^2\\a^2P_{0\frac{1}{2}}-y^2D_{1\frac{1}{2}}^2\end{cases}$	$\}$(0?w_2 D) 0.81	$\begin{cases}(0)\ \mathbf{0.84}s\\(0)\ \mathbf{0.78}s\end{cases}$
4	4848.60	3	III	20618.77			
1	b4846.620	1		20627.19	$a^2P_{1\frac{1}{2}}-y^2D_{1\frac{1}{2}}^2$	(?w_1D) 1.11w_2 A	(0.66) 0.96b
1	4843.018	2	IV	20642.53	$(b^2G_{4\frac{1}{2}}-r^2D_{3\frac{1}{2}}^2?$	(?w_2D) 1.67 w_2B	
1	4833.804	1	IV	20681.88		(0) 1.11	
1	4833.027	3	IV A	20685.21	$a^2P_{1\frac{1}{2}}-y^2D_{2\frac{1}{2}}^2$	(0) 1.19	(0) 1.16b
1	4832.427	30	I	20687.78	$a^4F_{1\frac{1}{2}}-z^4D_{1\frac{1}{2}}^4$	(0.43, **1.20**) 0, **0.79**, 1.62	(0.40, **1.21**) 0, **0.80**, 1.61
1	4831.642	35	I	20691.13	$a^4F_{2\frac{1}{2}}-z^4D_{2\frac{1}{2}}^4$	(0.51, **0.83**) 1.28w_3	(0.18, 0.52, **0.86**) 0.49, 0.83, **1.18**, 1.53, 1.87
1	b4830.678	1	IV	20695.26	$b^2P_{1\frac{1}{2}}-u^2D_{1\frac{1}{2}}^2$	(0.82) 1.18	(0.63) 1.14b
1	4828.821	1	IV	20703.23	$b^4D_{2\frac{1}{2}}-t^4F_{3\frac{1}{2}}^4$	(0) 0.90	(0) **0.90**s

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)		(8)
						Zeeman effect		
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed		Computed
1	^{b}4827.458	30	I	20709.07	$a^4F_{3\frac{1}{2}}-z^4D_{3\frac{1}{2}}$	(0.56w_3 B) 1.33w_3 C		(0.74) 1.32b
1	4823.428	1		20726.37	$a^2P_{0\frac{1}{2}}-v^4D_{0\frac{1}{2}}$	(?w_1 D) 1.15		(0) 1.15b
1	4819.040	2	IV	20745.25		(0) 1.05		
1	4808.666	1		20790.00		(0) 1.34		
1	4807.537	25	III	20794.88	$z^6G_{6\frac{1}{2}}^0-e^6F_{5\frac{1}{2}}$	(0?w_2 D) 1.18w_2 A		(0) 1.18b
1	4803.042	1		20814.34	$b^4F_{3\frac{1}{2}}-x^2G_{4\frac{1}{2}}^4$			
1	4799.786	5	II A	20828.45	$a^4F_{1\frac{1}{2}}-z^4D_{2\frac{1}{2}}$	(0.48, 1.51) 0, 0.92, 1.85, 2.81.		(0.48, 1.43) −0.08, 0.88, 1.83, 2.78.
1	4799.020	1	IV	20831.78	$b^4D_{3\frac{1}{2}}-t^4F_{4\frac{1}{2}}^4$	(?w_1) 0.52?		(0) 0.47s
1	4797.973	2	IV	20836.33	$b^4P_{2\frac{1}{2}}-y^4S_{1\frac{1}{2}}$	(0) 1.34		(0) 1.31b
1	^{b}4796.930	20	III	20840.85	$z^6G_{5\frac{1}{2}}^0-e^6F_{4\frac{1}{2}}$	(0?w_3 D) 1.10w_3 A		(0) 0.88b
1	4795.104	3	IV	20848.80	$a^2F_{2\frac{1}{2}}-v^2D_{1\frac{1}{2}}^4$	(0) 0.94		
1	4792.954	3	IV	20858.14	$a^2P_{1\frac{1}{2}}-v^2D_{1\frac{1}{2}}^4$	(0) 0.86		(0) 0.82b
1	4786.515	20	III	20886.20	$z^6G_{4\frac{1}{2}}^0-e^6F_{3\frac{1}{2}}$	(0?w_3 D) 0.99w_3 A		(0) 1.03b
1	4784.480	5	II A	20895.10	$a^4F_{2\frac{1}{2}}-z^4D_{3\frac{1}{2}}$	(0) 2.18w_1 B		(0) 2.00b
1	^{b}4781.342	tr	IV A	20908.80	$a^2F_{2\frac{1}{2}}-s^4D_{1\frac{1}{2}}^4$?	(0) 0.49		(0) 0.68b
1	4778.40	tr	IV	20921.69	$a^2F_{3\frac{1}{2}}-s^4D_{2\frac{1}{2}}^4$	(?w_1 D) 0.85		(0) 0.90b
1	4776.519	5	III	20929.92	$b^2P_{1\frac{1}{2}}-v^2D_{2\frac{1}{2}}^4$	(?w_1) 0.89w_1		(0.16) 0.97b
1	4776.364	10	III	20930.59	$z^6G_{3\frac{1}{2}}^0-e^6F_{2\frac{1}{2}}$	(0.34) 0.69, 1.44		(0.10, 0.30, 0.50) 0.60, 0.80, 1.00, 1.20, 1.40, 1.60
1	4774.505	1—		20938.74	$b^4D_{1\frac{1}{2}}-v^4P_{0\frac{1}{2}}^4$			
1	4773.083	1	IV	20944.99		(0) 1.00		
1	^{b}4772.588	2		20947.15	$b^4F_{1\frac{1}{2}}-x^4P_{2\frac{1}{2}}^2$	(0) 1.18		(0) 2.40b
1	4767.552	1—		20969.29	$b^4D_{2\frac{1}{2}}-t^4G_{3\frac{1}{2}}^4$			
1	4766.635	10	III	20973.31	$z^6G_{2\frac{1}{2}}^0-e^6F_{1\frac{1}{2}}$	(0?w_1) 0.67w_3 A		(0) 0.58b
4	4765.67	1	IV	20977.56	$b^2H_{4\frac{1}{2}}-u^4G_{3\frac{1}{2}}^4$	(0) 0.99		
2	4765.496	1		20978.33	$a^4G_{5\frac{1}{2}}-x^2H_{5\frac{1}{2}}^4$?			
1	4765.233	1h		20979.49		(0) 1.33		
1	4764.004	1		20984.90		(0) 1.07		
1	4761.880	1—		20994.26		(?w_1 D) 0.50		
1	4759.346	1		21005.43		(0) 1.41		
1	4759.018	1		21006.88	$a^4G_{3\frac{1}{2}}-x^2H_{4\frac{1}{2}}^4$			
1	4758.742	2	III A	21008.10	$a^4P_{2\frac{1}{2}}-z^6S_{2\frac{1}{2}}^0$?			
1	4757.50	8	III	21013.57	$z^6G_{1\frac{1}{2}}^0-e^6F_{0\frac{1}{2}}$	(0.34) 0.37		(0.36) 0.36b
1	4757.37	4	III	21014.14	$z^6G_{5\frac{1}{2}}^0-e^6F_{5\frac{1}{2}}$			
1	4753.957	7	IV	21029.25	$z^6G_{4\frac{1}{2}}^0-e^6F_{4\frac{1}{2}}$	(0.61w_2 B) 1.37w_2 C		(0.78) 1.32b
1	4751.849	1—		21038.58	$a^4G_{4\frac{1}{2}}-x^2H_{5\frac{1}{2}}^4$			
1	4751.574	6	III	21039.80	$b^4P_{2\frac{1}{2}}-x^4P_{2\frac{1}{2}}^2$	(0.11) 1.61		(0) 1.54b
1	4751.275	1		21041.11	$a^2F_{3\frac{1}{2}}-v^2D_{2\frac{1}{2}}^4$			
1	4750.990	8	III	21042.38	$z^6G_{3\frac{1}{2}}^0-e^6F_{3\frac{1}{2}}$	(0.85) —, 1.30		(0.11, 0.34, 0.57, 0.80) 0.53, 0.76, 0.99, 1.21 1.44, 1.67, 1.90
1	4748.525	7	III	21053.31	$z^6G_{2\frac{1}{2}}^0-e^6F_{2\frac{1}{2}}$	(1.09w_3 B) 1.15w_3 A		(1.14) 1.04b
2	4747.075	1	IV	21059.73				
1	4746.638	5	IV	21061.68	$z^6G_{1\frac{1}{2}}^0-e^6F_{1\frac{1}{2}}$	(1.63) 0.55, 1.60		(0.52, 1.57) −0.52 0.52, 1.57
1	4742.631	5	IV	21079.47	$b^2P_{0\frac{1}{2}}-v^2D_{1\frac{1}{2}}^4$	(0?w_2 D) 1.00w_1		(0) 0.98b
1	4739.607	1		21092.91	$\{b^4D_{3\frac{1}{2}}-t^4G_{4\frac{1}{2}}^4$ $\{a^2F_{2\frac{1}{2}}-v^2D_{2\frac{1}{2}}^4$			
4	4739.11	1	IV A	21095.13	$a^6D_{4\frac{1}{2}}-z^4F_{4\frac{1}{2}}^0$			
1	4738.318	1	IV	21098.66	$\{b^4F_{1\frac{1}{2}}-w^4G_{2\frac{1}{2}}^4$ $\{b^4F_{2\frac{1}{2}}-w^4G_{3\frac{1}{2}}^4$			
1	4737.746	1	IV	21101.21	$b^4F_{1\frac{1}{2}}-x^2F_{2\frac{1}{2}}^2$			
1	4731.95	1		21127.05	$\{a^2F_{2\frac{1}{2}}-v^2F_{2\frac{1}{2}}^2$ $\{b^4F_{1\frac{1}{2}}-w^4G_{1\frac{1}{2}}^4$	}(0.59) 1.05w_2		$\{ —, —$ $\{(0.52) 1.24b$
1	4731.556	1		21128.81	$\{a^4G_{3\frac{1}{2}}-x^4H_{3\frac{1}{2}}^4$ $\{b^4P_{2\frac{1}{2}}-x^2D_{2\frac{1}{2}}^4$			
1	4731.268	2		21130.10	$b^2P_{1\frac{1}{2}}-s^4D_{1\frac{1}{2}}^4$			
1	4730.394	3	III	21133.99	$b^4F_{2\frac{1}{2}}-w^4G_{3\frac{1}{2}}^4$	(0) 1.04		(0) 1.07b
1	4729.844	1—		21136.46	$b^2P_{1\frac{1}{2}}-u^2D_{2\frac{1}{2}}^4$			
1	4729.544	6	III	21137.80	$b^4P_{1\frac{1}{2}}-y^4S_{1\frac{1}{2}}$	(0.18) 1.77w_1		(0.24) 1.76b
1	4728.652	2		21141.79	$\{z^6G_{1\frac{1}{2}}^0-e^6F_{2\frac{1}{2}}$ $\{a^4G_{4\frac{1}{2}}-x^4H_{4\frac{1}{2}}^4$			
1	4723.430	1		21165.14	$z^6G_{2\frac{1}{2}}^0-e^6F_{3\frac{1}{2}}$			
1	4722.877	8	III	21167.65	$b^4F_{4\frac{1}{2}}-w^4G_{5\frac{1}{2}}^4$	(0) 1.12		(0) 1.15b

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
1	4721.524	6	III	21173.70	$b^4F_{3\frac{1}{2}}-w^4G^o_{4\frac{1}{2}}$	(0) 1.05	(0) 1.08b
1	4721.246	2		21174.95		(0) 1.15	
1	4718.895	1–		21185.49	$z^6G^o_{3\frac{1}{2}}-e^6F_{4\frac{1}{2}}$		
1	4718.753	1–		21186.13	$b^4D_{1\frac{1}{2}}-r^4D^o_{1\frac{1}{2}}$		
1	4717.692	10	IV	21190.89	$a^4G_{2\frac{1}{2}}-x^4H^o_{3\frac{1}{2}}$	(0) 0.81	(0) 0.77b
1	4716.644	1–		21195.60	$a^4P_{1\frac{1}{2}}-z^6S^o_{2\frac{1}{2}}$		
1	4715.900	5	?	21198.95	$a^2F_{2\frac{1}{2}}-u^2D^o_{1\frac{1}{2}}$	(?) 0.98w_2	(0) 0.98b
1	4714.113	10	?	21206.99	$aG_{4\frac{1}{2}}-x^4H^o_{3\frac{1}{2}}$	(0) 0.96	(0) 0.88b
1	4713.448	2		21209.98	$b^4D_{2\frac{1}{2}}-r^4D^o_{1\frac{1}{2}}$		
1	4710.566	12	?	21222.95	$a^4G_{4\frac{1}{2}}-x^4H^o_{5\frac{1}{2}}$	(0) 1.04	(0) 1.05b
1	4709.728	4	?	21226.74		(0) 1.04	
1	4707.458	4	III A	21236.97	$b^4F_{2\frac{1}{2}}-x^2F^o_{3\frac{1}{2}}$	(0) 1.06	(0) 1.05b
1	4706.574	12	?	21240.96	$a^4G_{5\frac{1}{2}}-x^4H^o_{6\frac{1}{2}}$	(0?w_1) 1.09w_1	(0) 1.08b
1	4706.178	8	?	21242.75	$b^4P_{2\frac{1}{2}}-x^4P^o_{1\frac{1}{2}}$	(?w_3 D) 1.39w_3 A	(0) 1.37b
1	4705.099	4	?	21247.61	$a^2F_{3\frac{1}{2}}-u^2D^o_{2\frac{1}{2}}$	(0) 1.15	(0) 1.16b
1	4699.329	3	?	21273.70	$a^2H_{5\frac{1}{2}}-x^2G^o_{4\frac{1}{2}}$	(?) 1.11	(0) 1.12b
1	4686.926	6	?	21329.99	$b^4P_{0\frac{1}{2}}-y^4S^o_{1\frac{1}{2}}$	(0.39) **1.50**, —	(0.38) **1.47**, 2.22
1	4684.457	3		21341.23	$b^4P_{1\frac{1}{2}}-x^4P^o_{2\frac{1}{2}}$		
1	4682.763	2h		21348.96	$b^4D_{2\frac{1}{2}}-r^4D^o_{2\frac{1}{2}}$		
1	4680.904	2		21357.43	$a^2H_{4\frac{1}{2}}-x^2G^o_{3\frac{1}{2}}$		
1	4673.658	1		21390.54	$b^2H_{5\frac{1}{2}}-w^4H^o_{6\frac{1}{2}}$		
1	4670.483	25cm	III	21405.10	$a^4D_{3\frac{1}{2}}-y^4P^o_{2\frac{1}{2}}$	(?w_2) 1.14w_2	(0) 1.04b
2	4669.273	2		21410.64	$a^4F_{4\frac{1}{2}}-z^4G^o_{3\frac{1}{2}}$		
1	4666.149	4	III?	21424.97	$b^4P_{1\frac{1}{2}}-x^4P^o_{0\frac{1}{2}}$	(0.41)?	(0.41) **1.27**, 2.09
1	4656.546	1h		21469.16	$b^4D_{3\frac{1}{2}}-2^o_{3\frac{1}{2}}$		
1	4654.639	1h		21477.95	$b^4D_{3\frac{1}{2}}-r^4D^o_{3\frac{1}{2}}$		
1	4652.928	1		21485.85	$b^4F_{2\frac{1}{2}}-v^2G^o_{3\frac{1}{2}}$		
1	4648.880	2		21504.56	$b^2P_{1\frac{1}{2}}-w^2P^o_{1\frac{1}{2}}$		
1	4647.860	1		21509.28	$a^2F_{3\frac{1}{2}}-v^2F^o_{3\frac{1}{2}}$		
1	4646.396	15 cm	III	21516.06	$a^4D_{2\frac{1}{2}}-y^4P^o_{1\frac{1}{2}}$	(0.17, 0.55) **0.83**, 1.21, 1.62	(**0.19**, 0.58) **0.77**, 1.16, 1.55, 1.93
1	4645.971	1	III A	21518.03	$a^4F_{3\frac{1}{2}}-z^4G^o_{2\frac{1}{2}}$	(?) 1.34	(0) 1.34?b
1	4644.452	3	III	21525.06	$a^2H_{4\frac{1}{2}}-w^2G^o_{3\frac{1}{2}}$		
1	4640.735	7cm	III	21542.30	$a^4D_{2\frac{1}{2}}-y^4P^o_{2\frac{1}{2}}$	(0.47) 1.57w_2	(0.16, 0.48, **0.80**) 0.87, 1.19, **1.52**, 1.83, 2.15
2	4640.309	0		21544.28	$b^4P_{1\frac{1}{2}}-x^4P^o_{1\frac{1}{2}}$		
1	4640.062	8	III	21545.42	$a^4D_{1\frac{1}{2}}-y^4P^o_{0\frac{1}{2}}$	(0.73) 0.46	(0.74) **0.45**, 1.94
1	4636.166	2	IV	21563.53	$a^2H_{5\frac{1}{2}}-w^2G^o_{4\frac{1}{2}}$		
1	4635.176	15	I	21568.14	$a^4F_{4\frac{1}{2}}-z^4G^o_{4\frac{1}{2}}$	(0.63) 1.27w_2	(0.44) 1.22b
1	4630.038	1h		21592.07	$a^4P_{1\frac{1}{2}}-x^4F^o_{2\frac{1}{2}}$		
1	4626.480	7	III	21608.67	$a^4D_{0\frac{1}{2}}-y^4P^o_{0\frac{1}{2}}$	(1.34) 1.34	(1.33) 1.33b
2	4624.657	1		21617.19	$b^4P_{0\frac{1}{2}}-x^4P^o_{0\frac{1}{2}}$		
1	4624.404	8	III	21618.38	$\begin{cases} a^4D_{1\frac{1}{2}}-y^4P^o_{1\frac{1}{2}}- \\ b^4F_{3\frac{1}{2}}-w^2F^o_{3\frac{1}{2}} \end{cases}$	(0.82w_1) 0.98, 1.52, 2.07	(0.27, **0.82**) 0.92, **1.47**, 2.01
1	4621.26	1–		21633.09	$a^2H_{5\frac{1}{2}}-w^4G^o_{4\frac{1}{2}}$		
1	b4619.771	25	I	21640.05	$a^4F_{3\frac{1}{2}}-z^4G^o_{3\frac{1}{2}}$	(0.67w_1 B) 1.49w_1 D	(0.71) 1.08b
1	4619.648	8	IV	21640.64		(0) 0.96	
1	4618.800	2		21644.60	$a^4D_{1\frac{1}{2}}-y^4P^o_{2\frac{1}{2}}$		
1	4616.850	1		21653.75	$b^4F_{2\frac{1}{2}}-w^2F^o_{2\frac{1}{2}}$		
1	4613.913	1–		21667.52	$\begin{cases} a^2F_{2\frac{1}{2}}-w^2P^o_{1\frac{1}{2}} \\ b^4D_{1\frac{1}{2}}-v^2P^o_{0\frac{1}{2}} \end{cases}$		
1	4611.722	2	IV	21677.83	$b^4F_{1\frac{1}{2}}-w^2F^o_{2\frac{1}{2}}$	(**0.22**, 0.65) 0.62, 1.05, **1.48**	(**0.22**, 0.67) 0.17 0.62, 1.06, **1.51**
1	4610.925	2	III A	21681.57	$a^4D_{0\frac{1}{2}}-z^4P^o_{1\frac{1}{2}}$	(0.87) **2.58**, —	(0.86) 0.86, **2.57**
1	4609.646	4	III	21687.64	$a^2G_{4\frac{1}{2}}-z^4H^o_{4\frac{1}{2}}$	(0.56) 1.07w_2 D?	(0.56) 1.05b
1	4607.226	2		21698.97		(0) 0.54	
1	4606.146	15	I	21704.06	$\begin{cases} a^4F_{2\frac{1}{2}}-z^4G^o_{2\frac{1}{2}} \\ b^4F_{4\frac{1}{2}}-w^2F^o_{3\frac{1}{2}} \end{cases}$	(0.68, **1.12**) —, 0.32, **0.78**, **1.25**, 1.71	(0.22, 0.68, **1.14**) −0.13, 0.33, **0.78**, 1.23, 1.69
1	4602.960	2	IV	21719.09	$a^2H_{4\frac{1}{2}}-w^4G^o_{3\frac{1}{2}}$	(0) 0.64	(0) 0.62b
1	4594.103	60acm	I	21760.97	$a^4F_{4\frac{1}{2}}-z^4G^o_{5\frac{1}{2}}$	(0) 1.13	(0) 1.15b
5	4591.991	[0]		21770.96	$b^4P_{2\frac{1}{2}}-w^2F^o_{2\frac{1}{2}}$		
1	4591.220	12	IV	21774.62	$b^2H_{5\frac{1}{2}}-w^2H^o_{5\frac{1}{2}}$	(0) 1.02	(0.54) 1.02b
1	4588.776	1	IV	21786.23	$b^4F_{2\frac{1}{2}}-w^2F^o_{2\frac{1}{2}}$	(0) 1.18	(0) **1.16**s
1	4586.364	50acm	I	21797.68	$a^4F_{3\frac{1}{2}}-z^4G^o_{4\frac{1}{2}}$	(0?w_2 D) 1.05w_2 C	(0) **1.02**s

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm⁻¹	Term combinations	Observed	Computed
4	4585. 93	2	IV	21799. 74	$a^2G_{3\frac{1}{2}}-z^4H^a_{3\frac{1}{2}}$		
1	4583. 783	5	III	21809. 95	$b^4F_{2\frac{1}{2}}-v^4G_{2\frac{1}{2}}^a$	(0.63, **1.06**) 0.00, 0.37, 0.77, 1.18, 1.63	(0.22, 0.67, **1.12**) −0.07, 0.38, **0.82**, 1.27, 1.72
1	4581. 227	2	IV	21822. 12	$a^2H_{4\frac{1}{2}}-x_2F^a_{3\frac{1}{2}}$		
1	4580. 394	40 acm	I	21826. 14	$a^4F_{2\frac{1}{2}}-z^4G^a_{3\frac{1}{2}}$	(0) 0.90	(0) 0.90b
1	4579. 198	7	IV	21831. 80	$b^4F_{3\frac{1}{2}}-v^tG^a_{3\frac{1}{2}}$	($0.73w_2$B) $1.22w_3$ C	(0.59) 1.12b
1	4578. 728	15	III	21834. 03	$b^4F_{1\frac{1}{2}}-v^4G^a_{2\frac{1}{2}}$	($0?w_2$D) $0.79w_2$ B	(0) 0.76b
1	4577. 642	1		21839. 21	$a^4G_{5\frac{1}{2}}-y^2I^b_{6\frac{1}{2}}$		
1	4577. 173	40 acm	I	21841. 44	$a^4F_{1\frac{1}{2}}-z^4G^a_{2\frac{1}{2}}$	($0?w_2$D) $0.70w_2$ B	(0) 0.66b
1	4571. 783	15	III	21867. 20	$b^4F_{2\frac{1}{2}}-v^4G^a_{1\frac{1}{2}}$	(0) 0.92	(0) **0.95s**
1	4570. 425	6	III	21873. 70	$b^4F_{4\frac{1}{2}}-v^4G^a_{3\frac{1}{2}}$	($0.67w_2$ B) $1.21w_2$ D	(0.59) 1.23b
5	4565. 513	[−1h]		21897. 23	$a^4H_{5\frac{1}{2}}-w^4G^a_{4\frac{1}{2}}?$		
1	4564. 581	2		21901. 71	$a^2D_{1\frac{1}{2}}-x^2D^a_{1\frac{1}{2}}$	($0w_1$ D) $0.97w_1$ A	(0.11) 0.93b
1	4560. 710	20	III	21920. 29	$b^4F_{3\frac{1}{2}}-v^4G^a_{2\frac{1}{2}}$	(0) 1.02	(0) 1.03b
1	4553. 056	7	IV	21957. 14	$b^2H_{4\frac{1}{2}}-w^2H^a_{4\frac{1}{2}}$	(0.26) 0.95	(0.30) 0.95b
1	4551. 860	3	IV	21962. 91	$a^2D_{1\frac{1}{2}}-y^2P^a_{0\frac{1}{2}}$	(0.15) 0.81, **1.07**	(0.11) 0.85, **1.08**
1	4549. 644	10	IV	21973. 60		($?w_2$ D) 1.03	
1	4545. 394	25	III	21994. 13	$b^4F_{4\frac{1}{2}}-v^4G^a_{5\frac{1}{2}}$	(0) 1.08	(0) 1.02b
1	4540. 014	6	IV	22020. 22	$a^2H_{5\frac{1}{2}}-z^4I^a_{4\frac{1}{2}}$		
1	4537. 663	6	IV	22031. 62	$a^2D_{2\frac{1}{2}}-y^2P^a_{1\frac{1}{2}}$	(0) 1.19	(0) 1.17b
4	4535. 57	1	IV	22041. 79			
1	4533. 940	4	IV	22049. 71			
1	4530. 808	4	IV	22064. 97		(0) 1.10	
1	4529. 589	8	III	22070. 89	$a^2H_{4\frac{1}{2}}-v^2G^a_{3\frac{1}{2}}$	(0) 0.73	(0) 0.74b
1	4529. 301	4	IV	22072. 31	$b^4P_{1\frac{1}{2}}-w^2F^a_{2\frac{1}{2}}$	($?w_2$ D) 1.02	
1	4528. 302	1		22077. 17	$a^2H_{4\frac{1}{2}}-y^2H^a_{4\frac{1}{2}}$		
1	4527. 990	5	IV	22078. 68		(0) 1.19	
1	4525. 168	5	IV	22092. 45	$b^4F_{1\frac{1}{2}}-t^4D^a_{0\frac{1}{2}}$	(0.19) —, **0.58**	(0.20) 0.20, **0.59**
1	4524. 218	15	III	22097. 10	$a^2H_{5\frac{1}{2}}-v^2G^a_{4\frac{1}{2}}$	(0) 1.15	(0) **1.17s**
4	4522. 87	tr	IV	22103. 68			
1	4520. 168	3	III A	22116. 88	$a^4D_{3\frac{1}{2}}-z^6S^a_{2\frac{1}{2}}$	(0.37) **0.91**, —	
1	4517. 571	3	IV	22129. 60			
1	4515. 558	2	IV	22139. 47	$a^2H_{5\frac{1}{2}}-z^4I^a_{4\frac{1}{2}}$	(0) 1.13	(0) **1.14s**
1	4514. 191	6	III	22146. 17	$b^4F_{2\frac{1}{2}}-t^4D^a_{1\frac{1}{2}}$	($?w_1$) $0.85w_1$	(0) **0.85s**
1	4513. 624	2	IV	22148. 96	$a^4G_{5\frac{1}{2}}-u^4F^a_{4\frac{1}{2}}$	(0) 1.18	(0) 1.20b
1	4511. 433	2	IV	22159. 72	$a^4G_{4\frac{1}{2}}-u^4F^a_{3\frac{1}{2}}$	(0) 1.02	(0) 1.01b
1	4509. 287	3	IV	22170. 25	$b^4F_{1\frac{1}{2}}-t^4D^a_{1\frac{1}{2}}$	(1.18) 0, 0.77, 1.56	(0.39, **1.18**) 0, **0.79**, 1.57
1	4506. 577	2	IV	22183. 59	$a^4G_{3\frac{1}{2}}-u^4F^a_{2\frac{1}{2}}$	(0) 0.88	(0) **0.86s**
1	4506. 210	1	IV	22185. 39			
1	4506. 094	2	IV	22185. 98	$a^2D_{1\frac{1}{2}}-x^2D^a_{2\frac{1}{2}}$		
1	b4501. 972	8	III	22206. 28	$a^2G_{4\frac{1}{2}}-y^2G^a_{4\frac{1}{2}}$	(0) 1.08	(0.37) 1.08b
1	b4501. 444	2		22208. 87	$a^4G_{4\frac{1}{2}}-u^4F^a_{4\frac{1}{2}}$	(0.25) $?nw_2$	(0.59) 1.22b
5	4501. 256	1	IV	22209. 82	$a^4H_{5\frac{1}{2}}-y^2I^a_{5\frac{1}{2}}$		
5	4500. 853	1	IV	22211. 80	$a^4G_{2\frac{1}{2}}-u^4F^a_{1\frac{1}{2}}$	(0) 0.59	(0) 0.63b
4	4499. 76	1		22217. 19	$a^2D_{2\frac{1}{2}}-x^2F^a_{2\frac{1}{2}}$		
1	4498. 114	tr	IV A	22225. 34	$a^4H_{4\frac{1}{2}}-v^2G^a_{3\frac{1}{2}}$	(?) 0.90, w_3 A	(0) 0.85 b
1	4497. 710	1		22227. 32	$b^2G_{3\frac{1}{2}}-t^2F^a_{3\frac{1}{2}}$		
1	4497. 398	2	IV	22228. 87	$b^2G_{3\frac{1}{2}}-t^2F^a_{2\frac{1}{2}}$	(0) 0.85	(0) 0.86b
1	4496. 864	5	III	22231. 51	$\begin{cases}a^4H_{4\frac{1}{2}}-y^2H^a_{4\frac{1}{2}}\\(a^2D_{1\frac{1}{2}}-x^2F^a_{2\frac{1}{2}})\end{cases}$		
1	4496. 062	8	III	22235. 47	$b^4F_{3\frac{1}{2}}-t^4D^a_{2\frac{1}{2}}$	($0?$ w_2 D) $1.01w_2$ A	(0) 1.08b
1	4494. 955	1	IV	22240. 94		(0) 0.63	
4	4492. 32	1	IV A	22253. 97	$a^4D_{2\frac{1}{2}}-z^6S^a_{2\frac{1}{2}}?$		
4	4491. 47	1	IV	22258. 18	$\begin{cases}a^2H_{4\frac{1}{2}}-v^2G^a_{4\frac{1}{2}}\\(x^6D_{4\frac{1}{2}}-h^6G^a_{5\frac{1}{2}}?)\end{cases}$		
6	4491. 162	2	III	22259. 74	$a^2G_{4\frac{1}{2}}-y^2G^a_{3\frac{1}{2}}$	($?w_2$ D) $1.55w_2$ C	(0) 1.51 b
6	4490. 815	5	III	22261. 45	$a^4H_{4\frac{1}{2}}-y^2H^a_{3\frac{1}{2}}$	($?w_2$ D) $1.33w_2$ B	(0) 1.40b
6	4488. 898	20	III	22270. 96	$\begin{cases}b^4F_{2\frac{1}{2}}-t^4D^a_{2\frac{1}{2}}\\a^4H_{3\frac{1}{2}}-y^2H^a_{3\frac{1}{2}}\\(b^2G_{4\frac{1}{2}}-t^2F^a_{3\frac{1}{2}})\end{cases}$	(? w_2 D) $0.99w_2$ C	$\begin{cases}(0.61)\ 1.19b\\(0)\ \textbf{1.01s}\end{cases}$
4	4486. 28	1	III	22283. 97	$a^4H_{5\frac{1}{2}}-z^4I^a_{4\frac{1}{2}}$		
6	4480. 041	6	III	22314. 97	$a^4H_{5\frac{1}{2}}-z^4I^a_{5\frac{1}{2}}$	($0.69w_2$ B) $1.06w_3$ C	(0.63) 1.03b

Table 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm⁻¹	Term combinations	Observed	Computed
6	4475.882	2	IV	22335.73	$a^4H_{4\frac{1}{2}}-z^4I^o_{4\frac{1}{2}}$	(0.26) 0.89	(0.26) 0.90b
6	4474.721	12	III	22341.52	$\{a^2I^2_{5\frac{1}{2}}-z^2I^o_{6\frac{1}{2}}$	$\}$(0) 1.02	(0) 1.03b
					$\{(a^4H_{6\frac{1}{2}}-z^4I_{6\frac{1}{2}})$		
6	4474.047	10	III	22344.88	$b^4F_{4\frac{1}{2}}-t^4D^o_{3\frac{1}{2}}$	(? w_1) 1.13w_2	(0) 1.17s
4	4473.26	1	IV	22348.82			
6	4471.781	1	IV	22356.20	$\{a^4D_{1\frac{1}{2}}-z^6S^o_{2\frac{1}{2}}?$		
					$\{b^2H_{5\frac{1}{2}}-v^2H^o_{4\frac{1}{2}}$		
4	4471.35	1		22358.36	$a^2F_{3\frac{1}{2}}-t^2G^o_{3\frac{1}{2}}$		
4	4470.86	1		22360.81	$a^4H_{5\frac{1}{2}}-v^2G^o_{4\frac{1}{2}}?$		
4	4470.39	1		22363.16	$a^2F_{2\frac{1}{2}}-t^4F^o_{1\frac{1}{2}}$		
6	4469.712	15	III	22366.55	$a^4H_{4\frac{1}{2}}-z^4I^o_{3\frac{1}{2}}$	(0) 0.98	(0) 1.01b
6	4468.764	4	III	22371.29	$a^2H_{4\frac{1}{2}}-w^2F^o_{3\frac{1}{2}}$	(0? w_2 D) 0.37w_2 A	(0) 0.27s
6	4468.008	8	III	22375.08	$a^4H_{3\frac{1}{2}}-z^4I^o_{3\frac{1}{2}}$	(0? w_3 D) 1.57w_3 B	(0) 1.64s
5	4467.624	1	IV	22377.00	$a^2D_{2\frac{1}{2}}-x^2F^o_{3\frac{1}{2}}$		
6	4466.857	2	IV A	22380.85	$a^2G_{4\frac{1}{2}}-y^2F^o_{3\frac{1}{2}}$	(0) 1.17	(0) 1.16b
6	4465.509	2	IV	22387.61	$b^4P_{2\frac{1}{2}}-t^4D^o_{3\frac{1}{2}}$	(0.53) 1.47w_2 C	(0.46) 1.44b
6	4464.769	2	IV	22391.32	$b^4F_{3\frac{1}{2}}-t^4D^o_{3\frac{1}{2}}$	(0.58) ?w_2 C	(0.38) 1.28h
4	4464.27	2	IV	22393.81	$b^2H_{5\frac{1}{2}}-t^2G^o_{4\frac{1}{2}}$	(0) 1.04	(0) 1.17b
6	4462.367	20	III	22403.36	$a^4H_{5\frac{1}{2}}-z^4I^o_{6\frac{1}{2}}$	(0) 1.01	(0) 1.02b
6	4460.989	4	IV	22410.29	$a^2F_{2\frac{1}{2}}-t^2G^o_{3\frac{1}{2}}$	(0) 0.92	(0) 0.95b
6	4460.302	50a	I	22413.74	$\{a^6D_{4\frac{1}{2}}-z^6P^o_{3\frac{1}{2}}$	(? w_3 D) 1.31w_3 A	(0) 1.27b
					$\{(a^2G_{3\frac{1}{2}}-y^2G^o_{4\frac{1}{2}})$		
6	4459.766	30a	I	22416.43	$a^6D_{3\frac{1}{2}}-z^6P^o_{2\frac{1}{2}}$	(0.24, 0.46, 0.79) **0.75**, 1.05, 1.46, 1.76, 2.04, 2.36	(0.16, 0.48, 0.80) **0.73**, 1.05 1.37, 1.69, 2.01, 2.33
4	4458.41	1	IV	22423.23	$a^2F_{3\frac{1}{2}}-v^2H^o_{4\frac{1}{2}}$		
6	4457.762	8	III	22426.51	$a^2H_{4\frac{1}{2}}-z^2I^o_{5\frac{1}{2}}$	(0) 0.97	(0) 1.03b
6	4457.484	15	I	22427.91	$a^6D_{2\frac{1}{2}}-z^6P^o_{1\frac{1}{2}}$	(0.36, **1.09**) **0.55**, 1.24, 2.01, 2.77	(**0.37**, 1.10) **0.51**, 1.24, 1.97, 2.71
6	4456.505	3	IV	22432.84		(0) 1.12	
6	4453.126	1	IV	22449.85	$b^4F_{4\frac{1}{2}}-x^2H^o_{5\frac{1}{2}}$		
6	4452.711	2	IV	22451.95	$a^4H_{3\frac{1}{2}}-v^2G^o_{4\frac{1}{2}}$	(0.20, 0.58, 0.97, 1.41) ?w_3 C	(**0.20**, 0.60, 1.00, 1.40) −0.35, 0.05, 0.45, 0.85, 1.25, 1.65, 2.05, **2.45**
6	4452.022	20	III	22455.42	$a^4H_{6\frac{1}{2}}-z^4I^o_{7\frac{1}{2}}$	(0) 1.09	(0) 1.05b
6	b4450.909	4	IV	22461.04	$a^2F_{3\frac{1}{2}}-t^2G^o_{4\frac{1}{2}}$	(0) 1.02	(0) 0.87b
6	4449.578	5	III	22467.75	$a^2G_{3\frac{1}{2}}-y^2G^o_{4\frac{1}{2}}$	(0.16) 0.91	(0.09) 0.90b
4	4445.81	1	IV	22486.82	$b^4P_{1\frac{1}{2}}-t^4D^o_{0\frac{1}{2}}$		
6	4444.216	20a	I	22494.87	$a^6D_{1\frac{1}{2}}-z^6P^o_{1\frac{1}{2}}$	(0.24, **0.79**) 1.56, **2.11**, 2.67	(0.26, **0.78**) 1.56, **2.08**, 2.60
6	4443.342	5	IV	22499.29	$b^2G_{3\frac{1}{2}}-t^2H^o_{4\frac{1}{2}}$	(0) 1.01	(0) 1.04s
6	4441.688	25	I	22507.67	$a^6D_{3\frac{1}{2}}-z^6P^o_{3\frac{1}{2}}$	(0.50) 1.74w_3 C	(0.53) 1.76b
6	4438.98	1	IV	22521.41	$a^2F_{3\frac{1}{2}}-t^4F^o_{4\frac{1}{2}}$		
6	4437.842	20a	I	22527.18	$a^6D_{3\frac{1}{2}}-z^6P^o_{2\frac{1}{2}}$	(0.39) 1.61	(0.41) 1.60b
4	4437.39	1		22529.48	$a^4H_{5\frac{1}{2}}-z^2I^o_{5\frac{1}{2}}$		
4	4436.89	1		22532.01	$a^4H_{4\frac{1}{2}}-y^4H^o_{4\frac{1}{2}}$		
6	4436.140	15	I	22535.82	$a^6D_{0\frac{1}{2}}-z^6P^o_{1\frac{1}{2}}$	(0.47) **1.90**, 2.88	(**0.47**) **1.87**, 2.81
6	4434.602	5	III	22543.64	$b^4P_{2\frac{1}{2}}-t^4D^o_{3\frac{1}{2}}$	(? w_2D) 1.14w_2 A	(0) 1.11b
4	4432.88	1	IV A	22552.39	$a^4D_{3\frac{1}{2}}-x^4F^o_{2\frac{1}{2}}$		
6	4430.512	3	IV	22564.45	$b^4P_{1\frac{1}{2}}-t^4D^o_{1\frac{1}{2}}$	(0.26, 0.79) 0.89, **1.41**, 1.95	(0.25, **0.75**) 0.93, **1.43**, 1.93
6	4429.802	15	I	22568.06	$a^6D_{2\frac{1}{2}}-y^6F^o_{3\frac{1}{2}}$	(?w_2 D) 1.89w_2 B	(0) 1.80b
6	4428.519	15	I	22574.59	$a^6D_{1\frac{1}{2}}-z^6P^o_{2\frac{1}{2}}$	(0) 1.87w_1 B	(0) 1.87b
4	b4427.31	5	III	22580.76	$b^2G_{4\frac{1}{2}}-t^2H^o_{5\frac{1}{2}}$	(0) **0.94**, 1.54	(0.02, 0.07, 0.12, 0.17, 0.22) **0.84**, 0.89, 0.94, 0.99, 1.04, 1.08, 1.13, 1.18, 1.23, 1.28
6	4426.011	20	I	22587.39	$a^6D_{3\frac{1}{2}}-y^6F^o_{2\frac{1}{2}}$	(0.15, 0.43, 0.70) 2.31w_3 B	(**0.14**, 0.44,0.74) 0.79, 1.09, 1.38, 1.67, 1.97, **2.27**
6	4425.724	4	III A	22588.85	$\{a^4H_{3\frac{1}{2}}-v^4G^o_{3\frac{1}{2}}$		
					$\{a^2G_{3\frac{1}{2}}-y^2F^o_{3\frac{1}{2}}$		
6	4424.576	4	III A	22594.72	$a^2G_{4\frac{1}{2}}-z^2H^o_{5\frac{1}{2}}$	(0) 1.03	(0) 1.00b
6	4423.920	2	IV	22598.06	$b^4D_{1\frac{1}{2}}-v^4D^o_{3\frac{1}{2}}?$	(0) 1.07	
6	4423.210	8	III A	22601.68	$a^4D_{3\frac{1}{2}}-x^4F^o_{3\frac{1}{2}}$	(0) 1.18	(0) 1.20b
4	4422.48	2	IV	22605.41	$\{a^4H_{5\frac{1}{2}}-z^2I^o_{5\frac{1}{2}}$	$\}$(?) 0.82	$\{$(0) **0.84**s
					$\{a^2P_{0\frac{1}{2}}-x^2D^o_{1\frac{1}{2}}$		$\{$(0) 0.95b

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm⁻¹	Term combinations	Observed	Computed
6	4422. 239	3	IV	22606. 65	$\{a^4H_{4\frac{1}{2}}-v^4G^6_{3\frac{1}{2}}$	(0) 0.88	(0) 0.80b
6	4421. 585	20	I	22610. 00	$\{(a^2P_{1\frac{1}{2}}-y^4S^2_{1\frac{1}{2}})$ $a^6D_{2\frac{1}{2}}-y^6F^5_{1\frac{1}{2}}$	(0.28, 0.87) 0.76, 1.34, 1.95, 2.55	(0.29, 0.88) 0.73, 1.31, 1.90, 2.49
6	4419. 944	12	I	22618. 38	$a^6D_{2\frac{1}{2}}-z^6P^3_{2\frac{1}{2}}$	(0) 1.76	(0) 1.75b
4	4418. 45	1		22626. 02	$a^2D_{2\frac{1}{2}}-v^2G^3_{3\frac{1}{2}}$		
6	4416. 699	2	IV A	22635. 01	$a^2G_{3\frac{1}{2}}-y^2F^3_{2\frac{1}{2}}$	(0) 0.89	(0) 0.92b
6	4416. 480	20	I	22636. 13	$a^6D_{1\frac{1}{2}}-y^6F^5_{0\frac{1}{2}}$	(1.21) 0.63, 3.10	(1.20) 0.62, 3.02
5	4415. 062	2		22643. 40	$\{a^4H_{5\frac{1}{2}}-v^4G^6_{3\frac{1}{2}}$ $\{b^4D_{3\frac{1}{2}}-q^4D^2_{3\frac{1}{2}}$		
6	4414. 547	2	IV	22646. 04	$a^4H_{3\frac{1}{2}}-v^4G^4_{3\frac{1}{2}}$		
4	4413. 70	2	III A	22650. 39	$a^4D_{2\frac{1}{2}}-x^4F^5_{2\frac{1}{2}}$.	(0.79w_1B)?w_3 D	(0.74) 1.18b
6	4412. 142	12	I	22658. 39	$a^6D_{0\frac{1}{2}}-z^4P^5_{0\frac{1}{2}}$.	(0.37) 2.94w_1B	(0.38) 2.92b
6	b4408. 515	90a	· I	22677. 01	$\{a^6D_{0\frac{1}{2}}-y^6F^5_{0\frac{1}{2}}$. $\{a^6D_{1\frac{1}{2}}-y^6F^5_{1\frac{1}{2}}$	$\}$(1.30) 0.85, 1.86	$\{$(1.94) 1.36b $\{$(0.40, 1.20) 0.62, 1.42, 2.22
6	4408. 209	70a	I	22678. 61	$\{a^6D_{2\frac{1}{2}}-y^6F^5_{2\frac{1}{2}}$ $\{(b^4P_{0\frac{1}{2}}-t^4D^4_{0\frac{1}{2}})$	(0.90)?	(0.83) 1.42b
6	4407. 655	70a	I	22681. 45	$a^6D_{3\frac{1}{2}}-y^6F^5_{3\frac{1}{2}}$	(0.56) 1.57w_3	(0.47) 1.45b
6	4406. 649	80a	I	22686. 63	$a^6D_{4\frac{1}{2}}-y^6F^5_{2\frac{1}{2}}$	(0.48) 1.49w_1C	(0.43) 1.47b
5	4406. 141	6	III A	22689. 24	$\{a^4D_{2\frac{1}{2}}-x^4F^5_{3\frac{1}{2}}$ $\{b^4P_{1\frac{1}{2}}-t^4D^4_{2\frac{1}{2}}$	(?w_2D) 1.09w_2 C	$\{$(0) 1.04b $\{$(0) 1.07b
6	4405. 008	4	III A	22695. 07	$\{a^6D_{2\frac{1}{2}}-z^4P^4_{1\frac{1}{2}}$ $\{a^4H_{4\frac{1}{2}}-v^4G^4_{4\frac{1}{2}}$.		
6	4403. 680	4	III	22701. 93	$a^4H_{6\frac{1}{2}}-v^4G^6_{5\frac{1}{2}}$	(0) 1.13	(0) 1.07b
5	4401. 140	[−]		22715. 02	$b^4D_{2\frac{1}{2}}-u^4P^4_{1\frac{1}{2}}$		
6	4400. 589	60a	II	22717. 87	$a^6D_{0\frac{1}{2}}-y^6F^5_{1\frac{1}{2}}$	(1.12) 0, 2.18	(1.14) 0.12, 2.16
6	4399. 426	2	III	22723. 88	$a^4D_{1\frac{1}{2}}-x^4F^5_{1\frac{1}{2}}$	(1.18) 0, 0.80, 1.50	(0.41, 1.22) −0.03, 0.79, 1.60
4	4397. 88	1		22731. 87	$a^2F_{2\frac{1}{2}}-t^4G^3_{3\frac{1}{2}}$		
6	4397. 414	1	IV	22734. 27		(0) 1.01	
6	4395. 243	80a	II	22745. 51	$a^6D_{1\frac{1}{2}}-y^6F^5_{2\frac{1}{2}}$	(0.27, 0.86) 0.43, 1.01, 1.58, 2.14	(0.29, 0.88) 0.35, 0.94, 1.53, 2.11
6	4394. 814	3	III	22747. 72	$a^2G_{3\frac{1}{2}}-z^2H^4_{4\frac{1}{2}}$	(0) 0.98	(0) 0.99b
6	4393. 840	4	III A	22752. 77	$a^4D_{1\frac{1}{2}}-x^4F^5_{2\frac{1}{2}}$	(0?w_1 D) 0.86w_1 A	(0) 0.88b
4	4393. 09	4	III	22756. 65	$b^4P_{0\frac{1}{2}}-t^4D^4_{1\frac{1}{2}}$	(0.72) 0.44	(0.71) 0.47, 1.89
6	4392. 078	5	II A	22761. 90	$a^6D_{1\frac{1}{2}}-z^4P^4_{1\frac{1}{2}}$	(0.19) 1.82	(0.15) 1.76b
6	4391. 681	2	IV	22763. 96	$a^4H_{5\frac{1}{2}}-v^4G^5_{5\frac{1}{2}}$	(0.63)?	(0.54) 1.16b
6	4390. 611	1	IV	22769. 50	$a^2P_{0\frac{1}{2}}-y^2P^2_{1\frac{1}{2}}$		
6	4389. 986	100a	II	22772. 74	$a^6D_{2\frac{1}{2}}-y^6F^5_{3\frac{1}{2}}$		
4	4388. 09	1		22782. 58	$a^2F_{3\frac{1}{2}}-t^4G^4_{4\frac{1}{2}}$		
6	4387. 215	3	III A	22787. 13	$a^4D_{0\frac{1}{2}}-x^4F^5_{1\frac{1}{2}}$	(0.20) 0.60	(0.19) 0.19, 0.57
4	4385. 33	1	IV	22796. 91	$a^4G_{5\frac{1}{2}}-u^4G^5_{4\frac{1}{2}}$		
6	4384. 730	125ra	II	22800. 04	$\{a^6D_{3\frac{1}{2}}-y^6F^4_{4\frac{1}{2}}$ $\{a^4F_{4\frac{1}{2}}-z^4F^6_{3\frac{1}{2}}$	$\}$(?w_2 D) 1.28w_2 C	$\{$(0) 1.20b $\{$(0) 1.37b
4	4384. 19	1	III A	22802. 84	$a^6D_{0\frac{1}{2}}-z^4P^5_{1\frac{1}{2}}$.		
4	4381. 76	1		22815. 47	$a^4H_{4\frac{1}{2}}-v^4G^5_{3\frac{1}{2}}$		
4	4381. 23	1h		22818. 24	$b^4D_{3\frac{1}{2}}-u^4P^4_{2\frac{1}{2}}$		
4	4381. 03	1	IV A	22819. 28	$\{a^4G_{4\frac{1}{2}}-u^4G^3_{3\frac{1}{2}}$ $\{a^4P_{1\frac{1}{2}}-x^4D^4_{1\frac{1}{2}}$ $\{a^6D_{3\frac{1}{2}}-z^4P^5_{2\frac{1}{2}}$		
6	4380. 570	4	IV	22821. 69	$a^4G_{5\frac{1}{2}}-u^4G^5_{5\frac{1}{2}}$	(0) 1.25	(0.18) 1.25b
6	4379. 242	150$racm$	II	22828. 61	$a^6D_{4\frac{1}{2}}-y^6F^5_{3\frac{1}{2}}$	(?w_3)1.29w_3	(0) 1.15b
4	b4377. 90	2	IV	22835. 58	$a^4P_{2\frac{1}{2}}-x^4D^4_{2\frac{1}{2}}$	(0) 1.35	(0.57) 1.42b
4	4376. 80	1	IV	22841. 38			
5	4376. 057	0		22845. 22	$a^4G_{3\frac{1}{2}}-u^4G^2_{2\frac{1}{2}}$?		
6	4375. 315	4	IV	22849. 10	$b^2G_{3\frac{1}{2}}-s^2G^3_{3\frac{1}{2}}$	(0) 0.88	(0.15) 0.88b
6	4375. 069	1	IV	22850. 38			
6	4373. 827	4	IV	22856. 87	$a^4G_{4\frac{1}{2}}-u^4G^3_{3\frac{1}{2}}$	(0) 1.19	(0.19) 1.16b
6	4373. 234	4	IV	22859. 98	$b^2G_{4\frac{1}{2}}-s^2G^4_{3\frac{1}{2}}$	(0) 1.11	(0.07) 1.10b
6	4369. 066	2	IV	22881. 77	$a^4G_{4\frac{1}{2}}-u^4G^5_{3\frac{1}{2}}$	(0) 1.56	(0) 1.64s
6	4368. 598	4	IV	22884. 23	$a^4G_{3\frac{1}{2}}-u^4G^3_{3\frac{1}{2}}$	(0) 0.97	(0.09) 0.98b
6	4368. 047	10	I	22887. 12	$a^4F_{3\frac{1}{2}}-z^4F^5_{2\frac{1}{2}}$	(?w_2 D) 1.63w_3 B	(0) 1.75s
4	4367. 07	1		22892. 25	$b^2G_{4\frac{1}{2}}-s^2G^3_{3\frac{1}{2}}$		
4	4365. 74	3	IV	22899. 21	$a^2D_{1\frac{1}{2}}-z^2D^2_{2\frac{1}{2}}$		
6	4364. 221	4	IV	22907. 18	$a^4G_{2\frac{1}{2}}-u^4G^2_{2\frac{1}{2}}$	(0) 0.56	(0.13) 0.56b
6	4363. 531	5	II A	22910. 81	$a^6D_{2\frac{1}{2}}-z^4P^3_{2\frac{1}{2}}$	(0?w_1) 1.59	(0.04) 1.60b
5	4363. 357	1	IV	22911. 71	$a^4P_{0\frac{1}{2}}-x^4D^4_{1\frac{1}{2}}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm^{-1}	Term combinations	Observed	Computed
6	4361.399	2	IV	22922.00	$a^4G_{3\frac{1}{2}}-u^4G_{4\frac{1}{2}}^4$	(?w_3 D) 1.66w_2 B	(0) 1.59b
4	4361.03	1		22923.95	$a^2F_{2\frac{1}{2}}-u^2F_{2\frac{1}{2}}^2$	(0) 0.83	(0.04) 0.85b
6	4360.592	3	IV	22926.24	$a^2D_{2\frac{1}{2}}-w^2F_{2\frac{1}{2}}^2$	(0w_1) 0.86w_1	(0) **0.86**s
6	4357.453	2	IV	22942.76	$\begin{cases} a^2F_{3\frac{1}{2}}-u^2F_{3\frac{1}{2}}^2 \\ a^2D_{1\frac{1}{2}}-w^2D_{1\frac{1}{2}}^2 \end{cases}$	(0) 1.10 or (0) 1.38 diffuse.	$\begin{cases} (0.09 \ 1.12b \\ (0.24) \ 0.88b \end{cases}$
6	4356.796	1	IV	22946.22	$a^4G_{2\frac{1}{2}}-u^4G_{3\frac{1}{2}}^3$	**(0.22**, 0.64, 1.03)?	**(0.20**, 0.60, 1.00)-0.01, 0.39, 0.80, 1.19, 1.59, **1.99**
6	4355.958	10	I	22950.64	$a^4F_{2\frac{1}{2}}-z^4F_{1\frac{1}{2}}^6$	**(0.29**, 0.88) 0.16, 0.70, 1 33, **1.92**	**(0.30**, 0.92) 0.09, 0.70, 1.31, **1.93**
6	4354.985	5	IV	22955.76	$a^2H_{5\frac{1}{2}}-x^2H_{5\frac{1}{2}}^5$	(0) 1.09	(0.13) 1.08b
6	4353.338	2	IV	22964.44	$a^2P_{1\frac{1}{2}}-x^2F_{2\frac{1}{2}}^2$	(0.15, 0.50)?	**(0.15**, 0.46) **0.43**, 0.74, 1.05, 1.35
6	4352.892	50acm	I	22966.81	$a^4F_{4\frac{1}{2}}-z^4F_{3\frac{1}{2}}^4$	(0) 1.30	(0.11) 1.30b
4	4352.47	2	IV	22969.03		(0.17)?	
6	4350.820	2	III A	22977.74	$a^6D_{1\frac{1}{2}}-z^4P_{2\frac{1}{2}}^2$		
6	4350.680	1	IV	22978.48			
4	4342.84	6	III	23019.94	$a^2H_{4\frac{1}{2}}-x^2H_{4\frac{1}{2}}^4$	(0) 0.90	(0.07) 0.89b
4	4342.21	4	III	23023.28	$a^4P_{1\frac{1}{2}}-x^4D_{2\frac{1}{2}}^2$	**(0.18**, 0.57) 0.81, 1.15, —	**(0.20**, 0.61) **0.68**, 1.09, 1.50, 1.90
6	4341.016	40acm	I	23029.63	$a^4F_{3\frac{1}{2}}-z^4F_{3\frac{1}{2}}^3$	(0) 1.21	(0.09) 1.22b
6	4336.129	2	IV	23055.58	$b^2H_{4\frac{1}{2}}-u^2H_{4\frac{1}{2}}^4$	(0) 0.90	(0.22) 0.88b
6	4334.114	4	III A	23066.30	$a^4P_{2\frac{1}{2}}-x^4D_{3\frac{1}{2}}^3$	(?w_2 D) 1.06w_2 A	(0) 1.10b
6	4332.832	30acm	I	23073.13	$a^4F_{2\frac{1}{2}}-z^4F_{2\frac{1}{2}}^2$	(0) 1.00	(0.07) 1.00b
6	4332.380	1	IV	23075.54	$b^2H_{5\frac{1}{2}}-u^2H_{5\frac{1}{2}}^5$	(0) 1.08	(0.09) 1.07b
6	4330.033	30acm	I	23088.04	$a^4F_{1\frac{1}{2}}-z^4F_{1\frac{1}{2}}^4$	(0) 0.35	(0.01) 0.40b
5	4323.489	[−1]		23122.99	$a^4H_{5\frac{1}{2}}-x^2H_{4\frac{1}{2}}^4$		
4	^{b}4322.37	1		23128.98	$b^2H_{1\frac{1}{2}}-v^2P_{1\frac{1}{2}}^1$	(0) 0.38, **1.32**	(0.02, **0.05**) 1.32, **1.35**
4	4320.29	1		23140.11	$a^2H_{5\frac{1}{2}}-x^4H_{5\frac{1}{2}}^5$	(0.21) 1.11	
4	4319.96	1		23141.88	$a^2H_{4\frac{1}{2}}-x^4H_{3\frac{1}{2}}^3$		
4	4318.70	4		23148.63			
4	4315.83	1		23164.01	$a^4P_{2\frac{1}{2}}-w^4F_{3\frac{1}{2}}^3$	(0.25) 0.94	(0.22) 0.91b
6	4313.896	3	IV	23174.40	$a^4H_{4\frac{1}{2}}-x^2H_{4\frac{1}{2}}^4$	(? w_2 D) 1.46 w_2 B	(0) 1.50b
6	4309.801	20	I	23196.42	$\begin{cases} a^4F_{3\frac{1}{2}}-z^4F_{4\frac{1}{2}}^4 \\ (aG^4_{4\frac{1}{2}}-w^4H^3_{5\frac{1}{2}}) \end{cases}$		
6	4309.531	2	IV	23197.89	$a^4G_{3\frac{1}{2}}-w^4H_{3\frac{1}{2}}^3$		
4	4308.44	1		23203.74	$a^2D_{2\frac{1}{2}}-w^2D_{2\frac{1}{2}}^2$		
6	4307.188	12	I	23210.50	$\begin{cases} a^4F_{1\frac{1}{2}}-z^4F_{2\frac{1}{2}}^6 \\ (aG^4_{5\frac{1}{2}}w-H^4_{5\frac{1}{2}}) \end{cases}$	**(0.31**, 0.92) 0?, 0.72, 1.37, **1.93**	**(0.29**, 0.87) 0.11, 0.69, 1.27, **1.85**
5	4306.594?	[−1]		23213.70	$a^4H_{3\frac{1}{2}}-x^2H_{2\frac{1}{2}}^4$		
6	4306.222	15	I	23215.70	$a^4F_{2\frac{1}{2}}-z^4F_{3\frac{1}{2}}^6$	(? w_3 D) 1.82w_3 B	(0) **1.78**s
5	4305.482	3	IV	23219.70	$a^4H_{5\frac{1}{2}}-x^2H_{5\frac{1}{2}}^5$	(0, 0.38) 1.08	(0) 1.10b
6	4303.542	3	IV	23230.16		(? w_1 D) 0.85w_1 A	
5	4302.143	tr	IV A	23237.72	$a^2D_{1\frac{1}{2}}-w^2D_{2\frac{1}{2}}^2$	(?) 1.32w_1	(0) 1.34b
6	4298.048	12	III	23259.85	$a^4G_{2\frac{1}{2}}-w^4H_{3\frac{1}{2}}^3$	(0) 0.77	(0) **0.80**s
6	4297.694	12	III	23261.77	$a^4G_{3\frac{1}{2}}-w^4H_{4\frac{1}{2}}^4$	(0) 0.94	(0) 0.85b
4	4297.10	1		23265.01	$a^2H_{5\frac{1}{2}}-u^2G_{4\frac{1}{2}}^4$	(0) 1.07	
6	4296.121	15	III	23270.29	$a^4G_{4\frac{1}{2}}-w^4H_{5\frac{1}{2}}^3$	(0) 1.04	(0) 0.95b
6	4291.828	15	III	23293.56	$a^4G_{5\frac{1}{2}}-w^4H_{6\frac{1}{2}}^3$	(0) 1.10	(0) 1.08b
6	4291.305	4	III	23296.40	$a^4H_{4\frac{1}{2}}-x^4H_{3\frac{1}{2}}^3$	(0.12, 0.44, 0.73, 1.05) 2.06w_3 B	**(0.13**, 0.40, 0.67, 0.94) 0.00, 0.27, 0.54, 0.81, 1.07, 1.34, 1.61, **1.88**
5	4288.819	1	IV A	23309.90	$a^4D_{1\frac{1}{2}}-z^2S^0_{\frac{1}{2}}$		
6	4287.823	4	IV	23315.31		(0) 1.03	
6	4286.428	5	III	23322.91	$a^4H_{5\frac{1}{2}}-x^4H_{4\frac{1}{2}}^3$	(?) w_2 D 1.61w_2 B	(0) 1.48b
6	4284.061	15	III	23335.80	$a^4H_{3\frac{1}{2}}-x^4H_{3\frac{1}{2}}^3$	(0) 0.68	(0.06) 0.66b
5	4282.924	(5)	(III)	23341.99	$a^4H_{6\frac{1}{2}}-x^4H_{6\frac{1}{2}}^3$	(?w_2 D) 1.46 w_2 B	
5	4278.992	2	III A	23363.44			
6	4276.966	12	III	23374.52	$a^4H_{4\frac{1}{2}}-x^4H_{4\frac{1}{2}}^2$	(0) 0.94	(0.04) 0.94b
6	4271.563	12	III	23404.08	$a^4H_{5\frac{1}{2}}-x^4H_{5\frac{1}{2}}^5$	(0) 1.08	(0.04) 1.10b
6	4270.332	4	IV	23410.82	$a^2D_{2\frac{1}{2}}-t^4D_{2\frac{1}{2}}^2$	(0) 1.18	(0.35) 1.25b
6	4269.768	5	III	23413.92	$a^4H_{3\frac{1}{2}}-x^4H_{4\frac{1}{2}}^3$	(0.15, 0.45, 0.75, 1.05) 1.96w_3 B	**(0.15**, 0.43, 0.71, 0.99) −0.06, 0.22, 0.50, 0.79, 1.08, 1.36, 1.64, **1.92**
6	4268.652	20	III	23420.03	$a^4H_{6\frac{1}{2}}-x^4H_{6\frac{1}{2}}^3$	(0) 1.21	(0.21) 1.20b
4	4267.32	1	IV	23427.32			
4	4265.90	1	IV	23435.12	$b^4D_{3\frac{1}{2}}-x^6F_{4\frac{1}{2}}^6$?		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} Å	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
6	4265.162	8n	III	23439.19		(0? w_2 D) 1.21w_2	
6	4262.169	6	III	23455.66	a^4H$_{4\frac{1}{2}}-x^4$H$^\circ_{5\frac{1}{2}}$	(?w_2 D) 1.67w_2 B	(0) 1.50b
6	4261.222	2	IV	23460.87	b^2G$_{3\frac{1}{2}}-q^4$F$^\circ_{2\frac{1}{2}}$		
6	4259.320	8	I	23471.33	a^4F$_{2\frac{1}{2}}-z^2$D$^\circ_{1\frac{1}{2}}$	(0.41) 1.31w_1 B	(**0.12**, 0.37) 0.6 ‹0.88 1.13, **1.38**
6	4257.375	6	III	23482.08	a^4H$_{5\frac{1}{2}}-x^4$H$^\circ_{6\frac{1}{2}}$	(? w_2 D) 1.55w_1 B	(0) 1.55b
4	a4252.80	1	IV	23507.35	a^2H$_{4\frac{1}{2}}-u^2$G$^\circ_{3\frac{1}{2}}$	(0) 0.93	(0) 0.93
4	4246.69	1	IV	23541.15	a^2P$_{1\frac{1}{2}}-w^2$F$^\circ_{2\frac{1}{2}}$		
6	4241.325	3	III	23570.93	b^4F$_{4\frac{1}{2}}-u^4$F$^\circ_{3\frac{1}{2}}$	(0) 1.52	(0) 1.48b
6	4240.368	4	III	23576.24	b^4F$_{3\frac{1}{2}}-u^4$F$^\circ_{2\frac{1}{2}}$	(? w_1 D) 1.54	(0) 1.50b
6	4240.089	3	IV	23577.80	b^4F$_{2\frac{1}{2}}-u^4$F$^\circ_{1\frac{1}{2}}$	(**0.24**, 0.72) 0.78, 1.23, **1.74**	(**0.25**, 0.76) 0.29, 0.79, 1.30, **1.81**
4	4238.97	2	IV	23584.01		(0) 1.22	
6	4236.618	1	III A	23597.11	a^6D$_{4\frac{1}{2}}-z^2$G$^\circ_{3\frac{1}{2}}$		
6	4235.765	10	III	23601.86	b^4F$_{1\frac{1}{2}}-u^4$F$^\circ_{1\frac{1}{2}}$	(0.20) 0.46	(0.21) 0.47b
6	4234.531	8	I	23608.75	a^4F$_{1\frac{1}{2}}-z^2$D$^\circ_{1\frac{1}{2}}$	(—, **0.54**) 0.18, 0.57, 0.96	(0.18, **0.54**) 0.22, 0.58, 0.94
6	4234.010	12	I	23611.65	$\begin{cases}b^4\text{F}_{2\frac{1}{2}}-u^4\text{F}^\circ_{2\frac{1}{2}}\\a^4\text{F}_{3\frac{1}{2}}-z^2\text{D}^\circ_{2\frac{1}{2}}\end{cases}$	(0) 1.05w_1 A	(0.11) 1.02b
6	4232.959	12	III	23617.51	b^4F$_{3\frac{1}{2}}-u^4$F$^\circ_{3\frac{1}{2}}$	(0) 1.23	(0.03) 1.22b
6	4232.466	15	III	23620.26	b^4F$_{4\frac{1}{2}}-u^4$F$^\circ_{4\frac{1}{2}}$	(0) 1.34	(0.04) 1.30b
6	4229.695	4	III	23635.73	b^4F$_{1\frac{1}{2}}-u^4$F$^\circ_{2\frac{1}{2}}$	(**0.28**, 0.93) 0, 0.67, 1.30, **1.91**	(**0.30**, 0.91) 0.09, 0.70, 1.30, **1.91**
6	4227.740	4	III	23646.66	a^2P$_{0\frac{1}{2}}-w^2$D$^\circ_{1\frac{1}{2}}$	(0) 0.87	(0) **0.88**s
5	4226.622	(5)	(III)	23652.92	b^4F$_{2\frac{1}{2}}-u^4$F$^\circ_{3\frac{1}{2}}$	(?w_2 D) 1.61w_2 B	
5	4224.133	5	III	23666.85	b^4F$_{3\frac{1}{2}}-u^4$F$^\circ_{4\frac{1}{2}}$	(0?w_1 D)—, 1.50w_1 A	(0) 1.44b
4	4222.98	1	IV	23673.34	z^6F$^\circ_{5\frac{1}{2}}-e^6G_{6\frac{1}{2}}$		
4	4222.33	2	IV	23676.99	b^4P$_{2\frac{1}{2}}-w^4$P$^\circ_{1\frac{1}{2}}$	(0) 1.54	(0) 1.50b
4	4221.04	1		23684.23	b^4D$_{0\frac{1}{2}}-p^4$D$^\circ_{0\frac{1}{2}}$		
4	4219.51	2	III A	23692.81	a^6D$_{3\frac{1}{2}}-y^4$F$^\circ_{2\frac{1}{2}}$		
6	4218.714	4	III A	23697.25	a^6D$_{4\frac{1}{2}}-y^4$F$^\circ_{3\frac{1}{2}}$	(**0.19**, 0.55, 0.96, 1.34) ?w_3 C	(**0.18**, 0.55, 0.92, 1.29, 0.23, 0.60, 0.97, .134, 1.70, 2.07, 2.44, **2.81**
4	4216.38	1	II A	23710.40	$\begin{cases}a^6\text{D}_{2\frac{1}{2}}-y^4\text{F}^\circ_{1\frac{1}{2}}\\a^6\text{D}_{3\frac{1}{2}}-z^2\text{G}^\circ_{3\frac{1}{2}}\end{cases}$		
4	4213.94	1h		23724.12	b^4D$_{0\frac{1}{2}}-p^4$D$^\circ_{1\frac{1}{2}}$	(0.55) 0.75, 1.76	(0.56) 0.66, **1.78**
4	4210.85	1h		23741.52	b^4D$_{1\frac{1}{2}}-p^4$D$^\circ_{1\frac{1}{2}}$?		
6	b4209.857	20	I	23747.11	a^6D$_{4\frac{1}{2}}-y^4$F$^\circ_{4\frac{1}{2}}$	(?w_3 B) 1.43, 2.47w_3 C	0.14, 0.43, 0.72, 1.01, **1.30**) 0.22, 0.51, 0.80, 1.09, **1.38**, 1.66, 1.95, 2.24, 2.53
4	4206.68	1		23765.04	b^4D$_{2\frac{1}{2}}-p^4$D$^\circ_{1\frac{1}{2}}$	(0) 1.49	
1	4204.52	1		23777.25	a^6D$_{1\frac{1}{2}}-y^4$F$^\circ_{1\frac{1}{2}}$.		
4	4200.89	1	III A	23797.79	a^4F$_{2\frac{1}{2}}-z^2$D$^\circ_{2\frac{1}{2}}$		
6	4200.190	4	III A	23801.77	a^6D$_{2\frac{1}{2}}-z^2$G$^\circ_{3\frac{1}{2}}$	(**0.34**, 1.04, 1.70) 0, 0.72, 1.30	(**0.34**, 1.03, 1.72) **-0.80**, -0.11, 0.58, 1.26, 1.95, 2.64
6	4198.621	4	III A	23810.66	a^6D$_{3\frac{1}{2}}-y^4$F$^\circ_{3\frac{1}{2}}$	(—, 0.62, 1.01, **1.45**) 0.21, 0.54, 0.95, 1.38, 1.76, 2.18, 2.60, —	(0.18, 0.56, 0.94, **1.32**) 0.21, 0.59, 0.97, **1.34**, 1.71, 2.09, 2.47
6	4197.606	2	IV	23816.24	a^2H$_{5\frac{1}{2}}-y^2$I$^\circ_{6\frac{1}{2}}$	(0) 1.05	(0) 1.03b
4	4197.29	1		23818.20	a^6D$_{0\frac{1}{2}}-y^4$F$^\circ_{1\frac{1}{2}}$		
5	a4195.601	1	IV	23827.80	b^4D$_{2\frac{1}{2}}-p^4$D$^\circ_{2\frac{1}{2}}$?	(0) 1.31	(0.26) 1.31b
4	4191.55	10	II	23850.81	$\begin{cases}a^6\text{D}_{1\frac{1}{2}}-y^4\text{F}^\circ_{2\frac{1}{2}}\\b^4\text{P}_{2\frac{1}{2}}-w^4\text{P}^\circ_{2\frac{1}{2}}\end{cases}$	(**0.36**, 1.23) **0.20**, 0.60	(**0.42**, 1.26) **-0.28**, 0.56, 1.40, 2.24
6	4189.849	12	I	23860.51	a^6D$_{3\frac{1}{2}}-y^4$F$^\circ_{4\frac{1}{2}}$	(**0.16**, 0.49, 0.79, 1.08) **0.17**, 0.50, 0.80, 1.09, 1.41, 1.68	(**0.16**, 0.46, 0.76, 1.06) **0.17**, 0.47, 0.77, 1.07, 1.38, 1.69, 1.99, 2.29
5	4187.665	[1h]		23872.95	a^4D$_{1\frac{1}{2}}-x^4$D$^\circ_{0\frac{1}{2}}$?	(0.56)?w_2	(0.56) 0.56, **1.75**
4	4186.80	1		23877.92	a^4D$_{2\frac{1}{2}}-x^4$D$^\circ_{1\frac{1}{2}}$	(0) 1.42	(0.13) 1.49b
6	4182.596	10	I	23901.89	a^6D$_{2\frac{1}{2}}-y^4$F$^\circ_{3\frac{1}{2}}$	(**0.24**, 0.72, 1.20) 0, 0.43, 0.90, 1.43, —	(**0.22**, 0.68, 1.14) **0.01**, 0.47, 0.93, 1.38, **1.83**, 2.29
6	4182.082	2	IV	23904.82	a^2H$_{4\frac{1}{2}}-y^2$I$^\circ_{5\frac{1}{2}}$	(0) 0.92	(0) 0.97b
4	4180.89	1	IV	23911.66	b^4D$_{2\frac{1}{2}}-p^4$D$^\circ_{3\frac{1}{2}}$	(0) 1.48	(0) **1.50**s

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7) Zeeman effect Observed	(8) Zeeman effect Computed
Ref.	λ_{air} Å	Int. arc	Temp. class	ν_{vac} cm⁻¹	Term combinations	Observed	Computed
6	4179.421	15	I	23920.05	$a^6D_{4\frac{1}{2}}-z^2G^o_{4\frac{1}{2}}$	(—, 0.54, 0.93, 1.28, **1.70**) **0.20**, 0.57, 0.98, 1.34, 1.71, 2.09, 2.48, 2.86, —	(0.19, 0.58, 0.97, 1.36, **1.75**) −0.23, 0.16, 0.55, 0.94, **1.33**, 1.71, 2.10, 2.49, 2.88
6	4177.071	2	IV	23933.50	$b^4D_{3\frac{1}{2}}-p^4D^o_{3\frac{1}{2}}$	(0) 1.37	(0.38) 1.38b
5	4176.793	[3]		23935.09	$a^4F_{1\frac{1}{2}}-z^2D^o_{2\frac{1}{2}}$		
5	4176.644	[00p?]		23935.94	$a^4D_{0\frac{1}{2}}-x^4D^o_{0\frac{1}{2}}$		
4	4175.16	1	IV A	23944.47	$a^4D_{3\frac{1}{2}}-x^4D^o_{2\frac{1}{2}}$	(0) 1.46	(0) 1.52b
6	4174.023	5	III	23950.98	$a^2P_{1\frac{1}{2}}-w^2D^o_{2\frac{1}{2}}$	(0) 1.19	(0) 1.15b
6	4171.308	3	IV	23966.57	$b^4P_{1\frac{1}{2}}-w^4P^o_{0\frac{1}{2}}$	(0.46) 1.26	(0.45) **1.23**, 2.13
6	4169.261	2	IV	23978.34	$b^4P_{1\frac{1}{2}}-w^4P^o_{1\frac{1}{2}}$	(0) 1.65	(0.11) 1.64b
4	4168.95	1		23980.13	$a^4D_{1\frac{1}{2}}-x^4D^o_{1\frac{1}{2}}$	(0) 1.17	(0.02) 1.19b
4	4167.04	1h		23991.11	$z^6F^o_{3\frac{1}{2}}-f^6F_{3\frac{1}{2}}$	(?) 1.37 diffuse	
4	4166.74	1h		23992.84	$z^6F^o_{4\frac{1}{2}}-f^6F_{4\frac{1}{2}}$	(0) 1.33	
4	4162.34	1		24018.19	$a^4H_{6\frac{1}{2}}-y^2I^o_{6\frac{1}{2}}$		
4	4160.40	1	III A	24029.39	$\begin{cases}a^6D_{1\frac{1}{2}}-y^4D^o_{0\frac{1}{2}}\\a^6D_{2\frac{1}{2}}-y^4D^o_{1\frac{1}{2}}\end{cases}$	}(0.92)?w_2	$\begin{cases}(0.94)\quad 0.88,\quad \textbf{2.76},\\(\textbf{0.23},\quad 0.66)\quad 0.94,\\1.39,1.83,\textbf{2.27}\end{cases}$
3	4159.696	8	I	24033.47	$a^6D_{3\frac{1}{2}}-z^2G^o_{4\frac{1}{2}}$	(**0.20**, 0.61, 1.01, 1.45) **0.22**, 0.55, 0.93, 1.33, 1.76, —	(**0.21**, 0.61, 1.01, 1.41) −**0.28**, 0.12, 0.52, 0.92, 1.33, 1.74, 2.14, 2.54
3	4158.379	0		24041.08	$a^6D_{3\frac{1}{2}}-y^4D^o_{2\frac{1}{2}}$		
5	4157.960	1	III A	24053.50	$a^4D_{0\frac{1}{2}}-x^4D^o_{1\frac{1}{2}}$	(0.56) 0.56, **1.77**	(0.58) 0.58, **1.75**
5	4155.888	1	III A	24055.49	$a^6D_{4\frac{1}{2}}-y^4D^o_{3\frac{1}{2}}$		
4	4155.24	1		24059.22	$a^4H_{4\frac{1}{2}}-y^2I^o_{5\frac{1}{2}}$		
6	4153.332	2	III A	24070.30	$a^6D_{0\frac{1}{2}}-y^4D^o_{0\frac{1}{2}}$	(1.66) 1.58	(1.67) 1.62b
6	4152.662	2	IV	24074.18		(0.24) 1.00	
4	4151.37	1		24081.65	$a^4D_{2\frac{1}{2}}-x^4D^o_{2\frac{1}{2}}$	(0) 1.09	
4	4150.70	2	IV	24085.53			
6	4148.873	2	III A	24096.17	$a^6D_{1\frac{1}{2}}-y^4D^o_{1\frac{1}{2}}$	(0.32, **1.00**) 0.83, **1.49**, 2.15	(0.33, **0.98**)‿0.84, **1.49**, 2.15
4	4147.77	2		24102.60	$z^6D^o_{3\frac{1}{2}}-f^6D_{3\frac{1}{2}}$		
4	4142.91	2	III	24130.86	$a^4D_{3\frac{1}{2}}-w^4F^o_{2\frac{1}{2}}$		
4	4142.66	2	III A	24132.32	$a^6D_{2\frac{1}{2}}-y^4D^o_{2\frac{1}{2}}$	(1.03) 0.13, 2.23	(1.07) **0.10**, 2.23
4	4141.85	2	III A	24137.04	$a^6D_{0\frac{1}{2}}-y^4D^o_{1\frac{1}{2}}$	(0?w_2 D) 0.59w_2C?	(0) **0.67**s
4	4141.37	2	IV	24139.84	$z^6D^o_{4\frac{1}{2}}-f^6F_{5\frac{1}{2}}$		
6	4139.262	4	IV	24152.12	$b^4P_{1\frac{1}{2}}-w^4P^o_{2\frac{1}{2}}$	(0) 1.44	(0) 1.40b
6	4138.12	2hd?		24158.79	$b^4P_{0\frac{1}{2}}-w^4P^o_{0\frac{1}{2}}$		
5	4137.987	[1]		24159.55	$a^3D_{2\frac{1}{2}}-w^4F^o_{1\frac{1}{2}}$		
4	4137.02	1		24165.22	$z^6D^o_{2\frac{1}{2}}-f^6F_{3\frac{1}{2}}$?		
6	4136.395	3	III A	24168.85	$a^6D_{3\frac{1}{2}}-y^4D^o_{3\frac{1}{2}}$		
6	4136.116	4	III	24170.48	$b^4P_{0\frac{1}{2}}-w^4P^o_{1\frac{1}{2}}$	(0.51) 1.08	(0.50) **1.10**, 2.10
4	4135.29	1		24175.32	$a^4D_{2\frac{1}{2}}-x^4D^o_{3\frac{1}{2}}$		
4	4134.50	60a	I	24179.93	$a^6D_{4\frac{1}{2}}-y^6D^o_{3\frac{1}{2}}$	(0w_1D) 1.42w_1 C	(0) 1.43b
6	4133.781	3	III A	24184.13	$a^4D_{1\frac{1}{2}}-x^4D^o_{2\frac{1}{2}}$	(0) 1.48	(0) 1.44s
5	4132.877	[1]		24189.42	$a^4D_{2\frac{1}{2}}-z^2P^o_{1\frac{1}{2}}$		
6	4132.019	60a	I	24194.45	$a^6D_{3\frac{1}{2}}-y^6D^o_{2\frac{1}{2}}$	(0?w_2D) 1.44w_2 C	(0) 1.46b
4	4131.20	1	III A	24199.25	$a^6D_{1\frac{1}{2}}-y^4D^o_{2\frac{1}{2}}$	(0.23, 0.72)?w_2 A	(**0.24**, 0.72) **0.62**, 1.10, 1.58, 2.06
4	4130.40	1		24203.94	$z^6D^o_{3\frac{1}{2}}-f^6F_{4\frac{1}{2}}$		
6	4130.143	2		24205.44	$a^4P_{2\frac{1}{2}}-v^4F^o_{1\frac{1}{2}}$		
6	4128.868	5	III	24212.91	$b^4P_{1\frac{1}{2}}-s^4D^o_{0\frac{1}{2}}$	(0.22) 0.20, **0.60**	(0.20) 0.20, **0.59**
6	4128.077	60a	I	24217.55	$a^6D_{2\frac{1}{2}}-y^6D^o_{1\frac{1}{2}}$	(0w_1 D) 1.50w_1 C	(0) 1.42b
6	4124.080	5	III	24241.02	$a^4P_{2\frac{1}{2}}-w^4D^o_{2\frac{1}{2}}$	(0.56)w_2 C	(0.55) 1.42b
4	4123.56	60a	I	24244.07	$a^6D_{1\frac{1}{2}}-y^6D^o_{0\frac{1}{2}}$	(0.70) 1.12, 2.57	(0.71) **1.11**, 2.53
6	4123.196	6	III	24246.22	$b^4F_{2\frac{1}{2}}-s^4D^o_{1\frac{1}{2}}$		
4	4122.35	1h		24251.18	$z^6D^o_{3\frac{1}{2}}-f^6D_{4\frac{1}{2}}$		
6	4120.977	1	IV	24259.27	$a^4G_{5\frac{1}{2}}-v^2H^o_{4\frac{1}{2}}$		
6	4120.545	8	III	24261.81	$a^4D_{1\frac{1}{2}}-w^4F^o_{1\frac{1}{2}}$	(0.32, **0.97**) 0.22, **0.84**, 1.49	(0.34, **1.01**) 0.18, **0.86**, 1.53
6	4119.463	8	III	24268.18	$a^4D_{2\frac{1}{2}}-w^4F^o_{2\frac{1}{2}}$	(0.49, **0.83**) **0.52**, 0.85, 1.20, 1.55, 1.86	(0.18, 0.52, **0.86**) 0.49, 0.83, **1.18**, 1.53, 1.87
4	4119.10	1	IV	24270.32	$b^4F_{1\frac{1}{2}}-s^4D^o_{1\frac{1}{2}}$		
6	4118.648	8	III	24272.98	$a^4D_{3\frac{1}{2}}-w^4F^o_{3\frac{1}{2}}$	(0.54) 1.33	(0.62) 1.29b
6	4118.187	8	III	24275.70	$\begin{cases}b^4F_{3\frac{1}{2}}-s^4D^o_{2\frac{1}{2}}\\(b^4P_{2\frac{1}{2}}-x^4S^o_{1\frac{1}{2}})\end{cases}$	}(0w_1) 1.14w_1	(0) 1.08b

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm⁻¹	Term combinations	Observed	Computed
6	4116.700	4a	I A	24284.48	$a^6D_{1\frac12}-y^6D^\circ_{1\frac12}$		
3	4116.60	0		24285.06	$a^6D_{0\frac12}-y^6D^\circ_{0\frac12}$		
6	4116.479	50a	I	24285.77	$\begin{cases}a^6D_{2\frac12}-y^6D^\circ_{2\frac12}\\(a^4F_{4\frac12}-z^6P^\circ_{3\frac12})\end{cases}$	}(?) 1.60	(0.04) 1.60b
6	4115.484	2	III	24291.65	$a^4D_{1\frac12}-z^2P^\circ_{1\frac12}$		
6	4115.179	60a	I	24293.45	$\begin{cases}a^6D_{3\frac12}-y^6D^\circ_{3\frac12}\\(b^4F_{4\frac12}-u^4G^\circ_{5\frac12})\end{cases}$	}(?w₂D) 1.54	(0.15) 1.56b
6	4114.525	3	IV	24297.31	$b^4F_{1\frac12}-u^4G_{2\frac12}$		
6	4113.517	12	III	24303.27	$a^4P_{2\frac12}-w^4D_{3\frac12}$	(0?w₂D) 1.05w₂A	(0) 1.10b
6	4112.334	5	III	24310.27	$a^4G_{4\frac12}-t^4F^\circ_{3\frac12}$	(1.11) 1.74 or (0) 1.09	(0) **1.10s**
6	4111.790	100Ra	I	24313.47	$\begin{cases}a^6D_{1\frac12}-y^6D^\circ_{1\frac12}\\(a^4G_{3\frac12}-t^4F^\circ_{2\frac12})\\(b^4F_{2\frac12}-s^4D^\circ_{2\frac12})\\(a^4D_{2\frac12}-x^4D^\circ_{3\frac12})\\(b^4F_{3\frac12}-u^4G^\circ_{4\frac12})\\(b^4F_{2\frac12}-u^4G^\circ_{3\frac12})\end{cases}$		
5	4110.761	1		24319.56	$\begin{cases}a^4G_{4\frac12}-v^2H^\circ_{5\frac12}\\a^4G_{3\frac12}-t^2G^\circ_{4\frac12}\end{cases}$		
6	4109.780	50a	I	24325.36	$\begin{cases}a^6D_{0\frac12}-y^6D^\circ_{1\frac12}\\(a^4D_{0\frac12}-w^4F^\circ_{1\frac12})\end{cases}$	}(0.71) **1.09**, 2.54	(0.72) **1.14**, 2.58
6	4109.043	2	IV	24329.73	$a^4P_{1\frac12}-w^4D_{0\frac12}$	(0?, 0.80) 0.88, 1.60?	(0.80) 0.90, **2.50**
6	4108.217	5	III	24334.62	$a^4G_{2\frac12}-t^4F^\circ_{1\frac12}$	(?w₁) 0.72	(0) 0.72b
6	4107.467	4	III	24339.06	$a^4P_{1\frac12}-w^4D_{1\frac12}$	(0.44, 1.35) 0.40, 1.27	(0.45, **1.35**) 0.35, **1.25**, 2.15
6	4105.166	60a	I	24352.70	$a^6D_{1\frac12}-y^6D_{2\frac12}$	(?) 1.48w²C	(0) 1.42b
6	4104.779	15	III	24355.00	$b^4F_{4\frac12}-s^4D_{3\frac12}$	(?w₂) 1.38w₂	
6	4104.392	12	III	24357.30	$a^4G_{5\frac12}-t^4F^\circ_{4\frac12}$	(0) 1.36	(0) 1.36b
4	4103.41	1	IV	24363.15	$b^4P_{2\frac12}-s^4D^\circ_{1\frac12}$		
6	4102.163	20	II	24370.53	$a^4D_{1\frac12}-w^4F^\circ_{2\frac12}$	(0) 0.88	(0) 0.88b
5	4101.535	0		24374.24	$a^4G_{2\frac12}-t^4F^\circ_{3\frac12}?$		
5	4101.000	0		24377.44	$b^4F_{2\frac12}-r^4F^\circ_{4\frac12}$	(0) 0.94	
6	4099.796	60a	I	24384.60	$a^6D_{2\frac12}-y^6D_{3\frac12}$	(0) 1.44	(0) **1.50s**
5	4098.850	0h		24390.22	$\begin{cases}b^4D_{3\frac12}-q^4F^\circ_{3\frac12}\\a^4H_{5\frac12}-u^4F^\circ_{4\frac12}\\a^4H_{3\frac12}-u^4F^\circ_{2\frac12}?\end{cases}$		
6	4096.935	3	IV	24401.63	$b^4F_{3\frac12}-s^4D^\circ_{3\frac12}$	(0.61)?w₂C	(0.47) 1.30b
4	4096.50	1		24404.23	$a^4F_{3\frac12}-z^6P^\circ_{2\frac12}$		
6	4095.485	25	II	24410.27	$a^4D_{2\frac12}-w^4F^\circ_{3\frac12}$	(0) 1.06	(0) 0.97b
6	4094.285	3	IV	24417.42	$\begin{cases}a^4G_{5\frac12}-v^2H^\circ_{5\frac12}\\a^4G_{4\frac12}-t^4F^\circ_{4\frac12}\end{cases}$	}(?2p) 1.19w₁ C	$\begin{cases}(0.98)\ 1.16b\\(0.33)\ 1.18b\end{cases}$
4	4093.50	5	III	24422.11	$a^4P_{0\frac12}-w^4D^\circ_{0\frac12}$	(1.27) 1.35	(1.25) 1.34b
6	4092.694	50a	I	24426.91	$a^6D_{3\frac12}-y^6D^\circ_{4\frac12}$	(0) 1.40	(0) **1.40s**
6	4092.417	8	III	24428.58	$\begin{cases}a^4P_{1\frac12}-w^4D^\circ_{2\frac12}\\b^4P_{2\frac12}-s^4D^\circ_{2\frac12}\end{cases}$	(0.18, 0.55) **0.76**, 1.15, 1.50	(0.20, 0.60) **0.70**, 1.10, 1.50, 1.90
6	4091.948	3	III	24431.37	$a^4P_{0\frac12}-w^4D^\circ_{1\frac12}$	(0.91)¯0	(0.90) −0.10, 1.70
6	4090.587	25	I	24439.50	$\begin{cases}a^4D_{3\frac12}-w^4F^\circ_{4\frac12}\\(a^4F_{4\frac12}-y^6F^\circ_{3\frac12})\end{cases}$	}(0) 1.13	(0)¯1.14b
4	4084.75	1		24474.41	$a^4P_{0\frac12}-1^\circ$		
4	4084.24	1		24477.47	$\begin{cases}a^4G_{4\frac12}-v^2H^\circ_{5\frac12}?\\a^4F_{2\frac12}-u^4P^\circ_{1\frac12}?\end{cases}$		
6	4082.930	4	III	24485.34	$a^4P_{0\frac12}-v^4F^\circ_{1\frac12}$	(0.85) **0**, 1.73	(0.87) **−0.01**, 1.73
5	4078.707	[−1]		24510.68	$a^4P_{2\frac12}-z^6P^\circ_{1\frac12}$		
5	4077.971	[−1]		24515.11	$a^4P_{3\frac12}-z^6P^\circ_{3\frac12}$		
5	4074.191	[0]		24537.85	$a^4G_{3\frac12}-t^4G^\circ_{2\frac12}$		
4	4072.16	3	III	24550.06	$a^4P_{2\frac12}-v^4F^\circ_{3\frac12}$	(0.19, 0.52, 0.86) **0.36**, —, —	(0.18, 0.52, 0.86) **0.35**, 0.69, 1.03, 1.38, 1.73, 2.07
6	4071.537	8	III	24553.85	$b^4P_{2\frac12}-s^4D^\circ_{3\frac12}$	(?w₁) 1.06w₂	(0) 1.17b
4	4070.78	4	II	24558.38	$a^4F_{4\frac12}-y^6F^\circ_{4\frac12}$	(0.38) 1.32w₁	(0.48) 1.35b
4	4068.00	4	II A	24575.22	$a^4F_{3\frac12}-y^6F^\circ_{2\frac12}$	(0) 1.06	(0) **1.12s**
6	4067.742	3	IV	24576.75	$\begin{cases}a^4G_{3\frac12}-t^4G^\circ_{3\frac12}\\b^4D_{1\frac12}-x^4S^\circ_{1\frac12}\end{cases}$	}(0.31) 1.18, 1.76	$\begin{cases}(0)\ 1.33b\\(0.16,\ \mathbf{0.48})\ 1.52,\ \mathbf{1.84},\\2.16\end{cases}$
5	4065.421	−1d?		24590.78	$a^4F_{2\frac12}-z^6P^\circ_{2\frac12}$		
6	4063.932	10	IV	24599.79	$a^4G_{2\frac12}-t^4G^\circ_{2\frac12}$	(0) 0.56	(0.02) 0.58b
4	4062.72	1		24607.14	$b^4P_{1\frac12}-s^4D^\circ_{0\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
4	4061. 61	1		24613. 87	$b^4P_{1\frac{1}{2}}-v^2D_{1\frac{1}{2}}$	(1.27) 0.45, 1.29	(0.38, **1.14**) 0.54, **1.30**
4	4060. 85	1		24618. 47	$a^4G_{5\frac{1}{2}}-t^4G_{4\frac{1}{2}}^z$	(0) 1.38	(0.13) 1.42b
6	4057. 822	5		24636. 83	$b^4F_{2\frac{1}{2}}-u^2D_{2\frac{1}{2}}^z$		
6	4057. 069	10	III	24641. 41	$a^4G_{3\frac{1}{2}}-t^4G_{3\frac{1}{2}}^z$	(0) 0.98	(0.21) 1.00b
5	4055. 963	[0hp?]		24648. 12	$a^4F_{1\frac{1}{2}}-z^6P_{1\frac{1}{2}}^z$		
4	4053. 66	1		24662. 13	$a^4P_{2\frac{1}{2}}-y^2D_{2\frac{1}{2}}^z$		
6	4053. 267	3	IV	24664. 51	$b^4P_{1\frac{1}{2}}-s^4D_{1\frac{1}{2}}^z$	(0.86) 0.83, 1.41	(0.29, **0.87**) 0.81, **1.39**, 1.97
4	4052. 47	1	III A	24669. 37	$a^4F_{3\frac{1}{2}}-y^6F_{3\frac{1}{2}}^z$	(0.53)?w_2 C	(0.50) 1.28b
6	b4051. 356	12	III	24676. 15	$a^4G_{5\frac{1}{2}}-t^4G_{5\frac{1}{2}}^z$	(0) 1.25	(0.31) 1.24b
6	4050. 961	10	III	24678. 55	$a^4G_{4\frac{1}{2}}-t^4G_{4\frac{1}{2}}^z$	(0) 1.15	(0.22) 1.17b
6	4048. 619	4	II A	24692. 83	$a^4F_{2\frac{1}{2}}-y^6F_{1\frac{1}{2}}^z$	(0) 0.97	(0) **0.99**s
5	4047. 380	1h		24700. 39	$a^4F_{4\frac{1}{2}}-y^6F_{5\frac{1}{2}}^z$		
4	4046. 87	1		24703. 50	$a^4G_{2\frac{1}{2}}-t^4G_{3\frac{1}{2}}^z$		
6	4042. 632	5	III	24729. 40	$b^4P_{1\frac{1}{2}}-s^4D_{2\frac{1}{2}}^z$	(**0.19**,0.56) **0.77**,1.17, 1.56	(**0.17**,0.52) **0.81**, 1.16, 1.51, 1.85
4	4041. 60	3	V	24735. 70			
4	4040. 31	2	IV	24743. 60	$a^4G_{3\frac{1}{2}}-t^4G_{4\frac{1}{2}}^z$		
5	4037. 358	[−1h]		24761. 70	$a^4F_{2\frac{1}{2}}-y^6F_{3\frac{1}{2}}^z$?		
5	4036. 159	0		24769. 06	$b^4P_{0\frac{1}{2}}-x^4S_{1\frac{1}{2}}^z$		
5	4035. 896	[3]		24770. 67	$a^4F_{1\frac{1}{2}}-z^4P_{0\frac{1}{2}}^z$		
4	4034. 71	1	III A	24777. 95	$a^4F_{2\frac{1}{2}}-z^4P_{1\frac{1}{2}}^z$		
5	4033. 062	1		24788. 08	$a^4F_{3\frac{1}{2}}-y^0F_{3\frac{1}{2}}^z$		
4	4032. 85	2	III A	24789. 35	$a^4F_{1\frac{1}{2}}-y^6F_{0\frac{1}{2}}^z$	(?) 0.90	(0) **0.89**s
5	b4032. 481	1	IV	24791. 65	$a^4P_{1\frac{1}{2}}-y^2D_{1\frac{1}{2}}^z$	(0) 0.86	(1.36) 1.21b
6	b4031. 831	5	IV	24795. 64	$a^2F_{2\frac{1}{2}}-t^2F_{3\frac{1}{2}}^z$	(0) 1.09	(0.30) 1.09b
6	4031. 220	2	IV	24799. 41	$b^4P_{0\frac{1}{2}}-s^4D_{0\frac{1}{2}}^z$	(1.28) 1.31	(1.30) 1.30b
4	4030. 12	1		24806. 14	$b^4P_{0\frac{1}{2}}-v^2D_{1\frac{1}{2}}^z$		
4	4029. 90	2	III A	24807. 49	$a^4F_{3\frac{1}{2}}-z^4P_{2\frac{1}{2}}^z$		
4	4028. 08	1		24818. 76	$b^4D_{0\frac{1}{2}}-p^4F_{1\frac{1}{2}}^z$		
5	4026. 200	[−1]		24830. 32	$a^4F_{1\frac{1}{2}}-y^6F_{1\frac{1}{2}}^z$		
4	4025. 30	1		24835. 89	$b^4D_{1\frac{1}{2}}-p^4F_{1\frac{1}{2}}^z$	(0.73) 0.42, 0.93, **1.48**	(0.30, **0.90**) 0.30, **0.90**, 1.50
4	4024. 40	1		24841. 44	$b^4D_{1\frac{1}{2}}-t^2P_{1\frac{1}{2}}^z$		
6	4023. 174	4	IV	24849. 00	$\begin{cases} b^4P_{1\frac{1}{2}}-v^2D_{2\frac{1}{2}}^z \\ a^2F_{2\frac{1}{2}}-t^2F_{2\frac{1}{2}}^z \end{cases}$		
5	4023. 066	[−1?]		24849. 67	$a^4F_{1\frac{1}{2}}-y^2D_{2\frac{1}{2}}^z$		
5	4022. 111	[0]		24855. 56	$a^4F_{2\frac{1}{2}}-y^6F_{3\frac{1}{2}}^z$		
4	4021. 90	3	IV	24856. 88	$b^4P_{1\frac{1}{2}}-s^4D_{1\frac{1}{2}}^z$	(0.73) **0.39**, 1.87	(0. 75) **0.35**, 1.85
4	4021. 44	1		24859. 73	$b^4D_{2\frac{1}{2}}-p^4F_{1\frac{1}{2}}^z$		
4	4020. 54	1		24865. 30	$\begin{cases} b^4D_{2\frac{1}{2}}-t^2F_{1\frac{1}{2}}^z \\ b^4P_{2\frac{1}{2}}-x^2P_{1\frac{1}{2}}^z? \end{cases}$		
4	4019. 45	1		24872. 03	$b^4D_{0\frac{1}{2}}-o^4D_{0\frac{1}{2}}^z$		
6	4016. 699	1		24889. 05	$b^4D_{1\frac{1}{2}}-o^4D_{0\frac{1}{2}}^z$		
4	4015. 66	1		24895. 50	$a^4G_{2\frac{1}{2}}-u^2F_{2\frac{1}{2}}^z$		
4	4015. 35	1		24897. 42	$a^2H_{4\frac{1}{2}}-u^4G_{3\frac{1}{2}}^z$		
4	4015. 06	1	IV	24899. 22	$b^4D_{2\frac{1}{2}}-p^4F_{2\frac{1}{2}}^z$		
5	4012. 510	[1]		24915. 04	$a^4F_{1\frac{1}{2}}-z^4P_{1\frac{1}{2}}^z$		
6	4011. 315	3	III	24922. 47	$a^4P_{2\frac{1}{2}}-v^4D_{3\frac{1}{2}}^z$	(0?w_2 D) 1.03w_2 A	(0) 1.10b
4	a4009. 77	2	III	24932. 06	$b^4D_{0\frac{1}{2}}-o^4D_{1\frac{1}{2}}^z$	(0.49) 0.59, 1.55	(0.43) 0.54, **1.39**
4	4007. 01	1		24949. 23	$\begin{cases} b^4D_{1\frac{1}{2}}-o^4D_{1\frac{1}{2}}^z \\ a^4D_{1\frac{1}{2}}-y^2F_{2\frac{1}{2}}^z? \end{cases}$		
6	b4003. 544	2	IV	24970. 84	$b^4D_{2\frac{1}{2}}-p^4F_{3\frac{1}{2}}^z$	(0w_1) 1.06	(0) 0.73b
4	4003. 18	tr	IV	24973. 09	$b^4D_{2\frac{1}{2}}-o^4D_{1\frac{1}{2}}^z$		
4	4001. 66	1	IV	24982. 57	$a^4F_{1\frac{1}{2}}-v^4D_{2\frac{1}{2}}^z$		
6	b4000. 081	1	III	24992. 45	$\begin{cases} b^4D_{3\frac{1}{2}}-p^4F_{3\frac{1}{2}}^z \\ a^4P_{0\frac{1}{2}}-v^4D_{1\frac{1}{2}}^z \end{cases}$	}(0.50) 1.27?w_2	$\begin{cases} (1.27) 1.24b \\ (0.78) \textbf{0.27}, 1.82 \end{cases}$
5	3999. 939	0		24993. 34	$a^4F_{2\frac{1}{2}}-z^4P_{2\frac{1}{2}}^z$		
6	3998. 731	15	I	25000. 89	$\begin{cases} a^4H_{6\frac{1}{2}}-u^4G_{5\frac{1}{2}}^z \\ (b^2H_{5\frac{1}{2}}-l^2H_{4\frac{1}{2}}^z) \end{cases}$	(0) 1.09	(0) 1.04b
6	3994. 887	1	III	25024. 95	$b^4D_{1\frac{1}{2}}-o^4D_{2\frac{1}{2}}^z$		
6	3992. 801	12	I	25038. 01	$\begin{cases} a^4H_{5\frac{1}{2}}-u^4G_{4\frac{1}{2}}^z \\ (b^2H_{4\frac{1}{2}}-l^2H_{5\frac{1}{2}}^z) \end{cases}$	}(0) 1.02	(0) 0.90b
5	3991. 083	1	III	25048. 80	$b^4D_{2\frac{1}{2}}-o^4D_{2\frac{1}{2}}^z$		
6	3990. 574	20	I	25051. 99	$\begin{cases} a^4H_{4\frac{1}{2}}-u^4G_{3\frac{1}{2}}^z \\ a^4H_{3\frac{1}{2}}-u^4G_{2\frac{1}{2}}^z \end{cases}$	}(0) 0.88	$\begin{cases} (0) 0.85b \\ (0) 0.80b \end{cases}$

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm⁻¹	Term combinations	Observed	Computed
6	3988.834	5	II	25062.92	$a^4H_{5\frac{1}{2}}-u^4G_{5\frac{1}{2}}^o$	(0.66) 1.13w_2 C	(0.58) 1.16b
4	3988.10	1		25067.55	$a^2F_{3\frac{1}{2}}-t^2H_{4\frac{1}{2}}^o$		
5	3987.634	1		25070.46	$b^4D_{3\frac{1}{2}}-o^4D_{2\frac{1}{2}}^o$		
6	3984.595	6	II	25089.58	$a\ ^4H_{4\frac{1}{2}}-u^4G_{4\frac{1}{2}}^o$	(0.81w_2 B)? w_2 D	(0.93) 1.07b
6	3984.338	6	II	25091.19	$a^4H_{3\frac{1}{2}}-u^4G_{3\frac{1}{2}}^o$		
6	3980.526	3	III	25115.22		(0) 0.89	
6	3979.427	4	III	25122.16	$b^2H_{4\frac{1}{2}}-t^2H_{4\frac{1}{2}}^o$	(0w_1) 0.91	(0.04) 0.90b
6	3979.147	4	III	25123.93	$b^4D_{3\frac{1}{2}}-p^4G_{4\frac{1}{2}}^o$	(0) 1.13	(0) 1.10b
4	3978.34	1		25129.04	$a^4H_{3\frac{1}{2}}-u^4F_{4\frac{1}{2}}^o$		
6	^{b}3975.354	1	III	25147.90	$b^4D_{2\frac{1}{2}}-o^4D_{3\frac{1}{2}}^o$	(0) 1.42	(0) 1.70b
6	3973.363	2	III	25160.51	$b^2H_{4\frac{1}{2}}-t^2H_{3\frac{1}{2}}^o$		
5	3971.936	2	III	25169.55	$b^4D_{3\frac{1}{2}}-o^4D_{3\frac{1}{2}}^o$	(0) 1.36	(0) 1.45b
4	3964.50	2	III	25216.74	$z^6G_{6\frac{1}{2}}^o-e^6G_{6\frac{1}{2}}$		
6	3963.634	4	II	25222.26		(0) 1.01	
6	3950.230	4	III	25307.85		(0) 0.91	
4	3945.88	1	III	25335.76	$a^2D_{2\frac{1}{2}}-v^2D_{1\frac{1}{2}}^o$		
4	3945.17	2	III	25340.32	$z^6G_{5\frac{1}{2}}^o-e^6G_{5\frac{1}{2}}$		
4	3944.51	1	III	25344.56			
6	3943.666	12	I	25349.97	$a^4D_{3\frac{1}{2}}-w^4D_{2\frac{1}{2}}^o$	(0) 1.44	(o) 1.50b
4	3942.008	6	II	25360.63	$a^2G_{4\frac{1}{2}}-x^2G_{3\frac{1}{2}}^o$	(0?w_2) 1.70w_2 B	(0) 1.62b
4	3941.255	3	II	25365.48	$a^4H_{4\frac{1}{2}}-w^4H_{3\frac{1}{2}}^o$		
6	3940.596	2	II	25369.72	$a^2D_{1\frac{1}{2}}-v^2D_{1\frac{1}{2}}^o$	(0) 0.85	(0.07) 0.94b
6	3939.337	4	II	25377.82	$a^4H_{5\frac{1}{2}}-w^4H_{4\frac{1}{2}}^o$	(0?w_2 D) 1.59w_2 B	(0) 1.51b
4	3938.89	2h	I	25380.71	$z^6F_{4\frac{1}{2}}^o-e^6H_{5\frac{1}{2}}$		
6	3938.203	3	II	25385.12	$a^2F_{3\frac{1}{2}}-s^2G_{3\frac{1}{2}}^o$	(0) 1.00	(0) 1.01b
6	3937.528	3	II	25389.48	$a^4G_{6\frac{1}{2}}-w^4H_{5\frac{1}{2}}^o$	(0w_1 D) 1.50	(0) 1.46b
6	3936.286	5	I	25397.50	$a^4D_{2\frac{1}{2}}-w^4D_{1\frac{1}{2}}^o$	(0.26, 0.77) 0.48, 1.09, 1.60, 2.09	(0.28, 0.83) 0.52, 1.08, 1.63, 3.18
6	3935.140	6	II	25404.89	$a^4H_{3\frac{1}{2}}-w^4H_{3\frac{1}{2}}^o$	(0) 0.64	(0) 0.65b
6	3934.018	20	I	25412.13	$a^4D_{3\frac{1}{2}}-w^4D_{3\frac{1}{2}}^o$	(0) 1.37	(0.12) 1.37b
6	3931.345	5	II	25429.43	$a^4H_{4\frac{1}{2}}-w^4H_{4\frac{1}{2}}^o$	(0) 0.93	(0.07) 0.93b
6	3930.028	10	I	25437.93	$a^2G_{4\frac{1}{2}}-x^2G_{4\frac{1}{2}}^o$	(0) 1.04	(0.30) 1.09b
5	3929.491	$-1n$		25441.41	$z^6G_{5\frac{1}{2}}^o-f^6F_{3\frac{1}{2}}$		
7	3927.932	3		25451.51	$a^4H_{5\frac{1}{2}}-w^4H_{5\frac{1}{2}}^o$	(0w_1) 1.08w_1	(0.09) 1.09b
4	3926.67	1	III	25459.67	$z^6F_{5\frac{1}{2}}^o-f^6G_{5\frac{1}{2}}$	(0) 1.44	(0.36) 1.38b
6	3925.244	10	I	25468.94	$\begin{cases}a^2F_{2\frac{1}{2}}-s^2G_{3\frac{1}{2}}^o\\a^4F_{4\frac{1}{2}}-z^2G_{3\frac{1}{2}}^o\\a^4H_{3\frac{1}{2}}-w^4H_{4\frac{1}{2}}^o\end{cases}$	(0) 0.93	(0) 0.97b (0) 1.91b
6	3924.661	10	II	25472.73	$a^4H_{6\frac{1}{2}}-w^4H_{6\frac{1}{2}}^o$	(0) 1.18	(0.21) 1.20b
6	3922.437	12	I	25487.23	$a^4D_{2\frac{1}{2}}-w^4D_{2\frac{1}{2}}^o$	(0) 1.33	(0.11) 1.32b
6	3921.914	6	I	25490.57	$a^4D_{1\frac{1}{2}}-w^4D_{0\frac{1}{2}}^o$	(0.53) 0.64, 1.69	(0.56) 0.64, 1.75
5	3921.749	0		25491.63	$z^6F_{4\frac{1}{2}}^o-f^6G_{4\frac{1}{2}}$		
6	3920.491	5	I	25499.82	$a^4D_{1\frac{1}{2}}-w^4D_{1\frac{1}{2}}^o$	(0.53) 0.60, 0.98, 1.40	(0.20, 0.59,) 0.60, 1.00, 1.39
6	3919.990	2	III	25503.08	$a^4H_{4\frac{1}{2}}-w^4H_{5\frac{1}{2}}^o$		
4	3917.14	2	II	25521.66			
4	3915.36	2	II	25533.26			
6	3915.125	2	II	25534.77	$a^4H_{5\frac{1}{2}}-w^4H_{6\frac{1}{2}}^o$	(0) 1.60	(0) 1.55b
6	^{d}3914.329	5	I	25539.95			
4	3913.86	1	II A	25543.04	$a^4D_{1\frac{1}{2}}-1^o$		
4	3913.56	2	III	25545.00			
6	3912.887	4	II A	25549.38	$a^4D_{2\frac{1}{2}}-v^4F_{1\frac{1}{2}}^o$	(0?w_2 D) 1.39 w_3 C	(0) 1.35b
6	3912.209	10	I	25553.80	$\begin{cases}a^4D_{1\frac{1}{2}}-v^4F_{1\frac{1}{2}}^o\\a^4D_{0\frac{1}{2}}-w^4D_{0\frac{1}{2}}^o\end{cases}$	(0, 0.46) 0.70, 1.04, 1.34	(0.17, 0.50) 0.69, 1.03, 1.36 (0.04) 0.04b
4	3911.71	1		25557.08			
6	3910.796	5	I	25563.04	$a^4D_{0\frac{1}{2}}-w\ D_{1\frac{1}{2}}^o$	(0.39) 0.41, 1.21	(0.40) 0.40, 1.20
6	3909.892	20	I	25568.95	$a^4F_{4\frac{1}{2}}-y^4F_{3\frac{1}{2}}^o$		
6	3909.677	4	III	25570.35	$a^2G_{3\frac{1}{2}}-x^2G_{3\frac{1}{2}}^o$ $a^2D_{2\frac{1}{2}}-v^2D_{2\frac{1}{2}}^o$	(0) 1.12	(0.07) 1.16b
4	3909.40	tr	IV	25572.18			
6	3908.311	4h	III	25579.27		(0) 1.20 unsymmetrical.	
4	3907.17	2h	II	25586.77		(0) 1.40	
7	3906.746	6	I	25589.53	$\begin{cases}a^4D_{2\frac{1}{2}}-v^4F_{2\frac{1}{2}}^o\\a^4D_{1\frac{1}{2}}-w^4D_{2\frac{1}{2}}^o\end{cases}$	(0) 1.45	(0.07 1.34b (0) 1.38b

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7) Zeeman effect	(8)
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm⁻¹	Term combinations	Observed	Computed
6	b3904.475	3	III	25604.41	$a^2D_{1\frac12}-v^2D^2_{2\frac12}$	(0.32) 1.49	(0) **1.40**s
5	3904.402	2	III	25604.89	$\begin{cases}z^6G^3_{3\frac12}-e^6G_{4\frac12}\\a^2D_{2\frac12}-v^2F^2_{2\frac12}\end{cases}$		
6	3904.216	1	II A	25606.11	$a^4D_{6\frac12}-1°$	(0?w_2) 0.98	
6	3902.550	3	I	25617.04	$a^4D_{0\frac12}-v^4F^1_{1\frac12}$	(0.45) 1.28w_2	(0.43) 0.43, **1.29**
6	3902.260	50r	I	25618.94	$a^4F_{4\frac12}-y^4F^4_{4\frac12}$		
6	3901.681	2	II	25622.75	$a^2F_{3\frac12}-p^4D^3_{3\frac12}$		
6	3901.155	6	II	25626.20	$z^6F^4_{4\frac12}-f^6G_{5\frac12}$	(0w_1) 1.10w_2	(0) **1.15**s
6	3900.168	6	II	25632.69	$z^6F^3_{3\frac12}-f^6G_{4\frac12}$	(0?w_1) 1.00w_2	(0) **1.19**s
6	e3899.137	4	V E	25639.46	$(a^2D_{1\frac12}-v^2F^2_{2\frac12})$		
6	3898.271	5	II	25645.16			
5	3898.143	[4?]		25646.00	$a^2G_{3\frac12}-x^2G^3_{3\frac12}$		
6	3898.007	6	II	25646.88	$z^6F^5_{3\frac12}-f^6G_{6\frac12}$	(0?w_2) 1.17w_1	(0) 1.16b
6	3897.072	6	II	25653.06	$z^6F^5_{3\frac12}-f^6G^3_{5\frac12}$	(0) 1.02	(0) 0.92b
4	3896.81	2	III	25654.77	$a^2H_{5\frac12}-w^2H^2_{5\frac12}$		
6	3896.624	2	III	25656.00			
6	d3896.147	6	II	25659.15	$a^4D_{3\frac12}-v^4F^3_{3\frac12}$	(0) 0.27?	(0.53) 1.30b
4	3895.71	1		25662.01	$y^6F^3_{3\frac12}-h^6G_{2\frac12}?$		
6	b3894.028	4	II	25673.10	$z^6F^1_{1\frac12}-f^6G_{2\frac12}$	(0) 1.10	(0) 0.51b
4	3893.73	1	III	25675.00			
6	3892.864	25a	I	25680.77	$a^4F_{3\frac12}-y^4F^2_{2\frac12}$	(?w_3D) 1.59w_2 B	(0) 1.48b
6	3892.478	2	II	25683.33			
5	3891.227	2	II A	25691.58	$a^4D_{1\frac12}-v^4F^2_{2\frac12}$		
6	3891.115	4	II	25692.32			
6	3890.188	25a	I	25698.44	$\begin{cases}a^4F_{3\frac12}-z^2G^3_{3\frac12}\\z^6F^0_{0\frac12}-f^6G_{1\frac12}\end{cases}$	}(0.86w_1 B) 1.04w_3 C	(0.82) 1.06b
6	3889.857	0		25700.62	$b^4F_{2\frac12}-t^4F^1_{1\frac12}$		
6	3889.236	1	III	25704.73	$b^4F_{3\frac12}-t^4F^1_{1\frac12}$		
6	b3888.331	3	III	25710.72	$a^2D_{1\frac12}-u^2D^1_{1\frac12}$	(0.33) 1.39w_2	(0.38) 0.78b
6	3888.081	2	III	25712.37	$b^4F_{3\frac12}-t^2G^3_{3\frac12}$		
4	3887.56	1		25715.79	$a^2H_{5\frac12}-w^2H^4_{4\frac12}$		
5	3886.687	−1		25721.59	$b^4F_{4\frac12}-t^4F^5_{3\frac12}$		
6	3886.584	6	I	25722.27	$a^2G_{4\frac12}-w^4G^3_{3\frac12}$	(0?w_1) 1.25w_1	(0) 1.25b
5	3886.200	[2]		25724.81	$b^4F_{1\frac12}-t^4F^1_{1\frac12}$		
6	3885.770	2	III	25727.66	$a^2G_{4\frac12}-w^2G^4_{4\frac12}$		
4	3885.55	1	IV	25729.10			
4	3885.33	1		25730.55	$b^4F_{4\frac12}-v^2H^1_{1\frac12}$		
6	3884.462	4	II	25736.32	$a^2G_{3\frac12}-w^2G^3_{3\frac12}$		
6	b3883.887	3	II	25740.14	$b^4F_{2\frac12}-t^4F^2_{3\frac12}$	(0) 0.97	(0.35) 0.97b
6	3880.265	1		25764.16	$b^4F_{1\frac12}-t^4F^2_{3\frac12}$		
6	3879.667	3?	III?	25768.13	$b^4F_{3\frac12}-t^4F^3_{3\frac12}$	(0) 1.17	(0.21) 1.18b
6	3879.225	2?	III?	25771.07	$a^4D_{3\frac12}-y^2D^3_{2\frac12}$		
4	3878.31	1		25777.18	$\begin{cases}a^2D_{2\frac12}-u^2D^2_{2\frac12}\\b^4F_{3\frac12}-v^2H^4_{4\frac12}\end{cases}$		
6	3876.740	1	III	25787.59			
6	3876.084	20	I	25791.95	$a^4F_{4\frac12}-z^2G^4_{4\frac12}$	(0.61) 1.12w_3 C	(0.56) 1.20b
6	3875.909	20	I	25793.12	$a^4F_{2\frac12}-y^4F^1_{1\frac12}$	(?) —, —, 1.56	(0) 1.45b
6	3875.425	3	I	25796.34	$a^4D_{2\frac12}-v^4F^3_{3\frac12}$		
6	3875.081	35	I	25798.63	$a^4F_{3\frac12}-y^4F^3_{3\frac12}$	(0.26) 1.17w_2 B	(0.15) 1.18b
6	3874.350	1	III	25803.49	$b^4F_{2\frac12}-t^4F^5_{3\frac12}$	(0?w_2 D) 1.29w_2 C	(0) 1.28b
6	3873.640	4	II	25808.22	$a^2G_{3\frac12}-x^2D^2_{2\frac12}$	(?w_3 D) 0.47w_3 A	(0) 0.57b
4	3873.21	1		25811.11	$a^2D_{1\frac12}-u^2D^2_{2\frac12}$		
7	3872.747	4h	II	25814.18	$\begin{cases}a^4D_{3\frac12}-v^4F^4_{4\frac12}\\a^2D_{1\frac12}-x^2P^0_{0\frac12}\end{cases}$		
6	3871.083	8	I	25825.27	$a^2G_{4\frac12}-x^2F^2_{3\frac12}$	(0) 1.17	(0) 1.27b
6	3870.581	2	II	25828.62	$b^4F_{4\frac12}-t^4F^1_{3\frac12}$	(0.30) 1.27	(0.30) 1.27b
6	3867.610	15	II	25848.47	$a^4F_{3\frac12}-v^4F^4_{4\frac12}$	(0) 1.28	(0) 1.28b
4	3867.33	2	II A	25850.35	$a^4D_{2\frac12}-y^2D^1_{1\frac12}$		
6	3864.862	35	I	25866.85	$a^4F_{2\frac12}-y^4F^2_{3\frac12}$	(0) 0.98	(0.07) 1.00b
4	3864.55	1	IV	25870.14			
5	3864.300	[3]		25870.60	$a^2G_{3\frac12}-w^4G^2_{2\frac12}$		
6	3864.110	3	I	25871.87			
6	d3863.864	6	II	25873.52	$a^2G_{3\frac12}-x^2F^2_{2\frac12}$	(0) 0.86	(0) 0.87b
5	3863.629	1		25875.09	$b^4F_{2\frac12}-t^4F^4_{4\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7) Observed	(8) Computed
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Zeeman effect Observed	Zeeman effect Computed
4	3863. 40	1		25876. 64	$a^2H_{4\frac12}-w^2H^*_{3\frac12}$		
6	3862. 218	12	I	25884. 55	$a^4F_{2\frac12}-z^2G^3_{3\frac12}$	(0) 0.82	(0) 0.81b
6	3861. 593	6h	II	25888. 73	$\{a^2D_{2\frac12}-x^2P^1_{1\frac12*}$ $\{b^4F_{4\frac12}-v^2H^5_{3\frac12}?$		
6	3859. 336	6	II	25903. 87	$a^4D_{3\frac12}-v^4D^2_{2\frac12}$	(0) 1.52	(0) 1.53b
6	3858. 680	5	II A	25908. 28	$a^4D_{2\frac12}-y_2D^2_{2\frac12}$	(0.38) 1.23	(0.37) 1.26b
4	3857. 87	1h		25913. 72	$z^6G^2_{2\frac12}-f^0F_{3\frac12}$		
4	3857. 70	1		25914. 86	$y^6F^4_{4\frac12}-h^6G_{5\frac12}$		
6	3855. 855	60ra	I	25927. 26	$a^4F_{4\frac12}-y^4D^4_{3\frac12}$		
6	3855. 370	30a	I	25930. 52	$\{a^4F_{1\frac12}-y^4F^1_{1\frac12}$ $\{a^2G_{3\frac12}-w^4G^3_{3\frac12}$	(0?w_1) 0.38	(0.03) 0.41b
5	3854. 860	1h		25933. 95	$z^6G^3_{3\frac12}-f^0F_{4\frac12}?$		
4	3854. 58	1		25935. 83	$a^2G_{3\frac12}-w^2G^4_{4\frac12}$		
4	3854. 08	1	III	25939. 19			
6	3852. 099	2	II A	25952. 55	$a^4D_{1\frac12}-y^2D^1_{1\frac12}$	(0.65) 0.51, **0.95** 1.40	(0.24, **0.70**) 0.49, **0.96** 1.43
6	3851. 173	5	I	25958. 78	$a^4D_{2\frac12}-v^4D^1_{1\frac12}$	(?w_1) 1.67w_1	(0) 1.58b
5	3850. 158	[3p?]		25965. 62	$\{b^2G_{3\frac12}-s^2H^3_{3\frac12}$ $\{b^4F_{2\frac12}-t^4G^2_{2\frac12}$		
6	3849. 324	6	I	25971. 25			
6	^{d}3847. 331	20	I	25984. 69	$a^4F_{2\frac12}-y^4F^3_{3\frac12}$	(0?w_2) 0.91, 1.48	(**0.08**, 0.22, 0.36) 0.79, 0.93, 1.08, 1.23, 1.37, **1.51**
4	3846. 56	1		25989. 89	$b^4F_{1\frac12}-t^4G^2_{2\frac12}$		
4	3845. 96	3	II	25993. 95			
6	3844. 888	4	II	26001. 22	$a^4D_{1\frac12}-v^4D^0_{0\frac12}$	(0.58) 0.57, 1.72	(0.60) 0.60, **1.79**
6	3844. 442	20	I	26004. 23	$a^4F_{1\frac12}-y^4F^2_{2\frac12}$	(**0.39**, 0.91) 0, 0.66, 1.27, **1.93**	(**0.29**, 0.87) 0.11, 0.69, 1.27, **1.85**
6	3843. 502	4	II	26010. 59	$a^4D_{1\frac12}-y^2D^2_{2\frac12}$	(0) 1.15	(0) 1.17b
7	3843. 001	2	II	26013. 98			
4	3842. 70	3	II	26016. 02	$a^4D_{0\frac12}-y^2D^1_{1\frac12}$	(0.38) 0.38, 1.11	(0.36) 0.36, **1.09**
6	3841. 892	5	I A	26021. 50	$a^4F_{3\frac12}-z^2G^4_{3\frac12}$	(0) 1.03	(0) 1.01b
6	3840. 757	60r	I	26029. 19	$a^4F_{3\frac12}-y^4D^4_{3\frac12}$	(0w_1 D) 1.13w_1 C	(0) 1.02b
	^{c}3840. 443	80r Fe	II	26031. 57	$a^4D_{3\frac12}-v^4D^3_{3\frac12}$		
4	3840. 136	4	I	26033. 38	$a^2G_{3\frac12}-x^2F^3_{3\frac12}$	(0.49) ?w_3 C	(0.50) 0.96b
6	^{b}3839. 379	8	II	26038. 52	$a^2D_{2\frac12}-v^2F^3_{3\frac12}$	(0) 0.99	(0) 0.81b
6	3839. 001	10	I	26041. 09	$a^4D_{2\frac12}-v^4D^2_{2\frac12}$	(0) 1.31	(0.15) 1.32b
4	3837. 75	1hd		26049. 61	$b^4D_{1\frac12}-t^4P^1_{1\frac12}$		
5	3837. 427	1		26051. 76	$a^4F_{4\frac12}-y^6D^4_{3\frac12}$		
4	3836. 48	1	IV	26058. 22		(0) 1.28	
6	^{b}3836. 056	5	I	26061. 08	$a^4D_{1\frac12}-v^4D^1_{1\frac12}$	(0. 44) 1.10)	(0.20) 1.12b
6	3835. 563	4	II	26064. 43	$a^4D_{0\frac12}-v^4D^0_{0\frac12}$	Unaffected	(0) 0
5	3835. 180	[3p?]		26067. 03	$\{a^2F_{3\frac12}-r^4F^4_{4\frac12}$ $\{a^2P_{0\frac12}-s^4D^0_{0\frac12}$		
4	3834. 80	tr	IV	26069. 64	$b^4F_{2\frac12}-t^4G^3_{3\frac12}$	(0) 0.97	(0) **0.98**s
	^{c}3834. 227	100r Fe	II	26073. 49	$a^2P_{0\frac12}-v^2D^1_{1\frac12}$		
5	3834. 147	[4]		26074. 05	$a^2G_{4\frac12}-v^2G^3_{3\frac12}$		
4	3833. 80	1		26076. 44	$a^2P_{1\frac12}-s^4D^0_{0\frac12}?$		
6	3833. 223	3	III	26080. 34	$a^2G_{4\frac12}-y^2H^4_{4\frac12}$		
6	3832. 836	4	III	26082. 97	$a^2P_{1\frac12}-v^2D^1_{1\frac12}$	(0.45) 1.05w_1 C	(0.39) 1.06b
4	^{b}3831. 84	3	II	26089. 77	$b^4F_{4\frac12}-t^4G^5_{4\frac12}$	(0.59) 1.48w_2 diffuse	(0.41) 1.26b
4	3830. 59	1		26098. 28	$b^2G_{4\frac12}-s^2H^5_{4\frac12}$		
4	3830. 29	2	III	26101. 00			
6	3828. 830	4	II	26110. 26	$a^2G_{4\frac12}-y^2H^4_{4\frac12}$		
6	3828. 562	60r	II	26112. 09	$a^4F_{2\frac12}-y^4D^1_{1\frac12}$	(0.21) 0.92w_2 C	(**0.09**, 0.25) **0.76**, 0.92 1.09, 1.26
6	3826. 770	6	II	26124. 31	$a^4D_{0\frac12}-v^4D^1_{1\frac12}$		
4	3825. 32	4	II	26134. 23	$b^2H_{4\frac12}-g^4F^3_{3\frac12}$		
4	3825. 03	1	III	26136. 20	$b^4F_{3\frac12}-t^4G^4_{4\frac12}$		
6	3823. 977	5	II	26143. 40	$a^4D_{1\frac12}-v^2D^2_{2\frac12}$	(0) 1.40	(0) **1.42**s
4	3823. 77	4	II	26144. 82	$a^2D_{2\frac12}-w^2P^1_{1\frac12}$		
4	3823. 40	1	III A	26147. 35	$b^4F_{4\frac12}-t^4G^5_{5\frac12}$		
6	3823. 212	15	I	26148. 63	$\{a^6D_{2\frac12}-x^6D^1_{1\frac12}$ $\{(a^2F_{2\frac12}-r^2G^3_{3\frac12})$	$\}$(?) 1.43w_2 A	(0) 1.45b
6	3822. 890	15	I	26150. 83	$a^6D_{3\frac12}-x^6D^2_{2\frac12}$	(0) 1.43	(0) **1.40**s
4	3822. 70	1	III	26152. 14			
6	3822. 008	30	I	26156. 86	$a^4F_{3\frac12}-y^4D^3_{3\frac12}$	(0.54w_1) 1.25C	(0.56) 1.30b

TABLE 1.—Arc spectrum of vanadium (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
6	3821.485	15	I	26160.45	$a^6D_{1\frac{1}{2}}-x^6D_{0\frac{1}{2}}^o$	(0.70) 1.13, 2.52	(0.71) **1.11**, 2.53
5	3820.299	4		26168.56	$a^4D_{2\frac{1}{2}}-v^4D_{3\frac{1}{2}}^o$		
6	3819.967	15	I	26170.84	$a^6D_{4\frac{1}{2}}-x^6D_{3\frac{1}{2}}^o$	(0) 1.44	(0) 1.54b
4	3818.76	1	III	26179.10	$a^2D_{1\frac{1}{2}}-w^2P_{1\frac{1}{2}}^o$		
6	3818.241	60	II	26182.67	$\begin{cases}a^4F_{1\frac{1}{2}}-y^4D_{0\frac{1}{2}}^o\\(a^4F_{3\frac{1}{2}}-y^6D_{2\frac{1}{2}}^o)\end{cases}$	}(0.28)　0.22, **0.62**	(0.23) 0.17, **0.63**
6	3817.978	4	II	26184.48	$a^2G_{4\frac{1}{2}}-z^4I_{3\frac{1}{2}}^o$		
6	3817.847	8	I A	26185.38	$a^4F_{4\frac{1}{2}}-y^6D_{4\frac{1}{2}}^o$		
6	3815.514	10	II	26201.39	$a^6D_{0\frac{1}{2}}-x^6D_{0\frac{1}{2}}^o$	(0) 3.27	(0.03) 3.26b
6	3813.499	60a	II	26215.23	$\begin{cases}a^4F_{2\frac{1}{2}}-y^4D_{3\frac{1}{2}}^o\\(a^6D_{1\frac{1}{2}}-x^6D_{1\frac{1}{2}}^o)\end{cases}$	}(0.48, **0.90**) 0.42, 0.82, **1.16**, 1.49, 1.85	(0.17, 0.50, **0.83**) 0.51, 0.84, **1.17**, 1.51, 1.84
5	3813.347	1p?		26216.27	$b^2H_{5\frac{1}{2}}-r^2G_{4\frac{1}{2}}^o$		
4	3811.32	2	III	26230.20	$z^6D_{3\frac{1}{2}}^o-f^6P_{2\frac{1}{2}}$		
6	3809.599	15	I	26242.07	$a^6D_{2\frac{1}{2}}-x^6D_{3\frac{1}{2}}^o$	(0) 1.58	(0.07) 1.60b
4	3809.08	1	III	26245.62	$z^6D_{2\frac{1}{2}}^o-f^6P_{1\frac{1}{2}}$		
6	3808.521	40	II	26249.49	$a^4F_{1\frac{1}{2}}-y^4D_{1\frac{1}{2}}^o$	(0.38, **1.15**) **0.00**, 0.76, 1.52	(0.38, **1.15**) 0.02, **0.78**, 1.55
4	3808.11	3	III	26252.30	$z^6D_{4\frac{1}{2}}^o-f^6P_{3\frac{1}{2}}$		
6	3807.506	20a	I	26256.49	$a^6D_{0\frac{1}{2}}-x^6D_{1\frac{1}{2}}^o$	(0.70) 1.08, 2.48	(0.74) **1.08**, 2.56
6	3806.798	8	II	26261.37	$a^2G_{4\frac{1}{2}}-v^2G_{4\frac{1}{2}}^o$	(0.23) 1.04	(0.30) 1.09b
4	3806.44	1		26263.81	$b^4F_{1\frac{1}{2}}-r^4D_{0\frac{1}{2}}^o$		
6	3804.917	2	III	26274.35	$a^2H_{5\frac{1}{2}}-t^2G_{4\frac{1}{2}}^o$		
6	3804.599	3	III	26276.55	$b^4P_{2\frac{1}{2}}-v^4P_{1\frac{1}{2}}^o$	(0) 1.49	(0) 1.48b
6	3803.901	6	I A	26281.37	$a^4F_{3\frac{1}{2}}-y^6D_{3\frac{1}{2}}^o$		
6	3803.782	6	II	26282.19	$a^2G_{3\frac{1}{2}}-v^2G_{3\frac{1}{2}}^o$	(0.31) 0.93w_1C	(0.32) 0.94b
6	3803.487	25	I	26284.23	$\begin{cases}a^6D_{3\frac{1}{2}}-x^6D_{3\frac{1}{2}}^o\\(a^2F_{3\frac{1}{2}}-r^2G_{4\frac{1}{2}}^o)\end{cases}$	}(0) 1.51	(0.03) 1.52b
6	3802.884	2	III	26288.41	$a^2G_{3\frac{1}{2}}-y^2H_{4\frac{1}{2}}^o$	(0) 0.59 diffuse	(0) 0.47b
5	3801.158	[4]		26300.33	$a^4F_{2\frac{1}{2}}-y^6D_{1\frac{1}{2}}^o$		
6	3799.922	25	I	26308.89	$a^6D_{1\frac{1}{2}}-x^6D_{2\frac{1}{2}}^o$	(0w_2D) 1.40w_1 A?	(0) 1.40b
5	3799.704	[0]		26310.40	$b^4F_{2\frac{1}{2}}-r^4D_{1\frac{1}{2}}^o$		
6	3799.284	1	IV	26313.31	$b^2G_{3\frac{1}{2}}-q^2G_{3\frac{1}{2}}^o$	(0) 0.85	(0.09) 0.88b
6	3798.660	2	III A	26317.63	$\begin{cases}a^2P_{1\frac{1}{2}}-v^2D_{2\frac{1}{2}}^o\\z^6D_{1\frac{1}{2}}^o-f^6P_{1\frac{1}{2}}\end{cases}$	}(0) 1.16	(0) 1.10b
6	3798.260	4	I	26320.40			
6	3796.465	3	II	26332.84	$a^2H_{4\frac{1}{2}}-t^2G_{3\frac{1}{2}}^o$	(0) 0.90	(0) 0.90b
4	3796.21	1		26334.64	$\begin{cases}z^6D_{2\frac{1}{2}}^o-f^6D_{2\frac{1}{2}}\\a^2H_{5\frac{1}{2}}-t^4F_{4\frac{1}{2}}^o\end{cases}$		
6	3794.962	50a	II	26343.28	$\begin{cases}a^6D_{4\frac{1}{2}}-x^6D_{4\frac{1}{2}}^o\\a^4F_{2\frac{1}{2}}-y^4D_{2\frac{1}{2}}^o\end{cases}$	}(0w_1?) 1.48w_1?	$\begin{cases}(0.20)\ 1.50b\\(0)\ 1.86b\end{cases}$
6	3793.614	8	I A	26352.63	$a^4F_{1\frac{1}{2}}-y^4D_{2\frac{1}{2}}^o$	(0.47,　1.41)　0.96, 1.81, **2.76**	(**0.47**,　1.41)　−0.07, 0.87, 1.81, **2.75**
5	3792.853	1hp?		26357.92	$z^6D_{0\frac{1}{2}}^o-f^6P_{1\frac{1}{2}}$		
6	3791.331	2	I A	26368.51	$a^4F_{2\frac{1}{2}}-y^6D_{2\frac{1}{2}}^o$	(**0.85**, 1.51) 0?, 0.70, 1.30, 1.91	(0.30, 0.88, **1.46**) 0.13, 0.71, **1.30**, 1.89, 2.47
6	3790.467	8	II	26374.52	$a^2G_{4\frac{1}{2}}-w^2F_{3\frac{1}{2}}^o$	(0) 1.14	(0) 1.22b
6	3790.331	20	I	26375.46	$a^6D_{2\frac{1}{2}}-x^6D_{3\frac{1}{2}}^o$	(0) 1.41	(0) 1.41b
4	3788.78	1	III	27386.25			
5	3788.496	1p?		26388.23	$z^6D_{3\frac{1}{2}}^o-f^6P_{3\frac{1}{2}}$		
6	3787.545	3	II	26394.85	$a^2H_{5\frac{1}{2}}-v^2H_{5\frac{1}{2}}^o$	(0) 1.06	(0.09) 1.06b
6	3787.148	5	II	26397.62	$a^2H_{4\frac{1}{2}}-v^2H_{4\frac{1}{2}}^o$		
5	3784.822	1	III	26413.85	$b^4F_{3\frac{1}{2}}-r^4D_{2\frac{1}{2}}^o$		
6	3784.676	2	I A	26414.87	$a^4F_{3\frac{1}{2}}-y^6D_{4\frac{1}{2}}^o$		
4	3782.93	1	III	26427.06	$b^4P_{2\frac{1}{2}}-r^4D_{1\frac{1}{2}}^o$		
6	3782.555	3	II	26429.68	$a^2G_{4\frac{1}{2}}-z^2I_{5\frac{1}{2}}^o$		
4	3781.74	1	III	26435.37	$a^2H_{4\frac{1}{2}}-t^2G_{4\frac{1}{2}}^o$		
6	3781.398	3	II	26437.76	$\begin{cases}b^4P_{2\frac{1}{2}}-v^4P_{2\frac{1}{2}}^o\\a^4F_{1\frac{1}{2}}-y^6D_{1\frac{1}{2}}^o\end{cases}$	}(C) 1.45	$\begin{cases}(0.13)\ 1.51b\\(2.05)\ 1.13b\end{cases}$
5	3779.764	2p?		26449.19	$b^4F_{2\frac{1}{2}}-r^4D_{3\frac{1}{2}}^o$		
6	3779.646	4	II	26450.02	$a^2G_{3\frac{1}{2}}-w^2F_{3\frac{1}{2}}^o$	(0) 0.91	(0) 0.93b
6	3778.683	25	I	16456.76	$a^6D_{3\frac{1}{2}}-x^6D_{4\frac{1}{2}}^o$	(0) 1.43	(0) 1.36b
6	3777.492	1	III	26465.10	$\begin{cases}b^2P_{1\frac{1}{2}}-t^2P_{1\frac{1}{2}}^o\\a^2G_{4\frac{1}{2}}-y^4H_{5\frac{1}{2}}^o\end{cases}$	}(0) 0.85	$\begin{cases}(0.18)\ 1.30b\\(0)\ \mathbf{0.91s}\end{cases}$
6	3777.168	2	I A	26467.37	$a^4F_{2\frac{1}{2}}-y^6D_{3\frac{1}{2}}^o$		
6	3776.881	2	III	26469.38	$a^2G_{3\frac{1}{2}}-v^2G_{4\frac{1}{2}}^o$		
6	3776.171	4	II	26474.36	$b^4F_{4\frac{1}{2}}-r^4D_{3\frac{1}{2}}^o$	(0) 1.11	(0) **1.14s**

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1) Ref.	(2) λ_{air} A	(3) Int. arc	(4) Temp. class	(5) ν_{vac} cm^{-1}	(6) Term combinations	(7) Zeeman effect Observed	(8) Zeeman effect Computed
6	b3775.711	4	III	26477.58	$z^6F^\circ_{3\frac{1}{2}}-g^6D_{4\frac{1}{2}}$	(0) 1.22	(0) 1.46b
6	3775.193	3	II	26481.22	$b^4P_{1\frac{1}{2}}-v^4P^\circ_{0\frac{1}{2}}$	(0.43) 1.27w_1 C?	(0.44) **1.24**, 2.12
6	3774.116	3	III	26488.77	$a^2P_{0\frac{1}{2}}-x^2S^\circ_{0\frac{1}{2}}$		
6	3772.755	2	III	26498.33	$a^2P_{1\frac{1}{2}}-x^2S^\circ_{0\frac{1}{2}}$		
5	3772.472	0h		26500.32	$a^4H_{5\frac{1}{2}}-v^2H^\circ_{4\frac{1}{2}}$		
6	3772.157	2	III	26502.52	$a^4F_{1\frac{1}{2}}-y^6D^\circ_{2\frac{1}{2}}$		
4	3771.66	1	I A	26506.01	$a^4D_{3\frac{1}{2}}-u^4D^\circ_{2\frac{1}{2}}$		
4	3771.17	1	II A	26509.45	$a^4D_{3\frac{1}{2}}-u^4D^\circ_{3\frac{1}{2}}$		
6	3770.529	3	II A	26513.99	$a^4D_{2\frac{1}{2}}-u^4D^\circ_{1\frac{1}{2}}$	(0) 1.52	(0) 1.52b
6	3769.996	2	III	26517.72	$a^2P_{0\frac{1}{2}}-x^2P^\circ_{0\frac{1}{2}}$		
4	3769.83	1	III	26518.87	$a^4H_{3\frac{1}{2}}-t^4F^\circ_{3\frac{1}{2}}$		
6	3769.072	4	II	26524.23	$a^2P_{1\frac{1}{2}}-u^2D^\circ_{2\frac{1}{2}}$	(0) 1.03	(0) 1.06b
5	3767.250	[8W]		26537.05	$a^4D_{1\frac{1}{2}}-u^4D^\circ_{0\frac{1}{2}}$?		
6	3766.405	2	II	26543.00	$\begin{cases}a^4H_{4\frac{1}{2}}-t^4F^\circ_{3\frac{1}{2}}\\ z^6F^\circ_{4\frac{1}{2}}-g^6D_{3\frac{1}{2}}\end{cases}$	}(?w_2 D) 0.48w_2 A? diffuse	(0) 0.57b
5	3765.632	1	III	26548.45	$z^6F^\circ_{3\frac{1}{2}}-g^6D_{2\frac{1}{2}}$	(0) 1.00	(0) 0.94b
4	3764.80	2	III	26554.29	$b^2G_{4\frac{1}{2}}-q^2G^\circ_{4\frac{1}{2}}$	(0) 1.05	(0.11) 1.10b
6	3763.142	6	II	26566.01	$b^4P_{2\frac{1}{2}}-r^4D^\circ_{2\frac{1}{2}}$	(0.40) 1.41	(0.46) 1.43b
6	3761.445	3	II	26578.00	$b^4P_{1\frac{1}{2}}-v^4P^\circ_{1\frac{1}{2}}$		
6	3760.800	3	II	26582.56	$a^2G_{3\frac{1}{2}}-w^2F^\circ_{3\frac{1}{2}}$	(0.55) ?w_2	(0.59) 0.98b
5	3760.643	[−1]		26583.67	$a^4P_{2\frac{1}{2}}-y^4S^\circ_{1\frac{1}{2}}$		
7	3759.319	4	II	26593.03	$b^4D_{0\frac{1}{2}}-3^\circ_{1\frac{1}{2}}$	(0) 0.63, **1.41**	
6	3758.784	1	III	26596.81	$a^4H_{6\frac{1}{2}}-v^2H^\circ_{5\frac{1}{2}}$		
6	3758.548	2	II	26598.48	$a^4H_{5\frac{1}{2}}-t^4F^\circ_{4\frac{1}{2}}$		
5	3758.293	[5h]		26600.29	$a^4D_{0\frac{1}{2}}-u^4D^\circ_{0\frac{1}{2}}$?		
4	3756.89	tr	IV	26610.26	$b^4D_{1\frac{1}{2}}-3^\circ_{1\frac{1}{2}}$	(0) 1.08	
6	3756.036	3	II	26616.27	$a^4D_{1\frac{1}{2}}-u^4D^\circ_{1\frac{1}{2}}$	(0) 1.12	(0.10) 1.16b
6	3755.699	4	II	26618.66	$\begin{cases}z^6D^\circ_{5\frac{1}{2}}-g^6D_{2\frac{1}{2}}\\ z^6D^\circ_{4\frac{1}{2}}-g^6D_{3\frac{1}{2}}\end{cases}$	(0?w_2 D) 1.36w_1 A	(0) 1.58b
6	3753.273	4	II	26635.87	$a^2P_{1\frac{1}{2}}-x^2P^\circ_{1\frac{1}{2}}$	(0?w_2 D?) 1.36w_1 A?	(0.45) 1.36b
4	3752.11	1		26644.14	$z^6F^\circ_{4\frac{1}{2}}-g^6D_{4\frac{1}{2}}$		
6	3751.780	5	II A	26646.48	$a^4D_{2\frac{1}{2}}-u^4D^\circ_{2\frac{1}{2}}$	(0) 1.34	(0.07) 1.34b
4	3750.12	1	III	26658.28	$b^4P_{1\frac{1}{2}}-r^4D^\circ_{0\frac{1}{2}}$		
5	3750.062	1h		26658.68	$a^4H_{5\frac{1}{2}}-v^2H^\circ_{5\frac{1}{2}}$		
5	3749.374	[7]		26663.57	$a^4D_{3\frac{1}{2}}-u^4D^\circ_{3\frac{1}{2}}$		
6	3747.980	8h	II	26673.49	$\begin{cases}b^4P_{2\frac{1}{2}}-r^4D^\circ_{3\frac{1}{2}}\\ b^4P_{0\frac{1}{2}}-v^4P^\circ_{0\frac{1}{2}}\end{cases}$	}(0w_1) 1.08w_1	$\begin{cases}(0)\ 1.13b\\ (0.02)\ 2.58b\end{cases}$
6	3747.131	2	II	26679.53	$a^4D_{0\frac{1}{2}}-u^4D^\circ_{1\frac{1}{2}}$	(.58) 0.59, **1.75**	(0.56) 0.56, **1.68**
4	3743.89	1	III	26702.62	$z^6D^\circ_{2\frac{1}{2}}-g^6D_{4\frac{1}{2}}$		
6	3741.499	6	II	26719.68	$z^6D^\circ_{3\frac{1}{2}}-g^6D_{4\frac{1}{2}}$	(0) 1.45	(0.56) 1.48b
6	3740.236	6	II	26728.71	$b^4P_{1\frac{1}{2}}-r^4D^\circ_{1\frac{1}{2}}$		
6	3738.760	8	II	26739.27	$b^4P_{1\frac{1}{2}}-v^4P^\circ_{2\frac{1}{2}}$	(0w_1) 1.31w_1	(0) 1.33b
6	3737.992	5	II	26744.75	$a^4H_{3\frac{1}{2}}-t^4G^\circ_{2\frac{1}{2}}$	(0) 0.67	(0) 0.74
5	3737.426	1	II A	26748.80	$a^4D_{1\frac{1}{2}}-u^4D^\circ_{2\frac{1}{2}}$	(0) 1.50	(0) 1.52s
4	d3736.00	1		26759.01	$z^6D^\circ_{0\frac{1}{2}}-g^6D_{1\frac{1}{2}}$		
6	3734.428	5	II	26770.28	$b^4P_{0\frac{1}{2}}-v^4P^\circ_{1\frac{1}{2}}$		
5	3734.286	2		26771.30	$a^4P_{1\frac{1}{2}}-y^4S^\circ_{1\frac{1}{2}}$		
6	3732.067	1	II A	26787.21	$a^4P_{2\frac{1}{2}}-x^4P^\circ_{2\frac{1}{2}}$	(0) 1.46	(0.02) 1.54b
4	3731.02	2	III	26794.71	$z^6D^\circ_{1\frac{1}{2}}-g^6D_{2\frac{1}{2}}$	(0w_1 D) 1.49w_1 C	(0) 1.39b
4	3730.18	3	II A	26800.74	$a^4D_{2\frac{1}{2}}-u^4D^\circ_{3\frac{1}{2}}$		
6	3729.034	4	II	26809.00	$a^4H_{4\frac{1}{2}}-t^4G^\circ_{3\frac{1}{2}}$	(0) 0.82	(0) 0.78b
4	3724.17	1		26843.98	$b^2P_{0\frac{1}{2}}-p^4F^\circ_{1\frac{1}{2}}$		
4	3723.56	1	III	26848.38	$a^4H_{3\frac{1}{2}}-t^4G^\circ_{3\frac{1}{2}}$		
6	3723.332	3	III	26850.05	$b^4P_{0\frac{1}{2}}-r^4D^\circ_{0\frac{1}{2}}$	(1.24) 1.28	(1.28) 1.32b
6	3722.606	3		26855.29	$\begin{cases}a^4H_{6\frac{1}{2}}-t^4G^\circ_{5\frac{1}{2}}\\ z^6D^\circ_{3\frac{1}{2}}-g^6D_{4\frac{1}{2}}\end{cases}$	}(0) 1.12	
7	3722.201		III	26858.21	$z^6D^\circ_{2\frac{1}{2}}-g^6D_{3\frac{1}{2}}$?		
6	3721.996	4	II	26859.70	$a^4H_{5\frac{1}{2}}-t^4G^\circ_{4\frac{1}{2}}$	(0) 0.93	(0) 0.87b
5	3721.440	1		26863.71	$a^4P_{0\frac{1}{2}}-y^4S^\circ_{1\frac{1}{2}}$		
6	b3721.353	3	I A	26864.34	$a^4F_{3\frac{1}{2}}-z^2F^\circ_{2\frac{1}{2}}$	(0.38) 1.41, —	(**0.06**, 0.19, 0.32) 0.88 1.01, 1.14, 1.26, 1.39 **1.52**
4	3720.92	1	III	26867.50	$b^4P_{1\frac{1}{2}}-r^4D^\circ_{2\frac{1}{2}}$		
6	3718.913	4	III	26881.96	$z^6G^\circ_{3\frac{1}{2}}-e^6H_{0\frac{1}{2}}$	(0) 1.10	
4	3717.54	1	III	26891.91	$z^6G^\circ_{3\frac{1}{2}}-e^6H_{0\frac{1}{2}}$		
4	3714.85	1	III	26911.38	$a^4H_{4\frac{1}{2}}-t^4G^\circ_{4\frac{1}{2}}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
6	3713.955	5	I A	26917.84	$a^4F_{4\frac12}-z^2F^\circ_{3\frac12}$	(0?w_1 D) 1.73w_1 B	(0) 1.75b
4	3713.55	1	III	26920.80	$b^4P_{0\frac12}-r^4D^\circ_{1\frac12}$		
4	3713.31	1	III	26922.54	$a^4G_{4\frac12}-s^4G^\circ_{4\frac12}$		
4	b3711.41	1	III	26936.32	$a^4G_{5\frac12}-s^4G^\circ_{5\frac12}$	(0) 1.34	(0.31) 1.30b
6	3708.718	6	II	26955.85	$a^2H_{5\frac12}-u^2H^\circ_{5\frac12}$	(0) 1.02	(0.04) 1.06b
6	3706.031	4	II	26975.39	$a^2H_{4\frac12}-u^2H^\circ_{4\frac12}$	(0) 0.85	(0.19) 0.88b
4	3705.82	1	III	26976.94	$z^6G_{5\frac12}-e^6H_{5\frac12}$		
6	3705.037	30	I	26982.62	$a^6D_{2\frac12}-y^6P^\circ_{1\frac12}$	(0.34, **1.05**) 0.48, **1.16**, **1.90**, 2.64	(**0.36**, 1.07) **0.54**, 1.25, 1.96, 2.68
6	3704.705	60	II	26985.06	$a^6D_{3\frac12}-y^6P^\circ_{2\frac12}$	(0?w_3 D?) 1.33w_3 A?	(0) 1.24b
6	3703.993	2	II	26990.24	$a^4P_{2\frac12}-x^4P^\circ_{1\frac12}$		
6	3703.566	100a	II	26993.36	$a^6D_{4\frac12}-y^6P^\circ_{3\frac12}$	(0?w_3 D?) 1.40w_3 A?	(0) 1.36b
5	3702.231	1h		27003.08	$z^6G^\circ_{4\frac12}-f^6G_{4\frac12}$		
4	3700.63	tr	III A	27014.76	$a^2G_{4\frac12}-t^4D^\circ_{3\frac12}$		
6	3699.474	3	II	27023.21	$a^2G_{4\frac12}-x^2H^\circ_{4\frac12}$	(0.77) 0.99w_2	(0.93) 1.00b
6	3695.867	40	II	27049.56	$\begin{cases}a^6D_{1\frac12}-y^6P^\circ_{1\frac12}\\(a^4F_{2\frac12}-z^2F^\circ_{2\frac12})\end{cases}$	$\}$ (0.24, 0.80) **1.45**, 2.01, 2.55	(0.25, **0.75**) 1.57, **2.07**, 2.57
6	3695.331	30	II	27053.51	$z^6G^\circ_{6\frac12}-e^6H_{7\frac12}$	(0) 1.19 diffuse	(0) 1.22
6	3694.617	3	II	27058.73	$\begin{cases}z^6G^\circ_{4\frac12}-e^6H_{4\frac12}\\a^4P_{1\frac12}-x^4P^\circ_{0\frac12}\end{cases}$		
6	3692.224	50	II	27076.28	$a^6D_{2\frac12}-y^6P^\circ_{2\frac12}$	(0.48) 1.67w_3 C	(0.33) 1.68b
7	3690.277	40	II	27090.56	$a^6D_{1\frac12}-y^6P^\circ_{1\frac12}$	(0.45 **1.82**, 2.71	(0.49) **1.83**, 2.81
6	3688.070	50	II	27106.77	$a^6D_{3\frac12}-y^6P^\circ_{3\frac12}$	(0.38) 1.57	(0.27) 1.58b
6	b3687.473	12?	II?	27111.16	$z^6G^\circ_{3\frac12}-e^6H_{6\frac12}$	(0) 1.20	(0) 1.41b
4	3686.74	1	III	27116.51			
6	3686.259	8	I	27120.08	$a^2G_{4\frac12}-x^2H^\circ_{3\frac12}$	(0) 0.98	(0) **0.96**s
4	3684.35	3	II	27134.17	$z^6G^\circ_{3\frac12}-e^6H_{3\frac12}$	(0.87?)w_3 C	
6	3683.114	30	I	27143.24	$a^6D_{1\frac12}-y^6P^\circ_{2\frac12}$	(0) 1.77	(0) 1.72b
5	3682.581	0		27147.17	$a^4F_{3\frac12}-z^2F^\circ_{3\frac12}$?		
5	3682.064	[0]		27150.98	$a^4P_{0\frac12}-x^4P^\circ_{0\frac12}$		
6	3680.103	15	II	27165.45	$z^6G^\circ_{3\frac12}-e^6H_{5\frac12}$	(0) 1.02	(0) **1.00**s
4	b3677.08	2	I A	27187.80	$a^4F_{1\frac12}-z^2F^\circ_{2\frac12}$	(**0.22**, 0.67)?	(**0.34**, 1.01) 0.06, 0.74, 1.41, **2.08***
7	3676.693	10	II	27190.65	$z^6G^\circ_{5\frac12}-f^6G_{6\frac12}$	(0.43)?	(0.42) 1.39b
6	3675.698	20	II	27198.00	$a^6D_{2\frac12}-y^6P^\circ_{3\frac12}$	(0) 1.67	(0) **1.65**s
4	3675.49	3	III	27199.56	$z^6G^\circ_{2\frac12}-e^6H_{2\frac12}$		
6	b3673.392	12	III	27215.06	$z^6G^\circ_{3\frac12}-e^6H_{4\frac12}$	(0) 0.93	(0) 1.13b
6	b3672.394	8	II	27222.48	$z^6G^\circ_{4\frac12}-f^6G_{5\frac12}$	(0) 1.26	(0.36) 1.30b
6	3671.207	10	I	27231.27	$a^2G_{3\frac12}-x^2H^\circ_{4\frac12}$	(0) 0.89	(0) 0.88b
6	b3667.731	15	II	27257.08	$z^6G^\circ_{2\frac12}-e^6H_{3\frac12}$	(0) 0.79	(0) 1.00b
6	3665.137	8	II	27276.38	$z^6G^\circ_{3\frac12}-f^6G_{4\frac12}$	(0) 1.19	(0.15) 1.24b
6	3663.582	15	II	27287.95	$z^6G^\circ_{1\frac12}-e^6H_{2\frac12}$	(0) 0.67 diffuse	(0) 0.67b
4	3662.01	1	III	27299.66	$z^6F^\circ_{3\frac12}-g^6F_{4\frac12}$		
4	3661.37	2	III	27304.42	$a^2G_{4\frac12}-x^4P^\circ_{3\frac12}$	(0) 0.96 diffuse	(0) **1.02**s
4	3659.45	2	III	27318.74			
5	3658.274	−1?		27327.54	$z^6F^\circ_{3\frac12}-g^6F_{2\frac12}$		
4	b3657.47	2	I A	27333.54	$a^4F_{2\frac12}-z^2F^\circ_{3\frac12}$	(0) 1.25	(0) 1.01b
6	3656.689	6	II	27339.38	$z^6G^\circ_{3\frac12}-f^6G_{3\frac12}$	(0.25) 1.11	(0.06) 1.11b
4	3654.67	2	III	27354.46	$z^6F^\circ_{5\frac12}-g^6G_{5\frac12}$	(?) 0.48w_2 diffuse	
7	3652.453	2	III	27371.08	$z^6F^\circ_{3\frac12}-g^6F_{3\frac12}$	(0?w_2 D) 0.80 w_2 A	
6	3648.962	5	II	27397.28	$\begin{cases}z^6G^\circ_{2\frac12}-f^6G_{2\frac12}\\b^4P_{2\frac12}-w^4S^\circ_{1\frac12}\end{cases}$	$\}$(?)w_3 D) (1.17 w_2 C	$\begin{cases}(0)\ 0.78b\\(0)\ 1.24b\end{cases}$
5	3648.382	tr	IV	27401.63	$a^2D_{2\frac12}-u^2F^\circ_{2\frac12}$		
7	3647.359	3	II	27409.32	$b^4P_{2\frac12}-s^4F^\circ_{1\frac12}$	(0.63)?	
5	3647.157	0h		27410.83	$z^6G^\circ_{4\frac12}-f^6G_{5\frac12}$		
7	3645.626	3	II	27422.34			
6	b3644.709	8	II	27429.25	$a^2G_{4\frac12}-u^2G^\circ_{4\frac12}$	(0) 1.04	(0.52) 1.06b
4	3644.34	1	III A	27432.02			
5	3644.264	−1		27432.59	$z^6G^\circ_{3\frac12}-f^6G_{4\frac12}$		
4	3643.859	5	II	27435.64	$a^2D_{2\frac12}-u^2F^\circ_{2\frac12}$	(0) 0.73	(0) 0.74b
4	3643.10	1	III	27441.39	$\begin{cases}z^6F^\circ_{2\frac12}-g^6F_{2\frac12}\\z^6D^\circ_{3\frac12}-g^6F_{3\frac12}\end{cases}$		
6	a3641.082	4	II	27456.57	$z^6G^\circ_{1\frac12}-f^6G_{1\frac12}$	(0.54)? w_3	(0.53) 0.19b
4	c3640.392	15Fe	IV	27461.75	$z^6G^\circ_{2\frac12}-f^6G_{3\frac12}$		
4	3640.05	2	III	27464.38	$z^6F^\circ_{1\frac12}-g^6F_{1\frac12}$		
6	3639.023	6	II	27472.10	$a^2D_{2\frac12}-u^2F^\circ_{3\frac12}$	(0) 1.00	(0) 1.04b

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} Å	Int. arc	Temp. class	ν_{vac} cm⁻¹	Term combinations	Observed	Computed
4	3638.35	2	III	27477.21			
6	3637.762	3	IV	27481.63	$z^6G^\circ_{1\frac12}-f^6G_{2\frac12}$	(0) 0.88	
5	3637.240	−1		27485.57			
4	3636.95	1	III	27487.78			
5	3635.873	3	III	27495.90		(0) 1.07	
4	3635.41	2		27499.43	$a^4G_{2\frac12}-p^4D^\circ_{1\frac12}$		
4	3633.91	3	III	27510.77	$z^6D^\circ_{3\frac12}-g^6F_{4\frac12}$		
5	3632.871	1		27518.62	$\begin{cases}z^6F^\circ_{0\frac12}-g^6F_{1\frac12}\\ a^4G_{4\frac12}-p^4D^\circ_{3\frac12}?\end{cases}$		
4	3632.52	1		27521.29	$z^6F^\circ_{4\frac12}-g^6F_{5\frac12}$		
4	°3629.31	2	III	27545.63	$z^6D^\circ_{2\frac12}-g^6F_{3\frac12}$	(0.56) 0.85	(0.16, 0.48, 0.80) 0.46₄ 0.78, 1.10, 1.42, 1.7₄₄ 2.06
4	3628.38	1	III	27552.68	$z^6D^\circ_{0\frac12}-g^6F_{1\frac12}$		
4	3625.58	1		27573.96	$z^6D^\circ_{1\frac12}-g^6F_{2\frac12}$		
5	3624.149	−1		27584.85	$b^4F_{1\frac12}-q^4D^\circ_{0\frac12}$		
4	3622.64	2	III	27596.33	$z^6D^\circ_{4\frac12}-g^6F_{5\frac12}$		
5	3619.529	0		27620.06	$b^4F_{2\frac12}-q^4D^\circ_{1\frac12}$		
4	3617.29	1	III	27637.14	$a^2G_{3\frac12}-u^2G^\circ_{4\frac12}$		
6	3616.727	3	III	27641.46		(0) 1.01	
5	3610.810	0		27686.75	$b^4F_{3\frac12}-q^4D^\circ_{2\frac12}$		
6	3609.296	3	III	27698.36	$b^4P_{1\frac12}-w^4S^\circ_{1\frac12}?$	(0.37) 1.72	(0.36) 1.81b
5	3606.694	8	II?	27718.34	$a^2G_{3\frac12}-u^2G^\circ_{3\frac12}$	(0) 0.86	(0) 0.88
6	ᵈ3605.578	3	III	27726.93		(0) 0.87	
4	3604.09	1	IV	27738.40			
6	3600.024	5	II	27769.69	$a^2D_{2\frac12}-v^2P^\circ_{1\frac12}.$	(0) 0.99	(0) 1.04b
4	3598.11	1	III	27784.49	$b^4F_{4\frac12}-q^4D^\circ_{3\frac12}$		
5	3595.613	1	III	27803.77	$a_2D_{1\frac12}-v^2P^\circ_{1\frac12}$	(0?w₁) 1.15w₁	(0.52) 1.15b
6	3592.527	3	III	27827.65		(0) 0.96	
4	3592.17	1	11A	27830.43			
4	3591.08	1	III	27838.87	$b^4P_{2\frac12}-q^4D^\circ_{2\frac12}$		
5	3586.222	−1		27876.57	$a^4G_{4\frac12}-r^4F^\circ_{3\frac12}$		
5	3586.111	2	V	27877.43			
5	3584.333	[0h]		27891.26	$b^4P^\circ_{0\frac12}-w^4S^\circ_{1\frac12}$		
6	3583.706	8	II	27896.14	$a^4D_{3\frac12}-x^4P^\circ_{2\frac12}$	(0) 1.20	(0) 1.20b
6	3582.814	3	III	27903.09	$a^4G_{5\frac12}-r^4F^\circ_{4\frac12}$	(0) 1.18	(0) 1.29b
6	°3580.823	3	III	27918.60	$a^4G_{2\frac12}-r^4F^\circ_{1\frac12}$	(0) 0.60w₁ A	(0) 0.60b
4	3579.31	1	IV	27930.39			
4	3579.09	2	III	27932.10	$a^4G_{3\frac12}-r^4F^\circ_{2\frac12}$		
6	3577.868	4	II	27941.67	$a^4G_{3\frac12}-r^4F^\circ_{3\frac12}$		
6	ᵇ3575.124	3	III	27963.11	$a^4G_{4\frac12}-r^4F^\circ_{4\frac12}$	(0.35) 1.05	(0.44) 1.20b
6	3574.768	3	II	27965.90	$a^2D_{1\frac12}-v^2P^\circ_{0\frac12}$	(0)0.86	(0) 0.89s
5	3574.173	1		27970.54	$a^2F_{2\frac12}-s^2F^\circ_{2\frac12}$		
6	3573.506	5	II	27975.76	$a^4G_{4\frac12}-q^4F^\circ_{3\frac12}$	(0) 1.34	(0) 1.29b
6	3572.623	2	III	27982.69	$b^4P_{2\frac12}-q^4D^\circ_{3\frac12}?$	(0) 1.34 diffuse	(0) 1.36b
4	3572.30	1	III A	27985.18	$a^4D_{3\frac12}-x^2D^\circ_{2\frac12}$		
6	ᵇ3571.649	5	II	27990.32	$a^4G_{3\frac12}-q^4E^\circ_{2\frac12}$	(0) 0.87	(0) 1.00b
6	3571.210	2	III	27993.75			
6	3571.027	4	II	27995.19	$a^4G_{5\frac12}-q^4F^\circ_{4\frac12}$	(0) 1.29	(0) 1.38b
6	3569.081	1	II A	28010.45	$a^4P_{2\frac12}-t^4D^\circ_{1\frac12}$		
6	3568.929	3	III	28011.65	$a^4G_{2\frac12}-q^4F^\circ_{1\frac12}$	(0) 0.59	(0) 0.59b
4	3566.81	1		28028.32	$a^4G_{3\frac12}-r^4F^\circ_{4\frac12}$		
6	ᵈ3566.176	4	III	28033.29	$a^4D_{2\frac12}-x^4P^\circ_{2\frac12}$	(0.38, 0.87) 0.26, 0.61, 1.04, 1.49	(0.09, 0.28, 0.47), 1.07, 1.26, 1.45, 1.63, 1.82
5	3565.480	[−1]		28038.74	$b^4P_{1\frac12}-q^4D^\circ_{1\frac12}?$		
5	3564.984	1	III A	28042.64	$a^4F_{4\frac12}-x^6D^\circ_{3\frac12}$		
4	3563.52	1	IV	28054.19			
6	3563.394	2	III	28055.15	$a^4G_{4\frac12}-q^4F^\circ_{4\frac12}$	(0.21) 1.13	(0.30) 1.18b
6	ᵇ3562.133	2	III	28065.08	$a^2F_{3\frac12}-s^2F^\circ_{3\frac12}$	(0) 1.08	(0.35) 1.08b
4	3561.40	1	III	28070.88		(0.71) ?w₂ B	
6	3557.164	2	III	28104.29	$a^4D_{1\frac12}-y^2P^\circ_{1\frac12}$	(0) 1.27	
7	3556.241	4	II	28111.58		(0) 1.27	
6	3555.735	2	II	28115.57	$a^4P_{1\frac12}-w^2D^\circ_{2\frac12}$	(0.17, 0.79) 0.33, −	(0.26, 0.78) 0.40, 0.92, 1.44, 1.96
6	3555.140	3	III	28120.30	$a^4P_{1\frac12}-t^4D^\circ_{0\frac12}$	(0.84) 0.82, 2.49	(0.85) 0.85, 2.55

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2) λair A	(3) Int. arc	(4) Temp. class	(5) ν_{vac} cm^{-1}	(6) Term combinations	(7) Zeeman effect Observed	(8) Zeeman effect Computed
6	3553.274	6	II	28135.06	$a^4P_{2\frac12}-t^4D^2_{2\frac12}$	(0.50) 1.41w_2 C	(0.48) 1.44b
5	3552.814	[2]		28138.69	$a^4F_{3\frac12}-x^6D^2_{2\frac12}$		
5	3552.598	1	III	28140.40	$b^4P_{1\frac12}-q^4D^2_{2\frac12}$		
6	3551.534	3	III	28148.84	$a^2P_{1\frac12}-u^2F^2_{3\frac12}$	(?) 0.35w_2 A	(0) **0.30s**
5	3548.696?	0h		28171.35	$b^4P_{0\frac12}-q^4D^0_{0\frac12}$		
4	3546.78	1		28186.56	$b^4F_{2\frac12}-t^2F^2_{2\frac12}$		
6	3545.339	8	II	28198.02	$a^4P_{1\frac12}-t^4D^1_{1\frac12}$		
6	3543.498	8	II	28212.66	$a^4P_{0\frac12}-t^4D^0_{0\frac12}$	(1.28)1.25	(1.29) 1.30b
5	3543.171	[1]		28215.27	$a^4F_{4\frac12}-x^6D^2_{3\frac12}$		
6	^{b}3542.656	1	II A	28219.38	$a^4D_{1\frac12}-x^4P^0_{0\frac12}$		
5	3541.239?	[−1]		28230.67	$b^4P_{0\frac12}-q^4D^1_{1\frac12}$		
5	3541.150	[0]		28231.37	$a^4F_{2\frac12}-x^6D^1_{1\frac12}$		
6	3540.534	1	II A	28236.28	$a^4D_{2\frac12}-x^4P^1_{1\frac12}$	(0) 0.68	(0) **0.72s**
5	3536.036	[3]		28272.20	$a^4F_{3\frac12}-x^6D^3_{3\frac12}$		
7	3534.739	1	II A	28282.56	$a^4D_{0\frac12}-x^4P^0_{0\frac12}$	(1.25) 1.24	(1.26) 1.26b
6	^{b}3533.759	6	II	28290.42	$a^4P_{0\frac12}-t^4D^1_{1\frac12}$	(0) 1.14	(0) 0.83b
7	3533.666	10	I	28291.16	$a^4P_{2\frac12}-t^4D^3_{3\frac12}$	(0) 1.14	(0) 1.10b
5	3530.869	−1?		28313.58	$a^4F_{1\frac12}-x^6D^0_{0\frac12}$		
6	3529.743	10	II	28322.62	$a^4P_{1\frac12}-t^4D^2_{2\frac12}$	(0.19, 0.56) **0.71**, 1.12, 1.49	**(0.19, 0.56) 0.77**, 1.14, 1.51, 1.89
5	3529.474	[2]		28324.77	$a^4F_{2\frac12}-x^6D^2_{2\frac12}$		
5	3528.198	1	III	28335.01	$b^4F_{1\frac12}-s^4G^2_{1\frac12}$		
4	3527.74	1		28338.73	$a^4D_{1\frac12}-x^4P^1_{1\frac12}$		
6	3525.767	1	III	28354.55	$b^4F_{2\frac12}-s^4G^3_{1\frac12}$	(0) 0.93	(0) 0.89b
5	3524.009	[0]		28368.69	$a^4F_{1\frac12}-x^6D^1_{1\frac12}$		
6	^{b}3522.568	3	III	28380.30	$b^4F_{3\frac12}-s^4G^4_{1\frac12}$	(0) 1.18	(0) 1.33b
7	^{b}3519.165	3	III	28407.74	$b^4F_{4\frac12}-s^4G^5_{3\frac12}$	(0) 1.23	(0) 1.41b
4	3518.12	tr	IV	28416.20	$b^4P_{2\frac12}-x^6P^3_{3\frac12}?$		
4	3516.20	1	IV	28431.71	$b^4F_{4\frac12}-x^6F^4_{4\frac12}$		
5	3514.629	−1		28444.40	$a^4F_{3\frac12}-x^6D^4_{4\frac12}$		
4	3511.87	1		28466.75	$b^2H_{5\frac12}-s^2H^4_{4\frac12}$		
6	3506.845	3	III	28507.55	$a^2P_{0\frac12}-v^2P^1_{1\frac12}$	(0.35) 0.99, 1.65	(0.35) 0.99, **1.69**
6	3505.694	6	III	28516.90	$a^2P_{1\frac12}-v^2P^1_{1\frac12}$	(0.30) 1.20	(0.20) 1.27b
4	3505.24	1	IV	28520.59			
6	3503.181	1	III	28537.35		(0?w_1D) 0.80w_1 B	
6	3501.489	4	III	28551.21	$a^2P_{0\frac12}-w^2S^0_{0\frac12}$	(0.39) 1.02	(0.43) 1.07b
6	^{b}3500.818	3	III	28556.61	$b^2H_{5\frac12}-s^2H^5_{5\frac12}$	(0) 1.01	(0.63) 1.01b
4	^{b}3500.32	1	IV	28560.66	$a^2P_{1\frac12}-w^2S^0_{0\frac12}$	(0) 0.95	(0) 1.12b
4	3499.00	1		28571.43	$a^4G_{3\frac12}-p^4F^2_{2\frac12}$	(0) 0.65	
6	^{b}3498.198	3	III	28578.00	$a^4G_{4\frac12}-p^4F^3_{3\frac12}$	(0w_1 D) 0.94w_1 A	(0) 1.35b
6	^{a}3496.939	3	III	28588.28	$b^2H_{4\frac12}-s^2H^4_{4\frac12}$	(0) 0.96	(0.37) 0.96b
4	3496.25	1	IV	28593.90	$a^4G_{2\frac12}-p^4F^1_{1\frac12}$	(0) 0.56	(0) 0.58b
4	3491.39	tr	IV	28633.68	$a^4G_{2\frac12}-p^4F^2_{2\frac12}$		
4	3490.25	1	IV	28643.04	$a^4G_{3\frac12}-p^4F^3_{3\frac12}$		
6	3489.466	4	III	28649.51	$a^4G_{5\frac12}-p^4F^4_{4\frac12}$	(0) 1.07	(0) **1.04s**
6	3487.008	2	III	28669.70	$a^2P_{0\frac12}-v^2D^0_{0\frac12}$	(0.23) 0.88	(0.25) 0.89b
5	3485.867	6	III	28679.09	$a^2P_{1\frac12}-v^2P^0_{0\frac12}$	(0.59) 1.16w_2	(0.67) 1.23b
7	3482.188	1	IV	28709.40	$a^4G_{4\frac12}-p^4F^3_{3\frac12}$		
4	3480.78	1		28721.03	$a^4G_{3\frac12}-o^4D^2_{2\frac12}$		
5	3465.243	tr	IV	28849.77	$b^4P_{1\frac12}-p^4D^0_{0\frac12}$		
6	3463.393	2	II A	28865.19	$\begin{cases} a^4F_{4\frac12}-y^6P^3_{3\frac12} \\ b^4F_{2\frac12}-p^4D^1_{1\frac12} \end{cases}$		
	f3461.66	125R Ni	II	28879.63	$(a^4D_{2\frac12}-w^2D^1_{1\frac12})$		
5	3460.099	1	III A	28892.66	$\begin{cases} b^4F_{3\frac12}-x^4D^2_{2\frac12} \\ a^6D_{1\frac12}-x^4F^4_{4\frac12} \end{cases}$		
6	3456.917	4	III	28919.26	$a^2H_{5\frac12}-t^2H^5_{5\frac12}$		
4	3455.80	tr	IV	28928.57	$\begin{cases} a^2D_{1\frac12}-u^4P^0_{0\frac12} \\ a^4D_{3\frac12}-v^4G^4_{4\frac12} \end{cases}$		
5	3455.585	1	IV	28930.40	$b^4F_{4\frac12}-p^4D^3_{3\frac12}?$		
6	3455.211	1	IV	28933.54	$a^2F_{2\frac12}-q^2G^3_{3\frac12}$	(0) 1.05	(0) **0.97s**
6	3454.881	3	IV	28936.30	$b^2H_{4\frac12}-q^2G^3_{3\frac12}$	(0) 0.88	(0) 0 95b
4	3453.51	1	IV	28947.75			
4	3452.98	tr	IV	28952.23			
5	3450.504	1		28973.00	$a^4F_{3\frac12}-y^6P^2_{2\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm⁻¹	Term combinations	Observed	Computed
5	3449.511	0h		28981.34	$a^4D_{1\frac12}-w^2D^\circ_{1\frac12}$		
4	3447.09	tr	IV	29001.73	$a^4G_{5\frac12}-r^4G_{4\frac12}$		
6	3445.812	2	IV	29012.46	$b^2H_{5\frac12}-q^2G_{4\frac12}$	(0) 0.99	(0) 1.08b
4	3444.86	1	IV	29020.50			
4	3443.55	1	IV	29031.54		(0) 0.99	
5	3442.927	1		29036.76	$a^4D_{3\frac12}-w^2D^\circ_{3\frac12}$		
6	3442.317	2	III	29041.92	$a^2D_{4\frac12}-t^2H^\circ_{4\frac12}$	(0) 0.91	(0) 0.90b
6	3442.006	2	IV	29044.54	$\{a^4D_{0\frac12}-w^2D^\circ_{1\frac12}$ / $b^4P_{2\frac12}-p^4D^\circ_{3\frac12}$		
5	3439.659	[−1hp?]		29064.35	$a^4F_{2\frac12}-y^6P^\circ_{1\frac12}$		
4	3438.99	tr	IV	29070.02			
5	3437.876	2		29079.42	$a^2F_{3\frac12}-q^2G_{4\frac12}$		
6	3437.779	1	IV	29080.25	$a^2H_{4\frac12}-t_2H^\circ_{5\frac12}$		
5	3436.080	1		29094.62	$a^4F_{3\frac12}-y^6P^\circ_{3\frac12}$		
4	3432.05	1	IV	29128.78	$b^4P_{2\frac12}-p^4D^\circ_{3\frac12}$		
5	3428.490	−1		29159.03	$a^4F_{2\frac12}-y^6P^\circ_{2\frac12}$		
5	3427.486	1	IV	29167.57	$z^6G^\circ_{3\frac12}-g^6F_{3\frac12}$		
4	3427.09	1		29170.96			
4	3426.73	1	III A	29174.08	$a^4D_{2\frac12}-w^2D^\circ_{2\frac12}$		
6	3425.958	1	II A	29180.58			
6	3425.287	1	IV	29186.30		(0) 0.87	
6	3425.072	6	II	29188.14		(0) 0.96	
6	3423.867	3	III	29198.42	$a^2H_{5\frac12}-s^2G_{4\frac12}$	(0) 1.02	(0) 1.03b
5	3423.328	−1h		29203.00	$a^4F_{1\frac12}-y^6P^\circ_{1\frac12}$		
6	3418.517	5	II	29244.10	$a^4D_{3\frac12}-t^4D^\circ_{2\frac12}$	(0) 1.42	(0) 1.46b
6	3417.069	5	II	29256.50	$a^4D_{2\frac12}-t^4D^\circ_{1\frac12}$	(0) 1.43	(0) 1.48b
6	3416.541	2	II A	29261.04	$a^2G_{3\frac12}-v^2F^\circ_{2\frac12}$		
7	3414.77	150R Ni	II	29276.18	$(a^4D_{1\frac12}-w^2D^\circ_{2\frac12})$		
6	3414.201	5	II	29281.06	$a^4D_{1\frac12}-t^4D^\circ_{0\frac12}$	(0.56) 0.58, **1.71**	(0.60) 0.60, **1.79**
4	3413.76	1	IV	29284.81	$b^4F_{2\frac12}-r^4F^\circ_{1\frac12}$		
4	b 3410.96	1	IV	29308.92	$b^4F_{1\frac12}-r^4F^\circ_{1\frac12}$	(0) 0.77	(0.27) 0.49b
6	3409.098	4	III	29324.89	$\{a^2D_{2\frac12}-t^2F^\circ_{3\frac12}$ / $b^4F_{3\frac12}-r^4F^\circ_{2\frac12}$		
4	3408.46	1	II A	29330.41			
6	3408.001	3	III	29334.34	$b^4F_{3\frac12}-r^4F^\circ_{3\frac12}$	(0.63) 1.07w_2 C	(0.74) 1.09b
6	3406.838	6	III	29344.35	$a^4D_{0\frac12}-t^4D^\circ_{0\frac12}$	Unaffected	(0.12) 0.12
5	3406.617	2		29346.24	$b^4P_{1\frac12}-p^4D^\circ_{2\frac12}$		
6	3405.160	6	II	29358.80	$a^4D_{1\frac12}-t^4D^\circ_{1\frac12}$	(0) 1.14	(0) 1.18b
6	3404.964	2	IV	29360.49	$\{a^2D_{1\frac12}-t^2F^\circ_{2\frac12}$ / $b^4P_{2\frac12}-r^4F^\circ_{2\frac12}\}$ (0) 0.76		(0) 0.78b
6	3403.364	5	IIII	29374.29	$b^4F_{4\frac12}-r^4F^\circ_{4\frac12}$	(0.23) 1.23	(0.19) 1.28b
5	3402.977	0		29377.63	$b^4F_{2\frac12}-q^4F^\circ_{1\frac12}$		
6	3402.572	9	II	29381.13	$a^4D_{2\frac12}-t^4D^\circ_{2\frac12}$	(0) 1.29	(0.04) 1.34b
5	3402.367	−1		29382.90	$b^4F_{3\frac12}-q^4F^\circ_{2\frac12}$		
5	3401.894	−1		29386.99	$b^4F_{4\frac12}-q^4F^\circ_{3\frac12}$		
6	3401.345	2	III	29391.73	$a^2H_{4\frac12}-s^2G^\circ_{3\frac12}$	(0) 0.87	(0) 0.88b
6	3400.396	12	II	29399.94	$a^4D_{3\frac12}-t^4D^\circ_{3\frac12}$	(0) 1.34	(0.12) 1.37b
5	3400.200	1		29401.63	$b^4F_{1\frac12}-q^4F^\circ_{1\frac12}$		
6	3398.272	1	IV	29418.30	$b^4F_{2\frac12}-q^4F^\circ_{2\frac12}$	(0) 0.95	(0.26) 0.99b
6	3397.845	4	III	29422.00	$a^4D_{0\frac12}-t^4D^\circ_{1\frac12}$	(0.56) 0.56, **1.69**	(0.59) 0.59, **1.77**
6	3397.583	6	III	29424.28	$a^4P_{2\frac12}-w^4P^\circ_{1\frac12}$	(0) 1.48	(0) 1.48s
6	3396.514	3	IV	29433.54	$b^4F_{3\frac12}-q^4F^\circ_{3\frac12}$	(0.34) 1.13w_1	(0.50) 1.14b
5	3396.224	−1		29436.05	$b^4P_{0\frac12}-p^4D^\circ_{0\frac12}$		
5	3395.524	3	III	29442.11	$\{b^6F_{1\frac12}-q^4F^\circ_{3\frac12}$ / $a^4P_{2\frac12}-u^4F^\circ_{1\frac12}$		
4	3394.76	2	IV	29448.75			
5	3392.729	1		29466.37	$b^4F_{4\frac12}-q^4F^\circ_{4\frac12}$		
4	3392.45	1		29468.80	$b^4F_{2\frac12}-q^4F^\circ_{3\frac12}$		
5	3391.614	0h		29476.06	$\{a^4P_{2\frac12}-u^4F^\circ_{2\frac12}$ / $b^4P_{0\frac12}-p^4D^\circ_{1\frac12}$		
6	3390.767	6	III	29483.42	$a^4D_{1\frac12}-t^4D^\circ_{2\frac12}$	(0) 1.44	(0) 1.44b
7	b3390.388	2	III	29486.72	$a^2G_{4\frac12}-v^2F^\circ_{3\frac12}$	(0) 0.95	(0) 1.34b
4	3389.50	tr	IV	29494.43	$\{b^4F_{1\frac12}-u^2P^\circ_{1\frac12}$ / $a^2D_{2\frac12}-s^4G^\circ_{3\frac12}$		
6	3387.386	2	IV	29512.85	$b^4F_{3\frac12}-q^4F^\circ_{4\frac12}$	(0) 1.14	(0) 1.22b
5	3386.910	0h		29516.99	$a^4P_{2\frac12}-u^4F^\circ_{3\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Zeeman effect Observed	Computed
6	3384.602	5	III	29537.12	$a^4D_{2\frac12}-t^4D_{3\frac12}$	(0) 1.42	(0) 1.35b
4	3379.35	2	IV	29583.00		(0) 1.08	
6	3377.629	15	II	29598.10	$a^4P_{2\frac12}-w^4P^o_{3\frac12}$	(0) 1.49	(0.07) 1.54b
6	3377.398	10	II	29600.12	$a^4P_{1\frac12}-w^4P^o_{0\frac12}$	(0.45) **1.21**, 2.11	(0.43) **1.27**, 2.13
6	3376.059	8	II	29611.86	$a^4P_{1\frac12}-w^4P^o_{1\frac12}$	(0) 1.59	(0.14) 1.65b
6	3374.036	3	III	29629.62	$a^4P_{1\frac12}-u^4F^o_{1\frac12}$	(1.70) 0, 1.06, 2.21	(0.58, **1.74**)−0.04, **1.12**, 2.28
4	3372.80	tr	IV A	29640.52			
6	3371.118	3	IV	29655.27	$b^2P_{1\frac12}-v^2S^o_{0\frac12}$	(0.29, —) **0.94**, 1.63	(0.34) **1.03**, 1.70.
5	3370.196	1		29663.37	$a^4P_{1\frac12}-u^4F^o_{2\frac12}$		
4	3369.0	1	IV	29673.90	$a^6D_{0\frac12}-z^2S^o_{0\frac12}$		
4	3367.04	1	IV	29691.21			
6	3366.875	4	II	29692.64	$a^4P_{0\frac12}-w^4P^o_{0\frac12}$	(0) 2.54	(0.01) 2.58b
6	3365.556	10	II	29704.27	$a^4P_{0\frac12}-w^4P^o_{1\frac12}$	(0.46) **1.07**, 2.05	(0.50) **1.10**, 2.10
6	b3363.551	4	III	29721.97	$a^4P_{0\frac12}-u^4F^o_{1\frac12}$	(1.07) **1.07**, 1.56	(1.02) **0.48**, 1.56
4	3362.1	1	IV	29734.80			
6	3356.358	10	II	29785.67	$a^4P_{1\frac12}-w^4P^o_{2\frac12}$	(0) 1.38	(0) 1.38b
4	3345.01	tr	IV	29886.70			
4	3342.28	2	IV	29911.10			
4	3340.17	1	IV	29929.99			
4	3336.79	2	IV	29960.30	$b^4F_{2\frac12}-p^4F^o_{1\frac12}$	(?w_2) 1.40	(0) 1.39b
4	3336.350	2	IV	29964.29	$b^4F_{3\frac12}-p^4F^o_{3\frac12}$	(0) 1.01	
5	3336.212	1	IV	29965.53	$b^4F_{2\frac12}-t^2P^o_{1\frac12}$?		
4	3334.14	tr	IV	29984.11	$b^4F_{1\frac12}-p^4F^o_{1\frac12}$		
4	3333.573	2	III	29989.24	$b^4F_{4\frac12}-p^4F^o_{3\frac12}$		
5	3332.449	tr	IV	29999.36	$b^4F_{2\frac12}-p^4F^o_{2\frac12}$		
6	b3329.858	12	II	30022.71	$a^4P_{2\frac12}-x^4S^o_{1\frac12}$	(?w_2D) 1.02w_2 A	(0) **0.88**s
6	b3328.404	2	IV	30035.82	$b^4F_{3\frac12}-p^4F^o_{3\frac12}$	(0) 1.17	(0.59) 1.12b
6	3327.983	2	IV	30039.62	$b^2P_{0\frac12}-v^2S^o_{0\frac12}$?	(0.67) 1.36w_1 A	(0.68) 1.35b
4	3327.14	tr	IV	30047.26		(0) 1.06	
4	3326.38	1	IV	30054.13	$a^2H_{4\frac12}-q^4F^o_{3\frac12}$		
5	3324.489	1		30071.19	$b^4F_{2\frac12}-p^4F^o_{3\frac12}$		
6	3324.393	3	III	30072.05	$a^2H_{4\frac12}-r^2G^o_{3\frac12}$	(0) 0.77	(0) 0.76b
5	3324.208	1	IV	30073.73	$a^2P_{1\frac12}-t^2P^o_{2\frac12}$		
6	3321.684	5	III	30096.58	$a^2H_{5\frac12}-r^2G^o_{4\frac12}$	(0) 0.91	(0) 0.91b
6	3320.140	3	III	30110.58	$a^4P_{2\frac12}-s^4D^o_{1\frac12}$	(0.23, 0.66) ?w_3 B	(**0.23**, 0.68) 0.87, 1.33, 1.78, **2.23**
4	3319.77	1	IV	30113.95	$b^4F_{3\frac12}-o^4D^o_{2\frac12}$		
6	3319.010	4	III	30120.82	$b^4F_{4\frac12}-p^4F^o_{3\frac12}$	(0) 1.19	(0.04) 1.32b
4	3315.87	1	IV	30149.36	$b^4F_{2\frac12}-o^4D^o_{2\frac12}$		
4	3313.97	3	IV	30166.64	$b^4F_{4\frac12}-o^4D^o_{3\frac12}$	(0?w_1) 1.14	(0) 1.06b
4	3313.00	2	III	30175.48	$a^4P_{2\frac12}-s^4D^o_{1\frac12}$	(0.48) 1.37w_1	(0.48) 1.44b
6	3309.179	8	II	30210.31	$a^4P_{1\frac12}-x^4S^o_{1\frac12}$	(0.32) 1.75	(0.42) 1.85b
4	3308.89	1	IV	30212.95	$b^4F_{3\frac12}-o^4D^o_{3\frac12}$		
6	3308.250	3	III	30218.79	$a^4F_{4\frac12}-y^4G^o_{4\frac12}$		
5	3305.101	0h		30247.58	$a^4P_{1\frac12}-v^2D^o_{1\frac12}$		
5	3299.972	2	III	30294.59	$a^4P_{2\frac12}-v^2D^o_{2\frac12}$	(0.96)?w_3	(0.90) 1.34b
5	3299.588	0		30298.12	$a^4P_{1\frac12}-s^4D^o_{1\frac12}$		
5	3299.256	1	IV	30301.17	$a^4P_{2\frac12}-s^4D^o_{3\frac12}$		
6	3299.089	3	III	30302.69	$a^4P_{\frac12}-x^4S^o_{1\frac12}$		
6	3298.147	15	II	30311.37	$a^4F_{4\frac12}-y^4G^o_{4\frac12}$	(0) 1.07	(0) 1.05b
5	3295.788	0		30333.05	$a^4P_{\frac12}-s^4D^o_{0\frac12}$		
5	b3295.465	1	IV	30336.02	$a^2G_{4\frac12}-t^2G^o_{3\frac12}$	(0?) 1.17	(0) 1.53b
5	3292.561	0h		30362.78	$a^4P_{1\frac12}-s^4D^o_{2\frac12}$		
6	3291.678	4	I	30370.93	$a^4F_{3\frac12}-y^4G^o_{3\frac12}$		
5	3289.525	−1		30390.80	$a^4P_{\frac12}-s^4D^o_{1\frac12}$?		
6	b3288.435	2	III	30400.88	$a^2G_{4\frac12}-v^2H^o_{4\frac12}$	(0) 1.00	(0.96) 1.00b
6	3284.361	6	III	30438.58	$a^2G_{4\frac12}-t^2G^o_{3\frac12}$	(0) 1.06	(0.33) 1.08b
6	3283.311	15	II	30448.32	$a^4F_{3\frac12}-y^4G^o_{3\frac12}$	(0) 1.01	(0) 1.01b
6	3277.939	5	II A	30498.22	$a^4F_{2\frac12}-y^4G^o_{2\frac12}$		
5	3277.791	0		30499.59	$b^2P_{1\frac12}-t^2D^o_{2\frac12}$		
7	3273.025	7	II	30544.00	$a^2G_{3\frac12}-t^2G^o_{3\frac12}$	(0) 0.86	(**0.07**) **0.89**s
5	3272.188	1	III	30551.82	$a^2D_{1\frac12}-q^4F^o_{1\frac12}$		
6	3271.635	12	II	30556.98	$a^4P_{2\frac12}-y^4G^o_{3\frac12}$		
4	3271.39	3	III	30559.27	$a^2G_{4\frac12}-v^2H^o_{5\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1) Ref.	(2) λ_{air} A	(3) Int. arc	(4) Temp. class	(5) ν_{vac}cm⁻¹	(6) Term combinations	(7) Zeeman effect Observed	(8) Zeeman effect Computed
6	3266.078	4	III	30608.97	$\{a^2D_{2\frac12}-q^4F_{3\frac12}$		
6	3265.887	5	IV	30610.76	$\{a^2G_{3\frac12}-v^2H_{3\frac12}$ $a^2F_{3\frac12}-t^2D_{2\frac12}$	(0) 1.00	(0) 1.00b
6	3263.238	15	II	30635.62	$a^4F_{1\frac12}-y^4G_{2\frac12}$		
6	3262.063	5	III	30646.64	$a^2G_{3\frac12}-t^2G_{4\frac12}$		
6	3261.080	6	III	30655.88		(0) 1.15	
5	3260.889?	−1		30657.67	$a^2G_{4\frac12}-t^4G_{3\frac12}$		
5	3260.382	−1		30662.44	$a^2F_{2\frac12}-t^2D_{2\frac12}$?		
6	3259.531	5	III	30670.44	$a^4D_{2\frac12}-w^4P_{1\frac12}$	(0) 1.02	(0) 0.98s
5	3256.779	1	IV	30696.36	$a^2F_{2\frac12}-t^2D_{1\frac12}$		
4	3256.46	1	IV	30699.33		(0) 1.13	
6	3255.649	9	III	30707.02	$a^4D_{3\frac12}-w^4P_{2\frac12}$	(0?w_2D) 1.15w_2A	(0) 1.23b
5	d3254.783	10	II	30715.18	$a^4F_{4\frac12}-x^4F_{3\frac12}$	(0w^2D) 0.90w^2A diffuse	(0) 1.40b
4	3252.86	1	IV	30733.30			
6	3250.033	2	III	30760.08	$a^4G_{4\frac12}-t^4G_{4\frac12}$		
5	3249.930	3		30761.05	$a^4D_{1\frac12}-w^4P_{0\frac12}$		
5	3249.790	0h		30762.38	$a^2G_{3\frac12}-t^4G_{2\frac12}$		
6	d3249.567	10	II	30764.49	$a^4F_{4\frac12}-x^4F_{4\frac12}$	(0.61) 1.11w_2C	(0.15) 1.30b
6	3248.696	3	III	30772.73	$\{a^4D_{1\frac12}-w^4P_{1\frac12}$ $b^4P_{0\frac12}-t^4P_{0\frac12}$		
4	3246.83	1	IV	30790.42	$a^4D_{1\frac12}-u^4F_{1\frac12}$?		
4	3243.957	1		30817.69	$a^2G_{4\frac12}-t^4G_{5\frac12}$		
6	3243.274	3	III	30824.17	$a^4D_{0\frac12}-w^4P_{0\frac12}$	(1.29) 1.25w_1C	(1.29) 1.29b
6	3242.033	1	III A	30835.98	$a^4D_{0\frac12}-w^4P_{1\frac12}$		
6	3241.167	4	III	30844.22	$a^4D_{2\frac12}-w^4P_{3\frac12}$	(0.49) 1.43w_2C	(0.37) 1.43b
5	3238.894	1	IV	30865.86	$a^2G_{3\frac12}-t^4G_{3\frac12}$		
4	3234.73	2	III	30905.59	$a^4F_{3\frac12}-x^4F_{2\frac12}$		
5	3233.497	1		30917.38	$b^2P_{0\frac12}-t^2D_{1\frac12}$		
6	d3233.183	6	III	30920.37	$a^2G_{4\frac12}-u^2F_{3\frac12}$	(0) 0.96	(0) 1.16b
6	3230.645	6	II	30944.67	$a^4F_{3\frac12}-x^4F_{3\frac12}$	(0) 1.18	(0.03) 1.20b
5	3230.441	1		30946.62	$a^4D_{1\frac12}-w^4P_{3\frac12}$		
5	3229.604	4	IV	30954.64	$b^2H_{4\frac12}-x^2I_{5\frac12}$	(0) 0.90	(0) 0.91b
5	3228.182	3	III	30968.28	$a^2G_{3\frac12}-t^4G_{4\frac12}$	(0) 1.86	(0) 1.76b
6	3227.408	4	IV	30975.71	$b^2H_{5\frac12}-x^2I_{6\frac12}$	(0) 0.99	(0) 1.00b
6	3227.117	3	III	30978.50	$a^2G_{4\frac12}-u^2H_{3\frac12}$		
6	3226.106	4	II	30988.20	$a^4F_{4\frac12}-x^4G_{3\frac12}$		
4	3225.63	1	III A	30992.76			
5	3225.490	1		30994.12	$a^4F_{3\frac12}-x^4F_{3\frac12}$		
6	3218.874	5	III	31057.83	$a^2G_{3\frac12}-u^2F_{2\frac12}$	(0) 0.89	(0) 0.93b
5	3218.355	1	III A	31062.84	$a^4F_{2\frac12}-x^4F_{1\frac12}$	(0) 1.08 diffuse	(0) 2.04b
6	d3217.113	10	II?	31074.82	$a^4F_{3\frac12}-x^4G_{2\frac12}$	(0) 0.98	(0) 1.01b
6	3215.379	4	III	31091.59	$a^4F_{2\frac12}-x^4F_{2\frac12}$	(0) 1.12	(0) 1.12b
6	a3213.939	2	III	31105.52	$a^2D_{2\frac12}-t^2P_{1\frac12}$	(0) 1.02	(0) 0.90b
6	3212.437	15	II	31120.06	$a^2G_{4\frac12}-u^2H_{5\frac12}$		
5	3211.569	1	III	31128.47	$a^3G_{3\frac12}-u^2F_{3\frac12}$		
5	3211.323	0		31130.85	$a^4F_{2\frac12}-x^4F_{3\frac12}$		
5	3210.427	2	IV	31139.54	$\{a^2D_{1\frac12}-t^2P_{1\frac12}$ $a^2D_{2\frac12}-p^4F_{3\frac12}$	}(0) 1.12	(0.38) 1.10b
5	3210.096	4	III	31142.75	$a^4H_{3\frac12}-r^4G_{3\frac12}$	(0) 0.76	(0) 0.76b
6	3207.415	20	II	31168.79	$a^4F_{4\frac12}-x^4G_{4\frac12}$	(0.58) 1.16w_2 C	(0.59) 1.20b
5	3206.923	1	IV	31173.56	$a^2D_{1\frac12}-p^4F_{2\frac12}$		
6	b3205.581	15	II	31186.61	$a^2G_{3\frac12}-u^2H_{4\frac12}$	(0) 0.93	(0) 0.80b
5	3205.257	5	III	31189.76	$a^4H_{4\frac12}-r^4G_{3\frac12}$	(0) 0.90	(0) 0.90b
6	3204.193	3	I	31200.12	$a^4F_{1\frac12}-x^4F_{1\frac12}$	(0) 0.36	(0.03) 0.39b
6	3202.383	25	II	31217.76	$a^4F_{3\frac12}-x^4G_{3\frac12}$	(0.55) 1.04w_2 C	(0.74) 1.08b
7	3201.227	2	III A	31229.03	$\{a^4F_{1\frac12}-x^4F_{2\frac12}$ $a^4H_{3\frac12}-r^4G_{3\frac12}$		
6	3199.819	6	III	31242.77	$a^4H_{5\frac12}-r^4G_{4\frac12}$	(0) 0.99	(0) 0.99b
6	3198.012	20	II	31260.43	$a^4F_{2\frac12}-x^4G_{2\frac12}$	(0.62, **1.17**) 0.22, 0.73, 1.17, 1.68	(0.23, 0.71, **1.19**) −0.18, 0.30, **0.77**, 1.24, 1.72
4	3194.92	1	IV	31290.67	$b^4P_{2\frac12}-t^4P_{1\frac12}$		
4	3194.57	1	IV	31294.11	$a^4H_{4\frac12}-r^4G_{4\frac12}$?		

TABLE 1.—Arc spectrum of vanadium (V I)—Continued

(1) Ref.	(2) λ_{air} A	(3) Int. arc	(4) Temp. class	(5) ν_{vac} cm⁻¹	(6) Term combinations	(7) Zeeman effect Observed	(8) Zeeman effect Computed
4	3194.40	2	IV	31295.77			
6	3193.919	6	II	31300.48	$a^4H_{6\frac12}-r^4G_{5\frac12}$	(0) 1.15	(0) 1.16b
7	3189.078	1	IV	31347.99	$a^2P_{0\frac12}-u^2P_{1\frac12}$		
6	3188.096	3	IV	31357.64	$a^2P_{1\frac12}-u^2P_{1\frac12}$	(0.67)? w₁	(0.65) 1.43
6	ᵍ3185.404	40Ra	II	31384.17	$a^4F_{4\frac12}-x^4G_{5\frac12}$	(0.45) 0.68, **1.50?**	(0.12) 1.02b
6	ᵍ3183.995	(150R)a	II	31398.03	$a^4F_{1\frac12}-x^4G_{2\frac12}$	(0.59) 0, 0.62, 1.33	**(0.06,** 0.19) 0.34, 0.46, 0.59, **0.72**
8	3183.96	(125R)a	II	31398.38	$a^4F_{3\frac12}-x^4F_{1\frac12}$		
6	ᵍ3183.415	150Ra	II	31403.78	$a^4F_{2\frac12}-x^4G_{3\frac12}$	(0.34) 0.55, **1.15**	(0.05) 0.88b
8	3182.76	1	IV	31410.19	$a^4D_{3\frac12}-s^4D_{3\frac12}$		
8	3181.63	1	IV	31421.35	$a^4D_{2\frac12}-s^4D_{2\frac12}$		
4	3180.56	1	IV	31431.91	$a^2D_{1\frac12}-t^2P_{0\frac12}$		
4	3180.09	1	IV	31436.56			
8	3177.83	1	IV	31458.90	$a^4D_{1\frac12}-s^4D_{1\frac12}$		
8	3169.6	1	IV	31540.77	$a^4D_{2\frac12}-v^2D_{2\frac12}$		
4	3165.59	3	IV	31580.61	$b^4P_{1\frac12}-t^4P_{0\frac12}$		
8	3164.5	1	IV	31591.46			
4	3163.89	4	IV	31597.57	$b^4P_{1\frac12}-t^4P_{2\frac12}$		
8	3161.9	3H	IV	31617.55			
4	3159.87	2	V	31637.76			
8	3158.77	[1]	IV	31648.77			
8	3156.89	2h	IV	31667.62	$a^4P_{2\frac12}-t^4F_{3\frac12}$		
4	3156.19	10	IV	31674.64		(0) 1.15	
8	3153.54	5H	IV	31701.25			
8	3152.75	2H	IV	31709.19			
4	3150.59	5	IV	31730.92		(0) 0.83	
8	3150.03	2H	IV	31736.56			
8	3147.97	3H	IV	31757.32			
6	3147.255	8	IV	31764.56		(0) 0.65	
8	3146.8	1H	IV	31769.23			
8	3145.65	[1]	IV	31780.73			
8	3143.2	1	IV	31805.60			
4	3139.97	4	IV	31838.21	$a^2P_{0\frac12}-p^4F_{1\frac12}$?		
4	3139.04	3	IV	31847.64	$a^2P_{1\frac12}-p^4F_{1\frac12}$		
4	3138.50	3	IV	31853.12	$a^2P_{1\frac12}-t^2P_{1\frac12}$		
8	3135.17	2	IV	31886.94	{ $a^2P_{1\frac12}-p^4F_{2\frac12}$ / $a^4D_{0\frac12}-x^2S_{0\frac12}$		
8	3134.54	1	IV	31893.45			
8	3133.0	1H	IV	31909.12			
8	3131.9	1H	IV	31920.33			
8	3131.3	1	IV	31926.44			
8	3123.25	1	V	32008.71	$a^4D_{2\frac12}-b^2F_{3\frac12}$		
4	3121.78	4	IIIA	32023.78	$a^4P_{2\frac12}-v^4P_{1\frac12}$		
8	3116.35	1	IV	32079.56			
4	3112.93	8	III	32114.79	$a^4P_{1\frac12}-v^4P_{0\frac12}$		
8	3112.13	3	IV	32123.04			
8	3110.9	1	IV	32135.74	$a^2P_{0\frac12}-t^2P_{0\frac12}$		
8	3108.56	[1]	IV	32159.92			
5	3107.142	5	IV	32174.61	$a^4P_{2\frac12}-r^4D_{1\frac12}$		
4	3106.12	5	IV	32185.18	$a^4P_{2\frac12}-v^4P_{2\frac12}$		
4	3103.99	6	IV	32207.26	$a^4P_{0\frac12}-v^4P_{0\frac12}$		
8	3103.60	1	IV	32211.31	$a^4P_{1\frac12}-v^4P_{1\frac12}$		
8	3101.4	1	IV	32234.15			
8	3099.59	2h	IV	32252.96			
5	3096.763	−1		32282.44	$z^6F_{3\frac12}-h^6G_{2\frac12}$		
8	3096.04	2	IV	32289.93			
4	3095.90	5	III	32291.40	$a^4P_{1\frac12}-r^4D_{0\frac12}$		
6	3094.699	20	III	32303.98	$a^4P_{0\frac12}-v^4P_{1\frac12}$		
4	3093.79	25	III	32313.41	$a^4P_{2\frac12}-r^4D_{2\frac12}$		
8	3093.24	6?	III	32319.16	$a^4F_{2\frac12}-x^4D_{1\frac12}$		
8	3092.85	1	IV	32323.33			
4	3092.72	8	III	32324.64			
6	3091.552	15	II	32336.85	$a^4F_{3\frac12}-x^4D_{2\frac12}$		
8	3091.42	20	II	32338.28	$a^4F_{4\frac12}-x^4D_{3\frac12}$		
4	3090.81	4	III A	32344.66	$a^4F_{1\frac12}-z^4H_{3\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ref.	λ_{air} Å	Int. arc	Temp. class	ν_{vac} cm⁻¹	Term combinations	Zeeman effect Observed	Zeeman effect Computed
5	3090.538	3h	III	32347.46			
8	3090.40	[1]	IV	32348.96	$a^4F_{1\frac12}-x^4D^\circ_{0\frac12}$		
6	3089.134	25	III	32362.16	$\{a^4P_{1\frac12}-r^4D^\circ_{1\frac12}$; $(z^6F^\circ_{4\frac12}-h^6G_{4\frac12})\}$	$(0.68)w_2$	
6	3088.119	30	III	32372.81	$a^4P_{1\frac12}-v^4P^\circ_{2\frac12}$		
4	3087.49	2h	IV	32379.44	$z^6F^\circ_{3\frac12}-h^6G_{3\frac12}$		
6	3087.072	15	III	32383.79	$a^4P_{0\frac12}-r^4D^\circ_{0\frac12}$	(1.25) 1.28	(1.28) 1.32b
5	3085.923	1h	IV	32395.84	$z^6F^\circ_{2\frac12}-h^6G_{2\frac12}$		
6	3084.384	20	III	32412.01	$a^4P_{2\frac12}-2^3_{1\frac12}$		
6	3083.542	30	III	32420.87	$a^4P_{2\frac12}-r^4D^\circ_{3\frac12}$		
5	3082.109	50r	II	32435.92	$a^4F_{4\frac12}-w^4F^\circ_{3\frac12}$		
5	3082.010	6	IV	32436.96	$a^2H_{5\frac12}-s^2H^\circ_{5\frac12}$		
4	3080.34	12	III	32454.57	$a^4P_{\frac12}-r^4D^\circ_{1\frac12}$	(0.65) 0.54, —	(0.70) **0.50**, 1.90
4	3080.16	6	III	32456.46	$a^4F_{1\frac12}-x^4D^\circ_{1\frac12}$		
5	3079.365	4	III A	32464.83	$a^4F_{3\frac12}-z^4H^\circ_{4\frac12}$		
8	3077.86	5h	IV	32480.71	$z^6F^\circ_{1\frac12}-h^6G_{2\frac12}$		
4	3077.73	6	IV	32482.09	$a^2D_{1\frac12}-s^2F^\circ_{2\frac12}$	$(w_1$ D) 0.72 w_1 A	
8	3076.69	5h	IV	32493.06	$z^6F^\circ_{2\frac12}-h^6G_{3\frac12}$		
8	3076.63	4	III	32493.70	$a^4P_{2\frac12}-v^2P^\circ_{1\frac12}$		
6	3075.935	8	III	32501.04	$\{a^4F_{1\frac12}-r^4D^\circ_{2\frac12}$; $(z^6F^\circ_{3\frac12}-h^6G_{4\frac12}?)\}$		
6	b3075.269	10	III	32508.08	$a^2H_{4\frac12}-s^2H^\circ_{4\frac12}$	(0) 0.84	**(0.45) 0.95s**
8	3074.83	8h	IV	32512.71	$z^6F^\circ_{4\frac12}-h^6G_{5\frac12}$		
8	3074.06	10h	IV	32520.85	$z^6F^\circ_{5\frac12}-h^6G_{6\frac12}$		
6	3073.825	60r	II	32523.35	$\{a^4F_{3\frac12}-w^4F^\circ_{3\frac12}$; $a^4F_{2\frac12}-x^4D^\circ_{2\frac12}\}$	$\}(w_2$ D) 1.60w_2 B	$\{$(0) **1.68s** ; (0.61) 1.15b$\}$
8	3072.73	2h	IV	32534.93			
8	3070.88	2	III A	32554.52	$a^4F_{2\frac12}-z^4H^\circ_{3\frac12}$		
6	3069.648	30r	I	32567.60	$a^4F_{3\frac12}-x^4D^\circ_{3\frac12}$	(0.52) 1.22w_2 C	**(0.52) 1.28s**
5	d3067.117	6	IV E	32594.46	$a^2D_{2\frac12}-s^2F^\circ_{3\frac12}$		
8	3066.51	20	I	32600.90	$a^4F_{2\frac12}-w^4F^\circ_{1\frac12}$		
6	b3066.373	125R	II	32602.38	$a^4F_{4\frac12}-w^4F^\circ_{4\frac12}$	(0.30) 1.05, 1.41	(0.07) 1.29b
6	3063.725	12	II	32630.57	$a^4F_{2\frac12}-z^2P^\circ_{2\frac12}$		
4	3000.93	2	III A	32660.32	$a^4F_{1\frac12}-x^4D^\circ_{2\frac12}$		
6	3060.457	125R	II	32665.40	$a^4F_{3\frac12}-w^4F^\circ_{3\frac12}$		
8	3056.59	[1]	IV	32706.67			
6	b3056.339	100R	II	32709.42	$a^4F_{2\frac12}-w^4F^\circ_{2\frac12}$	(0) 0.87	(0) 1.01b
8	3054.89	1	IV A	32724.86	$\{a^4F_{1\frac12}-z^2P^\circ_{0\frac12}$; $a^4P_{1\frac12}-w^2S^\circ_{0\frac12}\}$		
8	3053.65	80R	II	32738.26	$a^4F_{1\frac12}-w^4F^\circ_{1\frac12}$		
6	b3052.195	20	II	32753.81	$\{a^4F_{2\frac12}-x^4D^\circ_{3\frac12}$; $(a^4F_{4\frac12}-y^2G^\circ_{4\frac12})\}$	$\}$(0.92w_2 B) 1.56w_2 C	$\{$(0.34) 1.78b ; (0.88) 1.16b$\}$
8	3051.39	tr	IV A	32762.45			
6	d3050.883	35r	II	32767.90	$a^4F_{1\frac12}-z^2P^\circ_{1\frac12}$	(0) 1.13	(1.15) 0.81b
6	3050.396	25	IV	32773.13	$a^2G_{4\frac12}-t^2F^\circ_{3\frac12}$		
6	3050.33	1	IV	32773.88	$a^4P_{\frac12}-v^2P^\circ_{1\frac12}$		
8	3047.21	[1]	IV	32807.43			
6	3044.938	50r	II	32831.87	$a^4F_{3\frac12}-w^4F^\circ_{4\frac12}$	(0) 1.39	(0) 1.48b
6	3043.553	50r	II	32846.80	$a^4F_{1\frac12}-w^4F^\circ_{2\frac12}$	(0.54w_2 B) 1.14w_2 C	$\{$(**0.30**, 0.91) 0.10, 0.70, 1.31, **1.92**$\}$
6	3043.123	50r	II	32851.44	$a^4F_{2\frac12}-w^4F^\circ_{3\frac12}$	$(w_1$ D) 1.58w_1 B	(0) **1.61s**
	c(3042.672)	15Fe	III	32856.31)	$(a^2H_{4\frac12}-q^2G^\circ_{4\frac12})$		
4	3041.83	8	IV	32865.44			
8	3040.13	1	IV	32883.81	$a^4D_{3\frac12}-t^4F^\circ_{4\frac12}$		
8	3039.46	[1]	IV	32891.06			
5	3039.305	1		32892.72	$a^2H_{5\frac12}-q^2G^\circ_{4\frac12}$		
6	3038.710	10	IV	32899.16			
8	3038.06	[1]	IV	32906.21			
5	3037.372	2		32913.65	$\{a^4D_{2\frac12}-t^4F^\circ_{3\frac12}$; $a^4D_{3\frac12}-u^4D^\circ_{3\frac12}\}$		
8	3033.75	[1]	IV	32952.94	$a^4D_{1\frac12}-t^4F^\circ_{2\frac12}$		
6	3031.009	10?	III	32982.75	$a^2G_{3\frac12}-t^2F^\circ_{2\frac12}$	(0) 0.86	(0) **0.93s**
8	3030.93	5?	III A	32983.60	$a^4F_{3\frac12}-y^2G^\circ_{4\frac12}$		
4	3027.07	2	IV	33025.64			

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm⁻¹	Term combinations	Observed	Computed
8	3022.77	10H	IV	33072.61	$z^6G^\circ_{6\frac12}-g^6G_{6\frac12}$		
4	3021.78	6	IV	33083.45	$a^2G_{4\frac12}-t^2H^\circ_{5\frac12}$		
5	3016.392	1	IV A	33142.56	$a^4F_{4\frac12}-z^2H^\circ_{5\frac12}?$		
4	3016.17	20	III	33144.96	$a^4P_{2\frac12}-w^4S^\circ_{1\frac12}$		
5	3014.972	1	IV A	33158.17	$a^4F_{3\frac12}-y^2F^\circ_{3\frac12}$		
4	3014.33	15H	IV	33165.19	$z^6G^\circ_{6\frac12}-f^6H_{7\frac12}$		
8	3014.19	[4]	IV A	33166.73			
8	3011.58	1	IV	33195.46	$a^2P_{1\frac12}-s^2F^\circ_{2\frac12}$		
8	3011.40	[2]	IV	33197.44	$z^6G^\circ_{5\frac12}-g^6G_{5\frac12}$		
8	3010.84	[1]	IV	33203.62	$z^6G^\circ_{4\frac12}-g^6G_{4\frac12}$		
8	3009.66	[1]	IV	33216.63	$z^6G^\circ_{3\frac12}-g^6G_{3\frac12}$		
8	3006.90	5 H	IV	33247.11	$z^6G^\circ_{5\frac12}-f^6H_{5\frac12}$		
4	3006.34	6	IV	33253.30	$a^2G_{3\frac12}-t^2H^\circ_{4\frac12}$		
8	3006.24	5 H	IV	33254.41	$z^6G^\circ_{4\frac12}-f^6H_{5\frac12}$		
4	3004.82	10	IV	33270.12	$a^4D_{2\frac12}-v^4P^\circ_{1\frac12}$		
4	3004.33	4	IV A	33275.55	$a^4D_{1\frac12}-v^4P^\circ_{0\frac12}$		
6	3003.288	5	IV	33287.16			
4	3002.65	8	III	33294.27	$a^4D_{3\frac12}-v^4P^\circ_{2\frac12}$		
6	3002.450	6	IV	33296.47			
8	3001.90	10 H	IV	33302.58	$z^6G^\circ_{3\frac12}-f^6H_{4\frac12}$		
8	3001.05	1 h	IV	33312.02			
5	3000.566	tr	IV A	33317.36			
4	2999.20	12	III	33332.55	$a^4P_{1\frac12}-w^4S^\circ_{1\frac12}$	(?) 1.74	(0.36) 1.82s
4	2998.62	4	IV	33339.00	$a^4D_{0\frac12}-v^4P^\circ_{0\frac12}$		
8	2997.87	5 H	IV	33347.33	$z^6G^\circ_{2\frac12}-f^6H_{3\frac12}$		
8	2997.08	3 H	IV	33356.12	$z^6G^\circ_{1\frac12}-f^6H_{2\frac12}$		
4	2996.48	6	IV	33362.80	$a^2G_{4\frac12}-s^2G^\circ_{3\frac12}$		
6	2995.617	4	IV	33372.40	$a^4D_{1\frac12}-v^4P^\circ_{1\frac12}$		
8	2994.61	2 h	IV	33383.63			
8	2994.50	1	IV	33384.86			
8	2994.01	1	IV A	33390.32	$a^4F_{2\frac12}-y^2F^\circ_{2\frac12}$		
8	2992.79	[tr]	IV	33403.93			
8	2991.14	2	IV	33422.35	$a^4D_{3\frac12}-r^4D^\circ_{2\frac12}$		
4	2990.93	8	III	33424.69	$a^4P_{0\frac12}-w^4S^\circ_{1\frac12}$		
8	2990.31	1	IV	33431.62	$a^4D_{2\frac12}-v^4P^\circ_{2\frac12}$		
4	2982.18	2	IV	33522.74	$a^4D_{1\frac12}-r^4D^\circ_{1\frac12}$		
5	2981.537	0		33529.99	$a^4D_{3\frac12}-r^4D^\circ_{3\frac12}$		
8	2979.21	2	IV	33556.15			
6	2978.936	4	IV	33559.27	$a^4D_{2\frac12}-r^4D^\circ_{2\frac12}$		
6	2977.550	25r	I	33574.90	$a^4F_{4\frac12}-w^4D^\circ_{3\frac12}$	(?) 1.12	(0.03) 1.04s
6	d2976.527	8	IV E	33586.43	$a^4P_{2\frac12}-q^4D^\circ_{2\frac12}$		
6	2975.077	8	IV	33602.80	$a_2G_{3\frac12}-s^2G^\circ_{3\frac12}$		
5	2974.217	8	IV	33612.51	$a^4P_{1\frac12}-q^4D^\circ_{0\frac12}$		
5	2969.868	0		33661.73	$a^4D_{1\frac12}-r^4D^\circ_{2\frac12}$		
5	2969.363	1		33667.45	$a^4D_{2\frac12}-r^4D^\circ_{3\frac12}?$		
6	2968.981	3	IV	33671.79	$a^4P_{1\frac12}-q^4D^\circ_{1\frac12}$		
8	2968.29	5	IV A	33679.67	$a^4P_{2\frac12}-u^4P^\circ_{1\frac12}$		
5	2966.079	0		33704.73	$a^4P_{0\frac12}-q^4D^\circ_{0\frac12}$		
6	2963.818	6	IV	33730.56	$a^4P_{2\frac12}-q^4D^\circ_{3\frac12}$		
6	2962.784	30r	II	33742.22	$a^4F_{3\frac12}-w^4D^\circ_{2\frac12}$		
4	2962.07	1	V	33750.38	$b^2H_{4\frac12}-p^2D^\circ_{3\frac12}?$		
6	2961.127	10	III	33761.09	$a^4P_{2\frac12}-u^4P^\circ_{2\frac12}$		
5	2960.849?	-1		33764.26	$a^4P_{0\frac12}-q^4D^\circ_{1\frac12}$		
8	2959.99	2	IV	33774.09	$a^4P_{1\frac12}-q^4D^\circ_{2\frac12}$		
e	(2957.520)	10	V E	33802.27)	$(b^2H_{5\frac12}-p^2G^\circ_{4\frac12})$		
4	2957.30	10?	II	33804.80	$a^4F_{3\frac12}-w^4D^\circ_{3\frac12}$		
5	2957.176	8h	IV	33806.20	$a^4P_{1\frac12}-u^4P^\circ_{0\frac12}$		
8	2956.57	1h	V	33813.14			
5	2956.142	1	IV A	33818.02			
6	2955.806	15	II	33821.87	$a^4F_{4\frac12}-v^4F^\circ_{3\frac12}$		
4	2954.33	20	II	33838.77	$a^4F_{2\frac12}-w^4D^\circ_{1\frac12}$		
c	(2953.943)	50R Fe		33843.19)	$(a^4F_{3\frac12}-v^4F^\circ_{2\frac12})$		
8	2951.84	2h	IV	33867.31	$a^4P_{1\frac12}-u^4P^\circ_{1\frac12}$		
8	2949.91	2h	IV	33889.46	$z^6G^\circ_{6\frac12}-h^6G_{5\frac12}?$		
4	2949.62	25	II	33892.79	$a^4F_{2\frac12}-v^4F^\circ_{1\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm⁻¹	Term combinations	Observed	Computed
8	2949.09	1	IV A	33898.87	$a^4P_{0\frac12}-u^4P_{0\frac12}$		
4	2946.54	15	II	33928.21	$a^4F_{3\frac12}-w^4D_{2\frac12}$		
4	2944.76	10h	IV	33948.71	$a^4P_{1\frac12}-u^4P_{2\frac12}$		
8	2943.84	12h	IV	33959.32	$\{a^4P_{0\frac12}-u^4P_{1\frac12}$; $(z^6G_{5\frac12}-h^6G_{4\frac12})\}$		
6	2943.197	30r	II	33966.76	$a^4F_{1\frac12}-w^4D_{0\frac12}$		
6	2942.354	10	I	33976.49	$a^4F_{1\frac12}-w^4D_{1\frac12}$		
8	2942.33	10	I	33976.74	$a^4F_{4\frac12}-v^4F_{4\frac12}$		
4	2942.02	tr	III A	33980.32			
8	2941.11	1	III A	33990.83	$a^4F_{2\frac12}-w^4D_{3\frac12}$		
8	2939.26	2h	V	34012.22			
8	2938.67	6	II	34019.04	$a^4F_{1\frac12}-1°$		
8	2938.30	5h	IV	34023.32	$z^6G_{4\frac12}-h^6G_{3\frac12}$		
6	2937.696	15	I	34030.35	$\{a^4F_{2\frac12}-v^4P_{2\frac12}$; $a^4F_{1\frac12}-v^4F_{1\frac12}\}$		
6	2935.880	15	I	34051.41	$a^4F_{3\frac12}-v^4F_{3\frac12}$		
8	2934.72	20h	IV	34064.82	$z^6G_{6\frac12}-h^6G_{0\frac12}$		
5	2934.646	2	III A	34065.72	$a^4F_{1\frac12}-w^4D_{2\frac12}$		
5	2933.234	3h	IV	34082.12	$z^6G_{3\frac12}-h^6G_{2\frac12}$		
8	2930.89	15h	IV	34109.32	$z^6G_{5\frac12}-h^6G_{5\frac12}$		
8	2928.74	1h	IV	34134.47	$z^6G_{2\frac12}-h^6G_{1\frac12}$		
4	2928.62	2	IV	34135.87			
6	2927.646	10h	IV	34147.17	$z^6G_{3\frac12}-h^6G_{4\frac12}$		
5	2926.258	12	I	34163.37	$a^4F_{3\frac12}-y^2D_{2\frac12}$		
6	2925.880	4	III A	34167.78	$a^4F_{1\frac12}-v^4F_{2\frac12}$		
8	2924.92	5h	IV	34179.04	$z^6G_{5\frac12}-h^6G_{3\frac12}$		
6	2923.627	70Ra	II	34194.11	$a^4F_{4\frac12}-v^4D_{3\frac12}$		
8	2923.41	2h	V	34196.69			
5	2922.715	5h	IV	34204.78	$z^6G_{6\frac12}-h^6G_{2\frac12}$		
6	2922.582	4	III A	34206.34	$a^4F_{3\frac12}-v^4F_{1\frac12}$		
8	2921.18	6h	IV	34222.78	$z^6G_{1\frac12}-h^6G_{1\frac12}$		
5	2919.931	6	III A	34237.39	$a^4F_{4\frac12}-v^4F_{3\frac12}$		
4	2917.94	8	IV	34260.78	$a^2G_{4\frac12}-r^2G_{4\frac12}$		
4	2917.52	4	IV	34265.70			
4	2916.00	8	IV	34283.56	$\{a^2G_{3\frac12}-r^2G_{3\frac12}$; $(z^6G_{5\frac12}-h^6G_{6\frac12})\}$		
4	2915.33	10	II	34291.44	$a^4F_{2\frac12}-y^2D_{1\frac12}$		
6	2914.924	50Ra	II	34296.21	$\{a^4F_{3\frac12}-v^4D_{2\frac12}$; $(z^6G_{4\frac12}-h^6G_{5\frac12})$; $(z^6G_{1\frac12}-h^6G_{2\frac12})\}$		
8	2914.43	2h	IV	34302.03	$z^6G_{2\frac12}-h^6G_{3\frac12}$		
6	d2914.299	2h	IV	34303.55	$z^6G_{3\frac12}-h^6G_{4\frac12}$		
5	d2910.435	5?	II A	34349.09	$a^4F_{2\frac12}-y^2D_{2\frac12}$		
6	2906.134	40r	II	34399.92	$a^4F_{3\frac12}-v^4D_{1\frac12}$		
6	2904.126	20	II	34423.71	$a^4F_{3\frac12}-v^4D_{2\frac12}$		
6	2903.700	12	II	34428.75	$a^4F_{1\frac12}-y^2D_{1\frac12}$		
8	2900.86	5H	IV	34462.44			
6	2899.602	30	II	34477.40	$a^4F_{1\frac12}-v^4D_{0\frac12}$		
6	2899.207	20	II	34482.11	$a^4F_{2\frac12}-v^4D_{2\frac12}$		
6	2898.822	5	III A	34486.69	$a^4F_{1\frac12}-y^2D_{2\frac12}$		
8	2895.16	4h	V	34530.27			
6	2894.583	8	III	34537.19	$a^4F_{1\frac12}-v^4D_{1\frac12}$		
8	2893.47	4h	IV	34550.43	$a^4D_{3\frac12}-s^4F_{4\frac12}$		
5	2891.977	2h	IV	34568.31	$\{a^4D_{2\frac12}-s^4F_{3\frac12}$; $a^4D_{\frac12}-s^4F_{1\frac12}\}$		
5	2891.430	2h	IV	34574.85	$a^4D_{1\frac12}-s^4F_{2\frac12}$		
8	2890.56	5H	IV	34585.26			
6	2888.523	2	III A	34609.64	$a^4F_{2\frac12}-v^4D_{3\frac12}$		
6	2887.707	2	III A	34619.43	$a^4F_{1\frac12}-v^4D_{2\frac12}$		
6	2873.378	2		34792.06	$a^4F_{2\frac12}-p^4D_{2\frac12}$		
6	2870.575	35r	II	34826.04	$a^4F_{4\frac12}-u^4D_{3\frac12}$		
4	2870.04	5	IV	34832.52	$\{a^4D_{2\frac12}-q^4D_{2\frac12}$; $a^4D_{1\frac12}-q^4D_{1\frac12}\}$		
6	2869.484	3	IV	34839.27	$a^4D_{3\frac12}-q^4D_{3\frac12}$		
6	2868.130	20	IV	34855.71	$a^2H_{5\frac12}-x^2I_{6\frac12}$		
6	2866.971	10	IV	34869.82	$a^4D_{3\frac12}-u^4P_{2\frac12}$		
6	2866.620	15	IV	34874.07	$a^2H_{4\frac12}-x^2I_{5\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm^{-1}	Term combinations	Observed	Computed
6	2866.447	20	IV	34876.19	$a^4P_{2\frac12}-p^4D_{3\frac12}^{\circ}$		
5	2864.386	30r	II	34901.27	$a^4F_{3\frac12}-u^4D_{2\frac12}^{\circ}$		
6	2863.076	12	IV	34917.25	$a^4P_{1\frac12}-p^4D_{1\frac12}^{\circ}$		
6	2862.418	10	IV	34925.28	$a^4D_{2\frac12}-u^4P_{1\frac12}^{\circ}$		
5	2861.677	1	IV	34934.31			
6	2859.997	25	II	34954.84	$a^4F_{2\frac12}-u^4D_{1\frac12}^{\circ}$		
6	2859.001	4h	IV	34967.00	$a^4D_{1\frac12}-u^4P_{0\frac12}^{\circ}$		
6	2858.787	10	IV	34969.63	$a^4P_{0\frac12}-p^4D_{0\frac12}^{\circ}$		
6	2857.972	20	IV	34979.59	$a^4P_{1\frac12}-p^4D_{2\frac12}^{\circ}$		
6	2855.739	2	IV	35006.95	$a^4D_{2\frac12}-u^4P_{2\frac12}^{\circ}$		
6	2855.518	6	IV	35009.65	$a^4P_{0\frac12}-p^4D_{1\frac12}^{\circ}$		
6	2855.252	20	II	35012.91	$a^4F_{1\frac12}-u^4D_{0\frac12}^{\circ}$		
6	2854.057	4h	IV	35027.57	$\begin{cases} a^4D_{1\frac12}-u^4P_{1\frac12}^{\circ} \\ a^4H_{4\frac12}-x^2I_{5\frac12}^{\circ}? \end{cases}$		
4	2853.82	3h	IV	35030.44	$a^4D_{0\frac12}-u^4P_{0\frac12}^{\circ}$		
6	2853.579	2	V	35033.88	$a^2P_{9\frac12}-v^2S_{0\frac12}^{\circ}$		
6	2852.899	25	IV	35041.80	$a^2P_{1\frac12}-v^2S_{0\frac12}^{\circ}$		
6	2851.784	20	II	35055.49	$a^4F_{3\frac12}-u^4D_{3\frac12}^{\circ}$		
5	2849.197	15	II	35087.32	$a^4F_{2\frac12}-u^4D_{2\frac12}^{\circ}$		
5	2849.086	4		35088.69			
6	2848.807	15	II	35092.11	$a^4F_{1\frac12}-u^4D_{1\frac12}^{\circ}$		
6	2846.600	20	IV	35120.01			
4	2844.92	2	IV	35140.12	$a^2D_{2\frac12}-l^2D_{2\frac12}^{\circ}$		
4	2839.43	4	IV	35208.05	$a^2D_{1\frac12}-l^2D_{1\frac12}^{\circ}$		
4	2838.06	5	III	35225.03	$a^4F_{1\frac12}-u^4D_{2\frac12}^{\circ}$		
6	2836.714	3	IV	35241.72	$a^4F_{2\frac12}-u^4D_{3\frac12}^{\circ}$		
6	2835.660	5	V	35254.82	$a^6D_{2\frac12}-w^2F_{3\frac12}^{\circ}?$		
4	2834.88	3	V	35264.54			
6	2815.994	5h	V	35501.02			
6	2799.229	3		35713.61			
6	2798.526	2		35722.57	$a^6D_{0\frac12}-t^4D_{1\frac12}^{\circ}$		
4	2788.16	2	V	35855.41			
4	2785.66	10	IV	35887.57	$a^2P_{1\frac12}-l^2D_{2\frac12}^{\circ}$		
4	2785.52	8	IV	35889.37			
6	2785.216	3		35893.28			
4	2783.76	7	IV	35912.06	$a^2P_{0\frac12}-l^2D_{1\frac12}^{\circ}$		
5	2778.058	4	IV	35985.77	$\begin{cases} a^4D_{3\frac12}-p^4D_{3\frac12}^{\circ}? \\ a^4F_{4\frac12}-x^2G_{4\frac12}^{\circ}? \end{cases}$		
4	^{d}2777.70	8h	IV	35990.41			
6	2777.157	5		35997.43			
8	2776.67	2h	V	36003.73			
4	·2776.47	6h	IV	36006.35			
6	2775.911	2		36013.59	$a^4P_{2\frac12}-o^4D_{2\frac12}^{\circ}$		
4	2774.61	3	IV	36038.24	$\begin{cases} a^4D_{2\frac12}-p^4D_{2\frac12}^{\circ} \\ a^4D_{1\frac12}-p^4D_{0\frac12}^{\circ} \end{cases}$		
4	2773.66	8	IV	36042.79	$a^2G_{4\frac12}-s^2F_{3\frac12}^{\circ}$		
4	2770.94	2d	IV	36078.16	$a^4D_{1\frac12}-p^4D_{1\frac12}^{\circ}$		
4	2768.93	6	IV	36104.34	$a^2G_{3\frac12}-s^2F_{2\frac12}^{\circ}$		
4	2768.30	3	IV	36112.56	$a^4P_{2\frac12}-o^4D_{3\frac12}^{\circ}$		
4	2766.10	1	V	36141.27	$a^4D_{1\frac12}-p^4D_{1\frac12}^{\circ}$		
4	2757.75	2	V	36250.79	$a^2G_{2\frac12}-s^2F_{2\frac12}^{\circ}$		
1	2755.653	(10)	V	36278.34			
1	2753.084	(8)	V	36312.19			
1	^{d}2747.534	(6)	III	36385.54	$a^4F_{4\frac12}-w^4G_{5\frac12}^{\circ}$		
1	2738.075	5		36511.22	$a^2G_{4\frac12}-s^2H_{4\frac12}^{\circ}$		
1	2733.334	(8)	IV	36574.55	$a^4F_{3\frac12}-w^4G_{4\frac12}^{\circ}$		
1	2731.518	(20h?)	IV	36598.86			
1	2731.347	(80r?)	IV	36601.16	$a^2G_{3\frac12}-s^2H_{3\frac12}^{\circ}$		
1	2729.807	2		36621.80	$a^4F_{4\frac12}-v^2G_{3\frac12}^{\circ}$		
1	2729.120	2		36631.02	$a^4D_{1\frac12}-q^4F_{2\frac12}^{\circ}$		
1	2727.440	1		36653.58	$a^4D_{0\frac12}-q^4F_{1\frac12}^{\circ}$		
1	2727.124	1		36657.83	$a^4F_{4\frac12}-y^2H_{3\frac12}^{\circ}$		
1	2725.062	4		36685.57	$a^4F_{2\frac12}-w^4G_{3\frac12}^{\circ}$		

Table 1.—*Arc spectrum of vanadium* (V I)—Continued

(1) Ref.	(2) λ_{air} A	(3) Int. arc	(4) Temp. class	(5) ν_{vac} cm⁻¹	(6) Term combinations	(7) Zeeman effect Observed	(8) Computed
1	2723.925	2		36700.88	$a\,^4F_{1\frac12}-x\,^2D_{2\frac12}$		
1	2722.560	(60r)	IV	36719.28	$a\,^2G_{3\frac12}-s\,^2H_{4\frac12}$		
1	2721.139	(20)	IV	36738.45			
1	2717.433	3		36788.56	$a\,^4F_{2\frac12}-x\,^2F_{3\frac12}$		
1	2716.689	3		36798.63			
1	2715.025	(7)	V	36821.18			
1	2712.217	4		36859.30	$a\,^2G_{4\frac12}-q\,^2G_{3\frac12}$		
1	2707.589	3		36922.30	$a\,^4F_{4\frac12}-w\,^2F_{3\frac12}$		
1	2703.904	1		36972.61	$a\,^4D_{3\frac12}-p\,^4F_{2\frac12}$		
1	2701.266	(7)	IV	37008.72			
1	2700.506	1		37019.13	$a\,^4F_{3\frac12}-w\,^2F_{2\frac12}$		
1	2700.046	4		37025.44			
1	2699.12	(20)	IV	37038.14	$a\,^4P_{2\frac12}-t\,^4P_{1\frac12}$		
1	2698.724	(40)	IV	37043.58	$\begin{cases}a\,^4P_{2\frac12}-t\,^4P_{2\frac12}\\(a\,^4D_{3\frac12}-p\,^4F_{3\frac12})\end{cases}$		
1	2697.744	(50r?)	IV	37057.03	$a\,^2G_{4\frac12}-q\,^2G_{4\frac12}$		
1	2696.996	(40r?)	IV	37067.31	$a\,^2G_{3\frac12}-q\,^2G_{3\frac12}$		
1	2696.760	(6)	IV	37070.55	$a\,^4D_{2\frac12}-p\,^4F_{1\frac12}$		
1	2696.376	1		37075.83	$a\,^4D_{2\frac12}-t\,^2P_{1\frac12}$		
1	2696.222	(5)	V	37077.95			
1	2695.235	4		37091.53	$a\,^4F_{4\frac12}-v\,^4G_{4\frac12}$		
1	2694.102	3		37107.12			
1	2693.918	6		37109.66	$a\,^4D_{2\frac12}-p\,^4F_{2\frac12}$		
1	2693.00	2		37122.31	$a\,^4D_{3\frac12}-o\,^4D_{2\frac12}$		
1	2689.350	2		37172.69	$a\,^4D_{1\frac12}-p\,^4F_{1\frac12}$		
1	2689.114	3		37175.95	$a\,^4D_{3\frac12}-p\,^4F_{4\frac12}$		
1	2688.942	4		37178.33	$a\,^4D_{1\frac12}-t\,^2P_{1\frac12}$		
1	e(2688.719)	(60)	V E	37181.41)	$(a\,^4D_{2\frac12}-p\,^4F_{3\frac12})$		
1	2688.55	1		37183.75	$a\,^4D_{2\frac12}-o\,^4D_{1\frac12}$		
1	2687.408	5		37199.55			
1	2687.001	1		37205.18	$a\,^4F_{2\frac12}-w\,^2F_{2\frac12}$		
1	2686.512	(10)	III	37211.96	$\begin{cases}a\,^4F_{4\frac12}-v\,^4G_{5\frac12}\\(a\,^4D_{1\frac12}-p\,^4F_{2\frac12})\end{cases}$		
1	2686.356	9		37214.11	$a\,^4D_{1\frac12}-t\,^4P_{0\frac12}$		
1	2685.843	4		37221.22	$a\,^4D_{3\frac12}-o\,^4D_{3\frac12}$		
1	2685.515	4		37225.77	$\begin{cases}a\,^4P_{1\frac12}-t\,^4P_{0\frac12}\\a\,^4P_{1\frac12}-t\,^4P_{1\frac12}\\a\,^4D_{1\frac12}-o\,^4D_{0\frac12}\end{cases}$		
1	d2685.14	(15)	III	37230.96	$a\,^4P_{1\frac12}-t\,^4P_{2\frac12}$		
1	2685.018	5		37232.66	$a\,^4F_{3\frac12}-v\,^4G_{3\frac12}$		
1	e(2683.092)	(80)	V E	37259.38	$(a\,^4D_{2\frac12}-o\,^4D_{2\frac12})$		
1	2682.682	1		37265.08	$a\,^2G_{3\frac12}-q\,^2G_{4\frac12}$		
1	2681.17	2		27286.09	$a\,^4D_{1\frac12}-o\,^4D_{1\frac12}$		
1	2680.939	2		37289.30	$a\,^4D_{2\frac12}-o\,^4D_{0\frac12}$		
1	2679.707	5		37306.45	$a\,^4P_{\frac12}-t\,^4P_{0\frac12}$		
1	2678.878	10		37317.99	$a\,^4P_{\frac12}-t\,^4P_{1\frac12}$		
1	2678.674	(5)	III	37320.83	$a\,^4F_{3\frac12}-v\,^4G_{4\frac12}$		
1	2677.472	1		37337.59	$a\,^4F_{2\frac12}-w\,^2F_{3\frac12}$		
1	2677.117	(4)	III	37342.54	$a\,^4F_{1\frac12}-w\,^2F_{2\frac12}$		
1	2676.636	3		37349.25	$a\,^4D_{1\frac12}-o\,^4D_{1\frac12}$		
1	2675.977	4		37358.44	$a\,^4D_{2\frac12}-o\,^4D_{3\frac12}$		
1	2675.753	(8)	III	37361.57	$\begin{cases}a\,^4F_{2\frac12}-v\,^4G_{3\frac12}\\a\,^4D_{1\frac12}-o\,^4D_{2\frac12}\end{cases}$		
1	2671.669	(10)	III	37418.68	$a\,^4D_{1\frac12}-v\,^4G_{2\frac12}$		
1	2670.918	(7)	III	37429.20	$a\,^4F_{3\frac12}-w\,^2D_{3\frac12}$		
1	2668.894	3		37457.58	$a\,^4F_{1\frac12}-w\,^2D_{1\frac12}$		
1	2665.958	(20)	III	37498.83	$a\,^4F_{1\frac12}-v\,^4G_{2\frac12}$		
1	2661.424	(7OR)	III	37562.71	$a\,^4F_{4\frac12}-t\,^4D_{3\frac12}$		
1	2657.708	5		37615.23	$a\,^4F_{2\frac12}-w\,^2D_{2\frac12}$		
1	2656.55	10		37631.62			
1	2656.224	(6OR)	III	37636.24	$a\,^4F_{3\frac12}-t\,^4D_{2\frac12}$		
1	2654.005	2		37667.71	$a\,^4F_{4\frac12}-x\,^2H_{5\frac12}$		
1	2653.824	(25)	IV	37670.28	$a\,^2H_{4\frac12}-p\,^2G_{3\frac12}$		
1	2652.919	(20)	IV	37683.12	$a\,^2H_{5\frac12}-p\,^2G_{4\frac12}$		
1	2651.896	(5OR)	III	37697.66	$a\,^4F_{2\frac12}-t\,^4D_{1\frac12}$		

TABLE 1.—Arc spectrum of vanadium (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm⁻¹	Term combinations	Observed	Computed
1	ᵈ2650.608	3		37715.98			
1	2648.891	6		37740.42			
1	2647.710	(40R)	III	37757.26	$a^4F_{1\frac12}-t^4D_{0\frac12}$		
1	2645.990	2		37781.80	$a^6D_{1\frac12}-s^4D_{1\frac12}$?		
1	2645.343	5		37791.04			
1	2645.256	(10)	III	37792.28	$a^4F_{3\frac12}-t^4D_{3\frac12}$		
1	2644.690	1		37800.37	$a^4F_{3\frac12}-x^2H_{4\frac12}$		
1	2643.19	5		37821.82			
1	2643.14	(5)	III	37822.53	$a^4F_{2\frac12}-t^4D_{2\frac12}$		
1	2642.289	(4)	III	37834.71	$a^4F_{1\frac12}-t^4D_{1\frac12}$		
1	2640.684	(6)	}III	⎰37857.71			
1	2640.267	(7)		⎱37863.69			
1	ᵉ2637.222	(20H)	III	37907.40			
1	2634.864	8H?		37941.33			
1	2633.588	4		37959.71	$a^4F_{1\frac12}-t^4D_{2\frac12}$		
1	2632.398	2		37976.87	$a^4F_{4\frac12}-u^2G_{3\frac12}$		
1	2632.300	(2)	III	37978.28	$a^4F_{2\frac12}-t^4D_{3\frac12}$		
1	2629.094	5		38024.59			
1	2620.284	(20)	III	38152.43	$a^4D_{3\frac12}-t^4P_{2\frac12}$		
1	2618.908	5		38172.47	$a^6D_{1\frac12}-u^2_2D_{2\frac12}$		
8	2614.90	2	III	38230.98			
8	2611.75	1	III	38277.09			
1	2611.255	8		38284.34	$a^4D_{2\frac12}-t^4P_{1\frac12}$		
1	2611.031	1?		38287.62	$a^4F_{3\frac12}-u^2G_{3\frac12}$		
1	2610.891	6		38289.68	$a^4D_{2\frac12}-t^4P_{2\frac12}$		
1	2607.752	(10)	III	38335.76			
1	2607.12	7		38345.06			
1	2605.084	4		38375.02	$a^4D_{1\frac12}-t^4P_{0\frac12}$		
1	2604.294	5		38386.66	$a^4D_{1\frac12}-t^4P_{1\frac12}$		
1	2603.932	1		38392.00	$a^4D_{1\frac12}-t^4P_{2\frac12}$		
8	2602.7	1	III	38410.17			
1	2600.798	5		38438.26	$a^4D_{0\frac12}-t^4P_{1\frac12}$		
1	2600.01	2		38449.91	$a^4D_{0\frac12}-t^4P_{1\frac12}$		
1	2586.242	5h		38654.58			
1	2577.292	(20r?)	III	38788.81	$a^4F_{4\frac12}-u^4F_{3\frac12}$		
1	2574.866	3h		38825.35			
1	2574.020	(50R)	III	38838.11	$a^4F_{4\frac12}-u^4F_{4\frac12}$		
1	2570.268	4h		38894.80			
1	2568.376	30h		38923.45			
1	2564.817	(40r?)	III	38977.46	⎰$a^4F_{3\frac12}-u^4F_{2\frac12}$⎱$a^2H_{4\frac12}-r^2H_{4\frac12}$		
1	2564.348	(4h)	}III	⎰38984.59			
1	2564.228	(20h)		⎱38986.42	$a^2H_{5\frac12}-r^2H_{5\frac12}$		
1	2562.125	(60R)	III	39018.41	$a^4F_{3\frac12}-u^4F_{3\frac12}$		
1	2558.893	(15)	III	39067.69	$a^4F_{3\frac12}-u^4F_{4\frac12}$		
1	2556.815	(6)	III	39099.44	$a^4F_{3\frac12}-w^4P_{2\frac12}$		
1	2556.016	(9)	III	39111.66	$a^4F_{2\frac12}-w^4P_{1\frac12}$		
1	2554.856	(15)	III	39129.42	$a^4F_{2\frac12}-u^4F_{1\frac12}$		
1	2552.648	(50r)	III	39163.26	$a^4F_{2\frac12}-u^4F_{2\frac12}$		
1	2549.965	12		39204.46	$a^4F_{2\frac12}-u^4F_{3\frac12}$		
1	2549.834	4 / 5		39206.48			
1	2547.832	1		39237.28	$a^4F_{1\frac12}-w^4P_{0\frac12}$		
1	2547.073	6		39248.98	$a^4F_{1\frac12}-w^4P_{1\frac12}$		
1	2545.981	(30r?)	III	39266.78	$a^4F_{1\frac12}-u^4F_{1\frac12}$		
1	2543.723	(20)	III	39300.66	$a^4F_{1\frac12}-u^4F_{1\frac12}$		
1	2541.765	7		39330.93	$a^4F_{1\frac12}-u^4F_{2\frac12}$		
1	2536.932	8		39405.86			
1	2535.835	1		39422.90	$a^4F_{1\frac12}-w^4P_{2\frac12}$?		
1	2534.825	15h		39438.61			
1	2534.206	3		39448.24	$a^4F_{4\frac12}-u^4G_{3\frac12}$?		
1	2533.800	10h		39454.56			
1	2532.280	5		39478.24			
1	2531.778	3		39486.07			
1	2531.20	4h		39495.08			
1	2530.174	(80R)	III	39511.10	$a^4F_{4\frac12}-u^4G_{5\frac12}$		
1	2526.213	(100R)	III	39573.04	$a^4F_{4\frac12}-s^4D_{3\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7) Zeeman effect Observed	(8) Zeeman effect Computed
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm⁻¹	Term combinations	Observed	Computed
1	2523.505	5h		39615.51			
1	2522.024	1		39638.77	$a^4F_{3\frac12}-u^4G^2_{2\frac12}$		
1	2521.615	(3h)	III	39645.20			
1	2521.512	6h		39646.82			
1	2520.31	10h		39665.73			
1	2519.622	(100R)	III	39676.56	$\begin{cases} a^4F_{3\frac12}-s^4D^2_{2\frac12} \\ (a^4F_{3\frac12}-u^4G^3_{3\frac12}) \end{cases}$		
1	2517.500	8		39710.00	$a^4F_{2\frac12}-x^4S^1_{1\frac12}$		
1	2517.142	(80R)	III	39715.64	$a^4F_{3\frac12}-u^4G^4_{4\frac12}$		
1	2515.649	6h		39739.22			
1	2515.145	(30r)	III	39747.18	$a^4F_{2\frac12}-v^2D^1_{1\frac12}$		
1	2514.41	10h		39758.79			
1	2514.322	15h		39760.18			
1	2511.940	(100r)	III	39797.88	$a^4F_{2\frac12}-s^4D^1_{1\frac12}$		
1	2511.642	(80r)	III	39802.61	$a^4F_{3\frac12}-s^4D^3_{3\frac12}$		
1	2511.182	20h		39809.90			
1	2510.242	(8)	III	39824.80	$a^4F_{2\frac12}-u^4G^2_{2\frac12}$		
1	2510.18	1		39825.79	$a^4F_{4\frac12}-w^4H^4_{4\frac12}$		
1	2508.822	5		39847.34	$a^4F_{1\frac12}-x^4S^1_{1\frac12}$		
1	2507.777	(100R)	III	39863.95	$\begin{cases} a^4F_{2\frac12}-u^4G^3_{2\frac12} \\ a^4F_{2\frac12}-s^4D^2_{2\frac12} \end{cases}$		
1	2506.902	150R		39877.86	$a^4F_{1\frac12}-s^4D^0_{0\frac12}$		
1	2506.482	6		39884.54	$a^4F_{1\frac12}-v^2D^1_{1\frac12}$		
1	2505.540	(15)	III	39899.54	$a^4F_{4\frac12}-w^4H^5_{4\frac12}$		
1	2504.382	1		39917.98	$a^6D_{2\frac12}-r^4D^2_{2\frac12}$		
1	2503.912	2		39925.47	$a^6D_{3\frac12}-2^3_{3\frac12}$		
1	2503.300	(50r)	III	39935.24	$a^4F_{1\frac12}-s^4D^1_{1\frac12}$		
1	2501.608	(60R)	III	39962.25	$a^4F_{1\frac12}-u^4G^2_{2\frac12}$		
1	2500.382	5		39981.84	$a^4F_{2\frac12}-v^2D^2_{2\frac12}$		
1	2499.959	8		39988.60	$a^4F_{2\frac12}-s^4D^3_{3\frac12}$		
1	2499.778	2		39991.50	$a^4F_{3\frac12}-w^4H^3_{3\frac12}$		
1	2499.244	(12)	III	40000.05	$a^4H_{1\frac12}-s^4D^2_{2\frac12}$		
1	2499.094	15		40002.44	$a^4F_{3\frac12}-u^2D^2_{2\frac12}$		
1	2498.232	(20h)	III	40016.25	$a^4F_{2\frac12}-v^2F^2_{2\frac12}$		
1	2498.024	(10h)	III	40019.58			
1	2497.655	6h		40025.49	$a^6D_{2\frac12}-r^4D^3_{3\frac12}$		
1	2497.099	2		40034.40	$a^4F_{4\frac12}-v^2F^3_{3\frac12}$		
1	2495.787	20		40055.44	$a^4F_{3\frac12}-w^4H^4_{4\frac12}$		
1	2491.815	2		40119.29	$a^4F_{1\frac12}-v^2D^2_{2\frac12}$		
1	2489.13	4h		40162.56	$a^6D_{4\frac12}-w^6D^5_{5\frac12}?$		
1	2488.737	4h		40168.90	$a^6D_{3\frac12}-w^6D^4_{4\frac12}?$		
1	2488.203	5		40177.52	$a^4F_{2\frac12}-w^4H^3_{3\frac12}$		
1	2487.528	10		40188.43	$a^4F_{2\frac12}-u^2D^2_{2\frac12}$		
1	2483.636	(7h)	III	40251.40			
1	2482.864	2		40263.91	$a^4F_{3\frac12}-v^2F^3_{3\frac12}$		
1	2482.711	(15h)	III	40266.39			
1	2482.115	(20h)	III	40276.06	$a^6D_{3\frac12}-w^6D^3_{3\frac12}?$		
1	2481.28	3h		40289.61			
1	2481.11	10h		40292.37			
1	2480.606	(30h)	III	40300.56	$a^6D_{4\frac12}-w^6D^4_{4\frac12}?$		
1	2478.97	5h		40327.15	$a^6D_{1\frac12}-w^6D^2_{2\frac12}?$		
1	2476.510	8h		40367.21	$a^6D_{2\frac12}-w^6D^3_{3\frac12}?$		
1	2475.178	10		40388.93			
1	2473.652	5h		40413.84	$a^6D_{3\frac12}-w^6D^3_{3\frac12}?$		
1	2473.527	6		40415.89			
1	2471.443	10		40449.96	$a^4F_{2\frac12}-v^2D^3_{3\frac12}$		
1	2468.138	3		40504.13			
1	2465.664	10h		40544.76			
1	2464.953	2		40556.46	$a^4F_{2\frac12}-w^2P^1_{1\frac12}$		
1	2445.224	3		40883.66	$a^4F_{4\frac12}-t^2G^3_{3\frac12}$		
1	2441.892	(30)	III	40939.44	$a^4F_{4\frac12}-t^4F^3_{3\frac12}?$		
1	2441.352	(15)	III	40948.49	$a^4F_{4\frac12}-v^2H^4_{4\frac12}$		
1	2439.102	(50r)	III	40986.26	$a^4F_{4\frac12}-t^2G^4_{4\frac12}$		
1	2435.518	(100R)	III	41046.57	$a^4F_{3\frac12}-t^4F^3_{3\frac12}$		
1	2432.014	(25r?)	III	41105.71	$a^4F_{4\frac12}-t^4F^3_{3\frac12}$		
1	2431.940	20r?		41106.96	$a^4F_{4\frac12}-v^2H^5_{5\frac12}$		
1	2431.568	10		41113.24	$a^4F_{3\frac12}-t^2G^3_{3\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm⁻¹	Term combinations	Observed	Computed
1	2428.269	(100R)	III	41169.09	$a^4F_{3\frac{1}{2}}-t^4F_{2\frac{1}{2}}$		
1	2427.735	20		41178.15	$a^4F_{3\frac{1}{2}}-v^2H_{4\frac{1}{2}}$		
1	2426.126	15		41205.46	$a^4F_{4\frac{1}{2}}-t^4G_{3\frac{1}{2}}$		
1	2423.370	40r?		41252.31	$a^4F_{2\frac{1}{2}}-t^4F'_{1\frac{1}{2}}$		
1	2421.976	(140R)	III	41276.05	$a^4F_{3\frac{1}{2}}-t^4F_{3\frac{1}{2}}$		
1	2421.058	(120R)	III	41291.70	$a^4F_{2\frac{1}{2}}-t^4F_{2\frac{1}{2}}$		
1	2420.614	3		41299.28	$a^4F_{2\frac{1}{2}}-t^2G_{3\frac{1}{2}}$		
1	2420.221	8		41305.98			
1	2420.115	(100R)	III	41307.79	$a^4F_{4\frac{1}{2}}-t^4G_{4\frac{1}{2}}$		
1	2418.738	15		41331.31	$a^4F_{3\frac{1}{2}}-t^4G_{2\frac{1}{2}}$		
1	2417.351	(100R)	III	41355.02	$a^4F_{2\frac{1}{2}}-t^4F_{1\frac{1}{2}}$		
1	2416.748	(150R)	III	41365.34	$a^4F_{4\frac{1}{2}}-t^4G_{3\frac{1}{2}}$		
1	2415.326	(110R)	III	41389.69	$a^4F_{1\frac{1}{2}}-t^4F'_{1\frac{1}{2}}$		
1	2413.031	(60R)	III	41429.05	$a^4F_{1\frac{1}{2}}-t^4F_{2\frac{1}{2}}$		
1	2412.686	(80R)	III	41434.97	$a^4F_{3\frac{1}{2}}-t^4G_{3\frac{1}{2}}$		
1	2411.590	5h		41453.80			
1	2410.768	2		41467.94	$a^4F_{4\frac{1}{2}}-u^2F_{3\frac{1}{2}}$		
1	2409.721	7		41485.95			
1	2407.900	(40R)	III	41517.32	$a^4F_{2\frac{1}{2}}-t^4G_{3\frac{1}{2}}$		
1	2407.517	5		41523.93			
1	2407.389	2		41526.14	$a^4F_{4\frac{1}{2}}-u^2H_{4\frac{1}{2}}$		
1	2406.748	(50R)	III	41537.20	$a^4F_{3\frac{1}{2}}-t^4G_{4\frac{1}{2}}$		
1	2405.733	6		41554.72	$a^6D_{1\frac{1}{2}}-x^0F_{0\frac{1}{2}}?$		
1	2405.494	8		41558.85			
1	2405.245	10h		41563.15	$a^6D_{4\frac{1}{2}}-x^0P_{3\frac{1}{2}}?$		
1	2404.544	5h		41575.26			
1	2403.362	5h		41595.71	$a^6D_{0\frac{1}{2}}-x^6F_{0\frac{1}{2}}?$		
1	2403.029	10h		41601.47	$a^6D_{4\frac{1}{2}}-x^6F_{3\frac{1}{2}}?$		
1	2401.901	(60R)	IV	41621.01	$a^4F_{2\frac{1}{2}}-t^4G_{3\frac{1}{2}}$		
1	2401.555	1		41627.00	$a^4F_{3\frac{1}{2}}-u^2P_{2\frac{1}{2}}$		
1	2401.450	3		41628.83			
1	2399.954	(50R)	IV	41654.77	$a^4F_{1\frac{1}{2}}-t^4G_{2\frac{1}{2}}$		
1	2398.877	4		41673.47	$a^2G_{4\frac{1}{2}}-p^2G_{3\frac{1}{2}}$		
1	2398.697	10h		41676.60	$a^6D_{3\frac{1}{2}}-x^6P_{3\frac{1}{2}}?$		
1	2398.277	20h		41683.89	$a^4F_{4\frac{1}{2}}-2_{3\frac{1}{2}}$		
1	2398.134	20		41686.38	$a^4F_{3\frac{1}{2}}-v^4P_{2\frac{1}{2}}$		
1	2397.775	40h		41692.62	$\begin{cases} a^4F_{4\frac{1}{2}}-r^4D_{3\frac{1}{2}} \\ a^6D_{1\frac{1}{2}}-x^6F_{1\frac{1}{2}}? \end{cases}$		
1	2397.496	4		41697.48	$a^4F_{3\frac{1}{2}}-u^2F_{3\frac{1}{2}}$		
1	2396.706	8		41711.22	$a^4F_{2\frac{1}{2}}-v^4P_{1\frac{1}{2}}$		
1	2396.492	15h		41714.94	$a^6D_{3\frac{1}{2}}-x^0F_{3\frac{1}{2}}?$		
1	2396.089	1		41721.96	$a^6D_{1\frac{1}{2}}-t^2F_{2\frac{1}{2}}$		
1	2395.429	10h		41733.45	$a^6D_{1\frac{1}{2}}-x^6F_{1\frac{1}{2}}?$		
1	2395.104	30h		41739.11	$a^6D_{2\frac{1}{2}}-x^6F_{2\frac{1}{2}}?$		
1	2394.270	10		41753.65	$a^6D_{4\frac{1}{2}}-s^4G_{5\frac{1}{2}}$		
1	2394.152	2		41755.71	$a^4F_{3\frac{1}{2}}-u^2H_{4\frac{1}{2}}$		
1	2392.898	40h		41777.59	$a^6D_{4\frac{1}{2}}-x^0F_{\substack{4\frac{1}{2} \\ 3\frac{1}{2}}}?$		
1	2392.00	1		41793.27	$a^6D_{3\frac{1}{2}}-s^4G_{4\frac{1}{2}}$		
1	2391.268	30h		41806.07	$\begin{cases} a^6D_{2\frac{1}{2}}-x^6F_{3\frac{1}{2}}? \\ a^6D_{1\frac{1}{2}}-x^6F_{2\frac{1}{2}}? \end{cases}$		
1	2390.868	4		41813.06	$a^4F_{2\frac{1}{2}}-u^2F_{2\frac{1}{2}}$		
1	2390.774	30		41814.70	$a^4F_{3\frac{1}{2}}-r^4D_{2\frac{1}{2}}$		
1	2388.910	40		41847.33	$a^2G_{4\frac{1}{2}}-p^2G_{4\frac{1}{2}}$		
1	2388.084	35		41861.80	$a^4F_{2\frac{1}{2}}-r^4D_{1\frac{1}{2}}$		
1	2387.780	8		41867.13			
1	2387.475	5		41872.48	$a^4F_{2\frac{1}{2}}-v^4P_{1\frac{1}{2}}$		
1	2386.956	40		41881.58	$a^2G_{3\frac{1}{2}}-p^2G_{3\frac{1}{2}}$		
1	2386.409	20h		41891.18	$a^6D_{3\frac{1}{2}}-x^0F_{4\frac{1}{2}}?$		
1	2385.14	2h		41913.47	$a^4F_{3\frac{1}{2}}-2_{3\frac{1}{2}}$		
1	2384.64	5		41922.25	$a^4F_{3\frac{1}{2}}-r^4D_{3\frac{1}{2}}$		
1	2384.286	20		41928.48	$a^4F_{1\frac{1}{2}}-r^4D_{0\frac{1}{2}}$		
1	2383.038	3		41950.43	$a^4F_{1\frac{1}{2}}-u^2F_{2\frac{1}{2}}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac} cm⁻¹	Term combinations	Observed	Computed
1	2380.266	8		41999.28	$a^4F_{1\frac12}-r^4D_{1\frac12}$		
1	2380.178	5		42000.83	$a^4F_{2\frac12}-r^4D_{2\frac12}$		
1	2378.262	4		42034.67			
1	2377.083	3		42055.52	$a^2G_{3\frac12}-p^2G_{4\frac12}$		
1	2372.43	1?		42137.99	$a^4F_{1\frac12}-r^4D_{2\frac12}$		
1	2370.00	1?		42181.19	$a^4F_{2\frac12}-v^2P_{1\frac12}$		
1	2355.441	1		42441.89	$a^6D_{0\frac12}-p^4D_{1\frac12}$		
1	2347.026	10		42594.05	$a^4F_{4\frac12}-s^4F_{3\frac12}$		
1	2340.479	(50 r)	IV	42713.19	$a^4F_{4\frac12}-s^4F_{4\frac12}$		
1	2339.673	20		42727.90	$a^4F_{3\frac12}-s^4F_{2\frac12}$		
1	2334.434	40 r		42823.78	$a^4F_{3\frac12}-s^4F_{3\frac12}$		
1	2333.33	20		42844.04	$a^4F_{2\frac12}-s^4F_{1\frac12}$		
1	2329.529	30		42913.94	$a^4F_{2\frac12}-s^4F_{2\frac12}$		
1	2327.970	10		42942.68	$a^4F_{3\frac12}-s^4F_{4\frac12}$		
1	2325.873	30		42981.39	$a^4F_{1\frac12}-s^4F_{1\frac12}$		
1	2324.748	40		43002.19	$a^4F_{4\frac12}-q^4D_{3\frac12}$		
1	2324.347	6		43009.61	$a^4F_{2\frac12}-s^4F_{3\frac12}$		
1	2324.189	10		43012.53	$a^2D_{2\frac12}-s^2P_{1\frac12}?$		
1	2322.096	15		43051.30	$a^4F_{1\frac12}-s^4F_{2\frac12}$		
1	2321.072	5		43070.29			
1	2320.156	25		43087.29	$a^4F_{3\frac12}-q^4D_{2\frac12}$		
1	2316.751	25		43150.61	$a^2G_{4\frac12}-r^2H_{5\frac12}$		
1	2315.634	30		43171.43	$a^4F_{2\frac12}-q^4D_{1\frac12}$		
1	2314.691	20		43189.01	$a^2G_{3\frac12}-r^2H_{4\frac12}$		
1	2312.531	10		43229.34	$a^2D_{1\frac12}-s^2P_{0\frac12}?$		
1	2312.410	8		43231.61	$a^4F_{3\frac12}-q^4D_{3\frac12}$		
1	2311.465	30		43249.28	$a^4F_{1\frac12}-q^4D_{0\frac12}$		
1	2310.958	5		43258.77			
1	2310.180	20		43273.33	$a^4F_{2\frac12}-q^4D_{2\frac12}$		
1	2308.287	15		43308.82	$a^4F_{1\frac12}-q^4D_{1\frac12}$		
1	2307.66	1?		43320.59	$a^4F_{4\frac12}-t^2F_{3\frac12}$		
1	2304.349	4		43382.83			
1	2302.87	1		43410.68	$a^4F_{1\frac12}-q^4D_{2\frac12}$		
1	2302.531	4		43417.08	$a^4F_{2\frac12}-q^4D_{3\frac12}?$		
1	2299.544	3		43473.47	$a^4F_{4\frac12}-x^6F_{3\frac12}?$		
1	2299.337	5		43477.38			
1	2295.414	4		43551.68	$\begin{cases} a^4F_{3\frac12}-t^2F_{2\frac12} \\ a^4F_{4\frac12}-s^4G_{4\frac12}? \end{cases}$		
1	2293.243	2		43592.90	$a^4F_{4\frac12}-t^2H_{4\frac12}$		
1	2291.527	10		43625.54	$a^4F_{4\frac12}-s^4G_{5\frac12}$		
1	2290.263	2		43649.62	$\begin{cases} a^4F_{4\frac12}-x^6F_{4\frac12}, \\ 5\frac12? \\ a^6D_{0\frac12}-o^4D_{1\frac12}? \end{cases}$		
1	2286.581	8		43719.90	$a^4F_{3\frac12}-s^4G_{3\frac12}$		
1	2284.982	3		43750.49	$a^2P_{0\frac12}-s^2P_{1\frac12}?$		
1	2284.494	20		43759.84	$a^2P_{1\frac12}-s^2P_{0\frac12}?$		
1	2283.382	10		43781.14	$a^4F_{3\frac12}-s^4G_{4\frac12}$		
1	2279.92	4		43847.62			
1	2279.152	4		43862.39	$a^4F_{2\frac12}-s^4G_{2\frac12}$		
1	2276.889	6		43905.98	$a^4F_{2\frac12}-s^4G_{3\frac12}$		
1	2276.661	3		43910.38	$a^4F_{4\frac12}-s^2G_{4\frac12}$		
1	2275.475	3		43933.26	$a^2P_{1\frac12}-s^2P_{0\frac12}?$		
1	2272.048	4		43999.51	$a^4F_{1\frac12}-s^4G_{2\frac12}$		
1	ᶜ2264.39	30?Fe?		44148.31	$a^4F_{1\frac12}-p^4D_{3\frac12}$		
1	2263.17	1		44172.11	$a^4F_{3\frac12}-s^2G_{3\frac12}$		
1	ᵈ2258.805	9		44251.46			
1	ᵈ2256.968	50r		44293.48	$a^4F_{3\frac12}-p^4D_{3\frac12}$		
1	2252.681	5		44377.76	$a^4F_{3\frac12}-p^4D_{3\frac12}$		
1	2250.672	30r?		44417.37	$a^4F_{2\frac12}-p^4D_{1\frac12}$		
1	2247.520	9		44479.66	$a^4F_{2\frac12}-p^4D_{2\frac12}$		
1	2246.204	1		44505.71	$a^4F_{4\frac12}-r^4F_{3\frac12}$		
1	2245.756	30		44514.59	$a^4F_{1\frac12}-p^4D_{0\frac12}$		
1	2243.742	8h		44554.54	$a^4F_{1\frac12}-p^4D_{1\frac12}$		

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1) Ref.	(2) λ_{air} A	(3) Int. arc	(4) Temp. class	(5) ν_{vac} cm⁻¹	(6) Term combinations	(7) Zeeman effect Observed	(8) Zeeman effect Computed
1	2243.258	6		44564.16			
1	2242.614	5		44576.95			
1	2241.846	40r		44592.21	$a^4F_{4\frac12} - r^4F^\circ_{4\frac12}$		
1	2241.213	7		44604.81	$a^4F_{4\frac12} - q^4F^\circ_{3\frac12}$		
1	2240.302	2		44622.95	$a^4F_{4\frac12} - r^2G^\circ_{3\frac12}$		
1	2237.228	50r		44684.26	$a^4F_{4\frac12} - q^4F^\circ_{4\frac12}$		
1	2234.680	10		44735.20	$a^4F_{3\frac12} - r^4F^\circ_{3\frac12}$		
1	2232.252	8		44783.85	$a^4F_{3\frac12} - q^4F^\circ_{2\frac12}$		
1	2231.412	30		44800.71			
1	2230.362	20		44821.80	$a^4F_{3\frac12} - r^4F^\circ_{4\frac12}$		
1	^{d}2229.734	25r?		44834.42	$a^4F_{3\frac12} - q^4F^\circ_{3\frac12}$		
1	2228.835	15		44852.51	$a^4F_{3\frac12} - r^2G^\circ_{3\frac12}$		
1	2227.398	3		44881.44			
1	2225.787	10		44913.92	$\begin{cases} a^4F_{3\frac12} - q^4F^\circ_{4\frac12} \\ a^4F_{2\frac12} - r^4F^\circ_{2\frac12} \end{cases}$		
1	2225.422	30		44921.29	$a^4F_{2\frac12} - r^4F^\circ_{3\frac12}$		
1	2225.029	8		44929.42	$a^4F_{2\frac12} - q^4F^\circ_{1\frac12}$		
1	2223.014	20		44969.94	$a^4F_{2\frac12} - q^4F^\circ_{2\frac12}$		
1	2222.834	15		44973.58	$a^4F_{1\frac12} - r^4F^\circ_{1\frac12}$		
1	2220.450	3		45021.86	$a^4F_{2\frac12} - u^2P^\circ_{1\frac12}$		
1	2219.652	3		45038.04	$a^4F_{3\frac12} - r^2G^\circ_{4\frac12}$		
1	2218.238	25r		45066.75	$a^4F_{1\frac12} - q^4F^\circ_{1\frac12}$		
1	2216.666	10		45098.71			
1	2216.245	4		45107.27	$a^4F_{1\frac12} - q^4F^\circ_{2\frac12}$		
1	2216.054	3		45111.16			
1	2213.692	10		45159.29	$a^4F_{1\frac12} - u^2P^\circ_{1\frac12}$		
1	2211.350	3		45207.11	$a^4F_{4\frac12} - p^4F^\circ_{3\frac12}$		
1	2210.878	5		45216.76			
1	2207.976	3		45276.18			
1	2204.930	12		45338.72	$a^4F_{4\frac12} - p^4F^\circ_{4\frac12}$		
1	2203.658	4		45364.89	$a^4F_{3\frac12} - p^4F^\circ_{2\frac12}$		
1	2202.724	60r		45384.13	$a^4F_{4\frac12} - o^4D^\circ_{3\frac12}$		
1	2200.174	15		45436.72	$a^4F_{3\frac12} - p^4F^\circ_{3\frac12}$		
1	2196.56	2?		45511.47	$a^4F_{2\frac12} - p^4F^\circ_{1\frac12}$		
1	2196.40	40r?		45514.78	$a^4F_{3\frac12} - o^4D^\circ_{2\frac12}$		
1	2196.29	5		45517.06	$a^4F_{2\frac12} - t^2P^\circ_{1\frac12}$		
1	2194.65	10		45551.07	$a^4F_{2\frac12} - p^4F^\circ_{2\frac12}$		
1	2193.82	5		45568.30	$a^4F_{3\frac12} - p^4F^\circ_{4\frac12}$		
1	2193.47	6		45575.57			
1	2191.65	3		45613.42	$a^4F_{3\frac12} - o^4D^\circ_{3\frac12}$		
1	2191.10	30		45624.87	$\begin{cases} a^4F_{2\frac12} - o^4D^\circ_{1\frac12} \\ (a^4F_{2\frac12} - p^4F^\circ_{3\frac12}) \end{cases}$		
1	2189.95	6		45648.83	$a^4F_{1\frac12} - p^4F^\circ_{1\frac12}$		
1	2189.68	2?		45654.45	$a^4F_{1\frac12} - t^2P^\circ_{1\frac12}$		
1	2188.06	3?		45688.26	$a^4F_{1\frac12} - p^4F^\circ_{2\frac12}$		
1	2187.95	15		45690.55	$a^4F_{4\frac12} - r^4G^\circ_{3\frac12}$		
1	2187.39	10		45702.24	$a^4F_{1\frac12} - o^4D^\circ_{0\frac12}$		
1	2184.53	2		45762.07	$a^4F_{1\frac12} - o^4D^\circ_{1\frac12}$		
1	2182.22	120R		45810.50	$a^4F_{4\frac12} - r^4G^\circ_{5\frac12}$		
1	2181.97	20		45815.76	$a^4F_{3\frac12} - r^4G^\circ_{3\frac12}$		
1	2177.24	10		45915.27	$a^4F_{2\frac12} - r^4G^\circ_{2\frac12}$		
1	2177.00	100R		45920.33	$a^4F_{3\frac12} - r^4G^\circ_{4\frac12}$		
1	2173.15	80R		46001.68	$a^4F_{2\frac12} - r^4G^\circ_{3\frac12}$		
1	2172.75	7		46010.14			
1	2170.74	60R		46052.75	$a^4F_{1\frac12} - r^4G^\circ_{2\frac12}$		
1	2169.85	8		46071.63			
1	2164.88	5		46177.39			
1	2158.12	6		46322.01			
1	2147.58	5h		46549.33			
1	2146.64	3		46569.71			
1	2138.60	3		46744.77			
1	2132.89	4		46869.89			

TABLE 1.—*Arc spectrum of vanadium* (V I)—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						Zeeman effect	
Ref.	λ_{air} A	Int. arc	Temp. class	ν_{vac}cm⁻¹	Term combinations	Observed	Computed
1	2125.83	3		47025.53			
1	2106.32	3		47461.05			
1	2104.56	3		47500.75			
1	2102.21	3		47553.83			
1	2100.75	6		47586.88	$a^4F_{4\frac12}-o^4F^3_{3\frac12}$		
1	2100.51	8		47592.31	$a^4F_{3\frac12}-o^4F^2_{2\frac12}$		
1	2098.50	3h		47637.89			
1	2097.34	7		47664.24	$a^4F_{2\frac12}-o^4F^1_{1\frac12}$		
1	2096.16	8		47691.07			
1	2095.75	8		47700.39			
1	2094.70	25r?		47724.30			
1	2092.44	60r		47775.84	$a^4F_{4\frac12}-o^4F^3_{3\frac12}$		
1	2092.30	10r		47779.04	$a^4F_{2\frac12}-o^4F^2_{2\frac12}$		
1	2091.29	20r		47802.11	$a^4F_{1\frac12}-o^4F^1_{1\frac12}$		
1	2090.90	5		47811.03			
1	2090.64	20r		47816.97	$a^4F_{3\frac12}-o^4F^3_{3\frac12}$		
1	2089.89	2h		47834.13	$a^4F_{3\frac12}-q^2G^4_{4\frac12}$		
1	2088.56	15r?		47864.59			
1	2086.55	3		47910.69			
1	2086.31	8		47916.20	$a^4F_{1\frac12}-o^4F^2_{2\frac12}$		
1	2082.49	20r?		48004.08	$\begin{cases} a^4F_{3\frac12}-o^4F^4_{3\frac12} \\ a^4F_{2\frac12}-o^4F^3_{3\frac12} \end{cases}$		

NOTES TO TABLE 1

a=*g* for higher level calculated from this line.
b=Observed and calculated Zeeman effects discordant.
c=Fe masks V line.
d=Blend with V II line.
e=Masked by V II line.
f=Ni masks V line.
g=Zeeman effect changed by self-reversal.

The total number of lines appearing in table 1 is 2,525; it includes all classified lines, and practically all unclassified lines since the latter are omitted only when they are suspected of molecular origin or rest on a single observer and have low intensity (2 or less). This list may, therefore, be regarded as a complete compilation of all data pertaining to spectral lines characteristic of neutral vanadium atoms, in the wave-length interval 2000 to 12000 A or, in other words, the entire range observable photographically with large-scale spectrographs in air. Since only 87 percent of the total number of lines are classified, this analysis, strictly speaking, is still incomplete. However, the main features of the V I spectrum are now revealed, and further efforts at analysis are deemed unprofitable without considerable additions to the observational material.

2. TERMS OF THE V I SPECTRUM

The established terms of the V I spectrum are collected in table 2 in order of increasing magnitude beginning with the normal state $a^4F_{1\frac12}=0.00$. Successive columns contain the electron configuration responsible for the term, term symbols, level values, level separations, or intervals, *g*-values derived from observed Zeeman effects and

observed combinations. The total number of levels is 453, comprising 148 terms. These numbers are divided among multiplicities as follows: 113 doublet levels or 60 terms; 219 quartet levels or 60 terms; 118 sextet levels or 28 terms; 3 levels remaining unassigned to terms; and 10 terms lacking their full quota of levels. A large majority of the terms are regular, only 14 being wholly or partially inverted. Landé's interval rules are reasonably well obeyed, as is shown by the examples in table 3, but there are noteworthy exceptions, such as $z^4H°$, $w^4D°$, $v^4F°$, $w^4G°$, $x^4H°$, $u^4G°$, $t^4G°$, g^6F, etc. In some cases (e. g., $w^4D°$, $v^4F°$, $w^4P°$), the deviations are apparently the result of perturbations also accounting for anomalous g values, but there are other cases of g-sharing (e. g., $z^6D°$, $z^6F°$) unaccompanied by any marked distortion of intervals.

Magnetic splitting factors (g-values) for 346 levels are entered in column (5) of table 2. These may readily be compared with Landé values by referring to the tables cited above [34] or to the paper [25] in which observed values of g, g-sums and anomalies for VI levels have been discussed in detail.

All of the observed combinations of each term are indicated in the final column of table 2, which may serve to exhibit the combining properties in lieu of a diagram of transitions. The total number of multiplets is 634, the combinations of various types being as follows: doublet 174; quartet 210; sextet 52; doublet-quartet 156; quartet-sextet 34; and doublet-sextet 8. In addition, there are 10 combinations with the 3 miscellaneous odd levels, and 4 combinations in which the observed lines of VI are believed to mask those of the multiplet in question. Combinations in parentheses have their lines masked.

TABLE 2.—*Terms of the VI spectrum*

Electron configuration	Term symbol	Level	Difference	Observed g	Combinations
d^3s^2	$a^4F_{1½}$ $a^4F_{2½}$ $a^4F_{3½}$ $a^4F_{4½}$	0.00 137.38 323.42 553.02	137.38 186.04 229.60	0.40 1.01 1.20 1.28	$(x^4S°, z^4P°, w^4P°, v^4P°, z^4D°, y^4D°, x^4D°, w^4D°,$ $v^4D°, u^4D°, t^4D°, s^4D°, r^4D°, q^4D°, p^4D°, o^4D°,$ $z^4F°, y^4F°, w^4F°, v^4F°, u^4F°, t^4F°, s^4F°, r^4F°,$ $q^4F°, p^4F°, o^4F°, z^4G°, y^4G°, x^4G°, w^4G°, v^4G°,$ $u^4G°, t^4G°, s^4G°, r^4G°, z^4H°, w^4H°, z^2P°, w^2P°,$ $v^2P°, u^2P°, t^2P°, z^2D°, y^2D°, x^2D°, w^2D°, v^2D°,$ $u^2D°, z^2F°, y^2F°, x^2F°, w^2F°, v^2F°, u^2F°, t^2F°,$ $z^2G°, y^2G°, x^2G°, w^2G°, u^2G°, t^2G°, s^2G°, t^2G°,$ $q^2G°, z^2H°, y^2H°, x^2H°, v^2H°, u^2H°, t^2H°, z^6P°,$ $y^6P°, z^6D°, y^6D°, x^6D°, z^6F°, y^6F°, x^6F°, z^6G°,$ $1°, 2°.$
$d^4s(^5D)$	$a^6D_{0½}$ $a^6D_{1½}$ $a^6D_{2½}$ $a^6D_{3½}$ $a^6D_{4½}$	2112.32 2153.20 2220.13 2311.37 2424.89	40.88 66.93 91.24 113.52	3.29 1.82 1.61 1.53 1.52	$(z^6P°, y^6P°, x^6P°, z^6D°, y^6D°, x^6D°, w^6D°, z^6F°, y^6F°,$ $x^6F°, z^2S°, u^2D°, w^2F°, t^2F°, z^2G°, z^4P°, y^4D°,$ $u^4D°, t^4D°, s^4D°, r^4D°, p^4D°, o^4D°, z^4F°, y^4F°,$ $x^4F°, s^4G°, 2°.$
$d^4s(^5D)$	$a^4D_{0½}$ $a^4D_{1½}$ $a^4D_{2½}$ $a^4D_{3½}$	8412.94 8476.20 8578.52 8715.72	63.26 102.32 137.20	0.00 1.19 1.35 1.39	$(z^4P°, y^4P°, x^4P°, w^4P°, v^4P°, u^4P°, t^4P°, z^4D°, y^4D°,$ $x^4D°, w^4D°, v^4D°, u^4D°, t^4D°, s^4D°, r^4D°, q^4D°,$ $p^4D°, o^4D°, z^4F°, y^4F°, x^4F°, w^4F°, v^4F°, u^4F°,$ $t^4F°, s^4F°, q^4F°, p^4F°, v^4G°, z^2S°, x^2S°, z^2P°, y^2P°,$ $t^2P°, z^2D°, y^2D°, x^2D°, w^2D°, v^2D°, z^2F°, y^2F°,$ $v^2F°, z^2G°, z^6S°, z^6P°, z^6D°, y^6D°, y^6F°, 1°.$
d^3s^2	$a^4P_{0½}$ $a^4P_{1½}$ $a^4P_{2½}$	9544.54 9636.96 9824.58	92.42 187.62	2.59 1.70 1.55	$(y^4S°, x^4S°, w^4S°, z^4P°, y^4P°, x^4P°, w^4P°, v^4P°, u^4P°,$ $t^4P°, z^4D°, y^4D°, x^4D°, w^4D°, v^4D°, t^4D°, s^4D°,$ $r^4D°, q^4D°, p^4D°, o^4D°, x^4F°, w^4F°, v^4F°, u^4F°,$ $t^4F°, w^2S°, v^2P°, y^2D°, w^2D°, v^2D°, z^2F°, z^6S°,$ $z^6P°, 1°, 2°.$
d^3s^2	$a^2G_{3½}$ $aG^2_{4½}$	10892.50 11100.65	208.15	0.88 1.13	$(x^2D°, z^2F°, y^2F°, x^2F°, w^2F°, v^2F°, u^2F°, t^2F°, s^2F°,$ $z^2G°, y^2G°, x^2G°, w^2G°, v^2G°, u^2G°, t^2G°, s^2G°,$ $t^2H°, s^2H°, r^2H°, z^2I°, t^4D°, y^4F°, x^4F°, w^4G°,$ $t^4G°, z^4H°, w^4H°, x^4H°, z^4I°, y^6F°.$

TABLE 2.—*Terms of the* V I *spectrum*—Continued

Electron config- uration	Term symbol	Level	Differ- ence	Observed g	Combinations
d^3s^2	$a^2P_{1\frac12}$ $a^4P_{0\frac12}$	13801.53 13810.90	−9.37	1.20 0.64	$z^2S^\circ, y^2S^\circ, x^2S^\circ, w^2S^\circ, v^2S^\circ, z^2P^\circ, y^2P^\circ, x^2P^\circ, v^2P^\circ,$ $u^2P^\circ, t^2P^\circ, s^2P^\circ, z^2D^\circ, y^2D^\circ, x^2D^\circ, w^2D^\circ, v^2D^\circ,$ $u^2D^\circ, t^2D^\circ, z^2F^\circ, w^2F^\circ, u^2F^\circ, t^2F^\circ, s^2F^\circ, (y^4S^\circ),$ $w^4D^\circ, v^4D^\circ, s^4D^\circ, v^4F^\circ, p^4F^\circ, z^6P^\circ, x^6D^\circ.$
d^3s^2	$a^2D_{1\frac12}$ $a^2D_{2\frac12}$	14514.75 14548.83	34.08	0.97 1.17	$y^2S^\circ, z^2P^\circ, y^2P^\circ, x^2P^\circ, w^2P^\circ, v^2P^\circ, t^2P^\circ, s^2P^\circ, y^2D^\circ,$ $x^2D^\circ, w^2D^\circ, v^2D^\circ, u^2D^\circ, t^2D^\circ, z^2F^\circ, y^2F^\circ, x^2F^\circ,$ $w^2F^\circ, u^2F^\circ, t^2F^\circ, s^2F^\circ, y^2G^\circ, v^2G^\circ, y^4P^\circ,$ $u^4P^\circ, x^4D^\circ, t^4D^\circ, v^4F^\circ, q^4F^\circ, p^4F^\circ, s^4G^\circ.$
$d^4s(^3H)$	$a^4H_{3\frac12}$ $a^4H_{4\frac12}$ $a^4H_{5\frac12}$ $a^4H_{6\frac12}$	14910.04 14949.30 15000.84 15062.94	39.26 51.54 62.10	0.65 0.94 1.10 1.18	$y^4F^\circ, u^4F^\circ, t^4F^\circ, y^4G^\circ, x^4G^\circ, w^4G^\circ, v^4G^\circ, u^4G^\circ, t^4G^\circ,$ $r^4G^\circ, z^4H^\circ, y^4H^\circ, x^4H^\circ, w^4H^\circ, z^4I^\circ, v^2G^\circ, z^2H^\circ,$ $y^2H^\circ, x^2H^\circ, v^2H^\circ, z^2I^\circ, y^2I^\circ, x^2I^\circ.$
$d^4s(^3P)$	$b^4P_{0\frac12}$ $b^4P_{1\frac12}$ $b^4P_{2\frac12}$	15078.25 15270.42 15571.90	192.17 301.48	2.60 1.68 1.54	$z^4S^\circ, y^4S^\circ, x^4S^\circ, w^4S^\circ, z^4P^\circ, y^4P^\circ, x^4P^\circ, w^4P^\circ, v^4P^\circ,$ $t^4P^\circ, y^4D^\circ, x^4D^\circ, w^4D^\circ, v^4D^\circ, u^4D^\circ, t^4D^\circ, s^4D^\circ,$ $r^4D^\circ, q^4D^\circ, p^4D^\circ, y^4F^\circ, v^4F^\circ, s^4F^\circ, z^2P^\circ, x^2P^\circ,$ $x^2D^\circ, v^2D^\circ, w^2F^\circ, x^6P^\circ, x^6D^\circ.$
d^3s^2	$a^2H_{4\frac12}$ $a^2H_{5\frac12}$	15103.77 15264.83	161.06	0.90 1.07	$x^2F^\circ, w^2F^\circ, z^2G^\circ, x^2G^\circ, w^2G^\circ, v^2G^\circ, u^2G^\circ, t^2G^\circ, s^2G^\circ,$ $r^2G^\circ, q^2G^\circ, p^2G^\circ, (z^2H^\circ), y^2H^\circ, x^2H^\circ, w^2H^\circ, v^2H^\circ,$ $u^2H^\circ, t^2H^\circ, s^2H^\circ, r^2H^\circ, z^2I^\circ, y^2I^\circ, x^2I^\circ, y^4F^\circ, t^4F^\circ,$ $q^4F^\circ, w^4G^\circ, u^4G^\circ, x^4H^\circ, z^4I^\circ.$
$d^4s(^3F)$	$b^4F_{1\frac12}$ $b^4F_{2\frac12}$ $b^4F_{3\frac12}$ $b^4F_{4\frac12}$	15664.75 15688.80 15724.22 15770.72	24.05 35.42 46.50	0.39 1.05 1.22 1.31	$x^4P^\circ, y^4D^\circ, z^4D^\circ, w^4D^\circ, t^4D^\circ, s^4D^\circ, r^4D^\circ, q^4D^\circ,$ $p^4D^\circ, o^4D^\circ, y^4F^\circ, x^4F^\circ, w^4F^\circ, v^4F^\circ, u^4F^\circ, t^4F^\circ,$ $r^4F^\circ, q^4F^\circ, p^4F^\circ, y^4G^\circ, x^4G^\circ, w^4G^\circ, v^4G^\circ, u^4G^\circ,$ $t^4G^\circ, s^4G^\circ, u^2P^\circ, t^2P^\circ, u^2D^\circ, y^2F^\circ, x^2F^\circ, w^2F^\circ,$ $t^2F^\circ, z^2G^\circ, y^2G^\circ, x^2G^\circ, v^2G^\circ, t^2G^\circ, x^2H^\circ, v^2H^\circ,$ $x^6F^\circ.$
$d^3sp(^5F)$	$z^6G_{1\frac12}$ $z^6G_{2\frac12}$ $z^6G_{3\frac12}$ $z^6G_{4\frac12}$ $z^6G_{5\frac12}$ $z^6G_{6\frac12}$	*16361.45* *16449.85* *16572.54* *16728.75* *16917.15* *17136.44*	88.40 122.69 156.21 188.40 219.29	0.00 0.78 1.10 1.22 1.26 1.43	$e^6F, f^6F, g^6F, e^6G, g^6G, h^6G, e^6H, f^6H, a^4F.$
$d^4s(^3G)$	$a^4G_{2\frac12}$ $a^4G_{3\frac12}$ $a^4G_{4\frac12}$ $a^4G_{5\frac12}$	17054.87 17116.92 17181.98 17242.05	62.05 65.06 60.07	0.59 0.96 1.14 1.27	$v^4D^\circ, p^4D^\circ, o^4D^\circ, y^4F^\circ, x^4F^\circ, w^4F^\circ, v^4F^\circ, u^4F^\circ,$ $t^4G^\circ, r^4G^\circ, q^4F^\circ, p^4F^\circ, y^4G^\circ, w^4G^\circ, v^4G^\circ, u^4G^\circ,$ $t^4G^\circ, s^4G^\circ, r^4G^\circ, z^4H^\circ, y^4H^\circ, x^4H^\circ, w^4H^\circ, x^2F^\circ,$ $w^2F^\circ, u^2F^\circ, z^2G^\circ, t^2G^\circ, y^2H^\circ, x^2H^\circ, v^2H^\circ, z^2I^\circ,$ $y^2I^\circ.$
$d^3sp(^5F)$	$z^6D_{0\frac12}$ $z^6D_{1\frac12}$ $z^6D_{2\frac12}$ $z^6D_{3\frac12}$ $z^6D_{4\frac12}$	*18085.82* *18126.27* *18198.08* *18302.27* *18438.07*	40.45 71.81 104.19 135.80	3.20 1.76 1.58 1.56 1.55	$f^6P, a^6D, e^6D, f^6D, g^6D, e^6F, f^6F, g^6F, a^4D, a^4F.$
$d^3sp(^5F)$	$z^6F_{0\frac12}$ $z^6F_{1\frac12}$ $z^6F_{2\frac12}$ $z^6F_{3\frac12}$ $z^6F_{4\frac12}$ $z^6F_{5\frac12}$	*18120.12* *18174.06* *18258.89* *18372.46* *18513.46* *18680.12*	53.94 84.83 113.57 141.00 166.66	−0.44 1.14 1.28 1.28 1.38 1.42	$a^6D, e^6D, g^6D, e^6F, f^6F, g^6F, e^6G, f^6G, h^6G, e^6H, a^4F.$
$d^4s(^3P)$	$b^2P_{0\frac12}$ $b^2P_{1\frac12}$	18805.05 19189.28	384.23	0.67 1.37	$z^2S^\circ, y^2S^\circ, v^2S^\circ, z^2P^\circ, y^2P^\circ, w^2P^\circ, v^2P^\circ, t^2P^\circ, x^2D^\circ,$ $v^2D^\circ, u^2D^\circ, t^2D^\circ, x^2F^\circ, x^4D^\circ, s^4D^\circ, p^4F^\circ.$
$d^4s(^3H)$	$b^2H_{4\frac12}$ $b^2H_{5\frac12}$	19023.47 19145.13	121.66	0.91 1.08	$w^2F^\circ, x^2G^\circ, v^2G^\circ, t^2G^\circ, r^2G^\circ, q^2G^\circ, p^2G^\circ, z^2H^\circ,$ $y^2H^\circ, x^2H^\circ, w^2H^\circ, v^2H^\circ, u^2H^\circ, t^2H^\circ, s^2H^\circ, z^2I^\circ,$ $y^2I^\circ, x^2I^\circ, q^4F^\circ, w^4G^\circ, v^4G^\circ, u^4G^\circ, z^4H^\circ, x^4H^\circ,$ $w^4H^\circ, z^4I^\circ.$
$d^4s(^3F)$	$a^2F_{2\frac12}$ $a^2F_{3\frac12}$	19026.34 19078.15	51.81	0.86 1.14	$w^2P^\circ, y^2P^\circ, x^2D^\circ, w^2D^\circ, v^2D^\circ, u^2D^\circ, t^2D^\circ, z^2F^\circ,$ $y^2F^\circ, x^2F^\circ, w^2F^\circ, v^2F^\circ, u^2F^\circ, t^2F^\circ, s^2F^\circ, y^2G^\circ,$ $x^2G^\circ, v^2G^\circ, u^2G^\circ, t^2G^\circ, s^2G^\circ, (r^2G^\circ), q^2G^\circ, v^2H^\circ,$ $t^2H^\circ, u^4P^\circ, v^4D^\circ, s^4D^\circ, p^4D^\circ, w^4F^\circ, u^4F^\circ, t^4F^\circ,$ $s^4F^\circ, w^4G^\circ, t^4G^\circ, z^4H^\circ.$
d^5	$a^6S_{2\frac12}$	20202.49			$y^6P^\circ.$
$d^3sp(^3F)$	$z^4D_{0\frac12}$ $z^4D_{1\frac12}$ $z^4D_{2\frac12}$ $z^4D_{3\frac12}$	*20606.43* *20687.75* *20828.48* *21032.52*	81.32 140.73 204.04	−0.04 1.21 1.35 1.45	$a^4P, a^4D, a^4F, f^4F.$

TABLE 2.—*Terms of the V I spectrum*—Continued

Electron configuration	Term symbol	Level	Difference	Observed g	Combinations
$d^4s(^3D)$	$b^4D_{3\frac12}$	20767.57	−21.56	1.45	$x^4P°, v^4P°, u^4P°, t^4P°, x^4D°, v^4D°, r^4D°, q^4D°, p^4D°,$
	$b^4D_{2\frac12}$	20789.13	−23.86	1.25	$o^4D°, x^4F°, w^4F°, v^4F°, t^4F°, r^4F°, q^4F°, p^4F°,$
	$b^4D_{1\frac12}$	20812.99	−17.21	1.20	$t^4G°, w^2P°, v^2P°, t^2P°, x^2D°, x^6F°, 1°, 2°, 3°.$
	$b^4D_{0\frac12}$	20830.20		0.10	
$d^4s(^3G)$	$b^2G_{4\frac12}$	21603.17	−43.22	1.11	$y^2F°, w^2F°, v^2F°, u^2F°, t^2F°, y^2G°, x^2G°, v^2G°, t^2G°$
	$b^2G_{3\frac12}$	21646.39		0.86	$s^2G°, q^2G°, z^2H°, x^2H°, v^2H°, u^2H°, t^2H°, s^2H°$
					$u^4D°, t^4D°, (r^4D°), u^4F°, q^4F°, x^4G°, w^4G°, t^4G°$
$d^3sp(^3F)$	$z^4G_{2\frac12}$	21841.45	122.05	0.55	
	$z^4G_{3\frac12}$	21963.50	157.67	0.96	$\}a^4F, f^4F.$
	$z^4G_{4\frac12}$	22121.17	192.82	1.16	
	$z^4G_{5\frac12}$	22313.99		1.24	
$d^3sp(^3F)$	$z^4F_{1\frac12}$	23088.06	122.50	0.39?	
	$z^4F_{2\frac12}$	23210.56	142.53	0.98?	$\}a^4D, a^4F, c^4F, f^4F, a^6D.$
	$z^4F_{3\frac12}$	23353.09	166.75	1.23	
	$z^4F_{4\frac12}$	23519.84		1.31	
$d^3sp(^3F)$	$z^2D_{1\frac12}$	23608.80	326.35	0.76	$\}a^2P, e^2F, a^4D, a^4F.$
	$z^2D_{2\frac12}$	23935.15		1.32?	
$d^4p(^5D)$	$z^6P_{1\frac12}$	24648.10	79.75	2.34	
	$z^6P_{2\frac12}$	24727.85	110.71	1.85	$\}e^6P, a^6D, e^6D, f^6D, f^6F, a^2P, a^4P, a^4D, a^4F.$
	$z^6P_{3\frac12}$	24838.56		1.67	
$d^4p(^5D)$	$z^4P_{0\frac12}$	24770.62	144.54	2.54	
	$z^4P_{1\frac12}$	24915.16	215.80	1.71	$\}a^4P, b^4P, a^4D, e^4D, a^4F, a^6D.$
	$z^4P_{2\frac12}$	25130.96		1.59	
$d^4p(^5D)$	$y^6F_{0\frac12}$	24789.36	40.82	−0.58	
	$y^6F_{1\frac12}$	24830.18	68.55	1.02	
	$y^6F_{2\frac12}$	24898.73	94.15	1.23	
	$y^6F_{3\frac12}$	24992.88	118.62	1.37	$\}a^6D, e^6D, f^6F, e^6G, h^6G, a^2G, a^4D, e^4D, a^4F.$
	$y^6F_{4\frac12}$	25111.50	142.03	1.41	
	$y^6F_{5\frac12}$	25253.53		1.41	
$d^4p(^5D)$	$y^4F_{1\frac12}$	25930.51	73.71	0.42	
	$y^4F_{2\frac12}$	26004.22	117.82	0.98	$\}b^4P, a^4D, e^4D, a^4F, b^4F, e^4F, a^4G, a^4H, a^2G, a^2H, a^6D$
	$y^4F_{3\frac12}$	26122.04	49.92	1.15	
	$y^4F_{4\frac12}$	26171.96		1.23	
$d^3sp(^3F)$	$z^2G_{3\frac12}$	26021.89	323.05	0.92	$\}a^2G, a^2H, a^4D, a^4F, b^4F, e^4F, a^4G, a^6D.$
	$z^2G_{4\frac12}$	26344.94		1.13	
$d^4p(^5D)$	$y^4D_{0\frac12}$	26182.60	66.88	−0.06	
	$y^4D_{1\frac12}$	26249.48	103.11	1.17	$\}a^4P, b^4P, a^4D, e^4D, a^4F, b^4F, e^4F, f^4F, a^6D.$
	$y^4D_{2\frac12}$	26352.59	127.69	1.34	
	$y^4D_{3\frac12}$	26480.28		1.39	
$d^4p(^5D)$	$y^6D_{0\frac12}$	26397.36	40.32	3.25	
	$y^6D_{1\frac12}$	26437.68	68.20	1.86	
	$y^6D_{2\frac12}$	26505.88	98.89	1.59	$\}e^6P, a^6D, e^6D, f^6F, e^6F, f^6F, a^4D, a^4F, e^4F.$
	$y^6D_{3\frac12}$	26604.77	133.54	1.58	
	$y^6D_{4\frac12}$	26738.31		1.50	
$d^3sp(^3F)$	$z^2F_{2\frac12}$	27187.77	283.11	1.07?	$\}a^2D, a^2F, a^2G, e^2F, a^4P, a^4D, a^4F, e^4F, f^4F.$
	$z^2F_{3\frac12}$	27470.88		1.01	
$d^3sp(^5P)$	$x^6D_{0\frac12}$	28313.68	55.08	3.23	
	$x^6D_{1\frac12}$	28368.76	93.39	1.82	
	$x^6D_{2\frac12}$	28462.15	133.49	1.58	$\}f^6P, a^6D, f^6F, h^6G, a^2P, b^4P, a_x^0F.$
	$x^6D_{3\frac12}$	28595.64	172.49	1.52	
	$x^6D_{4\frac12}$	28768.13		1.47	
	$z^4S_{1\frac12}$	28621.27			$b^4P.$
$d^3sp(^5P)$	$y^6P_{1\frac12}$	29202.80	93.63	2.32	
	$y^6P_{2\frac12}$	29296.43	121.74	1.76	$\}a^6S, a^6D, a^4F.$
	$y^6P_{3\frac12}$	29418.17		1.62	
$d^3sp(^3P)$	$y^4P_{0\frac12}$	30021.57	72.95	2.67	
	$y^4P_{1\frac12}$	30094.52	26.26	1.74	$\}a^4P, b^4P, a^4D, a^2D.$
	$y^4P_{2\frac12}$	30120.78		1.67	
$d^3sp(^3G)$?	$y^4G_{2\frac12}$	30635.60	58.74	0.53	
	$y^4G_{3\frac12}$	30694.34	77.38	0.93	$\}a^4F, b^4F, a^4G, a^4H.$
	$y^4G_{4\frac12}$	30771.12	92.62	1.13	
	$y^4G_{5\frac12}$	30864.34		1.21	

TABLE 2.—*Terms of the* V I *spectrum*—Continued

Electron configuration	Term symbol	Level	Difference	Observed g	Combinations
$d^3sp(^5P)$	$z^6S^o_{2\frac{1}{2}}$	*30832.58*			$a^4P, a^4D.$
$d^3sp(^3G)$	$x^4F^o_{1\frac{1}{2}}$	*31200.12*	28.86	0.38	
	$x^4F^o_{2\frac{1}{2}}$	*31228.98*	39.17	1.01	$\big\}a^4P, a^4D, b^4D, a^4F, b^4F, a^4G, e^2F, a^2G, a^6D$
	$x^4F^o_{3\frac{1}{2}}$	*31268.15*	49.35	1.21	
	$x^4F^o_{4\frac{1}{2}}$	*31317.50*		1.32	
$d^3sp(^5F)$	$x^4G^o_{1\frac{1}{2}}$	*31398.09*	143.09	0.53	
	$x^4G^o_{2\frac{1}{2}}$	*31541.18*	180.55	0.95	$\big\}a^4F, b^4F, a H, b^2G.$
	$x^4G^o_{3\frac{1}{2}}$	*31721.73*	215.45	1.12	
	$x^4G^o_{4\frac{1}{2}}$	*31937.18*		1.20	
	$z^2S^o_{\frac{1}{2}}$	*31786.19*		2.30	$a^2P, b^2P, a^4D, a^6D.$
	$y^2S^o_{\frac{1}{2}}$	*31962.30*		2.21	$a^2P, b^2P, a^2D.$
	$x^4D^o_{\frac{1}{2}}$	*32348.89*	107.56	0.08	
	$x^4D^o_{1\frac{1}{2}}$	*32456.45*	203.81	1.17	$\big\}a^4P, b^4P, a^4D, b^4D, a^4F, b^4F, b^2P, a^2D.$
	$x^4D^o_{2\frac{1}{2}}$	*32660.26*	230.80	1.29	
	$x^4D^o_{3\frac{1}{2}}$	*32891.06*		1.35	
$d^3sp(^3G)$	$z^4H^o_{2\frac{1}{2}}$	*32692.09*	96.13	0.68	
	$z^4H^o_{3\frac{1}{2}}$	*32788.22*	109.59	0.98	$\big\}a^4F, a^4G, a^4H, a^2F, a^2G, b^2H.$
	$z^4H^o_{4\frac{1}{2}}$	*32897.81*	66.09	1.11	
	$z^4H^o_{5\frac{1}{2}}$	*32963.90*		1.21	
	$z^2P^o_{\frac{1}{2}}$	*32724.86*	43.02	0.73?	$\big\}a^2P, b^2P, a^2D, b^4D, a^4D, a^4F.$
	$z^2P^o_{1\frac{1}{2}}$	*32767.88*		1.22	
$d^3sp(^5F)$	$w^4F^o_{1\frac{1}{2}}$	*32738.14*	108.60	0.52	
	$w^4F^o_{2\frac{1}{2}}$	*32846.74*	142.08	1.01	$\big\}a^4P, a^4D, b^4D, a^4F, b^4F, a^4G, a^2F.$
	$w^4F^o_{3\frac{1}{2}}$	*32988.82*	166.48	1.18	
	$w^4F^o_{4\frac{1}{2}}$	*33155.30*		1.30	
	$y^2G^o_{3\frac{1}{2}}$	*33306.96*	−53.35	1.03	$\big\}a^2D, a^2F, a^2G, b^2G, a^4F, b^4F.$
	$y^2G^o_{3\frac{1}{2}}$	*33360.31*		0.91	
	$y^2F^o_{3\frac{1}{2}}$	*32481.45*	−46.19	1.11	$\big\}a^2D, a^2F, a^2G, b^2G, a^4D, a^4F, b^4F.$
	$y^2F^o_{2\frac{1}{2}}$	*33527.64*		0.85	
	$z^2H^o_{1\frac{1}{2}}$	*33640.18*	55.14	0.92	$\big\}a^2G, b^2G, (a^2H^o), b^2H^6, a^4F, a^4H.$
	$z^2H^o_{5\frac{1}{2}}$	*33695.32*		1.09	
$d^3sp(^3P)$	$w^4D^o_{\frac{1}{2}}$	*33966.72*	9.30	0.09	
	$w^4D^o_{1\frac{1}{2}}$	*33976.02*	89.59	0.80	$\big\}a^4P, b^4P, a^4D, a^4F, b^4F, a^2P.$
	$w^4D^o_{2\frac{1}{2}}$	*34065.61*	62.43	1.30	
	$w^4D^o_{3\frac{1}{2}}$	*34128.04*		1.35	
	1°	*34019.12*			$a^4P, a^4D, b^4D, a^4F, f^6P.$
	$v^4F^o_{1\frac{1}{2}}$	*34030.04*	137.80	0.86	
	$v^4F^o_{2\frac{1}{2}}$	*34167.84*	206.97	1.32?	$\big\}a^4P, b^4P, a^4D, b^4D, a^4F, b^4F, a^4G, a^2P, a^2D.$
	$v^4F^o_{3\frac{1}{2}}$	*34374.81*	155.00	1.21	
	$v^4F^o_{4\frac{1}{2}}$	*34529.81*		1.41	
	$y^2D^o_{1\frac{1}{2}}$	*34428.76*	58.04	0.73	$\big\}a^2P, a^2D, a^2F, a^4P, a^4D, a^4F.$
	$y^2D^o_{2\frac{1}{2}}$	*34486.80*		1.18	
$d^3sp(^5F)$	$v^4D^o_{\frac{1}{2}}$	*34477.40*	59.81	0.00	
	$v^4D^o_{1\frac{1}{2}}$	*34537.21*	82.31	1.05	$\big\}a^4P, b^4P, a^4D, b^4D, a^4F, a^4G, a^2P, a^2F.$
	$v^4D^o_{2\frac{1}{2}}$	*34619.52*	127.54	1.28	
	$v^4D^o_{3\frac{1}{2}}$	*34747.06*		1.35	
	$u^4D^o_{\frac{1}{2}}$	*35012.91*	79.45	1.12	
	$u^4D^o_{1\frac{1}{2}}$	*35092.36*	132.68	1.32	$\big\}b^4P, a^4D, a^4F, b^2G, a^6D.$
	$u^4D^o_{2\frac{1}{2}}$	*35225.04*	154.07	1.33	
	$u^4D^o_{3\frac{1}{2}}$	*35379.11*			
$d^4p(^3P)?$	$y^4S^o_{1\frac{1}{2}}$	*36408.23*		1.85	$a^4P, b^4P, (a^2P).$
	$x^2D^o_{1\frac{1}{2}}$	*36416.49*	284.29	0.89	$\big\}a^2P, b^2P, a^2D, a^2F, a^2G, b^4P, a^4D, b^4D, a^4F.$
	$x^2D^o_{2\frac{1}{2}}$	*36700.78*		1.13	
$d^4p(^3F)$	$x^2G^o_{3\frac{1}{2}}$	*36461.26*	77.32	0.85	$\big\}a^2F, a^2G, b^2G, a^2H, b^2H, a^4F, b^4F.$
	$x^2G^o_{4\frac{1}{2}}$	*36538.58*		1.05	
$d^3sp(^1D)$	$y^2P^o_{\frac{1}{2}}$	*36477.75*	102.71	0.74	$\big\}a^2P, b^2P, a^2D, a^4D.$
	$y^2P^o_{1\frac{1}{2}}$	*36580.46*		1.17	
$d^4p(^3P)?$	$x^4P^o_{2\frac{1}{2}}$	*36611.81*	−83.68	1.54	
	$x^4P^o_{\frac{1}{2}}$	*36695.49*	119.31	2.51	$\big\}a^4P, b^4P, a^4D, b^4D, b^4F.$
	$x^4P^o_{1\frac{1}{2}}$	*36814.80*		1.77	

TABLE 2.—*Terms of the* V I *spectrum*—Continued

Electron configuration	Term symbol	Level	Difference	Observed g	Combinations
	$w^2G_{3\frac12}$	36628.82	199.51	0.65?	} a^2G, a^2H.
	$w^2G_{4\frac12}$	36828.33			
$d^3sp(^3H)$?	$w^4G_{2\frac12}$	36763.41	59.45	1.06	} a^4F, b^4F, a^4G, a^4H, a^2F, a^2G, b^2G, a^2H, b^2H.
	$w^4G_{3\frac12}$	36822.86	75.02	1.17	
	$w^4G_{4\frac12}$	36897.88	40.54	1.26	
	$w^4G_{5\frac12}$	36938.42			
	$x^2F_{2\frac12}$	36766.00	159.88	0.89	} a^2P, b^2P, a^2D, a^2F, a^2G, a^2H, a^4F, b^4F, a^4G.
	$x^2F_{3\frac12}$	36925.88		1.05	
d^5	$e^4F_{1\frac12}$	36983.63	5.57		} $y^4D°$, $z^4F°$, $y^4F°$, $z^2F°$, $z^2G°$, $y^6D°$.
	$e^4F_{2\frac12}$	36989.20	36.40		
	$e^4F_{3\frac12}$	37025.60	50.04		
	$e^4F_{4\frac12}$	37075.64			
$d^4s(^5D)$	$e^6D_{0\frac12}$	37116.68	41.68	3.03	} $z^6P°$, $z^6D°$, $y^6D°$, $z^6F°$, $y^6F°$.
	$e^6D_{1\frac12}$	37158.36	69.08	1.87	
	$e^6D_{2\frac12}$	37227.44	94.65	1.61	
	$e^6D_{3\frac12}$	37322.09	118.65	1.64	
	$e^6D_{4\frac12}$	37440.74		1.48	
$d^4p(^3H)$	$v^2G_{3\frac12}$	37174.68	187.27	0.99	} a^2D, a^2F, a^2G, b^2G, a^2H, b^2H, a^4F, b^4F, a^4H.
	$v^2G_{4\frac12}$	37361.95		1.05	
	$y^2H_{4\frac12}$	37180.90	29.95	0.73	} a^2G, a^2H, b^2H, a^4F, a^4G, a^4H.
	$y^2H_{5\frac12}$	37210.85		1.08	
$d^4p(^3H)$	$z^4I_{2\frac12}$	37285.03	30.80	0.87	} a^4H, a^2G, a^2H, b^2H.
	$z^4I_{3\frac12}$	37315.83	88.42	0.96	
	$z^4I_{4\frac12}$	37404.25	114.11	1.08	
	$z^4I_{5\frac12}$	37518.36		1.15	
$d^4p(^3F)$?	$w^2F_{2\frac12}$	37342.66	132.42	0.84	} a^2P, a^2D, a^2F, a^2G, b^2G, a^2H, b^2H, b^4P, a^4F, b^4F, a^4G, a^6D.
	$w^2F_{3\frac12}$	37475.08		1.08	
$d^3s.s(^5F)$	$e^6F_{0\frac12}$	37374.98	48.19	−0.72	} $z^6D°$, $y^6D°$, $z^6F°$, $z^6G°$.
	$e^6F_{1\frac12}$	37423.17	79.97	1.05	
	$e^6F_{2\frac12}$	37503.14	111.83	1.30	
	$e^6F_{3\frac12}$	37614.97	143.10	1.33	
	$e^6F_{4\frac12}$	37758.07	173.34	1.43	
	$e^6F_{5\frac12}$	37931.41		1.52	
$d^4p(^3F)$	$w^2D_{1\frac12}$	37457.50	295.04	0.80	} a^2P, a^2D, a^2F, a^4P, a^4D, a^4F.
	$w^2D_{2\frac12}$	37752.54		1.18	
$d^3sp(^3H)$?	$y^4H_{2\frac12}$	37481.36	35.59	0.76	} a^4G, a^4H, a^2G.
	$y^4H_{3\frac12}$	37516.95	48.93	1.05	
	$y^4H_{4\frac12}$	37565.88	60.56	1.09	
	$y^4H_{5\frac12}$	37626.44		1.24	
$d^4p(^3F)$	$v^4G_{2\frac12}$	37498.76	57.24	0.60	} a^4D, a^4F, b^4F, a^4G, a^4H, b^2H.
	$v^4G_{3\frac12}$	37556.00	88.41	1.02	
	$v^4G_{4\frac12}$	37644.41	120.48	1.15	
	$v^4G_{5\frac12}$	37764.89		1.22	
$d^4p(^3H)$?	$z^2I_{5\frac12}$	37530.29	76.03	0.94	} a^2G, a^2H, b^2H, a^4G, a^4H.
	$z^2I_{6\frac12}$	37606.32		1.06	
$d^4p(^3F)$	$t^4D_{0\frac12}$	37757.24	77.74	0.01	} a^4P, b^4P, a^4D, a^4F, b^4F, a^2D, a^2G, b^2G, a^6D.
	$t^4D_{1\frac12}$	37834.98	124.68	1.18	
	$t^4D_{2\frac12}$	37959.66	155.99	1.33	
	$t^4D_{3\frac12}$	38115.65		1.35	
$d^4s(^5D)$	$e^4D_{0\frac12}$	37940.08	63.85		} $z^4P°$, $y^4D°$, $y^4F°$, $y^6F°$.
	$e^4D_{1\frac12}$	38003.93	102.39		
	$e^4D_{2\frac12}$	38106.32	136.14		
	$e^4D_{3\frac12}$	38242.46			
	$x^2H_{4\frac12}$	38123.76	96.87	0.88	} a^2G, b^2G, a^2H, b^2H, a^4F, b^4F, a^4G, a^4H.
	$x^2H_{5\frac12}$	38220.63		1.10	
$d^4p(^3H)$	$x^4H_{2\frac12}$	38245.75	78.12	0.67	} a^4G, a^4H, a^2G, a^2H, b^2H.
	$x^4H_{3\frac12}$	38323.87	81.09	0.93	
	$x^4H_{4\frac12}$	38404.96	78.00	1.11	
	$x^4H_{5\frac12}$	38482.96		1.22	
	$u^2G_{2\frac12}$	38529.78	−81.16	0.99	} a^2F, a^2G, a^2H, a^4F.
	$u^2G_{3\frac12}$	38610.94		0.88?	

<p style="text-align:center">Tᴀʙʟᴇ 2.—Terms of the V ɪ spectrum—Continued</p>

Electron config-uration	Term symbol	Level	Difference	Observed g	Combinations
$d^3sp(^1H)$?	$y^2I_{5\frac{1}{2}}$ $y^2I_{6\frac{1}{2}}$	*39008.60* *39081.10*	72.50	0.92 1.06	$\}a^2H, b^2H, a^4G, a^4H.$
$d^3s.s(^5F)$	$f^4F_{1\frac{1}{2}}$ $f^4F_{2\frac{1}{2}}$ $f^4F_{3\frac{1}{2}}$ $f^4F_{4\frac{1}{2}}$	*39127.23* *39241.34* *39398.82* *39597.01*	114.11 157.48 198.19	0.46? 1.03 1.22? 1.33?	$\}z^4D°, y^4D°, z^4F°, z^4G°, z^2F°.$
$d^3sp(^5P)$	$w^4P_{0\frac{1}{2}}$ $w^4P_{1\frac{1}{2}}$ $w^4P_{2\frac{1}{2}}$	*39237.10* *39248.90* *39422.66*	11.80 173.76	2.57 1.60 1.52	$\}a^4P, b^4P, a^4D, a^4F.$
$d^4p(^3F)$	$u^4F_{1\frac{1}{2}}$ $u^4F_{2\frac{1}{2}}$ $u^4F_{3\frac{1}{2}}$ $u^4F_{4\frac{1}{2}}$	*39266.60* *39300.48* *39341.76* *39391.02*	33.88 41.28 49.26	0.54 1.00 1.21 1.30	$\}a^4P, a^4D, a^4F, b^4F, a^4G, a^4H, a^2F, b^2G.$
$d^3sp(^3P)$	$x^4S_{1\frac{1}{2}}$	*39847.24*		2.00	$a^4P, b^4P, a^4F.$
$d^4p(^2P)$	$s^4D_{0\frac{1}{2}}$ $s^4D_{1\frac{1}{2}}$ $s^4D_{2\frac{1}{2}}$ $s^4D_{3\frac{1}{2}}$	*39877.62* *39935.07* *39999.89* *40125.79*	57.45 64.82 125.90	0.01 1.10 1.33 1.38	$\}a^4P, b^4P, a^4D, a^4F, b^4F, a^2P, b^2P, a^2F, a^6D.$
$d^4p(^3P)$	$v^2D_{1\frac{1}{2}}$ $v^2D_{2\frac{1}{2}}$	*39884.43* *40119.26*	234.83	0.92 1.14	$\}a^2P, b^2P, a^2D, a^2F, a^4P, b^4P, a^4D, a^4F.$
$d^4p(^3H)$	$u^4G_{2\frac{1}{2}}$ $u^4G_{3\frac{1}{2}}$ $u^4G_{4\frac{1}{2}}$ $u^4G_{5\frac{1}{2}}$	*39962.17* *40001.18* *40038.95* *40063.78*	39.01 37.77 24.83	0.53 0.99 1.19 1.23	$\}a^4F, b^4F, a^4G, a^4H, a^2H, b^2H.$
	$v^2F_{2\frac{1}{2}}$ $v^2F_{3\frac{1}{2}}$	*40153.51* *40587.35*	433.84	1.01	$\}a^2D, a^2F, a^2G, b^2G, a^4D, a^4F.$
$d^3sp(^1P)$?	$u^2D_{1\frac{1}{2}}$ $u^2D_{2\frac{1}{2}}$	*40225.38* *40325.77*	100.39	0.70 1.12	$\}a^2P, b^2P, a^2D, a^2F, a^4F, b^4F, a^6D.$
$d^3sp(^1P)$?	$x^2S_{0\frac{1}{2}}$	*40299.81*			$a^2P, a^4D.$
$d^4p(^3G)$	$w^4H_{3\frac{1}{2}}$ $w^4H_{4\frac{1}{2}}$ $w^4H_{5\frac{1}{2}}$ $w^4H_{6\frac{1}{2}}$	*40314.83* *40378.70* *40452.38* *40535.62*	63.87 73.68 83.24	0.65 0.92 1.08 1.22	$\}a^4F, a^4G, a^4H, b^2H.$
	$x^2P_{0\frac{1}{2}}$ $x^2P_{1\frac{1}{2}}$	*40328.62* *40437.42*	108.80	1.52	$\}a^2P, a^2D, b^4P.$
	$w^2P_{0\frac{1}{2}}$ $w^2P_{1\frac{1}{2}}$	*?* *40693.76*			$\}b^2P, a^2D, a^2F, b^4D\ a^4F.$
	$w^2H_{5\frac{1}{2}}$ $w^2H_{4\frac{1}{2}}$	*40919.68* *40980.54*	−60.86	0.96 0.99	$\}a^2H, b^2H.$
$d^4p(^3G)$	$t^4F_{1\frac{1}{2}}$ $t^4F_{2\frac{1}{2}}$ $t^4F_{3\frac{1}{2}}$ $t^4F_{4\frac{1}{2}}$	*41389.49* *41428.93* *41492.29* *41599.36*	39.44 63.36 107.07	0.42 0.89 1.15 1.23	$\}a^4P, a^4D, b^4D, a^4F, b^4F, a^4G, a^4H, a^2F, a^2H.$
$d^3sp(^1G)$?	$t^2G_{3\frac{1}{2}}$ $t^2G_{4\frac{1}{2}}$	*41436.58* *41539.14*	102.56	0.90 1.04	$\}a^2F, a^2G, b^2G, a^2H, b^2H, a^4F\ b^4F, a^4G.$
$d^3sp(^1H)$?	$v^2H_{4\frac{1}{2}}$ $v^2H_{5\frac{1}{2}}$	*41501.41* *41659.71*	158.30	0.87 1.05	$\}a^2F, a^2G, b^2G, a^2H, b^2H, a^4F, b^4F, a^4G, a^4H.$
$d^4p(^3G)$	$t^4G_{2\frac{1}{2}}$ $t^4G_{3\frac{1}{2}}$ $t^4G_{4\frac{1}{2}}$ $t^4G_{5\frac{1}{2}}$	*41654.70* *41758.41* *41860.54* *41918.24*	103.71 102.13 57.70	0.58 1.03 1.20 1.20	$\}b^4D, a^4F, b^4F, a^4G, a^4H, a^2F, a^2G, b^2G.$
	$v^4P_{0\frac{1}{2}}$ $v^4P_{1\frac{1}{2}}$ $v^4P_{2\frac{1}{2}}$	*41751.78* *41848.47* *42009.93*	96.69 161.46	2.56 1.62 1.48	$\}a^4P, b^4P, a^4D, b^4D, a^4F.$
$d^3sp(^5P)$	$r^4D_{0\frac{1}{2}}$ $r^4D_{1\frac{1}{2}}$ $r^4D_{2\frac{1}{2}}$ $r^4D_{3\frac{1}{2}}$	*41923.47* *41999.10* *42133.00* *42245.61*	70.63 138.90 107.61	0.04 1.20 1.33 1.36	$\}a^4P, b^4P, a^4D, b^4D, a^4F, b^4F, (b^2G), a^6D.$
$d^3sp(^1D)$?	$u^2F_{2\frac{1}{2}}$ $u^2F_{3\frac{1}{2}}$	*41950.35* *42020.93*	70.58	0.84 1.11	$\}a^2P, a^2D, a^2F, a^2G, b^2G, a^4F, a^4G.$

TABLE 2.—*Terms of the* V I *spectrum*—Continued

Electron config- uration	Term symbol	Level	Differ- ence	Observed g	Combinations
$d^4.d(^5D)$	$e^6G_{1\frac{1}{2}}$	42033.84			
	$e^6G_{2\frac{1}{2}}$	42070.05	36.21		
	$e^6G_{3\frac{1}{2}}$	42114.17	44.12	1.08	$zF°, y^6F°, z^6G°.$
	$e^6G_{4\frac{1}{2}}$	42177.31	63.14	1.23	
	$e^6G_{5\frac{1}{2}}$	42257.32	80.01	1.32	
	$e^6G_{6\frac{1}{2}}$	42353.42	96.10	1.35	
$d^3sp(^1G)$	$u^2H_{4\frac{1}{2}}$	*42079.14*	141.55	0.85	$a^2G, b^2G, a^2H, b^2H, a^4F.$
	$u^2H_{5\frac{1}{2}}$	*42220.69*		1.06	
$d^4.d(^5D)?$	$e^6P_{1\frac{1}{2}}$	?			
	$e^6P_{2\frac{1}{2}}$	?			$z^6P°, y^6D°.$
	$e^6P_{3\frac{1}{2}}$	42164.74		1.44?	
	$2_{3\frac{1}{2}}$	*42236.66*			$a^4P, b^4D, a^4F, a^6D.$
$d^3sp(^1P)?$	$v^2P_{1\frac{1}{2}}$	*42318.42*	−162.20	1.34	$a^2P, b^2P, a^2D, a^4P, b^4D, a^4F.$
	$v^2P_{0\frac{1}{2}}$	*42480.62*		1.14	
	$w^2S_{0\frac{1}{2}}$	*42362.04*		1.50?	$a^2P, a^4P.$
$d^4.d(^5D)$	$f^6F_{0\frac{1}{2}}$	?			
	$f^6F_{1\frac{1}{2}}$	?			
	$f^6F_{2\frac{1}{2}}$	?			$z^6P°, z^6D°, y^6D°, x^6D°, z^6F°, y^6F, z^6G°.$
	$f^6F_{3\frac{1}{2}}$	42363.62	142.70		
	$f^6F_{4\frac{1}{2}}$	42506.32	71.66		
	$f^6F_{5\frac{1}{2}}$	42597.98		1.39	
$d^4.d(^5D)$	$f^6D_{0\frac{1}{2}}$	?			
	$f^6D_{1\frac{1}{2}}$	?			
	$f^6D_{2\frac{1}{2}}$	?			$z^6P°, z^6D°, y^6D°.$
	$f^6D_{3\frac{1}{2}}$	42404.89	148.73		
	$f^6D_{4\frac{1}{2}}$	42553.62		1.61	
	$w^6D_{0\frac{1}{2}}$	?			
	$w^6D_{1\frac{1}{2}}$	?			
	$w^6D_{2\frac{1}{2}}$	*42480.31*	107.10		$a^6D.$
	$w^6D_{3\frac{1}{2}}$	*42587.41*	137.92		
	$w^6D_{4\frac{1}{2}}$	*42725.33*			
$d^3sp(^5P)$	$w^4S_{1\frac{1}{2}}$	*42969.49*		1.94	$a^4P, b^4P.$
	$s^4F_{1\frac{1}{2}}$	*42981.34*	69.97		
	$s^4F_{2\frac{1}{2}}$	*43051.31*	95.78		$b^4P, a^4D, a^4F.$
	$s^4F_{3\frac{1}{2}}$	*43147.09*	119.06		
	$s^4F_{4\frac{1}{2}}$	*43266.15*			
	$q^4D_{0\frac{1}{2}}$	*43249.44*	59.39		
	$q^4D_{1\frac{1}{2}}$	*43308.83*	101.99		$a^4P, b^4P, a^4D, b^4D, a^4F, b^4F.$
	$q^4D_{2\frac{1}{2}}$	*43410.82*	144.30		
	$q^4D_{3\frac{1}{2}}$	*43555.12*		1.46	
	$u^4P_{0\frac{1}{2}}$	*43443.33*	60.66		
	$u^4P_{1\frac{1}{2}}$	*43503.99*	81.60		$a^4P, a^4D, b^4D, a^2D, a^2F.$
	$u^4P_{2\frac{1}{2}}$	*43585.59*			
$d^3s.d(^5F)$	$e^6H_{2\frac{1}{2}}$	43649.40	57.42	0.38	
	$e^6H_{3\frac{1}{2}}$	43706.82	80.78	0.88	
	$e^6H_{4\frac{1}{2}}$	43787.60	106.55	1.11	$z^6F°, z^6G°.$
	$e^6H_{5\frac{1}{2}}$	43894.15	134.18	1.18	
	$e^6H_{6\frac{1}{2}}$	44028.33	161.62	1.30	
	$e^6H_{7\frac{1}{2}}$	44189.95		1.38	
$d^3s.d(^5F)$	$f^6G_{1\frac{1}{2}}$	43818.02	29.14	0.38?	
	$f^6G_{2\frac{1}{2}}$	43847.16	64.77	0.78	
	$f^6G_{3\frac{1}{2}}$	43911.93	93.21	1.12	$z^6F°, z^6G°.$
	$f^6F_{4\frac{1}{2}}$	44005.14	134.55	1.26	
	$f^6G_{5\frac{1}{2}}$	44139.69	187.35	1.34	
	$f^6G_{6\frac{1}{2}}$	44327.04		1.35	
$d^3sp(^1G)$	$t^2F_{3\frac{1}{2}}$	*43873.79*	−1.46	1.04?	$a^2P, a^2D, a^2F, a^2G, b^2G, a^4F, b^4F, a^6D.$
	$t^2F_{2\frac{1}{2}}$	*43875.25*		0.86	
$d^3s.s(^3F)$	$e^2F_{2\frac{1}{2}}$	43918.58	147.47	0.89	$z^2D°, z^2F°, x^4F°.$
	$e^2F_{3\frac{1}{2}}$	44066.05		1.18	
	$x^6F_{0\frac{1}{2}}$	*43707.97*	137.83		
	$x^6F_{1\frac{1}{2}}$	*43845.80*	113.44		
	$x^6F_{2\frac{1}{2}}$	*43959.24*	67.05		$a^6D, b^4D, a^4F, b^4F.$
	$x^6F_{3\frac{1}{2}}$	*44026.29*	176.22		
	$x^6F_{4\frac{1}{2}}$	*44202.51*	0.00		
	$x^6F_{5\frac{1}{2}}$	*44202.51*			

TABLE 2.—*Terms of the* V I *spectrum*—Continued

Electron config- uration	Term symbol	Level	Differ- ence	Observed g	Combinations
	$x^6P^\circ_{1\frac{1}{2}}$	?			$\}a^6D, b^4P.$
	$x^6P^\circ_{2\frac{1}{2}}$	?			
	$x^6P^\circ_{3\frac{1}{2}}$	*43988.00*			
	$s^4G^\circ_{2\frac{1}{2}}$	*43999.68*	43.68	0.98	$\}a^4F, b^4F, a^4G, a^2D, a^6D.$
	$s^4G^\circ_{3\frac{1}{2}}$	*44043.36*	61.19	1.26	
	$s^4G^\circ_{4\frac{1}{2}}$	*44104.55*	73.90	1.34	
	$s^4G^\circ_{5\frac{1}{2}}$	*44178.45*			
$d^4p(^3G)$	$t^2H^\circ_{3\frac{1}{2}}$	*44145.77*	38.25	0.90	$\}a^2F, a^2G, b^2G, a^2H, b^2H, a\,F.$
	$t^2H^\circ_{5\frac{1}{2}}$	*44184.02*		1.06?	
$d^3s.d(^5F)$	$f^6P_{1\frac{1}{2}}$	44443.67	88.93		$\}z^6D^\circ, x^6D^\circ, 1^\circ.$
	$f^6P_{2\frac{1}{2}}$	44532.60	157.87		
	$f^6P_{3\frac{1}{2}}$	44690.47			
$d^4p(^3G)$	$s^2G^\circ_{4\frac{1}{2}}$	*44463.28*	−32.15	1.09	$\}a^2F, a^2G, b^2G, a^2H, a^4F.$
	$s^2G^\circ_{3\frac{1}{2}}$	*44495.43*		0.91	
	$p^4D_{0\frac{1}{2}}$	*44514.34*	39.91	1.22	$\}a^4P, b^4P, a^4D, b^4D, a^4F, b^4F,\ \ \ G, a^2F, a^6D.$
	$p^4D_{1\frac{1}{2}}$	*44554.25*	62.43	1.37?	
	$p^4D_{2\frac{1}{2}}$	*44616.68*	84.20	1.32?	
	$p^4D_{3\frac{1}{2}}$	*44700.88*			
$d^3s.d(^5F)$	$g^6D_{0\frac{1}{2}}$	?			$\}z^6D^\circ, z^6F^\circ.$
	$g^6D_{1\frac{1}{2}}$	44844.83	76.25		
	$g^6D_{2\frac{1}{2}}$	44921.08	135.53	1.55?	
	$g^6D_{3\frac{1}{2}}$	45056.61	101.13		
	$g^6D_{4\frac{1}{2}}$	45157.74			
	$r^4F^\circ_{1\frac{1}{2}}$	*44973.60*	75.57	0.58?	$\}b^4D, a^4F, b^4F, a^4G, a^2F.$
	$r^4F^\circ_{2\frac{1}{2}}$	*45049.17*	9.45	0.97	
	$r^4F^\circ_{3\frac{1}{2}}$	*45058.62*	86.54	1.26	
	$r^4F^\circ_{4\frac{1}{2}}$	*45145.16*			
	$q^4F^\circ_{1\frac{1}{2}}$	*45066.56*	40.65	0.59	$\}a^4D, b^4D, a^4F, b^4F, a^4G, a^2D, b^2G, a^2H, b^2H.$
	$q^4F^\circ_{2\frac{1}{2}}$	*45107.21*	50.51	0.93	
	$q^4F^\circ_{3\frac{1}{2}}$	*45157.72*	79.44	1.05	
	$q^4F^\circ_{4\frac{1}{2}}$	*45237.16*		1.22	
	$u^2P^\circ_{0\frac{1}{2}}$	?			$\}a^2P, a^4F, b^4F.$
	$u^2P^\circ_{1\frac{1}{2}}$	*45159.15*		1.66?	
$d^3sp(^1H)$?	$r^2G^\circ_{3\frac{1}{2}}$	*45175.92*	185.50	0.98	$\}(a^2F), a^2G, a^2H, b^2H, a^4F.$
	$r^2G^\circ_{4\frac{1}{2}}$	*45361.42*		1.14	
	$g^6F^\circ_{0\frac{1}{2}}$	(?)			$\}z^6D^\circ, z^6F^\circ, z^6G^\circ.$
	$g^6F_{1\frac{1}{2}}$	*45638.54*	61.71		
	$g^6F_{2\frac{1}{2}}$	*45700.25*	43.37	1.26	
	$g^6F_{3\frac{1}{2}}$	*45743.62*	69.23		
	$g^6F_{4\frac{1}{2}}$	*45813.25*	221.33		
	$g^6F_{5\frac{1}{2}}$	*46034.58*			
$d^4p(^3D)$	$p^4F^\circ_{1\frac{1}{2}}$	*45648.86*	39.55	0.60	$\}a^4D, b^4D, a^4F, b^4F, a^4G, a^4P, b^2P, a^2D.$
	$p^4F^\circ_{2\frac{1}{2}}$	*45688.41*	71.62	1.02	
	$p^4F^\circ_{3\frac{1}{2}}$	*45760.03*	131.52	1.32	
	$p^4F^\circ_{4\frac{1}{2}}$	*45891.55*			
	$t^2P^\circ_{1\frac{1}{2}}$	*45654.50*	−292.16	1.04?	$\}a^2P, b^2P, a^2D, a^4D, b^4D, a^4F, b^4F.$
	$t^2P^\circ_{0\frac{1}{2}}$	*45946.66*			
$d^4p(^3D)$	$o^4D_{0\frac{1}{2}}$	*45702.14*	60.10		$\}z^4P, a^4D, b^4D, a^4F, b^4F, a^4G, a^6D.$
	$o^4D_{1\frac{1}{2}}$	*45762.24*	75.82	0.96?	
	$o^4D_{2\frac{1}{2}}$	*45838.06*	99.01		
	$o^4D_{3\frac{1}{2}}$	*45937.07*		1.45	
	$r^4G_{2\frac{1}{2}}$	*46052.79*	86.27	0.56	$\}a^4F, a^4G, a^4H.$
	$r^4G_{3\frac{1}{2}}$	*46139.06*	104.58	0.96	
	$r^4G_{4\frac{1}{2}}$	*46243.64*	119.78	1.15	
	$r^4G_{5\frac{1}{2}}$	*46363.42*		1.19	
	$t^4P_{0\frac{1}{2}}$	*46851.10*	11.63		$\}a^4P, b^4P, a^4D, b^4D.$
	$t^4P_{1\frac{1}{2}}$	*46862.73*	5.37		
	$t^4P_{2\frac{1}{2}}$	*46868.10*			
$d^3sp(^3G)$	$s^2F^\circ_{2\frac{1}{2}}$	*46996.84*	146.40		$\}a^2P, a^2D, a^2F, a^2G.$
	$s^2F^\circ_{3\frac{1}{2}}$	*47143.24*		1.02	
	$3^\circ_{1\frac{1}{2}}$	*47423.18*			$b^4D.$
$d^3sp(^3G)$	$s^2H^\circ_{4\frac{1}{2}}$	*47611.77*	89.78	1.01?	$\}a^2G, b^2G, a^2H, b^2H.$
	$s^2H^\circ_{5\frac{1}{2}}$	*47701.55*		0.94	

TABLE 2.—*Terms of the* V I *spectrum*—Continued

Electron configuration	Term symbol	Level	Difference	Observed g	Combinations
	$o^4F_{1½}$	47801.87			
	$o^4F_{2½}$	47916.31	114.44		
	$o^4F_{3½}$	48140.15	223.84		$\}a^4F.$
	$o^4F_{4½}$	48328.86	188.71		
$d^3sp(^3G)$	$q^2G_{3½}$	47959.82		0.89	$\}p^2F,\ a^2G,\ b^2G,\ a^2H,\ b^2H,\ a^4F.$
	$q^2G_{4½}$	48157.57	197.75	1.08	
$d^4p(^3P)?$	$v^2S_{0½}$	48844.67		2.03	$a^2P,\ b^2P.$
$d^3sp(^2D)$	$t^2D_{2½}$	49689.01			
	$t^2D_{1½}$	49722.88	-33.87	1.25	$\}a^2P,\ b^2P,\ a^2D,\ a^2F.$
$d^3s.d(^5F)$	$f^6H_{2½}$	49717.57			
	$f^6H_{3½}$	49797.18	79.61		
	$f^6H_{4½}$	49875.12	77.94		
	$f^6H_{5½}$	49983.16	108.04		$\}z^6G°.$
	$f^6H_{6½}$	50164.26	181.10		
	$f^6H_{7½}$	50301.63	137.37		
$d^3s.d(^5F)$	$g^6G_{1½}$	(?)			
	$g^6G_{2½}$	(?)			
	$g^6G_{3½}$	49789.17	143.20		
	$g^6G_{4½}$	49932.37	182.22		$\}z^6G°.$
	$g^6G_{5½}$	50114.59	94.46		
	$g^6G_{6½}$	50209.05			
$d^3sp(^3H)$	$x^2I_{5½}$	49977.90		0.91	$\}a^2H,\ b^2H,\ a^4H.$
	$x^2I_{6½}$	50120.69	142.79	1.06	
d^3p^2	$h^6G_{1½}$	50584.27			
	$h^6G_{2½}$	50654.72	70.45		
	$h^6G_{3½}$	50751.83	97.11		$\}x^6D°,\ z^6F°,\ y^6F°,\ z^6G°.$
	$h^6G_{4½}$	50876.00	124.17		
	$h^6G_{5½}$	51026.30	150.30		
	$h^6G_{6½}$	51201.12	174.82		
$d^3sp(^3H)?$	$p^2G_{3½}$	52744.08			
	$p^2G_{4½}$	52947.98	173.90		$\}a^2G,\ a^2H,\ b^2H.$
	$r^2H_{4½}$	54081.51			
	$r^2H_{5½}$	54251.26	169.75		$\}a^2G,\ a^2H.$
	$s^2P_{1½}$	57561.36			
	$s^2P_{0½}$	57744.12	-182.76		$\}a^2P,\ a^2D.$

TABLE 3.—*Intervals of some* V I *terms*

Term	Level intervals	Interval ratios		Term	Level intervals	Interval ratios	
		Observed	Theoretical			Observed	Theoretical
a^4F	229.60	9.0	9	$z^6F°$	166.66	11.0	11
	186.04	7.3	7		141.00	9.3	9
	137.38	5.4	5		113.57	7.5	7
					84.83	5.6	5
a^6D	113.52	9.0	9		53.94	3.6	3
	91.24	7.2	7				
	66.93	5.3	5	$z^6G°$	219.29	13.0	13
	40.88	3.2	3		188.40	11.2	11
					156.21	9.2	9
a^4D	137.20	7.0	7		122.69	7.2	7
	102.32	5.2	5		88.40	5.2	5
	163.26	3.2	3				
				$z^4D°$	204.04	7.0	7
a^4P	187.62	5.0	5		140.73	4.8	5
	92.42	2.5	3		81.32	2.9	3
				$z^4F°$	166.75	9.0	9
$z^6D°$	135.80	9.0	9		142.53	7.7	7
	104.19	6.9	7		122.50	6.6	5
	71.81	4.8	5	$z^4G°$	192.82	11.0	11
	40.45	3.0	3		157.67	9.0	9
					122.05	7.0	7

3. ELECTRON CONFIGURATIONS, THEORETICAL AND BSERVED TERMS

The atomic number being 23, the extra-nuclear structure of normal vanadium atoms is represented by

$$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^3\ 4s^2,$$

but only the last five electrons need be considered in the theory of the first spectrum [7]; thus the configuration $3d^3\ 4s^2$ gives rise to a group of terms including the ground state ^{4}F, while $3d^4\ 4s$ and $3d^5$ both produce larger families of metastable states. These even terms combine with a multitude of odd terms resulting from configurations involving a p electron, $3d^3\ 4s\ 4p$ or $3d^4\ 4p$, thereby accounting for a majority of the observed V I lines. These odd terms also combine with higher even ones which form series with the lower ones because they arise from similar electron configurations with augmented total quantum numbers, $3d^3\ 4s\ 5s$, $3d^4\ 5s$, $3d^3\ 4s\ 4d$. Such series converge to low states of the V$^+$ atom, but the structure of the V II spectrum has not been sufficiently analyzed to permit a complete correlation of terms and series. Also the identification of established terms of V I is sometimes doubtful or ambiguous because, on account of overlapping, there is little justification for ascribing to some terms a single configuration and convergence limit. However, since the V I spectrum is, for the most part, orderly and regular as indicated by intensities, intervals and Zeeman effects for LS coupling, it has been possible to find a fairly satisfactory correlation between electron configurations and the resulting terms. We now enter upon a discussion of such correlation, assisted by comparison with other spectra, under the headings (a), low terms; (b), middle odd terms; and (c), high terms.

(a) LOW TERMS

Those to be expected are:

$3d^3\ 4s^2$: ^{4}F, ^{4}P; ^{2}P, ^{2}D, ^{2}F, ^{2}G, ^{2}H; ^{2}D.

$3d^4\ 4s$: ^{6}D^{4}D; ^{4}P^{2}P, ^{4}D^{2}D, ^{4}F^{2}F, ^{4}G^{2}G, ^{4}H^{2}H; ^{4}P^{2}P, ^{4}F^{2}F.

d^5: ^{6}S; ^{4}P, ^{4}D, ^{4}F, ^{4}G, and many doublets.

The $d^3\ s^2$ terms may be identified by comparison with the d^3 configurations in the related spectra V III and Ti II. Taking the components of highest J, and temporarily measuring all levels from the lowest of these in this particular configuration, we compile [35] the data given in table 4. The overall separations of the highest and lowest levels of each term are given in parentheses.

TABLE 4.—*Comparison of spectral terms from d^3*

	d^3 V I		d^3 V III		d^3 Ti II	
a^4F	0	(553)	0	(583)	0	(308)
a^4P	9271	(280)	11188	(258)	8302	(154)
a^2P	13248	(−9)	10804	(180)	8759	(125)
a^2D	13995	(34)	15793	(147)	11542	(129)
^{2}F					19676	(−60)
a^2G	10548	(208)	11604	(221)	7902	(120)
a^2H	14711	(161)	16394	(155)	11559	(98)

This comparison settles the identification of these terms beyond doubt. The narrow separation of a^2D and inversion of a^2P may be explained by repulsion of a^2D$_{1\frac{1}{2}}$ a^2P$_{1\frac{1}{2}}$, which share their g's. The

missing ^{2}F level in V I is probably at about 23 000 and should, therefore, give faint lines.

A similar comparison for the d^4s configurations is given [35] in table 5. The identification is again satisfactory.

TABLE 5.—*Comparison of spectral terms from d^4s*

d^4s V I			d^4s Cr II			d^4 V II		
a^6D	0	(313)	^{6}D	0	(535)			
						^{5}D	0	(339)
a^4D	6290	(303)	^{4}D	7527	(495)			
b^4P	13147	(494)	^{4}P	18368	(912)			
						^{3}P	11568	(612)
b^2P	16764	(384)	^{2}P	22859	(697)			
b^4D	18342	(−63)	^{4}D					
						^{3}D		
b^4F	13345	(106)	^{4}F	18723	(137)			
						^{3}F	13269	(118)
a^2F	16653	(52)	^{2}F	23111	(39)			
a^4G	14817	(187)	^{4}G	21198	(276)			
						^{3}G	16193	(192)
b^2G	19178	(−43)	^{2}G	26066?	(54)			
a^4H	12638	(153)	^{4}H	17895	(234)			
						^{3}H		
b^2H	16720	(122)	^{2}H	22316	(182)			

The terms from the d^5 configuration should be much higher and their combinations should be in the infrared. Two have been identified, as shown [35] in table 6.

TABLE 6.—*Comparison of spectral terms from d^5*

	d^5 V I		d^5 Cr II	
a^6S	20202	--------	0	--------
^{4}P	--------	--------	21824	(2)
^{4}D	--------	--------	25035	(13)
e^4F	37075	(92)	32856	(18)
^{4}G	--------	--------	20514	(7)

Here the levels for V I are referred to the ground level. In configurations of this d^n type the differences between the various terms are much smaller in the arc than in the related spark spectra. It appears, therefore, that the undiscovered terms in V I are about 32000 above the bottom, which would make all their combinations of any strength lie too far in the infrared to be observed.

(b) MIDDLE ODD TERMS

The odd terms, at middle levels, arise from the configurations d^4p and d^3sp. They may be divided into families according to limit term in V II, and give numerous triads of closely related terms. Each triad should give its strongest combinations with the corresponding term of d^4s. In this way the identifications in tables 7 and 8 have been made. Terms in heavy type are regarded as securely identified; the others are doubtful. Under each term is given the wave number of the leading line of the multiplet resulting from its combination with the related d^4s term. Most of these groups lie between 20000 and 26000, and make the spectrum very rich in this region.

TABLE 7.—*Identified* V I *terms from* d^4p

V II d^4	V I d^4s	V I d^4p Predicted		Identified					
⁵D	a^6D	a^4D	⁶PDF	⁴PDF	z^6P° 22413	y^6D° 24313	y^6F° 22828	z^4P° 16415	y^4D° 17764	y^4F° 17456
³P	b^4P	b^2P	⁴SPD	²SPD	y^4S°? 20836	x^4P°? 21039	s^4D° 24553	v^2S°? 29655	------	v^2D° 20929
³D	b^4D	----------	⁴PDF	²PDF	------	o^4D° 25169	p^4F° 25123	-------	-------	-----
³F	b^4F	a^2F	⁴DFG	²DFG	t^4D° 22344	u^4F° 23620	v^4G° 21994	w^2D° 18674	w^2F°? 18396	x^2G° 17460
³G	a^4G	b^2G	⁴FGH	²FGH	t^4F° 24357	t^4G° 24676	w^4H° 23293	-------	s^2G° 22859	t^2H° 22580
³H	a^4H	b^2H	⁴GHI	²GHI	u^4G° 25000	x^4H° 23420	z^4I° 22455	v^2G° 18216	x^2H° 19075	z^2I°? 18461

From d^3sp we obtained the results given in table 8.

TABLE 8.—*Identified* V I *terms from* d^3sp

V III d^3	V II d^3s	V I d^3s^2	V I d^3sp Predicted		V I Identified					
⁴F	⁵F	a^4F	⁶DFG	⁴DFG	z^6D° 34194...					
⁴F	⁵F	a^4F	⁶DFG	⁴DFG	z^6D°	z^6F°	z^6G°	v^4D° 34194	w^4F° 32602	x^4G° 31384
	³F		⁴DFG	²DFG	z^4D° 20479	z^4F° 22966	z^4G° 21760	z^2D°	z^2F°	z^2G°
⁴P	⁵P	a^4P	⁶SPD	⁴SPD	z^6S°	y^6P°	x^6D°	w^4S° 33144	w^4P° 29598	r^4D° 32420
	³P		⁴SPD	²SPD	x^4S° 30022	y^4P° 20296	w^4D° 24303	--	--	--
²P	³P	a^2P	⁴SPD	²SPD						
	¹P			²SPD	x^2S°? 26498	v^2P°? 28516	u^2D°? 26524			
²D	³D	a^2D	⁴PDF	²PDF	--	--	--	--	t^2D° 35139	--
	¹D			²PDF	y^2P° 22031	--	u^2F°? 27472			
²F	³F	^{2}F	⁴DFG	²DFG						
	¹F			²DFG						
²G	³G	a^2G	⁴FGH	²FGH	x^4F° 36042	y^4G°? 37056	z^4H° 36600	s^2F°	q^2G°	s^2H°
	¹G			²FGH	t^2F° 32773	t^2G°? 30438	u^2H° 31120	--	--	--
²H	³H	a^2H	⁴GHI	²GHI	w^4G°? 37683	y^4H°? 36821	--	p^2G°?	r^2H°?	x^2I° 34855
	¹H			²GHI	r^2G°? 30096	v^2H°? 26394	y^2I°? 23816	--	--	--

Here each low term has two "proper triads" with different limits in V II, and also related triads of higher and lower multiplicity (if the latter is possible). The latter triads have no low terms closely related to them, so that no combinations are given in the table. Their

combinations with low terms of other families are not often strong. There are other terms from this configuration not likely to be observed.

The identification of many of the odd doublet and quartet combinations is practically impossible—indeed, it is probable that the configurations are so intermixed that there is little sense in ascribing to a given term a single configuration and limit term. The sextets may, however, be definitely identified as follows:

$$\left.\begin{array}{l}z^6D^\circ\\z^6F^\circ\\z^6G^\circ\end{array}\right\}d^3sp \quad (^5F). \quad \text{Combinations with } e^6F.$$

$$\left.\begin{array}{l}z^6P^\circ\\y^6D^\circ\\y^6F^\circ\end{array}\right\}d^4p \quad (^5D). \quad \text{Combinations with } a^6D.$$

$$\left.\begin{array}{l}z^6S^\circ\\y^6P^\circ\\x^6D^\circ\end{array}\right\}d^3sp \quad (^5P). \quad \text{Left over.}$$

The assignment of z^6S° is doubtful. It is a real level and in the right position.

$$\left.\begin{array}{l}x^6P^\circ\\w^6D^\circ\\x^6F^\circ\end{array}\right\}d^4.5p.$$
Combinations with $a\,^6D$; no more sextets from $4p$; and these are too high. The general nature of these levels appears to be certain; some of the details are doubtful.

(c) **HIGH TERMS**

For the high terms, the distinctness of the various families, each with its own limit, is much sharper, and interfamily combinations are usually very weak or absent.

All the sextet configurations can be reliably assigned, the reasons being as summarized:

e^6D $d^4.s$ (^5D). Combination with z^6P°, y^6D°, y^6F°, and also series.

$\left.\begin{array}{l}e^6P\\f^6D\\f^6F\\e^6G\end{array}\right\}d^4.d$ (^5D). Combination with same triad. (Lower members fragmentary).

$\left.\begin{array}{l}e^6F\\f^6P\\g^6D\end{array}\right.$ $d^3s.s$ (^5F). Combination with z^6D°, z^6F°, z^6G°; series.

$\left.\begin{array}{l}g^6F\\f^6G\\e^6H\end{array}\right\}d^3s.d$ (^5F). Combination with same triad; series.

$\left.\begin{array}{l}---\\---\\---\\g^6G\\f^6H\end{array}\right\}d^3s.d$ (^5F). Combinations; series (no satellites).

h^6G d^3p^2. Only chance left; also analogy with Ti I.

For the high quartets we have:

e^4D $d^4.s$ (^5D). Combinations with d^4p triad; series.
e^4F d^5 Combinations with same triad. At right level for this; not for anything else.
f^4F $d^3s.s$ (^5F). Combinations with d^3sp triad; series.

No other high even quartet terms have been found despite much searching. There should be pentads $d^4.d$ and $d^3s.d$.

The only high doublet found is e^2F, which combines with the d^3sp triad, and has obviously the limit d^3s (^3F)—the lowest triplet term in V II.

It is of interest to compare the numbers of terms predicted by Hund's theory and those found in the present work. For the low levels we have:

Electrons		^6S	^6D	^4S	^4P	^4D	^4F	^4G	^4H	^2S	^2P	^2D	^2F	^2G	^2H	^2I
d^3s^2	Predicted				1		1				1	2	1	1	1	
	Observed				1		1				1	1		1	1	
d^4s	Predicted		1	2	2	2	1	1		2	2	3	3	3	1	1
	Observed		1	1	2	1	1	1		1			1	1	1	
d^5	Predicted	1			1	1	1	1		1	1	3	2	2	1	1
	Observed	1					1									

All the low sextet terms have been found and all of the quartets except a few which are known to lie high and must give infrared lines. Most of the doublets are still undiscovered. The missing terms are mainly those which have (probably high) singlet limits in V ɪɪ. Only a small part of the high-lying d^5 group is known.

For the odd levels, involving a $4p$ electron, distinction between the origins d^3sp and d^4p is often impracticable. The two together give:

Electrons	^6S	^6P	^6D	^6F	^6G	^4S	^4P	^4D	^4F	^4G	^4H	^4I	^2S	^2P	^2D	^2F	^2G	^2H	^2I	^2K
d^3sp	1	1	2	1	1	3	5	8	6	5	2	1	3	7	10	9	7	4	2	
d^4p		1	1	1		2	4	6	5	4	2	1	2	7	8	9	7	5	2	1
Combined	1	2	3	2	1	5	9	14	11	9	4	2	5	14	18	18	14	9	4	1
Observed	1	3	4	3	1	4	7	12	12	9	4	1	5	8	7	8	11	9	3	

The number of observed terms sometimes exceeds the computed, indicating that some terms arising from a $5p$ electron have been observed. This is certain among the sextets. The doublets are far from complete.

The high levels, arising from the addition of a $4s$ or $4d$ electron to the terms of V ɪɪ, are theoretically very numerous—50 in the first case and 220 in the second. Only a very few of these, arising from the lowest levels, have been detected—as is the case in all other spectra.

Table 1 contains 420 lines of intensity 15 or more. Of these only 16 remain unclassified. This, together with the results of this section, indicates that both the theoretical and practical analysis of the spectrum in the observable region is very nearly complete.

4. SERIES AND IONIZATION POTENTIALS

The foregoing analysis indicates that a considerable number of series have been identified in the V ɪ spectrum, but in no case have they been observed beyond two members. All the observed series converge to the two lowest terms in V ɪɪ, a^5D and a^5F. The series formed by addition of s-electrons to these terms, if reduced with the simple Rydberg formula, give the following values for the difference of the lowest energy levels in V ɪ and V ɪɪ (table 9).

TABLE 9—V I series

Electron	4s	5s	n* for 4s	Limit	V II	Ionization
$a^6D_{5\frac{1}{2}}$	2425	37441	1.4311	56009	339	55670
$a^6D_{4\frac{1}{2}}$	2311	37322	1.4312	55889	209	55680
$a^6D_{3\frac{1}{2}}$	2220	37227	1.4312	55793	107	55686
$a^6D_{2\frac{1}{2}}$	2153	37158	1.4313	55723	36	55687
$a^6D_{1\frac{1}{2}}$	2112	37117	1.4313	55682	0	55682
Mean____						55681
$a_4D_{3\frac{1}{2}}$	8716	38242	1.5344	55327	339	54988
$a^4D_{2\frac{1}{2}}$	8579	38106	1.5344	55191	209	54982
$a^4D_{1\frac{1}{2}}$	8476	38004	1.5343	55089	107	54982
$a^4D_{0\frac{1}{2}}$	8413	37940	1.5344	55025	36	54989
Mean____						54985
$a^4F_{4\frac{1}{2}}$	553	39597	1.3684	59161	3163	55998
$a^4F_{3\frac{1}{2}}$	323	39399	1.3679	58971	2968	56003
$a^4F_{2\frac{1}{2}}$	137	39241	1.3675	58818	2809	56009
$a^4F_{1\frac{1}{2}}$	0	39127	1.3672	58711	2687	56024
Mean____						56009

The general mean is 55558, corresponding to 6.85 volts. The agreement between the results from the various components of a term is so much better than that from terms of different types (though the latter is good), that it would have sufficed to use only the components of highest J. The mean result is, however, almost certainly too high, for a study of the spectra of elements of neighboring atomic number, for which long series and reliable values of the so-called effective quantum number n^* exist, shows that for the 4s and 5s terms Δn^* is always considerably greater than unity. The principal data are summarized in table 10, which explains itself.

This table may be applied to vanadium in two ways; by estimating the actual value of n^* by interpolation between Ti and Cr, or by a similar estimation of Δn^*.

TABLE 10.—*Denominator n^* for spectra of iron group*

Configuration___	$d^{n-1}s+s$			$d^{n-1}s+d$			d^n+s			d^n+d		
Electron_____	Term	4s	5s	Term	4d	5d	Term	4s	5s	Term	4d	5d
K I							2 S	1.771	2.802	2 D	3.798	4.771
Ca I	{ 1 S	1.492	2.620	1 D	3.023 ᵃ4.146		1 D	1.633	(ᵃ)			
	{ 3 S		2.485	3 D	3.083	4.091	3 D	1.604	2.657			
Ti I	{ 3 F	1.411	2.489				3 F	1.569				
	{ 5 F		2.392	5 H	2.870	3.885	5 F	1.489	2.545	5 H	2.997	
Cr I	{ 5 D	1.367	2.454				5 S	1.529	2.567			
	{ 7 D		2.338				7 S	1.418	2.494	7 D	2.989	4.008
Mn I	{ 6 S	1.352	2.433	6 D	2.936		4 D	1.467	2.544			
	{ 8 S		2.313	8 D	2.881	3.895	6 D	1.385	2.464			
Ni I	{ 3 F	1.252	2.372	3 H	2.867 ᵃ3.701		1 D	1.374	2.517	1 G	3.177	
	{ 5 F		2.259	5 H	2.896	3.907	3 D	1.337	2.411	3 G	2.972	
Cu I	{ 2 D	1.226	2.368				3 S	1.327	2.392	2 D	2.978	3.980
	{ 4 D		2.242	4 G	2.894	3.899						
Zn I	{ 1 S	1.203	2.344	1 D	2.871	3.843						
	{ 3 S		2.229	D	2.906	3.908						

ᵃ Series known to be perturbed.

It should be noted that, if we should apply a simple Rydberg series to the configurations $d^{n-1} 4s^2$ and $d^{n-1}4s5s$, we would do better by taking the upper term of higher multiplicity, e. g., ^3S in Ca I, and the lower one of lower multiplicity, as Δn^* is much nearer unity than for the two terms of the same multiplicity. (This was pointed out to one of us long ago by Shenstone.)

Estimating n^* itself for the possible series in V I, we find the value given in table 11. Each separate member of a series gives an estimate of the limit, and upon allowance for the limit-term in V II, of the ionization energy.

TABLE 11.—V I *series*

Configuration	Term	Estimated n^*	Resulting term	Observed level	Limit	Limit in V II		Ionization
						$^5F_5$	$^5D_4$	
d^3s+4s	$a^4F_{4\frac{1}{2}}$	1. 387	57043	553	57596	3163		54433
d^3s+5s	$f^4F_{4\frac{1}{2}}$	2. 472	17958	39597	57555	3163		54392
	$e^6F_{5\frac{1}{2}}$	2. 364	19636	37931	57567	3163		54404
d^3s+4d	$e^6H_{7\frac{1}{2}}$	2. 873	13295	44190	57485	3163		54322
d^3s+5d	$f^6H_{7\frac{1}{2}}$	3. 888	7259	50302	57561	3163		54398
d^4+4s	$a^4D_{3\frac{1}{2}}$	1. 543	46092	8716	54808		339	54469
	$a^6D_{4\frac{1}{2}}$	1. 450	52194	2425	54619		339	54280
d^4+5s	$e^4D_{3\frac{1}{2}}$	2. 59±	16359±	38242	54601		339	54262±
	$e^6D_{4\frac{1}{2}}$	2. 520	17280	37441	54721		339	54382
d_4+4d	$e^6G_{6\frac{1}{2}}$	2. 993	12250	42353	54603		339	54264

The agreement of the 10 values is extraordinary. The five with limit ^5F give 54390; those with limit ^5D give 54331.

It is evident that estimations of Δn^* would have led to almost exactly the same limit—but the present method makes more terms available. The general mean 54361 corresponds to 6.71 volts.

If these 10 values were really independent observations the probable error of the mean would be ± 16 wave numbers, or ± 0.002 volt. This is not a safe assumption, but it is evident that the ionization potential is very well determined.

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