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Oscillator Strengths for Ultraviolet Lines of Fe I

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Relative intensities and oscillator strengths for 2000 ultraviolet lines of Fe I from several investigations between 2080 and 4150 Å have been critically discussed and adjusted to a uniform absolute scale. New values for many lines not measured heretofore are reported.

Key words: Atomic spectra, iron, oscillator strengths, transition probability, ultraviolet lines of Fe I.

1. Introduction

During the past 30 years, numerous investigations of intensities and oscillator strengths in the ultraviolet part of the iron spectrum have been carried out. The great variety of forms in which they are reported makes comparisons difficult and obscures systematic errors which could otherwise be discovered and perhaps corrected. Furthermore, the fragmentary nature of these reports often leaves serious gaps in our knowledge of the line strength characteristics of the spectrum. Collection of these published reports into a single compilation not only permits the discovery of errors but discloses the need for certain additional work to be done. In 1964 Corliss and Warner made such a compilation for Fe I in the region 3100 to 9000 Å and supplied many new measurements in the region 4000 to 9900 Å. This provides nearly complete information for Fe I in the regions of interest to astrophysicists who obtain their data through the atmosphere but there remain many lacunae in the ultraviolet part of the spectrum that is of special interest to laboratory spectroscopists and space astrophysicists.

It is the purpose of this paper to extend that work as far as possible into the ultraviolet. To that end we have assembled such published ultraviolet data as were overlooked in our previous compilation or have since appeared, adjusted them to the same absolute scale and supplemented them with new values for many lines not previously measured.

There are in general three different methods which have been used to measure intensities and oscillator strengths in spectra such as Fe I. The three methods find their optimum utility in the measurement of lines of different intensity ranges and of different degrees of excitation. The hook method, which is supposed to provide the most accurate measurements, is limited to the strong lines of the spectrum. Because of the nature of the measurement to be made, the method of total absorption is less precise and consequently may be less accurate than the hook method, but it does permit the measurement of fainter lines. However, both of these methods, because they depend on furnace excitation do not produce lines whose lower levels are far above the ground state of the atom. To observe these lines emission methods are generally used. In emission methods, precise measurements of intensities can usually be made but the population distribution amongst the energy levels of the atoms cannot always be accurately specified. This is in contrast to the first two methods in which thermal equilibrium is assured by furnace excitation.

Work on the ultraviolet spectrum of Fe I which has already been published includes all of the stronger lines. These have been measured by all three of the methods mentioned above. To supplement this work and to complete the description of the intensity structure of Fe I the faint lines in the ultraviolet must be measured. We have done this by means of observations in emission, using arcs and sparks which reveal the faintest lines.

2. Published Data

The previously published data on the ultraviolet part of the first spectrum of iron, Fe I, discussed in this section, is summarized in table 1. A number of measurements made prior to 1962, those of King and King [1938]; Carter [1949]; Mitrofanova [1952]; Aarts, Harting, and Bakker [1954]; Allen and Asaad [1957]; and Hefferlin [1959], have been discussed by Corliss and Warner [1964] and are not further discussed here. The early work of van Milaan [1926] reports measurements of 69 lines in a 1.5 A iron arc and 61 of them in a spark. Comparison with other measurements shows that the lines of the stronger half of the group have been weakened by self-absorption, consequently we have not used van Milaan's data.

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TABLE 1. *Published data on intensities and oscillator strengths in the ultraviolet part of* Fe I *discussed in this paper*

Reference	Date	Wavelength range	No. of lines	Number included	Method	Quantity reported	Temperature	Ref. symbol
		Å					°K	
van Milaan	1926	3680–3800	59	.....	arc	intensity	.....	.....
Sobolev	1943	2585–3648	15	15	arc	P	5300	S3
Sobolev	1943	2912–3725	32	32	arc	gf	.....	S5
Gottschalk	1948	3265–4635	122	.....	calc.	S	.....	G
Crosswhite	1958	3200–4148	1060	1000	hollow cathode	intensity	.....	HC
Corliss and Bozman	1962	2084–3100	220	215	arc	log gf	5100	CB
Morozova, Startsev, and Frish	1962	2987–4144	117	117	arc	log gf	4500	MSF
Margenbes and Scribner	1963	2912–4144	105	105	arc	gf	5510	MS
Corliss and Warner	1964	3100–4148	685	680	.....	log gf	.....	CW
Penkin	1964	2937–4427	56	55	hook	f	2000–2500	PP
Valters, Nikonova, and Startsev	1964	2778–3930	57	57	absorpt.	log gf	1750–2020	VNS
Valters and Startsev	1964	2719–3930	89	89	hook	log gf	2200	VS
King, Olsen, and Corliss	1965	2502–3201	300	290	absorpt.	log gf	1600–3000	KOC

2.1. Calculated Values

Two papers have been published dealing with extensive theoretical calculations of line strengths in Fe I. The first was by Gottschalk [1948] who computed line strengths in intermediate coupling for the $3d^7(^4P)4s - 3d^7(^4P)4p$ and $3d^7(^4F)4s - 3d^7(^4F)4p$ transitions. To test these values we have plotted log S/λ from Gottschalk versus log gf from Corliss and Bozman [1962] in figure 1. The figure shows that calculations for the ^4P parent are unreliable but that, except for lines for which log $gf < -1.0$, the calculations for the ^4F parent are in agreement with the measured values. According to Gottschalk, the disagreement in the case of the ^4P parent is caused by the fact that the L and the S of the ^4P core are not good quantum numbers. The lack of agreement for faint lines (in the case of the ^4F parent) seems to be typical of calculated values. Since only 57 of his lines are of use to us and since these have all been measured many times by others, we have omitted them from our tabulation. It should be noted, however, by those interested in theoretical calculation of line strengths that the method used by Gottschalk has led in certain cases to remarkably accurate values.

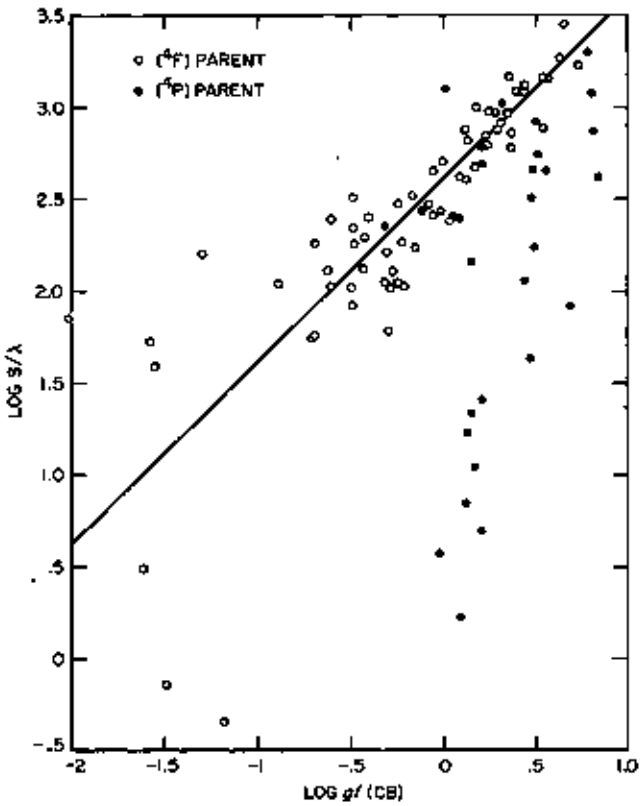

FIGURE 1. *Comparison of log gf-values from Gottschalk [1948] with those from Corliss and Bozman [1962].*

Recently Shore [1965] has investigated simple LS-coupling line and multiplet strengths in Fe I and compared them with observed values. He found that the standard deviation within a multiplet was 30 percent or less (i.e., within the experimental error) for about half the multiplets. The fluctuations among multiplets in transition arrays were considerably larger, sometimes amounting to several orders of magnitude. Many of the observed Fe I lines are intersystem transitions which are not predicted in this scheme.

In view of the evident uncertainties in calculated line strengths for Fe I, it seems that at present we are forced to rely almost entirely on measured values. Further investigation by theoreticians of calculations by the method of intermediate coupling would appear to be very much worthwhile, however.

2.2. Russian Measurements

Over the past 50 years, since the introduction of the hook method into the physical laboratories at the University of Leningrad by Rozhdestvenskii, Russian physicists have conducted an outstanding sustained effort in the measurement of oscillator strengths. A number of their papers have been concerned with Fe I. In 1964 Prokofiev, Nikonova, Gruzdev, and Frish published a review of the subject entitled "Oscillator Strengths in the Spectrum Fe I." In

TABLE 2. *Russian measurements of log gf for ultraviolet lines of* Fe I

(1) Wavelength	(2) S3	(3) S5	(4) PP	(5) MSF	(6) VNS	(7) VS	(8) R	(9) N
2584.537	0.10						0.10	
2719.027						0.26	0.26	
2720.904						−0.05	−0.05	
2723.579						−0.49	−0.49	
2725.476	0.10						0.10	
2737.311						−0.39	−0.39	
2742.406						−0.26	−0.26	
2744.069						−0.74	−0.74	
2750.162						−0.35	−0.35	
2756.330						−0.82	−0.82	
2778.221					−0.40		−0.40	
2788.106					0.49	0.20	0.34	2
2795.541					−1.27		−1.27	
2804.521					−0.34		−0.34	
2813.288					0.24		0.24	
2823.277					−0.30		−0.30	
2832.436	−0.10				−0.03		−0.06	2
2838.120					−0.45		−0.45	
2851.798					−0.05		−0.05	
2869.308						−1.68	−1.68	
2874.175						−1.65	−1.65	
2912.159		−1.09				−1.35	−1.22	2
2929.008		−1.00				−1.23	−1.12	2
2936.905		−0.64	−0.76			−0.58	−0.66	3
2941.344		−1.20				−1.45	−1.32	2
2947.877		−0.54	−0.62			−0.56	−0.53	3
2953.941		−0.70	−0.51			−0.67	−0.63	3
2957.366		−0.79	−0.45			−0.91	−0.72	3
2965.256		−0.87				−1.08	−0.98	2
2966.900		−0.21				−0.16	−0.18	2
2969.476					−0.68		−0.68	
2970.106			−0.58				−0.58	
2981.446		−1.16				−1.09	−1.12	2
2983.571		−0.42	−0.33			−0.36	−0.37	3
2987.292				−0.67	−0.53		−0.60	2
2994.428	−0.29	−0.34	−0.51				−0.38	3
2999.512	−0.28	−0.24		0.07	0.11	−0.15	−0.10	5
3000.949		−0.33	−0.47			−0.34	−0.38	3
3003.032				−0.54	−0.56		−0.55	2
3007.283						−1.12	−1.12	
3008.140			−0.42			−0.58	−0.50	2
3009.571				−0.09	−0.06	−0.29	−0.15	3
3016.186				−0.75	−0.68		−0.72	2
3017.629		−1.25				−1.12	−1.18	2
3018.985				−0.31			−0.31	
3024.034		−1.26				−1.07	−1.16	2
3025.844		−0.60	−0.44			−0.58	−0.54	3
3026.464				−0.50	−0.44		−0.47	2
3031.658				−0.54	−0.48		−0.51	2
3037.390	−0.37	−0.42	−0.57			−0.44	−0.45	4
3040.428				−0.68	−0.64		−0.66	2
3041.740					−0.56		−0.56	
3042.022					−0.77		−0.77	
3042.667				−0.60	−0.52		−0.56	2
3047.606	−0.27	−0.31	−0.48			−0.33	−0.35	4
3057.447	0.06	0.02		0.22	0.32	−0.01	0.12	5
3059.087	−0.33	−0.57	−0.62			−0.46	−0.44	4
3067.246	−0.07	−0.20		0.08	0.13	−0.18	−0.05	5
3075.721	−0.37	−0.41		−0.04	−0.06		−0.22	4
3085.743		−0.58		−0.25	−0.16		−0.20	2
3091.579				−0.49	−0.40		−0.44	2
3100.305					−0.19		−0.19	
3100.567					−0.16		−0.16	
3116.634		−0.42			−1.03		−0.73	2
3125.653					−1.00		−1.00	
3139.561				−0.66			−0.66	
3160.558				0.28			0.28	
3165.005				−0.47			−0.47	
3175.447				0.27			0.27	
3178.015				0.16			0.16	
3180.223				0.66			0.66	
3181.922				−0.52			−0.52	
3184.622				−0.49			−0.49	
3184.896						−2.29	−2.29	
3191.660						−2.29	−2.29	
3192.799				0.48			0.48	
3193.227						−1.99	−1.99	
3194.422				−0.29			−0.29	
3196.930				1.01			1.01	

TABLE 2. *Russian measurements of log gf for ultraviolet lines of* Fe I—Continued

(1) Wavelength	(2) S3	(3) S5	(4) PP	(5) MSF	(6) VNS	(7) VS	(8) R	(9) N
3199.530				0.57			0.57	
3200.475				0.70			0.70	
3205.400				0.62			0.62	
3210.830				0.53			0.53	
3214.044				1.05			1.05	
3215.940				0.64			0.64	
3219.581				0.74			0.74	
3221.931				−0.98			−0.98	
3222.069				1.09			1.09	
3225.789				1.26			1.26	
3227.063				−0.38			−0.38	
3244.190				0.68			0.68	
3265.618				0.42			0.42	
3271.001				0.46			0.46	
3284.589				−0.27			−0.27	
3286.754				0.90			0.90	
3292.591				0.25			0.25	
3305.972				0.82			0.82	
3306.356				0.87			0.87	
3379.021				−0.20			−0.20	
3388.692				−0.21			−0.21	
3392.654				0.54			0.54	
3394.585				−0.21			−0.21	
3399.336				0.61			0.61	
3406.802				0.21			0.21	
3413.134				0.82			0.82	
3417.843				0.48			0.48	
3418.507				0.40			0.40	
3422.658				0.35			0.35	
3424.286				0.43			0.43	
3426.383				0.05			0.05	
3426.637				0.05			0.05	
3427.121				0.98			0.98	
3428.195				0.34			0.34	
3440.607						−0.49	−0.49	
3440.990						−0.79	−0.79	
3443.878						−1.19	−1.19	
3445.151				0.63			0.63	
3447.280				0.04			0.04	
3450.530				0.14			0.14	
3451.917				0.14			0.14	
3465.862						−1.00	−1.00	
3471.267				−0.21			−0.21	
3475.451						−0.89	−0.89	
3476.704					−1.14	−1.29	−1.22	2
3477.856				−0.78			−0.78	
3490.575						−0.93	−0.93	
3497.842		−1.00	−1.52		−1.38	−1.36	−1.32	4
3521.263			−0.46				−0.46	
3526.042					−1.59		−1.59	
3545.639				0.59			0.59	
3547.203				−0.16			−0.16	
3552.828				0.36			0.36	
3558.517	−0.35	−0.59	−0.22				−0.39	3
3565.381		−0.16	0.02			0.12	−0.01	3
3565.583				0.73			0.73	
3568.423				−0.13			−0.13	
3570.100		0.19	0.34		0.48	0.40	0.35	4
3571.995				0.87			0.87	
3575.118				0.03			0.03	
3575.249				0.18			0.18	
3575.976				0.10			0.10	
3578.380				0.96			0.96	
3581.195			0.51		0.69	0.63	0.61	3
3588.918				0.19			0.19	
3594.632				0.79			0.79	
3595.308				−0.04			−0.04	
3602.08				0.00			0.00	
3608.861	0.24		0.19			0.21	0.21	3
3610.159				1.18			1.18	
3618.769	0.24		0.27			0.28	0.26	3
3631.103				0.10			0.10	
3631.465			0.17			0.27	0.22	2
3637.862				0.09			0.09	
3643.627				0.33			0.33	
3647.844	0.06		0.08			0.12	0.08	3
3649.304						−2.75	−2.75	

TABLE 2. *Russian measurements of log gf for ultraviolet lines of* Fe I—Continued

(1) Wavelength	(2) SS	(3) SS	(4) PP	(5) MSF	(6) VNS	(7) VS	(8) R	(9) N
3651.10				−0.44			−0.44	
3679.915		−1.36	−1.43		−1.36	−1.34	−1.37	4
3683.056					−2.04	−2.17	−2.10	2
3685.998				0.76			0.76	
3687.459			−0.77			−0.45	−0.61	2
3689.457				0.72			0.72	
3701.086				0.88			0.88	
3705.567		−1.19	−1.16		−1.19	−1.06	−1.15	4
3707.048				0.53			0.53	
3707.823					−1.89	−2.01	−1.95	2
3709.248						−0.28	−0.28	
3719.937			−0.47			−0.20	−0.34	2
3722.564		−1.09	−0.98		−1.11	−1.03	−1.05	4
3726.927				0.50			0.50	
3727.621			−0.53			−0.23	−0.38	2
3727.809				0.24			0.24	
3733.319					−1.12	−1.15	−1.16	2
3734.866					0.61	0.52	0.56	2
3737.133			−0.58			−0.35	−0.46	2
3744.105				0.12			0.12	
3745.562					−0.69	−0.53	−0.61	2
3745.901					−1.07	−1.12	−1.10	2
3746.931				0.35			0.35	
3748.264					−0.93	−0.79	−0.86	2
3748.969				0.37			0.37	
3749.488					0.61	0.39	0.50	2
3752.420				−0.52			−0.52	
3754.506				−0.49			−0.49	
3758.235			0.31			0.26	0.28	2
3763.791			0.10			0.11	0.10	2
3766.665				−0.32			−0.32	
3767.194			−0.03			−0.04	−0.04	2
3773.699				−0.60			−0.60	
3787.883			−0.44				−0.44	
3815.843			0.69	0.61			0.65	2
3820.427					0.46	0.36	0.41	2
3824.446					−1.18	−1.11	−1.14	2
3825.883						0.24	0.24	
3827.826				0.56			0.56	
3834.224			0.10			0.03	0.06	2
3840.440						−0.15	−0.15	
3841.050				0.48			0.48	
3849.969			−0.29				−0.29	
3856.373			−1.10		−1.16	−1.06	−1.13	3
3859.913			−0.65			−0.47	−0.56	2
3872.503			−0.05				−0.05	
3878.574					−1.13	−1.13	−1.13	2
3886.284			−0.99			−0.83	−0.91	2
3888.516				0.02			0.02	
3895.658			−1.38		−1.36	−1.39	−1.38	3
3899.709			−1.31		−1.30	−1.27	−1.29	3
3906.481			−2.04		−1.75	−1.86	−1.88	3
3920.260			−1.44		−1.44	−1.45	−1.44	3
3922.913			−1.45		−1.40	−1.37	−1.41	3
3927.922			−1.33		−1.25	−1.27	−1.28	3
3930.298			−1.33		−1.29	−1.24	−1.29	3
3949.260				0.03			0.03	
4005.244				−0.12			−0.12	
4044.612				−0.30			−0.30	
4062.444				0.05			0.05	
4063.596			0.35	0.50			0.42	2
4071.740			0.44	0.49			0.46	2
4079.841				−0.48			−0.48	
4091.557				−1.30			−1.30	
4109.805				−0.11			−0.11	
4114.448				−0.45			−0.45	
4127.611				−0.13			−0.13	
4132.060				−0.16			−0.16	
4132.902				−0.08			−0.08	
4134.680				0.23			0.23	
4143.870				−0.06			−0.06	

it they review critically 18 papers on the subject and tabulate mean values of log gf for 1167 lines of Fe I reported in those papers.

There are five Russian papers that report original observations in the ultraviolet region of Fe I; they are discussed individually below. Because none of them report very extensive measurements we have tabulated them separately in table 2. The mean value of log gf for each line is given in column 8 of table 2 and entered into table 3, the complete tabulation, in column 10 headed R. The number of observations in table 2 is listed in column 10 of table 3 as a superscript following the R value. All values are normalized to the scale of Corliss and Bozman.

a. Sobolev [1943]

Sobolev published two sets of measurements made using a 3A d-c arc between copper electrodes containing 0.3 percent iron and 0.3 percent tin. From intensity ratios of tin lines he determined a temperature of 5300 °K. Since the two sets overlap, we have listed them in columns 2 and 3 of table 2 under the headings S3 and S5. Sobolev's values compare well with other reliable measurements. In discussing the discrepancies between his own measurements and those of King and King, he states, "It appears that the conditions under which the measurements of King were made were not conditions of thermal equilibrium for the excited levels." Since that time, numerous investigators, e.g., Crosswhite [1958]; Prokofiev, Nikonova, Gruzdev, and Frish [1964]; or Margoshes and Scribner [1963], have shown that the discrepancy is due to scattered light in the short wavelength end of the Kings' spectra, which made their values too small near 3000 Å. The disagreement is shown in figure 3 of Margoshes and Scribner's paper.

b. Parchevsky and Penkin [1954], Penkin [1964]

Parchevsky and Penkin [1954] published relative oscillator strengths for 56 lines of Fe I which they had measured by the hook method at the University of Leningrad. With reference to the accuracy of the hook method, the authors state that the quantity Nf can be determined with an error of from 3 to 20 percent, depending on the distance between the peaks of the hooks, and that the error in the quantity N depends on the uncertainty in the temperature in the Boltzmann formula and in this case can be as much as 15 percent. This would imply that the maximum error was not greater than 35 percent.

In 1964 Penkin published a review and summary of his past work. In the case of iron, substantial changes were made in many of the f-values. Some of the values were changed by factors as large as five. The value for 3872.503 was not changed and is about 3 times as large as the six other values for that line in table 3. For conversion to the CB scale 3.70 was subtracted from the new values. The new values are compared with those of Corliss and Bozman in figure 2 and the converted values are listed in column 4 of table 2.

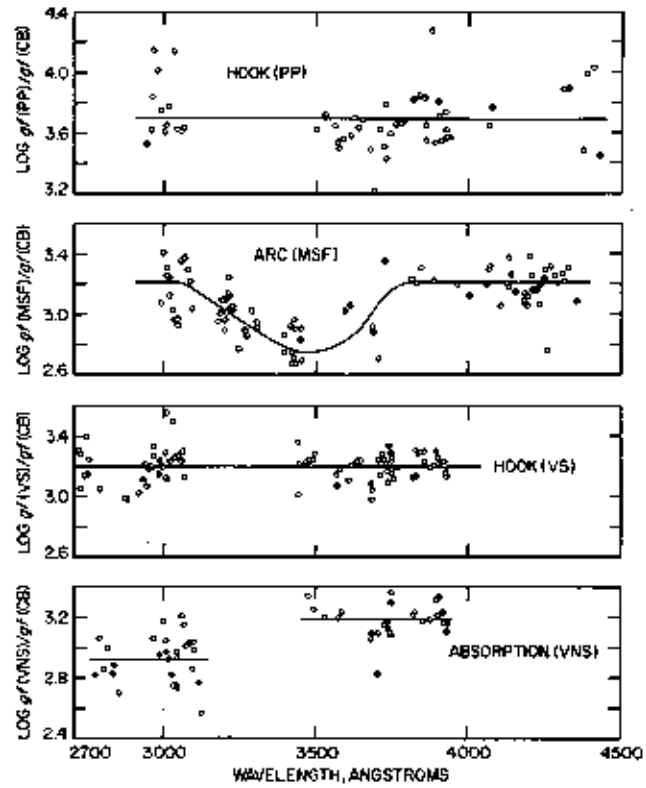

FIGURE 2. *Comparison of some Russian measurements of log gf-values with those from Corliss and Bozman [1962] in the wavelength range 2700 to 4500 Å.*

c. Morosova, Startsev, and Frish [1962]

Using a free burning arc in air, Morosova, Startsev, and Frish have measured oscillator strengths for Fe I, 117 of which are for lines below 4150 Å. By studying the self-absorption in the arc, they found that they could measure the intensities of lines arising from the low levels that lie above the a^5F level if they used an iron anode, a copper cathode and a current of 1.2 A. By comparison of their intensities with those of Crosswhite [1950], they determined a temperature of 4500 °K for their arc. They carried out their photographic photometry with a tungsten lamp, the crater of a carbon arc, and the calibrated continuum from a krypton lamp. A plot of the ratio of their values to those of Corliss and Bozman, in figure 2, shows that their values are too small in the region from 3100 to 3700 Å. An appropriate correction taken from figure 2 was applied and their values tabulated in table 2 under the heading MSF.

d. Valters, Nikonova, and Startsev [1964]

Measuring the equivalent widths of lines absorbed by iron vapor in a furnace, Valters, Nikonova, and Startsev determined oscillator strengths for 28 lines in the region 2750 to 3150 Å and 28 lines in the region 3450 to 3950 Å. They took special precautions to filter out scattered light from longer wavelengths in their spectrograph. Nevertheless, a plot of the ratio

of their values to those of Corliss and Bozman in figure 2 shows that the values for their short wavelength group are too small, as would be the case if extraneous radiation were superimposed on the absorption lines. From this plot their values have been corrected and adjusted to the CB scale. The corrected values are entered in table 2 under the heading VNS.

e. Valters and Startsev [1964]

Valters and Startsev determined oscillator strengths for 89 lines of Fe I with lower levels a^5F and a^3D from the anomalous dispersion of iron vapor in a furnace. The results cover the same wavelength range as the absorption results of Valters, Nikonova, and Startsev, but a plot of the ratio of their values to those of Corliss and Bozman in figure 2 does not show any dependence on wavelength. This result would be expected because of the nature of the anomalous dispersion method and indeed was also noted in the case of Penkin's results. Valters and Startsev's values have been adjusted to the scale of Corliss and Bozman by subtracting 3.20 and then entered into table 2 under the heading VS.

Figure 2 shows how systematic errors of measurement can seriously override random errors in oscillator strength work.

2.3. Data of Crosswhite

For more than 20 years a program of intensity measurements in atomic and molecular spectra has been conducted at The Johns Hopkins University spectroscopy laboratory by the late Prof. G. H. Dieke. Many of the measurements, particularly those in the spectrum of iron, were made by Dr. H. M. Crosswhite. In 1950 Crosswhite published the results of his intensity measurements in a 2.2 A iron arc. These measurements, which include 1064 lines in the region from 3147 to 5659 Å, have been reduced to oscillator strengths by Corliss and Warner (1964).

In 1958 Crosswhite published a monograph on Fe I which included not only his measurements in the 2.2 A arc but also measurements made in a 1 A arc and in a hollow cathode. Some of these measurements have also been published in the American Institute of Physics Handbook, pp. 7–89 through 7–102. The observations from the 1 A arc are not as numerous as those from the other sources, nor are they any more accurate, so we have not attempted to derive oscillator strengths from them.

With the hollow cathode, however, he has measured more than 1000 lines in the region from 3200 to 4150 Å, about 400 between 2450 and 3200 Å and about 700 lines between 4150 and 8000 Å. Above 3150 Å Crosswhite made his sensitivity calibration with a standard tungsten ribbon-filament lamp calibrated at the National Bureau of Standards; between 2700 and 3100 Å he made an indirect calibration from a study of self-absorption and below 2700 Å he extrapolated. A plot of the ratio of the hollow cathode intensities to those from Meggers, Corliss, and Scribner [1961] shows that, with the exception of a discontinuity at 3730 Å, the ratio is constant from 3200 to 8400 Å. Below 3200 Å the ratio becomes very irregular and the scatter increases. The discontinuity at 3730 Å amounts to 0.35 in the log, which is the same as that found by Corliss and Warner in Crosswhite's 2.2 A arc data. Figure 3 shows the plot in the region 3000 to 4250 Å for lines whose upper levels lie between 46 and 53 kK (kilokaysers). Comparison with the similar plots for the hook method data, which should be free of wavelength dependent errors, indicates that the discontinuity must lie in Crosswhite's intensities. We corrected the discontinuity before further discussion of the data.

Crosswhite's iron hollow cathode tube was filled with neon to a pressure of 3.5 mm Hg and operated at 90 mA. The strong lines were measured photoelectrically. "The much larger group of weaker lines is more conveniently measured photographically. Although the intensity range encountered with the photoelectric measurements was almost 10000:1, the photographic one is much less and can be encompassed by the use of a few neutral screens, with reference being made to the photoelectric values for purposes of plate calibration and standardization." Crosswhite [1958] goes on to say, "In spite of difficulties it appears that, at least within a given multiplet, transition probability determinations are possible. Comparison between different multiplets is more cumbersome than in an equilibrium case, but not impossible. It certainly seems worthwhile to make some effort to utilize the great stability of the intensities which are reproducible to better than 1 percent for a particular experimental arrangement."

It does indeed seem worth an effort to derive oscillator strengths from Crosswhite's measurements of hollow cathode intensities. To carry out this reduction, it is first necessary to determine the relative occupation numbers of the upper energy level of each measured transition. In an equilibrium source these numbers are determined by measuring the temperature of the source and calculating the occupation numbers with Boltzmann's exponential law. At pressures as low as 3.5 mm Hg it is generally thought that a source is no longer in LTE and that the population distribution can no longer be described as simply

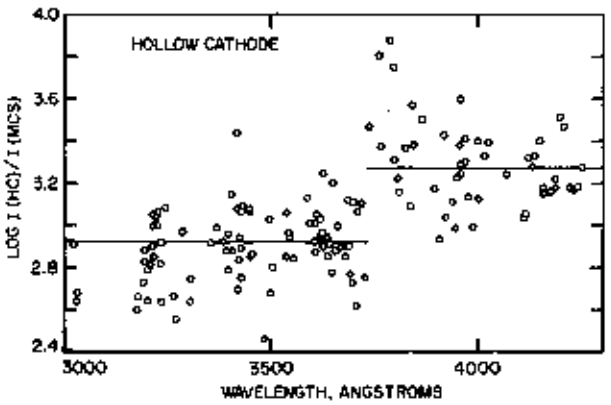

FIGURE 3. *Comparison of the intensity measurements of Crosswhite [1958] in the hollow cathode with those of Meggers, Corliss, and Scribner [1961] in a copper arc for lines of* Fe I *whose upper levels lie between 46 and 53 kK; wavelength range 3000 to 4500 Å.*

exponential. To test this assumption we calculated the relative occupation number of each upper level for a selected group of lines in Crosswhite's hollow cathode list. These are the lines between 3200 and 9000 Å for which transition probabilities are listed in Corliss and Bozman. To calculate the relative occupation numbers of the upper levels of the iron atoms in Crosswhite's hollow cathode we recall that

$$I = h\nu N_n A_{nm}, \text{ so that } I\lambda/A_{nm} \sim N_n$$

or

$$\frac{I\lambda}{g_n A_{nm}} \sim \frac{N_n}{g_n}, \tag{1}$$

Boltzmann's exponential law states that

$$\frac{N_n}{g_n} = \frac{N_0}{g_0} e^{-E/kT}$$

where the subscript 0 refers to the ground state. Now if we plot log $I\lambda/gA$ (or its reciprocal) versus E, the value of the upper energy level, we will see graphically the population distribution amongst the levels of the atom. In figure 4 we have plotted log $gA/I\lambda$ for every line between 3200 and 9000 Å which appears in both Corliss and Bozman (from which the values of gA are taken) and Crosswhite's hollow cathode list (from which the values of I are taken). In most cases each point represents the mean value for 2 to 4 lines. Figure 4 represents the population distribution amongst energy levels of iron atoms in Crosswhite's hollow cathode for every upper level listed in Corliss and Bozman. The dashed line represents an equilibrium distribution at a temperature of 4560 °K. The departures of the individual points from an equilibrium line seem to support an abandonment of the notion of LTE

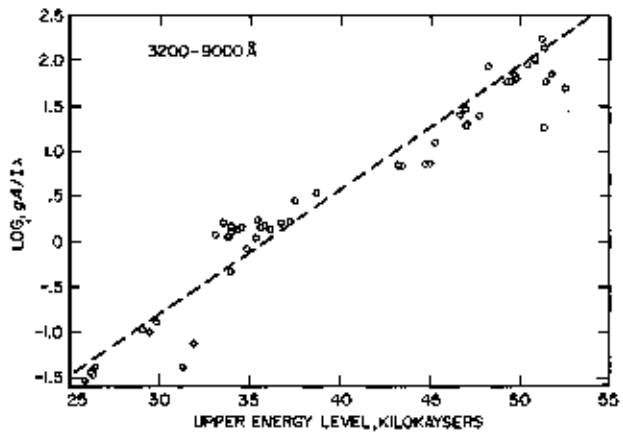

FIGURE 4. *Population distribution (reciprocal) amongst energy levels of iron atoms in Crosswhite's [1958] hollow cathode for every upper level listed in Corliss and Bozman [1962].*

for the most accurate reduction of Crosswhite's hollow cathode intensity measurements to oscillator strengths.

The data shown in figure 4 permit determination of occupation numbers for the iron atoms in the hollow cathode for only about 50 upper energy levels. To obtain a more complete specification of the population distribution, we repeated the process using the oscillator strengths for 2000 lines of Fe I given by Corliss and Warner. This allowed us to find occupation numbers for 323 levels with an average number of determinations per level of about 4. With the value of N/g for each of these levels known, we calculated log gf from each value of hollow cathode intensity using the formula log gf = log I_{hc} + 3 log λ − log N/g −15.82, where the value of the numerical constant depends on the scale of I. This determination makes no assumption about the population distribution among the upper levels of the iron atoms in the hollow cathode discharge. The values derived are entered in column 9 of the table 3 under the heading HC.

Inspection of table 3 reveals that a number of values of log gf derived from the hollow cathode intensities are in rather wide disagreement with the other tabulated values. We used the values of log I_2 from table XIII of Crosswhite [1958] to derive the values of log gf. Comparison of these log I_2 values with those given in the American Institute of Physics Handbook and with the photoelectric traces of hollow cathode spectra reproduced in both publications indicates that a number of these discrepant values are certainly due to misprints. For this reason, discrepant hollow cathode values have been freely ignored in arriving at the "best" values given in table 3.

2.4. Data of Corliss and Bozman

In 1963 Corliss and Bozman published NBS Monograph 53, "Experimental Transition Probabilities for Spectral Lines of Seventy Elements," which is derived from the intensity measurements of Meggers, Corliss, and Scribner [1961]. They reported 663 oscillator strengths for Fe I of which about 450 lie below 4150 Å. For a number of reasons their scale is suitable to use in a compilation such as ours. The number of values reported is so large that there are numerous lines in common with every published list. This simplifies the problem of putting all measurements onto a common scale. Their absolute scale has been shown by Allen and Corliss [1963] to be reasonably accurate for all the neutral atoms in the iron group. They concluded that the CB scale may be high by 0.05 in log gf, on the average. We discuss the accuracy of the CB absolute scale for Fe I in particular in section 5 of this paper. The temperature of their light source was determined with an accuracy of ±2 percent. The precision of their measurements, while not high, is accurately known and compares well with that of most other published sets of data for Fe I. The comparisons shown in figure 2 indicate that the intensity scale of Meggers, Corliss, and Scribner is correctly calibrated as a function of wavelength from 2700 to 4500 Å.

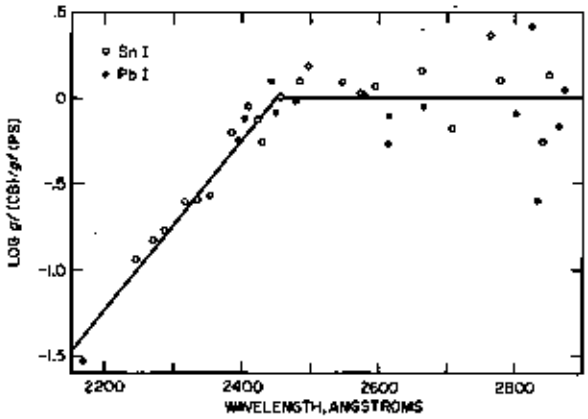

FIGURE 5. *Ratio of the gf-values of Corliss and Bozman [1962] to those of Penkin and Slavenas [1963] (normalized to unity above 2450 Å) between 2150 and 3000 Å.*

However, the intensity scale of Meggers, Corliss, and Scribner is subject to a serious systematic error below 2500 Å, where it becomes progressively too small. The origin of this error lies in the notorious lack of any reliable energy calibration procedure for short wavelengths. Soon after the publication of NBS Monograph 53, Penkin and Slavenas [1963] published oscillator strengths for lines of tin and lead which extended down to 2170 Å. They used the hook method, which does not require an intensity calibration of any sort. A plot of the ratio of their values to those of Corliss and Bozman (normalized to unity between 2450 and 3000 Å) is shown in figure 5. The figure shows that the ratio is constant between 2450 and 3000 Å but that the CB scale declines by a factor of 30 between 2450 and 2150 Å. This correction has been applied to the CB values reported in column 8 of table 3.

There are some independent data below 2500 Å that support the correction derived from the work of Penkin and Slavenas. The relative oscillator strengths for Co II calculated by Gruzdev [1962] with the method of intermediate coupling give rise to a correction curve in substantial agreement with that of figure 5. We have, however, preferred to base our calibration on experimental values. Measurement of intensities of Sn I lines in chemiluminescent flames led Gilbert [1963] to the conclusion that the values of Meggers, Corliss, and Scribner [1961] decreased by a factor of 50 between 2500 and 2100 Å. This agrees with our adopted correction.

2.5. Data of Margoshes and Scribner

Margoshes and Scribner [1963] determined relative oscillator strengths for 105 lines of Fe I between 2900 and 4150 Å using a gas stabilized arc (a form of plasma jet) as an emission source. All of these lines had been measured previously, but by other methods. Figure 5 in their paper shows the ratio of their *gf*-values to those of Corliss and Bozman. There appears to be a slight trend of the ratio with wavelength which hardly exceeds the uncertainty of the measurements and we have made no correction. The absolute value of their scale has been altered by adding 0.23 to their values of log *gf*, thereby putting their measurements onto the common scale of table 3. Their values are listed in column 12 under MS.

2.6. Data of Corliss and Warner

In 1964 Corliss and Warner published a compilation of oscillator strengths for Fe I that emphasized the visible and infrared regions of the spectrum. In addition to their own measurements in the visible and infrared, they included all data published prior to 1963, with the exception of Sobolev [1943] and Parchevsky and Penkin [1954] which were not available to them, and the hollow cathode data of Crosswhite [1958] (v. sec. 2.3). These data included King and King [1938], Carter [1949], Crosswhite [1950], Allen and Asaad [1957], and Corliss and Bozman [1962] longward of 3100 Å. The values of Mitrofanova [1952]; Aarts, Harting, and Bakker [1954]; and Hefferlin [1959] were discussed but not incorporated into their "best" value.

The "best" value of Corliss and Warner is entered in column 8 under CW. As in the tabulation of the Russians' measurements, a superscript following the value indicates the number of entries contributing to their "best" value and is used as a weighting factor in arriving at the "best" value in column 13. The CW values include and supersede those of Corliss and Bozman at wavelengths above 3100 Å. Since the CW values end at 3100 Å, the CB values are tabulated in the same column at shorter wavelengths.

2.7. Data of King, Olsen, and Corliss

In 1965 King, Olsen, and Corliss published oscillator strengths for 300 Fe I lines between 2500 and 3200 Å. They were calculated from the equivalent widths of lines absorbed from the continuum of a high pressure Xenon lamp when its radiation was passed through iron vapor in a graphite-tube electric furnace. Scattered light was controlled with a Corex red-purple filter. To avoid the flat portion of the curve-of-growth in the reduction of the data, only the faintest lines in each exposure were measured. Since the lines observed cover a very large range of intensities, a great many spectrograms would be required to put all of the lines on the same scale of intensity. Although 86 separate exposures were made, it was nevertheless necessary to tie some of them together with supplementary data. For this purpose the oscillator strengths of Corliss and Bozman were used. This procedure should not introduce any wavelength dependent error or energy level dependent error, even if such an error were present in the CB data. The only error which could be introduced from the supplementary data would be an

intensity dependent error. Such an error is most unlikely.

In figure 6 is plotted the ratio of oscillator strengths from KOC to those from CB as a function of upper energy level in kilokaysers. With the exception of two points at about 60 kK, there is only a very slight dependence of ratio on upper energy level. Qualitatively, this dependence is in the sense that the KOC temperature scale is slightly smaller than the CB scale which is in accord with results found earlier by Corliss [1962]. The same ratio is plotted as a function of wavelength in figure 7. The ratio seems to be independent of wavelength, with the possible exception of the region from 3100 to 3200 Å. The remarkable departure of the two high level lines at 2542 and 2543 Å from the general trend of the plots is unexplained. The values from this paper are entered in column 11 of table 3 under KOC.

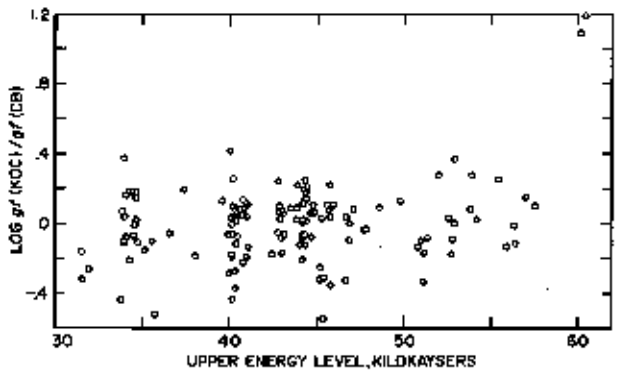

FIGURE 6. *Ratio of* gf*-values from King, Olsen, and Corliss [1965] to those from Corliss and Bozman [1962] as a function of upper energy level.*

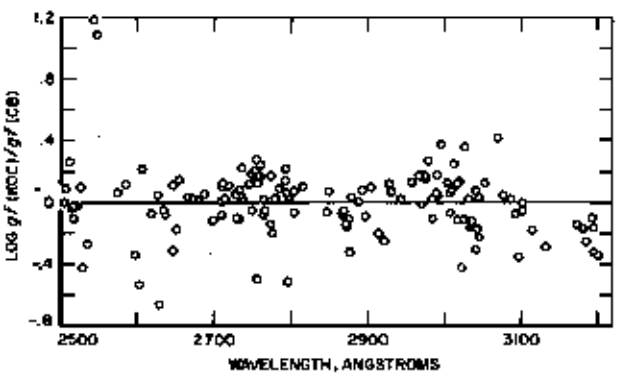

FIGURE 7. *Ratio of* gf*-values from King, Olsen, and Corliss [1965] to those from Corliss and Bozman [1962] as a function of wavelength; 2500 to 3200 Å.*

3. New Observations

3.1. Data of Warner From ULO

In the region from 2500 to 4150 Å, new observations have been made at the University of London Observatory using both free-burning arcs and sparks. A d-c arc was maintained between two 5 mm diam iron rods. These electrodes were obtained from Messrs. Johnson Matthey and Co. and contain only one or two parts per million of spectroscopically conspicuous impurities. A current of 1 A was drawn from a constant-current source. Such a small current, although necessitating longer exposure times than is usual, has the advantage of considerably reducing the amount of self absorption in strong lines.

The spark source, operated at 10,000 V, was produced between pure iron electrodes in an argon atmosphere at normal pressure. The average current was 1.3 A, which caused the electrodes to glow white hot as in a normal arc. This resulted in a very stable, nonwandering spark. The argon atmosphere removed troublesome O II, N II, O_2^+, and N_2^+ emissions that occur in a spark in air. A few Ar I and Ar II lines are observed. The argon atmosphere also reduced the self-absorption in strong lines to almost negligible amounts. A disadvantage of the spark was that exposure times up to 75 hr were necessary to record the spectral region below 3000 Å. Also, in this region Fe II lines interfered with many neutral lines.

The light from the sources was imaged by means of two quartz lenses onto the grating of the stigmatic Ebert spectrograph in the laboratory of the University of London Observatory. This spectrograph of 3.4 m focal length, has a 15000 lines per inch grating giving a dispersion of 4.75 A/mm in the first order. A total wavelength region of 2400 Å can be recorded in one exposure. Ilford HP3 plates were used throughout the present investigation. These were brushed continuously during development.

On all plates a spectrum of the iron arc through a calibrated step wedge (placed at the spectrograph slit) was obtained. All arc and spark spectra were traced with the recording microphotometer at the Royal Greenwich Observatory. From the step wedge spectra, photographic calibration curves were drawn for each plate. Line and continuum readings from the charts were converted into intensities with the aid of these characteristic curves. The continuum intensity was subtracted from the apparent line intensity to give the true line intensity.

In general at least three independent intensity measurements were made on each line. Over most of the intensity range the plate-to-plate interagreement of line intensities when placed on a uniform scale, was ~ 0.03 dex. (± 7%). In the arc spectra all strong lines were rejected to avoid effects of self-reversal.

Our intensity measurements in a range of 200 Å near 4100 Å were compared with the Fe I *f*-values given by Corliss and Warner in the manner described by Corliss and Warner and the excitation temperatures

for the two sources derived. For the 1 A d-c arc a value of 4630 ± 70 °K was found. In figure 8 we show the graph from which the excitation temperature of the spark was determined. It can be seen that for upper energy levels where E < 48 kK the population of levels in our spark source is closely Boltzmannian. The derived temperature is 6170 ± 30 °K. The departure from linearity in figure 8 for E > 48 kK is a reflection of the normalization function applied to the Corliss and Warner f-values, and will be discussed later.

With the above determined excitation temperatures we can calculate from the CB (and CW) Fe I f-values, a theoretical line intensity for all lines in common with the present work (with $E < 48$ kK):

$$\log I_{CB}\lambda^3 = \log gf_{CB} - \frac{625E}{T_{ex}}$$

where E is in kK. We then plot $\log I_{CB}\lambda^3 - \log I_W$ as a function of λ. This gives the wavelength calibration for the plate (i.e., determines the combined effects of plate sensitivity and spectrograph transmission) and at the same time takes care of the λ^3 factor. Using this graph we correct all intensities measured in the present work and obtain values of $\log I_W\lambda^3$ on an arbitrary scale. Relative gf values for all lines were then calculated from

$$\log gf_{rel} = \log I_W\lambda^3 + \frac{625E}{T_{ex}}.$$

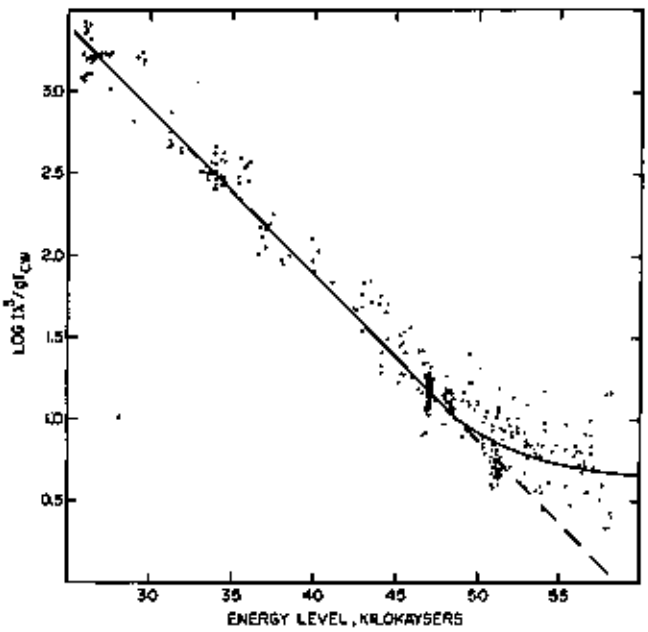

FIGURE 8. *Log ratio of intensity × λ^3 to gf-value of Corliss and Warner [1964] for Fe I lines in the iron spark plotted versus upper energy level.*

These relative values were corrected for departure from a Boltzmann distribution and adjusted to the absolute scale by plotting this $\log gf_{rel} - \log gf_{CB \text{ or } CW}$ versus E for lines in common with CB or CW and applying the indicated correction to every line. The values are listed in columns 6 and 7 of table 3.

3.2. Data of Corliss From NBS

In the region below 2500 Å a new set of observations has been made at the National Bureau of Standards and is reported in column 1 of table 3. Since this region is densely populated with lines of the first and second spectrum of iron, observations were made in the third order of a 30000 lines per inch grating mounted in parallel light. The second order was eliminated with a chlorine filter. A step sector wheel with sector openings in the ratio of two was mounted at the slit and reduced the intensity by that ratio in eight successive steps along the length of the slit image. An achromatic lens at the slit formed an image of the light source on the grating and permitted uniform illumination of the slit (in the absence of the sector wheel).

The light source was a 1 A arc between a 7/32 in. diam rod of commercially pure iron as the lower anode and a pointed 3/8 in. graphite upper cathode. Exposure times were about an hour on Kodak 103a-0 plates. Three sets of plates were measured.

The intensities were estimated by visual interpolation between steps in the sectored spectrograms. With these intensities and gf-values from Corliss and Bozman for the range 2450 to 2540 Å, a plot of $\log I\lambda^3/gf$ versus upper energy level was prepared. From this plot preliminary values of $\log gf$ for all the measured lines were calculated. Finally, a correction to be applied to all of these values below 2450 Å was prepared by plotting the ratio of these preliminary values to the corrected CB values from column 8 of table 3. After correction, the new values were entered in column 6 of table 3. To make certain that the new values were not affected by self-absorption, the ratio of the new values to those in column 8 were plotted versus the corresponding intensity from Meggers, Corliss, and Scribner for lines between 2450 and 2540 Å. A horizontal plot showed that at 1 A these lines were not self-absorbed.

4. Results

The results of the compilations and measurements discussed in sections 2 and 3 are presented in table 3. The wavelengths are taken in order of preference from Edlén [1955]; from Russell and Moore [1944]; from Kiess, Rubin, and Moore [1961]; or, in a few cases, are calculated from the term combinations. The classifications are taken from the same papers and the numerical values of the energy levels are given to the nearest kayser in columns 2 and 3. The lower excitation potential in electron volts has been calculated by multiplying the lower energy level in column 2 by 0.00012398 and the result, rounded off

to two decimal places, is entered in column 4. The multiplet numbers in column 5 are those assigned by Moore [1945, 1952] in her Multiplet Tables.

The recommended or "best" value of log gf given in column 13 is, in general, the unweighted mean of the individual values of log gf in the previous seven columns. However the CW and R values have been weighted according to the number of contributing values in Corliss and Warner or in table 2 and the weighting number is indicated as a superscript. In a few cases, where there was good reason, individual values were given a weight of zero. If the maximum and minimum values for any line differ by more than 0.4, no best value is recommended unless there is a value obviously discrepant.

Log $gf\lambda$ and log gA/λ have been computed from the best value and are given in the last two columns. Log $gf\lambda$ is useful in dealing with curves of growth in absorption spectra and stellar spectra and log gA/λ in determining temperatures from intensity measurements in emission spectra. It should be noted also that the line strength, S, is equal to $gf\lambda/304$, or $\log S = \log gf\lambda - 2.48$.

5. Discussion of the Absolute Scale

In this section we discuss the various attempts to make absolute determinations of oscillator strengths for lines of Fe I and try to decide if a scale more accurate than that used in this paper can be recommended.

A number of determinations of the oscillator strength of the resonance line of Fe I at 3719.937 Å by various atomic beam experiments have been reported over the past 15 years. They are listed below, with the value of log gf.

Kopfermann and Wessel [1951]	−0.41
Ziock [1957]	−0.38
Bell, Davis, King, and Routly [1958]	−0.54
Ottinger and Ziock [1961]	−0.50

The mean value here is −0.46, which is 0.14 less than the value reported for that line in our table.

In 1942, R. B. King made absolute determinations of the oscillator strengths of 12 lines of Fe I between 3700 and 3900 Å by measuring the total absorption in a furnace. Bell, Davis, King, and Routly [1958] revised those values on the basis of new vapor pressure data. The revised values for these 12 lines are on a scale of log gf which is 0.25 less than that of our table.

In their work on the abundances of the elements in the solar atmosphere, Goldberg, Müller, and Aller [1960] calculated absolute values of log gf for Fe I lines of the $3d^74s - 3d^74p$ transition array from the f-sum rule, assuming $f_T = 1.0$. The array has 45 lines in the range 3585 to 4150 Å. This f-sum scale is 0.06 less than the scale of our table.

With a somewhat different formulation of the f-sum rule, assuming $f_T = 0.7$, Allen [1960] adjusted a large number of relative oscillator strengths for Fe I to an absolute scale. A comparison of that scale with the scale of Corliss and Bozman made by Allen and Corliss [1963] leads to the conclusion that Allen's f-sum scale is 0.20 less than our present scale.

In an interesting experiment reported to the Aeronautical Systems Division, AFSC in 1965, Karstensen and Richter of the University of Kiel measured the lifetimes of the z^5F_4 and z^3D_1 levels in Fe I. They also calculated them from the oscillator strengths of Corliss and Warner [1964] which are reported on the present scale. The lifetimes in nanoseconds are quoted below from their report.

	z^5F_4	z^3D_1
Karstensen and Richter	220 ± 70	100 ± 25
Corliss and Warner	240 ± 120	80 ± 40

There does not appear to be any significant difference between the two sets of determinations.

Paul L. Byard [1966] of the Ohio State University Department of Astronomy has been making oscillator strength measurements in Fe I using a luminous shock tube. Preliminary results obtained for a group of lines in the red part of the spectrum show agreement with the values of Corliss and Bozman within the experimental uncertainties.

From a discussion such as this we cannot hope to arrive at an exact correction to be applied to our scale. It is obvious that the absolute scale is still somewhat uncertain. The mean correction obtained from the six determinations mentioned above is −0.11 with a standard deviation of this mean amounting to 0.04. At the present time therefore, it would seem that the scale used in this paper is high by about 0.1 in log gf. In order to keep the scale in this paper uniform with that of our previous work in the visible and infrared parts of the spectrum, we have not applied the correction here. Furthermore, there is little doubt that this figure is subject to some change as more data on the absolute scale of oscillator strengths for Fe I is accumulated.

6. Conclusion

In this paper numerous oscillator strength measurements, both new and old, for 2000 lines of Fe I have been assembled, adjusted to the same scale, and best values for most of the lines suggested. The scale on which they are presented is the same as that used by Corliss and Bozman [1962] for Fe I and by Corliss and Warner [1964]. The values in this paper supersede the values below 4151 Å in Corliss and Warner [1964] and, together with the remaining 1349 lines in that paper, provide a total of 3349 lines of Fe I for which more or less accurate values of oscillator strengths are known. These are more than three-quarters of the classified lines of Fe I which have been observed in the laboratory.

The accuracy of the best values of log gf in table 3, taken as relative values, will vary greatly from line to line, depending on the number and origin of the obser-

vations contributing to it. The standard deviation of the new observations should be about the same as those of Corliss and Warner [1964] which were stated to be about 0.13. Graphical representation of the overall scatter encountered in the construction of curves of growth with those values are given by Bell and Rodgers [1965] for stellar atmospheres and for the solar atmosphere by Goldberg, Kopp, and Dupree [1964]; by Warner [1964]; and by Aller, O'Mara, and Little [1964].

The absolute scale on which these values is reported appears to be about 25 percent higher than the best absolute scale for Fe I that can be established at present. The uncertainty in the best absolute scale, on the basis of the consistency amongst the various sets of determinations considered above seems to be about 11 percent (standard deviation of the mean for six sets). Therefore, for work requiring the best present estimate of the absolute scale, we suggest subtracting 0.10 from our reported values of log *gf*. Improved knowledge of this correction can be expected in the near future.

Warner thanks the Astronomer Royal for the use of the recording microphotometer at the Royal Greenwich Observatory. He is also grateful to E. L. G. Bowell and K. J. H. Phillips for carrying out some of the numerical work. He was supported by a Research Grant from the Department of Scientific and Industrial Research. We also thank Ruth Peterson for her conscientious work in making the tables and putting them on punched cards, and W. R. Bozman who wrote a program for computing several quantities in the tables.

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TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe I*

Wave-length Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gAλ
				Log *gf*									
2084.122	0—47967	0.00	UV 33			1.16					1.16	4.48	7.03
2157.795	416—46745	0.05	UV 24	0.90							0.90	4.23	6.72
2164.550	704—46889	0.09	UV 24	0.56							0.56	3.90	6.38
2166.769	0—46137	0.00	UV 21	1.12		1.18					1.15	4.49	6.97
2171.298	704—46745	0.09	UV 24	0.25							0.25	3.59	6.06
2178.080	416—46314	0.05	UV 21	0.79		0.82					0.80	4.14	6.61
2178.120	704—46601	0.09	UV 22	0.45							0.45	3.79	6.26
2186.483	416—46137	0.05	UV 21	0.56							0.56	3.90	6.36
2186.893	888—46601	0.11	UV 22	−0.02							−0.02	3.32	5.78
2187.195	704—46410	0.09	UV 21	0.56							0.56	3.90	6.36
2191.836	704—46314	0.09	UV 21	0.53		0.45					0.49	3.83	6.29
2196.043	888—46410	0.11	UV 21	0.43		0.45					0.44	3.78	6.24
2200.370	978—46410	0.12	UV 21	0.34							0.34	3.68	6.14
2200.723	888—46314	0.11	UV 21	0.31							0.31	3.65	6.11
2248.858	6928—51381	0.86	UV 70	−0.50							−0.50	2.85	5.27
2250.791	0—44415	0.00	UV 16	−0.79							−0.79	2.56	4.98
2259.511	0—44244	0.00	UV 15	−0.40							−0.40	2.95	5.36
2264.389	6928—51077	0.86	UV 71	−0.11							−0.11	3.24	5.65
2265.055	416—44551	0.05	UV 16	−0.79							−0.79	2.57	4.97
2266.903	7728—51828	0.96	UV 70	−0.61							−0.61	2.75	5.15
2267.085	416—44512	0.05	UV 17	−0.65							−0.65	2.71	5.11
2267.465	6928—51017	0.86	UV 70	−0.08							−0.08	3.28	5.68
2269.099	704—44761	0.09	UV 16	−0.78							−0.78	2.58	4.98
2270.863	0—44023	0.00	UV 15	−1.19							−1.19	2.17	4.57
2271.781	7377—51381	0.91	UV 70	−0.35							−0.35	3.01	5.40
2272.070	416—44415	0.05	UV 16	−0.62							−0.62	2.74	5.13
2272.816	7377—51361	0.91	UV 71	−0.36							−0.36	3.00	5.39
2275.189	888—44827	0.11	UV 16	−1.08							−1.08	2.28	4.67
2276.026	0—43923	0.00	UV 14	−0.31							−0.31	3.05	5.44
2277.098	7728—51630	0.96	UV 71	−0.59							−0.59	2.77	5.16
2277.672	7728—51619	0.96	UV 70	−0.59							−0.59	2.77	5.16
2279.922	704—44551	0.09	UV 16	−0.41							−0.41	2.95	5.34
2280.222	7986—51828	0.99	UV 70	−0.28							−0.28	3.08	5.47
2283.304	978—44761	0.12	UV 16	−0.99							−0.99	2.37	4.76
2283.656	888—44664	0.11	UV 16	−0.97							−0.97	2.39	4.78
2284.086	416—44184	0.05	UV 14	−0.36							−0.36	3.00	5.39
2287.250	704—44411	0.09	UV 14	−0.26							−0.26	3.10	5.49
2289.032	8155—51828	1.01	UV 70	−0.41							−0.41	2.95	5.33
2290.546	7986—51630	0.99	UV 71	−0.35							−0.35	3.01	5.39
2291.122	7728—51361	0.96	UV 71	−0.26							−0.26	3.10	5.48
2292.525	416—44023	0.05	UV 15	−0.71							−0.71	2.65	5.03
2294.406	888—44459	0.11	UV 14	−0.58							−0.58	2.78	5.16
2296.928	888—44411	0.11	UV 14	−1.00							−1.00	2.36	4.74
2297.788	416—43923	0.05	UV 14	−0.26		−0.24					−0.25	3.11	5.49
2298.170	0—43500	0.00	UV 14	−0.16							−0.16	3.20	5.58
2298.657	888—44378	0.11	UV 15	−1.30							−1.30	2.06	4.44
2299.221	704—44184	0.09	UV 14	−0.56							−0.56	2.80	5.18
2300.140	704—44166	0.09	UV 15	−0.58							−0.58	2.78	5.16
2301.685	978—44411	0.12	UV 14	−0.82							−0.82	2.54	4.92
2303.422	978—44378	0.12	UV 15	−0.77							−0.77	2.59	4.97
2303.582	888—44285	0.11	UV 15	−0.68							−0.68	2.68	5.06
2309.000	888—44184	0.11	UV 14	−0.49							−0.49	2.87	5.24
2313.105	704—43923	0.09	UV 14	−0.32							−0.32	3.04	5.41
2320.358	416—43500	0.05	UV 14	−0.31							−0.31	3.06	5.42
2341.575	416—43109	0.05	UV 13	−1.42							−1.42	1.95	4.30
2350.408	0—42533	0.00	UV 11	−1.69							−1.69	1.68	4.02
2355.327	416—42860	0.05	UV 11	−1.33							−1.33	2.04	4.38
2356.196	7377—49805	0.91		−0.20							−0.20	3.17	5.51
2369.457	888—43079	0.11	UV 11	−1.36							−1.36	2.01	4.34
2371.431	704—42860	0.09	UV 11	−0.97							−0.97	2.41	4.73

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log gf									
2373.625	416–42533	0.05	UV 11	−0.63							−0.63	2.75	5.07
2374.519	978–43079	0.12	UV 11	−1.06							−1.06	2.32	4.64
2381.836	888–42860	0.11	UV 11	−0.88							−0.88	2.50	4.81
2389.973	704–42533	0.09	UV 11	−0.86							−0.86	2.52	4.83
2408.045	7728–49243	0.96	UV 68	−1.84							−1.84	1.54	3.84
2411.558	6928–48383	0.86		−1.11							−1.11	2.27	4.57
2429.810	8155–49298	1.01	UV 68	−1.40							−1.40	1.99	4.27
2433.056	8155–49243	1.01	UV 68	−0.78							−0.78	2.61	4.89
2438.183	6928–47930	0.86	UV 62	−0.52							−0.52	2.87	5.14
2439.630	11976–52954	1.48		−0.86							−0.86	2.53	4.80
2439.743	19390–60366	2.40	UV157	0.89		0.50					0.70	4.09	6.36
2440.106	19788–60758	2.45	UV157	0.48		0.37					0.42	3.81	6.08
2442.567	19621–60549	2.43	UV157	0.56		0.66					0.61	4.00	6.27
2443.873	6928–47835	0.86	UV 63	−0.37		−0.33					−0.35	3.04	5.31
2445.213	6928–47812	0.86	UV 63	−1.09							−1.09	2.30	4.57
2447.711	0–40842	0.00	UV 9	−1.08		−1.04					−1.06	2.33	4.60
2450.439	12561–53358	1.56		−0.84							−0.84	2.55	4.82
2451.384	12969–53749	1.61		−1.03							−1.03	2.36	4.63
2453.477	7377–48123	0.91	UV 62	−0.21		−0.24					−0.22	3.17	5.43
2453.568	19621–60366	2.43	UV157	−0.40							−0.40	2.99	5.25
2457.598	6928–47606	0.86	UV 62	0.30							0.30	3.69	5.95
2458.564	6928–47590	0.86	UV 59	−1.38							−1.38	2.01	4.27
2462.182	416–41018	0.05	UV 9	−0.72							−0.72	2.67	4.93
2462.648	0–40594	0.00	UV 9	−0.26							−0.26	3.13	5.39
2463.728	7728–48305	0.96	UV 65	−0.53							−0.53	2.86	5.12
2465.150	7377–47930	0.91	UV 62	0.19							0.19	3.58	5.84
2467.733	7728–48239	0.96	UV 62	−0.48							−0.48	2.91	5.17
2468.880	6928–47420	0.86	UV 59	0.20							0.20	3.59	5.85
2470.961	7377–47834	0.91	UV 63	−0.70							−0.70	2.69	4.95
2472.343	6928–47363	0.86	UV 59	0.00		0.06					0.03	3.42	5.67
2472.896	416–40842	0.05	UV 9	−0.06		0.14					0.04	3.43	5.68
2473.156	0–40422	0.00	UV 8	−0.98							−0.98	2.41	4.66
2474.815	7728–48123	0.96	UV 62	0.23		0.33					0.28	3.67	5.92
2476.654	7986–48351	0.99	UV 62	−0.38							−0.38	3.01	5.26
2476.861	8155–48516	1.01	UV 65	−1.37							−1.37	2.02	4.27
2479.481	7986–48305	0.99	UV 65	−0.27		−0.15					−0.21	3.18	5.43
2479.777	704–41018	0.09	UV 9	0.00		0.14					0.07	3.46	5.71
2483.272	0–40257	0.00	UV 9			0.49					0.49	3.89	6.13
2483.531	7986–48239	0.99	UV 62	−0.18							−0.18	3.22	5.46
2484.186	888–41131	0.11	UV 9	−0.02		0.11					0.05	3.45	5.69
2484.530	11976–52213	1.48		−0.92							−0.92	2.48	4.72
2485.989	7377–47590	0.91	UV 59	−0.74							−0.74	2.66	4.90
2486.372	0–40207	0.00	UV 8			−1.00					−1.00	2.40	4.64
2486.690	7728–47930	0.96	UV 62	−0.15		−0.18					−0.16	3.24	5.48
2487.064	8155–48351	1.01	UV 62	−0.02		−0.03					−0.02	3.38	5.62
2487.370	704–40895	0.09	UV 10	−1.28		−1.33					−1.30	2.10	4.34
2488.144	416–40594	0.05	UV 9			0.51					0.51	3.91	6.15
2488.942	20641–60807	2.56	UV164	0.06							0.06	3.46	5.70
2489.751	978–41131	0.12	UV 9	0.07		0.41					0.24	3.64	5.88
2489.917	8155–48305	1.01	UV 65	−0.25							−0.25	3.15	5.39
2490.645	704–40842	0.09	UV 9			0.38					0.38	3.78	6.01
2491.156	888–41018	0.11	UV 9	0.16		0.29					0.22	3.62	5.85
2491.983	20641–60758	2.56	UV163	−0.02							−0.02	3.38	5.61
2492.640	7728–47834	0.96	UV 63	−1.06							−1.06	2.34	4.57
2493.998	7728–47812	0.96	UV 63	−0.55							−0.55	2.85	5.08
2494.252	6928–47008	0.86	UV 57	−1.06							−1.06	2.34	4.57
2495.869	6928–46982	0.86	UV 57	−0.55							−0.55	2.85	5.08
2496.534	7377–47420	0.91	UV 59	0.17		0.08					0.12	3.52	5.75
2501.133	0–39970	0.00	UV 7	−0.06	−0.11	−0.02					−0.06	3.34	5.57
2501.695	6928–46889	0.86	UV 56	−0.66	−0.57	−0.58			−0.58		−0.60	2.80	5.03

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe I*—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gAλ
				Log *gf*									
2503.491	20875—60807	2.59	UV164	−0.15							−0.15	3.25	5.48
2504.101	20641—60564	2.56		−1.20							−1.20	2.20	4.43
2504.635	17727—57641	2.20		−2.01							−2.01	1.39	3.62
2505.004	20641—60549	2.56	UV163	−0.54							−0.54	2.86	5.09
2506.569	20875—60758	2.59	UV163	−0.24							−0.24	3.16	5.39
2507.899	7728—47590	0.96	UV 59	0.04	−0.07	−0.05			0.04		−0.01	3.39	5.62
2508.751	7986—47834	0.99	UV 63	−0.98					−1.12		−1.05	2.35	4.58
2508.948	7986—47831	0.99	UV 59	−2.01							−2.01	1.39	3.62
2509.390	17727—57565	2.20		−1.48							−1.48	1.92	4.15
2510.836	416—40231	0.05	UV 7	−0.16	0.04	0.01			0.27		0.04	3.44	5.66
2512.266	6928—46721	0.86	UV 55	−0.68							−0.68	2.72	4.94
2512.361	416—40207	0.05	UV 8	−1.14		−1.10			−1.16		−1.14	2.26	4.48
2515.848	12561—52297	1.56	UV104	−1.15							−1.15	2.25	4.47
2516.249	7377—47107	0.91	UV 57	−1.48					−0.98		−0.98	2.42	4.64
2516.572	7728—47453	0.96	UV 61	−0.96					−1.13		−1.04	2.36	4.58
2517.658	7986—47693	0.99	UV 59	−0.08	−0.23	−0.08			−0.12		−0.12	3.28	5.50
2518.103	704—40405	0.09	UV 7	−0.08	0.02	−0.07			−0.18		−0.08	3.32	5.54
2518.824	20875—60564	2.59		−0.49							−0.49	2.91	5.13
2519.630	8155—47831	1.01	UV 59	−0.31	−0.01	−0.24			−0.27		−0.21	3.19	5.41
2521.920	7377—47017	0.91	UV 58	−0.84							−0.84	2.56	4.78
2522.488	7377—47008	0.91	UV 57	−0.75							−0.75	2.65	4.87
2522.850	0—39626	0.00	UV 7		0.56	0.44					0.50	3.90	6.12
2524.294	888—40491	0.11	UV 7	−0.17	−0.23	−0.20					−0.20	3.20	5.42
2527.436	416—39970	0.05	UV 7	0.15	0.37	0.18					0.23	3.63	5.85
2528.910	20641—60172	2.56	UV162		−0.25						−0.25	3.15	5.37
2529.136	704—40231	0.09	UV 7	−0.06	0.11	−0.23			−0.13		−0.08	3.32	5.54
2529.837	888—40405	0.11	UV 7	−0.47		−0.71					−0.59	2.81	5.02
2530.694	704—40207	0.09	UV 8	−1.28		−1.09			−1.52		−1.30	2.10	4.31
2531.510	20875—60365	2.59	UV162	−0.20					0.32				
2532.876	7728—47197	0.96	UV 56	−1.20					−1.32		−1.26	2.14	4.35
2535.128	7986—47420	0.99	UV 60	−1.20					−1.62				
2535.609	978—40405	0.12	UV 7	−0.18	−0.18	−0.06			−0.33		−0.19	3.21	5.42
2537.460	11976—51374	1.48	UV102	−0.49	−0.42				−0.45		−0.45	2.95	5.16
2539.358	7377—46745	0.91	UV 55	−0.78	−0.75				−0.77		−0.77	2.63	4.84
2539.575	7728—47093	0.96	UV 56	−1.78					−2.00		−1.89	1.51	3.72
2540.973	888—40231	0.11	UV 7		−0.22	−0.02					−0.12	3.29	5.49
2542.101	21039—60365	2.61	UV162	0.91	1.07	0.87			2.05				
2543.920	20875—60172	2.59	UV162	0.91	0.99	0.86			1.94				
2544.706	20641—59927	2.56	UV162	0.76		0.50					0.63	4.04	6.24
2545.980	704—39970	0.09	UV 7		−0.11	−0.05					−0.08	3.33	5.53
2549.614	416—39626	0.05	UV 7		−0.39	−0.18					−0.28	3.13	5.32
2550.812	7986—47177	0.99	UV 55	−1.28							−1.28	2.13	4.32
2552.604	888—40052	0.11	UV 8	−1.58					−1.72		−1.65	1.76	3.95
2552.832	7728—46889	0.96	UV 55	−1.07					−1.16		−1.12	2.29	4.48
2554.518	22947—62081	2.84		−0.93							−0.93	2.48	4.67
2555.648	8155—47272	1.01	UV 58	−1.58					−1.80		−1.69	1.72	3.91
2556.304	12561—51668	1.56	UV102	−0.50	−0.18				−0.28		−0.39	3.02	5.21
2556.862	6928—46027	0.86	UV 53	−1.02					−1.03		−1.02	2.39	4.58
2557.268	11976—51069	1.48	UV101	−1.40					−1.67		−1.54	1.87	4.06
2560.558	8155—47197	1.01	UV 56	−1.11					−1.30		−1.20	2.21	4.40
2561.262	7986—47017	0.99	UV 58	−1.39					−1.63		−1.51	1.90	4.09
2561.856	8155—47177	1.01	UV 55	−1.20					−1.31		−1.26	2.15	4.34
2562.224	8155—47172	1.01	UV 55	−0.88					−1.07		−0.98	2.43	4.62
2563.820	7728—46721	0.96	UV 55	−1.79							−1.79	1.62	3.81
2564.561	8155—47136	1.01	UV 58	−1.19					−1.21		−1.20	2.21	4.40
2567.860	17927—56859	2.22	UV130	−0.72							−0.72	2.69	4.88
2568.862	7986—46902	0.99	UV 54	−1.06					−1.17		−1.12	2.29	4.47
2569.595	6928—45833	0.86	UV 52	−1.03					−1.15		−1.09	2.32	4.50
2569.742	7986—46889	0.99	UV 55	−0.99					−1.11		−1.05	2.36	4.54
2571.570	12561—51436	1.56	UV103						−1.83		−1.83	1.58	3.76

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
2572.752	12969—51826	1.61	UV102	−0.75					−0.96		−0.85	2.56	4.74
2576.692	6928—45726	0.86	UV 52	−0.27	−0.23	−0.23			−0.15		−0.22	3.19	5.37
2579.266	7986—46745	0.99	UV 55	−1.21					−1.41		−1.31	2.10	4.28
2580.066	8155—46902	1.01	UV 54	−1.51					−1.62		−1.56	1.85	4.03
2580.281	12561—51305	1.56		−0.97							−0.97	2.44	4.62
2580.454	7986—46727	0.99	UV 54	−1.81					−1.69		−1.75	1.66	3.84
2580.561	12969—51708	1.61		−0.97							−0.97	2.44	4.62
2580.939	8155—46889	1.01	UV 55	−1.66							−1.66	1.75	3.93
2584.537	6928—45608	0.86	UV 52		0.08	0.17		0.10[3]	0.28		0.16	3.57	5.75
2586.557	21716—60366	2.69	UV171	−0.65							−0.65	2.76	4.94
2592.285	21999—60564	2.73		−0.63							−0.63	2.78	4.95
2593.510	19351—57897	2.40	UV146	−0.25	−0.23				0.16		−0.11	3.30	5.47
2594.150	7377—45914	0.91	UV 52	−0.84					−1.00		−0.92	2.49	4.66
2595.422	8155—46673	1.01	UV 54	−1.75					−2.11		−2.00	1.41	3.58
2598.855	12969—51436	1.61	UV103	−1.25							−1.25	2.16	4.33
2599.565	7377—45833	0.91	UV 52			0.27			−0.08		0.10	3.51	5.68
2605.658	6928—45295	0.86	UV 51	−0.78	−0.89	−0.37			−0.91		−0.86	2.56	4.72
2606.828	7377—45726	0.91	UV 52			−0.01			0.21		0.10	3.52	5.68
2609.220	22249—60564	2.76		−0.55							−0.55	2.87	5.02
2610.750	704—38996	0.09	UV 6	−1.96					−2.10		−2.03	1.39	3.54
2612.773	416—38678	0.05	UV 6	−1.72					−1.87		−1.80	1.62	3.77
2614.495	7728—45965	0.96	UV 52	−1.06					−1.10		−1.08	2.34	4.49
2618.019	7728—45914	0.96	UV 52	−0.22	−0.36	−0.11			−0.18		−0.22	3.20	5.35
2618.711	0—38175	0.00	UV 6	−1.71					−1.76		−1.74	1.68	3.83
2623.367	888—38996	0.11	UV 6						−1.84		−1.84	1.58	3.73
2623.532	7728—45833	0.96	UV 52	−0.09	−0.22	−0.02			0.02		0.00	3.42	5.57
2627.230	7377—45428	0.91	UV 51	−1.69							−1.69	1.73	3.88
2629.579	978—38996	0.12	UV 6	−1.58		−1.43			−2.09		−2.09	1.33	3.47
2632.238	7986—45965	0.99	UV 52	−0.33		−0.27			−0.36		−0.32	3.10	5.24
2632.595	704—38678	0.09	UV 6	−1.56	−1.63				−1.76		−1.70	1.72	3.86
2635.810	7986—45914	0.99	UV 52		−0.16	0.02			−0.06		−0.07	3.35	5.49
2636.479	7377—45295	0.91	UV 51	−1.01					−1.22		−1.12	2.30	4.44
2641.647	7377—45221	0.91	UV 50	−0.59	−0.63	−0.49			−0.81		−0.63	2.79	4.93
2643.999	8155—45965	1.01	UV 52		−0.19	−0.09			0.02		−0.09	3.33	5.47
2645.423	888—38678	0.11	UV 6	−1.96					−2.14		−2.05	1.37	3.51
2647.559	416—38175	0.05	UV 6	−1.67		−1.65			−1.84		−1.72	1.70	3.84
2648.164	11976—49727	1.48	UV 99	−1.68							−1.68	1.74	3.88
2648.548	24336—62081	3.02		−0.71							−0.71	2.71	4.84
2651.708	7728—45428	0.96	UV 51	−1.08					−1.15		−1.12	2.30	4.43
2655.140	11976—49628	1.48	UV100	−1.64					−2.00		−1.82	1.60	3.73
2656.145	19390—57028	2.40	UV156	0.16	0.23	0.23			0.38		0.25	3.67	5.80
2656.793	11976—49604	1.48	UV 99	−0.74					−0.98		−0.86	2.56	4.69
2660.396	7986—45563	0.99	UV 51	−1.18					−1.41		−1.30	2.12	4.25
2661.196	7986—45552	0.99	UV 50						−1.74		−1.74	1.69	3.81
2662.057	7728—45282	0.96	UV 50	−0.70	−0.66	−0.77			−0.75		−0.72	2.71	4.83
2666.400	7728—45221	0.96	UV 50	−0.87					−1.02		−0.94	2.49	4.61
2666.813	6928—44415	0.86	UV 48	−0.36		−0.35			−0.34		−0.35	3.08	5.20
2666.966	11976—49461	1.48	UV100	−0.10	−0.51				−0.39		−0.39	3.04	5.16
2667.914	704—38175	0.09	UV 6	−2.07					−2.33		−2.20	1.23	3.35
2669.492	19621—57070	2.43	UV156	−0.10					0.09		0.00	3.43	5.54
2673.214	8155—45552	1.01	UV 50	−1.08					−1.23		−1.16	2.27	4.38
2679.063	6928—44244	0.86	UV 47	−0.14	−0.23	−0.11			−0.09		−0.14	3.29	5.40
2680.454	7986—45282	0.99	UV 50	−0.73	−0.79				−0.92		−0.81	2.62	4.73
2680.910	12561—49851	1.56	UV100	−1.75					−1.90		−1.82	1.61	3.72
2681.586	19562—56843	2.42	UV145	−0.15					0.19		0.02	3.45	5.56
2684.857	7986—45221	0.99	UV 50	−1.78					−1.97		−1.97	1.46	3.57
2689.213	7377—44551	0.91	UV 48	−0.29		−0.24			−0.18		−0.24	3.19	5.30
2689.830	12561—49727	1.56	UV 99	−0.36	−0.39				−0.72		−0.49	2.94	5.04
2690.069	0—37163	0.00	UV 4	−1.91					−2.15		−2.03	1.40	3.50
2692.250	11976—49109	1.48	UV 98	−1.14					−1.36		−1.25	2.18	4.28

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TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wave-length Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
2692.658	8155—45282	1.01	UV 50	−0.84					−1.89		−1.89	1.54	3.64
2694.222	416—37521	0.05	UV 4	−2.86					−3.01		−3.01	0.42	2.52
2694.536	19351—56452	2.40	UV144	0.02	0.01				0.29		0.11	3.54	5.64
2695.036	6928—44023	0.86	UV 47	−1.35							−1.35	2.08	4.18
2695.662	19757—56843	2.45	UV145	0.02					0.19		0.10	3.53	5.63
2696.284	19351—56428	2.40	UV143	0.29					0.69		0.49	3.92	6.02
2697.022	12561—49628	1.56	UV100	−0.46					−0.59		−0.52	2.91	5.01
2699.108	7377—44415	0.91	UV 48		−0.49	−0.43			−0.55		−0.49	2.94	5.04
2701.908	20641—57641	2.56	UV161	−0.67	−0.01						−0.67	2.76	4.86
2702.453	19390—56383	2.40	UV154	−0.47	0.08						0.08	3.51	5.61
2706.012	19390—56334	2.40	UV154	0.43	0.30	0.40			0.39		0.38	3.81	5.91
2706.583	7728—44664	0.96	UV 48			−0.04			−0.12		−0.08	3.35	5.45
2707.451	20641—57565	2.56		−0.40							−0.40	3.03	5.13
2708.570	20641—57550	2.56	UV161	0.42	0.37	0.51			0.61		0.48	3.91	6.01
2709.700	23784—60677	2.95	UV180						0.87		0.87	4.30	6.40
2709.989	19562—56452	2.42	UV144	−0.32					−0.18		−0.25	3.18	5.28
2710.543	12969—49851	1.61	UV100	−0.26	−0.12	−0.44			−0.31		−0.34	3.09	5.18
2711.656	7377—44244	0.91	UV 47	−0.44		−0.45			−0.44		−0.44	2.99	5.08
2714.062	20875—57709	2.59	UV161	−0.35	−0.24						−0.30	3.13	5.22
2714.870	7728—44551	0.96	UV 48	−1.10	−1.21				−1.19		−1.20	2.23	4.32
2715.323	704—37521	0.09	UV 4	−2.33					−2.70		−2.70	0.73	2.82
2716.410	19621—56423	2.43	UV154	−0.68							−0.68	2.75	4.84
2717.368	7377—44166	0.91	UV 47	−1.68					−1.73		−1.70	1.73	3.82
2717.787	7728—44512	0.96	UV 49	−0.96					−1.21		−1.08	2.35	4.44
2718.436	7986—44761	0.99	UV 48	−0.24	−0.41	−0.28			−0.17		−0.28	3.15	5.24
2719.027	0—36767	0.00	UV 5		0.04	0.15		0.26[1]			0.15	3.58	5.67
2719.418	19621—56383	2.43	UV154	0.44							0.44	3.87	5.96
2720.194	17550—54301	2.18	UV129	−0.07	0.01				−0.09		−0.05	3.38	5.47
2720.516	416—37163	0.05	UV 4	−2.26					−2.71		−2.71	0.72	2.81
2720.904	416—37158	0.05	UV 5		−0.12	−0.13		−0.05[1]			−0.10	3.33	5.42
2722.032	11976—48703	1.48	UV 97	−0.99					−1.51		−1.51	1.92	4.01
2723.579	704—37410	0.09	UV 5			−0.34		−0.49[1]			−0.42	3.02	5.10
2724.344	19757—56452	2.45	UV144	−0.56	−0.45						−0.50	2.94	5.02
2724.954	7728—44415	0.96	UV 48	−0.33		−0.42					−0.38	3.06	5.14
2725.311	12561—49243	1.56	UV 98	−1.04							−1.04	2.40	4.48
2725.602	7986—44664	0.99	UV 48	−1.49					−1.76		−1.62	1.82	3.90
2725.805	20875—57550	2.59	UV161	−0.52	−0.31						−0.42	3.02	5.10
2726.054	8155—44827	1.01	UV 48			−0.37			−0.32		−0.34	3.10	5.18
2726.237	21039—57709	2.61	UV161	0.24	0.22				0.29		0.25	3.69	5.77
2728.021	7377—44023	0.91	UV 47	−0.63	−0.87	−0.59			−0.72		−0.70	2.74	4.82
2728.819	19788—56423	2.45	UV154			0.34			0.22		0.28	3.72	5.80
2728.970	888—37521	0.11	UV 4						−2.50		−2.50	0.94	3.02
2730.982	8155—44761	1.01	UV 48	−0.74					−0.89		−0.82	2.62	4.69
2731.281	21039—57641	2.61	UV161		−0.32				0.12				
2733.582	6928—43500	0.86	UV 46		0.34	0.42			0.51		0.42	3.86	5.93
2734.006	7986—44551	0.99	UV 48	−0.73	−0.92	−0.82			−0.76		−0.81	2.63	4.70
2734.269	17550—54112	2.18	UV125	0.15		0.02			0.04		0.07	3.51	5.58
2734.616	7728—44285	0.96	UV 47	−1.27					−1.40		−1.34	2.10	4.17
2735.476	7377—43923	0.91	UV 46			0.07		0.10[1]	0.30		0.16	3.60	5.67
2736.960	7986—44512	0.99	UV 49	−0.32							−0.32	3.12	5.19
2737.311	888—37410	0.11	UV 5		−0.35	−0.33		−0.39[1]			−0.36	3.08	5.15
2738.214	8155—44664	1.01	UV 48	−1.52							−1.52	1.92	3.99
2741.100	24336—60807	3.02	UV181	−0.23							−0.23	3.21	5.28
2741.578	12969—49433	1.61	UV 98	−1.09							−1.09	2.35	4.42
2742.016	704—37163	0.09	UV 4	−1.71	−2.12				−1.93		−1.92	1.52	3.59
2742.255	7728—44184	0.96	UV 46		−0.39	−0.44			−0.32		−0.38	3.06	5.13
2742.406	704—37158	0.09	UV 5		−0.23	−0.46		−0.26[1]			−0.32	3.12	5.19
2743.564	7728—44166	0.96	UV 47			−0.64			−0.70		−0.67	2.77	4.84
2744.069	978—37410	0.12	UV 5		−0.69	−0.69		−0.74[1]	−0.49		−0.65	2.79	4.86
2744.529	7986—44411	0.99	UV 46			−0.53			−0.32		−0.42	3.02	5.09

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
2746.982	6928—43321	0.86	UV 45			0.13			−1.00		0.13	3.57	5.64
2747.556	17727—54112	2.20	UV125	−0.21	−0.11				−0.22		−0.18	3.26	5.33
2749.688	8155—44512	1.01	UV 49	−1.33							−1.33	2.11	4.18
2750.142	416—36767	0.05	UV 5		−0.38	−0.40		−0.35[1]			−0.38	3.06	5.13
2750.708	17927—54271	2.22	UV125	−0.34							−0.34	3.10	5.17
2750.872	17550—53892	2.18	UV128	0.18		0.01			0.30		0.16	3.60	5.67
2751.808	12969—49298	1.61		−1.34							−1.34	2.10	4.17
2753.687	8155—44459	1.01	UV 46	−0.55		−0.70			−0.52		−0.59	2.85	4.91
2754.033	7986—44285	0.99	UV 47	−0.58		−0.72			−0.59		−0.63	2.81	4.87
2754.427	7728—44023	0.96	UV 47	−0.87	−1.20				−0.99		−1.02	2.42	4.48
2755.184	19621—55906	2.43	UV153	−0.53							−0.53	2.91	4.97
2756.268	416—36686	0.05	UV 4	−1.06	−0.84	−0.87			−1.37		−1.04	2.40	4.46
2756.330	888—37158	0.11	UV 5	−2.00				−0.82[1]	−0.38		−0.60	2.84	4.90
2757.317	8155—44411	1.01	UV 46	−0.35	−0.62	−0.40			−0.25		−0.30	3.14	5.20
2759.814	8155—44378	1.01	UV 47	−0.69	−0.84	−1.01			−0.76		−0.83	2.61	4.67
2761.480	19552—55754	2.42	UV140	−0.87							−0.87	2.57	4.63
2761.781	7986—44184	0.99	UV 46			−0.16			−0.24		−0.20	3.24	5.30
2762.028	7728—43923	0.96	UV 46			−0.16			−0.14		−0.15	3.29	5.35
2762.773	17927—54112	2.22	UV125	−0.15	−0.46						−0.30	3.14	5.20
2763.108	7986—44166	0.99	UV 47	−0.65	−0.82	−0.64			−0.70		−0.70	2.74	4.80
2764.323	17727—53892	2.20	UV128	0.14		−0.16					−0.01	3.43	5.49
2765.700	11976—48123	1.48	UV 92	−1.80					−1.99		−1.90	1.54	3.60
2766.910	8155—44285	1.01	UV 47	−0.76	−1.15	−1.02			−0.83		−0.94	2.50	4.56
2767.523	7377—43500	0.91	UV 46						−0.39		−0.39	3.05	5.11
2768.432	17550—53661	2.18	UV126	−0.54					−0.60		−0.57	2.87	4.93
2769.298	19390—55490	2.40	UV151	0.26					0.26		0.26	3.70	5.76
2769.672	6928—43023	0.86	UV 44	−1.31					−1.47		−1.39	2.05	4.11
2770.695	17727—53808	2.20	UV123	−0.73					−0.07				
2772.075	6928—42992	0.86	UV 45	−0.24	−0.44	−0.22			−0.39		−0.32	3.12	5.18
2772.320	17550—53610	2.18		−0.35							−0.35	3.09	5.15
2772.511	17727—53785	2.20		−0.43							−0.43	3.01	5.07
2772.860	24119—60172	2.99	UV179	−0.57	−0.36						−0.46	2.98	5.04
2773.907	19390—55430	2.40	UV151	−1.40							−1.40	2.04	4.09
2774.150	17727—53763	2.20	UV127	−1.50							−1.50	1.94	3.99
2774.730	8155—44184	1.01	UV 46	−0.93		−0.85			−1.05		−0.94	2.50	4.55
2778.221	6928—42912	0.86	UV 44		−0.40	−0.30		−0.40[1]	−0.27		−0.34	3.10	5.15
2780.526	11976—47930	1.48	UV 92	−1.74							−1.74	1.70	3.75
2780.700	20641—56593	2.56	UV160	−0.48					0.96				
2781.837	7986—43923	0.99	UV 46		−0.76	−0.81			−0.90		−0.82	2.62	4.67
2782.055	17727—53661	2.20	UV126	−0.74					−0.98		−0.86	2.58	4.63
2784.017	20875—56783	2.59	UV160	−0.95							−0.95	2.49	4.54
2784.346	19621—55526	2.43	UV152	−0.71					−0.69		−0.70	2.74	4.79
2786.180	17927—53808	2.22	UV123	−1.20							−1.20	2.25	4.29
2787.120	19621—55490	2.43	UV151	−1.20							−1.20	2.25	4.29
2787.933	11976—47835	1.48	UV 93						−0.71		−0.71	2.74	4.78
2788.106	6928—42784	0.86	UV 44		0.54	0.35		0.34[2]	0.58		0.43	3.88	5.92
2789.477	17550—53389	2.18	UV125	−0.43					−0.29		−0.36	3.09	5.13
2789.803	21716—57550	2.69	UV170	−0.06		0.01			0.15		0.03	3.48	5.52
2790.762	17927—53749	2.22		−1.58							−1.58	1.87	3.91
2791.787	19621—55430	2.43	UV151	−0.25	0.08	0.02			0.07		−0.02	3.43	5.47
2792.397	12561—48362	1.56	UV 95	−1.03					−1.11		−1.07	2.38	4.42
2794.157	17550—53329	2.18	UV124	−1.32							−1.32	2.13	4.17
2794.703	7728—43500	0.96	UV 46	−1.24					−1.22		−1.23	2.22	4.25
2795.006	0—35768	0.00	UV 3	−2.29		−2.05			−2.56		−2.30	1.15	3.18
2795.541	7377—43138	0.91	UV 44	−1.10				−1.27[1]	−1.18		−1.16	2.29	4.32
2796.872	12561—48305	1.56	UV 96	−1.51					−1.65		−1.58	1.87	3.90
2797.776	7377—43109	0.91	UV 45		−0.64	−0.54			−0.48		−0.55	2.90	4.93
2802.285	26406—62081	3.27		−1.01							−1.01	2.44	4.47
2803.168	416—36079	0.05	UV 3	−2.74					−2.87		−2.80	0.65	2.68
2803.613	19788—55446	2.45	UV151	−0.43					−1.81				

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
2804.521	7377—43023	0.91	UV 44		−0.30	−0.28		−0.34[1]	−0.36		−0.32	3.13	5.16
2804.865	21999—57641	2.73	UV170	−0.39							−0.39	3.06	5.09
2805.808	11976—47606	1.48	UV 92	−1.56					−1.66		−1.61	1.84	3.87
2806.072	18378—54005	2.28	UV139	−1.03							−1.03	2.42	4.45
2806.985	7377—42992	0.91	UV 45		−0.20	−0.25			−0.17		−0.21	3.24	5.27
2807.246	0—35612	0.00	UV 2	−2.52					−2.81		−2.68	0.77	2.80
2808.328	7728—43326	0.96	UV 45	−1.55					−1.31		−1.43	2.02	4.05
2810.834	21999—57565	2.73		−1.21							−1.21	2.24	4.27
2811.160	12561—48123	1.56	UV 92	−1.90							−1.90	1.55	3.58
2812.042	21999—57550	2.73	UV170	−0.85							−0.85	2.60	4.63
2813.288	7377—42912	0.91	UV 44		0.27	0.16		0.24[1]	0.26		0.23	3.68	5.71
2815.017	18378—53892	2.28	UV138	−1.14							−1.14	2.31	4.34
2815.506	12969—48476	1.61	UV 95	−1.06					−1.10		−1.08	2.37	4.40
2817.505	7728—43210	0.96	UV 44			−1.12					−1.12	2.33	4.35
2819.286	22249—57709	2.76	UV170	−0.21							−0.21	3.24	5.26
2820.804	416—35856	0.05	UV 2	−2.83							−2.83	0.62	2.64
2821.630	18378—53808	2.28	UV134	−1.73							−1.73	1.72	3.74
2823.277	7728—43138	0.96	UV 44		−0.15	0.27		−0.30[1]			−0.22	3.23	5.25
2824.700	22249—57641	2.76	UV170	−0.95							−0.95	2.50	4.52
2825.557	7728—43109	0.96	UV 45		−0.20	−0.26					−0.23	3.22	5.24
2825.689	0—35379	0.00	UV 3	−2.01		−1.90					−1.96	1.49	3.51
2825.995	704—36079	0.09	UV 3	−2.92							−2.92	0.53	2.55
2827.893	416—35768	0.05	UV 3	−2.29							−2.29	1.16	3.18
2828.809	7986—43326	0.99	UV 45		−0.81	−1.01					−0.91	2.54	4.56
2832.436	7728—43023	0.96	UV 44		0.05	0.06		−0.06[2]			0.00	3.45	5.47
2833.401	18378—53661	2.28	UV137	−0.91							−0.91	2.54	4.56
2834.177	12561—47834	1.56	UV 93	−1.97							−1.97	1.48	3.50
2834.414	12969—48239	1.61	UV 92	−1.95							−1.95	1.50	3.52
2834.755	20641—55907	2.56	UV159	−0.74							−0.74	2.71	4.73
2835.457	0—35257	0.00	UV 2	−2.04		−1.99					−2.02	1.43	3.45
2835.951	12561—47812	1.56	UV 93	−1.11					−1.21		−1.16	2.29	4.31
2836.315	22650—57897	2.81	UV175	−0.78							−0.78	2.67	4.69
2838.120	7986—43210	0.99	UV 44			−0.42		−0.45[1]			−0.44	3.01	5.02
2840.423	416—35612	0.05	UV 2	−2.02		−1.95					−1.98	1.47	3.48
2840.938	17727—52916	2.20	UV123	−1.11							−1.11	2.34	4.35
2843.631	7377—42533	0.91	UV 43		−0.53	−0.54					−0.54	2.91	4.92
2843.978	7986—43138	0.99	UV 44		0.13	−0.01			−0.07		0.02	3.47	5.48
2845.596	7728—42860	0.96	UV 43		−0.80	−0.61					−0.70	2.75	4.76
2845.714	11976—47107	1.48	UV 88		0.09						0.09	3.54	5.55
2846.831	11976—47093	1.48	UV 87	−1.22	−1.20				−1.38		−1.27	2.18	4.19
2848.715	7986—43079	0.99	UV 43			−1.22			−1.15		−1.18	2.27	4.28
2851.798	8155—43210	1.01	UV 44			0.17		−0.05[1]	−0.19		−0.02	3.44	5.44
2852.952	11976—47017	1.48	UV 89	−1.97					−2.01		−1.99	1.47	3.47
2853.685	11976—47008	1.48	UV 88		−0.61				−1.50		−1.50	1.96	3.96
2853.774	20875—55906	2.59	UV159	−0.47	−0.13				−0.24		−0.28	3.18	5.18
2857.996	18378—53358	2.28		−0.95	−0.47						−0.47	2.99	4.99
2858.897	888—35856	0.11	UV 2	−2.20	−2. 5				[3]2.24		−2.23	1.23	3.23
2861.996	17927—52858	2.22		−1.78							−1.78	1.68	3.67
2862.495	8155—43079	1.01	UV 43	−1.33					−1.35		−1.34	2.12	4.11
2863.431	11976—46889	1.48	UV 87	−0.41	−0.56	−0.25			−0.34		−0.39	3.07	5.06
2863.864	704—35612	0.09	UV 2	−1.63	−1.84	−1.73			−1.83		−1.76	1.70	3.69
2866.626	7986—42860	0.99	UV 43	−0.97	−0.99	−1.05			−1.10		−1.03	2.43	4.42
2867.311	12969—47834	1.61	UV 93	−0.99					−1.17		−1.08	2.38	4.37
2867.563	12969—47831	1.61	UV 90	−0.86					−1.12		−0.99	2.47	4.46
2867.880	12561—47420	1.56	UV 91	−1.62					−1.81		−1.72	1.74	3.73
2868.213	19757—54612	2.45	UV142	−0.72							−0.72	2.74	4.73
2868.454	18378—53230	2.28	UV135	−0.45							−0.45	3.01	5.00
2869.308	416—35257	0.05	UV 2	−1.48	−1.57	−1.47		−1.68[1]	−1.62		−1.56	1.90	3.89
2869.833	19913—54748	2.47	UV142	−0.89							−0.89	2.57	4.56
2871.730	19788—54600	2.45	UV149	−1.67							−1.67	1.79	3.78

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wave-length Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
2872.335	7728—42533	0.96	UV 43	−0.86		−0.78			−0.95		−0.86	2.60	4.59
2873.655	20641—55430	2.56	UV158	−0.83							−0.83	2.63	4.62
2874.173	0—34782	0.00	UV 2		−1.59	−1.43		−1.65[1]	−1.54		−1.55	1.91	3.90
2874.890	19351—54125	2.40	UV142	−0.63	−0.23								
2875.303	11976—46745	1.48	UV 86	−0.84		−0.56			−0.88		−0.76	2.70	4.69
2877.302	11976—46721	1.48	UV 86	−0.36	−0.45	−0.26			−0.22		−0.32	3.14	5.13
2878.762	22838—57565	2.83		−0.53							−0.53	2.93	4.92
2878.962	12969—47693	1.61	UV 90	−1.67							−1.67	1.79	3.78
2879.461	19552—54271	2.42	UV136	−1.38							−1.38	2.08	4.07
2880.581	8155—42860	1.01	UV 43	−1.93					−1.96		−1.94	1.52	3.51
2886.317	12561—47197	1.56	UV 87	−1.17					−1.37		−1.27	2.19	4.17
2887.360	19390—54014	2.40	UV150	−1.65							−1.65	1.81	3.79
2887.806	21716—56334	2.69	UV167	−0.19		−0.29					−0.24	3.22	5.20
2887.961	19621—54237	2.43	UV149	−1.14							−1.14	2.32	4.30
2889.890	19390—53983	2.40	UV149	−0.90							−0.90	2.56	4.54
2889.991	20020—54612	2.48	UV142	−0.80							−0.80	2.66	4.64
2890.414	12969—47556	1.61		−2.24							−2.24	1.22	3.20
2890.868	26225—60807	3.25	UV184	−1.02							−1.02	2.44	4.42
2891.410	12561—47136	1.56	UV 89	−1.99							−1.99	1.47	3.45
2891.705	20875—55446	2.59	UV158		−0.34						−0.34	3.12	5.10
2891.904	19788—54357	2.45		−0.94	−0.38						−0.94	2.52	4.50
2892.479	19562—54125	2.42	UV142	−0.63							−0.63	2.83	4.81
2893.763	7986—42533	0.99	UV 43	−1.80					−1.85		−1.82	1.64	3.62
2893.882	12561—47107	1.56	UV 88	−1.11					−1.02		−1.06	2.40	4.38
2894.506	18378—52916	2.28	UV134	0.19	0.28	0.45			0.45		0.34	3.80	5.78
2895.036	12561—47093	1.56	UV 87	−0.45	−0.42	−0.31			−0.23		−0.35	3.11	5.09
2897.635	19788—54289	2.45			−0.73						−0.73	2.73	4.71
2898.867	17727—52213	2.20		−1.37							−1.37	2.09	4.07
2899.416	18378—52858	2.28	UV133	0.00	0.12	0.15			0.06		0.08	3.54	5.52
2901.382	12561—47017	1.56	UV 89	−0.72	−0.76				−0.47		−0.65	2.81	4.79
2901.910	19351—53801	2.40	UV142	−0.15		−0.10			−0.01		−0.09	3.37	5.35
2905.570	26351—60758	3.27	UV182	−0.66	−0.38						−0.52	2.94	4.91
2907.518	21999—56383	2.73	UV167	−0.07	0.13	0.12					0.06	3.52	5.49
2908.864	19757—54125	2.45	UV142	−0.57							−0.57	2.89	4.86
2909.313	19621—53983	2.43	UV149	−1.40							−1.40	2.06	4.03
2910.930	22249—56593	2.76	UV168	−0.98							−0.98	2.48	4.45
2912.159	0—34329	0.00	UV 1		−1.35	−1.17		−1.22[4]	−1.38	−1.11	−1.24	2.22	4.19
2914.306	12969—47272	1.61	UV 89	−0.76	−0.79				−1.28				
2918.023	26106—60366	3.24	UV182	0.59	0.64	0.75					0.66	4.13	6.09
2918.354	19552—53808	2.42	UV134	−0.41	−0.44						−0.42	3.05	5.01
2919.838	19562—53801	2.42	UV142	−0.69	−0.53						−0.61	2.86	4.82
2920.290	20038—54271	2.48	UV136	−1.50							−1.50	1.97	3.93
2920.691	12969—47197	1.61	UV 87	−0.47	−0.59	−0.19			−0.44		−0.42	3.05	5.01
2922.383	12969—47177	1.61	UV 86	−1.51					−1.61		−1.56	1.91	3.87
2922.620	17550—51756	2.18	UV122	−0.84	−0.89						−0.86	2.61	4.57
2923.288	26351—60549	3.27	UV182	0.25	0.40	0.75					0.47	3.94	5.90
2923.851	21716—55907	2.69	UV166	0.10	0.28	0.41			0.28		0.27	3.74	5.70
2924.902	21716—55906	2.69	UV166	0.30	0.28						0.29	3.76	5.72
2925.359	22249—56423	2.76	UV167	−0.10	0.04						−0.03	3.44	5.40
2925.901	12969—47136	1.61	UV 89	−0.79	−0.79				−0.94		−0.84	2.63	4.59
2928.105	17550—51692	2.18	UV121	−1.07							−1.07	2.40	4.35
2929.008	416—34547	0.05	UV 1		−1.13			−1.12[3]	−1.21	−1.03	−1.12	2.35	4.30
2929.118	26628—60758	3.30	UV182		0.17						0.17	3.64	5.59
2929.620	12969—47093	1.61	UV 87	−1.23		−1.14			−1.35		−1.24	2.23	4.18
2930.590	20020—54132	2.48	UV141	−1.95							−1.95	1.52	3.47
2931.420	19788—53892	2.45	UV148	−1.15							−1.15	2.32	4.27
2931.803	21999—56098	2.73	UV166	−0.94							−0.94	2.53	4.48
2934.370	17550—51619	2.18	UV117	−1.38							−1.38	2.09	4.04
2936.120	12969—47017	1.61	UV 89	−1.21							−1.21	2.26	4.21
2936.905	0—34040	0.00	UV 1		−0.56	−0.59		−0.66[2]		−0.44	−0.60	2.87	4.82

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfA	Log gA/λ
				Log *gf*									
2937.806	17727–51756	2.20	UV122	−0.11	−0.44				−0.48		−0.34	3.13	5.08
2939.072	17927–51942	2.22	UV118	−0.98	−0.57						−0.78	2.69	4.64
2940.586	22846–56843	2.83	UV173	−0.34	−0.47						−0.40	3.07	5.02
2941.344	704–34692	0.09	UV 1		−1.40	−1.30		−1.32[z]	−1.28	−1.25	−1.31	2.16	4.11
2941.770	19562–53546	2.42	UV141		−0.81						−0.81	2.66	4.61
2945.050	19788–53734	2.45		−0.45	−0.52						−0.48	2.99	4.94
2945.870	26628–60564	3.30		−1.39							−1.39	2.08	4.03
2946.095	12969–46902	1.61		−2.25							−2.25	1.22	3.17
2947.116	26628–60549	3.30	UV182	0.24							0.24	3.71	5.66
2947.363	18378–52297	2.28	UV131	−0.42	−0.32						−0.37	3.10	5.05
2947.877	416–34329	0.05	UV 1		−0.45	−0.55		−0.53[s]		−0.42	−0.43	3.04	4.99
2948.433	21999–55906	2.73	UV166	0.25	0.23	0.26					0.25	3.72	5.67
2948.733	17727–51630	2.20	UV118	−0.99							−0.99	2.48	4.43
2949.688	17727–51619	2.20	UV117	−1.54							−1.54	1.93	3.87
2950.240	17550–51436	2.18	UV120	0.08	−0.18				−0.39		−0.28	3.19	5.13
2951.356	19788–53661	2.45		−1.27							−1.27	2.20	4.14
2953.486	22249–56098	2.76	UV166	0.12	0.36						0.24	3.71	5.65
2953.941	704–34547	0.09	10		−0.62	−0.65		−0.63[s]		−0.50	−0.61	2.86	4.80
2954.654	18378–52213	2.28	UV132	−0.13	−0.23				−0.33		−0.23	3.24	5.18
2956.710	17550–51361	2.18	UV118	−1.00							−1.00	2.47	4.41
2956.860	21716–55526	2.69	UV165	−0.72							−0.72	2.75	4.69
2957.366	888–34692	0.11	10		−0.87	−0.90		−0.72[z]	−0.75	−0.69	−0.77	2.70	4.64
2958.462	21999–55791	2.73	317	−1.39							−1.39	2.08	4.02
2959.682	22650–56428	2.81	UV172	−0.01							−0.01	3.46	5.40
2959.993	21716–55490	2.69	316	0.62	0.74	0.61					0.66	4.13	6.07
2960.299	20038–53808	2.48	148	−0.39	−0.28						−0.34	3.13	5.07
2960.666	23784–57550	2.95	UV178	−0.63							−0.63	2.84	4.78
2961.700	17550–51305	2.18	UV119	−2.29							−2.29	1.18	3.12
2962.110	11976–45726	1.48	57	−2.02							−2.02	1.45	3.39
2963.710	23111–56843	2.86	UV173	−1.24							−1.24	2.23	4.17
2964.196	20875–54600	2.59		−1.18							−1.18	2.29	4.23
2965.256	978–34692	0.12	10		−0.96	−1.15		−0.98[z]	−0.97	−0.91	−0.99	2.48	4.42
2965.811	19621–53329	2.43	UV147	−0.49							−0.49	2.98	4.92
2966.260	17927–51630	2.22	104	−0.80	−0.92						−0.86	2.61	4.55
2966.900	0–33695	0.00	10		−0.27	−0.29		−0.18[z]		−0.12	−0.21	3.26	5.20
2968.481	19552–53230	2.42	UV135	−0.67							−0.67	2.80	4.74
2969.361	888–34556	0.11	11	−1.65	−1.61	−1.82			−1.83		−1.73	1.74	3.68
2969.476	6928–40594	0.86	30	−0.79	−0.74	−0.77		−0.63[l]			−0.73	2.74	4.68
2970.106	888–34547	0.11	10		−0.73	−0.89		−0.58[l]		−0.68	−0.72	2.75	4.69
2972.277	17727–51361	2.20	104	−0.50	−0.54				−0.71		−0.58	2.89	4.82
2973.134	704–34329	0.09	10		−0.46	−0.67			−0.49		−0.54	2.93	4.86
2973.237	416–34040	0.05	10		−0.39	−0.40			−0.23		−0.34	3.13	5.06
2974.780	22846–56452	2.83	335	−0.95							−0.95	2.52	4.45
2975.655	20641–54237	2.56			−0.55						−0.55	2.92	4.85
2976.126	18378–51969	2.28	146	−0.20	−0.12	−0.47			−0.19		−0.24	3.23	5.16
2976.550	11976–45563	1.48	56	−1.74							−1.74	1.73	3.66
2976.922	22846–56428	2.83	334	−1.05							−1.05	2.42	4.35
2978.060	19788–53358	2.45		−1.39							−1.39	2.08	4.01
2980.532	22249–55791	2.76	317	−0.04	0.16	−0.27					−0.05	3.42	5.35
2981.446	416–33947	0.05	11		−1.00	−1.04		−1.12[z]	−1.00	−0.91	−1.03	2.44	4.37
2981.852	17550–51077	2.18	104	−0.07	0.06	−0.45			−0.55				
2982.234	24119–57641	2.99	460	−0.98							−0.98	2.49	4.42
2983.571	0–33507	0.00	9		−0.38	−0.39		−0.37[s]		−0.27	−0.36	3.11	5.04
2984.785	6928–40422	0.86	29	−0.89		−0.61					−0.75	2.72	4.65
2986.457	888–34363	0.11	11	−2.12		−2.35			−2.18		−2.22	1.26	3.18
2986.653	19621–53094	2.43	200	−0.89	0.00						−0.89	2.59	4.51
2987.292	7377–40842	0.91	30	−0.44	−0.61	−0.56		−0.60[s]	−0.52		−0.56	2.92	4.84
2988.473	11976–45428	1.48	56	−1.24					−1.56		−1.40	2.08	4.00
2988.942	21999–55446	2.73	316	−1.25							−1.25	2.23	4.15
2990.393	21999–55430	2.73	316	0.44	0.53	0.42			0.46		0.46	3.94	5.86

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
2994.428	416—33802	0.05	9		−0.34	−0.42		−0.38[3]		−0.22	−0.35	3.13	5.04
2994.503	978—34363	0.12	11	−0.23							−0.23	3.25	5.16
2995.838	24339—57709	3.02	460	−1.30							−1.30	2.18	4.09
2996.386	19552—52916	2.42	148	−0.09	0.01	−0.40			−0.03		−0.13	3.35	5.26
2999.512	6928—40257	0.86	30		0.10	−0.15		−0.10[3]		0.06	−0.06	3.42	5.33
3000.453	11976—45295	1.48	56	−0.23	−0.33	−0.39					−0.32	3.16	5.07
3000.949	704—34017	0.09	9		−0.35	−0.43		−0.38[3]		−0.25	−0.36	3.12	5.03
3001.663	24336—57641	3.02	506	−0.85							−0.85	2.63	4.54
3003.032	7728—41018	0.96	30		−0.50	−0.61		−0.55[3]	−0.49		−0.54	2.94	4.85
3004.119	19621—52899	2.43	199	−0.56							−0.56	2.92	4.83
3004.620	12561—45833	1.56	57	−1.87							−1.87	1.61	3.52
3005.302	19390—52655	2.40	199	−0.38	−0.18						−0.28	3.20	5.11
3006.598	20641—53892	2.56		−1.20							−1.20	2.28	4.19
3007.147	11976—45221	1.48	55	−0.17	−0.32	−0.55					−0.35	3.13	5.04
3007.283	704—33947	0.09	11		−1.26	−1.48		−1.12[1]	−1.41	−1.23	−1.30	2.18	4.09
3008.140	888—34122	0.11	9		−0.50	−0.50		−0.50[3]	−0.58	−0.48	−0.51	2.97	4.88
3009.094	19390—52613	2.40	198	−0.03	0.04				−0.23		−0.07	3.41	5.32
3009.571	7377—40594	0.91	30		−0.09	−0.21		−0.15[3]	−0.13	−0.16	−0.15	3.33	5.24
3011.482	22249—55446	2.76	316	0.50	0.54	0.43			0.68		0.54	4.02	5.93
3011.883	20038—53230	2.48	UV135	−0.92							−0.92	2.56	4.47
3014.175	7728—40895	0.96	31	−1.79	−1.54				−1.73		−1.69	1.79	3.70
3015.913	19621—52769	2.43	198	−0.20	−0.11				−0.24		−0.18	3.30	5.21
3016.186	7986—41131	0.99	30		−0.70	−0.69		−0.72[3]	−0.58		−0.68	2.80	4.71
3017.629	888—34017	0.11	9		−1.13	−1.16		−1.18[3]	−1.26	−1.11	−1.17	2.31	4.21
3018.134	19390—52514	2.40	199	−0.83							−0.83	2.65	4.55
3018.985	7728—40842	0.96	30		−0.25	−0.37		−0.31[1]	−0.23	−0.32	−0.30	3.18	5.08
3019.290	19788—52899	2.45	199	−0.23							−0.23	3.25	5.15
3020.492	704—33802	0.09	9			−0.71			−1.14				
3020.640	0—33096	0.00	9			−0.13					−0.13	3.35	5.25
3021.074	416—33507	0.05	9		−0.19	−0.32				−0.06	−0.19	3.29	5.19
3024.034	888—33947	0.11	11		−1.04	−1.05		−1.16[3]	−1.16	−0.99	−1.09	2.39	4.29
3025.283	7377—40422	0.91	29	−1.67					−1.68		−1.68	1.80	3.70
3025.638	19390—52431	2.40	198	0.63	0.92	0.84					0.80	4.28	6.18
3025.844	978—34017	0.12	9		−0.50	−0.88		−0.54[3]	−0.51	−0.48	−0.57	2.91	4.81
3026.464	7986—41018	0.99	30		−0.42	−0.35		−0.47[3]	−0.54		−0.45	3.03	4.93
3029.235	12561—45563	1.56	56	−1.05	−1.02				−1.28		−1.12	2.36	4.26
3030.149	19621—52613	2.43	198	0.71	0.78	0.87			0.90		0.82	4.30	6.20
3030.605	18378—51365	2.28	145	−1.37							−1.37	2.11	4.01
3031.213	19788—52769	2.45	198	0.57	0.72	0.88			0.71		0.72	4.20	6.10
3031.638	8155—41131	1.01	30		−0.47	−0.31		−0.51[3]	−0.44	−0.51	−0.46	3.02	4.92
3033.101	19552—52512	2.42	146	−0.73	−0.65						−0.69	2.79	4.69
3034.510	12969—45914	1.61	57	−1.30							−1.30	2.18	4.08
3037.390	888—33802	0.11	9		0.32	−0.50		−0.45[4]		−0.30	−0.43	3.05	4.95
3037.781	7986—40895	0.99	31	−1.56					−1.81		−1.68	1.80	3.70
3039.322	19621—52514	2.43	199	−0.77	−0.38						−0.77	2.71	4.61
3040.428	7377—40257	0.91	30	−0.60	−0.64	−0.46		−0.66[3]	−0.64	−0.72	−0.63	2.85	4.75
3041.639	12561—45428	1.56	56		−0.26	−0.21			−0.52		−0.33	3.15	5.04
3041.740	7728—40594	0.96	30		−0.50	−0.57		−0.56[3]	−0.49		−0.53	2.95	4.84
3042.022	8155—41018	1.01	30		−0.69	−0.82		−0.77[1]	−0.78	−0.81	−0.77	2.71	4.60
3042.667	7986—40842	0.99	30	−0.21	−0.53	−0.34		−0.56[3]	−0.56	−0.63	−0.48	3.00	4.89
3045.077	7377—40207	0.91	29	−1.12	−1.29						−1.20	2.28	4.17
3045.594	19788—52613	2.45	198	−0.88	−0.51						−0.70	2.78	4.67
3046.930	19621—52431	2.43	198	−0.76	−0.52						−0.64	2.84	4.73
3047.050	23784—56593	2.95	457	−0.32	−0.17						−0.24	3.24	5.13
3047.606	704—33507	0.09	9		−0.31	−0.40		−0.35[4]		−0.22	−0.33	3.15	5.04
3053.065	19552—52297	2.42	146	0.05	0.06						0.06	3.54	5.43
3053.440	8155—40895	1.01	31	−1.67							−1.67	1.81	3.70
3055.264	12561—45282	1.56	55	−0.13	−0.33	−0.29					−0.25	3.24	5.12
3056.250	21039—53749	2.61		−0.72							−0.72	2.77	4.65
3057.447	6928—39626	0.86	28		0.22	0.05		0.12[3]	0.17	0.24	0.14	3.63	5.51

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CB	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
3057.802	7728—40422	0.96	29	−1.92							−1.92	1.57	3.45
3059.087	416—33096	0.05	9		−0.43	−0.56		−0.44[a]		−0.37	−0.44	3.05	4.93
3060.545	24119—56783	2.99	457	−0.43	−0.38						−0.40	3.09	4.97
3060.985	12561—45221	1.56	55	−0.86	−1.06				−1.23		−1.05	2.44	4.32
3062.872	23784—56423	2.95	456	−0.99							−0.99	2.50	4.38
3063.149	17550—50187	2.18	102	−1.85							−1.85	1.64	3.52
3063.933	19552—52181	2.42	147	−0.49	−0.23						−0.36	3.13	5.01
3066.483	21999—54600	2.73	313	−0.11	−0.13				1.94		−0.12	3.37	5.24
3067.246	7377—39970	0.91	28		0.10	−0.11		−0.05[b]	0.30		0.00	3.49	5.36
3067.952	21716—54301	2.69	315a	−0.38	−0.15						−0.26	3.23	5.10
3068.175	12969—45552	1.61	55	−0.18	−0.48				−0.28		−0.31	3.18	5.05
3073.244	24575—57104	3.05	549	−1.17							−1.17	2.32	4.19
3073.982	21716—54237	2.69	313	−0.48							−0.48	3.01	4.88
3074.157	24339—56859	3.02	457	−0.49							−0.49	3.00	4.87
3075.721	7728—40231	0.96	28	−0.16	0.05	−0.15		−0.22[a]	−0.11	−0.09	−0.15	3.34	5.21
3078.014	7728—40207	0.96	29	−1.25	−1.37				−1.54		−1.39	2.10	3.97
3078.436	20038—52512	2.48	146	−0.12	0.22						0.05	3.54	5.41
3081.278	24339—56783	3.02	457	−1.34							−1.34	2.15	4.02
3081.832	11976—44415	1.48	53	−1.82							−1.82	1.67	3.54
3083.152	19788—52213	2.45	197	−0.90							−0.90	2.59	4.46
3083.743	7986—40405	0.99	28	−0.16	−0.14	−0.27		−0.20[a]	−0.25	−0.29	−0.22	3.27	5.14
3087.420	26140—58520	3.24		−0.49							−0.49	3.00	4.87
3090.209	22249—54600	2.76	313	−0.53							−0.53	2.96	4.82
3091.579	8155—40491	1.01	28	−0.27	−0.38	−0.34		−0.44[a]	−0.41	−0.52	−0.40	3.09	4.95
3092.778	7728—40052	0.96	29	−1.85	−1.96						−1.90	1.59	3.45
3093.806	12969—45282	1.61	55	−0.76	−0.74				−1.21				
3094.870	21999—54301	2.73	315a	−0.65							−0.65	2.84	4.70
3095.270	21716—54014	2.69	314	−0.63							−0.63	2.86	4.72
3096.044	21999—54289	2.73		−1.10							−1.10	2.39	4.25
3098.192	21716—53983	2.69	313	0.19	0.15				0.15		0.16	3.65	5.51
3098.963	17927—50189	2.22	102	−1.37							−1.37	2.12	3.98
3099.897	8155—40405	1.01	28	0.04	−0.02	0.10			−0.29		−0.04	3.45	5.31
3099.970	7377—39626	0.91	28						−0.27		−0.27	3.22	5.08
3100.305	7986—40231	0.99	28	−0.19	−0.16	−0.25		−0.19[j]	−0.25	−0.39	−0.24	3.25	5.11
3100.667	7728—39970	0.96	28	−0.17	−0.13	−0.28		−0.16[k]	−0.22	−0.26	−0.20	3.29	5.15
3100.838	19390—51630	2.40	196a	−0.38							−0.38	3.11	4.97
3101.004	21999—54237	2.73	313	−0.88							−0.88	2.61	4.47
3102.644	7986—40207	0.99	29	−2.10							−2.10	1.39	3.25
3103.760	19552—51762	2.42		−1.32							−1.32	2.17	4.03
3107.978	21716—53882	2.69		−0.73							−0.73	2.76	4.62
3109.050	19913—52067	2.47	165	−1.36							−1.36	2.13	3.99
3111.686	20641—52769	2.56	260	−0.79							−0.79	2.70	4.55
3112.079	23784—55907	2.95	455	−0.03	0.32						0.14	3.63	5.48
3113.592	22249—54357	2.76		−0.41							−0.41	3.08	4.93
3114.054	12561—44664	1.56	53	−2.55							−2.55	0.94	2.79
3115.656	24772—56859	3.07		−1.18							−1.18	2.31	4.16
3115.862	24339—56423	3.02	456	−1.47							−1.47	2.02	3.87
3116.250	19757—51837	2.45	165	−0.96							−0.96	2.53	4.38
3116.634	8155—40231	1.01	28	−0.69		−0.88		−0.73[a]	−1.07		−0.82	2.67	4.52
3116.984	26140—58213	3.24	578a	−1.24							−1.24	2.25	4.10
3117.640	7986—40052	0.99	29	−1.98					−2.39		−2.18	1.31	3.16
3119.496	19621—51668	2.43	194	0.20	0.07				−0.09		0.06	3.55	5.40
3120.220	22249—54289	2.76		−0.83							−0.83	2.66	4.51
3120.436	19788—51826	2.45	194	0.12	0.01				−0.14		0.00	3.49	5.34
3121.760	17927—49951	2.22	102	−1.19							−1.19	2.30	4.15
3123.353	19562—51570	2.42	164	−0.88							−0.88	2.61	4.46
3123.545	21999—54005	2.73		−1.22							−1.22	2.27	4.12
3124.099	20020—52020	2.48	165	−1.28							−1.28	2.21	4.06
3125.653	7986—39970	0.99	28	−0.52	−0.70	−0.65		−1.00[a]	−0.93		−0.76	2.73	4.58
3128.901	12561—44512	1.56	54	−1.47							−1.47	2.03	3.87

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfA	Log gA/λ
				Log *gf*									
3129.178	19757—51705	2.45	161	−0.72							−0.72	2.78	4.62
3129.335	11976—43923	1.48	52	−0.76	−1.04				−1.34				
3132.514	25900—57814	3.21	578	0.08	−0.10						−0.01	3.49	5.33
3134.112	7728—39626	0.96	28		−1.05				−1.18		−1.12	2.38	4.22
3135.590	21999—53882	2.73		−0.92							−0.92	2.58	4.41
3135.863	19788—51668	2.45	194	−0.97							−0.97	2.53	4.36
3139.661	19351—51192	2.40	155	−0.90	−0.47			−0.66[1]			−0.78	2.72	4.55
3140.391	26140—57974	3.24	578	0.19	−0.07						0.06	3.56	5.39
3142.453	19757—51570	2.45	164	0.04	−0.25				−0.30		−0.17	3.33	5.16
3142.891	18378—50187	2.28	144	−0.09	−0.20				−0.48		−0.26	3.24	5.07
3143.243	0—31805	0.00	7	−2.67					−3.20		−3.20	0.30	2.13
3143.990	25900—57698	3.21	578	0.47	0.19						0.33	3.83	5.66
3144.488	19913—51705	2.47	161	−0.18	−0.37						−0.28	3.22	5.05
3144.924	19621—51409	2.43	195	−1.46							−1.46	2.04	3.87
3145.057	24119—55906	2.99	455	−0.29	−0.13						−0.21	3.29	5.12
3146.475	19562—51335	2.42	160	−1.50							−1.50	2.00	3.83
3147.793	24339—56098	3.02	455	−0.50	−0.24	−0.30[1]					−0.35	3.15	4.98
3148.178	22249—54005	2.76		−1.22							−1.22	2.28	4.11
3148.408	19621—51374	2.43	194	−0.65	−0.38	−0.63[1]					−0.55	2.95	4.78
3149.492	23784—55526	2.95	453	−1.49							−1.49	2.01	3.84
3150.304	26479—58213	3.28	578a	−0.13	−0.24	0.02[1]					−0.12	3.38	5.21
3151.353	21999—53722	2.73	311	0.41		0.45[1]					0.43	3.93	5.76
3151.867	416—32134	0.05	7	−2.91							−2.91	0.59	2.42
3153.290	19757—51462	2.45	161	0.23	−0.06	0.10[1]			−0.18		0.02	3.52	5.35
3154.505	19913—51604	2.47	161	−0.17		−0.31[1]					−0.24	3.26	5.09
3155.134	20020—51705	2.48	161	−1.26							−1.26	2.24	4.07
3155.293	19621—51305	2.43	193	−0.52	−0.50	−0.63[1]					−0.55	2.95	4.78
3155.796	19390—51069	2.40	192a	−1.35							−1.35	2.15	3.98
3156.275	26140—57814	3.24	578	0.30	0.05	0.40[1]					0.25	3.75	5.58
3156.464	24119—55791	2.99	454	−0.64	−0.32	[1]					−0.48	3.02	4.85
3157.040	19562—51229	2.42	160	0.36	0.06	0.35[1]			0.06		0.21	3.71	5.54
3157.880	19913—51570	2.47	164	0.26	−0.10	0.26[1]			−0.17		0.06	3.56	5.39
3158.990	23784—55430	2.95	452	−0.89							−0.89	2.61	4.44
3159.248	21039—52683	2.61	259	−1.43							−1.43	2.07	3.90
3159.437	22249—53892	2.76		−1.38							−1.38	2.12	3.95
3160.200	26340—57974	3.26	578	0.00	−0.08						−0.04	3.46	5.28
3160.344	19390—51023	2.40	192a	−0.37	−0.22						−0.30	3.20	5.02
3160.658	19562—51192	2.42	155	0.46	0.14	0.39[1]		0.28[1]	0.16		0.29	3.79	5.61
3161.373	12561—44184	1.56	52	−0.94	−1.09	−0.96[1]			−1.41				
3161.558	19788—51409	2.45	195	−1.25							−1.25	2.25	4.07
3161.949	19351—50968	2.40	160	0.16	0.13	0.13[1]			−0.13		0.07	3.57	5.39
3162.335	19757—51370	2.45	159	−0.44	−0.63						−0.54	2.96	4.78
3164.308	19757—51351	2.45	163	−0.85	−0.61						−0.73	2.77	4.59
3165.005	19562—51149	2.42	155	−0.24	−0.43	−0.32[1]		−0.47[1]			−0.36	3.14	4.96
3165.860	19757—51335	2.45	160	−0.01	−0.18	−0.06[1]			−0.29		−0.14	3.36	5.18
3166.435	20641—52213	2.56	259	0.28	0.21	0.22[1]			0.15		0.22	3.72	5.54
3166.596	17727—49298	2.20	100	−0.01							−0.01	3.49	5.31
3166.982	24339—55906	3.02	455	−1.51							−1.51	1.99	3.81
3167.907	26140—57698	3.24	578	0.07		0.19[1]					0.13	3.63	5.45
3168.858	19913—51461	2.47	160	−0.42		−0.21[1]					−0.32	3.18	5.00
3171.353	11976—43500	1.48	52	−1.01	−0.66	−0.90[1]					−0.86	2.64	4.46
3171.663	20020—51540	2.48	160	−0.59							−0.59	2.91	4.73
3172.067	17727—49243	2.20	99	−0.61	−0.58	−0.62[1]					−0.60	2.90	4.72
3172.292	22249—53763	2.76	312	−1.27							−1.27	2.23	4.05
3173.400	23245—54748	2.88	333	−0.55							−0.55	2.95	4.77
3173.663	17727—49227	2.20	101	−0.57	−0.59	−0.41[1]					−0.52	2.98	4.80
3174.222	26479—57974	3.28	578	−1.45							−1.45	2.05	3.87
3175.447	19351—50833	2.40	155	0.44	0.13	0.42[1]		0.27[1]	0.25		0.32	3.82	5.64
3175.970	23270—54748	2.88	333	−0.87							−0.87	2.63	4.45
3176.366	21039—52512	2.61	258	−0.45	−0.31	−0.44[1]					−0.40	3.10	4.92

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
3178.015	19351—50808	2.40	156	0.32	0.01	0.33[1]		0.16[1]	0.06		0.18	3.68	5.50
3178.545	24339—55791	3.02	454	−0.42	−0.24						−0.33	3.17	4.99
3178.967	19621—51069	2.43	192a	−0.48	−0.35	−1.21[1]					−0.42	3.08	4.90
3179.479	12969—44411	1.61	52	−1.14							−1.14	2.36	4.18
3180.223	19757—51192	2.45	155	0.77		0.74[2]		0.66[1]	0.54		0.69	4.19	6.01
3180.756	704—32134	0.09	7	−2.10	−2.19				−2.48		−2.26	1.24	3.06
3181.522	20875—52297	2.59	258	−0.06	0.06						0.00	3.50	5.32
3181.922	24336—55754	3.02	505	−0.13				−0.52[1]			−0.32	3.18	5.00
3182.060	19562—50980	2.42	159	−0.22	−0.42						−0.32	3.18	5.00
3182.980	17727—49135	2.20	100	−0.25		−0.25[1]					−0.25	3.25	5.07
3183.582	19621—51023	2.43	192a	−1.22							−1.22	2.28	4.10
3184.112	26875—58272	3.33	711	−0.72							−0.72	2.78	4.59
3184.622	19757—51149	2.45	155	−0.41	−0.52			−0.49[1]			−0.47	3.03	4.84
3184.896	416—31805	0.05	7	−1.80	−1.99	−1.87[2]		−2.29[1]	−2.15		−2.00	1.50	3.31
3187.171	23245—54612	2.88	333	−0.95							−0.95	2.55	4.36
3188.026	21999—53358	2.73		−0.63							−0.63	2.87	4.68
3188.567	19351—50704	2.40	159	−0.09	−0.19				−0.36		−0.21	3.29	5.10
3188.819	20020—51370	2.48	159	0.29	0.05				0.01		0.12	3.62	5.43
3190.020	20875—52213	2.59	259	−0.74	−0.60	−0.61[1]					−0.65	2.85	4.66
3190.651	24575—55907	3.05	548	−0.23	−0.07						−0.15	3.35	5.16
3190.816	24575—55906	3.05	548	−0.28	0.12						−0.08	3.42	5.23
3191.116	20641—51969	2.56	258	−0.72							−0.72	2.78	4.59
3191.660	0—31323	0.00	8	−1.80	−1.99	−1.86[2]		−2.29[1]	−2.19		−2.00	1.50	3.31
3192.417	17927—49243	2.22	100	−0.96							−0.96	2.54	4.35
3192.799	20020—51331	2.48	155	0.58		0.43[1]		0.48[1]	0.35		0.46	3.96	5.77
3193.227	0—31307	0.00	7		−1.41	−1.68[1]		−1.99[1]	−1.85	−1.74	−1.73	1.77	3.58
3193.303	19913—51219	2.47	159		0.47						0.47	3.97	5.78
3194.422	19913—51208	2.47	155	−0.21	−0.28	−0.07[1]		−0.29[1]			−0.21	3.29	5.10
3196.147	22846—54125	2.83	333	0.13		0.24[1]					0.18	3.68	5.49
3196.930	19562—50833	2.42	155	1.04	0.77	1.00[2]		1.01[1]		0.74	0.93	4.43	6.24
3197.521	27560—58825	3.42	711	−0.43							−0.43	3.07	4.88
3198.266	21039—52297	2.61	258	−1.03							−1.03	2.47	4.28
3199.530	19562—50808	2.42	156	0.64	0.29	0.67[2]		0.57[1]			0.57	4.08	5.88
3200.475	19913—51149	2.47	155	0.73	0.52	0.81[2]		0.70[1]	0.41		0.66	4.17	5.97
3200.785	704—31937	0.09	8	−2.59			−2.89		−2.96		−2.81	0.70	2.50
3202.562	24575—55791	3.05	547	−0.09	−0.01	−0.02[1]	−0.08				−0.05	3.46	5.26
3205.400	20020—51208	2.48	155	0.69	0.42	0.67[2]		0.62[1]			0.60	4.11	5.91
3207.089	19351—50523	2.40	159	−0.50		−0.51[1]	−0.79				−0.60	2.91	4.71
3207.649	22838—54005	2.83	382	−1.45			−1.60				−1.52	1.99	3.79
3208.470	27666—58825	3.43	711	0.32	0.17	0.60[1]	0.84						
3209.297	27560—58710	3.42	711	−0.04	0.27	0.90[1]	1.14						
3210.230	19562—50704	2.42	159	0.30	0.03	0.34[1]	0.25				0.25	3.76	5.55
3210.830	19913—51048	2.47	156	0.59	0.36	0.54[2]	0.48	0.53[1]			0.51	4.02	5.81
3211.487	20020—51149	2.48	162	0.09	0.03		−0.22				−0.03	3.48	5.27
3211.683	26875—58002	3.33	711	0.91	0.77		1.03				0.90	4.41	6.20
3211.872	17927—49053	2.22	98	−0.02							−0.02	3.49	5.28
3211.989	19351—50475	2.40	158	0.73		0.70[1]	−0.17				0.72	4.23	6.02
3214.044	19757—50862	2.45	156	1.02	0.90	1.05[2]	1.13	1.05[1]			1.03	4.54	6.33
3214.396	704—31805	0.09	7	−1.86	−1.77	−1.87[1]	−1.79				−1.82	1.69	3.48
3214.624	18378—49477	2.28	143				−1.38				−1.38	2.13	3.92
3215.940	19913—50999	2.47	156	0.59	0.45	0.57[2]	0.56	0.64[1]			0.56	4.07	5.86
3217.380	19351—50423	2.40	157	0.41	0.22	0.37[2]	0.42				0.36	3.87	5.66
3219.581	19757—50808	2.45	156	0.75	0.59	0.63[1]	0.68	0.74[1]			0.68	4.19	5.98
3219.806	19562—50611	2.42	158	0.57	0.44	0.39[1]	0.45				0.46	3.97	5.76
3221.931	20020—51048	2.48	156					−0.98[1]			−0.98	2.53	4.32
3222.069	19351—50378	2.40	156	1.05	0.92	1.09[2]	1.11	1.09[1]			1.06	4.57	6.36
3223.273	11976—42992	1.48	51	−1.89							−1.89	1.62	3.41
3223.480	26628—57641	3.30		−0.97	−0.38						−0.97	2.54	4.33
3223.844	7986—38996	0.99	27	−1.19							−1.19	2.32	4.11
3225.789	19351—50342	2.40	155	1.29	1.07	1.20[2]	1.27	1.26[1]			1.22	4.73	6.52

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
3226.714	704–31686	0.09	8	−3.13			−3.44				−3.28	0.23	2.02
3227.063	20020–50999	2.48	156	−0.43		−0.29[1]	−0.76	−0.38[1]			−0.37	3.14	4.93
3227.798	19562–50534	2.42	157	0.80			0.69				0.74	4.25	6.04
3228.003	22838–53808	2.83	379	0.19			−0.26				0.19	3.70	5.49
3228.254	19913–50880	2.47	157	0.23	0.12		−0.03				0.11	3.62	5.41
3228.900	20020–50981	2.48	157	−0.18	−0.32		−0.34				−0.28	3.23	5.02
3229.122	978–31937	0.12	8	−2.26	−2.31		−2.28				−2.28	1.23	3.02
3229.595	22846–53801	2.83	333	−0.63	−0.52						−0.58	2.93	4.72
3229.994	24575–55526	3.05	546	0.28	0.37						0.32	3.83	5.62
3230.210	19913–50861	2.47	158	0.27	0.00		−0.08				0.06	3.57	5.36
3230.963	19757–50699	2.45	157	0.47	0.21	0.47[2]	0.29				0.38	3.89	5.68
3231.576	11976–42912	1.48	50				−1.57				−1.57	1.94	3.73
3232.155	21039–51969	2.61	258	−1.66							−1.66	1.85	3.64
3233.053	26106–57028	3.24	620	0.68	0.91	0.93[1]	0.94				0.86	4.37	6.16
3233.967	19562–50475	2.42	158	0.47	0.27	0.45[2]	0.40				0.41	3.92	5.70
3234.614	416–31323	0.05	8	−2.08	−2.18	−2.12[1]	−2.10				−2.12	1.39	3.17
3235.312	21999–52899	2.73	309	−1.93							−1.93	1.58	3.36
3235.592	21716–52613	2.69	308	−1.11			−1.36				−1.24	2.27	4.05
3235.833	22838–53734	2.83		−1.37							−1.37	2.14	3.92
3236.223	416–31307	0.05	7	−1.88	−1.91	−1.96[1]	−1.77				−1.88	1.63	3.41
3237.234	20875–51756	2.59	256	−1.54							−1.54	1.97	3.75
3238.313	24575–55446	3.05	545	−1.52							−1.52	1.99	3.77
3238.535	24507–55376	3.04	397				−1.36				−1.36	2.15	3.93
3239.029	18378–49243	2.28	142	−1.09			−1.32				−1.20	2.31	4.09
3239.436	19562–50423	2.42	157	0.74	0.53	0.90[2]	0.80				0.77	4.28	6.06
3240.013	24575–55430	3.05	545				−1.33				−1.33	2.18	3.96
3240.122	19757–50611	2.45	158	−1.28							−1.28	2.23	4.01
3241.502	8155–38996	1.01	27	−3.26			−2.03				−3.26	0.25	2.03
3242.268	20875–51708	2.59	255	−1.46			−1.53				−1.50	2.01	3.79
3243.109	19788–50614	2.45	192	−0.94			−1.03				−0.98	2.53	4.31
3243.406	26875–57698	3.33	710	−0.11	0.00		0.05				−0.02	3.49	5.27
3244.190	19562–50378	2.42	156	0.70	0.47	0.80[2]	0.81	0.68[1]			0.71	4.22	6.00
3246.005	888–31686	0.11	8	−2.05	−2.06	−2.06[1]	−2.15				−2.08	1.43	3.21
3246.482	20875–51668	2.59	252	−0.39	−0.23		−0.56				−0.39	3.12	4.90
3246.962	17727–48516	2.20	95	−0.15	−0.07		−0.67				−0.11	3.40	5.18
3247.278	19913–50699	2.47	157	−0.17	−0.08		−0.30				−0.18	3.33	5.11
3248.206	19757–50534	2.45	157	0.33	0.14	0.34[1]	−0.24				0.27	3.78	5.56
3249.037	21999–52769	2.73	308	−1.39							−1.39	2.12	3.90
3249.191	20641–51409	2.56	253	−0.56	−0.34	−0.68[1]	−0.56				−0.54	2.97	4.75
3249.504	12561–43326	1.56	51	−2.52							−2.52	0.99	2.77
3250.394	23052–53808	2.86	379	−0.65			0.21				−0.65	2.86	4.64
3250.625	17550–48305	2.18	95	−0.41	−0.45	−0.39[1]	−0.59				−0.46	3.05	4.83
3251.236	17727–48476	2.20	93	−0.23	−0.15	−0.08[1]	−0.65				−0.15	3.36	5.14
3252.916	20641–51374	2.56	252	−0.31	−0.18	−0.32[1]	−0.37				−0.30	3.21	4.99
3253.610	26225–56951	3.25	681	0.10	0.34	0.14[1]	−0.07				0.13	3.64	5.42
3253.834	20641–51365	2.56	250				−0.85				−0.85	2.66	4.44
3253.949	21039–51762	2.61	257	−0.69	−0.33		−0.82				−0.51	3.00	4.78
3254.363	26351–57070	3.27	620	0.67	0.90	0.82[1]	0.83				0.80	4.31	6.09
3254.734	21716–52431	2.69	308	−0.92			−1.14				−1.03	2.48	4.26
3257.244	24119–54811	2.99	451	−0.35	−0.15						−0.25	3.26	5.04
3257.594	17550–48239	2.18	90	−0.04	−0.08	−1.16[1]	−0.36				−0.16	3.35	5.13
3259.991	19757–50423	2.45	157	−0.22	−0.33	−0.31[1]	−0.34				−0.30	3.21	4.98
3260.261	20641–51305	2.56	250	−0.55	−0.26		−0.64				−0.48	3.03	4.80
3261.332	27560–58213	3.42	712	−0.39		−0.25[1]	−0.15				−0.26	3.25	5.02
3262.009	27167–57814	3.37	710	−0.34		0.05[1]					−0.14	3.37	5.14
3263.370	19552–50187	2.42	144	−0.84	−0.43	−0.83[1]	−0.74				−0.71	2.80	4.57
3264.512	17727–48351	2.20	90	−0.41	−0.31	−0.28[1]	−0.46				−0.36	3.15	4.92
3264.710	19913–50534	2.47	157	−0.96	−0.59		−1.14				−0.78	2.73	4.50
3265.047	704–31323	0.09	8	−2.20	−2.27	−2.12[1]	−2.14				−2.18	1.33	3.10
3265.618	17550–48163	2.18	91	0.47	0.43	0.47[2]	0.51	0.42[1]			0.46	3.97	5.74

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log gf									
3268.234	17927—48516	2.22	95	−0.41	−0.38	−0.38[1]	−0.64				−0.45	3.06	4.83
3269.235	27395—57974	3.40	710	−0.52		−0.29[1]					−0.40	3.11	4.88
3269.416	17727—48305	2.20	95	−1.94							−1.94	1.57	3.34
3269.964	17550—48123	2.18	90	−1.67			−0.57				−1.67	1.84	3.61
3271.001	17727—48290	2.20	91	0.48	0.41	0.51[2]	0.54	0.46[1]			0.48	3.99	5.76
3271.487	26225—56783	3.25	680	−0.51	−0.27		−0.37				−0.38	3.13	4.90
3271.684	11976—42533	1.48	49	−1.57			−1.70				−1.64	1.87	3.64
3272.596	12561—43109	1.56	95	−1.98							−1.98	1.53	3.30
3272.710	27666—58213	3.43	712	−1.04		−0.60[1]	−0.73				−0.79	2.72	4.49
3274.227	17927—48460	2.22	95	−1.84							−1.84	1.68	3.44
3274.453	27167—57698	3.37	710	−0.11	−0.12	−0.01[1]	−0.09				−0.08	3.44	5.20
3275.685	22249—52769	2.76	308	−1.34			−1.30				−1.32	2.20	3.96
3275.848	23784—54301	2.95	450a	−1.53			−1.58				−1.56	1.96	3.72
3276.471	17727—48239	2.20	90	−0.54	−0.54	−0.65[1]	−0.70				−0.61	2.91	4.67
3278.741	19552—50043	2.42	144	−0.45	−0.38	−0.47[1]	−0.56				−0.46	3.06	4.82
3279.739	24119—54600	2.99	449	−0.69			−0.84				−0.76	2.76	4.52
3280.261	26628—57104	3.30	620	0.66	0.81	0.81[1]	0.82				0.78	4.30	6.06
3280.763	24339—54811	3.02	451	−2.17			−1.07				−2.17	1.35	3.11
3281.824	12561—43023	1.56	50	−2.38							−2.38	1.14	2.90
3282.720	23784—54237	2.95	449	−1.35							−1.35	2.17	3.93
3282.891	26406—56859	3.27	680	0.21	0.24	0.12[1]	0.01				0.14	3.66	5.42
3283.430	7728—38175	0.96	27	−2.99			−2.26				−2.99	0.53	2.28
3284.589	17727—48163	2.20	91	−0.27	−0.35	−0.27[1]	−0.46	−0.27[1]			−0.32	3.20	4.95
3285.200	24181—54612	3.00	396	−0.79		−0.05[1]	−0.05						
3286.022	17927—48351	2.22	90	−0.92	−0.41		−1.01				−0.96	2.56	4.31
3286.444	27395—57814	3.40	710	−0.30							−0.30	3.22	4.97
3286.754	17550—47967	2.18	91	0.81	0.77	0.80[2]	1.04	0.90[1]			0.85	4.37	6.12
3287.117	23711—54125	2.94	396	−0.48			−0.66				−0.57	2.95	4.70
3288.651	19552—49951	2.42	144	−1.01							−1.01	2.51	4.26
3288.967	17727—48123	2.20	90	−0.89	−0.75		−0.93				−0.86	2.66	4.41
3289.442	22838—53230	2.83	380	−0.83			−0.90				−0.86	2.66	4.41
3290.714	17550—47930	2.18	90	−1.13			−1.47				−1.30	2.22	3.97
3290.990	17927—48305	2.22	95	−0.19	−0.21	−0.24[1]	−0.29				−0.23	3.29	5.04
3292.022	26225—56593	3.25	680	0.61	0.70	0.71[2]	0.63				0.66	4.18	5.93
3292.591	17927—48290	2.22	91	0.16	0.12	0.21[1]	0.22	0.23[1]			0.19	3.71	5.46
3293.142	12969—43326	1.61	51	−2.06							−2.06	1.46	3.21
3296.467	20875—51201	2.59	250	−1.00	−0.64		−1.07				−0.82	2.70	4.45
3296.806	26628—56951	3.30	619	−1.21			−1.07				−1.14	2.38	4.13
3298.133	17927—48239	2.22	90	−0.10	−0.10	−0.12[1]	−0.18				−0.12	3.40	5.15
3298.537	27666—57974	3.43	710	−1.30							−1.30	2.22	3.97
3299.077	27395—57698	3.40	710				−0.92				−0.92	2.60	4.35
3299.509	12561—42860	1.56	49	−2.56			−1.22				−2.56	0.96	2.71
3301.227	22947—53230	2.84	380	−0.93	−0.54		−0.84				−0.77	2.75	4.50
3301.917	26106—56383	3.24	617				−0.44				−0.44	3.08	4.83
3303.574	24339—54600	3.02	449	−0.52			−0.69				−0.60	2.92	4.67
3304.346	27560—57814	3.42	710	−1.42							−1.42	2.10	3.85
3305.972	17727—47967	2.20	91	0.69	0.61	0.80[2]	0.72	0.82[1]			0.73	4.25	6.00
3306.356	17927—48163	2.22	91	0.74	0.81	0.82[1]	0.94	0.87[1]			0.84	4.36	6.11
3306.490	26624—56859	3.30	680				−0.22				−0.22	3.30	5.05
3307.008	23784—54014	2.95	450	−0.85			−0.76				−0.80	2.72	4.47
3307.234	26106—56334	3.24	617	0.35	0.50	0.45[1]	0.46				0.44	3.96	5.71
3308.761	19390—49604	2.40	190	−1.43							−1.43	2.09	3.83
3310.347	23784—53983	2.95	449	−0.19	−0.05		−0.26				−0.17	3.35	5.09
3310.496	26225—56423	3.25	679	−0.23	−0.08		0.02				−0.10	3.42	5.16
3311.451	7986—38175	0.99	27	−3.52							−3.52	0.00	1.74
3312.224	24119—54301	2.99	450a	−1.22							−1.22	2.30	4.04
3313.723	12969—43138	1.61	50	−2.54							−2.54	0.98	2.72
3314.070	27543—57709	3.41	736	−1.02							−1.02	2.50	4.24
3314.441	21039—51201	2.61	250	−0.87			−0.85				−0.86	2.66	4.40
3314.742	26624—56783	3.30	680	0.56	0.63	0.82[1]	0.82				0.71	4.23	5.97

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
3315.164	26628–56783	3.30	618	−2.30							−2.30	1.22	2.96
3317.121	18378–48516	2.28	139	−0.54	−0.56	−0.61[1]	−0.67				−0.60	2.92	4.66
3319.258	24119–54237	2.99	449	−0.37	−0.31	−0.43[1]	−0.37				−0.37	3.15	4.89
3320.650	19621–49727	2.43	190	−0.89	−0.61						−0.75	2.77	4.51
3320.779	24507–54612	3.04	396	−0.59	−0.46		0.44				−0.52	3.00	4.74
3322.474	23711–53801	2.94	396	−0.18	−0.37	−0.12[1]	−0.11				−0.20	3.32	5.06
3323.738	22838–52916	2.83	379	0.22	0.35	0.30[1]					0.29	3.81	5.55
3324.372	26351–56423	3.27	617	−0.73			−0.47				−0.60	2.92	4.66
3324.538	19390–49461	2.40	191	−0.41	−0.34	−0.39[1]	−0.41				−0.39	3.13	4.87
3325.468	19788–49851	2.45	191	−0.43	−0.41	−0.46[1]	−0.49				−0.45	3.07	4.81
3327.497	19390–49434	2.40	190	−1.05	−0.76	−1.09[1]	−0.81				−0.93	2.59	4.33
3327.961	17550–47590	2.18	86	−2.29							−2.29	1.23	2.97
3328.867	26351–56383	3.27	617	0.42	0.59	−1.59[1]	0.77				0.59	4.11	5.85
3329.532	24575–54600	3.05	542a	−0.68			−0.41				−0.54	2.98	4.72
3329.970	24336–54357	3.02		−1.31							−1.31	2.21	3.95
3330.316	24339–54357	3.02		−1.03							−1.03	2.49	4.23
3331.613	19621–49628	2.43	191	−0.53	−0.61	−0.61[1]	−0.59				−0.58	2.94	4.68
3331.778	20038–50043	2.48	144	−0.91	−0.53		−0.35				−0.72	2.80	4.54
3334.220	19621–49604	2.43	190	−1.22	−0.64	−0.82[1]	−0.87				−0.78	2.74	4.47
3334.278	26351–56334	3.27	617				−0.45				−0.45	3.07	4.80
3335.513	12561–42533	1.56	49	−2.42	−1.30						−2.42	1.10	2.83
3335.770	22947–52916	2.84	379	−0.07	−0.35	−0.16[1]	−0.07				−0.16	3.36	5.09
3336.254	26628–56593	3.30	618	−0.31	−0.02		−0.30				−0.21	3.31	5.04
3337.666	21716–51668	2.69	304	−0.12	−0.15	−0.09[1]	−0.10				−0.12	3.40	5.13
3338.638	24181–54125	3.00	396	−0.44		−0.53[1]	−0.53				−0.50	3.02	4.75
3339.195	19788–49727	2.45	190	−0.69	−0.62	−0.81[1]	−0.68				−0.70	2.82	4.55
3339.582	24336–54271	3.02	502	−0.70							−0.70	2.82	4.55
3340.567	18378–48305	2.28	139	−0.35	−0.35	−0.38[1]	−0.25				−0.33	3.19	4.92
3341.906	21716–51630	2.69	303	−0.24	−0.21		−0.06				−0.17	3.35	5.08
3342.216	18378–48290	2.28	137	−0.52	−0.41	−0.29[1]	−0.31				−0.38	3.14	4.87
3342.298	22947–52858	2.84	378	−0.15	−0.40		0.32				−0.28	3.24	4.97
3343.240	17550–47453	2.18	88	−1.95			−0.78				−1.95	1.57	3.30
3343.678	24339–54237	3.02	449	−0.79			−0.76				−0.78	2.74	4.47
3345.679	19552–49433	2.42	141	−2.40			−1.02				−2.40	1.12	2.85
3346.936	17550–47420	2.18	87	−1.24	−0.97	−1.38[1]	−1.34				−1.23	2.29	4.02
3347.507	24119–53983	2.99	449	−1.50			−0.83				−1.50	2.02	3.75
3347.927	18378–48239	2.28	138	−0.44	−0.43	−0.45[1]	−0.37				−0.42	3.10	4.83
3349.739	22838–52683	2.83	377	−1.65							−1.65	1.88	3.60
3350.284	19788–49628	2.45	191	−1.36							−1.36	2.17	3.89
3351.524	17727–47556	2.20	89	−0.88	−0.75		−0.79				−0.81	2.72	4.44
3351.746	21999–51826	2.73	304	−0.36	−0.30	−0.39[1]	−0.40				−0.36	3.17	4.89
3352.929	19788–49604	2.45	190	−1.45							−1.45	2.08	3.80
3353.267	19621–49434	2.43	190	−1.19	−1.07						−1.13	2.40	4.12
3354.064	23052–52858	2.86	378	−0.27	−0.34	−0.31[1]	−0.04				−0.30	3.23	4.95
3355.229	26628–56423	3.30	617	0.45	0.53	0.59[1]	0.60				0.55	4.08	5.80
3355.517	7728–37521	0.96	25	−3.14							−3.14	0.39	2.11
3356.403	18378–48163	2.28	137	−0.56	−0.67	−0.56[1]					−0.60	2.93	4.65
3356.695	24575–54357	3.05		−0.78							−0.78	2.75	4.47
3359.488	6928–36686	0.86	25	−2.05	−2.01		−2.19				−2.08	1.45	3.17
3359.814	26628–56383	3.30	617	−0.78	−0.35	−0.35[1]	−0.35				−0.35	3.18	4.89
3360.922	19552–49298	2.42	142	−1.44			−1.17				−1.30	2.23	3.94
3361.959	22947–52683	2.84	377	−0.97							−0.97	2.56	4.27
3363.815	22249–51969	2.76	307	−1.30			−0.74				−1.30	2.23	3.94
3364.639	20875–50587	2.59	245	−1.56							−1.56	1.97	3.68
3366.789	21716–51409	2.69	302				0.19				0.19	3.72	5.43
3366.867	17727–47420	2.20	87	−0.27			−0.52				−0.40	3.13	4.84
3367.159	19552–49243	2.42	142				0.29				0.29	3.82	5.53
3368.248	26225–55906	3.25	678	−0.89							−0.89	2.64	4.35
3368.983	22838–52512	2.83	376	−1.63							−1.63	1.90	3.61
3369.146	19788–49461	2.45	191	−1.31							−1.31	2.22	3.93

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wave-length Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
							Log *gf*						
3369.549	21999 – 51668	2.73	304	0.62	0.53	0.51[3]	0.48				0.53	4.06	5.77
3370.785	21716 – 51374	2.69	304	0.72	0.71	0.69[5]	0.93				0.75	4.28	5.99
3372.074	17550 – 47197	2.18	83	−0.66	−0.74	−0.82[1]	−0.74				−0.74	2.79	4.50
3372.352	24119 – 53763	2.99	447	−1.73							−1.73	1.80	3.51
3373.874	21999 – 51630	2.73	303	−1.14	−0.74		−0.66				−0.85	2.68	4.39
3374.176	17927 – 47556	2.22	89		−1.07						−1.07	2.46	4.17
3375.724	24119 – 53734	2.99		−1.93							−1.93	1.60	3.31
3378.676	21716 – 51305	2.69	301	0.17	0.13		0.24				0.18	3.71	5.42
3379.021	17550 – 47136	2.18	85	−0.15	−0.27		−0.10	−0.20[1]			−0.18	3.35	5.06
3380.112	22249 – 51826	2.76	304	0.36	0.41	0.33[1]	0.36				0.36	3.89	5.60
3381.340	22947 – 52512	2.84	376	−0.75	−0.50	0.40[1]	0.37				−0.62	2.91	4.62
3381.990	24507 – 54067	3.04		−1.44							−1.44	2.09	3.80
3382.404	17550 – 47107	2.18	84	−0.75	−0.77	−0.74[1]	−0.74				−0.75	2.78	4.49
3383.387	21039 – 50587	2.61	245	−1.84							−1.84	1.69	3.40
3383.692	17727 – 47272	2.20	85	−0.25	−0.35		−0.27	−0.21[1]			−0.27	3.26	4.97
3383.981	17550 – 47093	2.18	83	0.10	0.01	0.17[1]	0.14				0.12	3.65	5.36
3384.765	7986 – 37521	0.99	25	−3.20							−3.20	0.33	2.04
3387.410	22249 – 51762	2.76	306	−0.16	−0.28	−0.43[1]	−0.25				−0.28	3.25	4.95
3388.966	24772 – 54271	3.07	502	−0.92							−0.92	2.61	4.31
3389.748	17927 – 47420	2.22	87	−0.77	−0.69	−1.01[1]	−0.83				−0.82	2.71	4.41
3392.014	24336 – 53808	3.02	499	−0.13	−0.19		−0.07				−0.13	3.40	5.10
3392.306	17727 – 47197	2.20	83	0.01	−0.07	0.15[1]	0.06				0.04	3.57	5.27
3392.654	17550 – 47017	2.18	85	0.42	0.37	0.46[2]	0.34	0.54[1]			0.43	3.96	5.66
3393.382	23052 – 52512	2.86	376	−0.75	−0.63		−0.55				−0.64	2.89	4.59
3393.623	22838 – 52297	2.83	376	−1.28							−1.28	2.25	3.95
3393.915	18378 – 47834	2.28	136	−1.18			−1.10				−1.14	2.39	4.09
3394.085	19788 – 49243	2.45	188	−0.93			−1.06				−1.00	2.53	4.23
3394.585	17727 – 47177	2.20	81	−0.10	−0.26	−0.19[1]	−0.05	−0.21[1]			−0.16	3.37	5.07
3395.080	24339 – 53785	3.02		−1.70							−1.70	1.83	3.53
3396.386	7728 – 37163	0.96	25	−2.99							−2.99	0.54	2.24
3396.977	7728 – 37158	0.96	26		−1.70	−1.63[1]	−1.62				−1.65	1.88	3.58
3397.221	24336 – 53763	3.02	503	−0.83							−0.83	2.70	4.40
3397.560	24339 – 53763	3.02	447				−0.90				−0.90	2.63	4.33
3397.640	7986 – 37410	0.99	26	−1.92	−1.93	−1.90[1]	−1.87				−1.90	1.63	3.33
3398.220	22249 – 51668	2.76	304	−0.96	−0.60		−1.00				−0.85	2.68	4.38
3399.230	21999 – 51409	2.73	302				−0.30				−0.30	3.23	4.93
3399.336	17727 – 47136	2.20	85	0.51	0.42	0.55[3]	0.66	0.61[1]			0.55	4.08	5.78
3400.662	24336 – 53734	3.02		−1.06							−1.06	2.47	4.17
3401.007	24339 – 53734	3.02		−1.32							−1.32	2.21	3.91
3401.520	7377 – 36767	0.91	26	−1.30	−1.45	−1.35[1]	−1.24				−1.34	2.19	3.89
3402.256	26106 – 55490	3.24	614	0.63	0.63	0.43[1]	0.44				0.53	4.06	5.76
3403.299	21999 – 51374	2.73	304	−0.52	−0.46		−0.44				−0.47	3.06	4.76
3404.356	17727 – 47093	2.20	83	0.45	0.32	0.46[3]	0.39				0.42	3.95	5.65
3404.755	21999 – 51361	2.73	300	−0.98			−0.45				−0.98	2.55	4.25
3404.923	21716 – 51077	2.69	300	−1.23							−1.23	2.30	4.00
3405.830	21716 – 51069	2.69	299	−0.64	−0.58						−0.61	2.92	4.62
3406.442	26406 – 55754	3.27	676	0.23	0.23		0.19				0.22	3.75	5.45
3406.802	17927 – 47272	2.22	85	0.09	0.03	0.09[1]	0.24	0.21[1]			0.13	3.66	5.36
3407.461	17550 – 46889	2.18	83	0.79	0.85	0.77[2]	1.10				0.86	4.39	6.09
3409.218	26106 – 55430	3.24	614	−0.62	−0.38		−0.19				−0.40	3.13	4.83
3409.605	19788 – 49109	2.45	188	−1.87							−1.87	1.66	3.36
3410.031	24575 – 53892	3.05	542	−0.57							−0.57	2.96	4.66
3410.171	27543 – 56859	3.41	735	0.39	0.36	0.27[1]	0.40				0.36	3.89	5.59
3410.905	7377 – 36686	0.91	25	−2.18	−2.11		−1.52				−2.14	1.39	3.09
3411.134	21716 – 51023	2.69	299	−1.00			−0.93				−0.96	2.57	4.27
3411.353	21999 – 51305	2.73	301	0.07	−0.05	−0.14[1]	0.17				0.01	3.54	5.24
3413.134	17727 – 47017	2.20	85		0.58	0.64[3]	0.74	0.82[1]			0.68	4.21	5.90
3414.564	26628 – 55906	3.30		−1.00							−1.00	2.53	4.22
3415.532	17927 – 47197	2.22	83	−0.19	−0.38	−0.37[1]	−0.23				−0.29	3.24	4.93
3416.679	20038 – 49298	2.48	142	−1.82			−1.07				−1.82	1.71	3.40

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gf	Log gA/λ
				Log gf									
3417.273	8155—37410	1.01	26	−2.14							−2.14	1.39	3.08
3417.843	17927—47177	2.22	81	0.44	0.39	0.45[2]	1.17	0.48[1]			0.44	3.97	5.66
3418.176	26479—55727	3.28	577	−0.51							−0.51	3.02	4.71
3418.507	17927—47172	2.22	81	0.37	0.29	0.40[2]	0.62	0.40[1]			0.41	3.94	5.63
3418.905	24507—53748	3.04		−0.94							−0.94	2.59	4.28
3419.154	26140—55379	3.24	576	−0.65			−0.46				−0.56	2.97	4.66
3419.706	22947—52181	2.84	377	−0.46	−0.43	−0.67[1]	−0.54				−0.52	3.01	4.70
3422.499	24119—53329	2.99	444	0.30	0.06						0.18	3.71	5.40
3422.658	17927—47136	2.22	85	0.23	0.16	0.25[3]	0.38	0.35[1]			0.27	3.80	5.49
3424.286	17550—46745	2.18	81	0.41	0.29	0.41[2]	0.54	0.43[1]			0.42	3.95	5.64
3425.009	24575—53763	3.05	541	0.45	0.34	0.39[1]	0.49				0.42	3.95	5.64
3426.337	18378—47556	2.28	135				−0.19				−0.19	3.34	5.03
3426.383	17550—46727	2.18	82	0.12		0.18[2]	−0.09	0.05[1]			0.09	3.62	5.31
3426.637	17727—46902	2.20	82	0.14	0.07	0.13[1]	0.24	0.05[1]			0.13	3.66	5.35
3427.121	17550—46721	2.18	81	0.86	0.80	0.75[2]	1.07	0.98[1]			0.87	4.40	6.09
3428.195	17727—46889	2.20	81	0.33	0.24	0.23[3]	0.46	0.34[1]			0.30	3.84	5.52
3428.746	29056—58213	3.60	836	−0.02	−0.27		1.13				−0.14	3.40	5.08
3431.815	22838—51969	2.83	376	−0.03	−0.17	−0.22[1]	−0.16				−0.14	3.40	5.08
3432.023	23052—52181	2.86	377	−1.10							−1.10	2.44	4.12
3434.029	22249—51361	2.76	300	−1.08	−0.83		−1.82				−0.96	2.58	4.26
3436.045	26351—55446	3.27	614	−0.88							−0.88	2.66	4.34
3437.046	24575—53661	3.05	539	0.13		−0.04[1]	0.12				0.07	3.61	5.29
3437.631	19621—48703	2.43	187	−1.63			−1.26				−1.44	2.10	3.78
3437.952	26351—55430	3.27	614	−0.09	−0.03	−0.08[1]	0.13				−0.02	3.52	5.20
3439.039	21999—51069	2.73	299	−0.73	−0.63						−0.68	2.86	4.53
3440.607	0—29056	0.00	6		−0.52	−0.30[1]	−0.11	−0.49[1]			−0.44	3.10	4.77
3440.990	416—29469	0.05	6		−0.69	−0.93[1]	−0.75	−0.79[1]			−0.82	2.72	4.39
3442.364	18378—47420	2.28	134	−0.19	−0.23	−0.13[1]	−0.60				−0.18	3.36	5.03
3442.671	7728—36767	0.96	26	−1.64	−1.89		−1.64				−1.72	1.82	3.49
3442.979	24772—53808	3.07	499				−0.50				−0.50	3.04	4.71
3443.878	704—29733	0.09	6		−0.96	−1.21[1]	−0.99	−1.19[1]			−1.09	2.45	4.12
3445.151	17727—46745	2.20	81	0.52	0.45	0.48[1]	0.79	0.63[1]			0.57	4.11	5.78
3446.791	21039—50043	2.61	244	−1.08			−0.44				−1.08	2.46	4.13
3446.947	8155—37158	1.01	26	−2.53			−0.97				−2.53	1.01	2.68
3447.280	17727—46727	2.20	82	0.06	−0.05	−0.02[2]	0.10	0.04[1]			0.02	3.56	5.23
3448.786	22838—51826	2.83	372	−1.36			−1.02				−1.19	2.35	4.02
3448.869	20641—49628	2.56	242	−1.25							−1.25	2.29	3.96
3450.330	17927—46902	2.22	82	0.14	0.02	0.14[3]	0.27	0.14[1]			0.14	3.68	5.35
3451.628	19552—48516	2.42	139	−0.45	−0.54		−0.54				−0.51	3.03	4.70
3451.917	17927—46889	2.22	81	0.16	0.01	0.20[1]	0.25	0.14[1]			0.15	3.69	5.36
3452.276	7728—36686	0.96	25	−1.08	−1.34	−1.06[1]	−1.07				−1.14	2.40	4.07
3453.022	22249—51201	2.76	301	−0.05	−0.22	−0.29[1]	−0.06				−0.16	3.38	5.05
3457.090	29056—57974	3.60	835	−0.20		−0.32[1]					−0.26	3.28	4.95
3457.512	19788—48703	2.45	187	−1.58							−1.58	1.96	3.63
3458.304	19552—48460	2.42	139	−0.17	−0.29	−0.31[1]	−0.23				−0.25	3.29	4.96
3459.429	21716—50614	2.69	297	−0.41	−0.53		0.19				−0.47	3.07	4.74
3459.911	24336—53230	3.02	501	0.28	0.17	0.18[1]	0.22				0.21	3.75	5.42
3462.354	17727—46601	2.20	79		−0.95	−1.18[1]	−0.88				−1.00	2.54	4.21
3462.808	22838—51708	2.83	373	−1.34							−1.34	2.20	3.87
3463.304	11976—40842	1.48	48	−1.65	−1.66						−1.66	1.88	3.55
3464.914	20875—49727	2.59	241	−1.00	−0.92		−0.98				−0.97	2.57	4.23
3465.862	888—29733	0.11	6		−0.84	−1.03[1]	−0.87	−1.00[1]			−0.94	2.60	4.26
3466.279	19390—48231	2.40	185				−1.36				−1.36	2.18	3.84
3466.500	6928—35768	0.86	24	−1.86	−1.94						−1.90	1.64	3.30
3468.847	20641—49461	2.56	242	−0.12	−0.11	−0.15[1]	−0.16				−0.14	3.40	5.06
3469.012	26628—55446	3.30	614	0.08	0.13						0.10	3.64	5.30
3469.390	22947—51762	2.84	375	−1.32			−0.01				−1.32	2.22	3.88
3469.834	21039—49851	2.61	242	−0.32	−0.44	−0.50[1]	−0.26				−0.38	3.16	4.82
3471.267	17927—46727	2.22	82				−0.28	−0.21[1]			−0.24	3.30	4.96
3471.346	18378—47177	2.28	130				−0.09				−0.09	3.45	5.11

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gAλ
				Log *gf*									
3473.303	24575—53358	3.05		−0.31							−0.31	3.23	4.89
3473.497	7986—36767	0.99	26	−2.49			−1.10				−2.49	1.05	2.71
3475.451	704—29469	0.09	6		−0.74	−0.93[1]	−0.80	−0.89[1]			−0.84	2.70	4.36
3475.651	17550—46314	2.18	78	0.28	−0.09		0.39				0.10	3.64	5.30
3475.867	19621—48383	2.43	186	−0.57			−0.20				−0.38	3.16	4.82
3476.336	18378—47136	2.28	133	−0.86	−0.78		−0.50				−0.71	2.83	4.49
3476.704	978—29733	0.12	6		−1.07	−1.36[2]	−1.19	−1.22[2]		−1.24	−1.24	2.30	3.96
3476.853	20875—49628	2.59	242		−0.08		−0.13				−0.10	3.44	5.10
3477.007	19552—48305	2.42	139		−0.29		−0.54				−0.42	3.12	4.78
3477.856	17927—46673	2.22	82	−0.68	−0.83	−0.97[1]	−0.84	−0.78[1]			−0.82	2.72	4.38
3478.374	19621—48362	2.43	185	−1.45			−1.30				−1.38	2.16	3.82
3478.788	19552—48290	2.42	137	−1.24			−0.70				−1.24	2.30	3.96
3479.683	23784—52514	2.95	443	−1.04			0.86				−1.04	2.50	4.16
3481.558	18378—47093	2.28	132	−1.60			−1.13				−1.60	1.94	3.60
3483.009	7377—36079	0.91	24	−1.72	−2.01	−2.12[2]	−2.02				−1.97	1.57	3.23
3484.858	19788—48476	2.45	185	−1.19			−0.17				−1.19	2.35	4.01
3484.972	19552—48239	2.42	138	−0.78	−0.79		−0.76				−0.78	2.76	4.42
3485.342	17727—46410	2.20	78	−0.02	−0.15	−0.01[2]	−0.05				−0.05	3.49	5.15
3486.556	17927—46601	2.22	79	−1.15	−1.08		−1.13				−1.12	2.42	4.08
3489.670	23784—52431	2.95	442	0.26	0.18	0.12[2]	0.15				0.18	3.72	5.38
3490.575	416—29056	0.05	6			−1.04[2]	−0.47	−0.93[1]			−1.00	2.54	4.20
3493.290	11976—40594	1.48	48	−1.72			−1.37				−1.54	2.00	3.65
3493.698	21999—50614	2.73	297				−0.40				−0.40	3.14	4.79
3494.170	19552—48163	2.42	137	−1.10	−0.86		−0.46				−0.98	2.56	4.21
3495.288	20641—49243	2.56	238	0.27	0.20	0.24[2]	0.29				0.25	3.79	5.44
3496.190	19788—48383	2.45	186				−1.03				−1.03	2.51	4.16
3497.110	17550—46137	2.18	78	0.27	0.12	0.20[2]	0.12				0.18	3.72	5.37
3497.842	888—29469	0.11	6	−0.94	−1.23	−1.45[1]	−1.29	−1.32[1]		−1.27	−1.27	2.27	3.92
3500.164	23193—51755	2.87	327	−1.45							−1.45	2.09	3.74
3500.568	20875—49433	2.59	238	−0.16	−0.33	−0.81[1]	−0.66						
3504.455	22838—51365	2.83	371	−1.09			−0.47				−1.09	2.45	4.10
3504.864	18378—46902	2.28	131	−0.57	−0.73		−0.58				−0.63	2.91	4.56
3505.065	24336—52858	3.02	498	0.03	−0.11		0.07				0.00	3.54	5.19
3506.500	18378—46889	2.28	130	−0.04	−0.13	0.09[2]	0.08				0.00	3.54	5.19
3507.139	29469—57974	3.65	835	−0.38	−0.51						−0.44	3.10	4.75
3507.390	24772—53275	3.07	500				−0.38				−0.38	3.16	4.81
3508.494	24119—52613	2.99	442	0.32	0.18	−0.21[1]	0.00						
3509.120	22846—51335	2.83	326	−0.77			−0.74				−0.76	2.79	4.43
3509.736	23270—51755	2.88	327	−0.78							−0.78	2.77	4.41
3509.870	17927—46410	2.22	78	−0.66	−0.63	−1.29[2]	−0.80						
3510.446	20038—48516	2.48	139		−0.39	−0.85[1]	−0.40						
3511.748	20641—49109	2.56	238	−0.86	−0.95		−0.92				−0.91	2.64	4.28
3512.080	22997—51462	2.85	327				−0.92				−0.92	2.63	4.27
3512.239	22997—51461	2.85	326	−0.49			−0.29				−0.39	3.16	4.80
3512.970	24772—53230	3.07	501	−0.63							−0.63	2.92	4.56
3513.065	12561—41018	1.56	48	−1.41	−1.41						−1.41	2.14	3.78
3513.820	6928—35379	0.86	24		−0.48	−0.50[2]	−0.30			−0.72	−0.50	3.05	4.69
3514.626	19390—47835	2.40	183	−0.77							−0.77	2.78	4.42
3516.403	24339—52769	3.02	442	0.08	−0.01	−0.40[2]	−0.18						
3516.550	23111—51540	2.86	326	−0.20			−0.23				−0.22	3.33	4.97
3518.680	23193—51604	2.87	327	−0.39	−0.65		−0.31				−0.45	3.10	4.73
3518.860	17727—46137	2.20	78	−0.68	−0.93	−1.48[1]	−0.87						
3520.855	21039—49433	2.61	238	−0.52	−0.64		−0.76				−0.64	2.91	4.54
3521.263	7377—35768	0.91	24		−0.32	−0.49[1]	−0.34	−0.46[2]		−0.55	−0.43	3.12	4.75
3521.833	17927—46314	2.22	78	−0.35	−0.58		−0.10				−0.46	3.09	4.72
3522.268	22846—51229	2.83	326	0.04	−0.30		0.00				−0.09	3.46	5.09
3522.896	23193—51570	2.87	330	−0.57	−0.71		−0.99				−0.76	2.79	4.42
3523.300	23193—51567	2.87	326	−0.22	−0.55		−0.39				−0.39	3.16	4.79
3524.075	20875—49243	2.59	239	0.05	−0.01						0.02	3.57	5.20
3524.242	18378—46745	2.28	130	0.01	−0.21		0.08				−0.04	3.51	5.14

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe I*—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
3525.856	22997—51351	2.85	329	−0.33			−0.14				−0.24	3.31	4.94
3526.042	704—29056	0.09	6	−1.36		−1.61[1]	−1.19	−1.59[9]			−1.52	2.03	3.66
3526.168	7728—36079	0.96	24			−0.89[1]	−0.67				−0.78	2.77	4.40
3526.230	23111—51462	2.86	327				0.67				0.67	4.22	5.85
3526.377	23111—51461	2.86	326	0.72	0.60						0.66	4.21	5.84
3526.470	18378—46727	2.28	131	0.25							0.25	3.80	5.43
3526.673	23193—51540	2.87	326	0.70	0.38		0.74				0.61	4.16	5.79
3527.792	22997—51335	2.85	326	0.48	0.13	0.46[1]	0.59				0.36	3.91	5.54
3528.316	12561—40895	1.56		−2.25							−2.25	1.30	2.93
3528.942	6928—35257	0.86	23	−3.73							−3.73	−0.18	1.45
3529.531	24575—52899	3.05	537	−0.69			−0.55				−0.62	2.93	4.56
3529.818	23245—51567	2.88	326	0.56	0.24	0.44[1]	0.44				0.42	3.97	5.60
3530.385	22650—50968	2.81	326	0.12		0.10[1]	0.17				0.13	3.68	5.31
3531.446	19621—47930	2.43	182	−0.99	−0.92		−1.12				−1.01	2.54	4.17
3533.008	23270—51567	2.88	326	0.60	0.42		0.50				0.51	4.06	5.69
3533.201	23245—51540	2.88	326	0.90	0.58	0.63[1]	0.93				0.76	4.31	5.94
3534.530	28820—57104	3.57	811	−0.44	−0.36		−0.18				−0.33	3.22	4.85
3534.914	12561—40842	1.56	48	−1.69	−1.67						−1.68	1.87	3.50
3536.556	23193—51461	2.87	326	0.99	0.73	1.00[8]	1.21				0.99	4.54	6.17
3537.491	20875—49135	2.59	239	−0.44	−0.46		−0.40				−0.43	3.12	4.75
3537.729	21039—49298	2.61	239	−0.04	−0.03		0.11				0.01	3.56	5.19
3537.896	22846—51103	2.83	327	0.25	−0.11		0.39				0.07	3.62	5.25
3538.310	28605—56859	3.55	775	−0.60	−0.52		−0.30				−0.47	3.08	4.71
3538.550	20038—48290	2.48	137	−1.14	−0.91						−1.02	2.53	4.16
3538.790	28820—57070	3.57	811	−0.89			−0.03				−0.89	2.66	4.29
3540.121	23111—51351	2.86	329	0.25	−0.06	0.19[1]	0.45				0.13	3.68	5.31
3540.711	7377—35612	0.91	23	−1.71	−1.68		−1.47				−1.62	1.93	3.56
3541.083	22997—51229	2.85	326	1.15	0.79	1.08[2]	1.10				1.04	4.59	6.22
3542.076	23111—51335	2.86	326	1.15	0.75	1.01[3]	1.16				1.01	4.56	6.19
3542.243	18378—46601	2.28	128				−0.33				−0.33	3.22	4.85
3543.392	19621—47835	2.43	183	−0.93	−0.82		−0.85				−0.87	2.68	4.31
3543.669	27543—55754	3.41	734	0.21	0.21	0.12[2]	0.28				0.20	3.75	5.38
3544.631	21039—49243	2.61	239	−0.49	−0.59	−0.68[2]	−0.45				−0.55	3.00	4.63
3545.639	22997—51192	2.85	321	0.35	0.24	0.33[3]	0.50	0.59[3]			0.40	3.95	5.57
3545.832	24575—52769	3.05	536	−0.27	0.08		−0.56				−0.10	3.45	5.07
3546.210	19621—47812	2.43	183	−1.39			−0.99				−1.19	2.36	3.98
3547.203	22650—50833	2.81	321	−0.29	−0.24	−0.37[1]	−0.31	−0.16[1]			−0.27	3.28	4.90
3548.037	24336—52512	3.02	496	−0.31	−0.27	−0.40[1]	−0.19				−0.29	3.26	4.88
3549.868	12969—41131	1.61	48	−1.30	−1.44	−1.43[1]	−1.43				−1.40	2.15	3.77
3551.114	22997—51149	2.85	321	−1.16							−1.16	2.39	4.01
3552.112	24772—52916	3.07	499	−0.30	−0.17		−0.12				−0.20	3.35	4.97
3552.420	19788—47930	2.45	182	−1.45			−0.97				−1.45	2.10	3.72
3552.828	23193—51331	2.87	321	0.20	−0.08	0.10[1]	0.17	0.36[1]			0.15	3.70	5.32
3553.741	28820—56951	3.57	810	0.97	1.06	0.78[1]	1.00				0.95	4.50	6.12
3554.120	7728—35856	0.96	23	−1.40	−1.60		−1.82				−1.50	2.05	3.67
3554.500	23245—51370	2.88	325	−0.10	0.04		0.11				0.02	3.57	5.19
3554.922	22846—50968	2.83	326	1.47	1.13	1.19[2]	1.11				1.22	4.77	6.39
3556.680	23111—51219	2.86	325	−0.24			−0.38				−0.31	3.24	4.86
3556.877	22997—51103	2.85	327	0.92	0.53	0.85[3]	0.99				0.82	4.37	5.99
3558.517	7986—36079	0.99	24	−0.30	−0.04	−0.27[3]	−0.26	−0.39[3]		−0.24	−0.28	3.27	4.89
3559.506	24772—52858	3.07	498	0.12	0.30	−0.48[3]	0.21				0.21	3.76	5.38
3560.076	23111—51192	2.86	321	−1.09							−1.09	2.46	4.08
3560.705	26225—54301	3.25	675	0.04	0.03	−0.65[3]	−0.07				0.00	3.55	5.17
3562.269	26225—54289	3.25		−1.07							−1.07	2.48	4.10
3564.110	12969—41018	1.61	48	−1.66	−1.65						−1.66	1.89	3.51
3564.533	19788—47834	2.45	183	−0.67	−0.40						−0.54	3.01	4.63
3565.381	7728—35768	0.96	24			0.16[3]	0.21	−0.01[3]		0.26	0.11	3.66	5.28
3565.583	23111—51149	2.86	321	0.75			0.66	0.73[1]			0.71	4.26	5.88
3566.316	18378—46410	2.28	127	−0.86	−0.90						−0.88	2.67	4.29
3566.590	19390—47420	2.40	181				−1.23				−1.23	2.32	3.94

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TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gAλ
				Log *gf*									
3567.038	23193—51219	2.87	325	−0.02	−0.33	−0.45[1]	0.14						
3567.360	19788—47812	2.45	183	−0.88	−1.01		−0.72				−0.87	2.68	4.30
3567.748	26140—54161	3.24	571	−0.87							−0.87	2.68	4.30
3568.423	23193—51208	2.87	321	−0.47	−0.70			−0.13[1]					
3568.828	26225—54237	3.25	673	−0.10	−0.10		0.07				−0.04	3.51	5.13
3568.978	21716—49727	2.69	294	−0.06	−0.01	−0.24[1]	0.01				−0.08	3.47	5.09
3570.100	7377—35379	0.91	24			0.43[2]	0.30	0.35[4]		0.55	0.39	3.94	5.56
3570.243	22650—50652	2.81	326	1.47							1.47	5.02	6.64
3571.226	11976—39970	1.48	46	−1.47	−1.41		−0.24				−1.44	2.11	3.73
3571.995	22846—50833	2.83	321	0.66	0.36	0.66[1]	0.70	0.87[1]			0.65	4.20	5.82
3572.600	22997—50980	2.85	325	−0.41	−0.59		−0.24				−0.41	3.14	4.75
3573.400	26624—54600	3.30	673	−0.01	−0.11		0.90				−0.06	3.49	5.10
3573.836	19390—47363	2.40	181				−0.14				−0.14	3.41	5.02
3573.896	26628—54600	3.30	611		0.63		0.72				0.68	4.23	5.84
3574.256	26479—54449	3.28	574	−0.95							−0.95	2.60	4.21
3575.118	23245—51208	2.88	321	−0.22	−0.34			0.03[1]			−0.18	3.37	4.98
3575.249	22846—50808	2.83	322	0.03			0.25	0.18[1]			0.15	3.70	5.31
3575.374	24336—52297	3.02	496	0.53	0.43	0.19[1]	0.43				0.40	3.95	5.56
3575.976	23193—51149	2.87	321	−0.07	−0.39	−0.50[1]	0.07	0.16[1]			0.40	3.95	5.56
3576.760	26351—54301	3.27	613a	0.21	0.45	−0.25[1]	0.04				0.40	3.95	5.56
3578.380	23270—51208	2.88	321	−0.30	−0.66			0.96[1]			−0.48	3.07	4.68
3579.829	26140—54067	3.24	573	−0.71							−0.71	2.84	4.45
3581.195	6928—34844	0.86	23			0.58[2]	0.59	0.61[2]			0.60	4.15	5.76
3581.650	21716—49628	2.69	295	−0.26	0.09		−0.12				−0.10	3.45	5.06
3581.816	24772—52683	3.07	497	−0.01	−0.03		0.03				0.00	3.55	5.16
3582.201	26106—54014	3.24	612	0.57	0.73	0.70[1]	0.78				0.70	4.25	5.86
3582.560	19788—47693	2.45	181		−0.27		−1.35						
3582.690	23245—51149	2.88	328	−0.74			−0.47				−0.60	2.95	4.56
3583.337	26550—54449	3.29	574	0.08	0.05	0.24[1]	0.02				0.10	3.65	5.26
3584.663	21716—49604	2.69	294	0.90	0.79	0.72[1]	0.83				0.81	4.36	5.97
3584.790	23111—50999	2.86	322	−0.08			1.07				−0.08	3.47	5.08
3584.960	26351—54237	3.27	611	0.91	0.79		0.35				0.85	4.40	6.01
3585.193	23784—51668	2.95	438	−0.19			0.83				−0.19	3.36	4.97
3585.321	7728—35612	0.96	23	−0.43	−0.30	−0.49[1]	−0.10			−0.41	−0.41	3.14	4.75
3585.707	7377—35257	0.91	23	−0.61	−0.61	−0.67[1]	−0.57			−0.74	−0.64	2.91	4.52
3586.114	26106—53983	3.24	611	1.10	1.05	1.00[1]	1.12				1.07	4.62	6.23
3586.740	22650—50523	2.81	325	−0.22			0.00				−0.11	3.44	5.05
3586.986	7986—35856	0.99	23	−0.40	−0.22	−0.41[1]	−0.37			−0.39	−0.36	3.19	4.80
3587.240	23111—50980	2.86	325	0.02	−0.24		0.30				−0.11	3.44	5.05
3587.424	19552—47420	2.42	134	−0.35	−0.32		−0.26				−0.29	3.26	4.87
3587.752	26406—54271	3.27		0.59	0.18								
3588.516	23711—51570	2.94	394	−0.28							−0.28	3.27	4.88
3588.815	22846—50704	2.83	325	0.31	0.21		0.60				0.40	3.95	5.56
3588.918	23193—51048	2.87	322	−0.06			0.27	0.19[1]			0.13	3.68	5.29
3589.106	6928—34782	0.86	23	−1.24	−1.09	−1.30[1]	−1.39				−1.26	2.29	3.90
3589.456	21999—49851	2.73	295	−0.48	−0.67		0.27				−0.58	2.98	4.58
3589.586	24119—51969	2.99		−0.66							−0.66	2.90	4.50
3590.086	23784—51630	2.95	440	−0.65	−0.44		−0.17				−0.54	3.02	4.62
3590.990	25900—53739	3.21	573	−0.75			−0.63				−0.69	2.87	4.47
3591.345	22997—50833	2.85	321	−0.51	−0.65		−0.27				−0.48	3.08	4.68
3591.485	26550—54386	3.29	568	−0.50	−0.54						−0.52	3.04	4.64
3592.486	20875—48703	2.59	237	−1.00	−0.88		−1.04				−0.97	2.59	4.19
3592.680	26140—53967	3.24	569	−0.46			−0.36				−0.41	3.15	4.75
3592.881	17727—45552	2.20	77	−1.47			−1.44				−1.46	2.10	3.70
3593.329	26340—54161	3.26	571	−0.34	−0.58		−0.26				−0.39	3.17	4.77
3594.632	22997—50808	2.85	322	0.63	0.33	0.61[2]	0.81	0.79[1]			0.63	4.19	5.79
3595.308	23193—50999	2.87	322	−0.01	−0.47	−0.26[1]	−0.08	−0.04[1]			−0.17	3.39	4.99
3595.857	19788—47590	2.45	181	−1.18	−1.11		−1.15				−1.15	2.41	4.01
3596.198	19621—47420	2.43	181	−0.74	−0.90	−1.00[1]	−0.71				−0.84	2.72	4.32
3597.050	26340—54132	3.26	569	0.00	−0.50	−0.13[1]	−0.20						

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
3598.721	26225—54005	3.25	674	−0.35			−0.73				−0.54	3.02	4.62
3598.930	26479—54258	3.28	568				−1.02				−1.02	2.54	4.14
3598.980	23270—51048	2.88	322	−0.73			−0.59				−0.66	2.90	4.50
3599.624	28820—56593	3.57	809	0.31	0.35	0.34[f]	0.45				0.36	3.92	5.52
3602.080	23245—50999	2.88	322	−0.54	−0.66		−0.18	0.00[f]					
3602.460	23111—50862	2.86	322				0.13				0.13	3.69	5.28
3602.534	23111—50861	2.86	324	0.26	0.11	0.20[f]	0.20				0.19	3.75	5.34
3602.774	22838—50587	2.83	370	−1.16							−1.16	2.40	3.99
3603.207	21716—49461	2.69	295	0.71	0.73	0.75[2]	0.80				0.75	4.31	5.90
3603.572	19621—47363	2.43	181	−1.53			−1.24				−1.38	2.18	3.77
3603.673	20641—48383	2.56		−1.24							−1.24	2.32	3.91
3603.828	24772—52512	3.07	496	−0.17	0.00		0.22				0.02	3.58	5.17
3604.383	23245—50981	2.88	323	−0.73	−0.76						−0.74	2.82	4.41
3604.701	26624—54357	3.30		−0.46			−0.30				−0.38	3.18	4.77
3605.206	26628—54357	3.30		0.07							0.07	3.63	5.22
3605.450	21999—49727	2.73	294	1.20	0.94	0.99[3]	1.11				1.05	4.61	6.20
3606.682	21716—49434	2.69	294	1.24	1.27	1.05[2]	0.99				1.14	4.70	6.29
3608.146	22997—50704	2.85	325	−0.10	−0.20	−0.99[1]	0.29						
3608.861	8155—35856	1.01	23			0.30[f]	0.27	0.21[3]		0.31	0.25	3.81	5.40
3609.486	23111—50808	2.86	322	−0.77							−0.77	2.79	4.38
3610.159	22650—50342	2.81	321	1.10	0.77	1.13[3]	1.01	1.18[1]			1.05	4.61	6.20
3610.703	23193—50880	2.87	323	−0.23	−0.39		−0.21				−0.28	3.28	4.87
3612.068	22846—50523	2.83	325	0.26	−0.08	0.26[1]	0.56				0.15	3.71	5.30
3612.940	12561—40231	1.56	46	−1.59	−1.66		−1.11				−1.62	1.94	3.53
3613.110	23193—50861	2.87	324	−0.56	−0.78		−0.50				−0.61	2.95	4.54
3613.459	26225—53892	3.25	672	−0.12							−0.12	3.44	5.03
3613.612	26624—54289	3.30		−0.62	−0.59						−0.60	2.96	4.55
3614.109	26628—54289	3.30		−0.29	−0.51						−0.40	3.16	4.75
3614.711	26225—53882	3.25		−0.14							−0.14	3.42	5.01
3615.190	26479—54132	3.28	569	−1.29			−0.83						
3615.665	11976—39626	1.48	46	−1.79	−1.88		−1.43				−1.84	1.72	3.31
3615.959	26624—54271	3.30		−1.12							−1.12	2.44	4.03
3616.162	25900—53546	3.21	569	−0.48	−0.60		−0.64				−0.57	2.99	4.58
3616.326	19552—47197	2.42	132	−1.06	−0.93		−0.93				−0.97	2.59	4.18
3617.090	24575—52213	3.05	535				−0.77				−0.77	2.79	4.38
3617.788	24336—51969	3.02	496	0.87	0.89	0.87[3]	0.97				0.89	4.45	6.04
3618.285	22846—50475	2.83	324	−0.76							−0.76	2.80	4.39
3618.392	21999—49628	2.73	295	0.02	0.24		0.28				0.18	3.74	5.33
3618.769	7986—35612	0.99	23			0.27[1]	0.67	0.26[3]		0.37	0.28	3.84	5.43
3619.772	19390—47008	2.40	180	−1.06			−0.93				−1.00	2.56	4.15
3620.228	22997—50611	2.85	324	−0.85			−0.72				−0.78	2.78	4.37
3620.880	23270—50880	2.88	323	−0.96							−0.96	2.60	4.19
3621.464	21999—49604	2.73	294	0.94	0.95	0.97[3]	1.03				0.97	4.53	6.12
3621.718	28820—56423	3.57	808	−0.09	0.17		0.48				0.04	3.60	5.19
3622.001	22249—49851	2.76	295	0.82	0.81	0.80[2]	0.87				0.82	4.38	5.97
3623.188	19390—46982	2.40	180	0.27	0.17	0.25[2]	0.26				0.24	3.80	5.39
3623.440	20641—48231	2.56	233	−0.55	−0.55		−0.23				−0.44	3.12	4.71
3623.772	23111—50699	2.86	323	−0.17	−0.59		−0.01						
3624.056	26340—53925	3.26	570	−0.63							−0.63	2.93	4.52
3624.310	19552—47136	2.42	133	−0.83	−0.88		−0.54				−0.75	2.81	4.40
3625.140	22846—50423	2.83	323	0.17	−0.07	0.29[2]	0.43				0.17	3.73	5.32
3627.060	28820—56383	3.57	808	−0.53	−0.41		−0.03				−0.47	3.09	4.68
3628.094	17727—45282	2.20	77	−1.04	−1.18						−1.11	2.45	4.03
3628.806	24129—51668	2.99	438	−1.15	−0.95						−1.05	2.51	4.09
3630.353	22997—50534	2.85	323	0.02	−0.20	0.04[1]	0.26				−0.05	3.51	5.09
3631.103	22846—50378	2.83	322	0.61			0.83	0.10[1]					
3631.465	7728—35257	0.96	23			0.23[1]	0.53	0.22[2]			0.22	3.78	5.36
3632.042	24772—52297	3.07	496	0.79	0.75	0.71[1]	0.78				0.76	4.32	5.90
3632.558	23784—51305	2.95	437	−0.02	−0.01		−0.28				−0.08	3.48	5.06
3632.980	20038—47556	2.48	135	−0.40	−0.41	−0.19[1]	−0.25				−0.31	3.25	4.83

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
3633.087	23711—51229	2.94	390	−0.04			−0.18				−0.11	3.45	5.03
3633.833	24119—51630	2.99	440	−0.36	−0.49		−0.14				−0.33	3.23	4.81
3634.326	23711—51219	2.94	389	0.12	−0.02	0.35[1]	0.38				0.21	3.77	5.35
3635.190	24336—51837	3.02	490	−0.17	−0.45		0.09				−0.31	3.25	4.83
3636.186	17727—45221	2.20	77		−0.46	−0.40[1]	−0.55				−0.47	3.09	4.67
3636.496	26340—53831	3.26	568	−0.49							−0.49	3.07	4.65
3636.650	24336—51826	3.02	493		−0.32		−0.30				−0.31	3.25	4.83
3636.995	20875—48362	2.59	233	−0.39	−0.49		−0.08				−0.32	3.24	4.82
3637.251	19621—47107	2.43	180	−0.66	−0.90		−0.65				−0.74	2.82	4.40
3637.730	20641—48123	2.56	229	−1.29	−0.75		−0.72						
3637.862	23711—51192	2.94	385	−0.10	−0.38		0.13	0.09[1]			0.04	3.60	5.18
3638.300	22249—49727	2.76	294	0.66	0.58	0.64[2]	0.69				0.64	4.20	5.78
3640.392	21999—49461	2.73	295	0.86	0.86	0.89[2]	0.95				0.89	4.45	6.03
3641.454	23245—50699	2.88	323	−1.25	−0.83						−1.25	2.31	3.89
3643.627	23711—51149	2.94	385	0.08	0.00	0.24[1]	0.28	0.33[1]			0.19	3.75	5.33
3643.716	21039—48476	2.61	233	−0.21			−0.22				−0.22	3.34	4.92
3643.812	12969—40405	1.61	46	−1.46			0.17						
3644.798	26140—53569	3.24	570	−0.22	−0.59						−0.40	3.16	4.74
3645.090	22997—50423	2.85	323	−0.26		−0.15[1]	−0.05				−0.15	3.41	4.99
3645.494	23111—50534	2.86	323	−0.42	−0.40		0.04				−0.41	3.15	4.73
3645.822	25092—52512	3.11	496	0.50	0.48	0.59[2]	0.67				0.57	4.13	5.71
3647.427	12561—39970	1.56	46	−1.17	−0.87						−1.02	2.54	4.12
3647.844	7377—34782	0.91	23			0.09[2]	0.38	0.08[2]		0.19	0.14	3.70	5.28
3649.304	0—27395	0.00	5	−2.34	−2.45		−2.59	−2.75[1]			−2.53	1.03	2.61
3649.509	21716—49109	2.69	291	0.88	0.87	0.78[2]	1.04			0.75	0.85	4.41	5.99
3649.699	23711—51103	2.94	391	−0.60							−0.60	2.96	4.54
3650.031	24181—51570	3.00	394	0.32	0.58		0.61				0.50	4.06	5.64
3650.281	19621—47008	2.43	180	0.21	0.08		0.39				0.23	3.79	5.37
3650.554	26225—53610	3.25		−0.42							−0.42	3.14	4.72
3651.100	22997—50378	2.85	322	−0.76			0.52	−0.44[1]			−0.60	2.96	4.54
3651.470	22249—49628	2.76	295	1.00	0.98	0.94[1]	1.06				1.00	4.56	6.14
3652.256	24336—51708	3.02	494		−0.85						−0.85	2.71	4.29
3653.352	20875—48239	2.59	229	−1.48							−1.48	2.08	3.66
3653.763	19621—46982	2.43	180	−0.72	−0.83		−0.77				−0.77	2.79	4.37
3654.660	17927—45282	2.22	77	−1.61	−1.53		−1.29				−1.48	2.08	3.66
3655.467	22838—50187	2.83	369	0.10	0.12	0.21[1]	0.18				0.15	3.71	5.29
3656.227	26406—53749	3.27		0.01	−0.28						−0.14	3.42	4.99
3656.358	23193—50534	2.87	323	−1.05							−1.05	2.51	4.08
3657.139	19552—46889	2.42	130	−0.71	−0.81	−0.46[1]	−0.57				−0.64	2.92	4.49
3657.890	24507—51837	3.04	395	−0.18	−0.58	−0.12[1]	−0.13				−0.14	3.42	4.99
3658.025	24339—51668	3.02	438	0.55							0.55	4.11	5.68
3658.550	20641—47967	2.56	231	−1.27	−1.21		−0.86				−1.11	2.45	4.02
3659.519	19788—47107	2.45	180	0.10	0.02	0.20[2]	0.19				0.14	3.70	5.27
3660.330	23111—50423	2.86	323	−1.03							−1.03	2.53	4.10
3661.360	19788—47093	2.45	179	−1.23	−1.06		−0.92				−1.07	2.49	4.06
3663.250	24119—51409	2.99	439	−0.51	−0.63		−0.34				−0.49	3.07	4.64
3663.458	20875—48163	2.59	231	−0.60	−0.83		−0.28				−0.72	2.84	4.41
3663.950	23784—51069	2.95	435	−0.90	−0.83						−0.86	2.70	4.27
3664.537	24181—51462	3.00	391	−0.08		−0.19[1]	0.00				−0.09	3.47	5.04
3664.694	24181—51461	3.00	390	−0.45	−0.54		−0.26				−0.42	3.14	4.71
3666.240	19621—46889	2.43	179	−0.76		−0.84[1]	−0.56				−0.72	2.84	4.41
3666.944	12969—40231	1.61	46	−2.25			−1.01				−2.25	1.31	2.88
3667.252	25900—53161	3.21	570	0.21	−0.29	0.17[1]	0.00						
3667.999	25900—53155	3.21	569	−0.03	−0.49		−0.09						
3668.214	26140—53394	3.24	568	−0.29	−0.57		−0.33				−0.40	3.16	4.73
3668.893	20875—48123	2.59	229	−1.30			−1.10				−1.20	2.36	3.93
3669.151	24119—51365	2.99	437	0.09	−0.02		0.10				0.06	3.62	5.19
3669.523	21999—49243	2.73	293	0.65	0.57	0.69[2]	0.64				0.65	4.21	5.78
3670.071	23784—51023	2.95	435		0.26						0.26	3.82	5.39
3670.810	20038—47272	2.48	133	−0.73	−0.83		−0.69				−0.75	2.81	4.38

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe I*—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
3671.510	26340—53569	3.26	570	−0.97							−0.97	2.59	4.16
3671.689	22249—49477	2.76		−1.18	−1.02						−1.10	2.46	4.03
3672.722	19788—47008	2.45	180	−0.88	−1.03		−0.89				−0.93	2.63	4.20
3674.766	22838—50043	2.83	369	−0.17	−0.33	−0.03[1]	−0.20				−0.18	3.39	4.95
3675.434	21039—48239	2.61	229	−1.89							−1.89	1.68	3.24
3675.694	24507—51705	3.04	391	−1.29	−1.14						−1.22	2.35	3.91
3676.314	20641—47835	2.56	228	0.13	0.04	0.15[1]	0.14				0.12	3.69	5.25
3676.879	24181—51370	3.00	389	−0.75	−0.74		−0.42				−0.64	2.93	4.49
3677.309	28605—55791	3.55	773	0.35	0.45		0.97				0.40	3.97	5.53
3677.477	18378—45563	2.28	125	−0.80	−0.84		−0.85				−0.83	2.74	4.30
3677.631	22249—49433	2.76	291	0.89	0.78	0.85[2]	0.65				0.80	4.37	5.93
3678.862	19552—46727	2.42	131	−0.30	−0.41	−0.28[1]	−0.15				−0.28	3.29	4.85
3678.980	18378—45552	2.28	124	−1.21			−0.95				−1.08	2.49	4.05
3679.330	20641—47812	2.56	228				−1.13				−1.13	2.44	4.00
3679.530	24181—51351	3.00	393				−0.45				−0.45	3.12	4.68
3679.915	0—27167	0.00	5		−1.22	−1.27[1]	−1.05	−1.37[4]		−1.33	−1.30	2.27	3.83
3680.675	25900—53061	3.21	568	0.14		0.35[1]	0.14				0.21	3.78	5.34
3681.227	26628—53785	3.30		−0.36	−0.47						−0.42	3.15	4.71
3681.651	24181—51335	3.00	390	−0.58			−0.47				−0.52	3.05	4.61
3681.880	29799—56951	3.69	951				−0.26				−0.26	3.31	4.87
3682.226	28605—55754	3.55	772	1.16	0.97	1.24[2]	1.29				1.18	4.75	6.31
3683.056	416—27560	0.05	5	−2.03	−2.12	−1.94[3]	−2.14	−2.10[2]			−2.05	1.52	3.08
3683.616	20038—47177	2.48	130	−1.32	−1.19						−1.26	2.31	3.87
3684.110	21999—49135	2.73	292	0.63	0.62	0.63[2]	0.72				0.65	4.22	5.77
3685.998	23711—50833	2.94	385	0.74		0.78[2]	0.81	0.76[1]			0.77	4.34	5.89
3686.260	19552—46673	2.42	131	−0.53	−0.48		−0.49				−0.50	3.07	4.62
3687.098	17550—44664	2.18	75	−0.70	−0.80						−0.75	2.82	4.37
3687.459	6928—34040	0.86	21	−0.43	−0.31	−0.42[2]	−0.11	−0.61[2]		−0.47	−0.47	3.10	4.65
3687.656	21999—49109	2.73	291	0.58	0.31		0.35				0.41	3.98	5.53
3688.198	26628—53734	3.30		−1.04							−1.04	2.53	4.08
3688.476	26225—53329	3.25	669	−0.11	−0.49						−0.30	3.27	4.82
3689.010	19621—46721	2.43	178	−1.72							−1.72	1.85	3.40
3689.457	23711—50808	2.94	386	0.75	0.42	0.81[2]	0.81	0.72[1]			0.72	4.29	5.84
3689.897	24575—51668	3.05	533	−0.96			−0.70				−0.83	2.74	4.29
3690.450	25092—52181	3.11	497	−0.18	−0.43		−0.30				−0.30	3.27	4.82
3690.730	28820—55907	3.57	807	0.51	0.58	0.54[1]	0.54				0.54	4.11	5.66
3693.008	24339—51409	3.02	439	−0.25	−0.39		−0.08				−0.24	3.33	4.88
3694.005	24507—51570	3.04	394	1.04		1.09[2]	1.19				1.10	4.67	6.22
3695.054	20875—47930	2.59	229	0.32	0.35	0.37[2]	0.37				0.36	3.93	5.48
3695.507	20641—47693	2.56	225	−1.43	−1.06		−1.11				−1.20	2.37	3.92
3696.030	19552—46601	2.42	128	−2.05							−2.05	1.52	3.07
3697.426	24181—51219	3.00	389		0.06	0.43[1]	0.36				0.28	3.85	5.40
3697.536	26624—53661	3.30	670				−0.04				−0.04	3.53	5.08
3698.611	24336—51365	3.02	491	−0.11	−0.23	−0.17[1]	−0.16				−0.17	3.40	4.95
3699.147	24336—51361	3.02	490	−0.56	−0.73		−1.04				−0.62	2.95	4.50
3701.086	24181—51192	3.00	385	0.94		1.09[2]	1.05	0.88[1]			1.01	4.58	6.13
3702.033	22947—49951	2.84	369	−0.12	−0.17	−0.12[1]	0.02				−0.10	3.47	5.02
3702.500	12969—39970	1.61	46	−1.64	−1.65	−1.60[3]					−1.63	1.94	3.49
3703.556	22249—49243	2.76	291	−0.04	−0.04	0.32[1]	0.03				0.07	3.64	5.19
3703.697	23711—50704	2.94	389	0.04	−0.29		0.33				0.18	3.75	5.30
3703.824	23052—50043	2.86	369	−0.07	−0.06		−0.04				−0.06	3.51	5.06
3704.021	24772—51762	3.07	495	−0.98	−0.69		−0.62				−0.76	2.81	4.36
3704.464	21716—48703	2.69	290	0.42	0.32	0.42[2]	0.49				0.41	3.98	5.53
3705.567	416—27395	0.05	5		−1.04	−1.12[3]	−0.90	−1.15[4]		−1.09	−1.10	2.47	4.02
3707.048	24181—51149	3.00	385	0.53		0.63[1]	0.76	0.53[1]			0.61	4.18	5.73
3707.458	20641—47606	2.56	229	−1.02							−1.02	2.55	4.10
3707.578	31307—58272	3.88	978	0.14							0.14	3.71	5.26
3707.823	704—27666	0.09	5			−1.53[1]	−1.75	−1.95[3]		−1.71	−1.78	1.79	3.34
3707.922	17550—44512	2.18	76	0.64			0.79				0.72	4.29	5.84
3708.602	19788—46745	2.45	178	−1.19			−0.70						

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe I*—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gAλ
				Log *gf*									
3709.248	7377 – 34329	0.91	21		−0.20	−0.26[3]	0.05	−0.28[1]		−0.29	−0.30	3.27	4.82
3709.535	24119 – 51069	2.99	435	−0.17	0.02						−0.08	3.49	5.04
3709.665	20641 – 47590	2.56	225	−0.63							−0.63	2.94	4.49
3711.224	20875 – 47812	2.59	228	−0.19	−0.22	0.03[1]	0.19				−0.13	3.44	4.99
3711.411	24772 – 51708	3.07	494	−0.07	−0.18		0.03				−0.07	3.50	5.05
3715.914	18378 – 45282	2.28	124	−0.49	−0.59	−0.39[1]	−0.38				−0.46	3.11	4.65
3716.442	23711 – 50611	2.94	388	0.58	0.30	0.58[2]	0.65				0.54	4.11	5.65
3717.837	17550 – 54449	2.18	706	−1.64							−1.64	1.93	3.47
3718.409	22249 – 49135	2.76	292	−0.13	−0.14	0.02[1]	0.20				−0.01	3.56	5.10
3719.937	0 – 26875	0.00	5			−0.36[2]	−0.21	−0.34[2]		−0.31	−0.32	3.25	4.79
3721.189	24336 – 51201	3.02	491				−0.48				−0.48	3.09	4.63
3721.278	26875 – 53739	3.33	705	0.03			0.13				0.08	3.65	5.19
3721.396	20038 – 46902	2.48	131	−0.72	−0.68		−0.40				−0.60	2.97	4.51
3721.510	24507 – 51370	3.04	389	−0.03			0.40						
3721.606	24339 – 51201	3.02	437	−0.17	−0.06		−0.04				−0.09	3.48	5.02
3722.026	22249 – 49109	2.76	291	−0.46			0.00						
3722.564	704 – 27560	0.09	5		−0.96	−1.08[3]	−0.78	−1.05[4]		−1.05	−1.02	2.55	4.09
3724.380	18378 – 45221	2.28	124	0.27	0.05	0.21[2]	0.35				0.22	3.79	5.33
3725.498	24575 – 51409	3.05	534	−0.56	−0.56	−0.55[1]	0.56				−0.56	3.01	4.55
3726.927	24507 – 51331	3.04	385	0.53	0.29	0.26[1]	0.06	0.50[1]			0.40	3.97	5.51
3727.096	23711 – 50534	2.94	387	0.36	0.14		0.59				0.25	3.82	5.36
3727.621	7728 – 34547	0.96	21			−0.25[3]	0.16	−0.38[2]		−0.28	−0.30	3.27	4.81
3727.809	24181 – 50999	3.00	386				0.41	0.24[1]			0.32	3.89	5.43
3728.670	20641 – 47453	2.56	227	−0.68	−0.73	−0.60[1]	−0.44				−0.61	2.96	4.50
3730.388	24575 – 51374	3.05	533	0.31	0.29	0.43[1]	0.34				0.34	3.91	5.45
3730.945	21039 – 47834	2.61	228	−0.36	−0.34	−0.22[1]	−0.24				−0.29	3.28	4.82
3731.376	21039 – 47831	2.61	225	−0.47	−0.38	−0.33[1]	0.20				−0.39	3.18	4.72
3732.399	17727 – 44512	2.20	76	0.31	0.28	0.30[2]	0.42				0.32	3.89	5.43
3733.319	888 – 27666	0.11	5		−1.08	−1.22[3]	−1.18	−1.16[2]		−1.16	−1.18	2.39	3.93
3734.866	6928 – 33695	0.86	21			0.55[2]	0.65	0.56[2]		0.58	0.57	4.14	5.68
3735.325	23711 – 50475	2.94	388	0.79			0.43				0.61	4.18	5.72
3737.133	416 – 27167	0.05	5			−0.49[3]	−0.67	−0.46[2]		−0.43	−0.50	3.07	4.61
3738.308	26351 – 53094	3.27	609	0.79	0.83	0.82[3]	0.83				0.82	4.39	5.93
3739.120	17927 – 44664	2.22	75	−1.36	−1.41						−1.38	2.19	3.73
3739.317	17550 – 44285	2.18	74	−1.48			−1.36				−1.42	2.15	3.69
3740.061	27395 – 54125	3.40	707	−0.45	−0.50		−0.70				−0.55	3.02	4.56
3740.247	26225 – 52954	3.25	667	0.08		0.26[1]	0.27				0.20	3.77	5.31
3741.486	27666 – 54386	3.43	701	−1.13	−0.97						−1.05	2.52	4.05
3742.151	31805 – 58520	3.94	978	−0.53							−0.53	3.04	4.57
3742.621	23711 – 50423	2.94	387	0.37		0.27[1]	0.07				0.24	3.81	5.34
3742.937	27666 – 54376	3.43	704	−0.76			−1.41						
3743.364	7986 – 34692	0.99	21	−0.35	−0.27	−0.36[3]	−0.24			−0.43	−0.34	3.23	4.76
3743.781	21999 – 48703	2.73	290				−1.16				−1.16	2.41	3.94
3744.105	24507 – 51208	3.04	385	0.19		0.31[1]		0.12[1]			0.21	3.78	5.31
3745.562	704 – 27395	0.09	5			−0.62[2]	−0.72	−0.61[2]		−0.59	−0.63	2.94	4.47
3745.901	978 – 27666	0.12	5		−1.09	−1.15[2]	−1.17	−1.10[2]		−1.09	−1.12	2.45	3.98
3746.486	17727 – 44411	2.20	73	−1.28	−1.15		−1.06				−1.16	2.41	3.94
3746.931	24181 – 50862	3.00	386	0.29	0.15	0.41[1]	−0.38	0.35[1]			0.30	3.87	5.40
3748.264	888 – 27560	0.11	5		−0.87	−0.87[2]	−0.93	−0.86[2]		−0.81	−0.87	2.70	4.23
3748.492	28820 – 55490	3.57	805				−0.65				−0.65	2.92	4.45
3748.969	23711 – 50378	2.94	386	0.47	0.02		0.45	0.37[1]			0.43	4.00	5.53
3749.488	7377 – 34040	0.91	21			0.43[2]	0.41	0.50[2]		0.43	0.44	4.01	5.54
3750.677	21039 – 47693	2.61	225	−1.26	−0.82						−0.82	2.75	4.28
3751.059	26624 – 53275	3.30	667				−0.62				−0.62	2.95	4.48
3751.820	21716 – 48362	2.69	287	−1.03	−0.98		−0.30				−1.00	2.57	4.10
3752.420	24507 – 51149	3.04	385	−0.62	−0.70		−0.52	−0.52[1]			−0.59	2.98	4.51
3753.154	19390 – 46027	2.40	177	−1.45	−1.39		−1.60				−1.48	2.09	3.62
3753.613	17550 – 44184	2.18	73	−0.09	−0.20	0.02[2]	−0.11				−0.07	3.50	5.03
3754.506	24181 – 50808	3.00	386	−0.41		−0.30[1]	−0.49	−0.49[1]			−0.42	3.15	4.68
3756.069	17550 – 44166	2.18	74	−1.17	−1.28	−1.03[1]	−0.90				−1.10	2.47	4.00

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gAλ
				Log *gf*									
3756.939	28820—55430	3.57	805	0.37	0.56	0.63[1]	0.42				0.50	4.07	5.60
3757.459	26624—53230	3.30	668	−0.18	−0.20		−0.36				−0.25	3.32	4.85
3758.235	7728—34329	0.96	21			0.36[2]	0.27	0.28[3]		0.26	0.31	3.88	5.41
3759.155	29313—55907	3.63	855	−0.43	−0.31		−0.82				−0.37	3.21	4.73
3759.597	27666—54258	3.43	701	−2.22							−2.22	1.36	2.88
3760.052	19390—45978	2.40	177	0.14	0.08	0.18[4]	0.19				0.15	3.73	5.25
3760.533	17927—44512	2.22	76	−0.36	−0.42	−0.61[2]	−0.34				−0.47	3.11	4.63
3761.069	27167—53748	3.37	706	−1.40							−1.40	2.18	3.70
3761.410	20875—47453	2.59	227	−0.90	−0.95	−1.06[1]	−0.88				−0.95	2.63	4.15
3762.205	27167—53739	3.37	705	−0.54			−0.84				−0.69	2.89	4.41
3763.791	7986—34547	0.99	21			0.12[5]	0.17	0.10[3]		0.07	0.11	3.69	5.21
3765.541	26106—52655	3.24	608	1.19	1.28	0.98[2]	0.99				1.08	4.66	6.18
3765.700	26351—52899	3.27	608				−0.52				−0.52	3.06	4.58
3766.092	20875—47420	2.59	226	−1.21	−1.02		−1.37				−1.20	2.38	3.90
3766.665	24507—51048	3.04	386	−0.38	−0.65		−0.44	−0.32[1]			−0.45	3.13	4.65
3767.194	8155—34692	1.01	21			−0.01[4]	0.03	−0.04[3]		−0.08	−0.02	3.56	5.08
3768.030	17927—44459	2.22	73	−0.92	−0.94						−0.93	2.65	4.17
3768.230	22947—49477	2.84	368	−1.35							−1.35	2.23	3.75
3769.995	24181—50699	3.00	387		−0.41	−0.46[1]	−0.34				−0.40	3.18	4.69
3770.305	21716—48231	2.69	287		−0.51		−0.53				−0.52	3.06	4.57
3770.405	19621—46136	2.43	177				−1.40				−1.40	2.18	3.69
3771.473	26106—52613	3.24	607	−0.99							−0.99	2.59	4.10
3773.364	24575—51069	3.05	531	−1.14							−1.14	2.44	3.95
3773.699	24507—50999	3.04	386	−0.46		−0.85[1]	−0.57	−0.60[1]			−0.62	2.96	4.47
3774.827	17927—44411	2.22	73	−0.66	−0.60	−0.81[2]	−0.73				−0.72	2.86	4.37
3775.860	21999—48476	2.73	287	−1.26	−1.10		−1.54				−1.18	2.40	3.91
3776.455	17550—44023	2.18	74	−0.66	−0.68	−0.83[4]	−0.80				−0.76	2.82	4.33
3777.061	24119—50587	2.99	432	−0.78	−0.64						−0.71	2.87	4.38
3777.452	20641—47107	2.56	223	−0.71	−0.75	−0.87[1]	−0.90				−0.81	2.77	4.28
3778.320	22838—49298	2.83	367	−0.85	−0.76		−0.91				−0.84	2.74	4.25
3778.509	26225—52683	3.25	664	−0.09	−0.09	−0.17[4]	−0.14				−0.12	3.46	4.97
3778.699	17727—44184	2.20	73	−1.21	−1.14		−1.30				−1.22	2.36	3.87
3779.213	22249—48703	2.76	290	−1.52							−1.52	2.06	3.57
3779.444	26406—52858	3.27	665			−0.28[1]					−0.28	3.30	4.81
3781.188	17727—44166	2.20	74			−1.49[1]	−1.31				−1.40	2.18	3.69
3781.938	29357—55791	3.64	917	−0.59	−0.25		−0.23				−0.36	3.22	4.73
3782.450	24181—50611	3.00	388	−0.70			−0.61				−0.66	2.92	4.43
3782.608	24772—51201	3.07	491	−0.92	−0.66		−1.01				−0.86	2.72	4.23
3785.706	26106—52514	3.24	608	−0.64	−0.49		−0.68				−0.60	2.98	4.49
3785.950	19621—46027	2.43	177	−0.08	−0.07	−0.15[2]	−0.15				−0.12	3.46	4.97
3786.176	22838—49243	2.83	367	−0.06	0.03		−0.22				−0.08	3.50	5.01
3786.678	8155—34556	1.01	22	−1.53	−1.65	−1.61[3]	−1.61				−1.60	1.98	3.49
3787.164	29357—55754	3.64	916	−0.33	−0.14		−0.39				−0.29	3.29	4.80
3787.883	8155—34547	1.01	21		−0.36	−0.49[2]	−0.44	−0.44[1]		−0.56	−0.47	3.11	4.62
3789.178	21999—48383	2.73	289	−0.43	−0.39	−0.56[1]	−0.59				−0.49	3.09	4.60
3789.570	21039—47420	2.61	226	−1.80			−0.82						
3789.808	27167—53546	3.37	702	−0.54	−0.63						−0.58	3.00	4.51
3790.094	7986—34363	0.99	22	−1.13	−1.21	−1.17[4]	−1.16			−1.29	−1.18	2.40	3.91
3790.656	24507—50880	3.04	387	−0.99			−0.82				−0.90	2.68	4.19
3790.756	17550—43923	2.18	73	−1.10	−1.11		−1.16				−1.12	2.46	3.97
3791.504	20641—47008	2.56	223	−1.16	−1.02		−0.89				−1.02	2.56	4.07
3791.730	27560—53925	3.42	703	−0.89							−0.89	2.69	4.20
3792.156	21999—48362	2.73	287	−0.55	−0.48	−0.67[1]	−0.47				−0.54	3.04	4.55
3792.833	17927—44285	2.22	74	−1.55	−1.39		−1.46				−1.47	2.11	3.62
3793.360	24507—50861	3.04	388	−0.89			−0.86				−0.88	2.70	4.21
3793.478	24181—50534	3.00	387	−0.36	−0.42		−0.37				−0.38	3.20	4.71
3793.872	22947—49298	2.84	367	−0.58	−0.46		−0.55				−0.53	3.05	4.56
3794.340	19788—46136	2.45	177	−0.24	−0.18	−0.17[3]	−0.16				−0.18	3.40	4.91
3795.004	7986—34329	0.99	21		−0.39	−0.34[3]	−0.45			−0.43[1]	−0.38	3.20	4.71
3796.000	19390—45726	2.40	176	−2.17							−2.17	1.41	2.92

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfA	Log gA/λ
				Log *gf*									
3797.517	26106—52431	3.24	607	0.82	0.94	0.65[5]	0.63				0.74	4.32	5.83
3797.950	20875—47197	2.59	222	−1.10	−1.01		−1.03				−1.05	2.53	4.04
3798.513	7377—33695	0.91	21		−0.72	−0.70[9]	−0.59			−0.76	−0.70	2.88	4.39
3799.550	7728—34040	0.96	21		−0.47	−0.43[9]	−0.50			−0.57	−0.47	3.11	4.61
3801.682	22838—49135	2.83	367	−0.20	−0.08	−0.11[1]	−0.27				−0.16	3.42	4.92
3801.804	22947—49243	2.84	367	−0.51			−0.60				−0.56	3.02	4.52
3801.975	26875—53169	3.33	704	−0.35	−0.65		−0.34				−0.45	3.13	4.63
3802.283	26624—52916	3.30	666	−0.50	−0.34		−0.56				−0.47	3.11	4.61
3803.220	18378—44664	2.28	122	−2.62	−1.60						−2.62	0.96	2.46
3804.013	26875—53155	3.33	702	−0.38	−0.58	−0.50[1]	−0.53				−0.50	3.08	4.58
3805.345	26628—52899	3.30	608	0.99	1.10	0.91[2]	0.91				0.96	4.54	6.04
3806.203	27543—53808	3.41	731	−0.14			−0.10				−0.12	3.46	4.96
3806.699	26351—52613	3.27	607	0.77	0.83	0.61[3]	0.41				0.65	4.23	5.73
3807.539	17927—44184	2.22	73	−0.23	−0.25	−0.47[2]	−0.22				−0.33	3.25	4.75
3808.286	24336—50587	3.02	489	−1.07	−0.76		−1.19				−0.92	2.66	4.16
3808.731	20641—46889	2.56	222	−0.31	−0.26	−0.29[1]	−0.30				−0.29	3.29	4.79
3809.043	23052—49298	2.86	367		−0.85		−1.13				−0.99	2.59	4.09
3810.759	26624—52858	3.30	665	−0.14	−0.06	−0.20[1]	−0.15				−0.14	3.44	4.94
3811.050	20875—47107	2.59	223	−1.72			−1.13						
3811.892	22249—48476	2.76	287	−0.54	−0.38	−0.62[1]	−0.58				−0.53	3.05	4.55
3812.966	7728—33947	0.96	22		−0.61	−0.61[9]	−0.57			−0.59	−0.60	2.98	4.48
3813.059	20875—47093	2.59	222				−0.07				−0.07	3.51	5.01
3813.638	21716—47930	2.69	283	−0.76	−0.66		−0.92				−0.78	2.80	4.30
3813.891	29313—55526	3.63	854	−0.22	0.03						−0.10	3.48	4.98
3814.525	8155—34363	1.01	22	−1.74	−1.84	−1.77[2]	−1.75				−1.77	1.81	3.31
3814.785	27543—53749	3.41		−0.48	−0.42						−0.45	3.13	4.63
3815.843	11976—38175	1.48	45			0.60[3]	0.60	0.65[3]		0.49	0.60	4.18	5.68
3816.342	17727—43923	2.20	73	−0.47	−0.53		−0.58				−0.53	3.05	4.55
3816.908	24507—50699	3.04	387	−0.22	−0.66								
3817.650	26875—53061	3.33	701	−0.24	−0.41	−0.29[1]	0.03				−0.31	3.27	4.77
3819.497	27395—53569	3.40	703	−0.45	−0.41						−0.43	3.15	4.65
3820.427	6928—33096	0.86	20			0.41[3]	0.41	0.41[2]			0.41	3.99	5.49
3821.181	26351—52514	3.27	608	0.95	0.97	0.73[1]	0.82				0.87	4.45	5.95
3821.836	21039—47197	2.61	222	−0.41	−0.22	−0.21[1]	−0.34				−0.30	3.28	4.78
3824.076	20875—47017	2.59	224	−0.81	−0.60		−0.17				−0.70	2.88	4.38
3824.306	26628—52769	3.30	607	1.52			0.42						
3824.446	0—26140	0.00	4		−1.26	−1.15[3]	−1.19	−1.14[2]			−1.17	2.41	3.91
3825.404	18378—44512	2.28	123	−1.50	−0.86		−1.49						
3825.883	7377—33507	0.91	20			0.24[3]	0.35	0.24[1]			0.26	3.84	5.34
3826.836	21999—48123	2.73	283	−1.00	−0.68		−0.76				−0.81	2.77	4.27
3827.575	21716—47835	2.69	284				−0.70				−0.70	2.88	4.38
3827.826	12561—38678	1.56	45			0.53[3]	0.60	0.56[3]			0.55	4.13	5.63
3828.510	22249—48362	2.76	287	−1.19	−0.79		−1.26						
3829.125	29799—55907	3.69	948	−0.64	−0.58		−0.79				−0.67	2.91	4.40
3829.458	26406—52512	3.27	663	−0.48	−0.29		0.39				−0.38	3.20	4.69
3829.764	20641—46745	2.56	221	−1.31	−1.26		−0.36				−1.28	2.30	3.79
3830.761	21039—47136	2.61	224	−0.97			−0.40						
3830.864	21716—47812	2.69	284	−0.80		−0.59[1]	−0.72				−0.70	2.88	4.37
3833.310	20641—46721	2.56	221	−0.19	−0.14	−0.14[5]	−0.14				−0.15	3.43	4.92
3834.224	7728—33802	0.96	20			−0.02[3]	0.04	0.06[3]		−0.09	0.01	3.59	5.08
3836.332	26624—52683	3.30	664	0.25	0.35	0.28[1]	0.30				0.30	3.88	5.37
3837.137	21039—47093	2.61	222	−0.89	−0.89	−0.90[1]	−0.85				−0.88	2.70	4.19
3839.258	24575—50614	3.05	529	0.40	0.52	0.30[5]	0.57				0.42	4.00	5.49
3839.630	31937—57974	3.96	995	−0.57	0.32								
3840.440	7986—34017	0.99	20			−0.20[3]	−0.15	−0.15[1]		−0.25	−0.19	3.39	4.88
3841.050	12969—38996	1.61	45			0.45[3]	0.68	0.48[1]		0.33	0.47	4.05	5.54
3842.901	20875—46889	2.59	222	−1.30							−1.30	2.28	3.77
3842.975	20875—46889	2.59	221	−1.47			−1.12				−1.30	2.28	3.77
3843.260	24575—50587	3.05	528	0.47	0.67	0.49[3]	0.54				0.53	4.11	5.60
3845.171	19552—45552	2.42	124	−0.63	−0.48	−0.55[1]	−0.58				−0.56	3.02	4.51

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe I*—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	log gfλ	log gA/λ
				log *gf*									
3845.692	28605–54600	3.55	771	−0.75	−0.67		−0.63				−0.68	2.90	4.39
3846.001	27167–53161	3.37	703	−0.74			−1.01				−0.88	2.71	4.19
3846.412	28820–54811	3.57	804	0.00	0.30		0.17				0.16	3.75	5.23
3846.802	26225–52213	3.25	664	0.58		0.59[2]	0.60				0.59	4.18	5.66
3848.299	21039–47017	2.61	224	−1.23	−1.23						−1.23	2.36	3.84
3849.969	8155–34122	1.01	20		−0.52	−0.44[2]	−0.43	−0.29[1]		−0.59	−0.45	3.14	4.62
3850.819	7986–33947	0.99	22	−1.20	−1.18	−1.24[2]	−1.26				−1.22	2.37	3.85
3852.575	17550–43500	2.18	73	−0.44	−0.47	−0.58[2]	−0.76				−0.57	3.02	4.50
3853.462	23784–49727	2.95	429	−1.18	−0.85		−0.91				−0.98	2.61	4.09
3854.375	25900–51837	3.21	567	−0.47	−0.68	−0.51[1]	−0.37				−0.51	3.08	4.56
3855.329	21999–47930	2.73	283	−1.24	−1.10		−1.56				−1.17	2.42	3.90
3855.846	26140–52067	3.24	567	−0.56	−0.78		−0.59				−0.64	2.95	4.43
3856.373	416–26340	0.05	4		−1.25	−1.13[3]	−1.13	−1.13[3]		−1.13	−1.14	2.45	3.93
3858.474	26140–52050	3.24	565	−0.38	−0.78						−0.58	3.01	4.48
3859.214	19390–45295	2.40	175	0.01	0.09	0.07[2]	0.08				0.06	3.65	5.12
3859.913	0–25900	0.00	4			−0.54[3]	−0.63	−0.56[2]		−0.62	−0.57	3.02	4.49
3861.341	21716–47606	2.69	283	−0.63	−0.35	−0.52[1]	−0.69				−0.55	3.04	4.51
3861.600	26624–52512	3.30	663	−1.25	−0.64		−0.76				−0.70	2.89	4.36
3863.745	21716–47590	2.69	280	−0.64	−0.54	−0.70[1]	−0.73				−0.65	2.94	4.41
3864.307	20875–46745	2.59	221	−1.98							−1.98	1.61	3.08
3865.526	8155–34017	1.01	20			−0.56[2]	−0.60				−0.57	3.02	4.49
3867.218	24336–50187	3.02	488	0.29	0.39	0.12[2]	0.20				0.22	3.81	5.28
3867.925	20875–46721	2.59	221	−1.05	−0.99	−1.21[1]	−1.05				−1.08	2.51	3.98
3868.243	23784–49628	2.95	430	−1.43	−0.93						−1.43	2.16	3.63
3869.561	21999–47835	2.73	284	−0.49	−0.30	−0.52[1]	−0.66				−0.49	3.10	4.57
3871.751	23784–49604	2.95	429	−0.19	0.05	−0.15[1]	−0.21				−0.12	3.47	4.94
3872.503	7986–33802	0.99	20		−0.62	−0.54[3]	−0.54	−0.05[1]		−0.65	−0.57	3.02	4.49
3872.923	21999–47812	2.73	284	−1.03	−0.81		−0.82				−0.89	2.70	4.17
3873.762	19621–45428	2.43	175	−0.04	−0.04	−0.15[2]	−0.02				−0.08	3.51	4.98
3874.053	18378–44184	2.28	120	−1.76			−1.00						
3876.041	8155–33947	1.01	22	−2.32	−2.37	−2.20[1]	−2.34				−2.31	1.28	2.75
3876.670	18378–44166	2.28	121	−2.16			−2.10				−2.13	1.46	2.93
3878.021	7728–33507	0.96	20		−0.65	−0.50[3]	−0.51			−0.64	−0.55	3.04	4.51
3878.574	704–26479	0.09	4			−1.19[3]	−1.18	−1.13[2]		−1.22	−1.18	2.41	3.88
3878.676	19788–45563	2.45	175				−1.45				−1.45	2.14	3.61
3878.740	26406–52181	3.27	664				−0.80				−0.80	2.79	4.26
3883.282	26225–51969	3.25	663	−0.08	0.11	0.02[1]	−0.11				−0.02	3.57	5.04
3884.361	21716–47453	2.69	282	−0.54	−0.32	−0.37[1]	−0.37				−0.40	3.19	4.66
3885.154	24119–49851	2.99	430	−0.78	−0.81		−0.93				−0.84	2.75	4.22
3885.512	19552–45282	2.42	124	−0.41	−0.34	−0.35[2]	−0.46				−0.38	3.21	4.68
3886.284	416–26140	0.05	4		−1.14	−0.90[3]	−0.91	−0.91[2]		−0.93	−0.94	2.65	4.12
3887.050	7377–33096	0.91	20	−0.97	−0.84	−0.72[2]	−0.71			−0.90	−0.81	2.78	4.25
3888.516	12969–38678	1.61	45	−0.11	−0.13	−0.05[2]	−0.01	0.02[1]		−0.13	−0.07	3.52	4.98
3888.825	24336–50043	3.02	488	0.00	0.03		−0.20				−0.06	3.53	4.99
3889.284	21716–47420	2.69	280	−1.66							−1.66	1.93	3.39
3889.931	26340–52040	3.26	564	−1.21			0.37						
3890.390	26140–51837	3.24	567	−1.00	−0.85		−0.87				−0.91	2.68	4.14
3890.844	21999–47693	2.73	280	−0.61	−0.45	−0.62[1]	−0.62				−0.58	3.01	4.47
3891.928	27543–53230	3.41	733	−0.04	0.23	−0.02[2]	−0.05				0.03	3.62	5.08
3892.302	28605–54289	3.55		−1.59							−1.59	2.00	3.46
3892.894	22249–47930	2.76	283	−1.26	−1.07		−1.45				−1.26	2.33	3.79
3892.980	26340–52020	3.26	567	−0.93							−0.93	2.66	4.12
3893.316	22838–48516	2.83	364				−0.76				−0.76	2.83	4.29
3893.393	23784–49461	2.95	430	0.27	0.31	0.20[3]	0.14				0.22	3.81	5.27
3893.914	19621–45295	2.43	175	−0.96			−0.89				−0.92	2.67	4.13
3894.005	26624–52297	3.30	663	−0.20	−0.06		−0.31				−0.19	3.40	4.86
3894.490	25900–51570	3.21	566	−1.83			−0.72						
3895.450	26550–52214	3.29	565				−0.70				−0.70	2.89	4.35
3895.658	888–26550	0.11	4		−1.55	−1.47[3]	−1.50	−1.38[2]		−1.40	−1.44	2.15	3.61
3897.452	23784–49434	2.95	429	−0.51	−0.35		−0.71				−0.52	3.07	4.53

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfA	Log gA/λ
				Log gf									
3897.896	21716—47363	2.69	280	0.22	0.03	0.05[1]					0.10	3.69	5.15
3898.011	8155—33802	1.01	20	−1.27	−1.21	−1.52[2]	−1.58				−1.42	2.17	3.63
3899.037	19788—45428	2.45	175	−0.97	−0.96	−0.90[1]	−1.02				−0.96	2.63	4.09
3899.709	704—26340	0.09	4		−1.50	−1.30[8]	−1.37	−1.29[8]		−1.32	−1.32	2.27	3.73
3900.519	26140—51771	3.24	565	−0.30	−0.31	−0.25[3]	−0.29				−0.29	3.30	4.76
3902.948	12561—38175	1.56	45	−0.14	−0.06	0.12[3]	−0.04			−0.05	0.01	3.60	5.06
3903.901	24119—49727	2.99	429	0.03	0.11	−0.04[2]	−0.32				−0.05	3.54	5.00
3906.481	888—26479	0.11	4	−1.91	−1.96	−1.89[6]	−2.06	−1.88[3]		−1.99	−1.92	1.67	3.13
3906.748	26624—52213	3.30	664	−0.30	−0.21		−0.29				−0.27	3.32	4.78
3907.464	22249—47834	2.76	284	−0.98	−0.93		−0.84				−0.92	2.67	4.13
3907.937	22249—47831	2.76	280	−0.35	−0.26	−0.34[1]	−0.29				−0.31	3.28	4.74
3908.691	19757—45334	2.45	153	−2.68	−1.47						−1.47	2.12	3.58
3909.664	26479—52050	3.28	565	−0.48	−0.57		−0.41				−0.49	3.10	4.56
3909.830	22947—48516	2.84	364	−0.49	−0.37	−0.40[1]	−0.57				−0.46	3.13	4.59
3910.846	22249—47812	2.76	284	−0.70	−0.64	−0.56[1]	−0.61				−0.63	2.96	4.42
3911.005	25900—51462	3.21	562	−0.88			−0.95				−0.92	2.67	4.13
3911.699	26624—52181	3.30	664	−1.59			−1.44				−1.52	2.07	3.53
3913.634	18378—43923	2.28	120	−0.88	−0.84	−0.78[1]	−0.85				−0.84	2.75	4.21
3914.273	26479—52020	3.28	567	−0.70	−0.80		−0.73				−0.74	2.85	4.31
3916.733	26106—51630	3.24	606	0.08	0.26	0.14[2]	0.30				0.18	3.77	5.23
3917.183	7986—33507	0.99	20	−1.58	−1.72	−1.61[3]	−1.67				−1.63	1.96	3.42
3918.317	20038—45552	2.48	124	−0.56			−0.57				−0.56	3.03	4.48
3918.418	22947—48460	2.84	364	−0.25			−0.38				−0.32	3.27	4.72
3918.644	24339—49851	3.02	430	0.14	0.24	0.14[2]	−0.02				0.13	3.72	5.17
3919.068	24119—49628	2.99	430	−0.47	−0.23	−0.46[1]	−0.44				−0.40	3.19	4.64
3920.260	978—26479	0.12	4			−1.49[3]	−1.58	−1.44[3]		−1.53	−1.48	2.11	3.56
3920.645	19562—45061	2.42	153				−1.85				−1.85	1.74	3.19
3920.839	26340—51837	3.26	567	−0.91	−0.77		−0.73				−0.80	2.79	4.24
3921.270	20641—46136	2.56	220	−1.78			−1.73				−1.76	1.83	3.28
3922.100	20020—45509	2.48	153	−2.30							−2.30	1.29	2.74
3922.913	416—25900	0.05	4		−1.59	−1.41[8]	−1.51	−1.41[3]		−1.48	−1.44	2.15	3.60
3925.201	26550—52020	3.29	567	−0.74	−0.73		−0.76				−0.74	2.85	4.30
3925.646	22838—48305	2.83	364	−0.22	−0.24		−0.27				−0.24	3.35	4.80
3925.946	23052—48516	2.86	364	−0.10	−0.03	−0.17[1]	−0.30				−0.15	3.44	4.89
3926.001	26140—51604	3.24	562				−0.43				−0.43	3.16	4.61
3927.922	888—26340	0.11	4			−1.29[8]	−1.36	−1.28[8]		−1.34	−1.30	2.29	3.74
3929.114	22249—47693	2.76	280		−1.10		−1.05				−1.08	2.51	3.96
3929.208	26225—51668	3.25	659		−0.32		−0.69				−0.50	3.09	4.54
3930.298	704—26140	0.09	4		−1.49	−1.26[8]	−1.35	−1.29[8]		−1.30	−1.31	2.28	3.73
3931.122	26340—51771	3.26	565	−0.40	−0.42	−0.52[1]	−0.43				−0.44	3.15	4.60
3932.629	26406—51828	3.27	652	−0.03	−0.04	−0.47[1]	−0.46						
3933.606	24772—50187	3.07	488	−0.37	−0.11	−0.42[1]	−0.43				−0.33	3.26	4.71
3935.306	22947—48351	2.84	362	−0.85	−0.85	−1.01[1]	−0.81				−0.88	2.71	4.16
3935.814	22838—48239	2.83	362	−0.11	−0.07	−0.14[2]	−0.16				−0.12	3.48	4.92
3936.772	25900—51294	3.21	564	−1.91							−1.91	1.69	3.13
3937.331	21716—47107	2.69	278	−0.60	−0.58	−0.63[1]	−0.64				−0.61	2.99	4.43
3940.044	27543—52916	3.41	731	−1.27	−0.81		−1.14						
3940.880	7728—33096	0.96	20	−1.99	−2.12	−1.99[2]	−2.08				−2.03	1.57	3.01
3941.283	26340—51705	3.26	562	−0.42	−0.65	−0.52[1]	−0.49				−0.52	3.08	4.52
3942.442	22947—48305	2.84	364	−0.27	−0.15	−0.19[3]	−0.41				−0.24	3.36	4.80
3943.341	17727—43079	2.20	72	−1.40	−1.41	−1.34[1]	−1.29				−1.36	2.24	3.68
3944.748	22947—48290	2.84	361	−1.26			−1.11				−1.18	2.42	3.86
3944.892	24119—49461	2.99	430	−0.61	−0.50	−0.66[1]	−0.69				−0.62	2.98	4.42
3945.119	22249—47590	2.76	280	−0.64	−0.60	−0.80[3]	−0.71				−0.69	2.91	4.35
3947.002	25900—51229	3.21	561	−0.26	−0.36	−0.24[1]	−0.45				−0.33	3.27	4.71
3947.391	19351—44677	2.40	153	−2.30			−1.85						
3947.533	22838—48163	2.83	361	−0.38	−0.24	−0.37[1]	−0.40				−0.35	3.25	4.68
3948.105	26140—51462	3.24	562	0.09	−0.06	0.13[1]	0.00				0.04	3.64	5.07
3948.778	26351—51668	3.27	604	0.38	0.49	0.38[2]	0.29				0.38	3.98	5.41
3949.156	27543—52858	3.41	730	−0.91			−0.78				−0.84	2.76	4.19

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
3949.956	17550–42860	2.18	72	−0.43	−0.40	−0.50[2]	−0.42				−0.45	3.15	4.58
3951.164	26406–51708	3.27	661	0.26	0.31	0.31[2]	0.25				0.29	3.89	5.32
3951.638	23052–48351	2.86		−1.92							−1.92	1.68	3.11
3952.604	21716–47008	2.69	278	−0.30	−0.24	−0.21[2]	−0.32				−0.26	3.34	4.77
3952.702	22947–48239	2.84	362				−0.57				−0.57	3.03	4.46
3953.155	24339–49628	3.02	430	−0.34	−0.25	−0.38[1]	−0.44				−0.35	3.25	4.68
3953.512	28605–53892	3.55	770	−1.48							−1.48	2.12	3.55
3953.861	22838–48123	2.83	362	−1.17	−1.04	−1.23[1]	−1.06				−1.12	2.48	3.91
3954.715	26351–51630	3.27	606	−1.53	−0.85		−1.21						
3955.352	26479–51755	3.28	562	−0.37	−0.75	−0.41[1]	−0.49				−0.50	3.10	4.53
3955.956	24772–50043	3.07	488	−0.66	−0.56	−0.68[1]	−0.68				−0.64	2.96	4.39
3956.457	26106–51374	3.24	604	0.41	0.49	0.41[1]	0.54				0.46	4.06	5.49
3956.680	21716–46982	2.69	278	0.51	0.41	0.33[1]	0.31				0.39	3.99	5.42
3957.027	26340–51604	3.26	562	−0.08	−0.26		0.00				−0.11	3.49	4.92
3957.620	26479–51740	3.28	564	−1.47	−1.03		−1.27				−1.37	2.23	3.66
3960.284	29357–54600	3.64	913	−0.55	−0.58	−0.61[2]	−0.69				−0.61	2.99	4.42
3961.147	23052–48290	2.86	361	−0.89	−0.90	−1.00[2]	−0.83				−0.92	2.68	4.11
3962.353	26340–51570	3.26	566	−0.99	−1.04	−1.01[1]	−0.89				−0.98	2.62	4.05
3963.108	26479–51705	3.28	562	−0.08	−0.29	−0.09[1]	−0.15				−0.15	3.45	4.88
3963.438	26406–51630	3.27	654	−1.50							−1.50	2.10	3.53
3964.517	22947–48163	2.84	361	−0.71	−0.68	−0.80[1]	−0.65				−0.71	2.89	4.32
3965.511	26140–51351	3.24	565	−0.72	−0.83		−0.78				−0.78	2.82	4.25
3966.064	12969–38175	1.61	45	−1.02	−1.16	−0.99[2]	−1.23				−1.08	2.52	3.95
3966.532	26624–51828	3.30	652				−0.86				−0.86	2.74	4.17
3966.630	25900–51103	3.21	562		0.13	0.34[2]	0.34				0.29	3.89	5.32
3966.824	26624–51826	3.30	659				0.15				0.15	3.75	5.18
3967.423	26628–51826	3.30	604	0.25	0.36	0.34[2]	−0.42				0.32	3.92	5.35
3967.964	26140–51335	3.24	561	−0.23	−0.38	−0.16[1]	−1.03				−0.26	3.34	4.77
3969.260	11976–37163	1.48	43	−0.13	−0.17	0.02[2]	0.08	0.03[1]		0.00	−0.02	3.58	5.01
3969.628	26225–51409	3.25	657		−0.28		−0.31				−0.30	3.30	4.73
3970.391	24772–49951	3.07	488	−0.26		−0.26[1]	−0.28				−0.26	3.34	4.77
3971.325	21716–46889	2.69	277	−0.14		−0.13[2]	−0.14				−0.14	3.46	4.89
3971.820	22249–47420	2.76	281	−1.86			−1.94				−1.90	1.70	3.13
3972.918	28820–53983	3.57	803		−0.87		−1.36						
3973.655	28605–53763	3.55	769	−0.25	−0.29	−0.31[1]	−0.30				−0.29	3.31	4.74
3974.397	26140–51294	3.24	564	−1.11	−1.08		−0.71				−1.10	2.50	3.93
3974.764	17927–43079	2.22	72	−1.95			−1.86				−1.90	1.70	3.13
3975.210	19913–45061	2.47	153	−1.92			−1.92				−1.92	1.68	3.11
3975.842	31307–56452	3.88	977	−0.81	−0.81						−0.81	2.79	4.22
3976.390	24336–49477	3.02	487	−1.30			−1.42				−1.36	2.24	3.67
3976.615	27543–52683	3.41	729	0.06		−0.01[1]	0.00				0.02	3.62	5.05
3976.865	24339–49477	3.02	431	−0.51	−0.58		−0.79				−0.63	2.97	4.40
3977.744	17727–42860	2.20	72	−0.31	−0.35	−0.22[2]	−0.28				−0.28	3.32	4.75
3978.464	22838–47967	2.83	361		−1.20		−1.37				−1.28	2.32	3.74
3979.630	26340–51461	3.26	561	−1.11			−1.01				−1.06	2.54	3.96
3980.650	19562–44677	2.42	153	−2.43			−2.24				−2.34	1.26	2.68
3981.104	19552–44664	2.42	22	−2.06							−2.06	1.54	2.96
3981.774	21999–47107	2.73	278	−0.32	−0.28	−0.24[2]	−0.36				−0.29	3.31	4.73
3983.350*	24336–49433	3.02	485		−1.23	−1.47[1]	−1.85				−1.35	2.25	3.67
3983.959	21999–47093	2.73	277	0.05	−0.12	0.06[2]	−0.14				0.00	3.60	5.02
3984.930	26479–51567	3.28	561	−1.44		−1.55[1]					−1.50	2.10	3.52
3985.322	20641–45726	2.56	219			−1.85[1]					−1.85	1.75	3.17
3985.393	26624–51708	3.30	661		−0.36	−0.50[2]	−0.44				−0.45	3.15	4.57
3986.176	26225–51305	3.25	655	−0.13	−0.09	−0.21[2]	−0.09				−0.15	3.45	4.87
3989.006	28820–53882	3.57		−1.12							−1.12	2.48	3.90
3989.859	28605–53661	3.55	768	−0.43		−0.59[2]	−0.53				−0.54	3.06	4.48
3990.377	24575–49628	3.05	527	−0.64		−0.70[2]	−0.72				−0.69	2.91	4.33
3992.395	26628–51668	3.30	604	−1.63		−1.58[1]	−1.51				−1.57	2.03	3.45
3994.117	24575–49604	3.05	526	−0.58	−0.59	−0.71[2]	−0.73				−0.66	2.94	4.36
3995.199	26351–51374	3.27	604	−1.15	−0.89	−1.12[2]	−1.29				−1.11	2.49	3.91

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wave-length Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				———			Log *gf*	———					
3995.986	21999—47017	2.73	279	−0.58	−0.65	−0.66[2]	−0.78				−0.67	2.93	4.35
3996.261	24119—49135	2.99	561	−1.55		−1.78[1]					−1.78	1.82	3.24
3996.779	33507—58520	4.15	1074	−1.12		−0.61[1]					−0.61	2.99	4.41
3996.968	29799—54811	3.69	945	−0.25	−0.16	−0.22[2]	−0.21				−0.21	3.39	4.81
3997.395	21999—47008	2.73	278	0.45	0.36	0.38[3]	0.32				0.38	3.98	5.40
3998.055	21716—46721	2.69	276	−0.01	−0.12	−0.04[3]	−0.04				−0.05	3.55	4.97
4000.266	26340—51331	3.26	556	−0.83		−0.87[1]	−1.08				−0.98	2.62	4.04
4000.460	24119—49109	2.99	426	−0.66	−0.68	−0.80[2]	−0.78				−0.74	2.86	4.28
4001.663	17550—42533	2.18	72	−1.10	−1.12	−1.09[2]	−1.05				−1.09	2.51	3.93
4002.665	23245—48221	2.88	320	−1.84		−1.67[2]	−1.54				−1.68	1.92	3.34
4003.764	27543—52512	3.41	728	−0.59	−0.48	−0.51[3]	−0.55				−0.53	3.07	4.49
4004.832	26106—51069	3.24	601			−0.47[1]					−0.47	3.13	4.55
4004.976	24336—49298	3.02	486			−0.76[1]	−0.85				−0.80	2.80	4.22
4005.244	12561—37521	1.56	43	−0.11	−0.02	−0.07[3]	−0.10	−0.12[1]		−0.15	−0.09	3.51	4.93
4006.159	26340—51294	3.26	564			−1.56[1]					−1.56	2.04	3.46
4006.314	26351—51305	3.27	603		−0.15	−0.23[1]	−0.17				−0.18	3.42	4.84
4006.631	25092—50043	3.11	488		−0.39	−0.43[1]	−0.58				−0.44	3.16	4.58
4006.768	23270—48221	2.88	320		−0.97	−0.99[1]	−1.22				−1.06	2.54	3.96
4007.274	22249—47197	2.76	277	−0.44	−0.44	−0.45[2]	−0.46				−0.45	3.15	4.57
4009.715	17927—42860	2.22	72	−0.39	−0.42	−0.44[3]	−0.43				−0.43	3.17	4.58
4010.180	29372—54301	3.64	915	−1.42		−1.29[1]	−1.55				−1.42	2.18	3.59
4010.770	23111—48037	2.86	320	−2.03		−1.72[1]	−1.55						
4011.412	20641—45563	2.56	218	−1.40	−1.40	−1.54[1]	−1.50				−1.46	2.14	3.55
4011.710	19757—44677	2.45	153	−1.77		−1.85[1]	−1.91				−1.84	1.76	3.17
4012.160	26106—51023	3.24	601	−1.72		−1.61[1]	−1.59				−1.64	1.96	3.37
4013.641	25900—50808	3.21	557	−0.89	−0.98	−1.02[1]	−0.95				−0.96	2.64	4.05
4013.798	24336—49243	3.02	485			−1.07[1]					−1.07	2.53	3.94
4013.822	24336—49243	3.02	486			−0.71[1]	−0.68				−0.70	2.90	4.31
4014.280	24339—49243	3.02	426	−1.32	−1.14	−1.37[1]	−1.38				−1.30	2.30	3.71
4014.534	28820—53722	3.57	802	0.38	0.52	0.58[3]	0.58				0.54	4.14	5.55
4016.429	26479—51370	3.28	560	−0.66	−0.89	−0.66[2]	−0.75				−0.72	2.88	4.29
4017.093	22249—47136	2.76	279			−1.09[1]					−1.09	2.51	3.92
4017.152	24575—49461	3.05	527		−0.11	−0.17[2]	−0.22				−0.17	3.43	4.84
4018.282	26340—51219	3.26	560		−0.78	−0.63[3]	−0.70				−0.70	2.90	4.31
4019.050	21039—45914	2.61	219	−1.88	−1.59	−1.80[1]	−1.74				−1.75	1.85	3.26
4020.490	29372—54237	3.64	913	−1.13	−0.88	−1.05[1]	−1.17				−1.06	2.54	3.95
4021.622	26140—50999	3.24	557	−1.08		−1.20[1]					−1.14	2.46	3.87
4021.870	22249—47107	2.76	278	0.20	0.08	0.12[3]	0.06				0.12	3.72	5.13
4022.212	22838—47693	2.83		−1.74		−1.66[1]					−1.70	1.90	3.31
4022.450	19390—44244	2.40	173	−2.37		−2.22[1]	−2.21				−2.27	1.33	2.74
4022.744	26479—51331	3.28	556	−1.10		−1.17[1]	−1.33				−1.20	2.40	3.81
4024.109	22249—47093	2.76	277	−1.30	−1.16	−1.35[2]	−1.33				−1.28	2.32	3.73
4024.735	26140—50980	3.24	560	−0.04	−0.33	−0.06[2]	−0.10				−0.12	3.48	4.89
4029.640	26340—51149	3.26	556	−0.29	−0.65	−0.42[2]	−0.47				−0.45	3.16	4.56
4030.186	17727—42533	2.20	72	−1.51	−1.51	−1.47[1]	−1.51				−1.50	2.11	3.51
4030.499	25900—50704	3.21	560	0.05	−0.20	0.08[3]	0.09				0.02	3.63	5.03
4031.243	24336—49135	3.02	486	−1.51		−1.41[1]	−1.58				−1.50	2.11	3.51
4031.727	24339—49135	3.02	427	−1.49		−1.42[1]					−1.44	2.17	3.57
4031.965	26406—51201	3.27	655	−0.21	−0.26	−0.30[3]	−0.33				−0.28	3.33	4.73
4032.469	23245—48037	2.88	320		−1.11	−1.24[1]	−1.46				−1.27	2.34	3.74
4032.629	11976—36767	1.48	44	−1.74	−1.89	−1.74[2]	−1.85				−1.79	1.82	3.22
4033.190	20641—45428	2.56	218	−1.64		−1.72[2]	−1.69				−1.69	1.92	3.32
4036.370	22249—47017	2.76	279	−2.10		−1.95[1]					−2.02	1.59	2.99
4037.725	18378—43138	2.28	118	−2.03	−1.55								
4038.622	26628—51381	3.30	600	−1.52		−0.99[2]					−0.99	2.62	4.02
4039.940	21999—46745	2.73	276	−1.75		−1.54[2]	−1.59				−1.60	2.01	3.40
4040.650	26624—51365	3.30	655	−0.35	−0.35	−0.30[3]	0.04				−0.27	3.34	4.73
4041.288	26628—51365	3.30	603	−0.72	−0.81	−0.74[2]	−0.92				−0.79	2.82	4.21
4041.911	26628—51361	3.30	602			−1.25[1]	−1.25				−1.25	2.36	3.75
4043.901	21999—46721	2.73	276			−0.56[2]	−0.70				−0.61	3.00	4.39

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gf	Log gf/λ	Log gA/λ
							Log *gf*							
4043.993	26140—50861	3.24	559		−0.37	−0.63[1]					−0.50		3.11	4.50
4044.612	22838—47556	2.83	359	−0.30	0.14	−0.17[2]	−0.33	−0.30[1]			−0.19		3.42	4.81
4045.815	11976—36686	1.48	43			0.68[3]	0.65			0.62	0.66		4.27	5.66
4046.629	24772—49477	3.07	487				−1.18				−1.18		2.43	3.82
4047.315	18378—43079	2.28	117	−1.68		−1.84[1]	−1.88				−1.80		1.81	3.20
4049.331	20875—45563	2.59	218	−1.31	−1.34	−1.35[2]	−1.39				−1.35		2.26	3.65
4051.923	27395—52067	3.40	700	−0.80	−0.91	−0.68[2]	−0.82				−0.78		2.83	4.22
4052.312	27167—51837	3.37	700	−0.93		−0.89[2]	−0.96				−0.93		2.68	4.07
4052.466	26479—51149	3.28	563	−0.83		−1.04[1]	−1.06				−0.98		2.63	4.02
4052.664	24575—49243	3.05	524		−1.05	−1.14[1]	−1.36				−1.18		2.43	3.82
4052.724	26140—50808	3.24	557			−1.16[1]	−1.07				−1.11		2.50	3.89
4053.820	24772—49433	3.07	485	−1.16		−1.47[1]	−1.34				−1.32		2.29	3.68
4054.180	26340—50999	3.26	557	−1.28		−1.17[1]	−1.24				−1.23		2.38	3.77
4054.833	27395—52050	3.40	698			−0.15[1]	−0.42				−0.28		3.33	4.72
4054.883	27560—52214	3.42	698		−0.33	−0.21[1]	−0.40				−0.31		3.30	4.69
4055.038	20641—45295	2.56	218	−0.84	−0.84	−0.86[1]	−0.54				−0.77		2.84	4.23
4055.980	29357—54005	3.64	914	−1.81		−1.60[1]	−1.59				−1.67		1.94	3.33
4056.530	23111—47756	2.86	320	−2.10		−1.82[1]					−1.96		1.65	3.04
4057.346	22249—46889	2.76	277	−1.00		−1.04[2]	−1.09				−1.04		2.57	3.96
4057.654	27543—52181	3.41	729	−2.01		−1.69[1]					−1.85		1.76	3.15
4058.227	25900—50534	3.21	558	−0.37	−0.50	−0.28[2]	0.01				−0.38		3.23	4.62
4058.756	19552—44184	2.42	120	−1.18	−1.31	−1.19[2]	−1.18				−1.21		2.40	3.79
4059.726	28605—53230	3.55	767	−0.50	−0.52	−0.52[2]	−0.52				−0.52		3.09	4.48
4062.444	22947—47556	2.84	359	0.02	0.02	0.05[2]	0.02	0.05[1]			0.04		3.65	5.04
4063.286	27167—51771	3.37	698	−0.06		0.34[2]	0.03				0.10		3.71	5.10
4063.596	12561—37163	1.56	43			0.43[2]	0.56	0.42[2]		0.41	0.44		4.05	5.44
4064.450	12561—37158	1.56	44	−2.27		−2.47[1]	−2.27				−2.34		1.27	2.66
4065.392	27666—52257	3.43	698	−0.50	−0.67	−0.70[2]	−0.62				−0.64		2.97	4.36
4066.590	24119—48703	2.99	424	−0.73	−0.61	−0.51[1]	−0.82				−0.67		2.94	4.33
4066.979	22838—47420	2.83	358	−0.25	−0.20	−0.19[2]	−0.30				−0.23		3.38	4.77
4067.274	20641—45221	2.56	217	−0.52	−0.65	−0.37[1]	−0.53				−0.52		3.09	4.48
4067.984	25900—50475	3.21	559	0.30	0.03	0.29[2]	0.31				0.24		3.85	5.24
4069.080	26479—51048	3.28	557	−1.25		−1.13[2]	−1.10				−1.15		2.46	3.85
4070.766	26140—50699	3.24	558	−0.03	−0.33	0.01[2]					−0.08		3.53	4.91
4071.520	20875—45428	2.59	218			−0.88[1]					−0.88		2.73	4.11
4071.740	12969—37521	1.61	43			0.40[2]	0.44	0.46[2]		0.35	0.42		4.03	5.41
4072.518	27666—52214	3.43	698	−0.45	−0.63	−0.43[1]	−0.56				−0.52		3.09	4.47
4073.760	26340—50880	3.26	558	−0.08	−0.35	−0.14[2]	−0.02				−0.15		3.46	4.84
4074.789	24575—49109	3.05	524	−0.14	−0.17	−0.14[2]	−0.24				−0.17		3.44	4.82
4076.232	24772—49298	3.07	486	−1.13	−1.20	−0.94[1]	−1.10				−1.09		2.52	3.90
4076.498	21039—45563	2.61	218			−0.90[1]	−1.14				−1.02		2.59	3.97
4076.636	25900—50423	3.21	558	0.17	0.06	0.24[2]	0.27				0.18		3.79	5.17
4076.810	26340—50862	3.26	557			−0.48[1]	−0.59				−0.54		3.07	4.45
4076.884	26340—50861	3.26	559			−1.42[1]					−1.42		2.19	3.57
4078.356	21039—45552	2.61	217	−0.59	−0.72	−0.61[2]	−0.58				−0.62		2.99	4.37
4078.822	29372—53882	3.64		−1.88		−1.45[1]								
4079.186	27560—52067	3.42	700	−0.81		−0.85[1]					−0.83		2.78	4.16
4079.841	23052—47556	2.86	359	−0.39	−0.51	−0.52[2]	−0.43	−0.48[1]			−0.48		3.13	4.51
4080.226	26479—50981	3.28	558	−0.33	−0.66	−0.34[1]	−0.43				−0.44		3.17	4.55
4080.886	26550—51048	3.29	557	−0.92		−1.06[2]	−0.98				−1.00		2.61	3.99
4082.125	27560—52050	3.42	698	−0.69		−0.70[2]	−0.81				−0.73		2.88	4.26
4082.432	29320—53808	3.63	906	−0.90		−0.78[1]	−0.88				−0.85		2.76	4.14
4083.554	18378—42860	2.28	117	−1.54		−1.59[2]	−1.60				−1.58		2.03	3.41
4083.780	27560—52040	3.42	697	−0.61		−0.63[1]	−0.80				−0.68		2.93	4.31
4084.498	26875—51351	3.33	698	0.17	−0.06	0.13[2]	0.08				0.09		3.70	5.08
4085.011	22947—47420	2.84	358	−0.39	−0.41	−0.41[1]	−0.51				−0.43		3.18	4.56
4085.312	26140—50611	3.24	559	0.00	−0.34	−0.02[1]	−0.16				−0.13		3.48	4.86
4085.980	33507—57974	4.15	1073	−0.83	−0.80	−0.68[1]					−0.77		2.84	4.22
4087.099	26875—51335	3.33	694	−0.47	−0.76	−0.67[2]	−0.70				−0.65		2.96	4.34
4087.801	29469—53925	3.65	832	−1.84		−1.60[1]					−1.72		1.89	3.27

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log −gA/λ
				Log gf									
4088.567	29357–53808	3.64	906	−0.74	−0.56	−0.81[4]	−0.70				−0.72	2.89	4.27
4089.225	23784–48231	2.95	422	−0.96	−0.99	−1.15[3]	−0.94				−1.01	2.60	3.98
4090.077	27395–51837	3.40	700	−0.90	−0.89	−1.09[4]	−1.03				−1.00	2.61	3.99
4090.326	12969–37410	1.61	44	−3.52		−3.55[1]					−3.54	0.07	1.45
4090.984	27167–51604	3.37	695	−0.94		−1.10[4]	−1.05				−1.05	2.56	3.94
4091.557	22838–47272	2.83	357	−1.10	−1.19	−1.28[3]	−1.28	−1.30[1]			−1.24	2.37	3.75
4092.287	29320–53749	3.63		−0.68	−0.78	−0.75[1]					−0.74	2.87	4.25
4092.512	7377–31805	0.91	18	−3.55		−3.74[2]	−3.74				−3.69	−0.08	1.30
4095.274	33802–58213	4.19	1075	−1.35		−1.19[1]					−1.27	2.34	3.72
4095.973	20875–45282	2.59	217		−0.75	−0.60[4]	0.76				−0.68	2.93	4.31
4096.114	29357–53763	3.64	911			−0.70[1]	−0.71				−0.70	2.91	4.29
4096.217	7728–32134	0.96	18			−3.62[1]					−3.62	−0.01	1.37
4097.099	26479–50880	3.28	558		−0.92	−1.00[4]	−1.06				−1.00	2.61	3.99
4098.183	26140–50534	3.24	558	−0.02	−0.42	−0.18[3]	−0.23				−0.20	3.41	4.79
4099.080	26628–51017	3.30	600	−1.39		−1.93[1]	−1.92				−1.92	1.69	3.07
4100.350	34329–58710	4.26	1103	−1.82	−1.74	−1.19[1]							
4100.739	6928–31307	0.86	18	−2.44	−2.72	−2.53[2]	−2.73				−2.59	1.02	2.40
4100.916	19788–44166	2.45	173	−1.91		−2.56[1]							
4101.272	27395–51771	3.40	698	−0.53	−0.72	−0.69[4]	−0.59				−0.64	2.97	4.35
4101.681	20038–44411	2.48	120	−1.65		−1.72[2]	−1.60				−1.67	1.94	3.32
4103.620	26225–50587	3.25	650	−2.06		−1.77[1]					−1.92	1.69	3.06
4104.132	26340–50699	3.26	558	−0.24		−0.61[4]	−0.56				−0.50	3.11	4.48
4104.472	24119–48476	2.99	422	−2.01		−1.93[1]					−1.97	1.64	3.01
4104.970	26875–51229	3.33	694	−1.37		−1.57[3]	−1.27				−1.44	2.17	3.54
4106.265	20875–45221	2.59	217	−1.36		−1.51[1]	−1.44				−1.44	2.17	3.54
4106.437	27395–51740	3.40	697	−0.61	−0.83	−0.78[1]	−0.85				−0.77	2.84	4.21
4107.492	22838–47177	2.83	354	0.17	0.01	0.06[2]	0.07				0.07	3.68	5.05
4108.138	26140–50475	3.24	559	−1.50	−1.28	−1.69[1]					−1.46	2.15	3.52
4109.070	26550–50880	3.29	558	−0.62	−0.95	−0.76[4]	−0.89				−0.80	2.81	4.18
4109.805	22947–47272	2.84	357	−0.14	−0.16	−0.07[3]	−0.18	−0.11[1]			−0.11	3.50	4.87
4111.060	26875–51192	3.33	689				−1.39				−1.39	2.22	3.59
4112.350	27395–51705	3.40	695	−0.87		−1.08[3]	−1.03				−1.01	2.60	3.97
4112.972	33695–58002	4.18	1103	−0.01	−0.37	−0.02[3]	−0.02				−0.09	3.52	4.89
4114.448	22838–47136	2.83	357	−0.35	−0.52	−0.47[3]	−0.33	−0.45[1]			−0.43	3.18	4.55
4114.957	27167–51462	3.37	695	−0.77	−0.90	−0.92[2]	−0.87				−0.88	2.73	4.10
4116.970	26140–50423	3.24	558	−1.63		−1.53[1]					−1.58	2.03	3.40
4117.320	24772–49053	3.07	484			−1.98[1]					−1.98	1.63	3.00
4117.850	27560–51837	3.42	700			−0.98[1]					−0.98	2.63	4.00
4117.870	34547–58825	4.28	1103			−0.78[1]	−1.03				−0.90	2.71	4.08
4118.548	28820–53094	3.57	801	0.90	1.09	0.85[3]	0.87				0.90	4.51	5.88
4118.904	26340–50611	3.26	559	−0.68		−0.96[2]	−1.00				−0.88	2.73	4.10
4120.209	24119–48383	2.99	423	−0.34	−0.40	−0.43[3]	−0.43				−0.41	3.20	4.57
4121.805	22838–47093	2.83	356	−0.41	−0.55	−0.49[4]	−0.49				−0.49	3.13	4.49
4122.522	22947–47197	2.84	356	−0.51	−0.62	−0.65[2]	−0.60				−0.61	3.01	4.37
4123.748	21039–45282	2.61	217	−0.91	−1.04	−1.13[1]	−0.76				−0.99	2.63	3.99
4124.490	29372–53610	3.64		−1.49		−1.53[1]					−1.51	2.11	3.47
4125.622	34040–58272	4.22	1103	−0.21	−0.41	−0.13[1]	−0.16				−0.23	3.39	4.75
4125.883	22947–47177	2.84	354	−1.04	−0.93	−0.97[3]	−1.17				−1.02	2.60	3.96
4126.192	26875–51103	3.33	695	−0.13	−0.56	−0.35[3]	−0.39				−0.36	3.26	4.62
4126.880	22947–47172	2.84	354	−1.93	−1.61	−1.87[1]	−1.96				−1.84	1.78	3.14
4127.611	23052–47272	2.86	357	−0.13	−0.09	−0.11[3]	−0.13	−0.13[1]			−0.12	3.50	4.86
4127.807	26479–50699	3.28	558	−0.29	−0.42	−0.47[2]	−0.33				−0.38	3.24	4.60
4129.220	27560–51771	3.42	698	−1.60		−1.49[2]	−1.78				−1.59	2.03	3.39
4129.474	27395–51604	3.40	695	−1.23		−1.21[1]					−1.22	2.40	3.76
4130.035	12561–36767	1.56	44	−2.68		−2.66[2]	−2.97				−2.74	0.88	2.24
4132.060	12969–37163	1.61	43	−0.26		−0.16[3]	−0.09	−0.16[1]		−0.40	−0.20	3.42	4.78
4132.540	34329–58520	4.26	1103	−0.49							−0.49	3.13	4.49
4132.902	22947–47136	2.84	357	−0.20	−0.18	−0.02[3]	−0.06	−0.08[1]			−0.09	3.53	4.89
4133.869	27167–51351	3.37	698	−0.36	−0.76	−0.48[3]	−0.48				−0.51	3.11	4.46
4134.340	0–24181	0.00	3			−4.23[1]	−4.07				−4.15	−0.53	0.82

TABLE 3.—*Oscillator Strengths for Ultraviolet Lines of Fe* I—Continued

Wavelength Å	Energy Levels K	Low e.p. Volts	Mult. No.	Arc	Spk	CW(N)	HC	R(N)	KOC	MS	Best	Log gfλ	Log gA/λ
				Log *gf*									
4134.433	24336–48516	3.02	482			−0.74[1]					−0.74	2.88	4.23
4134.680	22838–47017	2.83	357	0.32	0.05	0.18[9]	0.13	0.23[1]			0.18	3.80	5.15
4136.512	27167–51335	3.37	694	−0.69		−0.82[3]	−0.96				−0.82	2.80	4.15
4137.002	27543–51708	3.41	726	0.15	0.22	0.12[5]	0.16				0.15	3.77	5.12
4137.417	34547–58710	4.28	1103	−0.89		−0.82[1]					−0.86	2.76	4.11
4137.980	22846–47006	2.83	320	−2.38							−2.38	1.24	2.59
4138.840	18378–42533	2.28	117	−2.74		−2.80[1]	−2.79				−2.78	0.84	2.19
4139.929	7986–32134	0.99	18	−2.80		−2.86[5]	−2.86				−2.84	0.78	2.13
4140.441	27560–51705	3.42	695	−0.81		−1.11[2]	−1.01				−1.01	2.61	3.96
4141.862	24339–48476	3.02	422	−1.03		−1.04[9]	−0.93				−1.01	2.61	3.96
4142.625	34692–58825	4.30	1103	−0.71		−0.33[3]	0.12						
4143.417	24575–48703	3.05	523	0.58	0.62	0.61[2]	0.61				0.61	4.23	5.58
4143.870	12561–36686	1.56	43	−0.33		−0.07[5]	−0.02	−0.04[1]		−0.24	−0.12	3.50	4.85
4145.206	21716–45833	2.69	274	−1.62		−1.71[4]	−1.81				−1.71	1.91	3.26
4146.070	24119–48231	2.99	422	−1.00	−0.80	−0.87[2]	−0.89				−0.89	2.73	4.08
4147.347	26875–50980	3.33	693	−1.23		−1.28[1]					−1.26	2.36	3.71
4147.672	11976–36079	1.48	42	−1.49	−1.52	−1.47[3]	−1.56				−1.50	2.12	3.47
4149.372	26875–50968	3.33	694			−0.22[3]	−0.19				−0.21	3.41	4.76
4149.767	416–24507	0.05	3			−4.81[1]	−4.84				−4.82	−1.20	0.15
4150.258	27666–51755	3.43	695			−0.71[2]	−0.62				−0.68	2.94	4.29

(Paper 70A4–409)