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THE
IDENTIFICATION
MOLECULAR
SPECTRA

AW 100 for London

AW 100 range



SECOND EDITION REVISED

*London 135
Cape
Molind
1414*

and A. G. Gaydon, ^{D.Sc.} Ph.D., ~~A.~~ Inst. P.

system in that source, but a dash, —, denotes that under normal experimental conditions the band is unlikely to occur in that source (*e.g.*, a band arising from a transition between two excited electronic states will not in general be observed in absorption at ordinary temperatures).

Sources. Intensities are listed for the following sources :—

Ab.	Absorption in vapour state.
F.	Emission in flame.
A(a).	Emission in an arc at atmospheric pressure, usually in air.
A(r).	In an arc at reduced pressure (frequently referred to as a vacuum arc). Bands occurring in arc sources are listed under only one of these (a) or (r), that which is more favourable to the band.
D ⁺ } D ⁻ }	In discharge tubes of various sorts. The + and - columns denote whether the band appears more readily in the positive column or the negative glow respectively. Bands occurring in special discharges such as a high-frequency electrodeless discharge are
F.	Group of four or five heads.
Fd.	Group of five heads appearing double with small dispersion.
L.	Narrow band resembling an atomic line.
S.	Head of a sequence or group of bands.
T.	Triple head (separation 2-15 Å.).
wr.	Accompanied by weaker head to the red.
wv.	Accompanied by weaker head to the violet.

Occurrence. In the last column headed "Occ." some indications are given of special conditions or sources which are particularly favourable to the production of the band, the following abbreviations being used :—

c.	Mildly condensed discharge.
e.	Controlled electron source.
f.	Fluorescence.
hf.	Electrodeless high-frequency discharge.
r.	Ring discharge.
t.	Tesla coil.
A.	Favoured by presence of argon.
H.	" " hydrogen.
He.	" " helium.
N.	Excited by active nitrogen.
Ne.	Favoured by presence of neon.

Very Extensive Systems. Some systems comprise a very large number of bands which differ little in intensity and cover a wide range of the spectrum. Because of

TABLE OF PERSISTENT BAND HEADS

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the large number of bands which would have to be included for identification in the list of persistent heads they have in many cases been omitted. The extensive character of these systems in itself provides a clue to their identity.

The following is a list of the most important molecules which emit such extensive systems with the approximate region of the spectrum covered. Unless stated to the contrary, all these systems consist of bands degraded to longer wave-lengths (red).

As ₂	4300-2250 A.	Li ₂	7700-6600, 5000-4700
Br ₂	> 8000-5100.	LiH	5000-3000.
CO flame (narrow headless)	6000-3000.	Na ₂	7000-6000, 5100-4800, 3500-2500.
Cl ₂	> 6000-4800.	NaH	5000-3700.
CsH	6500-5000.	NaK	9100-7200, 6000-5700, 5300-4900, 4000-3800.
H ₂	"many-line."	P ₂	3300-2000.
I ₂	> 8000-5000.	Rb ₂	7100-6700, 5200-4500.
IBr	> 7000-5500.		
N ₂	"First Positive," > 10000-5000.		
O ₂	"Schumann-Runge emission," 4400-3000.		
O ₂ ⁺	"Second Negative," 6000-2000.		
S ₂	6000-2800.		
SO ₂	absorption 3400-2500.		
SiF	6500-2500 (bands degraded both ways).		
SiO	3000-< 2000.		

	Ab.	F.	A(a).	A(r).	D+.	D-.	System.	App.	Occ.
10603-3 R				10	10	BaH	1st Positive	T.S.	
10420 V					10	N ₂			
10052 R				10	10	BaH			
*9834-7 V			10			CaO		S.	
9420 O	9					H ₂ O			
*9229 V			8			CaO		S.	
9060 O	6					H ₂ O			
9017 R				10	10	BaH			
8924 R				10	10	BaH			
*8911-6 V	—	—			10	N ₂	1st Positive	T.S.	
*8722-3 V	—	—			8	N ₂	1st Positive	T.	
*8651-9			8			CaO			
8571-5 R		7	7			BaF		S.	
8563 O	5					HCN			
*8541-8 V	—	—			6	N ₂	1st Positive	T.	

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	Ab.	F.	A(s).	A(r).	D+.	D-.	System.	App.	Occ.
3548-7 R		6			6		SO		
3545-9 R	—	—	—			9	CO ₂		e.
3541 M	10						HNO ₂ †		
*3536-7 V	—	—			8		N ₂	2nd Positive	CT.
*3535-0 R				d	4		SiN		D.
3533-8 R	—	—	—			7	CO ₂		e.
3525-5 R	—	—	7				BO	α	CD.
3517-7 R	—	—	—			9	O ₂ ⁺	2nd Negative	He.
3516-1 R	—	—		8			O ₂	Schumann-Runge	
3516 R				5			AgH		
3514-3 R					10		SiTe		
3511-7 V	—	—	—			7	CO ⁺	Baldet-Johnson	wr.
3511-4 R	10						ClO ₂		
3510-8 R	—	—	—			6	CO ₂		e.
3508-2 R					8		CP	A.	A.
3507-3 R	—	—				10	HCl ⁺		
3503-8 R			10				SrO		
3503-4 V			4				MgF		CD. S.
*3503-2 R	—	—	—			6	CO ₂		e.
3502-7 R		8					CHO †	Ethylene flame	
3500 V					5		HgH		
3500-4 V	—	—	—			3	CO ⁺	Baldet-Johnson	D.
3500-3 R	5	8	8		8		S ₂		
3478-0 R	—	—	—				CHO †	Ethylene flame	
3472-5 R		5					SbO		
3469-2 R			?						
3463-6 R	8						TlBr		
3459-2 R					10		CP	A.	A.
3452-4 R	9						TlBr		
3449-2 R			2				CaF		S.
3445-2 R			6				SrO		
3441-6 R			6				BO	β	N.
3434-0 R	10						ClO ₂		
3429-6 R	10						TlBr		
*3428-1 R		4		4	4		OH		DCD.
3424-6 R					4		N ₂	Vegard-Kaplan	
3421-2 R	—	—	—			9	O ₂ ⁺	2nd Negative	He.
3420-5 R	—	—	—			10	HBr ⁺		
3419-6 R					10		PH		
3418-2 R	9						TlBr		
3417 M	8						HNO ₂ †		

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	Ab.	F.	A(s).	A(r).	D+.	D-.	System.	App.	Occ.
3548-7 R	—	6	—	—	6	—	SO	—	—
3545-9 R	—	—	—	—	—	9	CO ₂	—	e.
3541 M	10	—	—	—	—	—	HNO ₂ †	—	—
*3536-7 V	—	—	—	—	8	—	N ₂	2nd Positive	CT.
*3535-0 R	—	—	—	d	4	—	SiN	—	D.
3533-8 R	—	—	—	—	—	7	CO ₂	—	—
3525-5 R	—	—	7	—	—	—	BO	α	CD.
3517-7 R	—	—	—	—	—	9	O ₂ ⁺	2nd Negative	—
3516-1 R	—	—	—	8	—	—	O ₂	Schumann-Runge	He.
3516 R	—	—	—	5	—	—	AgH	—	—
3514-3 R	—	—	—	—	10	—	SiTe	—	—
3511-7 V	—	—	—	—	—	7	CO ⁺	Baldet-Johnson	wr.
3511-4 R	10	—	—	—	—	—	ClO ₂	—	—
3510-8 R	—	—	—	—	—	6	CO ₂	—	e.
3508-2 R	—	—	—	—	8	—	CP	A.	A.
3507-3 R	—	—	—	—	—	10	HCl ⁺	—	—
3503-8 R	—	—	10	—	—	—	SrO	—	—
3503-4 V	—	—	4	—	—	—	MgF	—	CD, S.
*3503-2 R	—	—	—	—	—	6	CO ₂	—	e.
3502-7 R	—	8	—	—	—	—	CHO †	Ethylene flame	—
3500 V	—	—	—	—	5	—	HgH	—	—
3500-4 V	—	—	—	—	—	3	CO ⁺	Baldet-Johnson	D.
3500-3 R	5	8	8	—	8	—	S ₂	—	—
3472-5 R	—	5	—	—	—	—	CHO †	Ethylene flame	—
3469-2 R	—	—	—	—	—	—	SbO	—	—
3463-6 R	8	—	—	—	—	—	TlBr	—	—
3459-2 R	—	—	—	—	10	—	CP	A.	A.
3452-4 R	9	—	—	—	—	—	TlBr	—	—
3449-2 R	—	—	2	—	—	—	CaF	—	S.
3445-2 R	—	—	6	—	—	—	SrO	—	—
3441-6 R	—	—	6	—	—	—	BO	β	N.
3434-0 R	10	—	—	—	—	—	ClO ₂	—	—
3429-6 R	10	—	—	—	—	—	TlBr	—	—
*3428-1 R	—	4	—	4	4	—	OH	—	DCD.
3424-6 R	—	—	—	—	4	—	N ₂	Vegard-Kaplan	—
3421-2 R	—	—	—	—	—	9	O ₂ ⁺	2nd Negative	He.
3420-5 R	—	—	—	—	—	10	HBr ⁺	—	—
3419-6 R	—	—	—	—	10	—	PH	—	—
3418-2 R	9	—	—	—	—	—	TlBr	—	—
3417 M	8	—	—	—	—	—	HNO ₂ †	—	—