APPENDIX I

ONE HUNDRED IMPORTANT VARIABLE STARS

In Appendix B to the 1925 report of Commission 27, Prof. A. A. Nijland presented two lists of variable stars which he, in consultation with other members of the Commission, considered to need special attention. List I contained those stars for which it was felt that the greatest continuity in observation was required, not only to determine positively the true character of the variation, but also to study the peculiarities of light-curve, period, and amplitude of variation. The majority of these were stars of the types represented by such stars as U Geminorum, R Coronae Borealis, and RV Tauri. This list contained 69 variable stars.

List II contained those stars which, for one reason or another, required not so much continuity over a long period of time as sufficient additional observational material to settle certain doubtful points. This list contained approximately 300 stars.

The greatest obstacle to observation proved to be the lack of suitable charts and sequences for such a large programme of stars.

New lists, prepared at the request of the Union in 1928, containing practically all the stars of the report of 1925, together with many additions, and now known as lists A and B, together with a third list C, of so-called neglected stars, were published by Nijland (*B.A.N.* **5**, 243–56 (197)) in 1930. Lists A and B contained 476 and 320 stars respectively.

Again the lack of suitable observing charts and sequences proved the chief obstacle to effective co-operation.

The preparation of a further revision, delegated by the Union to Nijland in 1935, has been undertaken by the writer with the collaboration of other members of Commission 27.

It was felt by many that greater progress in co-operation could be made if the lists were not so numerous, nor so lengthy. Accordingly it has been decided to present a list of only 100 variable stars which are considered as of major importance, with the hope that these may receive the concerted action of variable star observers, both professional and amateur. It will be noted that many of the stars are those given by Nijland in his List I, or A. These still appear to demand continuous observation, particularly by visual observers. Many of the stars in Nijland's lists B and C can be studied as well, if not better, by a well formulated photographic attack on the problem, and it is hoped that before long such an attempt will be made.

It must not be felt that these 100 variable stars are all the important ones, but only those which to the compiler, at least, are of enough significance to be included in such a selected list.

Stars of the types of U Geminorum, Z Camelopardalis, and R Coronae Borealis certainly require constant attention, which can be obtained only by co-operative methods. The same is almost as true for stars of the RV Tauri type, sometimes referred to as related to the "Great Sequence", and those of the nova-like class. For this reason, preference has been given to stars of these five types.

The only column in the table which may require detailed description is that headed "Type". Only a few eclipsing variables (Ecl) are included in the list. These have very long periods and many striking characteristics and are peculiarly suited to co-operative study. "U Gem" denotes those variable stars which behave more

or less like their main prototype, or like SS Cygni. As is well known, this type of variable is usually faint at minimum for a comparatively long time, suddenly increases in brightness to the extent of four or five magnitudes, and then gradually decreases to normal minimum within a few days. Cycles for these stars vary widely in length. The "Z Cam" type stars differ only slightly from those of the U Geminorum type, with an amplitude of variation usually confined to two or three magnitudes, with cycles of shorter duration, and an interval of time, lasting several months, in which the star is nearly constant at a median magnitude between maximum and minimum values.

"R CrB" indicates those stars which are generally at nearly constant maximum for a year or more at a time, suddenly decrease in light by several magnitudes—usually five to seven—and then recover normal maximum brilliance in a prolonged and irregular manner. Those designated as "RV Tau" usually present maximum and minimum, with secondary maximum and minimum occurring a general tendency to have a secondary wave over the regular long period and varying heights and depths of maximum and minimum.

Those marked "D P", double period (sometimes with evidences of multiple period), are typified by such stars as V Hydrae, DF Cygni, and W Orionis. V Hydrae appears to present a short-term period, around 530 days, over a longer period of approximately 17 years. In the long period the maximum range may be five or more magnitudes, while the range in the 530-day period may not exceed one or two magnitudes. Stars designated "V Sge" are those which appear to be subject to marked and sudden variations of several magnitudes, of short or long duration. They are perhaps the remains of old novae.

"Nova-like" stars are represented by RS Ophiuchi and T Pyxidis, which have had two or more sudden outbursts to bright maxima, and may possibly have more. This type might also be called recurring novae. "Irr" denotes that there are peculiarities occurring in the star, either in range or period, or both, outside of the regular variations. Also included in "Irr" are stars which appear to be involved in nebulosity, as, for example, S Coronae Australis and T Orionis. "L P", of course, refers to variables of the long-period class.

References to identification of variables in different catalogues, places where charts and sequences may be found, and other needed data are given in notes following the table.

Deletions and additions in this list may well be made from time to time to bring it up to date.

LEON CAMPBELL

Design. 1900	Name	BD or CoD	Chart Position		Magnitude Max.	Magnitude Min.	Period days	Spectrum	Type
		°	h m s	° ′					
004863	BM Cas	+63 110	0 45 55	+63 17·8	9·1	9·4	197·5	—	Ecl?
005060	γ Cas	+59 144	0 47 59	+59 55·7	1·6	2·3	—	Boemn τ	Irr
005840	RX And	—	0 56 26	+40 31·3	10·3	13·6	—	—	Z Cam
010884	RU Cep	+84 19	1 2 54	+84 21·8	8·3	9·3	117	K8	RV Tau
020356	UV Per	—	2 0 13	+56 29·8	12·4	<16·	—	—	U Gem
020657*a*	TZ Per	—	2 3 40	+57 41·9	12·4	15·3	—	—	Z Cam
033380	SS Cep	+79 110	3 27 1	+79 51·2	6·7	7·8	98	Mb	RV Tau?
040341	SW Per	+41 824	4 0 53	+41 49·5	8·2	9·8	86	M4	RV Tau?
041619	T Tau	+19 706	4 13 32	+19 11·2	9·0	12·8	—	Gpe	Irr
042625	UZ Tau	—	4 23 53	+25 33·9	9·2	<13·	—	—	Irr
043562	R Dor	−62 175	4 35 19	−62 19·5	4·5	7·0	335	M7	LP?
044025	RV Tau	+25 732	4 38 12	+25 54·7	9·4	12·5	78·6	K0	RV Tau
044349	R Pic	−49 1439	4 42 49	−49 28·3	6·5	10·0	173	M2e	RV Tau
045443	ϵ Aur	+43 1166	4 51 34	+43 36·2	3·1	3·8	9883	F5p	Ecl
045540	ζ Aur	+40 1142	4 52 21	+40 51·5	4·9	5·6	972·2	K5+B9	Ecl
045903	UX Ori	− 4 1029	4 57 17	− 4 0·1	9·2	10·5	—	—	V Sge?
050001	W Ori	+ 0 939	4 57 55	+ 0 58·5	5·9	7·7	200	N5	V Hya
050130	RW Aur	—	4 58 34	+30 12·3	9·0	12·0	—	G0	V Sge?
050840	UZ Aur	+39 1225	5 5 5	+39 57·5	7·7	9·3	40?	Ma	RV Tau
052702	RY Ori	—	5 24 54	− 2 56·4	9·0	11·4	—	—	V Sge?
053005*a*	T Ori	− 5 1329	5 28 44	− 5 34·4	9·7	12·8	—	—	Irr
053326	RR Tau	+26 887*a*	5 30 30	+26 17·2	10·1	14·0	Irr	—	V Sge?
054705	CN Ori	—	5 45 0	− 5 27·8	11·0	14·7	—	—	Z Cam?
060222	SS Gem	+22 1187	5 59 49	+22 37·9	8·5	9·5	89·3	G5v	RV Tau
060547	SS Aur	—	6 2 24	+47 46·2	10·5	14·7	—	Pec	U Gem
060727	SU Gem	—	6 4 53	+27 44·2	10·3	12·2	49·8	K6v	RV Tau?
061015	CZ Ori	—	6 8 23	+15 26·9	11·8	16·2	—	—	U Gem
062047	AG Aur	—	6 16 42	+47 6·6	8·7	11·1	98·3	cG5e	RV Tau?
063308	R Mon	+ 8 1427	6 31 15	+ 8 51·6	10·0	13·0	—	—	Irr
065911	Z CMa	−11 1760	6 56 56	−11 20·3	8·4	11·5	—	Bep	R CrB?
072609	U Mon	− 9 2085	7 23 52	− 9 28·6	5·6	7·3	92·3	G9v	RV Tau
074922	U Gem	+22 1807	7 46 30	+22 22·7	8·8	14·0	—	Pec	U Gem
080362	SU UMa	—	7 59 41	+63 1·8	11·1	14·5	—	—	U Gem
081041	RX Pup	−41 3911	8 9 52	−41 19·5	11·1	14·1	—	Pec	R CrB?
081473	Z Cam	—	8 8 53	+73 33·8	9·6	13·3	—	G?	Z Cam
081615	Z Cnc	+15 1808	8 14 16	+15 27·1	8·5	9·8	351?	M5	DP
083679	RS Cam	+79 286	8 30 26	+79 29·0	8·1	9·5	166	Mb	RV Tau
084934	V Pyx	−34 5361	8 48 26	−34 20·6	8·4	11·0	—	K2	Irr
090031	T Pyx	—	8 59 30	−31 52·8	6·5	14·1	—	Pec	Nova-like
090431	RS Cnc	+31 1946	9 1 52	+31 33·0	5·3	6·8	258	M6	RV Tau
092421	TU Leo	—	9 21 37	+22 1·5	11·7	14·9	—	—	U Gem?
092856	N Vel	−56 2822	9 27 26	−56 29·0	3·4	4·2	—	K5	Irr
094512	X Leo	—	9 43 14	+12 32·8	12·0	15·1	—	—	U Gem
104620	V Hya	−20 3283	10 44 35	−20 28·9	6·0	12·5	532	N6	DP
114003	TW Vir	—	11 37 57	− 3 37·8	11·8	<15·8	—	—	U Gem
115158	Z UMa	+58 1346	11 48 55	+58 40·7	6·7	9·3	198	M6e	RV Tau
121561	RY UMa	+62 1224	12 13 29	+62 6·9	7·2	8·3	311	M4e	LP
121548	SX Cen	−48 7357	12 14 33	−48 31·1	8·6	12·3	32·9	F5	DP
122169	SS Dra	+69 663	12 19 47	+69 29·5	8·6	10·0	48·2	Mb	RV Tau
123753	UW Cen	−53 4775	12 36 13	−53 50·6	10·0	<16·0	—	K	R CrB

Design. 1900	Name	BD or CoD	Chart Position		Magnitude Max.	Min.	Period days	Spectrum	Type
		°	h m s	° ′					
124318	X Crv	−18 3471	12 41 5	−18 43·1	*9·5*	*10·5*	127	—	RV Tau
131953	DY Cen	—	13 17 48	−53 35·6	*12·0*	<16·4	—	—	R CrB
133633	T Cen	−32 9549	13 34 36	−32 57·8	5·6	9·0	90·7	M0e	LP
153738	RR CrB	+29 2901	15 36 8	+39 1·5	7·2	8·4	113	Mb	RV Tau
154338	Y CrB	+38 2698	15 41 26	+38 46·4	9·4	11·0	300	Mc	Irr?
155947	X Her	+47 2291	15 58 17	+47 38·4	5·8	7·2	100	Mc	DP
160325	SX Her	+25 3031	16 1 21	+25 18·0	7·7	9·4	103	gG7ev	LP?
161559	RT Nor	—	16 13 42	−59 3·0	*11·3*	*16·3*	—	—	R CrB
163238	UU Her	+38 2803	16 30 53	+38 15·9	8·3	9·3	90	cF8	DP
163526	AX Sco	−26 11477	16 34 6	−26 51·7	*8·8*	*9·8*	—	Mc	Irr
164055	S Dra	+55 1870	16 39 51	+55 10·6	7·5	10·0	342	Mc	RV Tau?
164830	CL Sco	—	16 46 54	−30 22·7	*11·1*	*13·5*	—	—	U Gem?
170132	FQ Sco	—	16 59 59	−32 31·5	*12·8*	<16·5	—	—	U Gem
171707	UZ Oph	+ 7 3348	17 14 57	+ 7 3·4	9·5	12·0	87·4	G6v	RV Tau
174035	V381 Sco	—	17 38 39	−35 44·1	*12·3*	*16·0*	6545	F5?	Ecl
174406	RS Oph	− 6 4461	17 42 25	− 6 39·6	4·3	11·8	—	Ocp	Nova-like
174638	V383 Sco	−38 12283	17 45 0	−38 3·0	*11·4*	*13·3*	4900	—	Ecl
174933	AI Sco	−33 12638	17 48 3	−33 47·6	*10·4*	*12·7*	71·2	K	DP
180237	WX CrA	−37 12227	18 0 19	−37 20·4	*11·0*	<16·5	—	R5	R CrB
180415	W Ser	−15 4842	18 1 31	−15 34·2	8·9	10·0	14·15?	cG5e	Ecl?
181066	— Pav	—	18 7 48	−66 7·3	8·5	12·0	605	P Cyg	See note
181146	RS Tel	−46 12279	18 9 30	−46 35·6	*9·3*	<13·0	—	R8	R CrB
181631	TU Lyr	—	18 15 4	+31 41·6	9·3	10·3	120?	M6e	RV Tau?
182610	VW Sct	—	18 24 24	−10 1·2	*10·4*	<15·2	235	—	Irr
182621	AC Her	+21 3459	18 24 8	+21 45·8	7·2	9·0	75·2	G6ev	RV Tau
184007	RZ Oph	+ 7 3832	18 38 45	+ 7 4·3	9·8	10·6	261·9	cG0	Ecl
184137	AY Lyr	—	18 39 29	+37 51·6	12·5	<14·8	—	—	U Gem
185323	AR Sgr	−23 14922	18 52 7	−23 52·5	*9·5*	*11·5*	88·9	G	RV Tau
185437a	S CrA	—	18 52 44	−37 7·3	11·5	12·8	—	—	Irr
185537a	R CrA	−37 13027	18 53 28	−37 7·6	11·5	13·0	—	Gpe	Irr
190317	SV Sge	—	19 1 45	+17 24·0	*10·8*	*14·5*	—	—	R CrB
192745	AF Cyg	+45 2913	19 25 53	+45 50·7	6·4	8·4	182·4	M4	RV Tau
194111	DY Aql	−11 5117	19 38 30	−11 17·9	9·4	11·9	131	—	RV Tau
194542	DF Cyg	—	19 44 10	+42 40·5	*10·8*	*15·2*	49·8	cK0v	DP
195032	EY Cyg	—	19 48 59	+31 59·0	*11·5*	*16·0*	—	—	U Gem?
195209	UU Aql	—	19 49 52	− 9 45·5	*11·0*	*16·8*	—	—	U Gem
200715a	S Aql	+15 4078	20 4 57	+15 11·5	8·4	12·0	146·8	—	LP
200916	R Sge	+16 4197	20 7 27	+16 17·4	8·6	10·4	70·8	cG7v	RV Tau
201520	V Sge	—	20 13 50	+20 38·9	9·5	13·2	530?	Ob	V Sge
202574	UU Dra	+74 861	20 26 21	+74 46·5	8·7	10·2	120	M6	DP
203226	V Vul	+26 3937	20 30 22	+26 6·2	8·2	9·9	76	cG5pv	RV Tau
204017	U Del	+17 4401	20 38 50	+17 33·9	5·6	7·5	—	Mb	RV Tau
213244	W Cyg	+44 3877	21 30 32	+44 43·6	5·1	7·6	131	M4e	RV Tau?
214058	μ Cep	+58 2316	21 39 4	+58 7·0	4·0	4·8	750	M2	DP
215363	VV Cep	+62 2007	21 52 34	+62 56·2	4·9	5·7	7430	M2ep	Ecl
220912	RU Peg	—	22 6 57	+11 59·1	9·0	13·1	—	—	U Gem
223257	W Cep	+57 2568	22 30 56	+57 40·6	6·9	8·6	—	Pec	Irr
225859	UV Cas	—	22 56 13	+58 49·9	12·0	15·6	—	—	R CrB?
232848	Z And	+48 4093	23 26 43	+48 1·1	*8·3*	*12·8*	—	O+M+P	Irr
234956	ρ Cas	+56 3111	23 47 10	+56 41·6	4·4	5·1	1100	cG5	Irr

004863	BM Cas	Seq *A.N.* 6100; phtm curve needed.
005060	γ Cas	Phtm curve needed.
005840	RX And	Chart AAVSO.
010884	RU Cep	Chart *Moscow Ann.* (2), **5**.
020356	UV Per	Chart AAVSO; chart and seq *M.N.* **73**, 75.
020657*a*	TZ Per	Chart AAVSO and *A.N.* **4592**, **4623**; seq pv Harvard (App. II).
033380	SS Cep	Seq *Potsd. Publ.* **87**, 7 and *A.N.* 5962; other period, 1000d.
040341	SW Per	Seq Enebo **8**, 14; other period, 2000d.
041619	T Tau	Chart Hagen II and *M.R.A.S.* **58**, **9**; involved in nebula.
042625	UZ Tau	Nova-like?
043562	R Dor	Chart AAVSO; irregularities in curve.
044025	RV Tau	Chart *Rech. Astr. Utr.* **6** and *Moscow Ann.* (2), **5**; other period, 1360d.
044349	R Pic	Chart *Cape Ann.* **9**, 37B; other period, **333**d; marked irregularities in curve.
045443	ϵ Aur	Prim min due 1956.
045540	ζ Aur	Prim min in 1940.
045903	UX Ori	Involved in nebula.
050001	W Ori	Seq Hagen V; other period, 2000d.
050130	RW Aur	Chart *Moscow Ann.* (2), **5**; seq Enebo **9**, 7; seq pv Harvard (App. II).
050840	UZ Aur	Chart *Ass. tchèque*, **3**; seq Enebo, **9**, 15 and *A.N.* 5293; other period, 60d.
052702	RY Ori	Involved in nebula; chart *A.N.* 4085.
053005*a*	T Ori	Chart AAVSO and Hagen I; involved in nebula.
053326	RR Tau	Chart AAVSO and Hagen VI.
054705	CN Ori	Chart *A.N.* 4085.
060222	SS Gem	Chart *H.B.* 883; seq. *H.B.* 846.
060547	SS Aur	Chart AAVSO.
060727	SU Gem	Chart *Sonn. Mitt.* 10, *A.N.* 5508 and *H.B.* **883** (also App. II); other
061015	CZ Ori	Chart *A.N.* 5571; seq pv Harvard (App. II). [period, 716d.
062047	AG Aur	Chart and seq *A.N.* 5506; seq pv Harvard (App. II).
063308	R Mon	Chart AAVSO and Hagen VI; involved in nebula.
065911	Z CMa	Seq. *Erg. A.N.* **8**, C72.
072609	U Mon	Seq *B.A.F.* **2**, 95.
074922	U Gem	Chart AAVSO and Hagen II.
080362	SU UMa	AAVSO chart in preparation; seq pv Harvard (App. II).
081041	RX Pup	Light curve needed.
081473	Z Cam	Chart AAVSO.
081615	Z Cnc	Seq *A.N.* 5776; several values of period assigned.
083679	RS Cam	Chart *Moscow Ann.* (2), **5**; seq *M.N.* **76**, 613.
084934	V Pyx	
090031	T Pyx	AAVSO chart in preparation; three observed max.
090431	RS Cnc	Seq *A.N.* 5253 and *B.A.F.* **2**, 96.
092421	TU Leo	Chart *N.N.V.S.* **4**, 279.
092856	N Vel	Chart Hagen V.
094512	X Leo	Chart AAVSO.
104620	V Hya	Chart AAVSO and Hagen IV; other period, 6200d.
114003	TW Vir	AAVSO chart in preparation.
115158	Z UMa	Chart AAVSO.
121561	RY UMa	Seq pv Harvard (App. II); other period, 41d?
121548	SX Cen	Chart and seq *Lembang Ann.* **2**, D53; seq *H.B.* 893.
122169	SS Dra	Chart AAVSO
123753	UW Cen	

124318	X Crv	
131953	DY Cen	AAVSO chart in preparation.
133633	T Cen	Chart AAVSO and *Cape Ann.* **9**, 94B; peculiarities in curve.
153738	RR CrB	Chart *Ass. tchèque*, **3**; seq *A.N.* 5797; other periods?
154338	Y CrB	Seq *Vassar Publ.* **3**, 129.
155947	X Her	Chart Hagen V; other period, 900d?
160325	SX Her	Chart AAVSO and Hagen VI [RU Her]; irregularities in curve.
161559	RT Nor	CPD −59° 6719.
163238	UU Her	Seq *H.B.* 857 and Pracka I, Heft 3, 17; additional period, 72·6d.
163526	AX Sco	
164055	S Dra	Chart Hagen IV.
164830	CL Sco	*H.B.* 852; AAVSO chart in preparation.
170132	FQ Sco	AAVSO chart in preparation.
171707	UZ Oph	Chart and seq *A.N.* 5175; seq *A.N.* 5788.
174035	V381 Sco	*H.B.* 902; min due 1944.
174406	RS Oph	Chart AAVSO; oscillations at min.
174638	V383 Sco	*H.B.* 902; min due 1941.
174933	AI Sco	Other period, 980d.
180237	WX CrA	
180415	W Ser	Variation in light curve and spectrum; period perhaps to be doubled.
181066	— Pav	CPD −66° 3307; seq *H.A.* **105**, 492, curve of eclipse type but with marked
181146	RS Tel	[variations in max and range.
181631	TU Lyr	Chart Hagen VIII.
182610	VW Sct	Like R Cen?; subject to change in period; AAVSO chart in preparation.
182621	AC Her	Chart *Ass. tchèque*, **3**, 4; seq *H.B.* 845.
184007	RZ Oph	Min due July 1938 and April 1939.
184137	AY Lyr	Chart *Sonn. Mitt.* 16; seq pv Harvard (App. II).
185323	AR Sgr	
185437a	S CrA	Chart AAVSO and *Cape Ann.* **9**, 133B; involved in nebula.
185537a	R CrA	Chart AAVSO and *Cape Ann.* **9**, 133B; involved in nebula.
190317	SV Sge	Chart *A.N.* 5633.
192745	AF Cyg	Seq *A.N.* 5847.
194111	DY Aql	Seq *N.N.V.S.* **3**, 113 [called DV Aql].
194542	DF Cyg	Chart and seq *H.A.* **105**, 521 (also App. II) and *B.A.F.* **1**, 127; other
195032	EY Cyg	Chart *A.N.* 5571. [period, 790d.
195209	UU Aql	Seq *H.B.* 890.
200715a	S Aql	Chart AAVSO and Hagen IV; irregularities in curve.
200916	R Sge	Chart AAVSO and Hagen IV.
201520	V Sge	Chart AAVSO; old nova?
202574	UU Dra	Other period, 960d.
203226	V Vul	Chart Hagen IV.
204017	U Del	Chart Hagen IV.
213244	W Cyg	Chart Hagen V.
214058	μ Cep	Chart Hagen V; long term period 4675d.
215363	VV Cep	
220912	RU Peg	Var has close comp; chart *A.N.* 4062; seq pv Harvard (App. II).
223257	W Cep	Chart *P.A.* **4**, 423; irregularities in light curve.
225859	UV Cas	Chart and seq *A.N.* 4697.
232848	Z And	Chart AAVSO; old nova?
234956	ρ Cas	