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THE CASE LOW-DISPERSION NORTHERN SKY SURVEY. III.

PETER PESCH
National Science Foundation

AND

N. SANDULEAK
Warner and Swasey Observatory, Case Western Reserve University
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ABSTRACT

Positions, estimated magnitudes, and finding charts (when needed) are provided for 130 blue and/or emission-line galaxies, probable H II regions in six galaxies, 73 blue and/or emission-line unresolved objects including QSO candidates, and 58 known and probable blue stars contained within the region $08^h05^m < \alpha < 10^h10^m$ and $+33°.0 < \delta < +38°.0$ (1950). The objects, whose blue magnitudes range from 12 to 18, were identified on low-dispersion, objective-prism plates taken with the Burrell Schmidt telescope at Kitt Peak.

Subject headings: galaxies: general — nebulae: H II regions — quasars — stars: faint blue

I. INTRODUCTION

This is one of a continuing series of finding lists of interesting objects discovered in the course of a low-dispersion (~1350 Å mm^{-1} at Hγ) objective-prism survey of northern Galactic polar regions which is being carried out by the writers using hypersensitized Eastman Kodak IIIa-J plates taken with the 61/91 cm Burrell Schmidt–type telescope at Kitt Peak. The plates cover 5° × 5°, have a scale of ~100″ mm^{-1}, cover the spectral range from 3300 to 5350 Å, and are exposed 75 minutes. Careful guiding during the exposure produces unwidened spectra which are usually less than 0.03 mm wide and which have a limiting magnitude of $B \sim 18$ for the threshold detection of the continuum of an unresolved object.

As described in the earlier papers of this series (Pesch and Sanduleak 1983, hereafter Paper I; Sanduleak and Pesch 1984, hereafter Paper II), this survey seeks to detect a wide variety of interesting Galactic stars and extragalactic objects. In this paper we again present results only for categories I–III, which involve galaxies, QSO candidates, and blue Galactic stars. The region covered is $08^h05^m < \alpha < 10^h10^m$ and $+33°.0 < \delta < +38°.0$ (1950). The finding lists are given in Tables 1, 1A, 2, and 3, where the formats are identical with those used and fully described in Papers I and II. Finding charts are provided in Figure 1 (Plates 50–56) for those objects which are new or which cannot be easily identified from other sources.

Several observers have recently communicated to us the results of their higher dispersion spectroscopy of a sampling of objects taken from our lists. These results, and what they indicate about the nature of the objects being found by this survey, are included in the discussion below.

II. RESULTS

a) Blue and/or Emission-Line Galaxies

Category I (Table 1) contains blue galaxies, which we find to display continua shortward of 4000 Å much stronger than are seen in an average galaxian spectrum. About one out of every 10 field galaxies on our plates meets our definition as a blue galaxy. In turn, about half of these blue galaxies definitely show or are suspected of showing emission features. It is expected that many of the blue galaxies we list without emission will be found to have moderately weak emission when spectra are obtained at much higher dispersion. Kunth (1984) has obtained spectra at 90 Å mm^{-1} of a sample of 25 of the CG galaxies and confirms emission in 22 of them, including several cases in which the emission was too weak to be detected at very low dispersion. It would appear, as expected, that most of these emission-line galaxies are of the starburst variety, but presumably some Seyferts will be included, although follow-up higher dispersion spectroscopy will be required to identify these. Although most of the emission-line galaxies display blue continua, we do occasionally encounter cases where emission is detected in yellowish systems or in objects too faint ($B > 18$ mag) to show a continuum on our plates (these are identified as galaxies from their appearance on the POSS prints).

The format of Table 1 is as described in Papers I and II. Some clarification appears to be needed regarding the intent of the eye estimates of relative strength of the emission features given in column (5) ([O III] λλ4959, 5007 = $N_1 + N_2$) and column (6) ([O II] λ3727). We use the designation "w?" to indicate uncertainty as to the reality of the emission. When the emission is certain, we use the sequence w (weak), m (medium), s (strong), and vs (very strong) as a qualitative measure of the increasing "strengths," which may be more closely associated with equivalent widths than with intensity. These uncalibrated estimates are not suitable for quantitative studies. Clearly, in order to be detected at this very low dispersion, the emission strength must be substantial, and thus it would not be surprising that features we term weak would be considered relatively strong by observers using much higher resolution spectra.

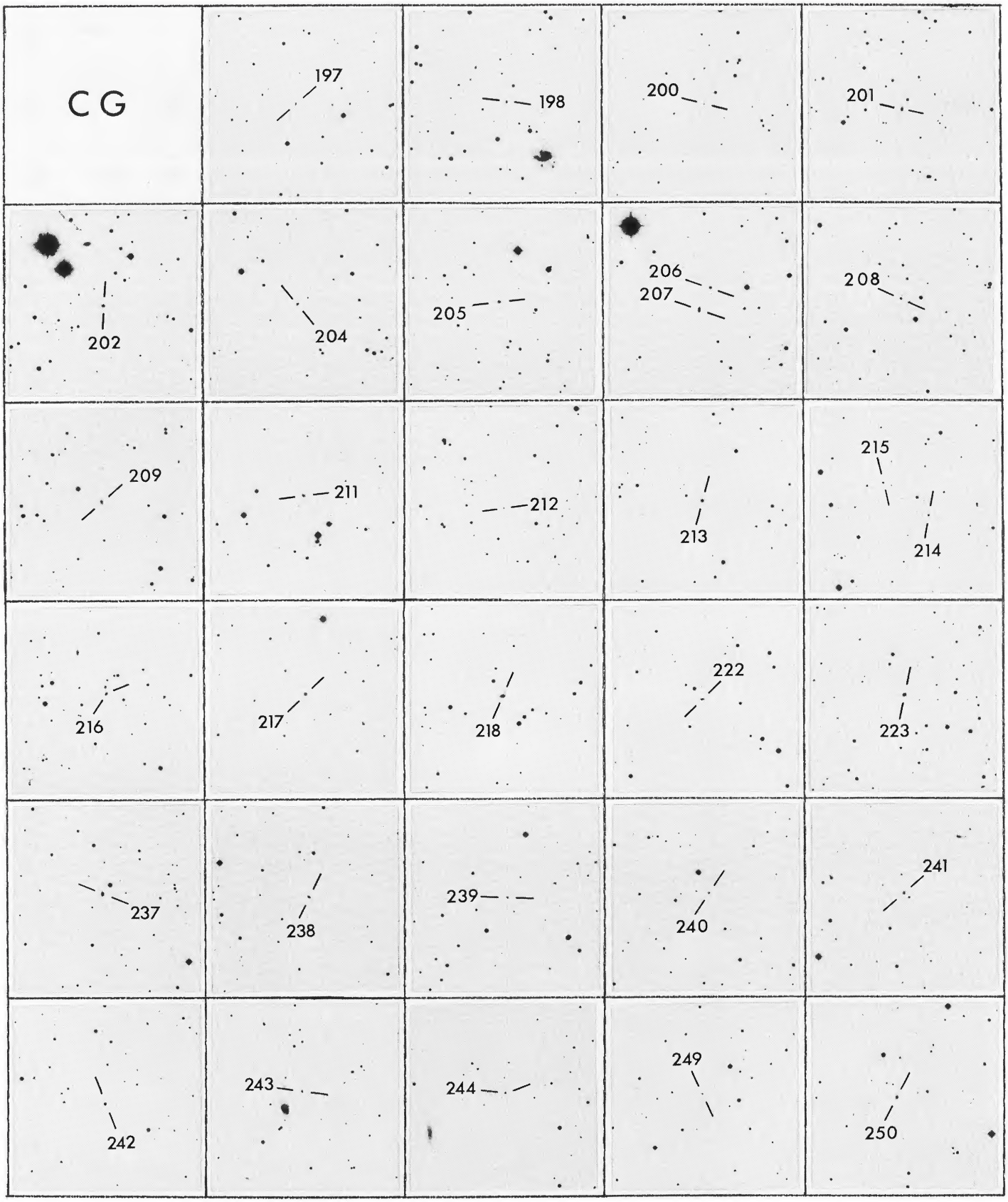

FIG. 1.—Finding charts copied from the POSS E prints (except where indicated by "O" in lower right-hand corner). North is up, and east is to the left. Fields are $10' \times 10'$.

PESCH AND SANDULEAK (*see* page 543)

PLATE 51

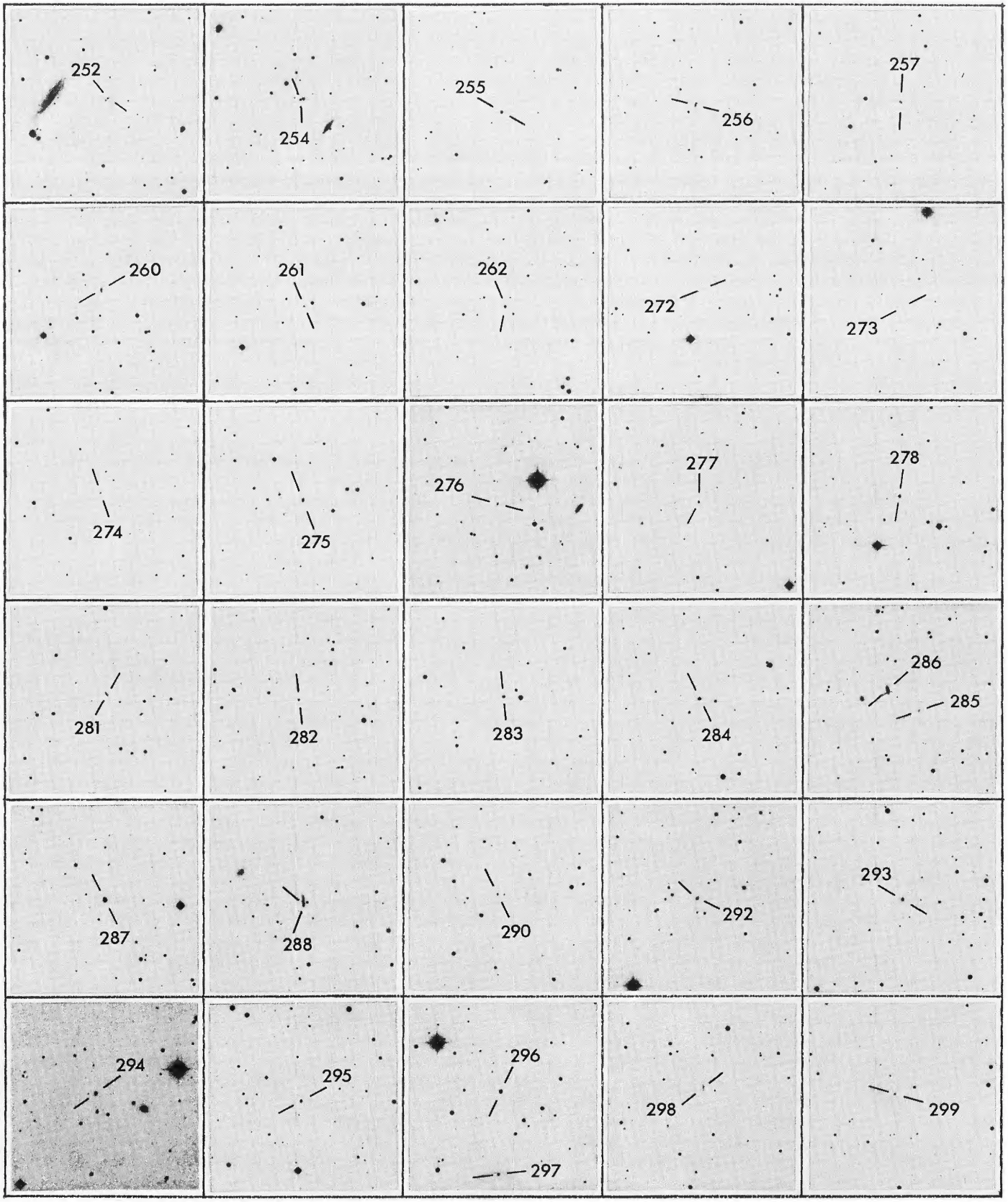

FIG. 1—*Continued*

PESCH AND SANDULEAK (*see* page 543)

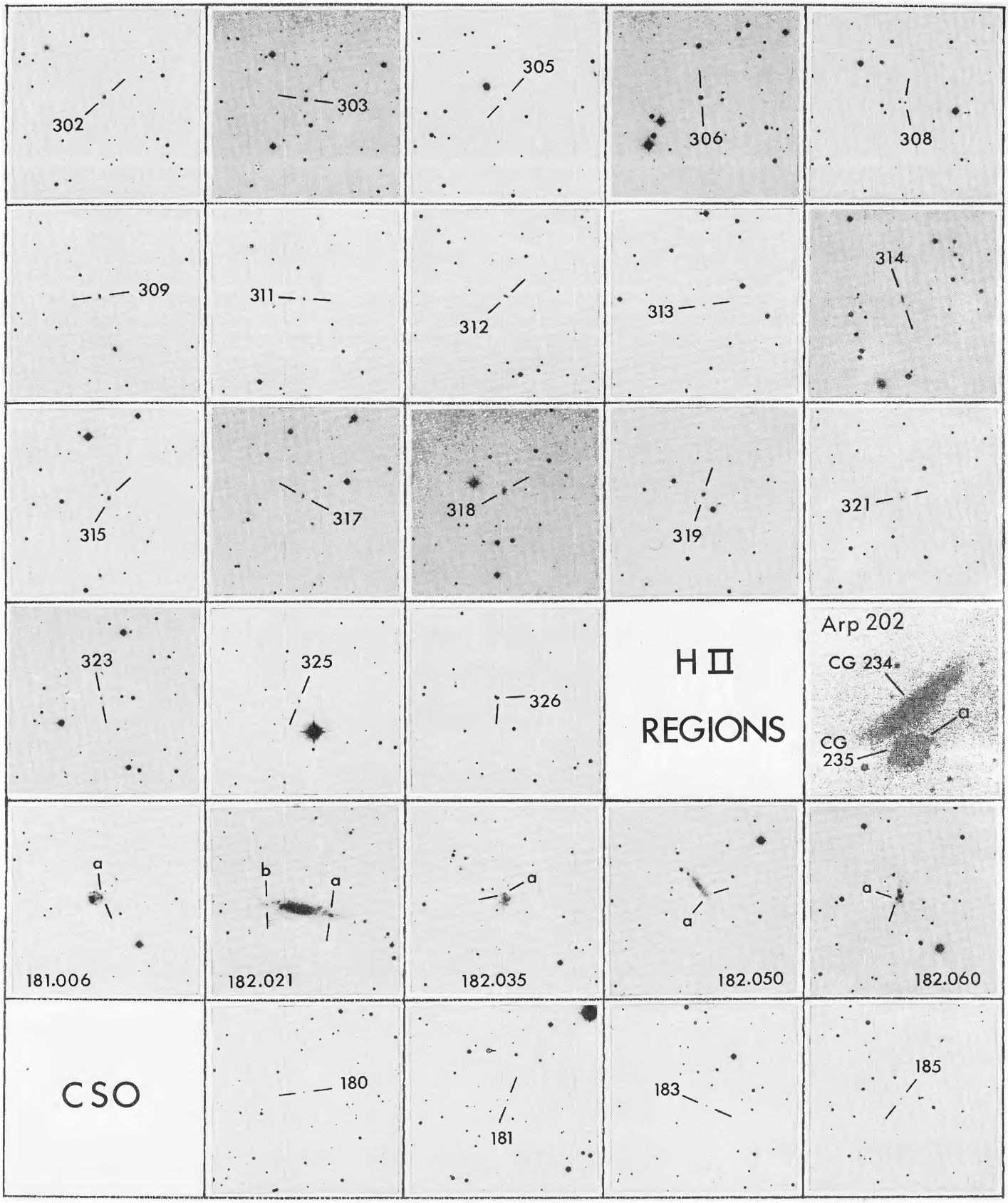

FIG. 1—*Continued*

PESCH AND SANDULEAK (*see* page 543)

PLATE 53

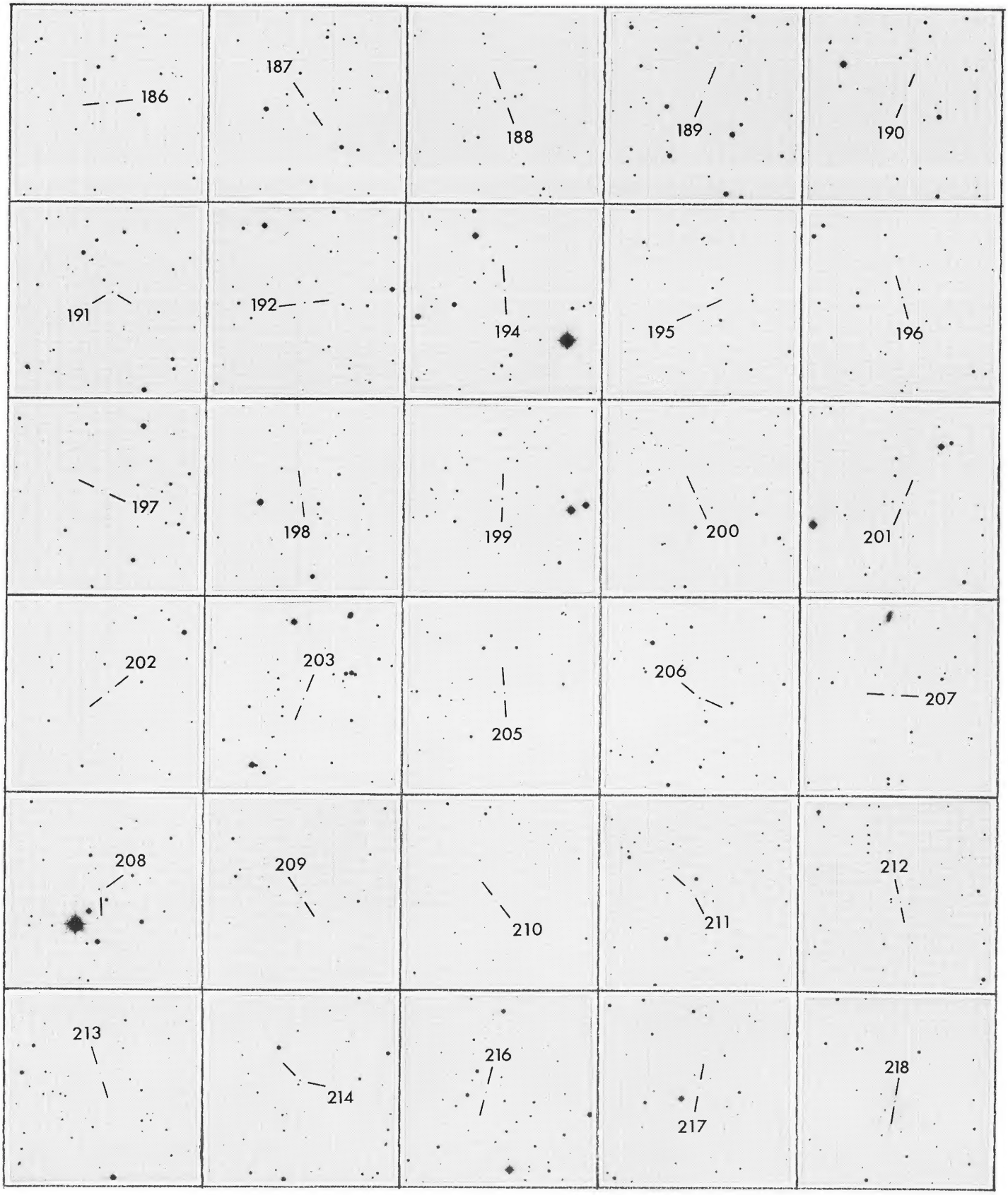

FIG. 1—*Continued*

PESCH AND SANDULEAK (*see* page 543)

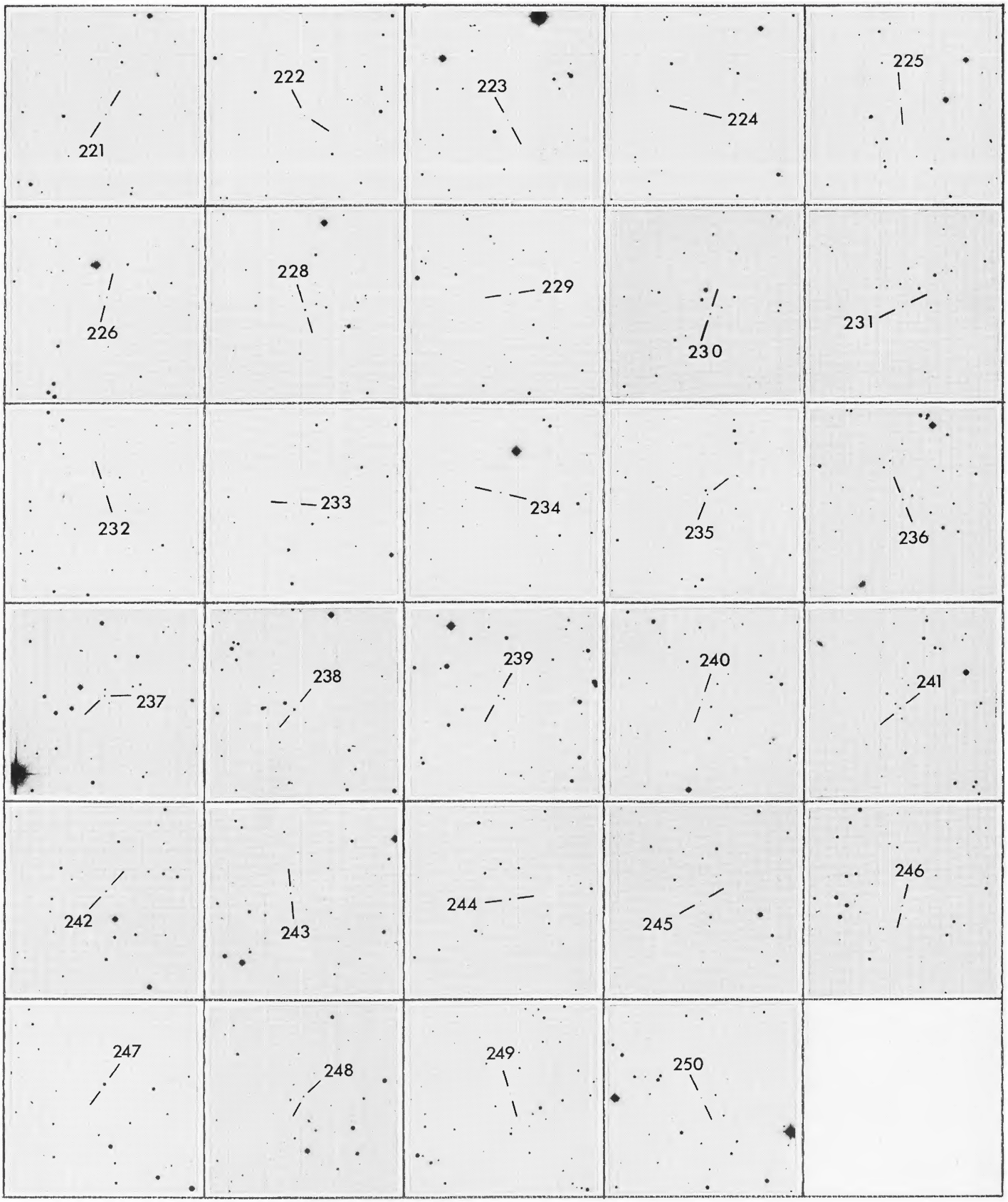

FIG. 1—*Continued*

PESCH AND SANDULEAK (*see* page 543)

PLATE 55

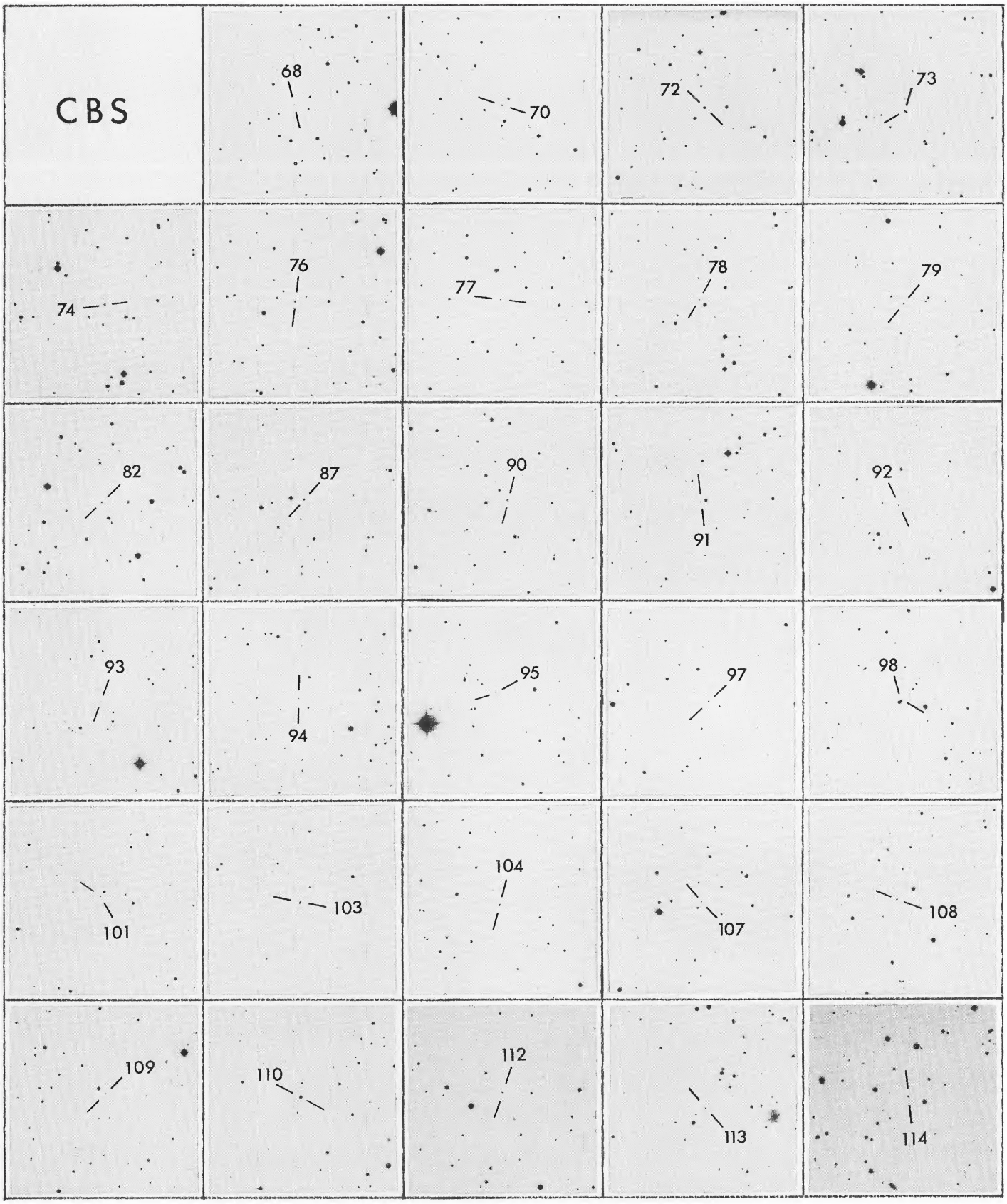

FIG. 1—*Continued*

PESCH AND SANDULEAK (*see* page 543)

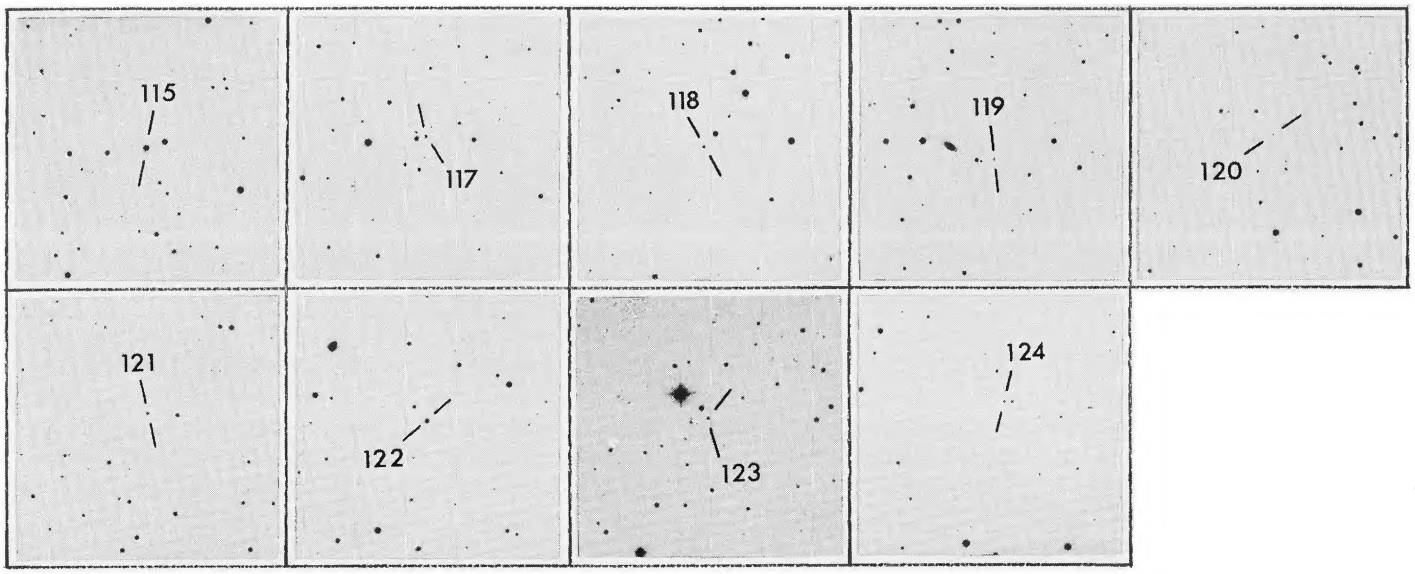

FIG. 1—*Continued*

PESCH AND SANDULEAK (*see* page 543)

TABLE 1

BLUE AND/OR EMISSION-LINE GALAXIES

CG (1)	α 1950 (2) h m s	δ (2) ° ′	m_B (3)	Color (4)	$N_1 + N_2$ (5)	λ3727 (6)	z (7)	ZWG (8)	Other Name(s) (9)
197	08 07 07.4	+34 39.3	16	b	w?	w?	h?		
198	08 07 13.2	34 09.4	16	mb	m		h?		
199	08 07 40.1	36 58.9	15	mb		w?	l?	178.033	UGC 4261,IRAS
200	08 08 01.7	37 29.8:	17	-	m				
201	08 09 01.6	35 18.6	15	mb					
202	08 16 04.7	35 09.3	16	mb					
203	08 17 23.1	37 02.9	15	mb				179.002	
204	08 19 25.7	37 56.1	16	mb					
205	08 21 26.9	37 01.9	16	mb					
206	08 22 27.6	37 05.7	16	mb	w?				
207	08 22 30.7	37 04.5	15	mb					
208	08 25 13.	33 10.9:	16	b					
209	08 25 43.2	35 21.2	16	mb					
210[a]	08 25 43.6	34 49.3	15	b	m			179.008	UGC 4434,MCG+06-19-005,KUG 0825+348,IRAS
211	08 33 14.7	33 38.3	16	mb	m		h?		
212[b]	08 34 01.6	36 14.6	17	mb	w?	w?	h?		
213	08 34 07.6	35 03.2	16	mb	w?				KUG 0834+350
214[b]	08 35 31.0	35 54.7	16	b	m	m	m		
215	08 35 42.	35 55.8:	16	mb					
216[c]	08 35 46.9	34 16.6	16	mb	w?				KUG 0835+342B
217	08 37 17.0	34 46.4	16	mb					KUG 0837+347
218	08 40 34.6	36 00.9	16	mb	s	w	h		
219	08 42 19.0	34 36.3	15	mb				179.025	MCG +06-19-020,KUG 0842+346,IRAS
220	08 42 26.3	37 07.3	14	mb				179.026	UGC 4572,MCG+06-19-021,MRK 626,KUG 0842+371,IRAS
221	08 42 48.4	34 20.5	16	b					KUG 0842+357
222	08 43 09.7	35 30.1	17	b	m	m	l		
223	08 43 20.2	35 44.1	16	mb	w		m?		KUG 0843+357
224	08 43 23.7	36 37.6	15	b	s	m	l	180.002	MRK 627,KUG 0843+366
225[d]	08 45 00.7	35 27.0	16	mb	s	s	h	180.009	KUG 0854+354,IRAS?
226	08 45 01.5	36 58.3	15	mb				180.010	MCG +06-20-003?,KUG 0845+369
227	08 45 15.7	35 48.0	16	mb					KUG 0845+358
228	08 45 31.1	37 24.5	15	mb				180.011	IC 2405,MCG+06-20-006,KUG 0845+374,IRAS
229	08 47 03.5	35 16.1	15	y		w?		180.014	UGC 4621,MCG+06-20-008,KUG 0847+352,IRAS
230	08 47 29.6	36 39.5	16	mb				180.015	MCG+06-20-009,KUG 0847+366
231[e]	08 51 19.8	36 39.0	15	mb				180.021	UGC 4661,MCG+06-20-015,KUG 0851+366
232	08 52 21.7	37 23.6	16	mb					KUG 0852+373
233[f]	08 55 23.3	37 20.8	15	mb				180.024	
234	08 57 07.1	35 56.3	15	b	m	m	l	180.025	NGC 2719,UGC 4718,HOLM 105A,ARP 202,IRAS
235	08 57 07.8	35 55.5	15	b	s	s	l		MCG+06-20-018,HOLM 105B
236	08 57 11.5	34 52.3	15	mb				180.026	UGC 4720
237	08 57 59.2	34 47.5	16	mb					IRAS?
238	08 59 54.2	34 26.5	16	mb					
239	09 00 40.5	35 47.8	17	mb					
240	09 02 08.3	36 07.6	17	mb					
241	09 02 24.1	37 46.1	16	b	s	m	l		
242	09 03 39.8	36 38.5	16	mb					
243[g]	09 04 04.	37 25.9:	17	b					
244	09 04 12.	33 30.8:	16	mb	w?				
245[h]	09 05 19.	35 50.2:	15	b				180.040	MCG+06-20-030,KARA.72 188A,IRAS?
246	09 05 23.3	35 49.3	15	mb				180.041	MCG+06-20-031,KARA.72 188B,IRAS?
247	09 06 32.9	37 48.6	15	y	w			180.049	IC 527,UGC 4810,MCG+06-20-039
248	09 06 38.7	37 54.9	15	mb				180.050	
249	09 07 20.3	37 28.2	17	mb					
250	09 09 54.4	37 05.2	16	b					
251	09 13 43.2	34 38.6	15	mb				181.006	NGC 2793,UGC 4894,MCG+06-21-002,IRAS
252[i]	09 16 16.0	33 19.5	18+	-	s				HOLM 111B
253	09 16 26.0	34 31.1	15	mb				181.019	IRAS
254[j]	09 16 28.2	33 51.8	16	b	m	w	l		
255	09 17 17.5	37 44.3	16	mb					
256[c]	09 17 22.6	37 03.1	16	mb					
257	09 19 26.9	36 26.4	16	mb	m	w	m		
258	09 20 42.6	35 42.1	15	mb				181.039	
259	09 23 05.2	35 06.9	15	mb		w	l		MRK 399,IRAS
260[c]	09 25 29.9	34 36.7	16	mb	w?				
261	09 27 44.0	37 04.4	17	mb?	w?				
262	09 27 59.7	34 38.5	16	mb					
263	09 30 42.5	33 49.6	15	mb	m	m	l	181.057	MCG+06-21-049,PG
264	09 32 27.3	35 12.9	14	mb				181.063	MCG+06-21-055
265	09 34 23.	35 27.6:	15	mb				181.069	IRAS
266	09 34 29.3	35 49.2	15	mb				181.070	IRAS?
267[k]	09 34 36.7	35 27.5	15	mb	m	m	l	181.072	MCG+06-21-061
268	09 35 43.5	34 57.4	14	mb				181.073	IC 2496? IRAS
269	09 36 14.6	36 47.6	15	mb		m	l	181.077	MCG+06-21-068,KARA.72 208A
270	09 36 19.6	36 48.3	15	mb				181.079	MCG+06-21-069,KARA.72 208B
271	09 36 28.8	34 04.8	15	b	m		l	181.081	MCG+06-21-070?
272	09 37 25.9	34 16.4	18	-	m		h?		
273	09 39 05.8	35 36.7	18	-	m		h?		
274	09 39 51.5	36 01.3	17	vb	s	m	m		
275	09 41 12.3	35 39.4	16	b					IRAS
276[k]	09 41 26.1	34 56.1	17	b					

TABLE 1—*Continued*

CG (1)	α 1950 (2)	δ (2)	m_B (3)	Color (4)	$N_1 + N_2$ (5)	λ3727 (6)	z (7)	ZWG (8)	Other Name(s) (9)
	h m s	o ′							
277	09 42 05.3	+35 33.3	16	mb					
278	09 42 09.6	36 00.9	16	mb	m	m	m		
279[k]	09 42 15.6	34 56.8	15	mb	w?			182.010	IRAS?
280	09 42 18.8	36 23.6	15	mb				182.011	IRAS
281	09 42 38.5	36 14.1	16	mb					
282	09 42 39.9	33 28.8	16	mb					
283	09 42 41.3	36 45.3	16	b	m	m	m		
284	09 43 09.2	33 55.5	16	mb	w?	w?	l?		
285	09 43 12.4	35 00.6	18	-	s		h?		
286	09 43 20.4	35 01.8	15	mb				182.014	MCG+06-22-010
287	09 43 31.2	35 09.1	15	b					IRAS?
288	09 44 07.6	34 59.5	15	mb					IRAS?
289	09 45 07.0	33 07.2	15	b	m	w	l	182.020	MRK 408,IRAS
290	09 45 21.0	37 00.4	16	mb					
291[a]	09 45 37.4	33 39.4	15	mb		w?		182.021	NGC 3003,UGC 5251,MCG+06-22-013,IRAS
292	09 45 51.0	36 50.5	16	mb					
293	09 46 32.0	35 30.1	16	mb	m		m?		
294	09 47 23.1	33 49.2	16	b	w?				MCG+06-22-018,KEEL 189,KUG 0947+338
295	09 47 33.9	36 00.1	16	b	w?	w?			KUG 0947+359
296	09 47 53.0	36 41.0	15	mb					KUG 0947+366
297	09 47 54.1	36 36.7	16	b					
298	09 47 59.6	35 26.9	16	mb					
299	09 48 15.4	36 54.8	17	b					KUG 0948+369
300	09 50 09.1	37 59.9	15	mb					MRK 410
301	09 50 18.7	36 19.6	14	mb				182.028	MCG+06-22-024,KN 15.001,KUG 0950+363
302	09 50 33.3	34 38.8	15	mb					KUG 0950+346A
303	09 51 33.2	36 01.2	16	mb					KUG 0951+361
304	09 51 40.3	36 55.0	15	mb				182.032	KUG 0951+369
305[l]	09 51 42.7	37 54.9	16	mb					IRAS?
306	09 52 19.3	35 15.6	16	mb					KUG 0952+352
307	09 52 53.5	36 12.4	15	y	m		h?	182.038	MCG+06-22-032
308	09 53 16.6	36 28.9	16	b	m	m	m		
309[m]	09 54 21.7	37 07.2	15	b	s	m	m		IRAS?
310	09 54 36.2	33 51.7	14	b	vs	m	l	182.047	IC 2524,MCG+06-22-039,MRK 411,KUG 0954+338
311	09 54 37.1	37 11.1	16	mb		w?			KUG 0954+371
312	09 55 50.1	35 01.7	16	mb					KUG 0955+350
313	09 57 21.8	35 03.6	17	mb	w?		h?		
314	09 58 07.9	37 09.8	16	mb					KUG 0958+371
315[n]	09 58 15.5	37 18.7	15	b	s	w?	l		KN 15.066,KUG 0958+373
316	09 59 19.4	34 06.1	15	mb				182.062	MCG+06-22-056,KN 15.078,REIZ 138,KUG 0959+340,IRAS
317	09 59 24.2	37 01.5	16	mb					KUG 0959+370
318	09 59 55.9	35 28.4	16	mb	w?	w?			KUG 0959+354
319	10 00 22.2	37 26.3	16	mb					KUG 1000+374
320[o]	10 00 55.0	33 38.8	15	mb				182.068	KN 15.090,REIZ 151,KUG 1000+336
321	10 03 19.7	36 50.3	16	mb	w?				
322	10 07 13.3	36 42.8	15	mb				183.002	IC 2549,KN 15.147,KUG 1007+367
323	10 07 35.8	35 29.1	16	mb					KUG 1007+354
324	10 07 38.3	36 15.6	15	mb					KN 15.150,KUG 1007+362
325	10 09 07.0	36 31.5	16	mb					KUG 1009+365
326[p]	10 10 23.2	34 42.6	17	mb?	m	w	m		KUG 1010+347

[a] Stellar-like nucleus.
[b] Nearly stellar in appearance.
[c] Possibly involving interacting galaxies.
[d] Emission in the westernmost of apparently two interacting galaxies.
[e] Note proximity to the galaxy ZWG 180.022.
[f] Located near ZWG 180.023, which may be a ring galaxy.
[g] Might be a companion to the galaxy ZWG 180.035, which is an *IRAS* source.
[h] Appears to have a blue, stellar nucleus. Note proximity to CG 246.
[i] Weak emission suspected in HOLM 111C, which lies about 10″ to the southeast.
[j] The emission is in the southeastern of two galaxies of nearly equal brightness.
[k] In a small cluster of galaxies.
[l] Note proximity to the galaxy IC 2516.
[m] Hβ is seen in emission.
[n] Emission at the western edge of the galaxy.
[o] Hα emission suspected on a IIIa-F plate.
[p] Lies just to the west of a star.

TABLE 1A

PROBABLE H II REGIONS

ZWG (1)	H II REGION (2)	α 1950 (3)	δ	m_B (4)	Color (5)	$N_1 + N_2$ (6)	λ3727 (7)	z (8)	Other Name(s) for Parent Galaxy (9)
-	a	$08^h57^m06.^s4$	$+35°55'.8$	17	mb	s	m	1	HOLM 105B (see Table 1)
186.006	a	09 13 36.9	+34 39.7	17	mb	m	w	1	NGC 2793 (see Table 1),IRAS
182.021	a	09 45 29.7	+33 38.9	17	b	s	m	1	NGC 3003,UGC 5251,MCG+06-22-013,REIZ 44,IRAS
	b	09 45 40.7	33 39.6	18+	-	w	w	1	(see Table 1)
182.035	a	09 52 28.1	+33 30.3	17	-	m	w?	1	UGC 5326,MCG+06-22-029,REIZ 90
182.050	a	09 55 06.3	+37 32.2	17	mb	s	w	1	UGC 5349,MCG+06-22-043,REIZ 106
182.060	a	09 58 42.9	+37 29.2	17	-	s	w?	1	UGC 5391,MCG+06-22-054,HOLM 158A

As indicated in column (9), a substantial fraction of the galaxies in Table 1 have been identified as infrared sources in the *IRAS* survey. The *IRAS* sources are about equally divided between galaxies showing emission and those apparently lacking strong emission lines. The *IRAS* data may prove useful in detecting the Seyfert galaxies in our lists according to the criteria found by de Grijp *et al.* (1985). There are nine Markarian galaxies listed in the region here under consideration. We include six of these among our blue galaxies but note that two others (Mrk 392, Mrk 396) were considered to be blue stars and are included in Table 3. Mrk 395 was not considered sufficiently blue to meet our criteria.

b) *Probable* H II *Regions*

Category IA (Table 1A) contains generally stellar-like, blue emission-line knots lying outside the readily identifiable nuclei of well-resolved galaxies. We therefore consider these to be probable giant H II regions. This is supported by the fact that they usually display rather low excitation characteristics. These objects therefore constitute a related subset of category I and could prove useful as distance indicators, for abundance studies and the like. As would be expected, most of the H II regions in our lists are associated with moderately faint galaxies and have not been previously reported in the literature.

c) *Blue and/or Emission-Line Stellar Objects*

Category II (Table 2) is comprised of two groups of objects which are unresolved both on our plates and on the POSS prints. One category comprises highly probable QSO candidates which definitely show or are suspected of showing emission features whose wavelengths are listed in column (4). In order to be readily seen at this low dispersion, we estimate that an emission feature must have an equivalent width in excess of 50 Å. Thus the most likely line to be detected is Lyα in a QSO having $z > 1.7$. If two or more lines are seen, the identifications of the emission features can usually be determined with some assurance and the redshift estimated with reasonable accuracy from our plates. However, this is possible only in a small number of cases, and clearly all of our QSO candidates should be observed at higher dispersions to obtain definitive line identifications and redshifts.

In addition to showing emission lines, a small percentage of high-z QSOs will also show extremely broad absorption features. Because of the possibility that these represent a very early stage in the QSO phenomenon, such cases are of particular interest. Thus we are diligently on the lookout for such broad absorption line (BAL) objects, as they are called, and note that CSO 203 in this paper is one such candidate.

The other spectral group included in category II contains unresolved objects which show no indication of emission features on our plates but are characterized by the presence of a rather flat, featureless blue continuum. It is anticipated that some of these will prove to be QSOs in which the emission features are too weak to be readily detected at our low dispersion. Likewise, it is possible that moderately blue Galactic stars having very weak absorption features will also be included. Thus it is imperative that all of the CSO objects be subjected to higher dispersion spectroscopic observations to determine their nature.

Such follow-up studies of samples of CSO objects have now been made by Zotov (1985) and Wagner (1985). They confirm the objects in which we report emission to be QSOs with z generally greater than 1.7. In addition, it appears that at least one-third of the flat, featureless blue continuum objects are also QSOs with z-values generally less than 1.7. The remaining objects are a mixture of various types of interesting blue subluminous stars. Although her intensified image dissector scanner (IIDS) scans were somewhat noisy, Zotov found that about one-third of her sample of 67 featureless CSO objects appeared to remain featureless at higher dispersion. These might well include some BL Lac objects or DC white dwarfs.

d) *Known and Probable Blue Stars*

The category III objects (Table 3) are definitely known or highly probable blue Galactic stars. Objects showing extremely strong ($U - B < -1.0$) ultraviolet continua are not likely to be QSOs and are included here under the assumption that they will prove to be O-type subdwarfs. Any object showing evidence of hydrogen absorption lines (such features must have an equivalent width greater than 15 Å to be readily detected in these narrow spectra) are also clearly stars. Stars showing very broad Balmer series absorption are designated as "DA?," i.e., probable A-type white dwarfs. If a check of the literature discloses that a blue object has been determined to be a star from spectroscopy or has been detected in a proper-motion survey, we of course put it in this category. A valuable source

TABLE 2

BLUE AND/OR EMISSION-LINE STELLAR OBJECTS

CSO (1)	α 1950 (2) h m s	δ (2) ° ′	m_B (3)	Emission Feature(s) (4)	Ton (5)	Other Name(s) (6)
180	08 09 59.2	+36 31.7	17			
181	08 11 21.1	35 19.2	17			
182	08 12 10.6	36 44.6	18			Q 0812+367(z=1.03)
183	08 14 36.6	36 42.3	17			
184	08 16 22.	33 58.4:	17		907	
185	08 19 25.6	36 23.1	17	~3490 m		
186	08 19 54.2	36 18.8	17	~4920 m		
187	08 20 22.8	36 10.3	17			
188	08 22 30.2	34 33.3	17	~3870 w?		
189	08 24 27.2	37 15.8	18			
190	08 24 37.3	34 08.8	17			
191	08 27 25.6	35 04.1	17			
192	08 27 32.1	37 58.7	17			
193	08 27 55.2	37 52.3	18			Q 0827+378(z=0.91),KUV 08279+3752
194	08 28 09.0	35 34.8	17			
195	08 28 25.4	36 22.5	18	~4070 w?		
196	08 30 34.3	34 36.7	17	~5105 m		
197	08 35 37.7	34 00.8	17			
198	08 37 09.0	37 53.7	18			
199	08 38 07.6	35 55.7	16	~3420 m		
200	08 38 09.0	37 37.2	17			KUV 08381+3737
201	08 40 28.3	34 23.2	17			
202	08 41 53.	34 25.8:	18			
203[a]	08 42 30.5	34 31.9	17	~3825 m, broad		
204	08 44 34.0	34 56.3	14	~5150 s	951	PG 0844+349(z=0.064)
205	08 44 46.2	35 58.3	17	~5105 w		
206	08 45 14.5	36 13.5	17	~3990 w		
207[b]	08 46 11.3	36 49.8	17			
208[c]	08 46 37.	33 56.4:	18		955	
209	08 46 42.0	36 51.0	17			
210	08 46 57.3	36 47.7	18			
211	08 53 12.	34 02.3:	17	~4230 w		
212	08 53 54.4	35 36.5	18			
213	08 54 33.5	35 15.3	18			
214	08 55 15.9	35 14.0	18		975	
215	08 55 22.0	34 35.6	16		978	
216	08 56 12.7	35 19.5	17			
217	08 58 47.5	33 56.1	18	~3710 m		
218	09 04 57.4	33 47.3	18			
219	09 07 33.3	33 41.8	16		1015	KUV 09076+3342
220	09 10 30.	35 38.2:	17		1029	
221	09 11 01.0	35 40.2	17			
222	09 11 01.5	37 13.4	17			
223	09 14 27.8	36 00.3	18	~5110 w?		
224	09 21 15.5	37 49.8	18			
225	09 25 21.6	36 36.1	17		1062	
226	09 27 30.	34 38.7:	18	~5350 m	1067	
227	09 28 02.5	33 53.2	17		1069	
228	09 28 29.4	33 02.8	16			
229	09 29 44.5	36 47.0	17	~4110 w?		
230	09 30 37.3	37 40.4	18			KUV 09306+3740
231	09 33 49.	37 27.6:	18			
232	09 34 31.3	37 19.5	17			
233	09 36 32.3	36 53.8	17	~3670 m= Lyα 1216,~4690 w= CIV1549,z=2.03		
234	09 37 16.9	36 18.2	17			
235	09 40 42.3	35 51.1	18			
236	09 44 12.6	35 05.5	18			
237	09 50 15.5	35 17.4	17		1113	
238	09 50 42.1	35 56.5	17	~3740 w?		
239[d]	09 52 40.9	33 49.5	17	~4210 m, broad	1125	
240	09 53 49.9	34 05.0	17			
241	09 54 35.8	34 06.1	16	~4230 w?		
242	09 57 42.7	36 59.8	16			
243	09 57 53.9	35 29.7	17		1138	
244	10 01 00.9	33 18.6	17			
245	10 01 20.3	33 31.9	18			
246	10 02 16.9	34 07.1	18			
247[e]	10 05 56.9	37 54.4	16v			
248	10 07 23.2	34 10.7	18			
249	10 08 16.4	34 30.8	18+	~4130 m		
250	10 09 17.8	33 24.4	18	~4000 m		
251	10 10 07.5	36 06.6	15	~4620 m= ? ,~5240 m= ?	1187	
252[f]	10 10 31.	36 13.1:	17		1189	

[a] Broad absorption features. Broad absorption line QSO?
[b] Lies near the galaxy ZWG 180.013.
[c] The magnitude of TON 955 is given as 16.2. Variable?
[d] Two emission features suspected on a IIIa-F plate.
[e] Seems brighter on the POSS print than on our plate taken 1981 February 5.
[f] Lies just north of the galaxy ZWG 183.006.

TABLE 3

KNOWN AND PROBABLE BLUE STARS

CBS (1)	α 1950 (2)	δ	m_B (3)	Color (4)	Sp. Data (5)	Ton (6)	Other Name(s) (7)
	h m s	o ′					
67	08 05 57.1	+35 37.1	15	b	h	874	
68	08 10 45.	33 26.2:	17	b	DA?	890	
69	08 12 36.	35 26.2:	13	vb	h?	899	
70	08 15 39.8	37 39.2	16	b	DA?		KUV 08157+3739
71	08 16 30.5	37 41.1	16	b	DA?		WD 0816+376,EG 348,GD 90,KUV 08165+3741
72	08 19 32.6	36 24.0	15	b	h		WD 0819+363,PG
73[a]	08 25 15.7	36 44.5	17	vb	h?		
74	08 29 11.6	37 17.9	17	vb	fc?		
75	08 30 47.3	37 09.9	16	b	h		WD 0830+371,G 115-009
76	08 30 49.8	36 50.4	17	vb?	fc		
77	08 35 25.1	36 39.7	17	vb	h?		
78	08 38 42.1	37 34.0	17	vb	h?		KUV 08387+3734
79	08 39 05.4	37 59.9	16	b	h		KUV 08391+3800
80[b]	08 39 43.7	34 35.4	16	b	DA?	941	
81	08 39 57.4	33 38.7	14	vb	h?	943	PG
82	08 40 39.9	36 25.5	17	vb	fc		
83	08 41 09.0	33 40.3	16	vb	h?	946	
84[c]	08 43 35.0	35 49.8	14	b	pec.	949	GD 95
85	08 46 01.7	34 41.0	16	b	fc	953	EG 953,GD 96,WD 0846+346,KUV 08460+3441
86	08 47 05.9	35 24.0	17	b	DA?	957	
87	08 55 31.6	36 34.0	16	b	bd?		KUV 08555+3634
88	08 56 10.6	33 08.9	15	b	h?	368	G 047-018,LTT 12351,WD 0856+331,MRK 392,PG
89	08 58 40.5	36 19.2	14	b	DA?		EG 219,GD 99,WD 0858+363,PG
90	08 59 05.3	33 47.2	16	b	h	374	
91	09 00 13.3	35 25.0	17	vb	h?		
92	09 00 49.6	37 52.3	17	vb	h?		KUV 09008+3752
93	09 01 50.2	34 50.7	18	vb	h?		
94	09 06 24.8	34 10.7	17	vb	h?		
95	09 08 31.6	35 43.0	17	vb	fc?		
96[d]	09 17 08.3	34 09.5	14	b	h?	1051	PG
97	09 20 30.0	37 31.0	16	b	h		WD 0920+375,PG
98[e]	09 20 49.6	36 36.7	16	vb	fc		
99	09 20 52.3	36 21.8	16	b	h?	1054	WD 0920+363,PG
100	09 21 11.8	35 29.8	16	b	DA?		EG 65,WD 0921+354,MRK 396,PG
101	09 21 39.4	35 23.5	18	vb	fc?	1056	
102	09 25 28.4	35 26.1	17	b	h,bd?	1063	
103	09 26 34.1	37 55.5	16	vb	fc		KUV 09266+3755
104	09 32 52.3	36 47.2	16	b	h?,bd		
105	09 34 00.9	34 38.8	16	vb	fc	1078	
106	09 34 08.6	33 47.7	16	vb	h	1082	WD 0934+337,PG
107	09 36 53.6	37 24.1	18	vb	fc?		KUV 09369+3724
108	09 41 26.6	36 22.7	17	vb	h?		
109	09 45 58.8	33 56.0	17	vb	fc?	1100	
110	09 46 15.8	36 17.4	14	b	bd		
111[f]	09 48 50.9	34 21.7	14	b	h?,bd?	1107	PG
112	09 49 34.	35 26.7:	18	vb	fc?		
113	09 52 48.	33 30.2:	18	vb	fc?		
114	09 54 52.6	34 14.0	17	vb	h?	1132	
115	09 56 33.6	36 33.1	12	b	h?		
116	09 56 57.9	35 54.5	14	vb	fc?	1137	PG,WD 0956+359
117	09 58 17.6	35 19.8	16	vb	fc		
118	09 58 57.9	37 41.3	17	b	h?		KUV 09590+3741
119[g]	09 59 11.4	34 05.7	17v	vb	pec.	1143	
120	09 59 20.3	33 58.0	18	vb	fc?		
121	10 00 07.9	36 16.3	17	b	h?		
122	10 00 19.2	37 31.7	15	b	h		KUV 10003+3732,PG
123	10 00 32.3	36 11.2	16	vb	fc	1147	
124	10 08 58.5	37 12.4	17	b	DA?		KUV 10090+3712

[a]Appears to have a red companion star about 6″ to the southwest.
[b]Partial overlapping of the spectrum with that of TON 940 lying just to the south.
[c]Strong H and K lines in absorption.
[d]A cataclysmic variable in Green 1982.
[e]Lies just west of a slightly brighter later type star.
[f]We see no emission on two plates of this cataclysmic variable (Green 1982).
[g]Hβ and Hγ in emission.

of such spectral information is the survey by Green (1982), which, however, has a limiting magnitude of $B \sim 15.5$. As noted earlier, blue Galactic stars generally fainter than $B = 16.0$ will also be found among the category II objects by means of follow-up spectroscopy.

III. ADDENDA

We need to add the following abbreviations for references cited in the last column of each table to those already given in our previous papers. Sources marked with an asterisk provide identification charts.

KARA.72: Karachentsev (1972). KUG*: Takase and Miyauchi-Isobe (1984). *IRAS*: Point Source Catalog (1985). WD: McCook and Sion (1984). 4C: Pilkington and Scott (1965).

We also note the following errata in Paper II. The declination of CSO 141 should read $+31°54'2$:. This object is thus identified as LB 6414. The identification chart given for CSO 69 is inverted, with north down and east to the right.

IV. SUMMARY

This is the third in a series of papers which provide lists of interesting blue objects in north Galactic polar regions which were noted on low-dispersion objective-prism plates. To its limiting magnitude of $B \sim 18$, we believe this spectroscopic approach has one main advantage over the multiple–direct-image color selection technique, in that it provides a much greater capability of defining a wide range of spectral categories and screening out the objects of rather marginal interest which often abound in the lists of objects selected only by color. Also, the deep color selection surveys are, of necessity, confined to selected areas, whereas it is our ultimate intention to cover much of the northern Galactic cap lying above $b = +30°$. However, we again emphasize that our results should be viewed as finding lists of objects which must be subjected to follow-up observations to confirm and fully define their nature. It would therefore not be prudent to use our lists (as given) for any statistical purpose.

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PETER PESCH: Division of Astronomical Sciences, National Science Foundation, 1800 G Street, N.W., Washington, DC 20550

N. SANDULEAK: Warner and Swasey Observatory, Case Western Reserve University, Cleveland, OH 44106