

Astron. Astrophys. Suppl. Ser. **65**, 241-258 (1986)**Miscellaneous observations of active galactic nuclei (*)**

M.-P. Véron-Cetty and P. Véron

Observatoire de Haute Provence, F-04870 St-Michel-l'Observatoire, France

*Received September 30, accepted November 5, 1985***Summary.** — We present spectra, in the wavelength range $\lambda\lambda 4000$ -7500, with a resolution of $\sim 10 \text{ \AA}$, of 61 galaxies suspected of being active. Eighteen are Seyfert 1, 9 Seyfert 2, one is a liner, 32 have nuclear HII regions, and one object is a star.**Key words :** galaxies : nuclei of — galaxies : redshift.

While carrying out a spectroscopic survey of the nucleus of a complete sample of galaxies with an Image Dissector Scanner and a Boller and Chivens spectrograph attached at the Cassegrain focus of the ESO 152 cm telescope, we have observed in addition 53 galaxies which had once been suspected of being compact, variable, active or having some Seyfert characteristics. The dispersion was 171 \AA mm^{-1} and the resolution $\sim 10 \text{ \AA}$; the spectral range was ~ 4000 -7500 \AA . The exposure time was usually 20 min.

Eight other galaxies have been observed with other telescope and instrumentation as mentioned in the notes.

Of the 61 galaxies observed, 18 turned out to be Seyfert 1, 9 Seyfert 2, one liner, and 32 have a nuclear HII region ionized by hot stars; the last one (Mark 511) is a galaxy with a star projected near its nucleus.

Our results are summarized in table I which gives the list of the galaxies observed with the measured redshift, our classification (S1, S2, L or HII) and references for published redshift, *UBV* photoelectric measurements and finding charts.

Notes on individual objects.*Mark 298 — 1603+17 IC1182*

Mark 298 is a well known peculiar galaxy near the center of the Hercules cluster (A2151). It has been classified as a Seyfert galaxy by Arakelian *et al.* (1971) and as a Seyfert 2 by Khachikian and Weedman (1974) and Bothun *et al.* (1981); Koski (1978) also calls it a Seyfert 2; however his published line ratios cast some doubts on this classification, as $H\alpha/[NII] \lambda 6583 = 3.8$ and $[OIII] \lambda 5007/H\beta = 1.94$, suggesting that this object is a low excitation HII region

(Véron, 1981). It is not a Seyfert 2 galaxy for Shuder and Osterbrock (1981). Our spectrum shows line ratios in agreement with Koski. Mark 298 is a moderate excitation HII region rather than a Seyfert 2 galaxy.

Mark 308 — 2239+19 MCG3-57-31

A Seyfert 2 galaxy according to Popov and Khachikian (1980). However our spectrum, obtained at the ESO 3.6 m telescope, shows it to be a high excitation HII region.

Mark 334 — 0000+21 IVZw1 VV806

A Seyfert 1.8 galaxy according to Dahari (1985). Our spectrum shows a possible faint broad $H\alpha$ component, confirming this classification.

Mark 510 — 2106-02

A spectrum obtained with an RCA CCD and a Boller and Chivens spectrograph at the Cassegrain focus of the 3.6 m ESO telescope, at 171 \AA mm^{-1} , shows relatively weak emission lines characteristic of an HII region ($H\alpha \gg [NII] \lambda 6583$), at $z = 0.0196$.

Mark 511 — 2107-01

A photograph of Mark 511 has been obtained by Vanderriest and Lelièvre with the 3.6 m CFH telescope at Hawaii and published in the CFH bulletin N° 5 (1981); it shows that this object has two components, a disk galaxy and a very compact component. Our spectrum (not shown) shows this last object to be a B star.

Mark 549 — 0019-01

Our spectrum shows emission lines with a possible weak broad $H\alpha$ component. This galaxy could be a Seyfert 1.8.

Mark 567 — 0116+04 UM93

A possible Seyfert 1 galaxy according to MacAlpine *et al.* (1977); however a 3.6 m ESO telescope spectrum at 171 \AA mm^{-1} (with an Image Dissector Scanner) shows it to be a low excitation HII region.

(*) Based on observations made at the European Southern Observatory, La Silla, Chile. Most of the work was done while the authors were associated with ESO in Garching (FRG).

Mark 662 — 1351+23 PG 1351+236

A faint type 2 Seyfert galaxy (Afanasev *et al.*, 1980), a Seyfert 1.5 galaxy (Osterbrock and Dahari, 1983), or a quasar (Schmidt and Green, 1983). Our spectrum shows broad Balmer emission lines characteristic of Seyfert 1 galaxies.

Mark 702 — 0842+16

Emission line spectrum characteristic of a high excitation HII region.

Mark 703 — 0856+06 NGC 2718

Low excitation HII region.

Mark 704 — 0915+16

This galaxy has been recognized as presenting Seyfert properties by Markarian and Lipovetski (1976a) and shown to be a Seyfert 1 by Denisyuk and Lipovetski (1977). It has been detected as an X-ray source by the Einstein Observatory in the 0.1–4 keV range (Ulvestad and Wilson, 1983). It is indeed a Seyfert 1 galaxy with very strong and broad Balmer lines.

Mark 707 — 0934+01 PG 0934+013

It has been classified as a Seyfert 1 galaxy (Ulrich, 1975; Afanasev *et al.*, 1979) or a quasar (Schmidt and Green, 1983). It is optically variable with $\Delta B > 2.0$ mag (Miller, 1977). It is indeed a Seyfert 1 galaxy with however relatively narrow Balmer lines.

Mark 709 — 0946+17

The emission line ratios published by Denisyuk and Lipovetski (1983) show this object to be an HII region of relatively high excitation. Our spectrum confirms this classification.

Mark 711 — 0952+13

Our spectrum shows this object to be an HII region of moderate excitation in agreement with Denisyuk and Lipovetski (1983).

Mark 720 — 1015+07

Afanasev *et al.* (1979) have discovered a broad emission band at $\lambda 6864$. Our spectrum shows this object to be a Seyfert 1 galaxy with broad Balmer lines.

Mark 728 — 1058+11

Classified as a possible Seyfert 2 by Afanasev *et al.* (1979), as a Seyfert 1.5 by Afanasev *et al.* (1980) and as a Seyfert 1.9 by Goodrich and Osterbrock (1983). Our spectrum, of rather low signal-to-noise ratio shows the emission spectrum to be that of a Seyfert 2 galaxy with a possible weak broad $H\alpha$ component.

Mark 734 — 1119+12 PG 1119+20

Seyfert characteristics have been suspected by Markarian and Lipovetski (1976a) in this object which has been shown to be a Seyfert 1 galaxy by Denisyuk and Lipovetski (1977), or a quasar by Schmidt and Green (1983). Our spectrum confirms that it is a Seyfert 1 galaxy.

Mark 759 — 1208+16 NGC 4152

A weak, uncertain Seyfert galaxy for Afanasev *et al.* (1979). It is a low excitation HII region.

Mark 769 — 1222+16 NGC 4383

S0 pec ? galaxy in the Virgo cluster with a very strong UV continuum (Sandage, 1978). It is a moderate excitation HII region.

Mark 783 — 1300+16

First classified as a Seyfert 1 galaxy by Denisyuk and Lipovetski (1977), but a Seyfert 2 according to Afanasev *et al.* (1980); the Seyfert 1 nature of this object has been confirmed by Osterbrock and Dahari (1983) who have noted the presence of relatively narrow Balmer emission lines which are however noticeably wider than [OIII]. Our spectrum confirms this observation.

Mark 789 — 1329+11 VIII Zw323

This galaxy consists essentially of two condensations (Petrosian *et al.*, 1978). Denisyuk and Lipovetski (1977) have noted that it could have weak Seyfert 1 features; for Petrosian *et al.* (1979) both components have weak Seyfert 2 characteristics; however, for Shuder and Osterbrock (1981) this object is not a Seyfert 2 galaxy. Our spectrum shows that it is indeed a moderate excitation HII region.

Mark 873 — 1608+18 MCG 03-41-142

Weak emission lines, characteristic of an HII region at $z = 0.0365$.

Mark 938 — 0008-12 NGC 34, VV 850

Afanasev *et al.* (1980) have classified this galaxy as a Seyfert 2, but for Osterbrock and Dahari (1983), it is not a Seyfert. However Dahari (1985), by reexamining the spectral information available has reclassified it as a Seyfert 2. Our 3.6 m CCD spectrum shows that it is indeed a Seyfert 2 galaxy, with strong internal reddening as shown by the high value of the Balmer decrement and the large equivalent width of the interstellar NaID line.

Mark 1055 — 0245-09 I Zw8

Wisniewski (1980) has claimed to have observed variability of the emission lines and of the integrated V magnitude of this object, suggesting that it is a new class of extragalactic variable objects. Our spectrum shows it to be an HII region with relatively weak emission lines. Variability in such an object seems to be rather unlikely.

Mark 1087 — 0447+03 II Zw23, KP 103B

Very compact galaxy with sharp emission lines (Sargent 1970). Our spectrum shows a moderate excitation HII region.

Mark 1093 — 0505-08 NGC 1797

Low excitation HII region at $z = 0.0149$.

Mark 1126 — 2258-13 NGC 7450

Mark 1126 has been called a possible Seyfert galaxy (Markarian *et al.*, 1979a; 1980b); a Seyfert 2 galaxy with possibly faint Balmer line wings (Markarian *et al.*, 1980a); and a Seyfert 1.5 with quite narrow broad lines (Osterbrock and Dahari, 1983). This is indeed a Seyfert 1.5 galaxy, with obvious broad $H\alpha$ and $H\beta$ wings.

Mark 1143 — 0039+02 UM 60

Although Mark 1143 has been called a possible Seyfert 1 by MacAlpine *et al.* (1977), it is not a Seyfert galaxy for Shuder and Osterbrock (1981). It is indeed an HII region.

Mark 1220 — 0851+17

A possible Seyfert galaxy according to Markarian *et al.* (1980c). Our spectrum shows it to be most probably a Seyfert 1 galaxy with relatively narrow broad Balmer components.

Mark 1231 — 0917–10 MCG 02-23-10

An HII region at $z = 0.0377$.

Mark 1235 — 0939–08 NGC 2969

An HII region at $z = 0.0160$.

Mark 1261 — 1041–01 Ark 253, UGC 5849, MCG00-28-03

Although Doroshenko and Terebizh (1975) have called this object a possible Seyfert galaxy, it is not a Seyfert for Osterbrock and Phillips (1977). Our spectrum shows it to be a moderate excitation HII region.

Mark 1308 — 1151+00 IC 745, UGC 6877, MCG 00-30-34

A probable Seyfert for Markarian *et al.* (1979c); it is not a Seyfert for Osterbrock and Dahari (1983). It is a moderate excitation HII region.

Mark 1344 — 1306–05 NGC 4990

Although this object is a possible Seyfert galaxy for Markarian *et al.* (1979c), it is not according to Osterbrock and Dahari (1983). Our spectrum shows it to be a moderate excitation HII region.

Mark 1392 — 1503+03

A possible Seyfert galaxy according to Markarian *et al.* (1979c). It is a Seyfert I galaxy at $z = 0.0359$.

ESO 185-IG13 — 1941–54

This galaxy has been classified as a Seyfert 2 galaxy by West *et al.* (1978); our spectrum shows it to be rather a high excitation HII region.

ESO 215-G? 14 — 1057–51

Borchkhadze and West (1980) classified it as a possible Seyfert 1 galaxy. Our spectrum confirms this classification.

ESO 273-IG04 — 1445–43

Borchkhadze and West (1978) have classified the galaxy ESO 273-IG04 (a), the NE member of the pair, as a Seyfert 2; this is confirmed by our spectrum.

ESO 286-IG19 — 2055–42

The spectrum of this object has been studied by West *et al.* (1978); our spectrum shows that it is a moderate excitation HII region.

ESO 325-IG41 — 1356–42

Undoubtedly a Seyfert 2 galaxy according to Borchkhadze and West (1978); however our spectrum shows it to be a high excitation HII region.

ESO 350-IG38 — 0034–33 MCG 06-02-22

Approaching (!) Seyfert 2 type (West *et al.*, 1981). It is in fact a very high excitation HII region with very strong emission lines.

F 280 — 0912-60 ESO 126-G02

A « near Seyfert » according to Fairall (1980b). It is a low excitation HII region.

F 339 — 2007–57

A Seyfert 1 galaxy (Fairall 1981). This is confirmed by a 59 \AA mm^{-1} CCD spectrum obtained with the 2.2 m ESO telescope at La Silla (not shown), showing a very broad $H\alpha$ emission line.

F 341 — 2016–52 IC 4995, ESO 186-G34

Seyfert 2 galaxy (Fairall, 1981). This is confirmed by our 3.6 m CCD spectrum.

F 348 — 2033–50 ESO 234-IG56

A Seyfert 2 galaxy according to Fairall (1981). Our 3.6 m CCD spectrum shows that it is instead a very high excitation HII region.

F 357 — 2223–70

Seyfert 2 galaxy (Fairall, 1981); classification confirmed by our 3.6 m CCD spectrum.

F 917 — 2049–52 ESO 235-G10

Seyfert 2 galaxy (Fairall, 1984), classification confirmed by our 3.6 m CCD spectrum.

Tololo 1344+038 — 1344+03

« Somewhat similar to Seyfert 2 galaxies » according to Fairall (1980a). It is indeed a Seyfert 2.

Tololo 1347+023 — 1347+02

« Somewhat similar to Seyfert 2 galaxies » (Fairall, 1980a). It is a Seyfert 1 galaxy, with broad Balmer lines.

A 0125–58 — 0125–58

According to Arp (1981), this galaxy has Seyfert spectral characteristics; it is however a moderate excitation HII region.

A 1001–37 — 1001–37

A Seyfert 1 galaxy according to Arp (1981), classification confirmed by our spectrum.

Ton S180 — 0054–22

Seyfert 1 galaxy at $z = 0.0613$.

NGC 1685 — 0450–03 H 0447–037

It has been suggested that NGC 1685 is the optical counterpart of the X-ray source H 0447–037 (Marshall *et al.*, 1979). Our spectrum shows it to be a Seyfert 2 galaxy at $z = 0.0141$; there is a hint of a weak, broad $H\alpha$ component, therefore NGC 1685 could be a Seyfert 1.9 galaxy. A 20 min exposure on a IIIaJ emulsion behind an UG1 filter, taken with the CFH 3.6 m telescope in Hawaii clearly shows a starlike nucleus. Its position, as measured on a glass copy of the Palomar Sky Survey, is :

$$\alpha = 04^{\text{h}}50^{\text{m}}03^{\text{s}}87 \pm 0^{\text{s}}15$$

$$\delta = -03^{\circ}01'53''0 \pm 0''.7 (1950.0)$$

NGC 1685 is very likely the identification of the X-ray source. Figure 3 shows a 60 min exposure of NGC 1685 exposed on a IIIaJ emulsion, behind a GG 385 filter, at the prime focus of the CFH telescope.

NGC 3032 — 0949+29

The nucleus of this galaxy morphologically resembles Seyferts (Keel and Weedman, 1978). Our spectrum shows

it to be an HII region, with $H\alpha/\lambda 6583 \sim 2$, a rare occurrence in a S0/Sa galaxy (Sandage and Tammann, 1981).

NGC 3362 — 1042+06 Tololo 1042+068

« Somewhat similar to Seyfert 2 galaxies » (Fairall, 1980a). It is a Seyfert 2 galaxy.

NGC 3393 — 1046-14 ESO 501-G100

Suspected to be a Seyfert 2 galaxy by W. Wamsteker (1981, private communication). Classification confirmed, $z = 0.0123$.

NGC 5252 — 1335+04 Tololo 1345+047, MCG 1-35-22

« Somewhat similar to Seyfert 2 galaxies » (Fairall, 1980a). It is a Seyfert 2 galaxy.

NGC 6500 — 1753+18

This galaxy contains a compact, flat spectrum nuclear radiosource (Condon and Dressel, 1978; Jones *et al.*, 1982); Heckman (1980) having shown that « liners » and compact nuclear radiosources tend to occur together, we have observed NGC 6500 which turned out to be a « liner » indeed.

NGC 7172 — 2159-32 H 2158-321, 2A 2151-316, 3A 2159-320

NGC 7172 has been identified with the X-ray source H 2158-321 by Marshall *et al.* (1979). Our spectrum obtained with the 3.6 m ESO telescope shows this galaxy to be a Seyfert 2 with relatively weak emission lines and strong internal absorption as shown by the very deep NaID line; the presence of this absorption is not a surprise as Rubin (1974) has pointed out a dense dust lane in this nearly edge-on galaxy.

NGC 7590 — 2316-42

NGC 7590 has been detected as an X-ray source by Macca-
caro and Perola (1981). Martin (1976) has described its nucleus as stellar-like and reported the presence of weak emission lines. Our spectrum shows it to be a Seyfert 2 galaxy.

IC 4687 — 1809-57 ESO 140-IG10

A Seyfert 2 galaxy according to West (1976); it is in fact a low excitation HII region.

References

- ADAMS, T. F. : 1977, *Astrophys. J. Suppl. Ser.* **33**, 19.
 AFANASEV, V. L., DENISYUK, E. K. and LIPOVETSKI, V. A. : 1979, *Sov. Astron. Lett.* **5**, 144.
 AFANASEV, V. L., LIPOVETSKI, V. A., MARKARIAN, B. E. and STEPANIAN, D. A. : 1980, *Astrophysics* **16**, 119.
 ARAKELIAN, M. A., DIBAI, E. A., ESIPOV, V. F. and MARKARIAN, B. E. : 1971, *Astrophysics* **7**, 102.
 ARAKELIAN, M. A., DIBAI, E. A. and ESIPOV, V. F. : 1972a, *Astrophysics* **8**, 106.
 ARAKELIAN, M. A., DIBAI, E. A. and LYUTYI, B. M. : 1972b, *Astrophysics* **8**, 280.
 ARP, H. : 1981, *Astrophys. J. Suppl. Ser.* **46**, 75.
 BERGWALL, N. A. S., EKMAN, A. B. G., LAUBERTS, A., WESTERLUND, B. E., BORCHKHADZE, T. M., BREYSACHER, J., LAUSTSEN, S., MULLER, A. B., SCHUSTER, H.-E., SURDEJ, J. and WEST, R. M. : 1978, *Astron. Astrophys. Suppl. Ser.* **33**, 243.
 BIEGING, J. H. and BIEMANN, P. : 1977, *Astron. Astrophys.* **60**, 361.
 BOHUSKI, T. J., FAIRALL, A. P. and WEEDMAN, D. W. : 1978, *Astrophys. J.* **221**, 776.
 BORCHKHADZE, T. M. and WEST, R. M. : 1978, *Astrophysics* **13**, 358.
 BORCHKHADZE, T. M. and WEST, R. M. : 1980, *Astrophysics* **16**, 233.
 BOTHUN, G. D., STAUFFER, J. R. and SCHOMMER, R. A. : 1981, *Astrophys. J.* **247**, 42.
 CHAVIRA, E. : 1958, *Boll. Ton. y. Tac.* **17**, 15.
 CHINCARINI, G. and ROOD, H. J. : 1976, *Astrophys. J.* **206**, 30.
 CONDON, J. J. and DRESSEL, L. L. : 1978, *Astrophys. J.* **221**, 456.
 CRENSHAW, D. M., PETERSON, B. M., FOLTZ, C. B. and BYARD, P. L. : 1982, *Publ. Astron. Soc. Pac.* **94**, 16.
 DAHARI, O. : 1985, *Astrophys. J. Suppl. Ser.* **57**, 643.
 DENISYUK, E. K. and LIPOVETSKI, V. A. : 1977, *Sov. Astron. Lett.* **3**, 3.
 DENISYUK, E. K. and LIPOVETSKI, V. A. : 1983, *Astrophysics* **19**, 134.
 DENISYUK, E. K. and LIPOVETSKI, V. A. : 1984, *Astrophysics* **20**, 290.
 DENISYUK, E. K., LIPOVETSKI, V. A. and AFANASEV, V. L. : 1976, *Astrophysics* **12**, 442.
 DIBAI, E. A., DOROSHENKO, V. T. and POSTNOV, K. A. : 1982, *Soviet Astron. Lett.* **7**, 295.
 DOROSHENKO, V. T. and TEREbizh, V. Y. : 1975, *Astrophysics* **11**, 422.
 DOROSHENKO, V. T. and TEREbizh, V. Y. : 1980, *Sov. Astron. Lett.* **5**, 305.
 FAIRALL, A. P. : 1980a, *Mon. Not. R. Astron. Soc.* **191**, 391.
 FAIRALL, A. P. : 1980b, *Mon. Not. R. Astron. Soc.* **192**, 389.
 FAIRALL, A. P. : 1981, *Mon. Not. R. Astron. Soc.* **196**, 417.
 FAIRALL, A. P. : 1984, *Mon. Not. R. Astron. Soc.* **210**, 69.
 GOODRICH, R. W. and OSTERBROCK, D. E. : 1983, *Astrophys. J.* **269**, 416.
 GRIERSMITH, D. : 1980, *Astron. J.* **85**, 789.
 HECKMAN, T. M. : 1980, *Astron. Astrophys.* **87**, 152.
 HUCHRA, J. P. : 1977, *Astrophys. J. Suppl. Ser.* **35**, 171.
 HUCHRA, J. and SARGENT, W. L. W. : 1973, *Astrophys. J.* **186**, 433.
 JONES, D. L., SRAMEK, R. A. and TERZIAN, Y. : 1982, *Astrophys. J.* **261**, 422.
 KEEL, W. C. and WEEDMAN, D. W. : 1978, *Astron. J.* **83**, 1.
 KHACHIKIAN, E. Y. and WEEDMAN, D. W. : 1974, *Astrophys. J.* **192**, 581.
 KOPYLOV, I. M., LIPOVETSKI, V. A., PRONIK, V. I. and CHUVAEV, K. K. : 1974, *Astrophysics* **10**, 305.
 KOPYLOV, I. M., LIPOVETSKI, V. A., PRONIK, V. I. and CHUVAEV, K. K. : 1976, *Astrophysics* **12**, 119.
 KOSKI, A. T. : 1978, *Astrophys. J.* **223**, 56.

- MACALPINE, G. M., SMITH, S. B. and LEWIS, D. W. : 1977, *Astrophys. J. Suppl. Ser.* **34**, 95.
- MACCACCARO, T. and PEROLA, G. C. : 1981, *Astrophys. J. Lett.* **246**, L 11.
- MARKARIAN, B. E. : 1969, *Astrophysics* **5**, 286.
- MARKARIAN, B. E. : 1977, *Astron. Astrophys.* **58**, 139.
- MARKARIAN, B. E. and LIPOVETSKI, V. A. : 1971, *Astrophysics* **7**, 299.
- MARKARIAN, B. E. and LIPOVETSKI, V. A. : 1973, *Astrophysics* **9**, 283.
- MARKARIAN, B. E. and LIPOVETSKI, V. A. : 1974, *Astrophysics* **10**, 185.
- MARKARIAN, B. E. and LIPOVETSKI, V. A. : 1976a, *Astrophysics* **12**, 241.
- MARKARIAN, B. E. and LIPOVETSKI, V. A. : 1976b, *Astrophysics* **12**, 429.
- MARKARIAN, B. E., LIPOVETSKI, V. A. and STEPANIAN, D. A. : 1977a, *Astrophysics* **13**, 116.
- MARKARIAN, B. E., LIPOVETSKI, V. A. and STEPANIAN, D. A. : 1977b, *Astrophysics* **13**, 215.
- MARKARIAN, B. E., LIPOVETSKI, V. A. and STEPANIAN, D. A. : 1979a, *Astrophysics* **15**, 130.
- MARKARIAN, B. E., LIPOVETSKI, V. A. and STEPANIAN, D. A. : 1979b, *Astrophysics* **15**, 235.
- MARKARIAN, B. E., LIPOVETSKI, V. A. and STEPANIAN, D. A. : 1979c, *Astrophysics* **15**, 363.
- MARKARIAN, B. E., LIPOVETSKI, V. A. and STEPANIAN, D. A. : 1980a, *Sov. Astron. Lett.* **5**, 269.
- MARKARIAN, B. E., LIPOVETSKI, V. A. and STEPANIAN, D. A. : 1980b, *Astrophysics* **16**, 1.
- MARKARIAN, B. E., LIPOVETSKI, V. A. and STEPANIAN, D. A. : 1980c, *Astrophysics* **16**, 353.
- MARKARIAN, B. E., ERASOVA, L. K., LIPOVETSKI, V. A., STEPANIAN, J. A. and SHAPOVALOVA, A. I. : 1985, *Astrofizika* **22**, 215.
- MARSHALL, F. E., BOLDT, E. A., HOLT, S. S., MUSHOTZKY, R. F., PRAVDO, S. H., ROTHSCHILD, R. E. and SERLEMITSOS, P. J. : 1979, *Astrophys. J. Suppl. Ser.* **40**, 657.
- MARTIN, W. L. : 1976, *Mon. Not. R. Astron. Soc.* **175**, 633.
- MILLER, H. R. : 1977, *Astrophys. J.* **212**, 34.
- OSTERBROCK, D. E. and DAHARI, O. : 1983, *Astrophys. J.* **273**, 478.
- OSTERBROCK, D. E. and PHILLIPS, M. M. : 1977, *Publ. Astron. Soc. Pac.* **89**, 251.
- PETERSON, B. M., FRICKE, K. and BIERMANN, P. : 1981, *Publ. Astron. Soc. Pac.* **93**, 281.
- PETROSIAN, A. R., SAAKIAN, K. A. and KHACHIKIAN, E. E. : 1978, *Astrophysics* **14**, 36.
- PETROSIAN, A. R., SAAKIAN, K. A. and KHACHIKIAN, E. E. : 1979, *Astrophysics* **15**, 250.
- POPOV, V. N. and KHACHIKIAN, E. E. : 1980, *Astrophysics* **16**, 33.
- RUBIN, V. C. : 1974, *Astrophys. J.* **191**, 645.
- SANDAGE, A. : 1978, *Astron. J.* **83**, 904.
- SANDAGE, A. and TAMMANN, G. A. : 1981, « A Revised Shapley-Ames Catalog of bright galaxies », Washington : Carnegie Institution of Washington, publication 635.
- SARGENT, W. L. W. : 1970, *Astrophys. J.* **160**, 405.
- SCHMIDT, M. and GREEN, R. F. : 1983, *Astrophys. J.* **269**, 352.
- SHUDER, J. M. and OSTERBROCK, D. E. : 1981, *Astrophys. J.* **250**, 55.
- STOCKTON, A. N. : 1968, *Astron. J.* **73**, 887.
- ULRICH, M.-H. : 1975, *Astron. Astrophys.* **40**, 337.
- ULVESTAD, J. S. and WILSON, A. S. : 1983, *Astron. J.* **88**, 253.
- VÉRON, M.-P. : 1981, *Astron. Astrophys.* **100**, 12.
- VÉRON-CETTY, M.-P. : 1984, *Astron. Astrophys. Suppl. Ser.* **58**, 665.
- VORONTSOV-VELYAMINOV, B. A. : 1977, *Astron. Astrophys. Suppl. Ser.* **28**, 1.
- WEEDMAN, D. W. : 1973, *Astrophys. J.* **183**, 29.
- WEST, R. M. : 1976, *Astron. Astrophys.* **46**, 327.
- WEST, R. M., BORCHKHADZE, T. M., BREYSACHER, J., LAUSTSEN, S. and SCHUSTER, H.-E. : 1978, *Astron. Astrophys. Suppl. Ser.* **31**, 55.
- WEST, R. M., SURDEJ, J., SCHUSTER, H.-E., MULLER, A. B., LAUSTSEN, S. and BORCHKHADZE, T. M. : 1981, *Astron. Astrophys. Suppl. Ser.* **46**, 57.
- WILLS, B. J. and WILLS, D. : 1979, *Astrophys. J. Suppl. Ser.* **41**, 689.
- WISNIEWSKI, W. : 1980, *IAU Circular*, N° 3557.

TABLE I.

			z		ref.z	ref.UBV	ref.chart	Fig.
Mark	298	1603+17	0.0344	HII	1	1,10	1,23,29	1f
	308	2239+19	0.0237	HII	2,3	1,10,11	3	1e
	334	0000+21	0.0215	S1	3,4	2,11	2,3	1c
	510	2106-02	0.0196	HII			4	2
	511	2107-01	-	-			4,5	
	549	0019-01	0.0390	S1	5		4	1c
	567	0116+04	0.0325	HII	6		4,12	1h
	662	1351+23	0.0549	S1	7,8,13,36	3	27	1a
	702	0842+16	0.0532	HII	9		6	1e
	703	0856+06	0.0124	HII	9,10	4	6	1h
	704	0915+16	0.0291	S1	11,12	3	6	1a
	707	0934+01	0.0496	S1	13,14,15	4	6,7,28	1a
	709	0946+17	0.0521	HII	9		6	1e
	711	0952+13	0.0192	HII	9		6	1f
	720	1015+07	0.0444	S1	14	3,4	6	1a
	728	1058+11	0.0354	S1	7,8,14,16	3,4	6	1c
	734	1119+12	0.0491	S1	11,12,13	3,4	6	1a
	759	1208+16	0.0068	HII	14	3	6	1h
	769	1222+16	0.0052	HII	35	6	6	1f
	783	1300+16	0.0672	S1	7,8,11,12	3	6	1b
	789	1329+11	0.0315	HII	11,12,28	3,4	6	1g
	873	1608+18	0.0365	HII	9		24	1i
	938	0008-12	0.0193	S2	4,7,8,17		2,8	2
	1055	0245-09	0.0366	HII	17	4,12	10	1h
	1087	0447+03	0.0277	HII	17,18	3,4	9,10	1f
	1093	0505-08	0.0149	HII	17,19		10	1h
	1126	2258-13	0.0108	S1	7,20,21	4	11	1b
	1143	0039+02	0.0376	HII	22		11,12	1i
	1220	0851+17	0.0649	S1	22		25	1b
	1231	0917-10	0.0377	HII			25	1i
	1235	0939-08	0.0166	HII			25	1g
	1261	1041-01	0.0258	HII	23	5	25	1g
	1308	1151+00	0.0040	HII	7,22,28		26	1f
	1344	1306-05	0.0103	HII	7	4	26	1f
	1392	1503+03	0.0359	S1			26	1b
ESO	185-IG13	1941-54	0.0186	HII	25	7		1e
	215-G?14	1057-51	0.0188	S1	26		14	1c
	273-IG04	1445-43	0.0370	S2	27	4	15	1d
	286-IG19	2055-42	0.0433	HII	25	8	16	1g
	325-IG41	1356-42	0.0060	HII	27	9	15	1e
	350-IG38	0034-33	0.0205	HII	26		4	1e
F280		0912-60	0.0095	HII	29		18	1g
F339		2007-57		S1	30			
F341		2016-52	0.0165	S2	30			2
F348		2033-50	0.0088	HII	30			2
F357		2223-70	0.0282	S2	30			2
F917		2049-52	0.0521	S2	31			2
A0125-58		0125-58	0.0471	HII	33		20	1g
A1001-37		1001-37	0.0241	S1	33	4	20	1a
Tol 1344+038		1344+03	0.0231	S2	32		19	1d
Tol 1347+023		1347+02	0.0326	S1	32		19	1b
NGC	1685	0450-03	0.0141	S1		4	17	1c
	3032	0949+29	0.0054	HII	37			1i
	3362	1042+06	0.0279	S2	32		19	1d
	3393	1046-24	0.0123	S2				1d
	5252	1335+04	0.0229	S2	32	4	19	1d
	6500	1753+18	0.0100	L	38		30	1i
	7172	2159-32	0.0085	S2	24		13	1d
	7590	2316-42	0.0047	S2	39			1i
IC	4867	1809-57	0.0173	HII	34		21	1h
Ton	S 180	0054-22	0.0613	S1		4	22	1b

Notes to table I :

Col. 1 :	name of the source
Col. 2 :	short position
Col. 3 :	observed redshift as measured on our spectra
Col. 4 :	classification of the spectrum : HII, S1 or S2 or L (for the liner NGC 6500)
Col. 5 :	references for other published redshifts
Col. 6 :	references for UBV measurements
Col. 7 :	references for finding charts.

References for redshifts

- | | |
|----------------------------------|----------------------------------|
| 1. Arakelian et al. 1971 | 20. Markarian et al. 1980a |
| 2. Huchra and Sargent 1973 | 21. Markarian et al. 1980b |
| 3. Arakelian et al. 1972a | 22. Markarian et al. 1980c |
| 4. Dahari 1985 | 23. Doroshenko and Terebizh 1975 |
| 5. Kopylov et al. 1976 | 24. Chincarini and Rood 1976 |
| 6. Kopylov et al. 1974 | 25. West et al. 1978 |
| 7. Osterbrock and Dahari 1983 | 26. West et al. 1981 |
| 8. Afanasev et al. 1980 | 27. Borchkhadze and West 1978 |
| 9. Denisyuk and Lipovetski 1983 | 28. Shuder and Osterbrock 1981 |
| 10. Crenshaw et al. 1982 | 29. Fairall 1980b |
| 11. Denisyuk and Lipovetski 1977 | 30. Fairall 1981 |
| 12. Markarian 1977 | 31. Fairall 1984 |
| 13. Schmidt and Green 1983 | 32. Fairall 1980a |
| 14. Afanasev et al. 1979 | 33. Arp 1981 |
| 15. Ulrich 1975 | 34. West 1976 |
| 16. Goodrich and Osterbrock 1983 | 35. Sandage 1978 |
| 17. Denisyuk and Lipovetski 1984 | 36. Denisyuk et al. 1976 |
| 18. Sargent 1970 | 37. Biegging and Biermann 1977 |
| 19. Markarian et al. 1985 | 38. Wills and Wills 1979 |
| | 39. Martin 1976 |

References for finding charts

- | | |
|-----------------------------------|------------------------------------|
| 1. Stockton 1968 | 16. West et al. 1978 |
| 2. Vorontsov-Velyaminov 1977 | 17. This paper |
| 3. Markarian and Lipovetski 1971 | 18. Fairall 1980a |
| 4. Markarian and Lipovetski 1973 | 19. Bohuski et al. 1978 |
| 5. CFH Inf. Bull. N° 5 | 20. Arp 1981 |
| 6. Markarian and Lipovetski 1976a | 21. West 1976 |
| 7. Adams 1977 | 22. Chavira 1958 |
| 8. Markarian et al. 1977a | 23. Markarian 1969 |
| 9. Sargent 1970 | 24. Markarian and Lipovetski 1976b |
| 10. Markarian et al. 1977b | 25. Markarian et al. 1979b |
| 11. Markarian et al. 1979a | 26. Markarian et al. 1979c |
| 12. MacAlpine et al. 1977 | 27. Markarian and Lipovetski 1974 |
| 13. Rubin 1974 | 28. Schmidt and Green 1983 |
| 14. Borchkhadze and West 1980 | 29. Bothun et al. 1981 |
| 15. Borchkhadze and West 1978 | 30. Condon and Dressel 1978 |

References for UBV

- | | |
|---------------------------------|----------------------------|
| 1. Huchra 1977 | 7. West et al. 1978 |
| 2. Peterson et al. 1981 | 8. Bergwall et al. 1978 |
| 3. Doroshenko and Terebizh 1980 | 9. West et al. 1981 |
| 4. Veron-Cetty 1984 | 10. Weedman 1973 |
| 5. Dibai' et al. 1982 | 11. Arakelian et al. 1972b |
| 6. Griersmith 1980 | 12. Wisniewski 1980 |

a)

Seyfert 1

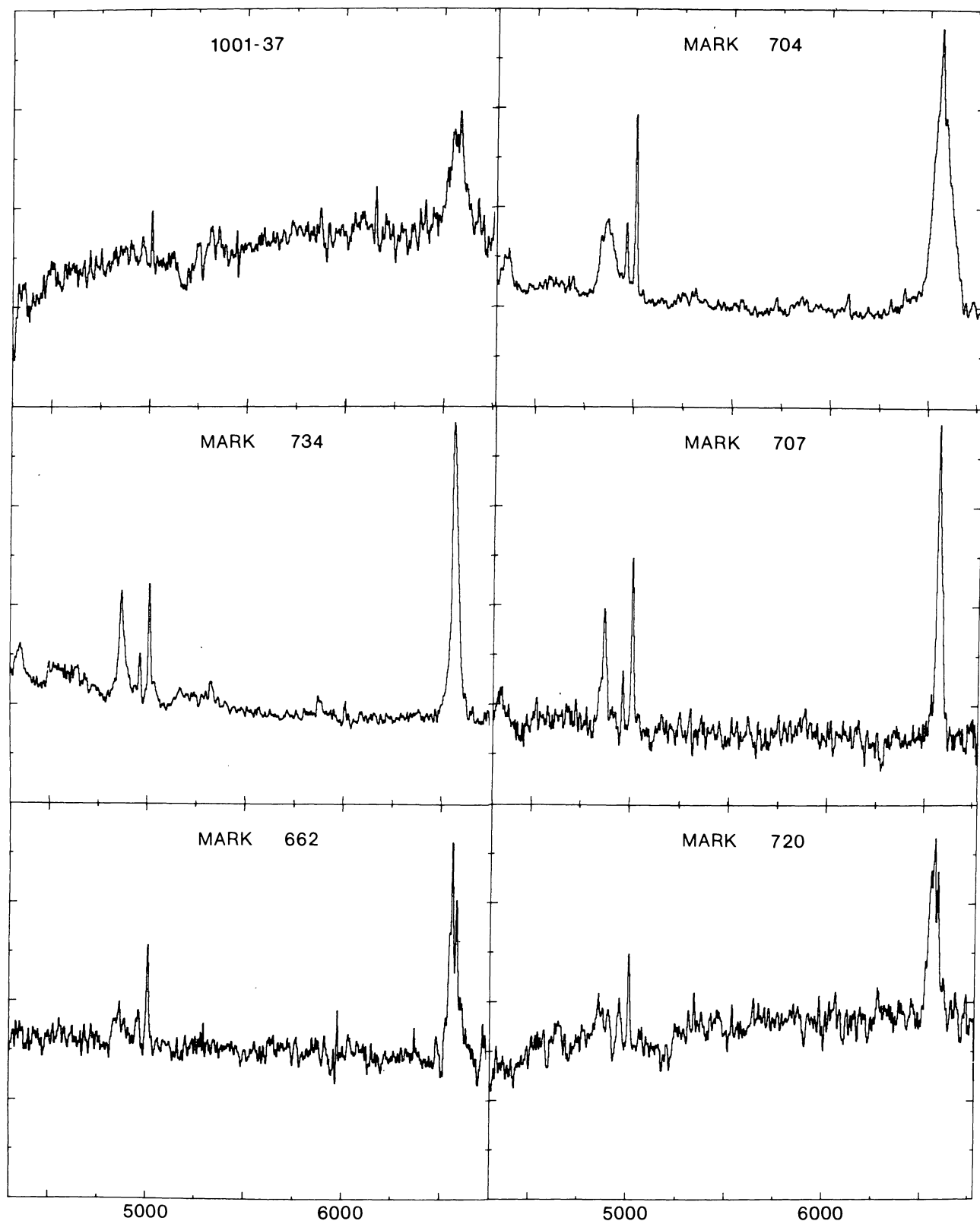
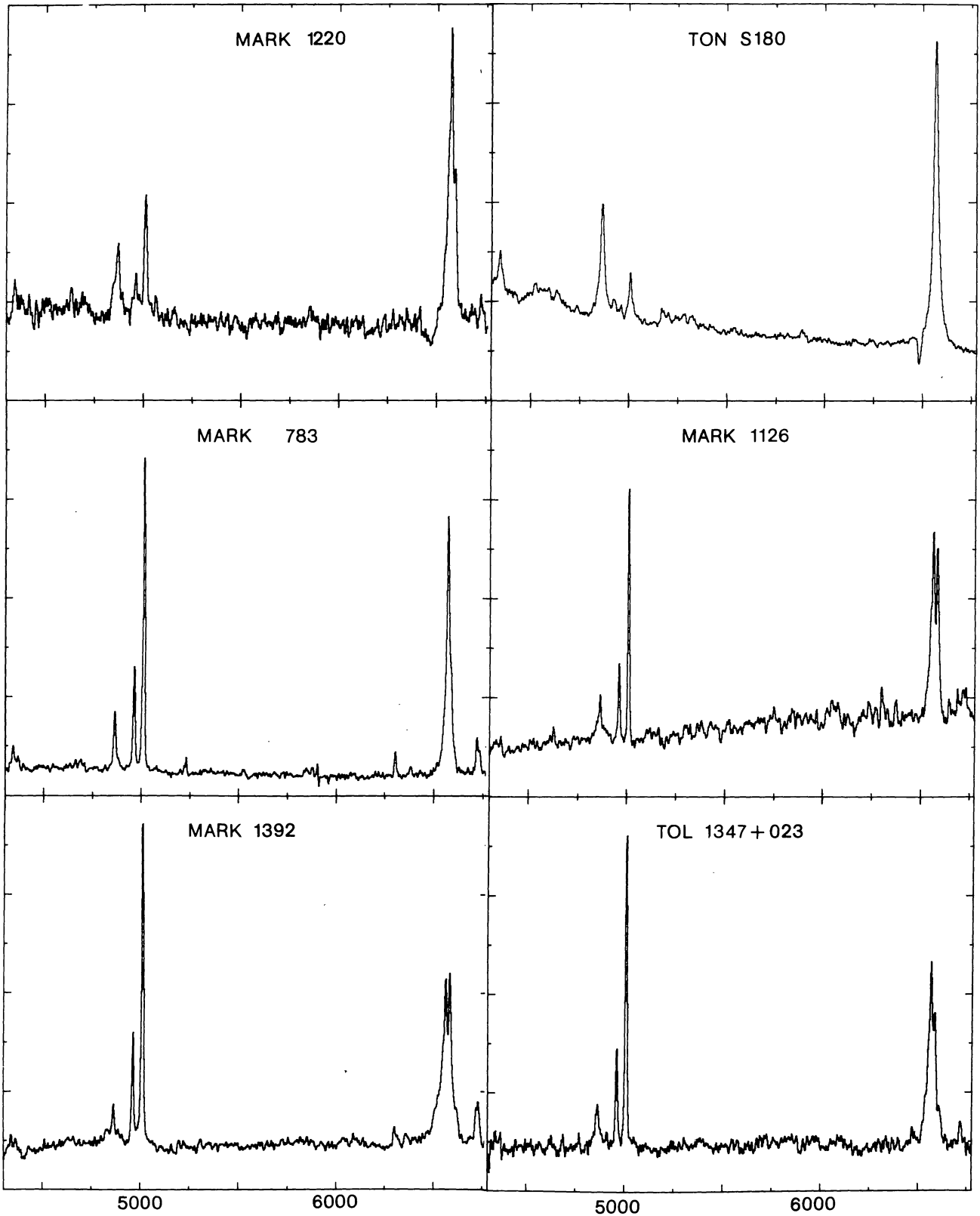


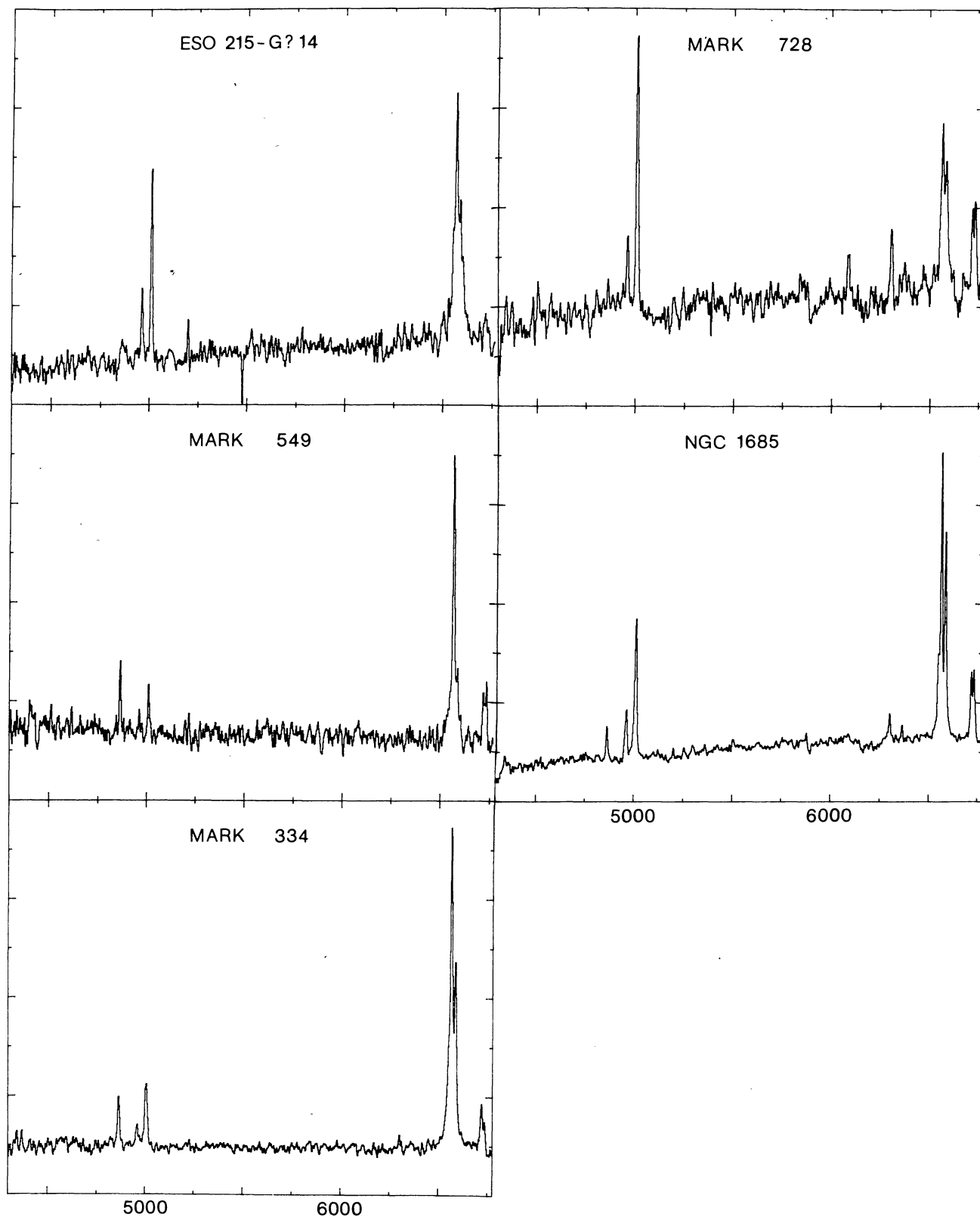
FIGURE 1. — a-i 171 \AA mm^{-1} IDS spectra obtained at the 1.52 m ESO telescope (except for Mark 567 at the 3.6 m telescope).

b)

Seyfert 1

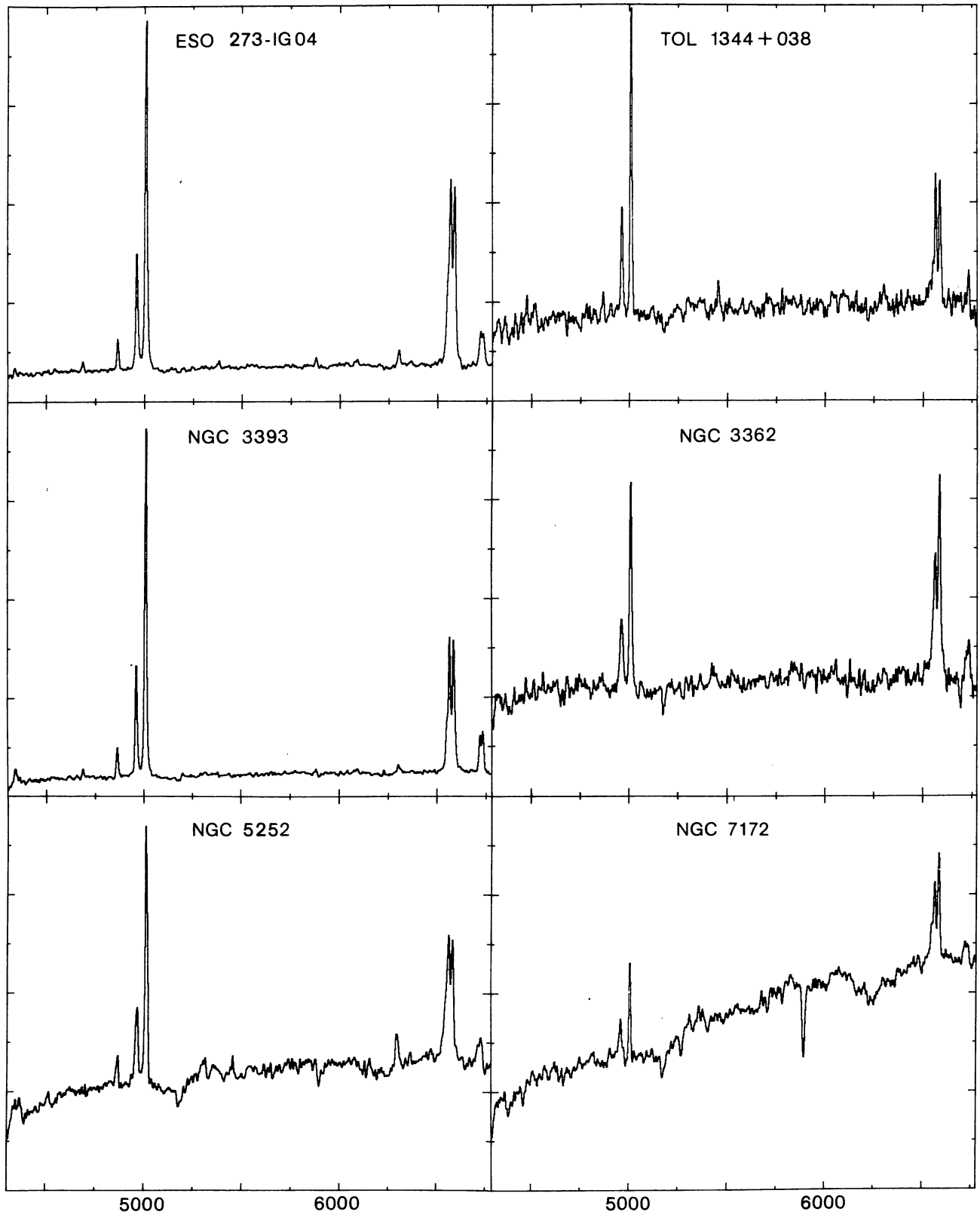


c) Seyfert 1 and Weak Seyfert 1



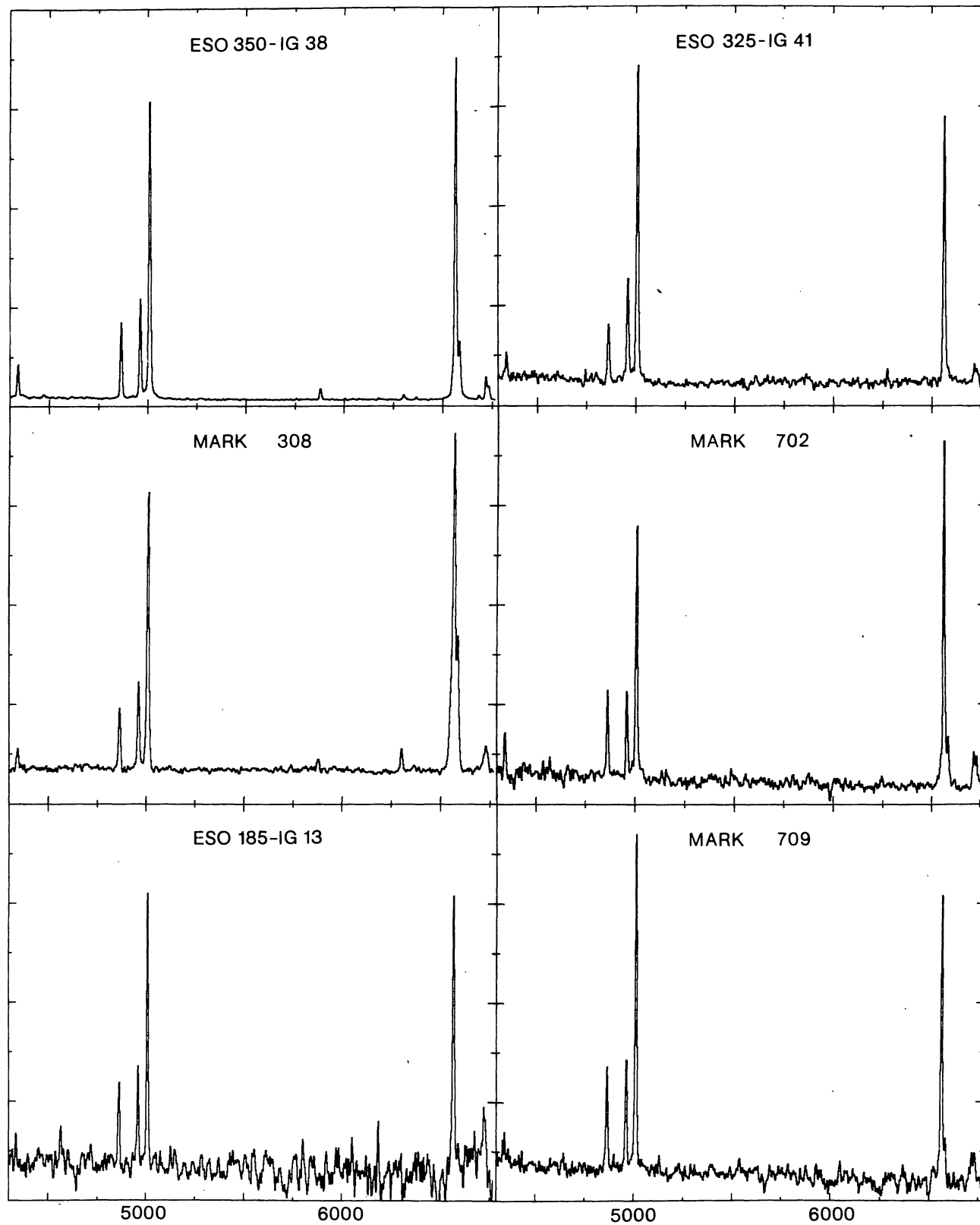
d)

Seyfert 2

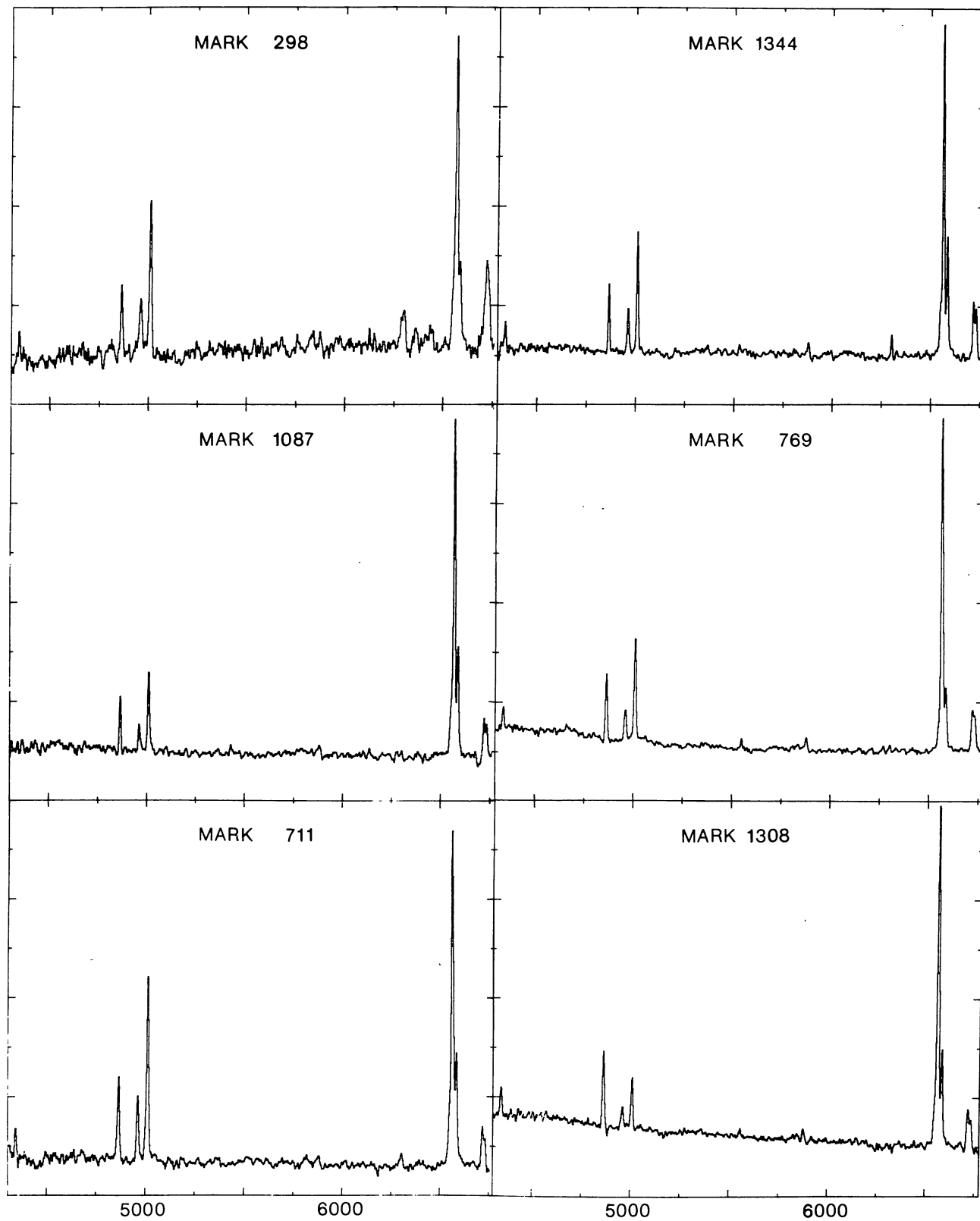


e)

HII regions (high excitation)

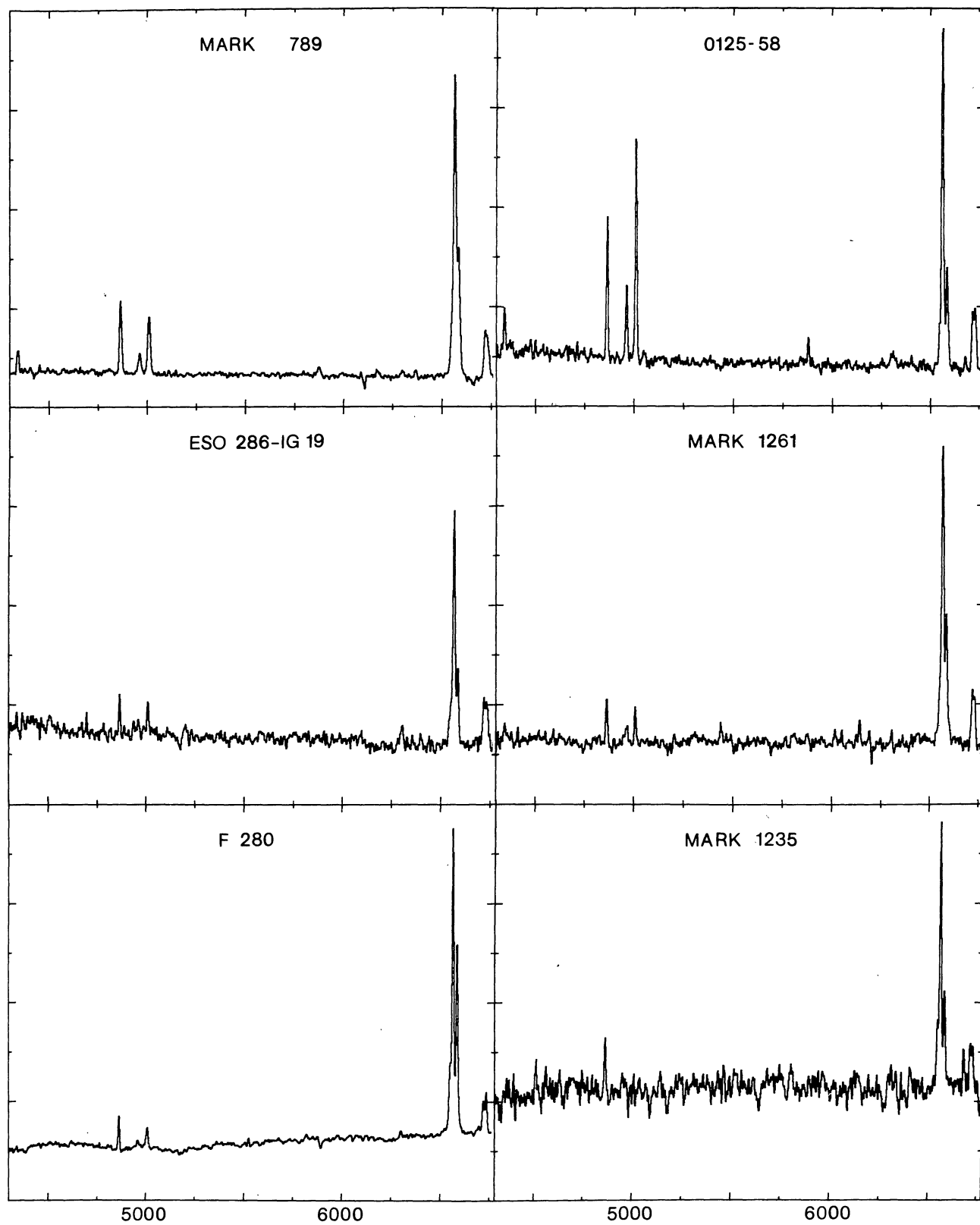


f)

HII regions
(moderate excitation)

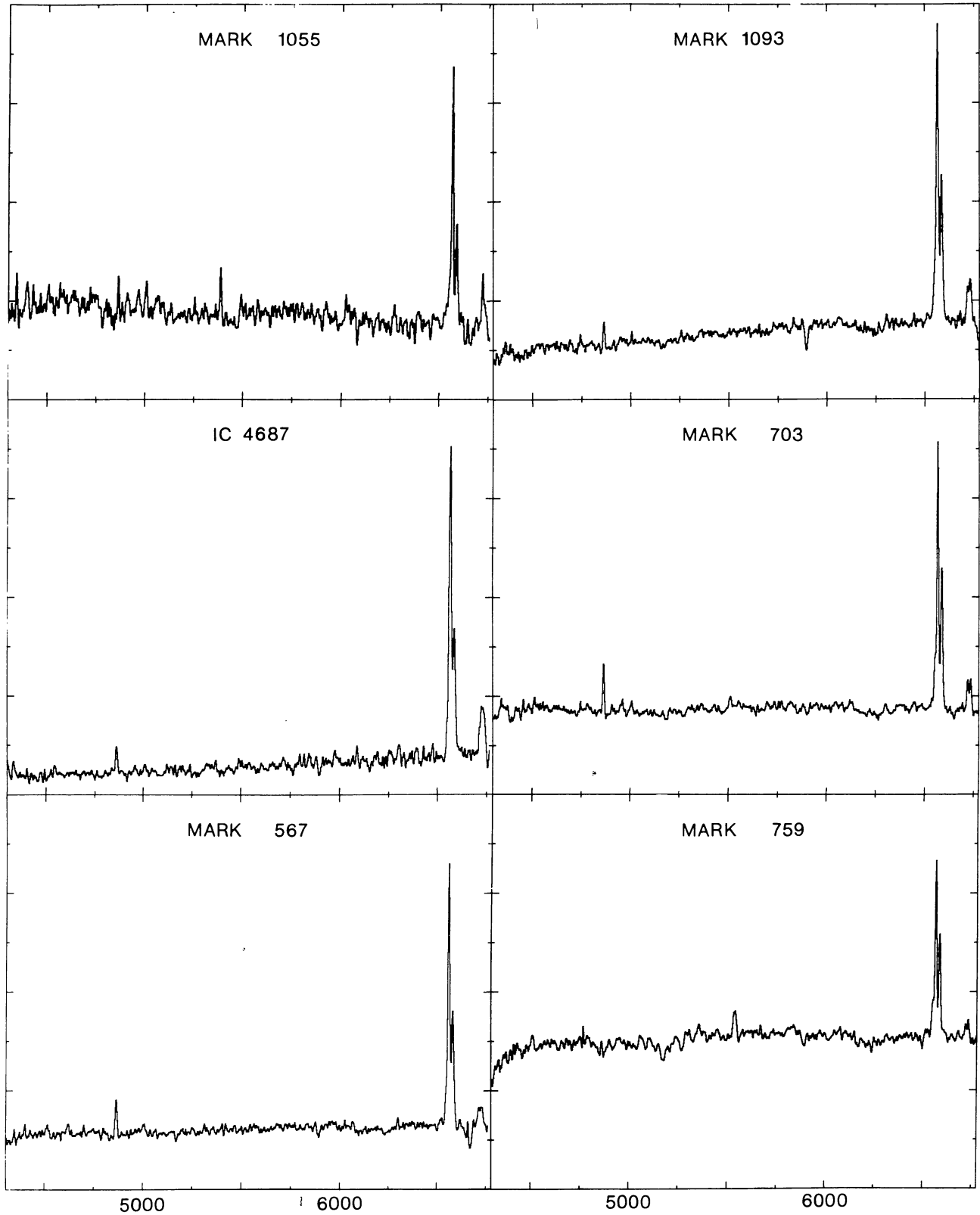
g)

HII regions (moderate excitation)



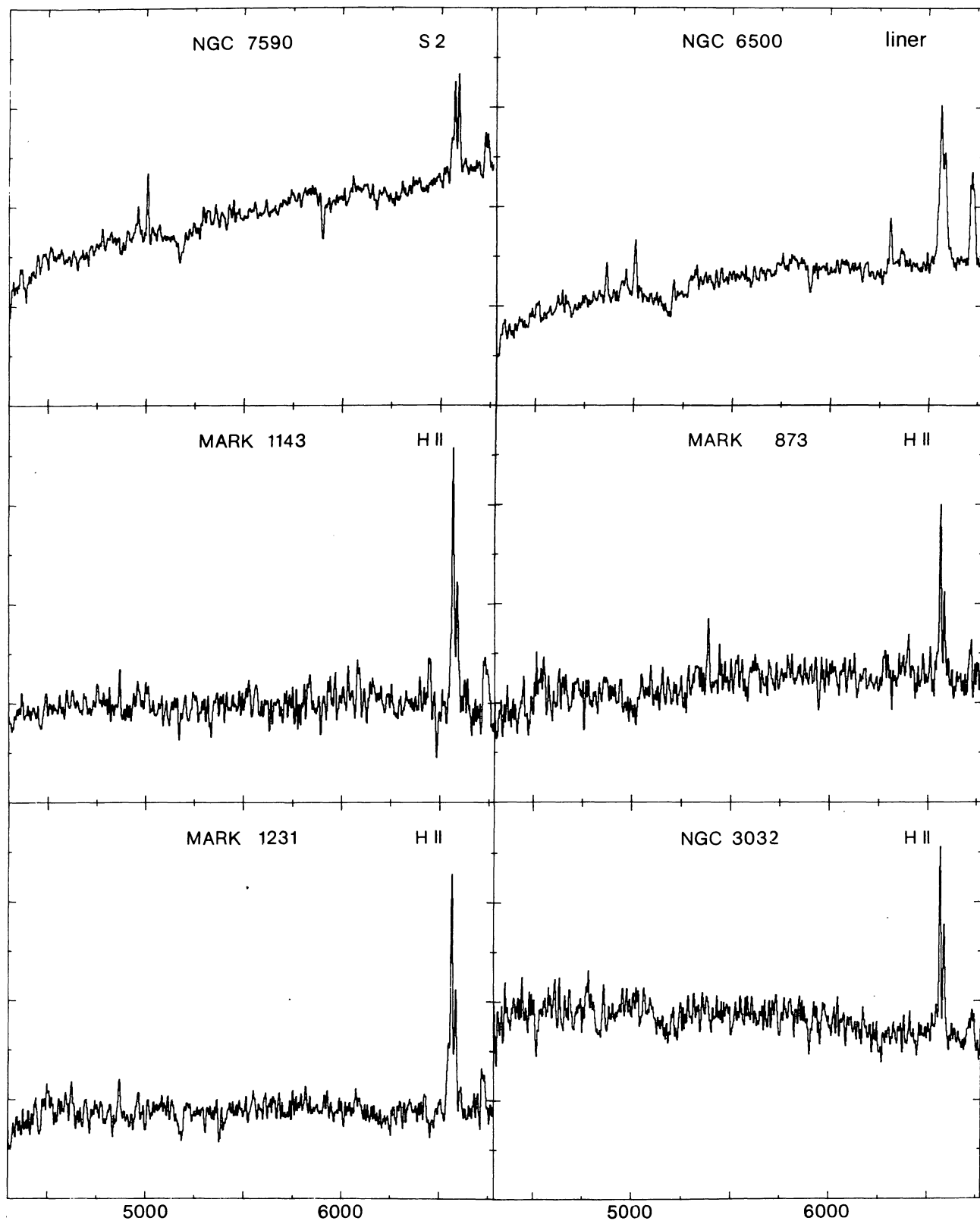
h)

HII regions (low excitation)



i)

miscellaneous



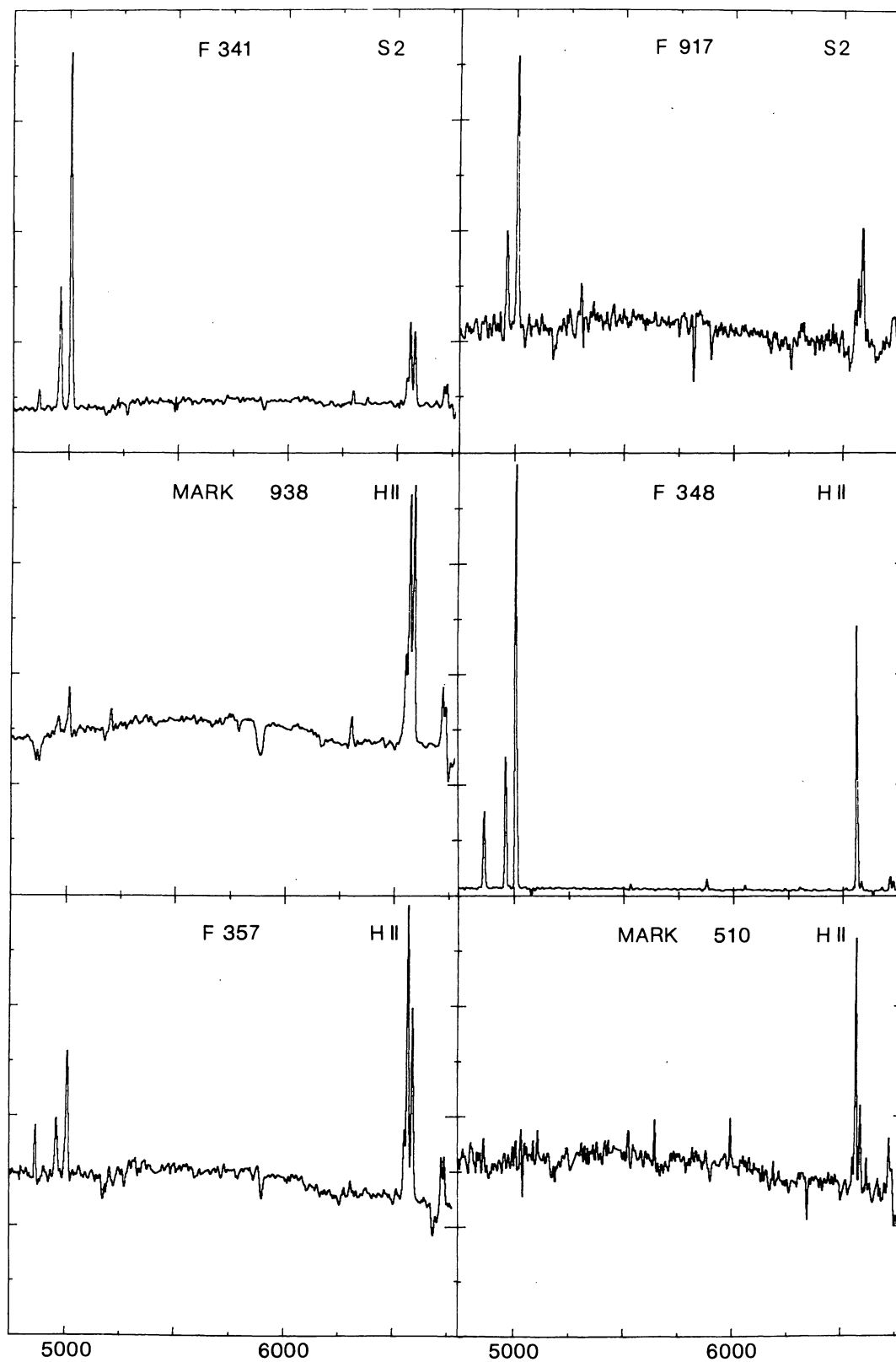


FIGURE 2. — 171 \AA mm^{-1} CCD spectra obtained at the 3.6 m ESO telescope.

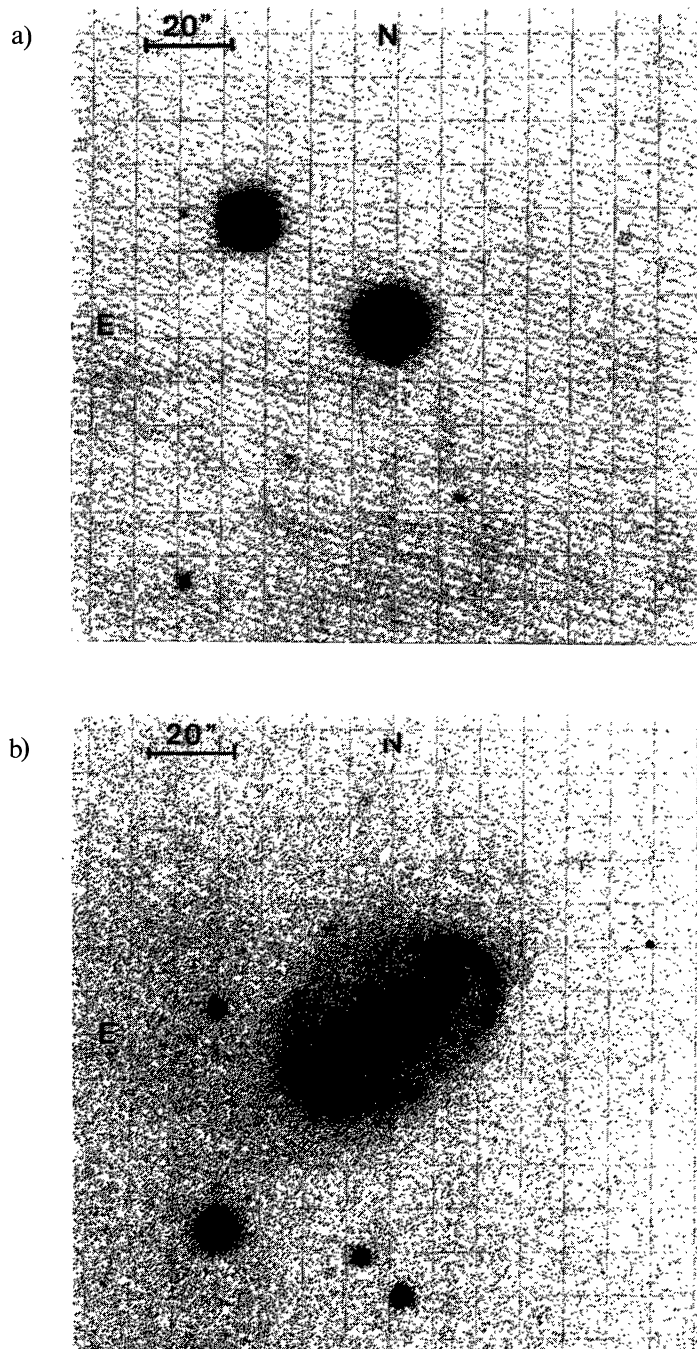


FIGURE 3. — Photographs taken at the prime focus of the CFH telescope (both are 60 min exposures, on IIIaJ plates behind a GG 385 filter). The original scale is $1'' = 72 \mu\text{m}$. a) Mark 567. b) NGC 1685.