

THE NEW CATALOGUE OF OPTICAL HII-REGIONS

P. Polechova
Observatory Petrin, Prague, Czechoslovakia

ABSTRACT

The principles of the work on the new catalogue of the optical HII-regions are described.

On the basis of thirteen catalogues and lists of the optical HII-regions the catalogue of these objects had been compiled by me (Marsalkova, 1974). The main source of the objects on the northern sky was the catalogue of Sharpless (1959) which up to now is the only one in computer-readable form, the southern sky being characterized by a larger number of smaller catalogues represented in first place by that of Rodgers et al (1960) and that of Gum (1955). For this already published catalogue (now referred to as the "old" one) only optical data were taken into account. The catalogue was supplemented by a list of excluded HII-regions like supernova remnants, planetary nebulae and galaxies.

One of the gains of the old catalogue was the comparison of various subdivisions of the nebular complexes published by the individual authors. E.g. the Cygnus X-regions was catalogued by Dickel et al. (1969) as 193 objects while Sharpless (1959) lists one object in this region only. But this was one of the most simple cases to solve.

The registration of all the subdivisions of the complexes listed by various authors was provided as a mean of following those authors whose description of the objects in the area was the most detailed one. This will not be precisely the case in the new catalogue, as will be mentioned later on.

The old catalogue removed a number of mistakes which appeared in the source catalogues mainly in the coordinates. One of them was the systematic error of the coordinates in the catalogue of Sharpless (1959) caused by the 20-years precession. It is interesting to point out just at this colloquium that this error (the origin of which was explained in

the old catalogue - Marsalkova, 1975, p.10) could never have been revealed by a computer.

The imperfections of the old catalogue were the following.

It was not published in computer-readable form.

Running numbers were used instead of some system of numbering open to later discoveries. This was because of the frequent cross-references included and because of the visibility of the entries on the page.

The old catalogue was inhomogeneous : since Lynga's atlas (1972) shows only the objects of higher brightness and covers the narrow band around the galactic equator, the scale of the most detailed maps used for the southern sky (Rodgers et al., 1960) is 17 times worse than that of the POSS, which was the basis for the cataloguing of the objects on the northern sky.

The scale of POSS was not well used : e.g. the nebulae M 42 and M 43 were listed in the catalogue of Sharpless (and therefore also in the old catalogue) under the common name S 281.

Contrary to this, the detailed subdivisions of the objects according to e.g. Dottori and Carranza (1971) should not have been regarded as the representative ones because of the low angular resolution (110'/mm) of their survey.

In the new catalogue we shall try our best to remove or suppress all these defects.

Inhomogeneity will be suppressed by the use of the coordinate boxes referred to in my previous paper (Polechova, 1982). It will be possible to incorporate the data into the body of the catalogue without changing the numbers of the objects. The objects smaller than 6' will not be catalogued in the southern sky until the ESO/SRC red maps become available ; this implies that the two-decimal digit range of the names in the system of the catalogue will not be covered up to that time.

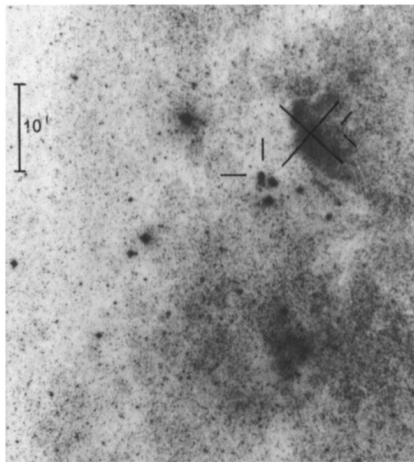
The system of boxes also excludes those unjustified subdivisions, because instead of following the author whose subdivision of the complex is the most detailed one, the confrontation with the radio maps will be essential.

The confrontation of the radio maps with the optical maps is appropriate also because of the fact that the nature of some non-radio emitting objects catalogued as HII-regions appears to be doubtful. The importance of the mutual confrontation of the optical and radio results for the purpose of the catalogue of HII-regions shows up for instance in the example of the object S 88 : the position of the object named S 88 in the paper of Silverglate and Terzian (1978) indicates that the radio

measurements reported in their paper do not concern the true S 88 object. (Fig. 1).

Some work for the new catalogue has been already done. At present a majority of the radio continuum maps of HII-regions in the different frequencies and different HPBW's has been assembled from about thirty papers in the scale of the POSS.

I have had no constant collaborator during this phase of the work, except some young people associated with the Petrin observatory which helped me occasionally with the preparation of the material for the abovementioned comparison work. I am specially grateful to J. Arnol'tova, K. Danihelka, J. Holanek, J. Kaspar, P. Kasperek; S. Lego, J. Manek, J. Soukupova and to my colleague T. Netopil.



The center of S 88 according to Sharpless (1959)



The point of radio measurements by Silverglate and Terzian (1978) named also S 88



The exciting star of the true S 88 : star LSII25-8 = BD + 25°3952, type O8 V

Fig. 1 The reproduction of the POSS red map with the object S 88 ($\alpha_{1950} = 19^{\text{h}} 43.9^{\text{m}}$, $\delta_{1950} = -25^{\circ} 13'$). See also the text at the top of this page.

REFERENCES

- Altenhoff W.J., Downes D., Pauls T., Schraml J. : 1979, *Astron. Astrophys. Suppl.* 35,23
 Angerhofer P.E., Becker R.H., Kundu M.K. : 1977, *Astron. Astrophys.* 55,11
 Colley D. : 1980, *Monthly Notices Roy. Astron. Soc.* 193, 495
 Colley D. : 1980, *Monthly Notices Roy. Astron. Soc.* 192, 377
 Day G.A., Warne W.G., Cooke D.J. : 1970, *Aust. J. Phys. Astrophys. Suppl.* N° 13,11
 Dickel H.R., Wendker H., Bieritz J.H. : 1969, *Astron. Astrophys.* 1, 270
 Dottori H., Carranza G. : 1971, *Astrophys. Space Sci.* 13, 180

- Fanti C., Mantovani F., Tomasi P. : 1981, *Astron. Astrophys. Suppl.* 43, 1
- Felli M., Churchwell E. : 1972, *Astron. Astrophys. Suppl.* 5, 369
- Felli M., Habing H.J., Israel F.P. : 1977, *Astron. Astrophys.* 59, 43
- Felli M., Perinotto M. : 1974, *Astrophys. Space Sci.* 26, 115
- Goss W.M., Day G.A. : 1970, *Aust. J. Phys. Astrophys. Suppl.* N° 13, 3
- Goss W.M., Shaver P.A. : 1970, *Aust. J. Phys. Astrophys. Suppl.* N° 14, 1
- Gum C.S. : 1955, *Memoirs Roy. Astron. Soc.* 67, 155
- Harten R., Felli M. : 1980, *Astron. Astrophys.* 89, 140
- Haynes R.F., Caswell J.L., Simons L.W.J. : 1978, *Aust. J. Phys. Suppl.* N° 45, 1
- Hughes V.A., Viner M.R., Kidd A.M. : 1977, *Monthly Notices Roy. Astron. Soc.* 179, 525
- Israel F.P. : 1973, *Astron. Astrophys.* 27, 143
- Israel F.P. : 1976, *Astron. Astrophys.* 52, 175
- Israel F.P. : 1977, *Astron. Astrophys.* 59, 27
- Israel F.P. : 1977, *Astron. Astrophys.* 60, 233
- Israel F.P. : 1977, *Astron. Astrophys.* 61, 377
- Israel F.P. : 1978, *Astron. Astrophys.* 63, 328
- Kallas E., Reich W. : 1980, *Astron. Astrophys. Suppl.* 42, 227
- Lynga G., Hansson N. : 1972, *Astron. Astrophys. Suppl.* 6, 327
- Marsalkova P. (Polechova P.) : 1974, *Astrophys. Space Sci.* 27, 3
- Matthews H.E., Goss W.M., Winnberg A., Habing H.J. : 1977, *Astron. Astrophys.* 6, 261
- Mezger P.G., Henderson A.P. : 1967, *Astrophys. J.* 147, 471
- Mezger P.G., Höglund B. : 1967, *Astrophys. J.* 147, 490
- Polechova P. : 1979, Ph. D. Thesis, Charles University, Praha
- Polechova P. : 1982, this volume, p. 207.
- Retallack D.S., Goss W.M. : 1980, *Monthly Notices Roy. Astron. Soc.* 193, 261
- Rodgers A.W., Campbell C.T., Whiteoak J.B. : 1960, *Monthly Notices Roy. Astron. Soc.* 121, 103
- Schraml J., Mezger P.G. : 1964, *Astrophys. J.* 156, 269
- Sharpless S. : 1953, *Astrophys. J.* 118, 362
- Sharpless S. : 1959, *Astrophys. J. Suppl.* 4, 257
- Shaver P.A., Goss W.M. : 1970, *Aust. J. Phys. Astrophys. Suppl.* 14, 77
- Silverglate P.R., Terzian Y. : 1978, *Astrophys. J.* 224, 437