

NEW STELLAR ASSOCIATIONS IN M31

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About twenty years ago van den Bergh (1964) recognized 188 OB associations in the Andromeda Nebula. He used plates taken by the 52-inches Tautenburgh Schmidt telescope in GDR. Later on Richter (1971) added 7 new associations in the south-western periphery of M31. Now we have the opportunity to continue the search of stellar associations in M31 with the 2m Ritchey-Chrétien (RC) telescope of the Bulgarian National Astronomical Observatory. The limiting magnitude of this telescope is approximately the same as that of the Tautenburg 2m Schmidt telescope but it possesses somewhat smaller field ($1^\circ \times 1^\circ$) with plate-scale 12.8 mm^{-1} . That is why a new search of stellar associations in M31 by means of the 2m RC telescope is very efficient. Indeed, some previous inspections of the RC plates (Efremov, 1982) indicated some new associations in M31.

Within the frames of an investigation project of ours of nearby galaxies we had at our disposal mainly B plates of M31 using 103a0 Kodak + GG 385 and 30 - 90 minutes exposure time. As Ivanov (1985) showed, in the spiral arms of M31 one background star occurs on the average at 2 square arc min. The mean dimension of an M31 association is 2.4 arc min and therefore the background stars do not influence significantly the search of associations.

We covered the Andromeda galaxy with four plates. Figure 1 shows part of an M31 field. The associations of van den Bergh are shown surrounded by continuous line with their numbers. The new associations are marked by a dashed line. We extended van den Bergh's numeration from No. 189 up to No. 312, i. e. we distinguished 123 new objects. A large amount of subgroups does not enter in this number. This might be noted in many of the associations outlined by van den Bergh, as he himself remarked.

A not very detailed inspection of the Andromeda Nebula associations shows that a lot of the newly recorded associations are smaller than about 1 - 2 arc min. Another

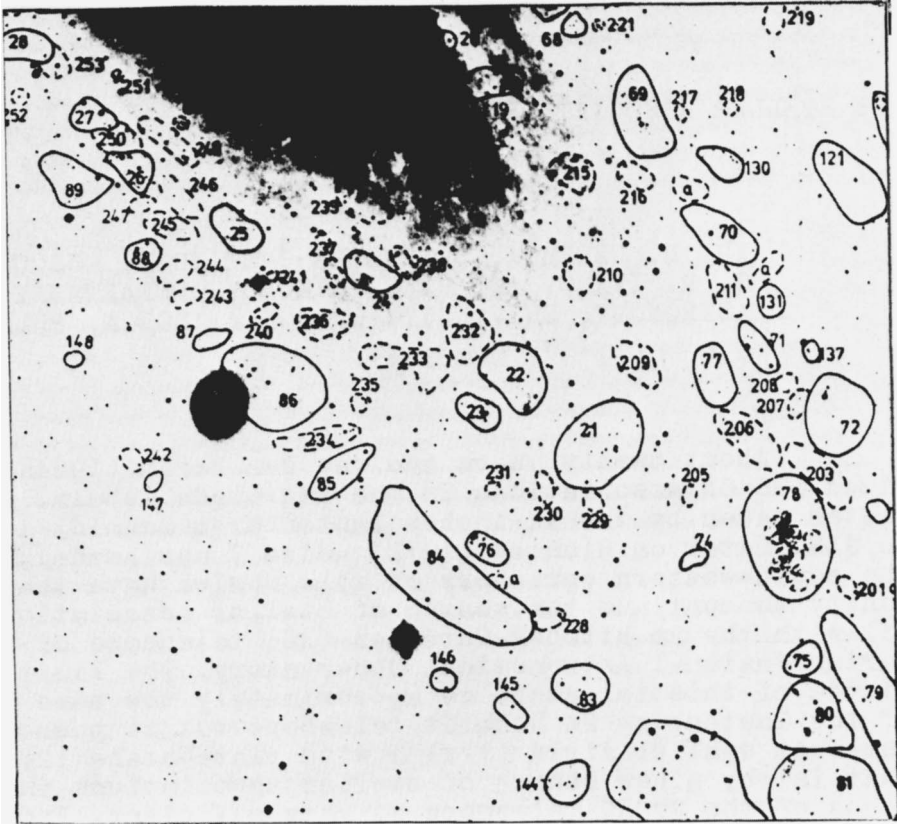


Figure 1. The stellar associations indicated by van den Bergh (1964) are outlined with line and ours - with dash.

part of them contains B stars near the limiting magnitude of 21.5. Both facts once more underline the statement that the 2m RC telescope is suitable for investigation of nearby galaxies.

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