the line joining them. There is an edge-on 14^m SC galaxy about 8′ NE. of the center of this line, but it cannot be assumed without further evidence that this galaxy is associated with the source. No other strong radio source has yet been identified with a spiral galaxy (Matthews, Morgan, and Schmidt 1964). On the other hand, the angular extent of the source is so great that it can hardly be associated with a very distant, faint galaxy.

In summary, the two sources listed as 3C 343 and 3C 343.1 in the *Revised 3C Catalog* have very similar intensities and spectra. Since these similarities are so great, it is probable that the sources are physically connected. If so, they have by far the largest ratio of separation to component diameter of any known radio source. There is no satisfactory optical identification, although a moderately bright galaxy lies within the smallest circle that can circumscribe the source.

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OBJECTIVE-PRISM SPECTRA OF SOME STARS OF LOW LUMINOSITY

A few years ago, van Biesbroeck (1961) published a list of faint (m_{pv} 14–18) common-proper-motion companions of relatively brighter stars with known large proper motions. If these stars are assumed to be physical companions, and if the parallax of the brighter component is known, this list can be used to obtain information about stars of low intrinsic luminosity. Of the twelve stars listed by van Biesbroeck, six are either too far south or too close to other stars for our instruments. Objective-prism spectra have been taken of five of the six accessible stars. For comparison purposes, a few additional stars with absolute visual magnitudes in the range 13–15 were also observed. The spectra were taken with the Burrell Schmidt–type telescope and the 4° objective prism. With one exception, these spectra covered the wavelength region 6800–8800 Å and were taken on ammonia-sensitized Kodak 1-N plates behind a Schott RG8 filter. One spectrum covering the wavelength region 5800–6800 Å was used. This was taken on a Kodak 103a-F plate behind a Schott OG2 filter. The telescope–objective-prism combination used yields a dispersion of 1000 Å/mm at 6500 Å and 1700 Å/mm at the atmospheric A-band.

Objective-prism spectra in the near infrared can be used to classify M stars on the system described by Nassau and Velghe (1964 and earlier papers referred to in that paper). In the range M0.5–M6, this system—which we shall call the Case system—is based on Mount Wilson spectral types. The classes M7 to M10 are based on a sequence of spectral changes observed in giant M-type variables. The relation between the Case system and the Mount Wilson and MK systems has been discussed recently by Blanco (1964).

Spectral types on the Case system for the stars observed are listed in Table 1, along with absolute visual magnitudes and remarks. The absolute magnitudes were either derived from the estimated magnitudes and parallaxes given by van Biesbroeck (1961) or taken from the catalogue by Gliese (1957) except for stars BD −8°4352 D, BD +4°4048 B, and Wolf 47. For these stars, the absolute magnitudes listed by Breckinridge and Kron (1964) were used.

Table 1 shows that the appearance of low-dispersion spectra in the near infrared is not a sensitive function of the absolute visual magnitude among dwarf M stars. Thus Barnard's Star and BD +4°4048 B, which differ in absolute visual magnitude by 5.4 mag., exhibit spectral differences corresponding to only about two subdivisions in the Case system. The same situation is encountered with spectra taken at higher dispersion in the photographic region. Barnard's Star has been classified as sdM4.5 on the Mount Wilson system by Joy (1947). Herbig (1956), using essentially the same classification

TABLE 1

SPECTRAL TYPES OF SOME STARS OF LOW LUMINOSITY

No *	Other Designation	M_v	Spectral Type (Case System)	Remarks
Van B 1	γ Leporis C	16 4	M4±	2 plates, both spectra faint
Van B 7	Ross 1027 B	. . .	M1±	3 plates, all spectra faint
Van B 8.	−8°4352 D	18 0	M6±	2 plates, both spectra well exposed
Van B 9†	+45°2743 B	13 5	M2±	2 plates, one red, one near infrared, both spectra well exposed
Van B 10 Gl 752 B	+4°4048 B	18 6	M6±	2 plates, both spectra well exposed
Gl 699	Barnard's Star	13 2	M4	1 plate
Gl 729	Ross 154	13 3	M3–4	2 plates
Gl 802	Wolf 1084	14 3	M4	1 plate
Gl 51.	Wolf 47	14 5	M4–5	2 plates
Gl 905 .	Ross 248	14 7	M4–5	3 plates

* "Van B" = van Biesbroeck's (1961) Table I; "Gl" = Gliese's (1957) Catalogue

† Van B 9 red spectrum classified by direct comparison with dwarf M stars classified on MK system This rather early spectral type is discordant with the absolute magnitude

system, estimated a spectral type of dM5± for BD +4°4048 B. The fact that these spectra of extremely low luminosity M stars can be classified on the Case system indicates, furthermore, that there are no obvious spectral features by which they can be distinguished from giant M stars.

In spite of the faintness of BD −8°4352 D in the visual region, the spectra in the near infrared were surprisingly well exposed, which suggested a large value of the $V - I$ (visual minus infrared) color index. This would make this star similar to BD +4°4048 B, for which Kron (1958) has determined a $V - I$ color index equal to 5.38 mag. Accordingly, a series of direct Schmidt plates were taken using neutral half-filters, in order to derive an approximate value of $V - I$ for the star BD −8°4352 D. Using the magnitudes determined by Breckinridge and Kron (1964) for BD −8°4352 C and D, the Mount Wilson spectral type sdM4 given by Gliese (1957) for BD −8°4352 C, and the relation between Mount Wilson spectral type and $V - I$ color derived by Blanco (1964), a value of $V - I = 4$ mag. was derived. The estimated uncertainty is ±0.5 mag. This value, although not as large as that for BD +4°4048 B, indicates that these stars are indeed similar and, in addition, suggests that these large $V - I$ color indices can be used to search for and detect stars of extremely low luminosity.

Figure 5 in Blanco's paper (1964) shows that, for giant M stars, only those of spectral