FURTHER IDENTIFICATIONS FOR STRONG EXTRAGALACTIC RADIO SOURCES IN THE DECLINATION ZONE 0° TO −20°†

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We recently reported identifications for 71 extragalactic radio sources between declinations 0° and −20° (Bolton and Ekers 1966). The identifications were based on a search of the 48 in. Sky Survey prints in positions determined by Shimmins, Clarke, and Ekers (1966) of sources in the Parkes catalogue for 0° to −20° (Shimmins, Day, Ekers, and Cole, paper in preparation). Positions accurate to 12″ arc in both coordinates have now been determined for a further 43 sources in this zone, and the 48 in. Sky Survey prints examined in their positions, with the following results.

In six cases no identification was possible as the search area was either obscured or heavily populated with stars.

In one case an HII region coincided with the position.

In eight cases galaxies were found whose positions coincided with the radio position to within 12″ arc.

In 12 cases stellar objects were found that were noticeably blue and thus could be quasi-stellar objects.

In two cases the search areas were blank and in 14 cases contained stars of normal colour, though in five of the latter, faint images may be those of distant galaxies.

The suggested identifications are listed in Table 1. Column 1 contains the Parkes catalogue number for the source and column 11 the equivalent 3C or MSH numbers. Columns 2 and 3 contain the position of the proposed optical counterpart, estimated with the aid of a transparent overlay containing the position of the radio source and those of 10 stars from the Yale catalogue. These positions are given to $0^s \cdot 5$ and $0' \cdot 1$ arc; however, the errors may be twice as great as this, i.e. of the same order as those of the radio positions.

Columns 4 and 5 contain preliminary values for the flux density at 1410 Mc/s and the spectral index; improved values will be given in the Parkes catalogue for 0° to −20°. Columns 6 and 7 contain the type of object and estimated magnitude. In column 6, D indicates an elliptical galaxy with a diffuse outer envelope, and N indicates a compact system; galaxies that are too faint for classification are denoted by g; possible quasi-stellar objects are indicated by QSO?. Magnitudes (photographic for galaxies and visual for QSO's) were estimated by comparison of their images on the Sky Survey prints with the images of well-known identifications for which published magnitudes are available. For faint objects the errors in these estimates may be as high as one magnitude.

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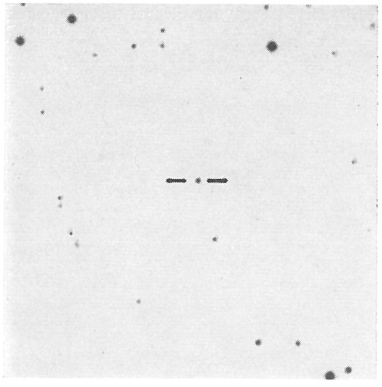
TABLE 1

LIST OF IDENTIFICATIONS

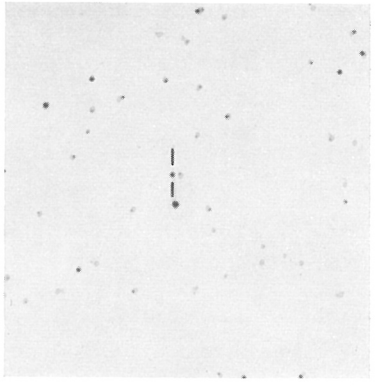
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Parkes Catalogue Number	Position (1950) R. A. h m s	Dec. ° ′	Flux Density at 1410 Mc/s*	Spectral Index	Type	Magnitude	l^{II} °	b^{II} °	Remarks	Other Catalogue Number
0056−17	00 56 38·0	−17 16·9	1·8	−0·8	QSO?	17·2	132	−79	Jet in p.a. 210° on red plate	00−*126*
0119−04	01 19 56·0	−04 37·2	1·5	−0·5	QSO?	17·6	142	−66		
0155−10	01 55 14·5	−10 58·0	2·2	−0·9	QSO?	18	169	−67		01−*120*
0420−01	04 20 43·5	−01 27·4	1·9	0·1	QSO?	18	195	−33		
0440−00	04 40 04·5	−00 23·3	3·7	0·1	QSO?	18·5	197	−28		
0719−12	07 19 01·0	−11 59·9	1·5	−0·5	E	18	227	01		
0722−09	07 22 33·0	−09 33·6	1·4	−1·0	Sc	13	225	02	Bright nucleus; flaw on red plate	3C 178 / 07−*04*
0800−09	08 00 15·5	−09 49·7	1·5	−0·9	E	18·5	230	10	In cluster	
0941−08	09 41 09·5	−08 05·7	2·8	−0·7	D	19	243	32		
1049−09	10 48 59·5	−09 02·2	1·9	−0·8	QSO	17·5	260	43	[1]†	10−*019*
1127−14	11 27 35·6	−14 32·9	7·0	0·1	QSO	16·9	275	43	[1]	
1148−00	11 48 10·0	−00 07·2	3·3	−0·1	QSO	17·6	272	58	[1]	
1229−02	12 29 26·0	−02 07·5	1·9	−0·5	QSO	16·8	293	60	[1]	
1416−15	14 16 15·0	−15 42·1	1·9	−0·8	g	20	331	41		14−*14*
1452−04	14 52 26·0	−04 09·0	2·0	−0·9	g	19·5	351	46	Galaxy 0′·2 preceding and object with jet 0′·4 sp	
1454−06	14 54 03·0	−06 05·7	1·4	−0·8	QSO	18·5	349	44	[1]	14−*018*
2135−14	21 35 00·5	−14 46·3	3·4	−0·8	QSO?	16·8	38	−44		21−*115*
2236−17	22 36 27·5	−17 36·9	1·7	−0·8	QSO?	18·5	43	−57		
2322−05	23 22 45·0	−05 14·4	1·7	−0·8	N	18·5	76	−59	Jet? in p.a. 180°; faint blue object 0′·3 preceding	
2349−01	23 49 22·5	−01 26·0	1·6	−0·7	N	17·5	91	−60		23−*020*

* In units of 10^{-26} W m^{-2} (c/s)$^{-1}$.

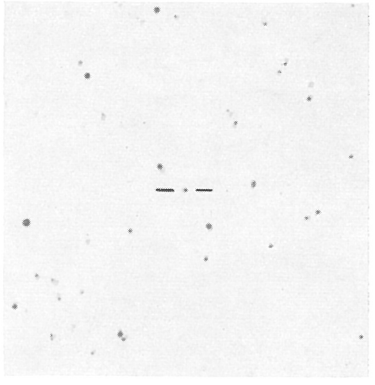
† [1]: Photometric observations by T. D. Kinman (personal communication) have confirmed these identifications.



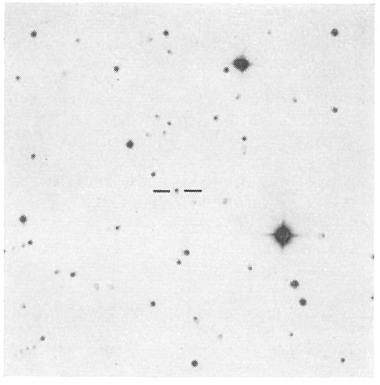
0056−17



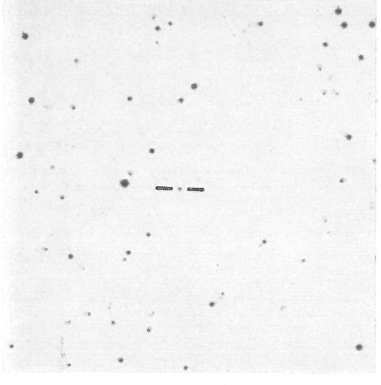
0119−04



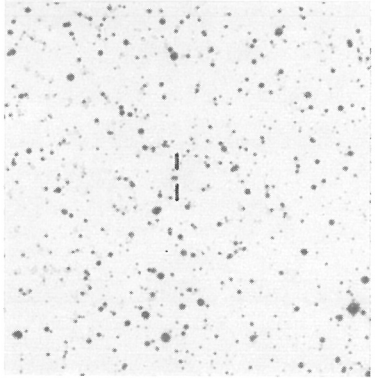
0155−10



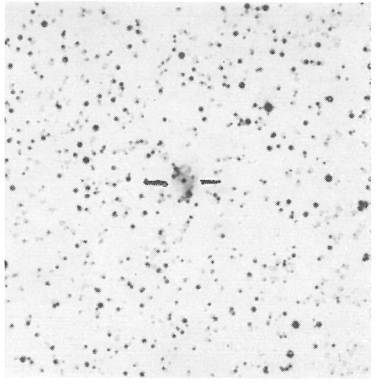
0420−01



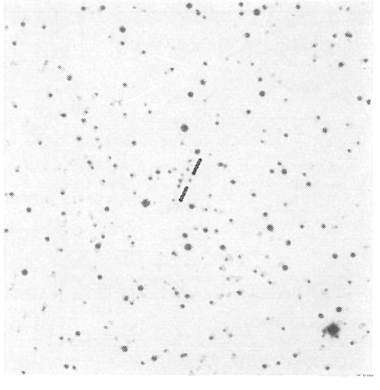
0440−00



0719−12

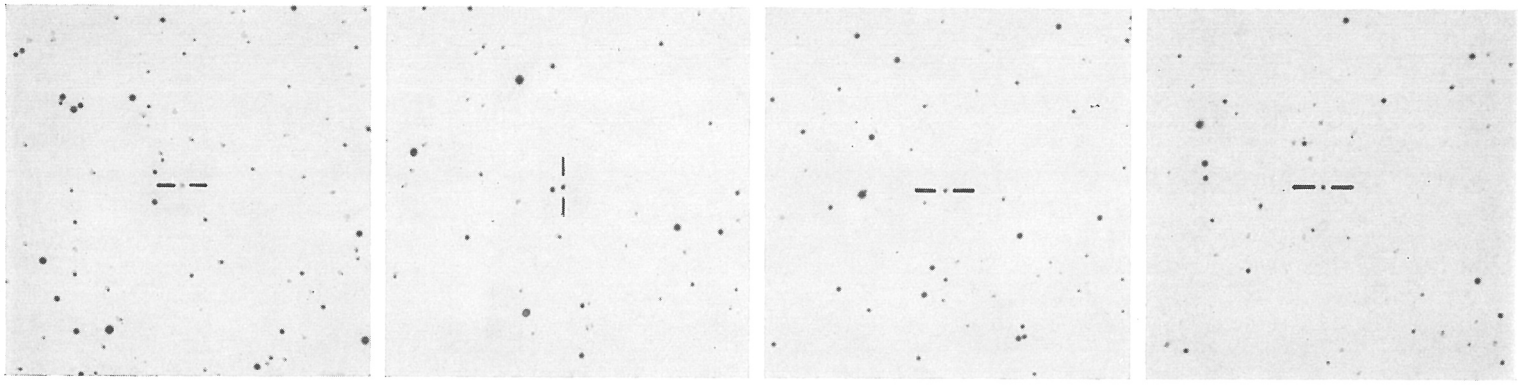


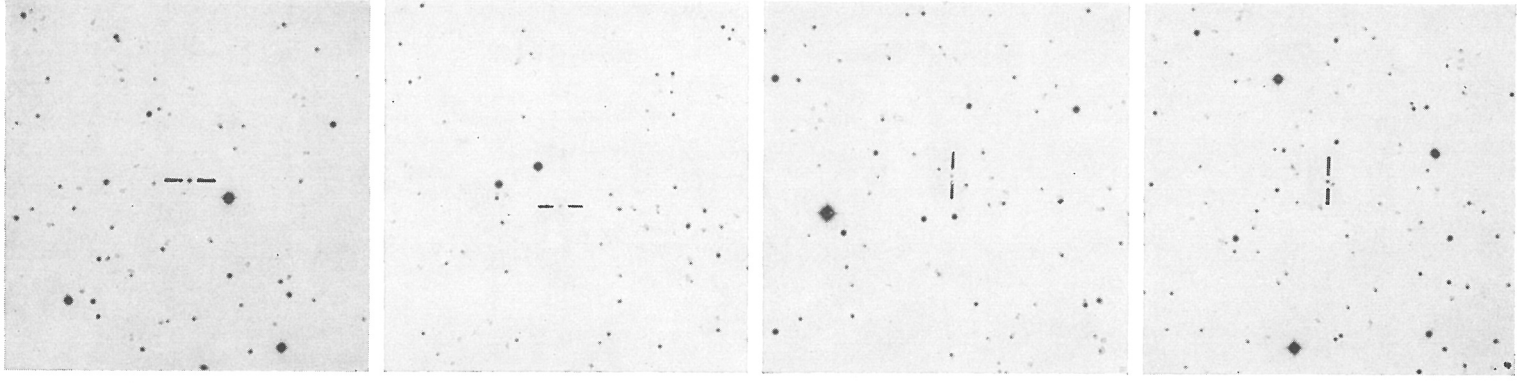
0722−09



0800−09

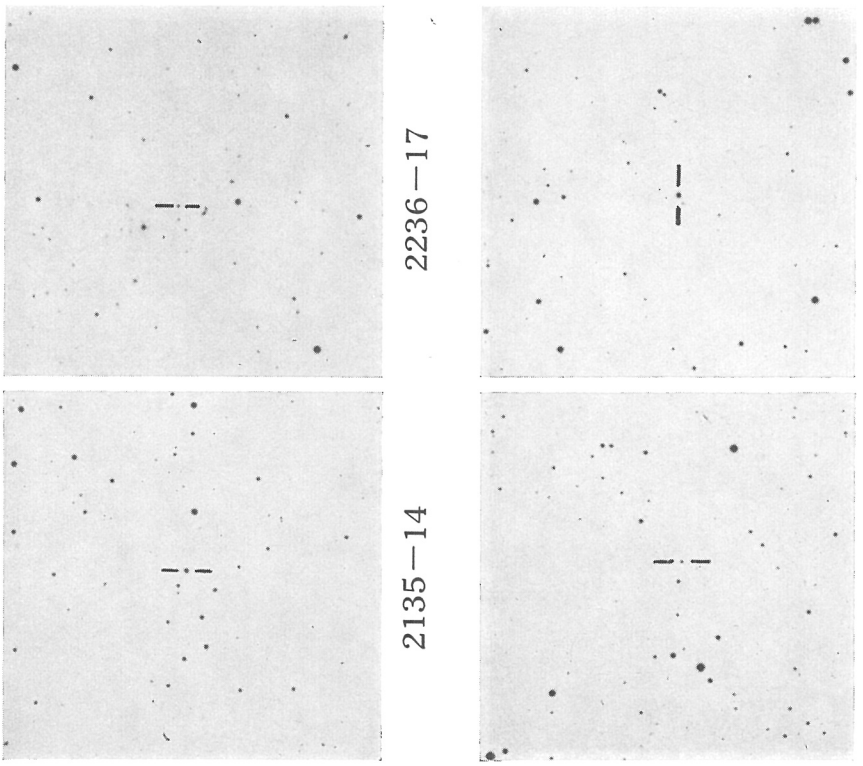
Finding charts for identifications (marked between the bars). Scale is 5 mm = 1′ arc. North-east is at top left-hand corner.





Finding charts for identifications (marked between the bars). Scale is 5 mm = 1′ arc. North-east is at top left-hand corner.

Aust. J. Phys., 1966, **19**, 713–15



Finding charts for identifications (marked between the bars). Scale is 5 mm = 1′ arc. North-east is at top left-hand corner.

New galactic coordinates are given in columns 8 and 9 and additional notes on individual objects in column 10.

Finding charts are given in Plates 1–3. These charts were prepared from the Sky Survey prints, and contrast has been increased over that of the original prints. The O, or blue, print was used for quasi-stellar objects and the E, or red, print for all the galaxies except 0722—09. In the latter case the red Sky Survey plate contains a flaw that makes it difficult to determine the nature of the object. Dr. R. L. Minkowski kindly informed us that the reject plates showed the object to be an Sc galaxy.

References

BOLTON, J. G., and EKERS, JENNIFER (1966).—*Aust. J. Phys.* **19**, 559–64.
SHIMMINS, A. J., CLARKE, MARGARET E., and EKERS, R. D. (1966).—*Aust J. Phys.* **19**, 649–85.