

THE ACCURATE POSITIONS OF 17 INTENSE
RADIO SOURCES

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Observations of 17 intense sources were made at a 1.9-meter wavelength with the Cambridge four-aerial interferometer [1] to provide information that may assist in their identification with optical objects, and as a check on the positions of a few of the sources of the recently completed third Cambridge survey [2].

The sources were sufficiently intense not to be seriously affected by confusion effects of weak adjacent sources, and special attempts were made to reduce instrumental errors; further details are given in a paper published elsewhere [3].

To make the observation method as different as possible from the one in the third Cambridge survey (3C survey), the aerials were connected to form two interferometers having crossed axes. Observations were made on successive days using first the one diagonal pair of aerials and then the other; the pairs of aerials were connected, in turn, to a phase-switching receiver of Ryle's type [4].

Each source's declination was derived from measuring the difference in the transit times across the two fictitious meridians, in contrast to the method of determining declination used in the 3C (and 2C) surveys, which required measuring the relative amplitudes of the records on successive days. Right ascension was derived from the mean of the transit times across the two interferometers.

The results are given in Table I: the positions listed refer to epoch 1950.0; the corresponding 3C positions are given immediately beneath. The errors listed are probable errors.

Three of the sources lie below declination +10 degrees, where the accuracy of this method is least, and the agreement with the corresponding positions derived by Mills [5] is good, especially in declination, and the fit in right ascension is improved if a correction of 4 seconds of time is applied to Mills' positions. (This correction has been discussed previously by Mills and Dewhirst.)

The positions of five other sources are in excellent agreement with optical objects, which Dewhirst has previously noted as being possible identifications (see paper 92); these optical objects are indicated in the last column under "Notes" in the table.

TABLE I

R. A. 1950.0			Error	Declination		Error	Approximate Flux Density	Notes
h	m	s	s	°	'	'	10^{-26} M. K. S.	
00	22	38.3	3.0	63	53	3		
00	22	37	2.0	63	52	2	110	S. N. 1572
01	06	12.7	1.0	13	02	4.3		
01	06	13	3.0	13	05	9	58	15 ^m E ₀ galaxy
04	15	00.3	1.5	37	51	2.5		
04	15	05	2.0	37	50	4	60	
04	33	53.5	1.5	29	37	3.0		
04	33	55	4.0	29	35	2	204	
05	01	17.4	2.0	38	03	2.8		
05	01	21	4.0	38	03	8	85	
08	10	00.9	1.5	48	23	2.2		
08	10	02	3.0	48	22	3	66	
09	17	52.1	2.0	45	53.5	2.0		18 ^m double E
09	17	54	2.0	45	52	1.5	42	galaxy
09	58	56.3	3.0	29	04	2.8		
09	58	56	7.0	29	01	10.0	30	
14	09	32.0	2.0	52	25	3.4		
14	09	32	3.0	52	26	5.0	74	
14	16	41.2	2.0	06	46.5	4.5		
14	16	40	8.0	06	46	7.0	61	
16	26	56.2	1.8	39	39.5	2.0		
16	26	54	5.0	39	38	3.0	49	NGC 6166
16	48	42.1	1.5	05	04	6.3		
16	48	43	5.0	05	10	10.0	300	18 ^m pec. gal. ?
17	17	59.6	1.8	-00	57	6.8		
17	17	58	3.0	-00	52	6	180	
18	28	16.5	3.0	48	42	2.5		
18	28	12	3.0	48	43	3	70	
20	12	19.8	2.0	23	24	3.6		
20	12	17	2.0	23	26	5	102	
21	21	30.7	3.0	24	49.5	4.2		
21	21	31	4.0	24	48	7	62	17 ^m double E
22	43	33.9	3.0	39	19.0	2.8		galaxy.
22	43	30	5.0	39	21	3	50	

REFERENCES

- [1] Ryle, M. and Hewish, A. *Mem. R.A.S.* **67**, 97, 1955.
 [2] Edge, D. O., Shakeshaft, J. R., Archer, S., and Baldwin J. E. (In preparation.)
 [3] Elsmore, B. *M.N.R.A.S.* (In press.)
 [4] Ryle, M. *Proc. Roy. Soc. Lond. A* **211**, 351, 1952.
 [5] Mills, B. Y., Slee, O. B., and Hill, E. R. *Aust. J. Phys.* **11**, 360, 1958.

Discussion

Mills: The 4^s discrepancy may be the result of a +4^s correction based on identification of Hercules A and Hydra A. Dewhirst has suggested that the first identification is incorrect.

Dewhirst: I must confess that previous to this work it had not seemed necessary to determine the position of galaxies to better than 15 seconds of arc. A more careful optical measure will now be required to match the quoted accuracy of the radio position for NGC 6166!