CP 1919 usually shows trains of pulses all having almost the same height; the other two show a succession of pulses markedly different from each other. Table 1 shows the percentages of pulses at various normalized peak power intervals for the three sources. $\bar{S}$ is the average peak value of 200 successive pulses for *CP* 1919 and *CP* 1133 and of about 400 for *CP* 0950.

Table 1

Source	$S/\bar{S} < 0{\cdot}5$	$0{\cdot}5 < S/\bar{S} < 1$	$1 < S/\bar{S} < 1{\cdot}5$	$1{\cdot}5 < S/\bar{S} < 2$	$S/\bar{S} > 2$
CP 1919	2%	68%	27%	3%	0%
CP 1133	55%	25%	13%	3%	4%
CP 0950	52%	16%	10%	6%	16%

At this time of the year the sources are observed respectively in the early morning or in the evening. Interplanetary scintillation should therefore not play a significant part in any of the three sources.

An attempt has also been made to find some sort of correlation between the peak values of the various successive pulses of a given source. For sources *CP* 1919 and *CP* 0950, there is no indication of any significant deviation from a sequence of random values, although this does not exclude the presence of a hidden pattern which can be deciphered only by sophisticated filtering.

Source *CP* 1133, on the other hand, shows some sort of regular pattern—which has appeared in at least three very good and long records—consisting of a fluctuation of the average pulse height with a period which is twice that of the pulse repetition. Our preliminary value for the ratio between the average peak value of "even" pulses and that of "odd" pulses in $1{\cdot}50 \pm 0{\cdot}18$. This modulation, if confirmed, would of course support the concept of "something" oscillating both in the fundamental mode and in some higher order mode.

G. GRUEFF
G. ROFFI
M. VIGOTTI

Laboratorio Nazionale di Radioastronomia,
Istituto di Fisica,
Universita di Bologna.

Received May 21, 1968.

[1] Bailey, G. A., and Mackay, C. D., *Nature*, **218**, 129 (1968).

Confirmation of the Parkes Period for *CP* 1919

THE measurement of the period of *CP* 1919 by Radhakrishnan, Komesaroff and Cooke[1] disagrees with the value obtained at Cambridge by Hewish *et al.*[2] by about 21 μs, while the combined errors are less than 3 μs (Table 1).

To resolve the discrepancy, we have derived a period for the pulsations of this source from observations made at Arecibo on March 20–21, 1968, close to the dates of the Parkes observations (March 22–25, 1968). The result, corrected to the rest frame of the Sun, is $P_o = 1^s{\cdot}337\,3017 \pm 0{\cdot}000\,0005$, agreeing closely with the Parkes number.

The observations were made at a frequency of 111·5 MHz, with IF bandwidth of 100 kHz; the detected signal was filtered with a time constant of 0·01 s. Data were taken at a rate of 250 samples per second by a recorder synchronized to a Varian *R*-20 rubidium standard, which is stable on a 1 h time scale to better than one part in 10^{11}. The system, including the RF section, was checked for stability by transmission of artificial 10 ms wide pulses derived from a Manson oscillator, stable to one part in 10^{10} on a 1 h time scale.

Table 1. PERIOD OF *CP* 1919 IN REST FRAME OF THE SUN

Observatory	Date of observations	Period		Reference
Cambridge	Dec. 1967–Jan. 1968	1·337 279 5	$\pm 2 \times 10^{-6}$ s	2
Parkes	March 22–25, 1968	1·337 301 13	$\pm 7 \times 10^{-8}$	1
Goldstone	March 16, 1968	1·337 305	$\pm 20 \times 10^{-6}$	3
Arecibo	March 20–21, 1968	1·337 3017	$\pm 5 \times 10^{-7}$	This paper

Signal-to-noise of the pulses was sufficient to permit counting of individual pulses. Thus it was possible to obtain, from 41 min of observations on March 20 (10 : 45 : 10–11 : 26 : 46 UT), a mean period with rms deviation small enough to allow prediction of arrival of a pulse 24 h later. This was done by measuring the period of eight pairs of pulses, each pair separated by about 40^m. The deviation from the mean is reduced by $1/\sqrt{8}$ compared with the error in a single such measurement, which is roughly (pulse width)/(number of pulses, n, in 40 min). The value of n was found by projecting up to 40 min from estimates of apparent period, P, over shorter stretches of data.

Six strong pulses that arrived at 10 : 43 : 02–10 : 43 : 11 UT on March 21 were then sufficient to permit extension of the average for P during 24 h. The apparent period of $P = 1^s{\cdot}337\,21459 \pm 14 \times 10^{-8}$ was so derived. The Doppler shift correction, which did not account for acceleration of the Earth, yields the value of P_o given in Table 1.

For further comparison, we have also applied a Doppler correction to the apparent period obtained by Moffet and Ekers[3], estimated errors from data in their paper, and included the derived P_o in Table 1. The agreement among the three latest measurements is very good, further emphasizing the inconsistency with the Cambridge determination. A smooth secular change in P_o seems excluded, for this would have to be of the order of 7 μs per month, on the average, and would have been detected by Hewish *et al.* The possible pulse counting error in the Cambridge work, as suggested by the Parkes group, remains the best explanation.

We thank D. L. Jauncey, F. D. Drake and J. M. Comella for discussions. The Arecibo Ionospheric Observatory is operated by Cornell University with the support of the Advanced Research Projects Agency under a research contract with the Air Force Office of Scientific Research.

G. ZEISSIG
D. W. RICHARDS

Arecibo Ionospheric Observatory,
Cornell-Sydney University Astronomy Centre,
Arecibo, Puerto Rico.

Received May 6, 1968.

[1] Radhakrishnan, V., Komesaroff, M. M., and Cooke, D. J., *Nature*, **218**, 229 (1968).
[2] Hewish, A., Bell, S. J., Pilkington, J. D. H., Scott, P. F., and Collins, B. A., *Nature*, **217**, 709 (1968).
[3] Moffet, A. T., and Ekers, R. D., *Nature*, **218**, 227 (1968).

Possible Interpretation of Pulses from a Radio Source

THE Cambridge group[1] recently announced the recording of pulses from a local object, lasting for about 0·016 s and repeating with extreme regularity with a period of 1·337 s, the accuracy being one part in 10^7. There have been further observations from Cambridge[2] and from Jodrell Bank[3]. The amplitude of the pulses varies randomly, the pulses appearing and disappearing for periods of a few minutes. There is also a fine structure superimposed on the main pulse. Despite the regularity of the pulses, the power emitted varies significantly over all periods. Furthermore, observations indicate a frequency drift of -5 MHz s^{-1}. The absence of any proper motion of the source, and the interpretation of the frequency drift in terms of dispersion through the interstellar plasma, limit the distance of the source to the range 10^3 A.U. $< d < 65$ pc. An eighteenth magnitude blue stellar object has been found near the object, although there seems to be uncertainty about the nature of the object. From the pulse width and the rate of frequency drift the source is smaller than 5×10^8 cm.

Hewish *et al.*[1] tentatively suggested that the radio signals come from a pulsating neutron star or a white