ACTA ARITHMETICA
XIV (1968)

Corrigendum to the paper "A problem of Erdös concerning power residue sums"

(Acta Arithmetica 13 (1968), pp. 131-149)

by

P.D.T.A. Elliott (Nottingham)

The author would like to draw attention to the following oversights.

1. In the statement of Lemma 3 the condition that l be a power of q has been inadvertently omitted, and that q is a prime.

2. The results of Lemmas 4, 5 are correct only if all the q_i under consideration are odd. If one of the primes q_i has the value 2 a slight change has to be made. This is due to the fact that when $m \geqslant 3$ the Galois group of the cyclotomic field generated by a primitive 2^m-th root of unity is the direct product of cyclic groups of order 2 and 2^{m-2}. Thus that cyclotomic field has two quadratic subfields, namely $Q(\sqrt{-1})$ and $Q(\sqrt{2})$. Accordingly the definition of $c(k)$ (with an attendent change in the definition of n_r) becomes 2^{-t}, where

$$t = \begin{cases} 0 \quad \text{if } 2 \nmid k, \\ \text{the number of odd primes } q_i \text{ dividing } k \text{ and satisfying} \\ \qquad q_i \equiv 1 \pmod 4 \quad \text{if } 2 \| k, \\ \text{the number of odd primes } q_i \text{ dividing } k \quad \text{if } 4 \| k, \\ \text{the number of primes dividing } k \text{ if } \; 8 | k. \end{cases}$$

This change does not affect any succeeding argument. Indeed we only use the fact that t is bounded by k, and has the value zero when k is an odd prime.

3. On page 137 line 22 for 2^{-t+r} read $2^{-t}l^r$.

We note that we do not mention separability in for example Lemma 1, since the fields we are considering are of characteristic zero and so automatically separable. Moreover, for each field F, $\overline{F}$ is its ring of integers.

Finally we notice that unless otherwise stated the primes q_i are arbitrary until we reach p. 146. For pp. 146-149 they then become the rational primes in increasing order.

UNIVERSITY OF NOTTINGHAM

Reçu par la Rédaction le 12. 2. 1968