

LETTERS TO THE EDITOR

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SOME CONJECTURES IN NUMBER THEORY

THE object of this note is to give some recent conjectures in the Theory of Numbers and what has been done about them.

1. A Conjecture of Miller.

If  $\mu(n)$  and  $M(n)$  be the well-known Möbius functions, then

$$A(n) = \left\{ \sum_1^n M(m) \right\} / n \leq 0 \text{ for } n \geq 3.$$

The conjecture was verified by Miller for values of  $n$  up to 1000. I now find that the conjecture holds for values of  $n$  up to 20000 at least.

2. A Conjecture of Chowla.

If  $p$  be a prime of the form  $4q + 1$ , then the sum of the quadratic residues of  $p$  which are less than  $p/2$  is less than the sum of the non-residues less than  $p/2$ .

I have verified Chowla's conjecture for

primes up to 200 and also for the primes 1009 and 1997.

Further, if  $p$  be a prime of the form  $4q - 1$  then I find that the sum of the quadratic residues of  $p$  which are less than  $p$  is less than the sum of the quadratic non-residues less than  $p$ ,  $p < 200$ .

In fact, if  $S(p)$  denote the sum of the quadratic residues specified above, then

$$S(p) \leq (p-1)^2/16 \text{ or } (p-1)^2/4,$$

according as  $p$  is of the form  $4q + 1$  or  $4q - 1$ .

Govt. College,  
Hoshiarpur,  
May 18, 1949.

HANSRAJ GUPTA.

RELATIVE EFFECTS OF CARBON DIOXIDE, TEMPERATURE AND LIGHT INTENSITY UPON PHOTOSYNTHESIS RESEARCHES in photosynthesis have shown that rate of carbon dioxide absorbed by leaves is related to concentration of this