A REMARK ON g (*n*).

BY S. CHOWLA.
(*Government College, Lahore.*)
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PILLAI* proved that, for $n > n_0$,

$$g(n) = 2^n + \left[\left(\frac{3}{2}\right)^n\right] - 2 \qquad (1)$$

provided

$$3^n = l \cdot 2^n + r \ (0 < r < 2^n) \text{ where } r \geqslant 2^n - (l + 3).$$

By combining this with a recent theorem of Mahler (*Acta arithmetica*, Band 3, p. 93, Theorem 4) we obtain the result

THEOREM : *Let A be an arbitrarily large number. Then there exist infinitely many* x *such that* (1) *is true for* $x \leqslant n \leqslant Ax$.

Another form is the following :

THEOREM : *Let* ϵ *be an arbitrarily small positive number, then there exist infinitely many* x *such that the number of values of* n *for which* $2 \leqslant n \leqslant x$ *and in addition* (1) *is true, is less than* ϵx.

(All letters, except ϵ, denote positive integers.)

In fact if we denote by K (x), the number of solutions of

$$\left.\begin{array}{l} 1 \leqslant n \leqslant x \\ g(n) = 2^n + \left[\left(\frac{3}{2}\right)^n\right] - 2 \end{array}\right\},$$

the above results can be put elegantly in the following form :

THEOREM :

$$\limsup_{x \to \infty} \frac{K(x)}{x} = 1$$

Pillai proved that $$\frac{K(x)}{x} > \frac{1}{4} \ (x > x_0).$$

* *Annamalai University Journal*, March 1936, 5, No. 2. The result mentioned was also proved by Dickson.