(44) $$= \Omega^{\lambda} W_{m+r+s} \Omega^{\mu} W_{n-r+t} + \epsilon q^{n-r} U_{2r-t+s-1} \Delta^{\lambda} \Omega^{\mu} U_{n-m-1}$$

(45) $$= W_{m+r+s} \Omega^{\lambda+\mu} W_{n-r+t} + \epsilon q^{n-r} \Delta^{\lambda} U_{2r-t+s-1} \Omega^{\mu} U_{n-m-1} .$$

Putting $\lambda = 1$ and $\mu = 1$ in (36), (39) and (40) gives us, respectively, (13), (26) and (27) of [2], while letting $\lambda = 1$, $\mu = 2$ in (39) and (40) gives, respectively, 28(a) and (b). If, however, we let $t = 0$, $s = 0$, $\lambda = 1$ and $\mu = 1$ in (43) we have as a special case result (29) of [2].

REFERENCES

1. A. F. Horadam, "Basic Properties of a Certain Generalized Sequence of Numbers," *The Fibonacci Quarterly,* Vol. 3 (1965), No. 3, pp. 161–175.
2. A.L. Iakin, "Generalized Quaternions with Quaternion Components," *The Fibonacci Quarterly,* 1974 pre-print.

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LETTER TO THE EDITOR

16 September 1977

Dear Professor Hoggatt:

In a recent article with Claudia Smith (*The Fibonacci Quarterly,* Vol. 14, No. 4, p. 343), you referred to the question whether a prime p and its square p^2 can have the same rank of apparition in the Fibonacci sequence, and mentioned that Wall (1960) had tested primes up to 10,000 and not found any with this property.

I have recently extended this search and found that no prime up to 1,000,000 (one million) has this property.

My computations in fact test the Lucas sequence for the property

(1) $$L_p \equiv 1 \pmod{p^2} \qquad p = \text{prime}.$$

For $p > 5$ this is easily shown to be a necessary and sufficient condition for p and p^2 to have the same rank of apparition in the Fibonacci sequence, because of the identity

(2) $$(L_p - 1)(L_p + 1) = 5F_{p-1}F_{p+1} .$$

So far I have shown that the congruence (1) does not hold for any prime less than one million; I hope to extend the search further at a later date.

You may wish to publish these results in *The Fibonacci Quarterly.*

Yours sincerely,

s/ Dr. L. A. G. Dresel
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