REFERENCES

1. R. André-Jeannin. "A Generalization of Morgan-Voyce Polynomials." *The Fibonacci Quarterly* **32.3** (1994):228-31.
2. A. F. Horadam. "A Composite of Morgan-Voyce Generalizations." *The Fibonacci Quarterly* **35.3** (1997):233-39.
3. G. B. Djordjević. "On a Generalization of a Class of Polynomials." *The Fibonacci Quarterly* **36.2** (1998):110-17.
4. G. B. Djordjević. "Polynomials Related to Morgan-Voyce Polynomials." *The Fibonacci Quarterly* **37.1** (1999):61-66.

AMS Classification Numbers: 11B39, 26A24, 11B83

LETTER TO THE EDITOR

February 14, 2000

Professor Cooper,

I would like to bring your attention to an error in Paul S. Bruckman's article entitled "On the Degree of the Characteristic Polynomial of Powers of Sequences," *The Fibonacci Quarterly* **38.1** (2000):35-38. In particular, the following counterexample illustrates the error. In the notation of the article, let $U_n = 1+2^n+4^n$ with the characteristic polynomial $P_1(z) = (z-1)(z-2)(z-4)$ of degree $R_1 = 3$ with $m = 3$ roots. The main theorem then predicts

$$R_3 = \binom{5}{3} = 10.$$

However, on expanding $(U_n)^3$ we get $(U_n)^3 = 1+3*2^n+6*4^n+7*8^n+6*16^n+3*32^n+64^n$ with a characteristic polynomial of degree only 7, namely, $P_3(z) = (z-1)(z-2)(z-4)(z-8)(z-16)(z-32)(z-64)$.

The particular reasoning error in Bruckman's article revolves around the assumption that the products of the powers of the original eigenvalues are all distinct, indicated implicitly in the equation for $P_k(z)$ right before equation (7) on page 36 of the article. I brought attention to this issue in my recent article in your quarterly, noting that *if each root has a unique prime divisor that distinguishes it from the other roots*, then the final order of the power $(U_n)^k$ can be determined easily.

Regrettably, the general result stated in Bruckman's paper is erroneous.

For your careful consideration.

Adam Stinchcombe
Adirondack Community College
640 Bay Road
Queensbury, NY 12804