1135-VS-1072 **Ralph P Grimaldi*** (grimaldi@rose-hulman.edu), Mathematics Department - RHIT, 5500 Wabash Avenue, Terre Haute, IN 47803. *Up-Down Ternary Strings.*

For the alphabet $\Sigma = \{0, 1, 2\}$ and $n \geq 2$, let a_n count the number of strings in Σ^n of the form $x_1x_2x_3 \ldots x_n$, where $x_i < x_{i+1}$, for i odd, and $x_i > x_{i+1}$, for i even. For example, for $n = 3$, there are $a_3 = 5$ such strings of length 3 - namely,

$$010, \quad 021, \quad 020, \quad 121, \quad 120.$$

In general we find that $a_2 = 3$, $a_3 = 5$, and for $n \geq 4$, $a_n = a_{n-1} + a_{n-2}$. Thus, for $n \geq 2$, $a_n = F_{n+2}$, where F_n denotes the nth Fibonacci number. For these strings we examine (i) the number of 0's, 1's, and 2's that occur among the a_n strings; (ii) the sum of all the integers that occur in the a_n strings; (iii) the sum of all the a_n strings considered as base 3 integers; (iv) the number of runs of consecutive integers of the same parity; and, (v) the number of inversions that occur among the a_n strings. (Received September 19, 2017)