Richard Thompson’s group $F$ is the group given by the presentation

$$\langle x_0, x_1, x_2, \ldots \mid x_n x_m = x_m x_{n+1}, \forall n > m \rangle.$$ 

The semigroup defined by this presentation is denoted by $P$ and is called the \textit{positive semigroup} of $F$. It is a long standing open question as to whether or not the group $F$ is amenable. It has been shown that the group $F$ is amenable if and only if the semigroup $P$ is left amenable, and moreover, that the semigroup $P$ is the ascending union of semigroups, none of which are left amenable. It is well known that if a semigroup $S$ is the ascending union of left amenable semigroups, then $S$ is left amenable. One can ask the question: If a semigroup $S$ is the ascending union of semigroups, none of which are left amenable, then is it necessary for $S$ not to be left amenable? An affirmative answer to this question would provide an answer to the question of whether or not $F$ is amenable. The speaker gives an example of a left amenable semigroup which is the ascending union of semigroups, none of which are left amenable. (Received December 10, 2007)