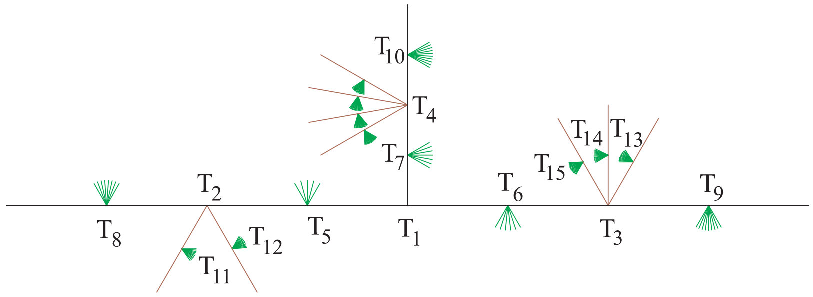

Figure 1.3.15: (A) Y_3

point x in common with the attached copy of T_i. All this can clearly be done so carefully that the resulting set Y_{n+1} is a tree and the limit continuum

$$Y = \mathrm{cl}\,(\bigcup\{Y_n : n \in \mathbb{N}\})$$

is a dendrite. See Figure A.

The following properties of the dendrite Y are shown in [Charatonik 1979, Statement 10, p. 229].

1. The set of all end points of Y is dense in Y.
2. For each $n \in \mathbb{N}$ the set of all points of Y that are of order at least n is dense in Y.
3. For each natural $n \geq 3$ the dendrite Y contains exactly one point of order n.
4. For each point $p \in Y$ and for each component C of $Y \setminus \{p\}$ the continuum $C \cup \{p\}$ contains a homeomorphic copy of Y.
5. Y is not strongly rigid.
6. Y is chaotic.

Recall that for any dendrite conditions 1 and 3 imply 5 and 6, see [Charatonik 1999, Theorem 13, p. 22]. However, neither the above mentioned conditions, nor a rough description given in [J. de Groot et al. 1958], nor the one presented in [Charatonik 1979] lead to a uniquely determined dendrite, because the constructed dendrite Y depends on a function that assigns the consecutive i-ods T_i (used in the succesive steps of the construction) to the midpoints of the maximal free arcs in the trees Y_n. Thus we refer to any of the dendrites Y obtained in this way as to a *dendrite of de Groot-Wille type* .

An example of a dendrite of de Groot-Wille type that is chaotic but not openly chaotic is constructed in [Charatonik 2000, Theorem 3.10, p. 646].