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Neil J.A. Sloane,
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600 Mountain Avenue,
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Dear Neil,

Maybe I won't mail today's letter today, but while it's fresh in my mind, let me talk about paraffins and alcohols. I don't drink many paraffins, but I believe them to be the same as (saturated) hydrocarbons, and *perhaps* the same as carbon trees. Anyway, I claim that S₂₆₈ is in error, and should be the same as (a subset of) S₂₆₇. Evidence: you got 268 from Busacker & Saaty, who are not renowned for their accuracy. B&S say they copied from Cayley. Henze & Blair (JACS 53 (1931) 3077-3085; see also 3042-3046) tell me that Cayley got C₁₂H₂₆ and C₁₃H₂₈ wrong, and these are indeed the last two items in the table in B&S.

Incidentally, the references for S.436, 1023 & 1063 should be to JACS 53 (1931) 3042-3046 instead of, or at least in addition to 3077-3085. Similarly for S.267: JACS 55 (1933) 680-686.

Now alcohols, I believe, are (saturated) hydrocarbons with a hydroxide ion in place of a hydrogen, so they may be described as rooted trees with no vertex of valence more than 4. Moreover, since a 4-valent vertex means a carbon atom with 4 carbons bonded to it, there's no room for the hydroxide ion, so we can't have a 4-valent vertex for root. Hence S.436 is different from 448: I may have suggested at some time that they should be the same. I think 436 is probably O.K., but 448 is suspect. Our run of *Zeitschrift für Krystallographie* does go back to 1936. But Cayley, as I've said, is suspect, and it's suspicious that the sequence is only quoted to C₁₄ (did Z.f.K. calculate just one more term?) By the way, B. & S. also quote Schiff, while H. & B. say that *he* made mistakes (at C₁₂ & C₁₄, I think) too.

Someone ought to clean all this up, using the Redfield-Pólya-de Bruijn theorem. Have you access to a master's student, looking for a problem? What are carbon trees?

Best wishes,

Yours sincerely,

Richard K. Guy.

RKG:l

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