January 28, 1972

Neil Sloane, 2C-363
Bell Telephone Laboratories
Murray Hill, N.J. 07974

Dear Neil,

I was happy to hear from you again and can give you a little information about the two questions you propose.

(1) Carmichael Numbers are composite a's such that $n|(a^n-a)$ for every integer a for which $(a,n) = 1$. They are discussed in Ore's book on number theory, p. 331. The person who knows how the sequence proceeds is Professor D. H. Swift at UCLA. I suggest you write him (I have his list, but I can't find it now, since I'm moving. -- I probably couldn't find it in any case, without raising a lot of dust). There is also Dickson's history, v. 1, pp. 91-95 which has the older information.

(2) As to the second question, I believe Professor David Singmaster might know something about it. His address is:
Poly of the South Bank
Borough Rd.
London (SE1), England.

With best regards.

Sincerely,

John Brillhart

JB:gc
January 24, 1972

Prof. John D. Brillhart
University of Arizona
Tucson, Arizona 85721

Dear John:

Do you happen to know anything about the following sequences (found in Sierpiński, A Selection of Problems in the Theory of Numbers)?

1. Absolute Pseudo-primea, or Carmichael Numbers (pp. 51-52, 109): Composite numbers n which divide $a^n - a$ for every integer a. He gives the examples 561 = 3,11,17, 5,29,73,7,13,31,7,23,31,7,31,73,13,37,61, 5,17,29,113,337,673,2689. If $c_i$ is the $i^{th}$ such number, he says $c_1 = 561$. How does the sequence continue?

2. Numbers n such that $\sigma(n) = \sigma(n+1)$ (page 110) where $\sigma(n)$ is the sum of the divisors of n. He gives the examples 14, 206, 957, 1334, 1364, 1634, 2685, 2974, 4364. Are any more terms known?

Any comments will be most welcome.

Best regards,

MH-1216-NJAS-1s

N. J. A. Sloane
February 7, 1972

Professor J. D. Swift
Department of Mathematics
University of California in Los Angeles
Los Angeles, California 90024

Dear Professor Swift:

John Brillhart suggested that I write to you about this. Carmichael numbers are composite a's such that n divides a\(^n\) - a for every integer a for which (a,n) = 1. Let c\(_i\) be the ith Carmichael number. According to Sierpinski, c\(_1\) = 561. I would be very grateful if you could tell me how the sequence proceeds (or supply a reference if it has appeared in the literature). Any information at all would be most welcome.

Thank you.

Yours sincerely,

MH-1216-NJAS-bk

N. J. A. Sloane
February 9, 1972

Dr. N. J. A. Sloane  
Bell Laboratories  
680 Mountain Avenue  
Murray Hill, New Jersey  07974

Dear Dr. Sloane:

The standard table of Carmichael numbers consists of the starred elements in P. Poulet, "Table des nombres composés vérifiant le théorème de Fermat pour le module 2 jusqu'à 100.000.000", Sphinx, v. 8, 1938, pp 42-52.

An almost complete errata to Poulet appears in Math. Comp. v. 25, 1971, p 944. It may be completed by starring 99036001.

I have an (unpublished) list of Carmichael numbers to $10^9$.

For your immediate information, $c_2, \ldots, c_{14}$, are 1105, 1729, 2465, 2821, 6601, 8911, 10585, 15841, 29341, 41041.

Yours very truly,

J. D. Swift

JDS:dg