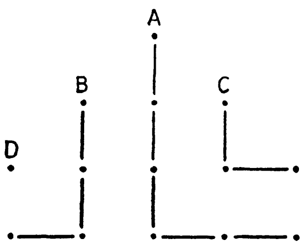
CORRESPONDENCE

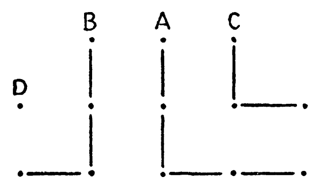
To the Editor of the *Mathematical Gazette*

DEAR SIR,

In your May 1958 issue, p. 84, Richard K. Guy gave several proofs of my theorem on partitions in *Mathematics Magazine*, January–February 1955, p. 160. The origin of the theorem was not empirical as he assumed, and was less ingenious than his proofs.

He used Glaisher's algebraic 1–1 correspondence between partitions of n into odd parts and partitions of n into unequal parts (MacMahon's Combinatory Analysis, vol. 2, p. 12). From a slightly modified version of Sylvester's graphical 1–1 correspondence between such partitions (ibid., p. 13), I inferred the theorem and can also prove it.





For example, reading the first graph upward by rows, it represents the partition of 14 into the odd parts 5, 5, 3, 1. Reading by three broken lines from A, B, C, then the single point D, it represents the partition of 14 into the unequal parts 6, 4, 3, 1.

Similarly the second graph represents the partition of 13 into the odd parts 5, 5, 3, and the partition of 13 into the unequal parts 5, 4, 3, 1.

It is the absence of single points at the top of the second graph that makes the number of lattice points on the broken line from A only one greater than the number of lattice points on the broken line from B. Such a graph transparently exhibits a 1–1 correspondence, hard to translate into words or algebra, between partitions of n into odd parts greater than unity and those into unequal parts of which the two greatest differ by unity.

Yours etc., HOWARD D. GROSSMAN

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