Again by occasion of this infinite series I am called to mind that of the lot of gamblers, which I proposed in the *Journal des Scavans* 1685 article 25 in this manner: Two gamblers A & B play a die, the same condition, when who the first will cast that assigned number of points, wins: A in first place makes one cast, & B one, then A two consecutive casts, & B two: hence A three, & B three, &c. Or, A makes one cast, then B two, hence A three, afterwards B four, &c. until when either of them win. The ratio of the lots is demanded? Since the problem awaited solution thus far in vain, thus I present the same through infinite series: the lot of gambler A to the lot of gambler B in the first case have to one another, as

\[
1 + \left(\frac{5}{6}\right)^2 + \left(\frac{5}{6}\right)^6 + \left(\frac{5}{6}\right)^{12} + \left(\frac{5}{6}\right)^{20} \&c. - \frac{5}{6} - \left(\frac{5}{6}\right)^4 - \left(\frac{5}{6}\right)^9 - \left(\frac{5}{6}\right)^{16} \&c.
\]

in regard to the latter, as

\[
1 + \left(\frac{5}{6}\right)^3 + \left(\frac{5}{6}\right)^{10} + \left(\frac{5}{6}\right)^{21} + \left(\frac{5}{6}\right)^{36} \&c. - \left(\frac{5}{6}\right) - \left(\frac{5}{6}\right)^6 - \left(\frac{5}{6}\right)^{16} - \left(\frac{5}{6}\right)^{28} \&c.
\]

to the complement of unity.\(^1\) Of these series the limits represent just as many powers of the fraction \(\frac{5}{6}\), of which the indices arise by preserving the differences between themselves in arithmetic progression, of which in that place are two common excesses, here four.

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\(^1\)Several questions on interest, together with the solution to a problem of a chance lot.

*Date:* *Acta Eruditorum* 1690 (May), p. 219–223.

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\(^1\)The value of the first series is approximately 0.596791943 and that of the second 0.5239191276.