

634.

THEOREMS IN TRIGONOMETRY AND ON PARTITIONS.

[From the *Messenger of Mathematics*, vol. v. (1876), p. 164, and p. 188.]

If

$$A + B + C + F + G + H = 0,$$

then

$$\begin{vmatrix} \sin \overline{A + F} \sin \overline{B + F} \sin \overline{C + F}, & \cos F, & \sin F \\ \sin \overline{A + G} \sin \overline{B + G} \sin \overline{C + G}, & \cos G, & \sin G \\ \sin \overline{A + H} \sin \overline{B + H} \sin \overline{C + H}, & \cos H, & \sin H \end{vmatrix} = 0.$$

Let u_n = number of partitions of n , no part less than 2, the order attended to; e.g. if $n = 7$, the partitions are 7, 52, 25, 43, 34, 322, 232, 223, $u_7 = 8$; the series is

$$u_2 = 1,$$

$$u_3 = 1,$$

$$u_4 = 2,$$

$$u_5 = 3,$$

$$u_6 = 5,$$

$$u_7 = 8,$$

$$u_8 = 13,$$

$$u_9 = 21,$$

where each term is the sum of the next preceding two terms.