

IV. "On the Tangential of a Cubic." By ARTHUR CAYLEY,
Esq., F.R.S. Received February 11, 1858.

(Abstract.)

In my "Memoir on Curves of the Third Order," Phil. Trans. vol. cxlvii. (1857), I had occasion to consider a derivative which may be termed the "tangential" of a cubic, viz. the tangent at the point (x, y, z) of the cubic curve $(x, y, z)^3 = 0$ meets the curve in a point (ξ, η, ζ) , which is the tangential of the first-mentioned point; and I showed that when the cubic is represented in the canonical form $x^3 + y^3 + z^3 + 6lxyz = 0$, the coordinates of the tangential may be taken to be $x(y^3 - z^3) : y(z^3 - x^3) : z(x^3 - y^3)$. The method given for obtaining the tangential may be applied to the general form $(a, b, c, f, g, h, i, j, k, l)(x, y, z)^3$: it seems desirable, in reference to the theory of cubic forms, to give the expression of the tangential for the general form; and this is what I propose to do, merely indicating the steps of the calculation, which was performed for me by Mr. Creedy.

V. "On the Constitution of the Essential Oil of Rue." By C.
GREVILLE WILLIAMS, Esq., Lecturer on Chemistry in the
Normal College, Swansea. Communicated by Professor
STOKES, Sec. R.S. Received February 15, 1858.

(Abstract.)

The essential oil of rue and its products of decomposition have been examined by several chemists. Will analysed it many years ago, and deduced the formula $C^{28}H^{28}O^3$ as the result of his analyses. The principal investigation of it was made by Gerhardt, who regarded it as the aldehyde of capric acid. The production of capric acid from it by the action of nitric acid, as observed by Gerhardt and also by Cahours, has been considered as corroborative of the 20 carbon formula. It is evident, however, that the formation of capric acid merely indicates the aldehyde to contain *not less* than 20 equivalents of carbon.