versals to the double lines. The residual section by the plane of l, m, n is a conic whose image in the plane is also a conic, which has the common directions at A and B and passes through the four other points, thus fulfilling eight conditions. Thus, if four points of such a set of fourteen are collinear, or if eight of them lie in sets of four on two lines, the remaining points are related in the manner just noted. If we arranged the nine points in a triangle, one at each vertex and two on each side, we should get three skew lines on the surface, each meeting l and four other lines, but not meeting the double lines.

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A NOTE ON THE RATIONAL PLANE QUARTIC CURVE WITH CUSPS OR UNDULATIONS*

BY J. H. NEELLEY

1. *Introduction.* In a recent paper† compound singularities of the rational plane quartic curve have been considered, but cusps and undulations were not incorporated in that article because of their widespread discussion by other writers. However, the errors or ambiguities in previous treatments of these two singularities are cleared up by this paper.

2. *A System of Cusp Invariants.* It is well known that all types of the rational plane quartic curve with simple singularities are given to within projection by plane sections of the Steiner Romische Surface S_3^4 of order three and class four. When referred to its tropes S_3^4 has the equation

$$(1) \qquad (x_0)^{1/2} \pm (x_1)^{1/2} \pm (x_2)^{1/2} \pm (x_3)^{1/2} = 0.$$

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†J. H. Neelley, *Compound singularities of the rational plane quartic curve,* American Journal of Mathematics, vol. 49 (1927), pp. 389-400.