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E56-100, 38 Memorial Drive, Cambridge, MA 02139. *Early Theories of Vectors*.

According to a commonly-accepted picture of the development of mathematics, vector calculus arose as a consequence of the discovery of the geometric representation of complex numbers, at the beginning of the nineteenth century. This is not entirely true. In fact, there were some very important early influences from geometry and mechanics, which can be traced back to the works of many mathematicians, notably Euler, Carnot, Poinsot and Poisson. The decisive step in the application of these new results to the establishment of a primitive form of vector calculus was taken by Italian mathematician Gaetano Giorgini (1795-1874). His "Teoria analitica delle proiezioni" (Analytic Theory of Projections, 1820) consists almost entirely of formulae which are identical with those of modern vector algebra. Giorgini sought to generalize to non-orthogonal axes the results already known on the projections of directed line segments and plane surfaces. By considering the algebraic sums of the projections, he introduced the compositions of line segments (equivalent to the parallelogram law) and of plane surfaces. While the "Teoria analitica" is still in the manner of Monge and Hachette, it is difficult to deny that it resembles strongly in aim and content a modern expositions of vector algebra. (Received September 19, 2005)