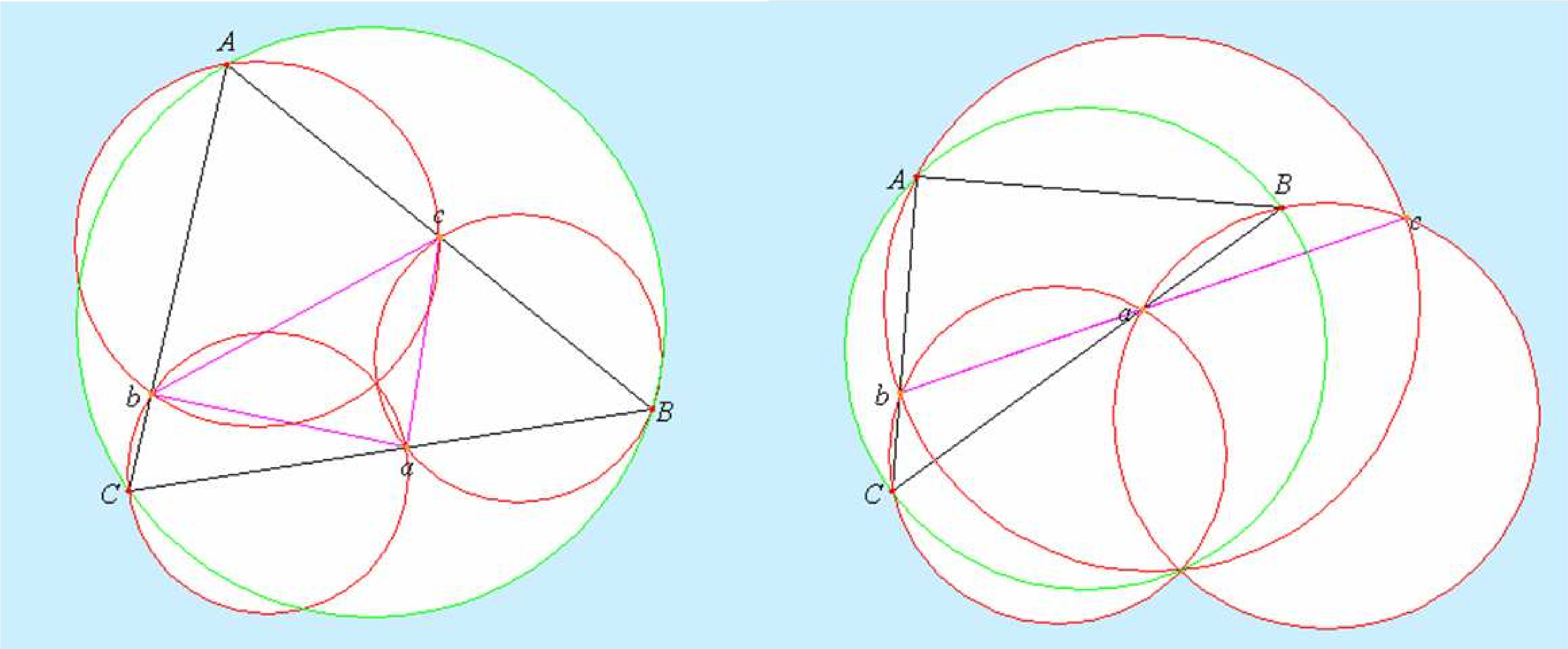
THEOREM OF THE DAY

Miquel's Triangle Theorem *Let A, B and C be the vertices of a triangle and a, b and c be points chosen on sides CB, AC and AB, respectively. Then the circles defined by bAc, cBa and aCb have a common point of intersection. Moreover, if a, b and c are chosen to be collinear then this point lies on the circle defined by A, B and C.*



The above picture (created using David Joyces wonderful Geometry Applet package) shows Miquel's Theorem in action. Changing the size or shape of triangle *ABC*, or moving any of the side points *a*, *b* or *c*, will move but not destroy the point of intersection of the three red circles. The magenta triangle *abc* reduces to a line when its vertices are collinear, as on the right, and at this point we find the red circles intersect in a point on the green circle on *ABC*.

Auguste Miquel was a French mathematician active in the mid-nineteenth century. The point of intersection of the circles in this theorem is known as the 'Miquel Point'.

Web link: kskedlaya.org/geometryunbound/, see section 1.2 of "notes from August 1999" (under "Non-GFDL").

Further reading: *Episodes in Nineteenth and Twentieth Century Euclidean Geometry,* by Ross Honsberger, The Mathematical Association of America, 1996.