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Brian J Winkel* (brianwinkel@simiode.org). *Eye Surgery Problems, Dry Ice Does a Job, and How Water Cooling while Room Heats Up – Modeling with Differential Equations.*

We will engage the audience in modeling scenarios we have used with students in modeling with differential equations using data. In retinal surgery inert gas is injected into the eye and doctors need to model the gas's diffusion out of the eye before permitting patients to fly. Otherwise bad things could happen! Dry ice sublimates, but how can we model it, and how should we not model it? Hot water cools in a room, but the room is heating up. What happens? All of these are readily available at www.simiode.org. (Received September 16, 2019)