Hail strikes Socorro

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FIGURE 8—Normally dry tributary draw to Sand Draw is a torrent of water Saturday morning following Friday night's hail and rainstorm.

FIGURE 9—More runoff from Friday night, August 13th, hail and rainstorm flowing north parallel to NM–402 and cascading into tributary arroyo.

fall amount at Clayton all summer and a new record daily maximum precipitation amount for that date. The old record was 1.30 inches in 1926.

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Hail collected in the Bureau of Land Management parking lot in Socorro. Photo by Edward Wells.

October 5th is well past the end of summer and presumably the end of summer storms, but this continues to be the year of unusual weather. On October 4th and 5th several severe storms containing large hail moved through the Albuquerque area, and on the 5th were reported in Belen and Socorro; near Encino, Picacho, Vaughn, and Lovington; and between Dexter and Hagerman. At New Mexico Institute of Mining and Technology in Socorro, hail between 2 and 3 inches in diameter bombarded buildings and vehicles causing more than $10 million in damage on the campus. Estimates of storm damage city wide were at least $10 million as well.

I calculated that the terminal velocity achieved by a 2-inch-diameter spherical hailstone would be 78 mph, whereas a 3-inch-diameter hailstone would hit the ground at more than 95 mph. The more typical pea-sized hail, if it were assumed to be one-fifth inch in diameter, would reach a terminal velocity of slightly over 25 mph. A comparison of momentum transferred on impact shows that the 3-inch hail packed more than 3,500 times the momentum of one-fifth-inch hail.

These fierce terminal velocities of 80–95 mph are identical to the updraft velocities necessary to create 2–3-inch-diameter hail. In fact updraft velocities actually exceed 95 mph because air density is lower at the elevation where hail is created. [I made these calculations using a simple newtonian drag model, in which drag force is proportional to velocity cubed and the cross sectional area of the falling object. Hail density was taken to be 920 kg/m^3, and air density at Socorro's elevation was taken to be 1.00 kg/m^3.]

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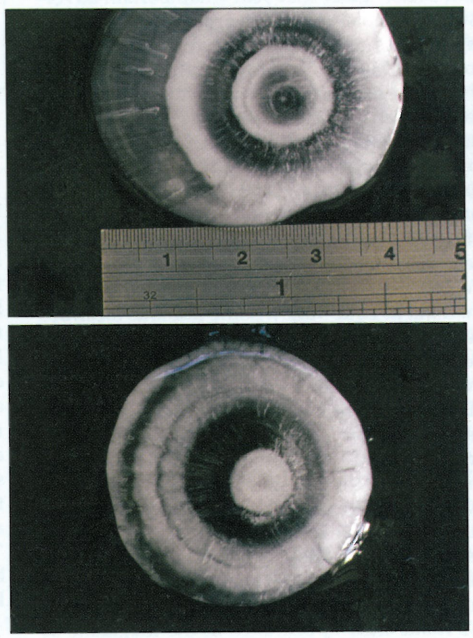

These hailstones have melted down from their 2-inch diameter to approximately 1.5 inches. Many 3-inch stones were observed as well. These pictures were selected because they so clearly depict the growth rings associated with hail formation. Photos by Harald Edens.