

remarks anent certain phenomena which he has observed taking place in his beakers.

The first is an easily reproduced observation which presents a singularly beautiful analogy to the formation of spiral nebulae from unorganized dispersions of matter and the further condensation of nebulae into star masses. The operation is so commonplace that the result must needs have been observed innumerable times. When a solution containing some considerable amount of lead has been evaporated strongly with sulfuric acid, then cooled and diluted with water, there is formed a dispersed cloud of precipitated lead sulfate throughout the solution, which cloud we may perhaps think of as resembling a primal chaos of matter in space.

When the chemist, deputy demi-urge pro tem, gives to his beaker a rapid swirl to better mix and settle the precipitate, a very striking demonstration follows. Almost immediately a nucleus of precipitate forms at the center of rotation of the liquid. About this nucleus rotate spiral arms of matter which quickly draw in toward the center. One can not but be impressed by the close resemblance between the appearance of this formation and that of the photographs of the great spiral nebula in Orion. In the beaker the micro-nebula endures but a few seconds, for the arms are quickly absorbed by, and coalesce with, the central nucleus, forming a disk-shaped "star" which, in a gravitationless field, had certainly been globular in shape.

The writer has not sufficient temerity to draw a rigid parallel between the phenomenon here described and that taking place in the nighted dark of infinite space, but it is suggested that some similar cause must control the two cases.

A second observation has to do with a condition which may not be reproducible and which may present itself but once in a lifetime. Recently the writer was diluting, with a jet of water, a concentrated solution of various sulfates in sulfuric acid, using the caution advisable in such cases. The first few drops of water formed a number of globular pearls upon the surface of the liquid, which droplets were almost immediately absorbed with the exception of two which remained upon the surface for a fleeting instant. The larger of these droplets, perhaps three millimeters in diameter, came to rest near the center of the beaker, while the other, very minute, skipped across the surface, approaching the larger with increasing speed until it reached a maximum of velocity near its primary and went whirling around it and away in what may have been a parabolic or elliptical path. The wall of the beaker unfortunately intervened, and the droplet disappeared. The writer was forcibly reminded of the behavior of a comet which falls from infinite distance toward the sun, around which it swings at maximum

speed while endures the balance between the centrifugal and gravitational forces, to go winging away into space again as the centrifugal force predominates.

The increase in velocity of the smaller droplet as it neared the greater may have been due to the depression of the surface of the liquid by the weight of the latter, so that the former may really have been running down hill in its approach. If such be the case, then we may have here an observation duplicating Einstein's analogy of gravitation. Perhaps we may surprise the workings of universal law in the ridiculous as in the sublime, in a chemist's beaker as in infinite space.

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LA OROYA, PERÚ

TORNADO CLOUD SEEN IN ALASKA

TORNADOES have never been reported from Alaska, although Sir Douglas Mawson, in "The Home of the Blizzard," reports the occurrence of tornadoes—"whirlies," he calls them—in the Antarctic.

On August 3, 1939, the writer was at the Adam Werner farm in Sec. 20, T. 18 N., R 2 E., in the Matanuska Valley. This farm is three miles north-northwest from Palmer, Alaska. About 2 P.M. some very heavy storm clouds were seen to the westward with an unmistakable tornado funnel silhouetted against a more distant area of lighter-appearing clouds.

The stormy looking clouds with appended tornado funnel appeared to be about 20 or 25 miles distant and about S. 85° W. from the point where seen. This would place the clouds about 25 miles north of Anchorage, Alaska. The air temperature was about 60° F.

Later inquiry at Anchorage gave the additional information that a violent shower of thunderstorm type broke upon Anchorage at about this hour. The flat valley lands over which I estimate the funnel to have been when seen are practically uninhabited, so that possible local observers would be few and far between.

The funnel appeared to be attached to, or hanging from, the lower surface of some clouds which would be technically classed as of strato-cumulus type. The base of the parent cloud formation was probably 2,000 feet above the ground, and the funnel, the writer estimated, extended about two thirds of the way to the earth's surface, but at no time during the period observed did it reach the earth's surface.

When first observed, the black-looking funnel was perfectly formed, but before the writer could get a camera and reach a point of vantage for a photograph, the funnel began to disintegrate, and in two or three minutes from the time when first seen, it had entirely disappeared.

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