

RENEWED ACTIVITY OF RADIUM BROMIDE AFTER
HEATING, AS REVEALED IN A WILSON
EXPANSION CHAMBER

BY

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The recovery of the activity of a radioactive substance may be studied by proceeding as follows:

Place a minute quantity of the radioactive salt on the end of a solid rod (about 2 mm in diameter) of Pyrex glass by wetting the tip with alcohol containing a little shellac. Next blow a thin-walled bulb of Pyrex glass so thin that it *shows* Newton's rings in the form of *broad colored bands*. Now hold the tip in a soft blast, heating it slightly from the rear to insure against loss of radioactive material by the action of the blast, and when the tip begins to soften and assumes a spherical form, and with the thin walled bulb in line and in readiness, plunge the tip into it. This operation will cover the heated end of the tip with a thin film of glass, thus sealing in the radioactive salt. The tip may now be used in a Wilson expansion chamber without fear of losing any of the active material, and should last indefinitely as a source of alpha-particles free from emanation. This latter, obviously, is

not able to pass through the thin glass film. Tips thus prepared were made over ten years ago by the writer and the protective film of glass seems to be intact.

If a *freshly* prepared tip is placed in a Wilson expansion chamber and the proper expansion is brought about, tracks will appear, but they will be few in number and only about one cm in length, as shown in Fig. 1. Re-



Figs. 1 and 2.—Renewed activity of radium bromide. (Courtesy University of Illinois.)

peated expansions *immediately* following this one will not increase the number or length of the tracks. This apparently poor showing is disconcerting, for one naturally concludes that the tip is a poor one—that it contains but little active material under its film of glass, or that possibly the film is too thick. However if the apparatus be let stand for a day, the tracks will become more numerous and their lengths increase. This will come as a surprise. This increase in number and length has further support as time goes on. After ten days the alpha-ray tracks will seemingly have reached their full length—about 7 cm—and the number may vary from 20 to 40. The sketches shown in Figs. 1 and 2 are drawn to represent the first and last stages in this recovery of activity process. The explanation at first may seem a bit puzzling. It is quite evident that at the beginning when the salt is red hot, there is little or no activity trapped under the film of glass, but with time, this, also the emanation, builds up and reaches the steady state. This requires as stated above from six to ten days. The phenomenon is interesting and very pronounced.