Variation of the Emanation Content of Certain Springs.

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While measuring the radioactivity of springs in the neighborhood of Bloomington, Indiana, I found that the measurements made at certain times did not agree with those made at other times. The discrepancy was so great I set out to see if the difference was due to errors or was a real difference. I selected two springs and have tested them once a week for about three months. One, the Hottle Spring, is due north of the square near the corporation line. The other is due west of the square a little beyond the corporation line, across the Illinois Central Railroad from the railroad pumping station. These springs are 1.3 miles apart. Each has a flow of abut 15,000 gallons per day. The flow of the Illinois Central Spring has perceptibly lowered during October and November. The Illinois Central Spring issues from the ground at the root of a beech tree through coarse gravel or stones. The Hottle Spring issues from a crack in solid rock.

The results are shown in the following table:

Variation of Emanation Content of Certain Springs near Bloomington, Ind. Expressed in Curies per Liter.

Date.	Temp. C.	J. C. S.	Hottle.	Ill. Cent.
Mar. 4	12.0°	X 10^{-12}	X 10^{-12}	600. X 10^{-12}
Mar. 13	10.3°	430.	.....	.....
May 16	11.5°	170.	.....	.....
May 23	12.2°	.....	.....	265.
July 24	.....	.....	.....	330.
Aug. 5	12.5°	425.	.....	.....
Sept. 24	13 and 13°	.....	650.	445.
Oct. 9	15°	530.	.....	.....
Oct. 16	13 and 12.8°	.....	695.	166.
Oct. 23	13.3 and 13°	.....	700.	120.
Oct. 30	13 and 12.7°	.....	665.	20.
Nov. 6	13 and 12.6°	.....	650.	40.
Nov. 13	13 and 12.6°	.....	705.	20.
Nov. 20	13 nd 13°	.....	520.	20.
Nov. 26	13 and 13°	.....	550.	33.
Dec. 3	13 and 13°	.....	535.	60.
Dec. 11	13 and 13°	.....	510.	20.
Dec. 18	13 and 13°	.....	450.	00.

The Hottle Spring has remained almost constant, while the Illinois Central has fallen from 600. X 10^{-12} curies to almost zero. Four readings taken on another (J. C. S.) spring are added. Taken all together it is noted that in May there was a low value and an increase during September and another decrease October and December. In a rough way an increase coincides with a season of rain and a decrease with dry weather. It may be that due to a small flow there is more splashing and trickling over rocks near the mouth of the spring and the emanation is lost.

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