in diameter at the baffle disc converges the air stream and passes it through the baffle into the humidifying chamber. A flange (I) one half inch wide soldered to the small end of the cone prevents water from dripping into the opening. The shaft, shaft hanger, coupling, and collars onto which the fan and agitators are soldered are stock parts of the "Driver" home workshop. They may be purchased from Sears, Roebuck & Co. or from the chain store called "Grant's." The shaft should be of brass, but an iron one may be coated with shellac to prevent rusting. The humidifying chamber may be made easily by a tinsmith from galvanized sheet iron.

When the humidifier is operating continuously and temperature is held constant, the relative humidity within the incubator is a function of the depth to which the agitator discs dip into the water of the humidifying chamber. Hence the relative humidity may be varied by raising or lowering the water level. Since the water level in the humidifying chamber is the same as that in the float chamber of the carburetor, the relative humidity within the incubator may be varied by altering the height of the carburetor. From these facts it is obvious that the precision of humidity regulation depends upon the sensitivity of the float and needle valve in maintaining a constant water level. The ratio between unit difference in water level and unit difference in relative humidity in the incubator depends upon the difference between the capacity of the humidifier and the size of the incubator in question. A machine the size of the one illustrated works very satisfactorily in an incubator of 53 cubic feet capacity.

Other methods of varying the humidity output of the apparatus and therefore of varying the relative humidity in the incubator is to alter the number of agitators or to change the size of the outlet through the baffle plates. These methods, however, serve only to alter the capacity of the humidifier. The sensitivity of the float and needle valve in the carburetor remains as the secret to the accuracy of humidity regulation.

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# SPECIAL ARTICLES

## THE LEAKAGE OF HELIUM THROUGH PYREX GLASS AT ROOM TEMPERATURE, II[1]

SOME years ago (SCIENCE, 68: 516, 1928) Baxter, Starkweather and Ellestad reported evidence of the slow leakage of helium from a sealed pyrex globe containing helium at room temperature. The gas in the (1044 ml.) globe was originally under slightly less than average atmospheric pressure in this locality, *i.e.*, 75 cm. The globe was occasionally compared in weight with a similar sealed globe, containing argon under a pressure of 79 cm., over a period of a year. In the course of the year the helium globe lost in weight to an extent corresponding to a little more than 1 per cent. of the helium.

| Date | Excess in wt. of counterpoise over globe g. | Time days | Loss in wt. mg. | Loss in wt. per day mg. |
|---|---|---|---|---|
| Nov. 11, 1927 | 8.08873 | 0 | | |
| Nov. 11, 1928 | 8.09046 | 366 | 1.73 | 0.00474 |
| Feb. 2, 1929 | 8.09091 | 449 | 2.18 | 0.00486 |
| April 25, 1929 | 8.09141 | 531 | 2.68 | 0.00505 |
| May 2, 1929 | 8.09144 | 538 | 2.71 | 0.00505 |
| June 28, 1929 | 8.09179 | 595 | 3.06 | 0.00515 |
| March 25, 1931 | 8.09445 | 1230 | 5.72 | 0.00465 |
| May 22, 1931 | 8.09500 | 1288 | 6.27 | 0.00488 |
| May 23, 1931 | 8.09491 | 1289 | 6.18 | 0.00479 |
| May 25, 1931 | 8.09496 | 1291 | 6.23 | 0.00482 |

[1] Contribution from the T. Jefferson Coolidge Memorial Laboratory of Harvard University.

The weight of the globe has been occasionally determined since that time and the observations show a continuous regular loss corresponding to that previously found.

In the three years and one half since the experiment was started the proportion of helium which apparently has diffused through the glass is nearly 3.5 per cent. (35 ml.). The rate of leakage per day is somewhat irregular although a continuously slower rate is to be expected on account of the diminishing interior pressure.

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## INCREASING THE VITAMIN D POTENCY OF COW'S MILK BY THE DAILY FEEDING OF IRRADIATED YEAST OR IRRADIATED ERGOSTEROL[1]

LUCE[2] in 1924 reported that the diet of the cow appeared to be the main factor in determining the

[1] The experiments here described were carried out through the cooperation of the Walker-Gordon Laboratory Company and Columbia University.

[2] E. M. Luce, *Biochem. J.*, 18, 2379, 1924.