maple and birch, makes a good element. The switch should be of the normally closed type. It is opened by pressure of the foot of the wood element against a protruding contact point, and this interrupts the flow of

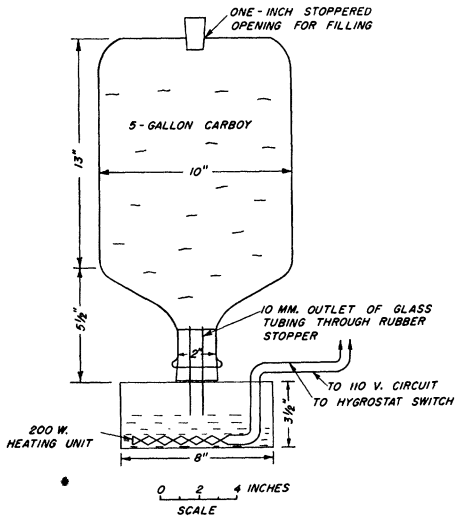

FIG. 2. Humidifier.

current through the heating coil of the humidifier. It is closed again and humidification is resumed as the element shrinks in response to decreasing relative humidity. No relay is required; the switch, which is designed for current loads up to 10 amps at 125 volts, is simply connected in series with the heating element of the humidifier.

The relative humidity to be maintained is controlled by the proximity of the element foot to the switch contact point, which is regulated by adjusting the spacing between the spring bronze element supports. These supports are spread or contracted by turning the right- and left-hand threaded screw in the nuts brazed to the supports. The final adjustment is arrived at by trial and error, using a wet- and dry-bulb hygrometer to indicate when the proper setting has been made.

The humidifier (Fig. 2) consists of a closed 5-gal reservoir of water that feeds through 10-mm glass tubing into a glass evaporating pan. Heat is supplied by an open, 200-w heating coil submerged in the pan. A sealed heating unit probably would give longer service, although the open coil is remarkably durable when kept submerged. The smaller the heat output of the unit, the smaller will be the overrun in humidification resulting from lag in the response of the hygrostat.

The water reservoir is filled as necessary through a ½-in. hole bored in the top. A rubber stopper is inserted in the outlet tube during the filling process. Distilled water is used because of the extreme hardness of the tap water at Madison, although lime would not, of course, materially interfere with the operation of the apparatus if it were removed from the evaporating pan and heating unit frequently enough to prevent large accumulation.

Significant stratification of relative humidity and temperature in the controlled rooms at the laboratory is avoided by keeping an electric fan running at low speed in each room.

From measurements made in one of the rooms during the winter, it was found that about 873 g water/day was evaporated in maintaining the 70% relative humidity. The humidifier was in operation about 5.8 hr each day, which entailed a daily power consumption of about 1.16 kwhr. Corresponding summertime values were not measured, but are known to be considerably smaller. The room in this case is walled on three sides with double sheet rock panels with mineral wool insulation batting between them, and on the fourth side with unglazed tile. All conspicuous cracks and similar openings to the outside are sealed with calking compound, a measure that materially reduces the amount of humidification required.

To provide a relative humidity lower than that of the outside atmosphere, some arrangement for increasing the temperature (if this could be tolerated) or for dehumidification would, of course, be necessary. In any case, the wood-element hygrostat could be adapted to serve as the control apparatus.

Treatment of Nausea and Vomiting of Pregnancy with Dramamine—Preliminary Report

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Nausea occurs in approximately 50% of pregnancies, and in about 25% vomiting ensues. The severity of symptoms varies in individual patients. Frequently patients require hospitalization because of the excessive dehydration which occurs. However, in a study of 15,000 cases, Eastman and Hellman (*1*) have reported that in only one instance was interruption of the pregnancy necessary. The cause of these symptoms has never been definitely established.

Coincident with the study of the control of motion sickness with Dramamine (*2*), it was decided to investigate the effect of the drug on nausea and vomiting in pregnancy.[1] The following data are presented as a preliminary report of this investigation.

Forty-three women who had complained of these symptoms for 4–6 weeks had been given a number of remedies. Intravenous pyridoxine, oral pyridoxine, oral thiamine chloride, sedation, and psychotherapy had failed. Each patient was given 100 mg of Dramamine, three times daily. This dose was reduced to 50 mg three times daily for seven patients because of minor side-effects—drowsiness and vague subjective muscle tremors. Unknown to 10 patients, the drug was discontinued and a placebo of lactose, identical in appearance, was substituted.

Thirty-one patients (72.1%) of the 43 were completely relieved of their symptoms 3 hr after administration of Dramamine. Ten patients whose symptoms were con-

[1] Dramamine supplied by G. D. Searle & Co., Chicago.

trolled by the drug relapsed when a placebo was substituted, but immediately regained their normal health after Dramamine was again administered. Twelve patients (27.8%) of the 43 obtained no relief from the drug.

In summary, although the number of patients treated with Dramamine is small, the results are so encouraging that the Allergy Clinic and the Obstetrical Clinic of the Johns Hopkins Hospital and University are making an extensive comparative study. These data will be published in a subsequent report.

References

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Plasma and Liver Protein Levels in Rats Fed the Carcinogen 2-Acetylaminofluorene[1]

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Cook, Griffin, and Luck (*1*) have recently reported that azo dyes decrease plasma albumin and increase gamma globulin in rats. In addition, the carcinogenic activity of the drug can be correlated with the degree of change induced in these plasma components. The non-azo dye, though its carcinogenic action is well known. Whether or not the drug would alter plasma protein levels when fed at different concentrations and for a longer time was considered of interest in elucidating this drug's actions.

The azo dyes induce liver tumors and have a definite effect on nucleic acid content of this organ (*2*, *3*, *6*, *7*). The non-azo dye 2AAF also causes formation of liver tumors and increases liver weight (*8*). We have extended these data to include estimations of liver water and protein in an effort to correlate the liver and plasma proteins, since the liver is a source of plasma albumin.

Forty-day-old female rats were maintained on Purina fox chow to which 0.03% or 0.15% of 2-acetylaminofluorene was added. The diets were fed ad lib. for 100 days, after which time the rats were bled by cardiac puncture under light ether anesthesia and the plasma was analyzed for nonprotein nitrogen, total plasma protein, and albumin and globulin concentrations by salt fractionation methods previously reported (*5*). The liver was dried to constant weight, ground to uniform consistency, and analyzed for total nitrogen. The nitrogen values were converted to protein by use of the factor 6.25.

Body weight increase was recorded at weekly intervals and the control rats increased from 100 to 237 g in 100 days. Body weight increase of rats fed 0.03% of 2AAF followed the controls for 11 weeks, starting at 102 g and increasing to 202 g, and then leveled off. The incorporation of 0.15% 2AAF in the diet resulted in an average body weight change from 90 to 164 g. These rats' weight at 6 weeks was constant for a 2-week period, then it increased slowly for 4 weeks but leveled off again. The results simulate those reported by Wilson *et al.* (*9*).

TABLE 1

PLASMA PROTEIN CONCENTRATIONS OF FEMALE RATS FED 2-ACETYLAMINOFLUORENE FOR 100 DAYS

Diet	No. of rats	Hematocrit %	NPN in mg%	Plasma proteins in g%*		
				total	albumin	globulin
Fox chow	6	40.4 ± 1.2	50 ± 3.0	4.99 ± 0.11	2.42 ± 0.06	2.57 ± 0.11
Fox chow + 0.03% drug	6	42.4 ± 1.2	51 ± 2.4	5.06 ± 0.14	2.52 ± 0.07	2.54 ± 0.18
Fox chow + 0.15% drug	5	40.4 ± 1.1	47 ± 2.0	4.64 ± 0.09	1.99 ± 0.13	2.65 ± 0.13

* $\varepsilon = \sqrt{\frac{\Sigma d^2}{N(N-1)}}$

TABLE 2

LIVER PROTEIN OF FEMALE RATS FED 2-ACETYLAMINOFLUORENE FOR 100 DAYS

Diet	No. of rats	Wt in g	H_2O %	Liver protein*		
				Dry wt %	Total g	Total g/100g BW
Fox chow	6	7.77 ± 0.4	70.1 ± 1.2	65.4 ± 0.8	1.43 ± 0.2	0.629 ± 0.015 (0.589 – 0.696)
Fox chow + 0.03% drug	7	8.08 ± 0.3	70.3 ± 0.3	60.8 ± 1.0	1.44 ± 0.04	0.710 ± 0.015 (0.665 – 0.791)
Fox chow + 0.15% drug	7	7.39 ± 0.4	70.3 ± 0.2	61.1 ± 1.9	1.36 ± 0.05	0.852 ± 0.024 (0.755 – 0.939)

* $\varepsilon = \sqrt{\frac{\Sigma d^2}{N(N-1)}}$

2-acetylaminofluorene (2AAF), however, failed to alter plasma protein levels after a 6-week feeding period, although its carcinogenic action is well known. Whether or not the drug would alter plasma protein levels when fed at different concentrations and for a longer time was considered of interest in elucidating this drug's actions.

Table 1 shows the hematocrit, plasma nonprotein nitrogen, and plasma protein concentrations. Plasma albumin concentration was significantly subnormal in rats fed 0.015% of 2AAF, but other analyses were unchanged.

To determine whether liver size or protein content was

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