jects. Minimum amounts of dental care had been supplied to these subjects in the past, and only emergency treatment was given during the course of this study. During the period of study relating to this report, no regimentation or alteration of standard conditions of institutional life was employed.

Two hundred twelve teen-aged children (102 boys, 110 girls) were given serial dental examinations from July, 1946 to July, 1948, with at least 23 months lapse between initial and final examination for each subject. Painstaking clinical examinations were recorded and supplemented with roentgenograms of the teeth. The data were tabulated to indicate the number of newly affected surfaces of teeth in each mouth for each interval between examinations, as well as the duration of periods of non-detectable advance of caries. The findings are summarized in Table I.

Advance of caries occurred among most of the subjects during the 2-year period of study: the mean annual increment of newly affected tooth surfaces was 2.75. In 90% of the subjects, periods of non-advance were interspersed among periods of advancing caries. One-third of the group had consecutive periods of at least one year during which caries did not advance in detectable degree; in more than 80% of the group there were consecutive periods of 6 months or longer without advance. In 60% of the group, no advance was noted for an aggregate of 8 months or longer during the 2-year observation period. When the experimental group was divided into quartiles in terms of the relative net rate of progression of tooth decay, it was found as one would predict, that the quartile with the least progression of caries had had the highest mean consecutive and aggregate duration of non-advance of caries. But among the quartile with the greatest advance of caries, the median aggregate duration of non-advance was 7 months; the middle one-half of values for that quartile ranged from 6 to 12 months. Comparison also has been made between the duration of non-advance and the number of tooth surfaces affected by tooth decay at the initial observation. No difference was discernible between the quartile with the least initial extent of decay and the quartile with the most; the median duration of non-advance was the same for the two contrasted quartiles: 11 months. Likewise the range of values for the middle one-half of the subjects from each quartile was the same: from 6 to 17 months.

Thus one would have been misled if he had attempted to correlate the incidence or duration of non-advance of tooth decay with any imposed regimen. It seems obvious that in any test study wherein conclusions are to be based on the duration of non-advance of caries, the degree of non-advance in a non-controlled population of like attributes should be determined for reference.

Conclusions. One may assume either that the progress of tooth decay is discontinuous, or that there are periods of latency prior to the time when a carious area becomes detectible either to clinical or to roentgenologic examination.

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Effect of Piperidylmethyl Benzodioxane on the Cold Pressor Response.* (17657)

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Wolf and Hardy(1) have shown that the afferent limb of the cold pressor response is mediated through nervous pathways. Reiser

* Part of thesis to be submitted by B. Berris to the faculty of the Graduate School of the University of Minnesota in partial fulfillment of the requirements for the degree of Master of Science in Medicine.

1. Wolf, S., and Hardy, J. O., *J. Clin. Invest.*, 1941, v20, 521.

and Ferris(2) studied the effect of tetraethyl ammonium chloride on the cold pressor response and found that this drug eliminated the response. Since tetraethyl ammonium chloride causes a transient block of autonomic ganglia, they concluded that the rise in blood pressure on immersion of the hand in cold water was on a neurogenic basis. However, in 12 of the 20 patients under autonomic blockade with tetraethyl ammonium chloride, a delayed cold pressor response occurred after removal of the hand from cold water. They believed that the delayed response could best be explained by a humoral mechanism. Dibenamine, which is capable of adrenergic blockade, inhibited the cold pressor response in 11 of 15 patients(3). It has recently been shown by Morrison and Farrar(4) that tetraethyl ammonium bromide blocks the release of epinephrine from the adrenal medulla. Hence, it is conceivable that the action of tetraethyl ammonium chloride in eliminating the cold pressor response is by blocking the release of epinephrine. Since piperidylmethyl benzodioxane in proper dosage is said to have a purely adrenolytic action(5), it was thought worthwhile to study the effect of this compound on the cold pressor response to determine whether or not epinephrine is responsible for the rise in blood pressure on immersion of the hand in cold water.

Method. Six subjects were studied. One was in apparent good health, one had chronic glomerulonephritis, and 4 had essential hypertension. After a stable base line blood pressure was obtained with the patient in the supine position, 4 or 5 cold pressor tests were done in the usual manner, by immersion of the hand in water at 4°C for one minute. During immersion the blood pressure was recorded at the end of ½ and one minute, and every ½ minute for the next 2 minutes. An intravenous infusion of 5% glucose in distilled water was started, and piperidylmethyl benzodioxane was injected into the tubing in the dosage of 10 mg per square meter of body surface, taking 2 minutes for the injection. This was done to determine what effect benzodioxane alone would have on the blood pressure. The blood pressure was recorded every minute following the injection for 20 minutes, at which time the blood presure had returned to baseline levels. The same dose of benzodioxane was again administered in the same manner. Cold pressor tests were then repeated 2 and 6 minutes after the completion of the second injection. The rise in systolic and diastolic blood pressure on exposure to the cold stimulus before the administration of benzodioxane was averaged for each patient. An average was similarly obtained for the cold pressor tests performed during the period of activity of benzodioxane.

Results. The piperidylmethyl benzodioxane did not block the cold pressor response in any of the 6 patients studied. Furthermore, there was no significant difference in the magnitude of the response to cold stimulus after benzodioxane administration. The result in one typical experiment is shown graphically in Fig. 1. The average rise in blood pressure on cold pressor stimulation, both before and after administration of benzodioxane, are listed for all 6 patients in Table I.

Comments. The effect of benzodioxane on the response to intravenously administered epinephrine was not carried out in these patients, since 5 of the 6 had hypertension and it was not considered safe to do this. How-

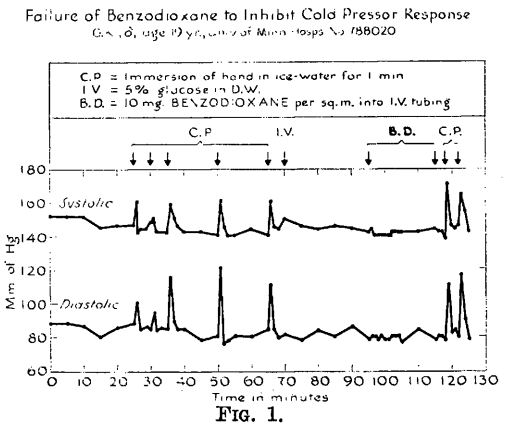

FIG. 1.

2. Reiser, M. F., and Ferris, E. B., Jr., *J. Clin. Invest.*, 1948, v27, 156.

3. Hecht, H. H., and Anderson, R. B., *Am. J. Med.*, 1947, v3, 3.

4. Morrison, J. L., and Farrar, C. H., PROC. SOC. EXP. BIOL. AND MED., 1949, v71, 235.

5. Goldenberg, M., Snyder, C. H., and Aranow, H., Jr., *J. A. M. A.*, 1947, v135, 971.

TABLE I.

Diagnosis	Avg rise in blood pressure in cold pressor tests —MM Hg			
	Control		After benzodioxane	
	Systolic	Diastolic	Systolic	Diastolic
Normal	6	11	3	14
Chronic glomerulonephritis	14	25	23	33
Essential hypertension	19	29	30	25
" "	30	25	18	14
" "	21	15	22	10
" "	6	13	16	16

ever, Goldenberg *et al.*(5) have demonstrated that benzodioxane abolished the rise in systolic blood pressure that followed the intravenous infusion of epinephrine. The dose of epinephrine which they used was adjusted to cause a 25% increase in systolic pressure. This increase is comparable to the increase in systolic blood pressure noted on cold stimulus in our experiments. The fact that benzodioxane did not block the cold pressor response suggests that this response is not due to the release of epinephrine. The fact that cold stimulation causes a rise in both systolic and diastolic blood pressure also suggests that this response is on a neurogenic rather than an epinephrine-induced basis.

Conclusions. Benzodioxane, administered intravenously in dosage of 10 mg per sq m of body surface, does not inhibit the cold pressor response.

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Adsorption by Erythrocytes of Antigens of *Pfeifferella mallei* and *Pfeifferella whitmori.** (17658)

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During the course of experiments on bacterial haemagglutination it has been observed that erythrocytes of various species, under certain conditions, adsorb serologically specific substances from a solution of mallein (a Seitz E-K filtrate of a steam-killed 6 weeks culture of *Pf. mallei* in synthetic broth, concentrated to 2/5 of the original volume). Thus it was found that human, horse, guinea pig, sheep and fowl red cells exposed in contact with mallein were rendered agglutinable by the sera of horses, rabbits and other animals immunized against mallein. Ox red cells were shown to adsorb antigen from mallein solutions, and then, when treated with anti-mallein sera, to adsorb antibodies responsible for the agglutination of sensitized horse cells. However, neither ox nor pig cells exposed to mallein could be agglutinated by such antisera.

Sheep and fowl cells required about 8 times, and guinea pig cells 2 times more mallein to sensitize them than did horse and human cells. Different batches of mallein varied considerably in their sensitizing potency, some being twenty times more active than others in this respect. There was no quantitative relationship between the amount of sensitizing antigen and the amount of antigen responsible for complement fixation present in the various preparations.

Sensitization of horse red cells with a minimum sensitizing dose of antigen took 3 hours to reach completion at room temperature

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