

the difference was more marked. To ascertain whether the change was in the complement or native hemolysin the serum was inactivated and guinea pig's complement added. Here, the uniform titers indicate that the change observed after the injections of dinitrophenol was in the complement (Table II).

Rabbits 2 and 6, following the injection of 30 mg./k., exhibited no essential change in complement titer.

Tests of uninjected rabbit's serum revealed no significant diurnal variation in complement or hemolysin.

Summary. Subcutaneous administration of dinitrophenol in varying amounts from 10 mg. to 24 mg./k., over a period of 37 days, had no apparent effect on the production of agglutinins for *B. paratyphosus* B in rabbits. Large amounts, 30 to 40 mg. per kilo, sufficient to increase the temperature several degrees, did not significantly alter the agglutinin-titers. Similar large doses given after a rest period of from 4 to 11 months failed to cause a secondary rise in titer except in one instance. A very slight decrease in complement-content took place in 2 of 3 experiments following large doses of dinitrophenol. The above results did not encourage more extensive investigation.

8700 P

Vasomotor Response of Non-Hypertensive Individuals to a Standard Cold Stimulus.

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Hines and Brown¹ have described a standard test for the study of vasomotor reactions based on the responses of the blood pressure to a cold stimulus. They are of the opinion that "excessive" responses to this test indicate a hypersensitive sympathetic nervous system. Assuming that the principal abnormality in essential hypertension is a hypersensitive sympathetic nervous mechanism, they have considered non-hypertensive individuals with "excessive" responses potential candidates for hypertension. They suggest that essential hypertension develops only in individuals manifesting "ex-

¹ Hines, E. A., Jr., and Brown, G. E., *Ann. Int. Med.*, 1933, **7**, 209.

cessive" responses; that these abnormal responses depend upon an hereditary factor, and that they appear early in life. If these theories are correct, it is apparent that in advanced age periods where actual essential hypertension has already developed in many of the potential hypertensives, there should be a lower percentage of "excessive" responses in the individuals of the same age period with normal blood pressures. Also, it would follow that the average response of non-hypertensive people in the advanced age periods would be lower than the average response of non-hypertensives in younger age groups.

It is the purpose of this study to investigate the incidence of "excessive" responses in a group of non-hypertensive subjects; and, to compare the average response of this group with the series reported by Hines and Brown.²

Two hundred and five subjects with a systolic blood pressure below 140 mm. Hg. and a diastolic blood pressure below 90 mm. Hg. have been chosen at random. The ages of the individuals selected have varied from 8 to 70. Each subject has been tested according to the technic described by Hines and Brown.¹

The upper limit of normal response was first arbitrarily placed by Hines and Brown¹ at 15 mm. Hg., but in a subsequent publication² they raised their limit of normal to 22 mm. Hg. For present purposes 15 and 22 mm. Hg. have been considered separately as the upper limit of normal. Then, percentages of abnormal responses have been grouped according to age. The results of this analysis are presented in Table I. It will be seen that in no instance is there an appreciable decrease in the percentage of abnormal responses in the older age groups.

TABLE I.

Age	Below 30	30 and over	Below 40	40 and over	Below 50	50 and over
No.	135	70	171	34	192	13
Systolic over 15 mm. Hg. (%)	46.6	55.7	51.4	41.2	48.9	53.8
Systolic over 22 mm. Hg. (%)	14.8	24.3	18.1	17.6	18.2	15.4

In Table II the average responses of our series and that of Hines and Brown² are grouped according to age periods. It will be observed that the 2 series, comprising more than 500 normal individuals, are in close accord. It will be noted further that the aver-

² Hines, E. A., Jr., and Brown, G. E., *Am. Ht. J.*, 1936, **11**, 1.

TABLE II.

Age in years	No.	Systolic mm. Hg.	Diastolic mm. Hg.
6-19	30	14.2	13.4
20-39	141	16.4	16.2
40-	34	15.2	13.1
	(From Hines and Brown)		
0-20	89	13.4	12.3
20-40	201	12.9	11.8
40-	98	19.6	18.4

age response to cold in patients 40 or more years of age in the series of Hines and Brown is greater than the average of their younger age groups, and that there is no significant difference in the present series.

It must be emphasized that the number of reported cases of non-hypertensive individuals studied with the cold water test is too small for any conclusion. The findings of the present study indicate that non-hypertensive older persons are as likely to give "excessive" responses to the test as non-hypertensive younger persons. This suggests that as many of the younger subjects with normal responses may develop hypertension as those with "excessive" responses. If this be true the original contentions of Hines and Brown would be invalidated.

8701 P

Limitation of Fluorine Toxicosis in the Rat with Aluminum Chloride.*

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Fluorine fed in low concentration has been shown to cause defective teeth in guinea pigs, rats, dogs, and cattle. In higher concentrations it causes inferior reproduction, poor bones and inferior growth or death.¹ Recently it has been shown that mottled enamel of human teeth is caused by the toxic action of fluorides present in drinking water.²

* Read before the American Institute of Nutrition, Washington, D. C., March 25, 1936.

¹ McClure, F. J., *Physiol. Rev.*, 1933, **13**, 277.

² Smith, M. C., Lantz, E. L., and Smith, H. V., *Arizona Agr. Exp. Sta. Tech. Bull.*, 1931, **32**.