TABLE 1

LIVER CATALASE ACTIVITY IN THE RAT

	No. of rats	Body wt in g	Catalase activity ($K \times 10^4$)	P*
Control	6	215 ± 28†	2418 ± 114	....
Adrenalectomized ..	8	189 ± 14	1781 ± 251	< 0.05

* P in t test of Fisher.
† Standard error of the mean.

this or other investigations (*3*, *8*). The possible role of strain differences in this discrepancy is not known.

It is improbable that inanition was a factor in the loss of liver catalase activity (*6*), since the animals operated upon continued to gain weight (60 g in 21 days), and in both groups the extracts of liver were adjusted to constant nitrogen content (0.2 mg N/ml).

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An Apparatus for Localizing Warm and Cold Receptors

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Ever since Blix (*1*), Goldschneider (*3*), and Donaldson (*2*) discovered that cutaneous receptors are not distributed uniformly over the surface of the body, but are present as discrete points, laboratory experiments have been devised to demonstrate this fact. Numerous types of equipment have been employed for the purpose of making charts of the distributions of cold and warm points in various regions of the skin. These vary from metal tubes arranged so that water of any desired temperature can be circulated through them to glass and metal rods placed in water and sand baths.

In order to provide a better means for locating cold and warm points on the surface of the body, a new type of apparatus has been devised and is herewith described.

Localization of cold points. The apparatus devised for the localization of cold points is shown in cross section in Fig. 1. It consists of a plastic cylinder (*C*) 2½ in. long by 1¾ in. in diam. A plastic cap (*A*) cut from a rod, and fitted with a gasket (*B*) is made to screw into one end of the cylinder, thus sealing it. A plastic tube (*D*) 3½ in. long, with an inside diameter of ⅜ in. is cemented into a plastic disk, which in turn is cemented into the open end of the plastic cylinder (*C*). A copper fitting (*E*) milled to a point 1 sq mm is threaded and cemented to the free end of the ⅜-in. tube.

The technique for locating cold points is to place an ice cube in the large cylinder together with sufficient water to fill the small tube. The cylinder is tipped and then righted so that the water is cooled by flowing over the ice. When the apparatus is righted, the cold water enters the small cylinder thus cooling the copper tip, which is kept at a uniform temperature of approximately 10° C by tipping the apparatus occasionally.

The experimental procedure for locating cold points is to survey the area in question with the copper tip and to have the subject report "cold" when a cold receptor is contacted.

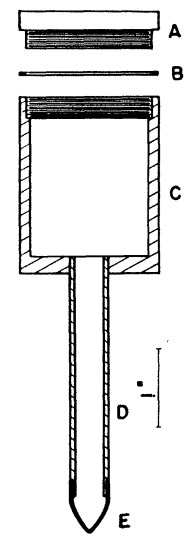

FIG. 1. Apparatus for localizing cold receptors.

Localizing warm points. The apparatus for localizing warm receptors is shown in Fig. 2. It consists of a 22.5-watt Ungar soldering pencil (obtainable from any radio supply company) connected in series with a 3000-ohm, 2-watt potentiometer (R_1) and a 1500-ohm, 5-watt fixed resistor (R_2). The potentiometer and resistor are contained in a small box made of sheet metal. The box is lined with insulating paper (not shown) and is held together by a screw from the back into post (*A*), which in turn is soldered to the front. A chassis mounting type plug (*B*) which fits a standard 110-volt receptacle is placed in the back of the box. Care must be taken either to employ a potentiometer in which the contact arm is insulated from the control shaft or to insulate the shaft from the box and to provide it with an insulating knob so as to prevent any contact between the fingers and the shaft. Otherwise there is danger of electric shock to the experimenter.

The copper end of the soldering iron is beveled to a point 1 sq mm in area. The potentiometer provides for point temperatures from 39° C to 85° C. Since the temperature of the skin serves as the zero point, 39° C should serve to localize warm receptors. However, experience has shown that 44° C serves the purpose best. To obtain this temperature on the particular instrument constructed by the authors the potentiometer is set at a dial reading of 4, which means that about 1,800 ohms of the potentiometer are in the circuit. At any rate, the point temperature can be varied to meet the experimental demands by changing the resistance in the potentiometer, to reach the desired temperature.

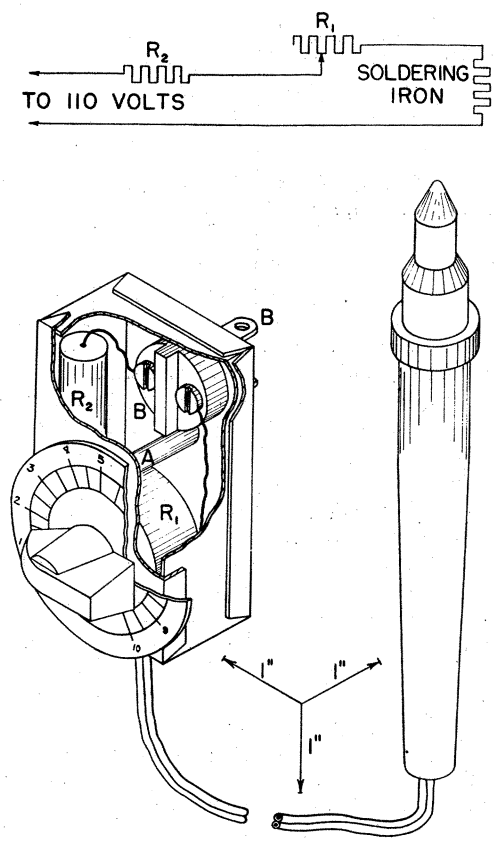

FIG. 2. Apparatus for localizing warm receptors.

The apparatus just described, for the localization of cold and warm receptors, is also suitable for applying cold and heat to any localized area where it is desirable to show the effect of temperature changes on activity. The equipment is effective, readily controlled, and inexpensive. Its simplicity of construction is advantageous in that it can be made available for any laboratory with limited shop facilities.

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Hemophilia in the Female Dog[1]

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The inheritance of true hemophilia as a recessive sex-linked characteristic is well established. Genuine cases of this disease appear to have been observed in the male sex only. However, the disease would be expected in females from matings in which both parents could contribute X chromosomes containing the affected gene *h*. Marriages between hemophilic males (X_hY) and females heterozygous for the disease (X_hX_H) are believed to have occurred on rare occasions. Apparently, true hemophilia did not appear among the female progeny. This lack of hemophilia in the female has been the subject of speculation for decades, and has led to several alternate hypotheses, including the following: (a) the hemophilic gene is sublethal, and a double dose of the gene, such as would be present in a female hemophiliac, is lethal; (b) the genotype X_hX_h may occur, but the bleeding tendency is not manifest in females; and (c) the opportunities for the appearance of hemophilic females have been too limited to determine whether or not this genotype can occur.

Recently a bleeding disease in male dogs was described in which a sex-linked type of inheritance was demonstrated by matings between females, heterozygous for the disease, and normal males (*2*). Extensive studies showed that the clotting defect in the canine disease was indistinguishable from that in human hemophilia (*3*). The untreated bleeders usually died of massive hemorrhage early in life. By frequent transfusions of blood or plasma the hemorrhagic phenomena were controlled, and the bleeder males were reared to maturity.

The purpose of this study was to test the results of mating these bleeder males with females heterozygous for the disease. From such a mating, half of the males should be bleeders. Likewise, half of the females should be bleeders, provided that the disease can exist in this sex. The results of these matings are shown in Table 1. Ten of the 19 female pups tested proved to be bleeders. This was as close to the theoretical expectation of a 1:1 ratio as was possible. In the males, the preponderance of nonbleeders over bleeders, 14 to 8, appears, on application of the chi-square test, to be merely a chance deviation from the expected 1:1 ratio ($\chi^2 = 1.64$; $n = 1$; $P = 0.2 - 0.3$).

Of the ten female hemophiliacs, four died during the first 2 weeks of life. One died of massive hemorrhage, one died accidentally, and two died of undetermined causes not associated with hemorrhage. The remaining six animals vary in age from 2 to 10 months. They were raised under conditions similar to those described previ-

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