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Temperature Changes in the Liver in Relation to Heat and Cold on Skin.

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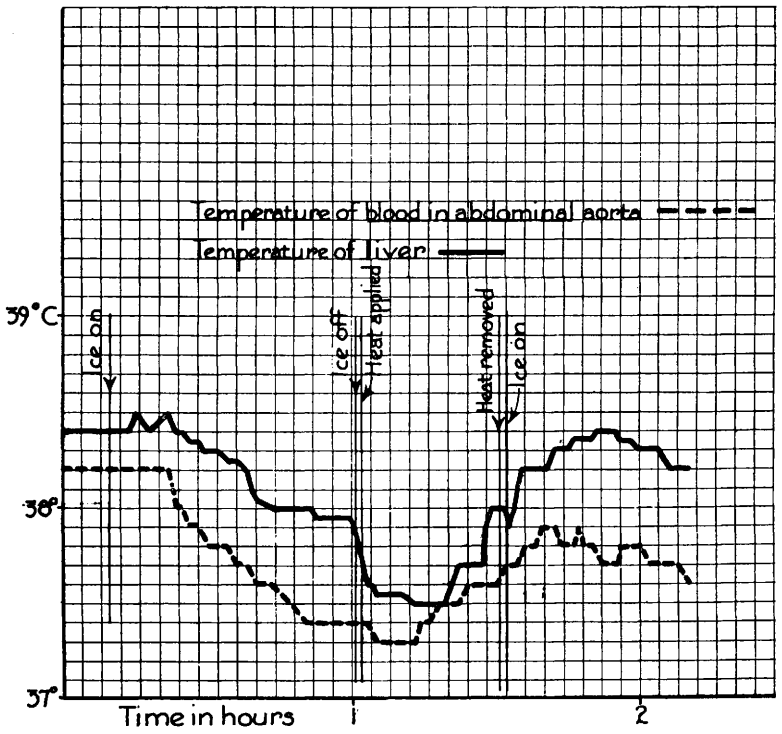
For recording the temperature in the liver we used a fever recorder of Siemens and Halske. To this apparatus were devised special electrodes of a size suitable to requirements of the case, made of a piece of flat mica wound around by an iron wire of a diameter of 0.00175 in. The electrodes were insulated on one side by cork and mica and on the other side (sensitive part) with shellac and celluloid. Both ends of a wire were attached to heavier wires, connected with the galvanometer and the latter with the fever recorder.

Six dogs were used. Under nembutal anesthesia, the abdomen was opened and the flat electrode placed between the lobes of the liver, fastened by its wires to the external surface of the abdominal wall by means of an adhesive plaster and the abdomen closed. Heparin was injected intravenously (0.01 per kilo), the femoral artery opened and a long glass thermometer introduced through it

into the abdominal aorta. Ice packs and hot moist towels were applied to the skin of the chest of dogs.



The results are shown on an accompanying chart. The abscissa represents the time from the beginning of the experiment, the ordinate—temperature in Centigrade. Dotted lines represent the findings of the temperature of the blood in the abdominal aorta, the straight line the temperature of a surface of one of the lobes of the liver. The perpendicular lines show the time of application of cold and heat to the body surface of the dog.

The temperature of the liver and abdominal aorta show that the liver tends to maintain its temperature in comparison with that of the blood. The influence of heating and cooling the skin upon the systemic blood can be observed. The liver has a tendency to maintain its temperature at a higher level than the blood.