



HOW BLOOD IS FORMED

New light on the relation of temperature to the formation of blood was provided at the meeting of the American Medical Association by the exhibit of Drs. Charles B. Huggins (left), W. J. Noonan (right) and B. H. Blocksom, not present in the picture.

PHYSIOLOGY

## Warmth Necessary for Working Of Body's Blood Factory

**D**ISCOVERY of a hitherto unknown but fundamental relation between temperature and blood formation was announced at the meeting of the American Medical Association in Kansas City.

The discovery, which may give physicians new leads to the treatment of infections and blood diseases, was made by a group of Chicago surgeons, Drs. Charles B. Huggins, W. J. Noonan and B. H. Blocksom, of the University of Chicago.

The blood factory of the adult body is located in the marrow of certain bones.

This factory cannot operate at low temperatures, it appears from the experiments reported by Dr. Huggins and associates. No blood is made in the marrow of the bones of the hands, feet and lower part of the arms and legs because it is too cold there.

No application of the discovery to disease or its treatment is made by the Chicago surgeons, who are at present content to have found an answer to the

question of why the marrow in some bones is the red, blood-forming variety while the marrow of other bones is yellow and forms no blood.

Certain practical aspects suggest themselves, however. New knowledge about the mechanism of blood formation may well be expected to prove helpful in finding the causes and better methods of treating blood diseases.

### Fever Useful

This discovery also suggests that it may be a good thing when a sick person has fever because when the temperature goes up it may favor production of more blood and antibacterial substances which the patient needs to fight the infection. Physicians who treat disease by inducing fever, a method demonstrated at the medical meeting, may come to revise their methods as a result of this discovery. Raising the body temperature a slight amount for a week, the discovery suggests, might prove more beneficial than elevating it to a high point

for a few hours once or twice a week, as is now the practice.

Discovery of the importance of temperature for blood formation in the bone marrow was made by ingenious experiments which, as Dr. Huggins explained them, seemed so simple that the layman might wonder why no one had thought of them sooner. One reason is that the experiments required the use of modern surgical technic and a modern physical instrument, the thermocouple, which detects small differences in temperature in body tissues.

The red, blood-forming marrow in bones changes abruptly to the yellow variety in the extremities; the sharp line between the two, seen in the specially prepared skeletons of small animals which Dr. Huggins exhibited, suggested that the cause must be physical rather than chemical.

With thermocouples Dr. Huggins and associates measured the temperature of the bones above and below the line of change in marrow color, and found the bones with yellow marrow were definitely colder.

### Experimental Proof

Proof of the causal relation of temperature to blood formation was obtained by operations in which the tip of an animal's tail was inserted within its abdomen, or the feet of baby rats were dropped into the abdomens of their mothers. Instead of turning yellow, the marrow of these extremities stayed red and continued to form blood when in the new warmer location within the body.

"Panama temperature" of 96 degrees Fahrenheit is required for blood formation by the bone marrow, the surgeons found.

An exhibit showing how bone marrow makes blood for the body, and how only certain bone marrow is the blood factory in the adult body, was awarded the gold medal of the American Medical Association for its originality and excellence of presentation.

The silver medal of the AMA was awarded to an exhibit demonstrating a new short-cut method of detecting the presence of one form of vitamin B in foods. The exhibitors were Dr. George C. Supplee and A. Ansbacher of the research division of the Borden Company.

The bronze medal went to the exhibit of Dr. Alvan L. Barach of New York City, who is seeking to lower the cost of helium so that the light gas will find wider use in the treatment of asthma.

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