

PHYSIOLOGY

Shiver to Keep Warm

► SHIVERING is exactly the right thing to do to keep warm.

Those involuntary jerky motions may look foolish but they mean muscles are making heat. In a really vigorous spell of the shivers, the body is producing heat about five times as fast as it usually does.

While the shivers are turning on the heat, so to speak, the blood vessels near the surface of the body are shutting the windows to keep the heat in. They close up, and the outer layers of flesh become a sort of insulation between the vital heat of the inner body and the cold outside.

This is one of the many interesting things about the body's heating system that was brought out by Navy research into what happens when men are in cold water.

If his ship goes down in very cold water the hapless sailor may not last half an hour, despite his body's remarkable defenses against cold.

If the water is 68 degrees Fahrenheit or above, the body can generate enough heat to balance the loss through the surface. The swimmer may last a long time.

If the water is less than 68 degrees, more heat escapes than can be replaced.

In 40-degree water, according to war-time records of ship sinkings, about half of the survivors die within an hour.

Sea water can get as cold as 28 degrees without freezing, because of the salt in solution. In water that cold, few can last half an hour.

PSYCHOLOGY

Beat Daily Tensions

► PEOPLE are not mentally ill just because they are occasionally tense and anxious, Dr. George S. Stevenson, medical consultant, National Association for Mental Health, Inc., New York, reports in a booklet "How to Deal With Your Tensions."

Everybody is confronted with threats and everybody experiences tensions. The thing to do is to know how to handle them, and here are the 11 ready-to-hand actions he advises for making life more bearable.

When something worries you, talk it out. Talking helps to relieve the strain and puts the worry in a clearer light. Escape for a while is also recommended, not permanently but just until you are in a better emotional condition to deal with the problem.

Work off your anger by doing something constructive, such as gardening, or some other do-it-yourself project. But if you find you are frequently getting into quarrels, maybe you need to give in occasionally. Stand your ground when you know you are right, but do it calmly and remember you could be wrong.

If you worry about yourself all the time, try doing something for somebody else. This

consciousness begins to dim and shivering to stop when the body temperature gets down to 95 degrees. At about 90 degrees consciousness is gone.

But even after the body temperature drops to 77 degrees Fahrenheit, proper treatment can bring survival.

That treatment is to plunge the patient into a tub of water between 110 and 120 degrees Fahrenheit. It is essential to heat that cold layer of outer flesh—which is still guarding a warmer inner body temperature—as rapidly as possible.

The reason is this:

Mild warmth only on the skin may fool the constricted blood vessels into relaxing and allowing the comparatively warm blood within to course through the still very cold outer layer of flesh. When blood thus cooled goes back it may cause a sudden and fatal drop of inner temperature.

The phenomenon is known as "paradoxical cooling" and often brings a tragic ending to what appeared to be a timely rescue.

The survival suit worn by flyers is essentially a tight-fitting waterproof envelope over the clothing. Given warm clothing beneath, this suit can prolong life in the coldest water to as much as four hours.

According to Navy scientists, the body loses heat from two to four times as fast in cold water as in air at the same temperature. You would think the loss would be more rapid, since the thermal conductivity of

water—its ability to absorb or lead away heat—is 20 times that of air.

But conductivity is only part of the story. Air moves faster and carries heat away by convection more rapidly than water does. Hence water's net chilling effect, compared to that of air, is somewhat reduced.

Proof of the amazing ability of the body to make heat was given by a Navy experiment in Newfoundland. Ten men jumped overboard in 37-degree water, swam to an inflatable liferaft and climbed aboard. The raft had a hood or cover over it to keep out the cold air.

Packed tightly aboard, the ten men lived for five days without ill effects, though without any degree of comfort. Half took off their clothes and half did not. Those that did not were dry within 24 hours. The others then put their wet clothes back on and soon were dry too.

Without the canvas cover, all would have perished shortly. But with it, the ten bodies built up a temperature of 70 degrees. By then the concentration of carbon dioxide in that closed space was so high that all hands were panting like dogs in mid-summer.

They let in fresh air, and that set them to shivering again.

Riding a thin line between freezing and suffocation, they proved that men can survive for a long time in a covered liferaft.

Science News Letter, June 22, 1957

MEDICINE

Prison Volunteers Test Vaccine for Tularemia

► PRISON VOLUNTEERS at the Ohio State Penitentiary are testing a vaccine developed against tularemia, an infectious disease more commonly known as "rabbit fever" or "deer-fly fever."

The research is aimed at improved methods for the evaluation of vaccines and drugs against a variety of infectious diseases. It is one of the few examples of controlled experimentation in man where the exact method of transmission and amount of infecting organisms are known, Dr. Samuel Saslaw, Ohio State University College of Medicine, Columbus, reported.

The disease in man causes an ulcer at the site of inoculation and enlargement of the lymph glands. It occurs among rabbits, squirrels and other rodents and is transmitted by the bites of flies, ticks, fleas and lice. Man can also get the disease by handling infected animals.

If left untreated the disease can be fatal. However, prompt treatment with streptomycin brought quick recovery to the volunteers who became ill.

The 31 prisoners were honored with certificates of achievement from the U. S. Army for risking serious illness to further medical science's fight against infectious diseases.

The half-finished two-year program is being carried on by the Ohio State University Research Foundation and the Army.

Science News Letter, June 22, 1957

Science News Letter, June 22, 1957