MEDICINE

Warn Against Antiseptics

➤ A WARNING that acute skin inflammation may be caused by organic mercury compounds used as antiseptics is issued by Drs. L. Edward Gaul and G. B. Underwood, skin specialists of Evansville, Ind., in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (July 9).

"Interestingly, the color, red, really signifies danger," they declare, referring to the red color of these compounds.

Merthiolate, mercurochrome, metaphen and mercresin are the compounds they specifically warn against.

The "continued popularity" of these compounds among surgeons preparing the skin for operation is attributed by the Evansville physicians to the fact that in most surgical cases the compounds are applied to normal skin. It is when the skin barrier has been broken by infection, burns, tears, scratches and scrapes such as those occurring in automobile accidents that the organic mercury compounds are likely to cause trouble.

The skin inflammation may not develop immediately, but in persons who have become sensitized to a particular compound, second use of the same compound is likely to produce skin inflammation very quickly.

The inflammation usually appears as little blisters or pimples around the original injury and is often considered an infection. Unless the role of the organic mercury compounds is known, one of them is likely to be used to treat the supposed infection, a measure which is likely to make the trouble worse, or at least keep it going.

Five out of 20 patients sensitized by these compounds were so sick they had to be put in a hospital for treatment.

Patch tests, something like those given for allergies, were made on 400 patients with skin disease. Positive reactions occurred in 40%, or 160 patients. The reactions were to the remedies they had used. In 56 cases the "offender" was one of the organic mercury compounds.

Science News Letter, July 16, 1949

PHYSIOLOGY

You Can Stand High Heat

➤ IF YOU are wondering how much hotter it can get and how much longer you can stand this sweltering summer heat, scientists have an answer for you.

If the temperature were 240 degrees Fahrenheit, instead of the 90 to 100 degrees your outdoor thermometer may be registering, you could probably stand it for about 23 minutes.

This "average limit of human tolerance," 240 degrees Fahrenheit for approximately 23 minutes, was announced at the meeting of the American Society of Heating and Ventilating Engineers in Minneapolis.

The limit figures were discovered in studies with student volunteers. The studies were made by Craig L. Taylor, associate professor, and W. V. Blockley, research associate, of the department of engineering of the University of California.

Their research was spurred by problems of supersonic aircraft, though human tolerance for extremely high temperatures has long been a problem of industrial physiology and hygiene. If the cabin air conditioning system of a very high speed plane failed, heat would become a hazard to pilots and occupants. At low altitudes on a 100-degree summer day air temperature in the cabin at a speed of 800 miles per hour would, if the air conditioning failed, rapidly reach 215 degrees, or three degrees above the boiling point of water.

Industrial exposures to high heat also occur. A plastics engineer regularly spends 10 minutes out of each 30 in an oven at 200 degrees Fahrenheit. A kiln technician is exposed many times for two or three minutes at a time to 250 degrees and sometimes to 500 degrees. Mining engineers tell of rescue parties exploring pockets in a burning mine where temperatures ranged up to 240 degrees.

Hot air inhaled by the students in the tests was cooled as much as 100 degrees Fahrenheit in a few inches of travel down toward the lungs. This cooling action of the mucous membranes lining the nose, mouth and breathing passages was one of the observations made.

Although the heart rate was speeded from the normal of around 75 beats per minute to 160, electrocardiograms taken before and after heat exposure showed no distinct signs of heart damage.

The maximum mean skin temperature was 107 degrees Fahrenheit, reached in an exposure to 240 degrees.

"Air hunger" was commonly felt in all exposures carried to the tolerance level. With this there was deep, irregular breathing, restlessness and nervous irritability. Waves of dizziness developed at the finish of the tests.

The studies were made with "intelligent and manful cooperation" by the students in a five-foot, ten-inch heat chamber. Humidity was not controlled but resulted from outdoor temperature and the moisture added by the volunteer. Clothing for the test consisted of a close-fitting wool and cotton one-piece union suit eight-hundredths of an inch thick and loose-fitting felt duffel socks.

Science News Letter, July 16, 1949

ENGINEERING

Room Humidity Depends on Proper Sidewall Materials

➤ THERE is a relation between the humidity in a room and the material of which the walls of the room are made, it was pointed out to the American Society of Heating and Ventilating Engineers in Minneapolis by Prof. E. R. Queer of Pennsylvania State College. The fundamental thing that heating engineers must determine to make proper installations is how fast moisture can be transmitted through the sidewall material, and he described a new instrument for measuring this vapor transmission.

The rate of transmission is known to technical men as the "permeance" of the material. Many devices have been used to measure permeance, he said, but a new method has been developed at the institution he represents which overcomes some of the limitations of former methods and provides a means of testing thicker materials.

This new method involves the use of an apparatus in which the material being tested can be sealed between two cups, thus eliminating the need for humidity control of the surrounding atmosphere. Within one cup of the double-cup cell a pan of water is placed. In the other is placed a water absorbing substance, what chemists call a desiccant. Water from the pan gradually passes through the material under test to the desiccant. The loss of weight in the water in the pan is measured, and the gain in weight of the desiccant. Both weighings can be made without removal of the water and desiccant pans from their chambers.

Permeance of a material tested with this apparatus, he said, depends upon the weight of the vapor transmitted, the time required for transmission, the area of the specimen and the difference in vapor pressure in the two chambers. F. A. Joy, of Pennsylvania State College, was co-author of the paper presented.

Science News Letter, July 16, 1949