GENERAL SCIENCE

How To Keep Cool

Scientists have some new pointers on this perennial summer problem. Things to do about the heat range from how you build your house to the salt cellar on your table.

By JANE STAFFORD

➤ SCIENCE CAN help you beat the heat in many ways, even if you have to spend most of the hot summer living and working in the city.

Some new findings will give you pointers on hot weather diets. You do not have to live on salads and sandwiches. In fact, you may be hotter if you limit your daily fare to those items.

No need, either, for most of us to salt our food excessively in hot weather. New findings about the body's handling of salt show why.

Homes can be made cooler in many ways. Air-conditioners help, of course, but there are even such simple cooling devices as light instead of dark colored shades at windows.

Many of you have probably thought that in hot weather you should avoid fats and fatty foods and eat a diet made up largely of salads and carbohydrates, that is, sugars and starches. That idea is wrong, Dr. Robert S. Harris of Massachusetts Institute of Technology, Cambridge, Mass., said.

He explained that during the digestion and utilization of foods, a significant amount of energy is expended. This is called the "specific dynamic action," or S.D.A. for short. This S.D.A. energy is given off in the form of heat. When fed alone, 32% of the calorie value of beef protein was expended as S.D.A. experiments showed. When dextrose sugar was fed alone, 20% of its calories went into S.D.A. With lard, the value was 16%.

When the three foods were mixed, however, the S.D.A. was less than that computed from each alone. A mixture of equal parts of beef protein and lard required only 11 calories for S.D.A., rather than a calculated 24, or a reduction of 52% in the energy expense. Dextrose plus lard led to an economy of utilization of 35%, and dextrose plus protein plus lard led to a 22% economy.

Fats Aid Cooling

In mixed diets, carbohydrate is the major heat producing factor, while lard and other fats are major factors in giving economy of utilization.

"Thus a person will be hotter on a high carbohydrate diet than on a diet of equal calorie content which is rich in fat," he told the National Association of Margarine Manufacturers recently.

The anti-heat producing effects of fat in mixed diets have not been explained yet. But the experimental evidence showed that you will be hotter, not cooler, on a diet rich in starches and sugars, and that fats counteract this.

You have probably heard that your body needed more salt in hot weather. Many take to salting their food heavily in summer and some even take salt tablets. Unless you do hard labor on very hot days, however, you do not need extra salt.

New findings on how the human body's salt balance is maintained in hot weather, which support his view that people may easily eat more salt than they need, were reported by Prof. Sid Robinson of Indiana University at a meeting of the American Physiological Society.

Normal Salt Sufficient

Except for a few first days of hot weather, most persons get enough salt in normally seasoned food, without an extra ration, Prof. Robinson said. Too much salt puts extra work for its elimination on the kidneys and sweat glands, he pointed out.

The sweat glands and kidneys change their output of salt to maintain the normal concentration of salt in body cells, he found. If the salt concentration falls too low, physiological disturbances such as heat cramps may result. His tests of men walking on a treadmill in high temperatures help to clear up apparent contradictions in reported results from less extensive studies.

He found that the response of the sweat glands and kidneys in speeding up or retarding salt secretion are all what might be expected in order to maintain a normal salt concentration, but that a time factor is involved. Failure to recognize this time factor has resulted in previous confusion of results.

Less Salt in Sweat

The kidneys begin their salt conserving responses to salt deficiency in one to two hours and complete them in five or six hours. The sweat glands are much slower, responding in eight to 24 hours and requiring several days for the complete response. But, after a few days of sweating, without full replacement of salt losses, a man is "acclimatized," and his sweat contains little salt.

Sweating is one of the ways the body cools itself. Evaporation of the sweat takes away heat. To make the most of this natural cooling mechanism, you should dress suitably. Wear clothing of porous material. White and light colors in clothing will help you beat the heat by reflecting it away from your body.

HOT WEATHER FUN—This is a favorite way to beat the heat followed by all who are fortunate enough to get to a lake, ocean or swimming pool.

Remember the point about light reflecting the heat when you are trying to cool your home. A light-colored roof, for example, will make the house cooler than a black- or dark-colored one. A fully drawn, light-colored roller shade at the window is 55% effective in reducing heat load, but a dark shade is only 20% effective.

Hang your Venetian blinds on the outside of the windows if you can. The Small Homes Council at the University of Illinois reports that light-colored Venetian blinds outside the house are 70% effective in reducing heat load, but only 40% effective inside the house.

Trees, Awnings Help

The Council also advises that sunlight should be prevented from beating down on house walls and windows where possible. Trees, overhangs, window louvers or blinds, awnings, louver-type insect screens and light-colored walls all can help offset the onslaught of a blistering summer sun.

If you are building a new home or trying to make the old one cooler, you can get other practical ideas, including some on air conditioning, from the Council's bulletin on summer comfort.

Frequent bathing with cool or lukewarm water that is allowed to dry off the skin instead of being rubbed off will cool and refresh you in hot weather.

Iced tea and coffee are favorite hot weather beverages for many, but some prefer these hot with the idea that the perspiration induced by the drinks helps in cooling the body.

Eat Well, Get Your Rest

Even if your appetite falls off on very hot days, remember you need the energy from food. Many a person feels exhausted because he has eaten so little that his energy stores are depleted.

You can stand the heat better, too, if you get enough rest. When the nights are too hot for sleeping more than a few hours, try to get an extra rest in the daytime, at least on week-ends and holidays. If you cannot take a noon-day siesta, try for one before your evening meal.

A brief afternoon nap is not the refuge of the lazy but the premium a wise man pays for a long life, said Dr. Clarence A. Mills, University of Cincinnati expert on the effect of climate and weather on man and professor of experimental medicine.

Ten minutes of sleep will do it. A short nap is better, Dr Mills said, than a long slumber which makes one groggy

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• RADIO

Saturday, July 30, 1955, 5:00-5:15 p.m. EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Elmer H. Loughlin, associate clinical professor of medicine, New York Medical College, will discuss "How to Travel and Stay Healthy."