

MURDERED: A PARAMECIUM

Science Perfects 'Death Ray' in Battle on Civilization's Greatest Enemy, the One-Celled Micro-Organism

By JOSEPH W. LaBINE

In the madcap 1920's a sober young laboratory engineer for the Detroit Edison company was married. Dr. Robert F. James was his name, a World war veteran with an M. D. degree from the University of Michigan.

Doctor and Mrs. James moved into an apartment equipped with an obsolete electric refrigerator which emitted a musty odor. They didn't like it, so they did something about it.

That musty odor is indirectly responsible for one of the greatest steps in sanitation progress the world has ever taken. It brought about perfection of a new and economical ultraviolet ray lamp that kills germs instantaneously but doesn't bother humans. Its inventors were Doctor James and another famous scientist, Dr. Harvey C. Rentschler. The device, called "sterilamp," has just been announced.

The new lamp has already shown its value in trial installations. At Duke hospital in Durham, N. C., it was placed over the operating table, immediately bringing about a reduction in post-operation infections. Meat dealers have installed it in their refrigerators with a resultant decrease in spoilage. Bakers find it delays formation of mold on their products, and restaurants use it to sterilize their glasses. These are only a few of its applications.

The Fight for Sanitation.

Sterilization by ultraviolet radiation is a far cry from the battle against micro-organisms waged by

Inventors of the amazing Rentschler-James process: Right: Dr. Robert F. James, whose ice box had a musty odor, and (below) Dr. Harvey C. Rentschler, internationally known ray authority.



How ultraviolet radiation purifies the air in an operating room, eliminating danger of infection from bacteria in the atmosphere. Note the "sterilamp" in the ceiling, the long tube-like lights.

Pasteur and Lister, yet it is merely another chapter in the history of sanitation.

For centuries man believed that all diseases could be "ascribed to demons" and millions forfeited their lives to ignorance before Van Leeuwenhoek discovered the tiny organisms responsible for plagues. Pasteur and Lister helped establish the importance of heat in killing bacteria.

But even heat has its limitations. It cannot be used to preserve perishables like food and meat; furthermore extreme heat destroys glasses and dishes. And, most important, it is limited to small areas and small surfaces.

Sunlight has a sterilizing action but its power is comparatively feeble. While it has long been known that sunlight carries some ultraviolet radiation that kills bacteria, it remained for Drs. James and Rentschler to isolate that small portion of the ultraviolet spectrum which is really effective. To use the entire spectrum would be like "killing rabbits with an elephant gun," in Dr. Rentschler's own words. So he set about inventing a meter to measure accurately the amount of invisible radiation of any selected wave-length being emitted by his experimental lamps.

Trial and Error.

But let's get back to Detroit and Dr. James' musty refrigerator. Equipped with a knowledge of ultraviolet rays, the scientist did perfect a lamp which he placed inside the refrigerator, resulting in sterilization by radiation. The musty smell soon vanished.

He knew the lamp would kill bacteria but he had no way of knowing how much radiation should be generated for any given sterilization job. Too much might be dangerous. It was while coping with this problem that he met Dr. Rentschler, who developed the meter.

Working at Bloomfield, N. J., the two men spent five years in experimentation. With their meter they tested, tediously and painstakingly, the effect of various ultraviolet wave-bands upon bacteria and other micro-organisms. Finally they found the right band, a tiny segment of the spectrum which has been mysteriously designated as the "2537 Angstrom unit band." Then came months of experimentation

Drinking glasses, exposed to the "sterilamp" for just a few seconds, emerge completely sterilized and thus check the spread of communicable disease.

cent of the bacteria in far corners of the room also died.

Helps the Butcher.

Meat dealers have found the lamp invaluable. Forced to carry from 500 to 1,500 pounds of meat in his refrigerator at all times, the butcher has in the past suffered great losses from spoilage caused by mold and slime, the result of combined high refrigeration temperature and high humidity. Low refrigeration temperatures have been similarly unfavorable because too much moisture is evaporated. But with the new lamp—which gives little heat—refrigerators need only be kept sufficiently cool to prevent flabbiness. Bacteria and mold are killed immediately.

Fresher bread and cake is guaranteed by bakeries where "sterilamp" has been tested. Two large firms used the lamp to retard mold growth on fruit cakes. Before installation, spoilage of the cakes amounted to about 15 per cent, a figure which dropped to 1 or 2 per cent after the lamps were adopted!

Although physical limitations have prohibited attempts at sterilization in connection with farm products, progress can be made in this field.

What of the Future?

Today the lamps are being used regularly by a number of farms, not only in connection with milking, but in hen houses, brooder houses and hog pens. One of the nation's largest poultry farms has adopted the process to combat infection.

Far-sighted scientists have predicted a day when the new lamp may free us from the worry of bacterial infection. Obviously the next application of this process will be to the atmosphere itself, a field in which experimentation is already being made.

The vast variety of fields in which the lamp eventually may be applied appears to be virtually limitless. Today one of the best known cosmetics manufacturers in the country is regularly using the Rentschler-James process to irradiate toothpaste and cleansing creams.

Science, whose Twentieth century gifts to civilization are already legion, has hurdled another barrier in its drive to make the world a safe, happy and healthy place to live!

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WHAT TO EAT and WHY ★



C. Houston Goudiss Describes the Precious MINERAL SALTS

That You Must Have in Order to Build Strong Bones, Sound Teeth, Healthy Nerves, Rich Red Blood

By C. HOUSTON GOUDISS

6 East 39th Street, New York.

THE human body is often compared to a machine, but it is far more wonderful, far more complex, than the most intricate machine ever designed to run without stopping, day in and day out, for upwards of 70 years, is also a fully equipped chemical laboratory. For if a chemist should grind a man to bits and analyze the pieces, he would find at least 18 chemical elements, and possibly traces of several others.

In addition to oxygen, carbon, hydrogen and nitrogen, the body contains a wide variety of mineral materials, which are necessary to its proper functioning—and even to life itself. The list includes calcium, phosphorus, potassium, sulphur, sodium, chlorine, magnesium, iron, manganese, iodine and copper. All these substances must be furnished to the growing child—through food and drink—and generous amounts must also be supplied daily in the diet of adults, to replace the minerals that are constantly being used up.

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Minerals Necessary to Life

It is vitally important that the home-maker should understand the function of these various salts and where they can be found. For if certain minerals are lacking in the body, the heart will stop beating. Without others, the bones cannot form properly. Still others are responsible for the rich red blood that makes the difference between a healthy person and a sickly one. Laboratory experiments have proved that if you leave out the smallest trace of the mineral known as manganese, you destroy the love of a mother for her child. And nutritionists—but unfortunately not mothers—are well aware that less than a thousandth of an ounce of iodine makes all the difference between a normal man and an imbecile.

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Calcium—Captain of Minerals

Calcium deserves its ranking position as the captain of the minerals, because it builds the bones, or body framework. And the bony skeleton is to the human being what steel is to a building. Calcium is also the chief constituent of the teeth and upon healthy teeth rests the health of the digestive system and, in turn, the entire body. For food that is improperly masticated is imperfectly digested and fails to nourish properly.

About 99 per cent of the calcium in the body is found in the teeth and bones. If the body does not receive an adequate supply of this mineral in pre-natal life and during the growing years, the bones will be porous, distorted and easily broken, and the teeth will develop cavities and eventually may fall out.

In addition to being the principal material for making and maintaining the bones and teeth, calcium increases the strength and pulsations of the heart and helps the blood coagulate in case of injury, thus keeping you and your loved ones from bleeding to death. That is why an extra supply of calcium is fed to patients just before an operation.

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Calcium Builds Will Power

There is a close relationship between calcium and sound, healthy nerves. And this precious substance likewise helps us to concentrate mentally—it strengthens our will power—and assists us in acquiring that "do or die" attitude toward life, which is essential in an age when we must all struggle or go under.

Yet despite its importance, it is estimated by that outstanding authority, Henry C. Sherman, Professor of Nutrition at Teachers College, Columbia University, that one-half of the American people—even those with plenty of money—are literally starving for calcium, because they do not know the food sources of this vitally important mineral.

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Where to Obtain Calcium

The foremost sources of calcium are milk and cheese, which is milk in concentrated form. It is chiefly to provide adequate calcium that homemakers must follow the rule of a quart of milk daily for every child, and a pint for each adult.

Vegetables, such as spinach, lettuce, celery, asparagus, string beans, cabbage, carrots and cauliflower are also a good supplementary source of calcium. And some fruits, such as oranges, figs,

strawberries and bananas likewise supply significant amounts.

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Indispensable Phosphorus

Like calcium, phosphorus is required by the body in relatively large amounts, and like calcium, it is especially important in the diet of children, because it is deposited in the bones, along with calcium, as calcium phosphate.

Phosphorus is indispensable for all the active tissues in the body and plays an important part in regulating the neutrality of the blood. It can be obtained from whole grain cereals, eggs, dried beans, cheese, lean meats, and root and leafy vegetables.

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Iron—King Pin of Them All

But measured in terms of food essentials, iron is king pin of them all. It is the supreme element in nutrition because it is necessary for the formation of the hemoglobin or red pigment in the blood. And it is the hemoglobin which carries purifying oxygen to every cell in the body. Recently, it has been discovered that copper is required for the proper utilization of iron.

"Red blooded" is a term understood by everyone to denote health and strength, and it is iron that makes us red blooded. When your children grow pale and listless, lose their pep and lack appetite, it is likely that they are starving for iron. If you become short of breath and "pant" when going up hill, or upstairs, even though there is nothing wrong with your heart or lungs, the chances are that there is insufficient red pigment in the blood—not enough to take up an adequate supply of oxygen and carry it to the millions of cells throughout the body.

There is no excuse for cheating yourself or your children of a full measure of iron, for this mineral can easily be obtained from liver, egg yolk, whole grain cereals, molasses, dried fruits, dried peas and beans, nuts, lean meats and green vegetables.

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Iodine—Molder of Men

Almost everyone has heard that iodine is the mineral which helps to prevent that disfiguring enlargement of the neck, known as simple goiter. But few people realize that it is the principal constituent of thyroxin, secretion of the thyroid gland, and that the thyroid functions normally only when sufficient iodine is available.

A wide variety of physiological disorders have been laid to iodine hunger. Obesity is frequently the result of thyroid disturbance. Specialists contend that stubborn skin diseases are associated with disorders of this gland. Many people are accused of laziness who are really suffering from thyroid deficiency. And competent authorities claim that the thyroid likewise influences mental make-up and emotional tendencies.

Iodine is found chiefly in sea-food and in fruits and vegetables grown near the sea. In inland regions, where soil and water are poor in iodine, health authorities frequently add it to the drinking water. And the use of iodized salt is also recommended. By these simple measures, thousands of growing children can be saved from the disastrous results of iodine deficiency.

In general, it can be said that if the minerals calcium, phosphorus, iron and iodine are supplied in adequate amounts, the other minerals will be automatically furnished.

Breakfast Foods

Mass production of popular brands of breakfast foods to meet the demand created by advertising has greatly reduced the price of many of the advertised brands. The sale of these foods adds materially to the demand and consumption of farm products in the United States.

An Invaluable Aid To the Housewife

IN THIS issue you will find the fourth of the series of articles written by C. Houston Goudiss, famous food expert whose books, radio talks and lectures have made him known all over the country.

In this article Mr. Goudiss discusses the vitally important subject, "Mineral Salts." He shows the necessity of these materials in the diet, and their relation to the building of a strong heart, healthy nerves, rich red blood, strong bones and sound teeth. He also gives the food sources of these salts.

Read each one of these articles as they appear weekly in this newspaper. They will prove invaluable to the housewife in assisting her to keep the entire family mentally and physically fit.

But every homemaker should make it her solemn responsibility to provide these four in abundance. For only in that way can you insure optimal growth in children, develop vigorous health in adults, and maintain the highest possible tone of every organ in the body.

A Splendid "Service" for Floors

Floors receive rougher treatment than any other part of the home—and it is floors that show up to poorest advantage when neglected—best advantage, when properly cared for! Up to now, attractive floors have required some little time and attention, but this is no longer necessary. For into the field of domestic preparations has come "self-polishing wax"—liquid-smooth, simple to apply, lovely to see. This remarkable preparation goes on easily, quickly, and dries in 20 minutes! Its results are 4-fold: The floors are protected—they are preserved—they stay freshly-clean longer—and they are beautified! A quality self-polishing wax protects and preserves, by forming a film over the surface—hard enough to withstand friction and grinding wear—and tear. It induces floors to stay clean longer, because dirt and grease cannot become imbedded in the wood. It beautifies, because it is shimmering, transparent, and brings out the natural beauty of the wood. And what more could the home-maker ask for? There are, however, various qualities of self-polishing wax available. Only the best should be used, for both the appearance and condition of the floors. But the finest self-polishing wax is a joy to use—its lasting results a joy to see!

FLOORS POLISH THEMSELVES

...with O-Cedar Self-Polishing Wax. No rubbing—simply spread it on and let it dry—then watch your floors sparkle! Non-slippery, long-wearing—eliminates scrubbing—dusting alone keeps floors clean. Full qt., only 85¢.



Worthy of Respect Bow to him who bows not to the flatterer.—Lavater.

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Each year, before Ferry's Seeds are packeted, the same Institute tests them all for growing ability—and grows and analyzes each variety for true-ness to type.

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