CHEMISTRY

Tartar Agent Detected

The discovery in saliva of a substance that produces the film over which calcium is deposited, forming tartar on the teeth, may lead to relief from gum diseases.

➤ AN ORGANIC INGREDIENT in saliva that is responsible for "tartar" on the teeth has been discovered, the 148th national meeting of the American Chemical Society was told in Chicago.

This discovery could unlock the door to relieving "periodontal" or gum diseases that afflict nearly all persons by the age of 60, reported Dr. Albert Sobel of Beth Israel Hospital, New York.

The substance in saliva, not yet fully analyzed, causes tartar formation by depositing itself as a thin film on teeth, after which it is calcified from the calcium and phosphate in the saliva, he said. This calcified material, if unchecked, builds up on the teeth, cuts into the gums causing irritation, and produces loss of the alveolar bone.

"Now that we are aware of this calcifying principle of saliva, it will ultimately be isolated, and methods will be found for determining the amounts present in the saliva," Dr. Sobel said. This will help to differentiate chemically the mouths that will form tartar easily.

In experiments, some chemicals stopped calcification of the saliva agent, leading scientists to believe that a substance can be developed that would retard tartar buildup.

Diseases around the teeth increase with age. Prior to 40, the main reason for tooth loss is decay; after 40, the main cause is loss of the alveolar bone that supports the teeth. By the age of 45, 90% are afflicted with alveolar bone loss.

Dr. Sobel said that abnormal calcification causes problems in the rest of the body as well as in the mouth. Kidney stones, hardened arteries and calcification of the salivary glands are examples.

Co-authors of Dr. Sobel's report were Drs. Ralph Eilberg, Beth Israel Hospital, and David Gould of Colgate-Palmolive Research Center, New Brunskick, N.J.

• Science News Letter, 86:181 Sept. 19, 1964

Rot-Resistant Finish

➤ A NEW FINISH that makes cotton fabric both rot resistant and weatherproof has been developed for use by sailors, campers and farmers.

The finish is made by applying two chemicals, formic acid and trimethylolmelamine to the fabric. The treated fabric can be used to cover boats, camping equipment and crops.

Rot resistance of the treated fabric results from the formation of "crosslinks" between the chain-like cellulose molecules that make up the cotton fibers, George L. Drake Jr., U.S. Department of Agriculture, told the American Chemical Society meeting in Chicago. Crosslinking also provides crease and weather resistance.

The extent of crosslinking can be altered by using a chemical process known as acid hydrolysis after the finish has been applied, Mr. Drake said. The best combination of properties for outdoor use can be obtained by regulating the amount of hydrolysis of the finish.

Co-workers in the study were Wilson A. Reeves and Mrs. Ethel K. Leonard, both of the USDA's Southern Regional Research Laboratory, New Orleans.

• Science News Letter, 86:181 Sept. 19, 1964

New Jet Oils Beat Heat

➤ SYNTHETIC OILS, capable of withstanding new extremes of temperature, pressure, corrosion and radiation, have been developed for jet and rocket engines.

The new oils are made from two classes of compounds that are individually unsuitable for the job. Oils in one class, the organosilicons, offer high resistance to heat, cold and chemicals but do not always keep their lubricating ability.

Fluorocarbons, the other class, are excellent lubricants but thin out at high temperatures and freeze solid at low temperatures.

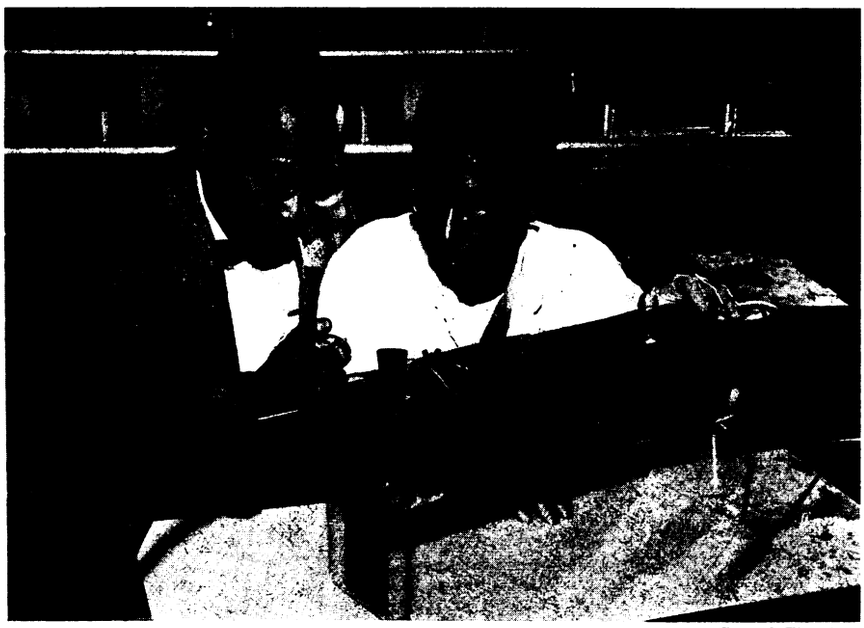
The two types have been combined into compounds called "organosilicon fluoroesters," which have the good traits of both classes, Paul M. Kerschner of the Columbian Carbon Company, Princeton, N.J., told the 148th national meeting of the American Chemical Society in Chicago.

The new oils are particularly important in today's military jet aircraft engines. In 1951, for example, a 50% loss by evaporation was allowable at 400 degrees Fahrenheit, whereas the maximum permissable loss today is only 5%.

Today an oil must resist oxidation and remain uncorrosive at 500 degrees, instead of the 347 degrees allowed in 1951. Also, it must remain a liquid down to minus 65 degrees Fahrenheit.

These specifications will become even more stringent as new lubricants become necessary for future rocket engines.

• Science News Letter, 86:181 Sept. 19, 1964



General Electric

RADIATION TEST—No significant physical changes are found to occur in trout fed large amounts of zinc-65, in experiments by Dr. R. E. Nakatani (left), manager of aquatic biology, and D. H. W. Liu at Hanford Biology Laboratory, Richland, Wash.

ECOLOGY

Radioactive Element Changes Fish Little

➤ TROUT fed large amounts of the radioactive element, zinc-65, show no significant changes in blood and tissue, a biological scientist told the Joint Meeting of Biological Societies in Boulder, Colo.

Dr. R. E. Nakatani, manager of aquatic biology at the Hanford Biology Laboratory, Richland, Wash., said trout fed high amounts of this substance actually grew faster than fish not given it. He said that trout with more than 10,000 times the amount of zinc-65 found in observed river fish showed no apparent changes in behavior when given swim tests.

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