

appears to be that it will result in greater safety and easier handling of personal aircraft. The controllable wing eliminates the necessity for ailerons, elevators and rudders.

Several years may be required to develop the wing before it can replace the conventional type, reports I. M. Laddon, vice president in charge of engineering

of Consolidated Vultee Aircraft Corporation, parent company of the Stout laboratories.

The controllable-wing plane was developed by George Spratt, who piled up 100 hours of secret flying with his new plane before friends knew he could fly. He cannot fly a conventional-type airplane.

Science News Letter, June 16, 1945

DENTISTRY

Hard on Teeth

Drinking large quantities of popular cola drink destroys the enamel, studies with rats show. The effect on humans has not yet been determined.

► DRINKING large quantities of a popular cola beverage is hard on the teeth of rats, causing severe destruction of the enamel, Lieut. Comdr. J. S. Restarski, Lieut. R. A. Gortner, Jr., and Lieut. Comdr. C. M. McCay found in studies at the Naval Medical Research Institute in Bethesda, Md. (*Journal, American Dental Association, June.*)

Since men are not mice or rats, the Navy officers are not yet issuing any warning against human consumption of cola drinks. Differences in composition of the saliva, manner of drinking and amounts of beverage consumed must be studied before the results of the rat studies can be applied to humans.

The cola beverage tested is not the only soft drink that can be hard on tooth enamel. Probably any other acid-containing soft drink would cause the same destruction, especially when sweetened. For reasons of economy, the Navy officers made part of their studies with a drink containing the same amounts of sugar and phosphoric acid as the cola beverage contains. The effect on the rat's tooth enamel was the same.

Ginger ale, grapefruit juice and cranberry juice as well as the cola drink had been found, by another scientist, to have an enamel-destroying effect.

Although the acid alone caused some enamel destruction, sugar added to the acid drink aggravated the effect.

In one part of the study the scientists added sodium fluoride to the acid beverage. Sodium fluoride in very minute amounts in drinking water seems to protect teeth from decay when taken during the years of tooth formation. It decreased but did not entirely prevent the destruction of the enamel caused by the acid or cola beverage.

The only clue so far reported to the

effect of these acid-containing drinks on human teeth came from a study with teeth that had had to be pulled from various patients. When these were immersed in a cola beverage for two days, the enamel surface had lost much of the calcium that gives it its hardness.

Science News Letter, June 16, 1945

CHEMISTRY-ENGINEERING

Plastic Replicas Used To Test Smoothness

► THE SMOOTHNESS, or degree of finish, of metal parts can now be rapidly and satisfactorily determined by the use of nearly transparent plastic replicas, following methods developed by the National Bureau of Standards, and acceptable modes of specifying and designating surface finish will probably result. Metal smoothness specifications have been lacking in the past because no easy method of evaluating them had been worked out.

The new method, described by Harry K. Herschman of the Bureau staff in Mechanical Engineering, consists of applying a suitable solvent to the metal surface, then pressing on a strip of clear plastic film. The solvent softens the side of the film adjacent to the surface being examined and permits it to flow and conform under the pressure to the minute surface irregularities. The film dries in about a minute and can then be stripped off readily, giving a perfect facsimile of the surface.

After a replica is made, its degree of transparency depends upon its roughness; increased roughness results in decreased transparency. Also, the rougher the metal surface, the more pronounced are the variations in the regularity of the reproduced pattern. This fact led to the

development of the apparatus for evaluating surface roughness, based upon the degree of variation of the geometric characteristics in a nearly transparent replica. In this apparatus a restricted beam of light passes through an oscillating test replica and to a photoelectric cell. The intensity of the light transmitted through the oscillating replica varies because of the unevenness of the surface of the pattern. Voltage readings of the current from the photoelectric cell may be calibrated in terms of the "peak-to-valley" values of the surface.

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