

DENTISTRY

## May Replace Dentist's Drill

New device operates on sand-blast principle and cuts tooth enamel and dentin swiftly and painlessly. Is called "airbrasive".

► GOOD NEWS for those who dread the dentist's drill appears in the *Journal of the American Dental Association* (Aug.).

The drill may be replaced by a new device which cuts tooth enamel and dentin swiftly and without pain or noise. It was developed by Dr. Robert B. Black, of Corpus Christi, Texas.

"Airbrasive" is the name Dr. Black coined for the new instrument. It operates somewhat on the principle of a sand-blast, but does not use sand and does not use a diffuse or blast type of airstream.

Instead of sand, aluminum oxide is used as the abrasive. Other substances might be used, but Dr. Black believes this is most nearly ideal for dental work. A softer abrasive, such as pumice, might be used for removing stains in cleaning teeth. Boron dioxide, a relatively new abrasive and the hardest of all man-made materials, rivalling the diamond in abrasive properties, might also be used.

The abrasive is applied with a very fine, almost pinpoint stream of compressed air. This gives precise control over the cutting action. A secondary stream of air leads the used abrasive and tooth debris into a vacuum hood on the instrument.

No pressure is exerted against the tooth, as is done with the dentist's drill. Consequently the patient is relieved of this discomfort and the fear of the dentist's hand slipping. The dentist is also relieved of considerable tension and fatigue. The airbrasive instrument, although capable of cutting hard structures, has practically no effect on soft ones, so there is no danger to gums, cheeks, tongue or the dentist's fingers if the stream does accidentally strike any of these.

Vibration and heat, both uncomfortable accompaniments of the usual drilling to prepare a cavity for filling, are not present with the airbrasive instrument. The unpleasant hum or grinding sound is also banished. The only sound to be heard is the slight hiss of the airstream.

Besides these advantages, the airbrasive instrument is fast. One patient had to be given a hand mirror to convince her

that anything had been done, the cavity preparation was accomplished so swiftly.

She was a typical nervous patient with teeth more sensitive than usual, Dr. Black had found when he previously filled eight cavities in her teeth, using the dental bur.

The first cavity he prepared with the airbrasive was on the upper left first bicuspid. (This is the fourth tooth from the center.) The cavity extended well into the dentin and when completed included about half the area of the surface of the tooth on the tongue side. It took about four minutes to complete the preparation with the airbrasive instrument. The patient was "enthusiastic" about the complete lack of any disagreeable sensation.

The airbrasive instrument will, Dr. Black believes, be ideal for eliminating deep grooves and pits on children's teeth, conditions that might become decayed spots or cavities. It has not as yet been used for this purpose, however.

Further research, investigation and development are warranted, Dr. Black be-

lieves, in order to extend to the fullest the possibilities of this new instrument.

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AERONAUTICS

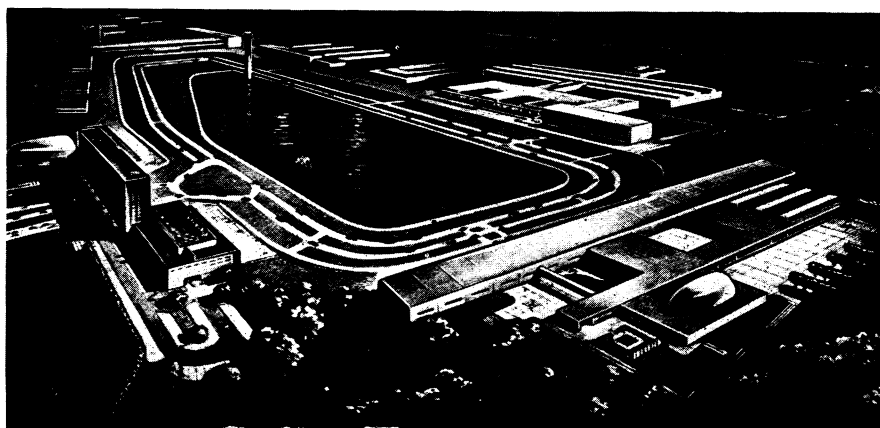
## Single-Seater Combats High-Flying Raiders

► DETAILS are now revealed on the British Westland Welkin stratosphere single-seater fighter, designed to combat high-flying raiders. It is one of the highest flying of combat planes, the largest English single-seater fighter, and has an armored pressure cabin and is equipped with four cannon.

The Welkin has a wing-span of 70 feet, is over 41 feet in length, and nearly 16 feet high. Its weight is 17,500 pounds. It is powered by two Rolls-Royce Merlin engines, each of which develops 1,650 horsepower, and by means of a two-stage two-speed supercharger maintains great power at height.

The plane is capable of 385 miles an hour, and has a range of about 1,500 miles. Extreme low temperatures are offset by a sandwich construction in which warm air is pumped between the double layers of glazing forming the pressure-resisting surface of the coupe. This heating device is light, but it keeps the cockpit so warm that special clothing is not needed even when the outside temperature is 78 degrees below zero Fahrenheit.

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**GENERAL MOTORS CENTER**—This view of the new General Motors Technical Center, which is to be built just outside the automobile center of Detroit, shows the layout of buildings and connecting roadways around the central lake. The central lake will supply water for cooling as well as lending beauty. At lower left is the Administration building and at lower right the new Styling building. Immediately above the latter is the Advanced Engineering building. To its left and just to the right of the water tower is the Process Development building. At the extreme end is the Research Laboratories building. Other buildings shown in the drawing represent potential expansion.