

in war as gunstocks, mortar projectile noses, bulletproof transparent noses and turrets of planes, instrument panels and handles of a hundred shapes and kinds. In peaceful life they follow the citizen from the plastic toys put into his cradle to the molded plastic coffin in which he is lowered into his grave.

RESEARCH pays in hard, cold cash, Eugene Ayres of the Gulf Research and Development Company told the meeting of the American Chemical Society recently. He explained a numerical yardstick which he has developed, which gives an estimate of the differences in costs between industrial processes put into operation without waiting for preliminary experimentation and those that are given the benefit of research in laboratory and pilot plant, together with proper patent procedures, before they are started. If a given industrial problem is carried through all three steps, or research, patent procedures and pilot plant experiments, the total cost of "make-ready" is considerably less than half that involved in rushing into full production without the preliminary steps. How necessary the pilot-plant stage is also shows up in the table. With laboratory research and patent procedure, but omitting pilot plant, the costs were substantially greater than those of complete preparation, though still substantially less than those of no preparation at all. Mr. Ayres cited the case of a company that found it necessary to go into the manufacture of a new chemical in a hurry: "There were no large-scale precedents for this operation, but two

good process ideas were offered by the Research Department. Because of the emergency, it was decided to commercialize one idea without any research, while the second idea was carried in orderly fashion through laboratory and pilot plant. Despite the delay occasioned by months of research, the second idea resulted in a smoothly operating plant before the first and at much lower development cost. The first idea was then sent back to the Research Laboratory and a year later superseded the second."—FRANK THONE.

NOT just his brain, but a pilot's teeth as well, may "black out" when he pulls out of a power dive. The suggestion is made by Capt. Herbert J. Lipson, M.C., U.S.A., and Dr. S. G. Weiss, Muskogee, Oklahoma, dentist, in a report in the *Journal* of the American Dental Association. The centrifugal force which pulls the blood away from the pilot's brain, causing the familiar "black out" symptoms, would also pull the blood out of the pulp of his teeth. The absence of any recoil mechanism in the "hard, unyielding wall of dentin" surrounding the tooth pulp makes it unlikely that recovery from a "black out" in the tooth would be "so efficient or so nearly complete as in the brain." Permanent damage or death of the tooth might result. Extreme cold at high altitudes and the "bends" to which aviators as well as divers are subject might also cause injury of the tooth pulp.

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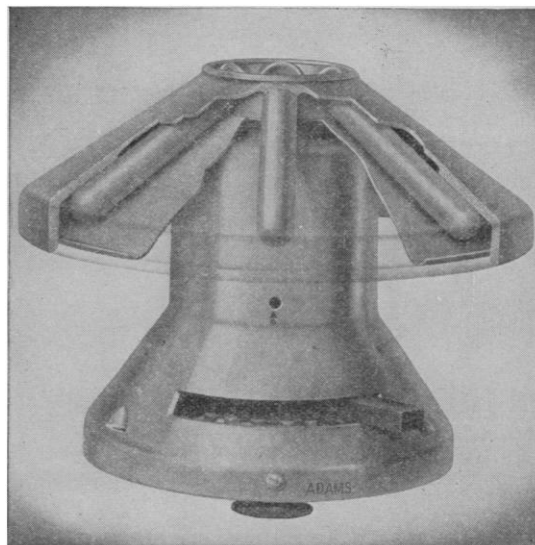
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