

this in 1968 with particular emphasis on improving our understanding of the mechanism of passivity and investigating the process of metal dissolution in the active state. It should be noted that this latter aspect of the program would be applicable not only to such corrosion problems as the rusting of mild steel, but also to the behavior of battery anodes during discharge.

Plating

The development of the metallizing process will continue. Two areas of application will be investigated: (1) chromium enrichment of alloys to provide greater oxidation resistance (e.g., engine valves, gas turbine components); (2) production of a titanium- or tungsten-rich diffusion layer in nickel for subsequent conversion to titanium carbide and tungsten carbide by carburizing. In support of these applications, further studies on the kinetics of deposition and diffusion will be carried out. The investigation of organic electrolytes as a possible medium for the deposition of metals which cannot be electroplated from aqueous solutions will continue. In cooperation with the Materials Application Department, work will continue also on electroplating of plastics. In addition to studying the plating process, this program will include an investigation of the failure mechanisms of the plated parts.

Friction Materials

The brake lining program is now undergoing a change in emphasis. Much of the past effort was aimed at improved techniques for quality control. The immediate objectives in this area have now been

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met. The present program, which will be continued in 1968, is aimed at the following main objectives:

1. A study of squeal and groan
2. An investigation of the correlation between laboratory results and vehicle performance
3. Research on processing and on the effect of composition and cure of resins.

Concurrently, we will work on the extension of these programs to dry clutch materials. We have recently started a cooperative program with Transmission and Chassis Division on wet clutch materials, and we plan to continue this work in 1968.

Automotive Emissions

We are in the process of re-evaluating our present program on insulation for exhaust manifolds. After promising progress in 1966, during 1967 we have been encountering inadequacies of materials which we have not been able to overcome. Depending on our success in formulating a plan to solve these difficulties, we may or may not continue this work in 1968. We will continue and will intensify our program on exhaust catalysts. We have several studies under way:

1. Investigation of the rate of carbon monoxide and hydrocarbon removal on various catalysts
2. Evaluation of catalysts in vehicles, in cooperation with Materials Application Department and Product Research Office

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