

Mr. WINN. To do the tests and the work?

Mr. MYERS. Yes. If they are going to do any work outside of the command module, they tend to twist a wrench and they torque off the other way. So the kind of thing we are getting into is getting good handholds so a man can grip something. The most recent one—they actually tested it on Gemini 12—is a couple of foot stirrups that you put your feet into, and, by twisting this way, they lock in position. So a guy is out there with good purchase with his feet so that he can do something like get the hatch out of the way or whatever. That's a very recent innovation, I guess that's the way to put it, to aid the guy when he is outside the command module. So these ideas from late flights of Gemini are now coming into the Apollo program.

Mr. WINN. Prior to this, they had to hold on with one hand and work with one hand?

Mr. MYERS. Or they tried gripping their legs over the front of the Gemini, and they had some real problems trying to work in space. This recent work that NASA has done in a water tank, where they tested these things before they went out with Gemini 11, proved a lot of things that helped the guys in the definition of work in space.

Mr. PETTIS. About this new material we saw down in Huntsville last weekend, it's sticky—does that work well outside?

Mr. MYERS. Velcro.

Mr. PETTIS. Velcro?

Mr. MYERS. Yes. They have used it on the outside. They actually used some steel Velcro on the outside of the command module. This is because of the heat problem during the boost. Inside we have had Velcro, which is sticky nylon material, for attaching things to the side of the spacecraft when they are not using them. But there is some yet to be learned about this problem of extravehicular activity and we need it in an emergency situation. If there is trouble with the LM as far as docking is concerned, the men come outside the LM and across to the command module for return to earth. So we do need extravehicular activity even on the main line of the job of getting to the Moon. Some of these changes will come in here as we learn more about extravehicular activity.

I'm going to show you a chart on our manpower shortly here, and we talk of an area called sustaining engineering. In the absence of continuing development activity for Apollo, you would normally say fine, get rid of the engineers, and we'll just run a production program. But it isn't that simple. We are going to be in the position when we go on lunar flights that we need top technical people here and at MSC who really understand these systems so they can communicate, while the guys are on the lunar flight, concerning any anomalies that show up during the flight. So we have looked into a thing we call sustaining engineering. It may be a poor choice of words. What we are looking for here are substantial and challenging programs that can hold top technical people, as required, in certain companies to support, from a subcontractor's standpoint, their equipment. We have concluded here at North American that our central research and engineering activity under John McCarthy, and the various test activities we have in-house, indicate that we don't need a basic sustaining engineering program. I guess we are betting on the thought that