Now, we have another list of things which have been done in the past year, which has to do with the Manned Spacecraft Center at Houston (fig. 16). One of the key items which I would like to highlight is the same LTA-3 structural test article I mentioned earlier (fig. 17). Once we had run the series of tests here at Bethpage, the vehicle was shipped to Houston. There a simulated external thermal skin was applied, and the whole vehicle was mounted in a spacecraft adapter. That is that conical device with the patches on it; then the whole assembly was shaken and vibrated.

You see, in the tests here at Bethpage, we were pursuing the effect of the engine on the spacecraft, the engine firing portion of the mission, and at Houston, we were pursuing the question of the environment during launch and boost when the LM is inside the stack.

Now, the next picture (fig. 18) shows the upper end of the facility; and here I guess I am speaking more for MCS than for Grumman, because it is their facility. This is a huge set of loudspeakers which pour acoustical energy down the funnel. Inside the funnel has been mounted the spacecraft adapter, the LM within it; and then on top of that, the command and service module portions, so that we had the spacecraft stack inside this funnel. Then acoustical energy was poured down it to simulate the launch boost conditions. From this we were able to read from the instruments on the LM the reaction of the LM vehicle to that environment. This was of very great significance to us because it allowed us to obtain a better indication of the environment to which we would have to subject the equipment in the LM; and in many cases we were able to reduce some of the earlier overconservative assumptions which we had made. This was a major step ahead in bringing to completion the development of some of the LM equipment.

There are several other items of note that went on at Houston. The next picture (fig. 19) shows a mock-up of the ascent stage which was provided to MSC to support radar range testing of the rendezvous antenna.

MSC MILESTONES COMPLETED: 1966

● TEST PREPARATION AREA: COMPLETED MECHANICAL FACILITY MOD	10/15/66
● RENDEZVOUS RADAR TESTING, TM-7	10/13/66
● VIBRATION TESTING, LTA-3	11/17/66

FIGURE 16