on the Moon of about three-tenths of a mile. A 16-inch telescope in orbit has about the same resolution. This is also true of Mars where we have about a 50-mile resolution. If you look at the improvements achievable in orbit, you see that the 16-inch in orbit is about the same for Moon and Martian observations as that on the ground, but you get successively better resolution as you go to larger diameters.

Finally, at 120-inch diameter, you get something like a 0.05 miles resolution on the Moon and something like 7 miles on Mars. With the 120-inch in orbit and perhaps even with the 60-inch in orbit, it might be possible to detect planets, and other stars. One of the basic things that one can do in orbit that one can't do on Earth is to extend the spectral range of operation and extend the regions of the electromagnetic spectrum over which one can observe. That is a unique characteristic of being in orbit.

There are increased requirements in technology to reach these. One is developing the capability of pointing quite accurately. By the time one gets to a 120-inch telescope one has to have a stability of plus or minus .025 arc-seconds. The approximate weight of the telescopes increases as one goes up in size and the present estimates for the 120-inch telescope is that it might weigh as much as 30,000 pounds.

Another area that we have looked at in terms of near Earth orbital operations is the way one might resupply or carry out periodic trips to space stations in orbit (MT65–9715, fig. 7). We have looked at a

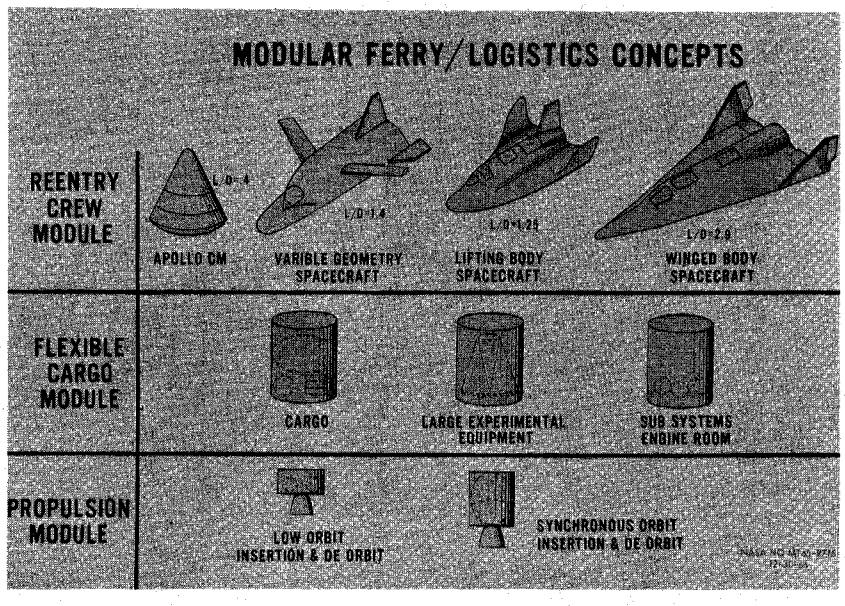

FIGURE 7