range that starts with the Apollo Command Module and goes on to finally reaching something like a winged body spacecraft with an engine as you can see, on the far right, which is capable of flying. You will also find that there are various ways of carrying cargo and we have been examining these various means to try to find the most efficient way of carrying the cargo to orbit. We have also been looking at various propulsion modules. These are the kind of studies that lead us to an understanding that permits us to make sound decisions in times to come.

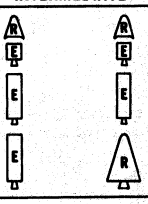
Turning to the trend of the transportation systems (MT66–8032, fig. 8) that we will be using, we have been looking at various general kinds of vehicle concepts including such things as improving the present systems and then those systems where we can begin to reuse part of the system, beginning with the reusable spacecraft and then considering some form of reusable booster systems. In this case the first stage is proposed as being reuseable time after time.

Finally we are working toward a concept of fully reusable vehicle systems so that we would have a fully reusable launch vehicle and spacecraft.

Mr. DADDARIO. In the area of manned Earth orbital telescope activity, Dr. Mueller, will you briefly sum up those members of the astronomical community who have advised you in this and supported this?

Some of them have made the point that by spending less money on

TRANSPORTATION TRENDS - EARTH TO ORBIT AND RETURN
[MANNED PROGRAM SUPPORT]

TIME PERIOD	CURRENT	INTERMEDIATE	FUTURE
GENERALIZED VEHICLE CONCEPTS			
OPERATIONAL OBJECTIVES	• EXPERIMENTAL SYSTEMS DEVELOPMENTS • EXPLORATORY SPACE PROGRAMS	• INITIAL SPACE SYSTEMS LOGISTIC SUPPORT • IMPROVED OPERATIONAL FLEXIBILITY • GROWTH IN SPACE FUNCTIONAL CAPABILITY	• INCREASED LOGISTICS TRAFFIC • INCREASED SPACE SYSTEMS CAPABILITY • REDUCED OPERATIONAL AND SUPPORT SYSTEMS COST • IMPROVED OPERATIONAL CHARACTERISTICS-NOMINAL AND CONTINGENCY
DESIRED VEHICLE CHARACTERISTICS	• EXPENDABLE LAUNCH AND SPACECRAFT VEHICLES • WATER RECOVERY OF SPACECRAFT	• FLEXIBLE MAN-RATED LAUNCH VEHICLE CAPABILITIES • REUSABLE ENTRY SPACECRAFT • ORBITAL MANEUVERING PROPULSION • NOMINAL LAND-RECOVERY OF SPACECRAFT	• FULLY-REUSABLE VEHICLE SYSTEMS

E - EXPENDABLE UNIT R - REUSABLE UNIT

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FIGURE 8