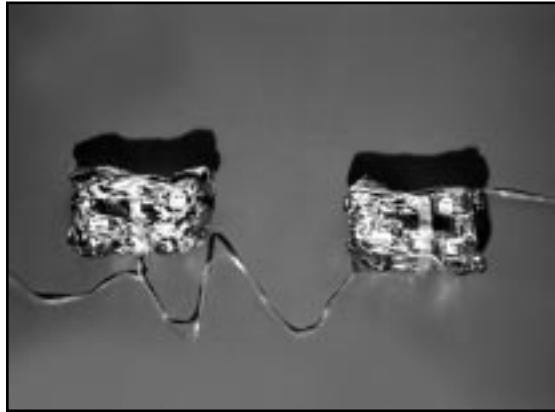
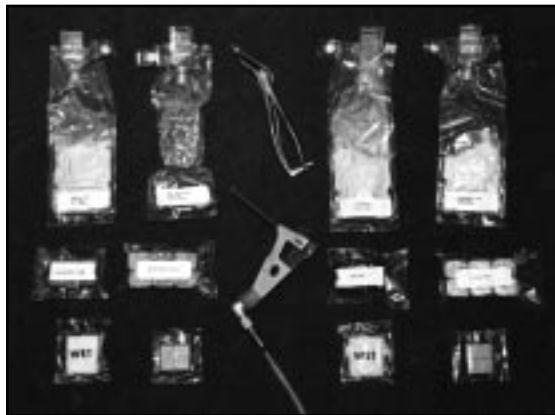


Gemini

The major advancements in food items during the Gemini period were more variety and improved packaging. The dehydration process provided foods that were similar in appearance—including color, taste, shape, and texture—to freshly prepared food products. Some examples of the food flown on Gemini missions included grape and orange drinks, cinnamon toasted bread cubes, fruit cocktail, chocolate cubes, turkey bites, applesauce, cream of chicken soup, shrimp cocktail, beef stew, chicken and rice, and turkey and gravy.



Gemini meal wrap.



Sample types of food that have been dehydrated and packaged in cellophane for use by Gemini astronauts.

Dehydration occurs naturally in warm climates, and in cold climates, it is called freeze drying. Freeze-drying techniques in the space program consist of slicing, dicing, or liquefying prepared food to reduce preparation time. After the food has been cooked or processed, it is quick-frozen, then placed on drying trays and put into a vacuum chamber where the air pressure is reduced. Heat is then applied through heating plates. Under these conditions of reduced pressure and increased temperature, the ice crystals in the frozen food boil off, and the water vapor that is left is condensed back to ice on cold plates in the vacuum chamber. Because water is the only thing removed in this process, the freeze-dried food has all the essential oils and flavors. The texture is porous and can be easily rehydrated with water for eating.

To rehydrate food, water was injected into the package through the nozzle of a water gun. The other end of the package had an opening in which the food could be squeezed out of the package into the astronaut's mouth. Because of the size of the opening, food particle size was limited. After the meal had been completed, germicidal tablets were placed inside the empty package to inhibit microbial growth on any leftovers.

The advantages of freeze-dried foods were paramount in their development. The food is lightweight because the water has been removed. The food has a longer shelf life and can be stored at room temperature. The food also has flavors and textures more closely resembling that of the original fresh food items.

Adequate nutrient intake became a health concern with extended space flights in the Gemini program. Each crew member was supplied with 0.58 kilograms of food per day. These included dehydrated juices, freeze-dried and dehydrated foods, and compressed, noncrumbling, bite-sized foods. These made up the three meals a day that the astronauts ate. Meals were planned in advance, and the menu was repeated every 4 days.

