

formulated by Perkin-Elmer people, or by Marshall people? **Wojtalik:** Marshall gave the requirements in the contract, and they were then converted by Perkin-Elmer, but were cross-checked by several different organizations including Marshall. Those equations still exist. They are going to be looked at again now—several times, I am sure. But I personally do not think they are in error. They were done meticulously by good people.

**Q:** Let's think for a moment about the hypotheses that might arise if it turns out that those mirrors was specified correctly and ground to specs. Is there any way in which the large primary mirror, if correct, could have changed shape while waiting eight years on the ground?

**Wojtalik:** You've got me into the realm of speculation. I really don't want to get in there. I personally don't think that would have happened in that amount of time. We have a very uniform spherical aberration, and I would have a hard time believing that any such process would be all that uniform.

**Q:** But gravity is uniform. Do you happen to know whether, during storage—all the time the primary mirror had to wait—was it sitting in the Optical Telescope Assembly or was it sitting fully supported on the ground?

**Wojtalik:** When I got into the program, it had been in various positions at Perkin-Elmer waiting to be put into the Optical Telescope Assembly. When it was delivered to Lockheed, and started to get integrated into the vehicle, about 1984, it mostly sat in one orientation—the vertical. That would be from 1984 until we moved it out of there in late 1989. By vertical, I mean the shiny surface is up—the axis is vertical.

The only times that it wasn't in that position were when we were taking it to acoustic testing, thermal vacuum testing, and prior to shipment. Maybe three-quarters of a year all told it was in the horizontal position.

**Q:** Once the mirror is mounted in the Optical Telescope Assembly, it is no longer everywhere supported, but only supported at certain points on its periphery, is that correct?

**Wojtalik:** That's correct.

**Q:** And when did it get mounted?

**Wojtalik:** It got mounted, I would suspect, sometime in 1983. It was delivered to Lockheed in 1984.

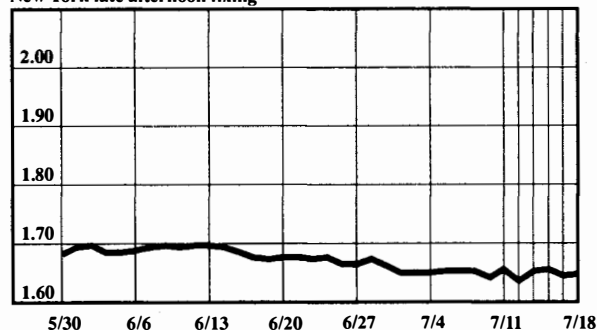
**Q:** Once it is mounted, and hence not everywhere supported, you cannot expect a uniform deformation from gravity?

**Wojtalik:** That would be my assumption. It's my personal opinion that it is not deformed from being on the ground for some length of time. And I am not sure either mirror is deformed, let me make that clear. So we have a mystery on our hands. But we do know we have some spherical aberration, the exact amount is not known yet.

## Currency Rates

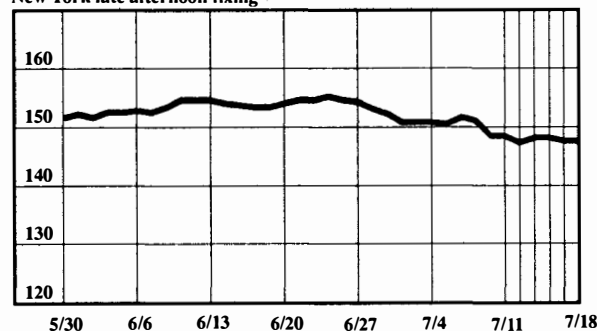
### The dollar in deutschemarks

New York late afternoon fixing



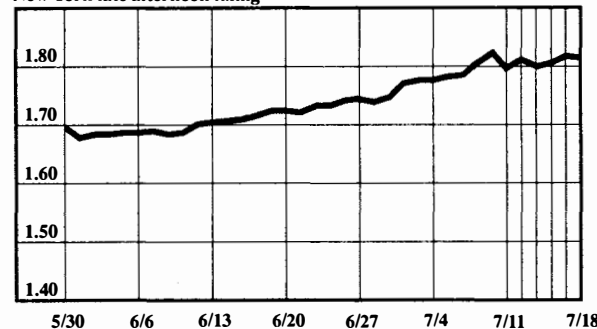
### The dollar in yen

New York late afternoon fixing



### The British pound in dollars

New York late afternoon fixing



### The dollar in Swiss francs

New York late afternoon fixing

