osgenin-based steroid industry into a minor player on the world stage—a transformation from which Mexico has never recovered.

As is so common in gray area problems of great complexity, where economic, political, and scientific factors as well as feedback mechanisms operate, oversimplified black and white solutions tend to prove counterproductive. The Mexican example shows that they can even lead to economic hara-kiri. Most of us want better new drugs, a more equitable distribution of the world's wealth, less dependence by three-quarters of the world on the technological prowess of the other quarter, and so forth. But naïve proposals and a refusal to learn from history will not accomplish those meritorious aims. *Caveat lector!*

Carl Djerassi
Department of Chemistry,
Stanford University,
Stanford, CA 94305

REFERENCES AND NOTES

1. For a recent personal view, see C. Djerassi, *The Pill, Pygmy Chimps, and Degas' Horse* (Basic Books, New York, 1992), chapters 4 and 5.
2. *Fortune*, May 1951, p. 87.
3. L. F. Fieser, reproduced in C. Djerassi, *Steroids*, in press.
4. _____ and M. Fieser, *Steroids* (Reinhold, New York, 1959).
5. C. Djerassi, *Proc. R. Soc. London Ser. B* **195**, 175 (1976).

■

Space Station Freedom

Ivan Amato's article "Microgravity materials science strives to stay in orbit" (Research News, 14 Aug., p. 882) leaves a somewhat misleading impression regarding the ability of Space Station Freedom to support basic scientific research. Both of the reports cited by Amato (*1*) emphasize the need for a coordinated program of basic and applied research as well as the need for both manned space facilities (such as Space Station Freedom) and complementary unmanned facilities.

Space Station Freedom has been designed with the flexibility to be refitted in space over a 30-year period so as to accommodate a changing mix of research. This flexibility will allow both basic and applied research in a variety of disciplines to be done simultaneously. The foundation built by good basic research will progress to innovative commercial applications. Applied research is a follower, not a leader.

Amato cites the lack of access to space flight opportunities as hindering our understanding of basic phenomena. This is

true, but the picture will begin to change as a series of Spacelab missions fly in the 1990s. However, there is a limit to the kinds of experiments that can be conducted during short missions. Space Station Freedom will provide a substantial boost in research capability that will build on the results obtained from these precursor Spacelab missions. Another goal of the Space Station Freedom program is to ensure that investigators can rapidly pass through the system. There is no question that the current time from concept to flight is too long.

Two of the prime design drivers for Space Station Freedom are prolonged exposure to microgravity and a continuous human presence—capabilities that are needed to expand microgravity and life science research; capabilities which can only be provided aboard a permanent space-based research facility.

Robert W. Phillips
Chief Scientist,
Space Station Freedom,
Office of Space Systems Development,
National Aeronautics and
Space Administration,
Washington, DC 20546

REFERENCES

1. "Toward a microgravity research strategy" (Space Studies Board, National Research Council, Washington, DC, 1992); "White paper on NASA-wide microgravity research" (Universities Space Research Association, Microgravity Science and Applications Council, Washington, DC, 1992).

■

Landsats Old and New

The 14 August ScienceScope item "Landsat to get a new home" (p. 867) paints a rosy picture of the Landsat program and its "new home." What is not mentioned is that the Landsats so far defined to continue the program are nothing but clones of previous Landsats and represent 25-year-old technology. In the meantime, other countries, particularly France and Japan, have built or are building Earth-sensing satellites with performances that greatly exceed those of current (and planned) Landsats. It is hoped that Congress and the Administration will see the wisdom of bringing our Earth-sensing program into the 1990s before we find ourselves completely out-of-date.

*Alden P. Colvocoresses**
3316 Rocky Mount Road,
Fairfax, VA 22031

*Past President, American Society for Photogrammetry and Remote Sensing

Corrections and Clarifications

Figure 3 on page 253 of the report "Block of Ca^{2+} wave and Ca^{2+} oscillation by antibody to the inositol 1,4,5-trisphosphate receptor in fertilized hamster eggs" by Si. Miyazaki *et al.* (10 July, p. 251) was printed so that the sperm drawn on the computer display were not visible. Also, the scale bar for (F), which was 50 μm, was not clear. The correct figure is reproduced below.