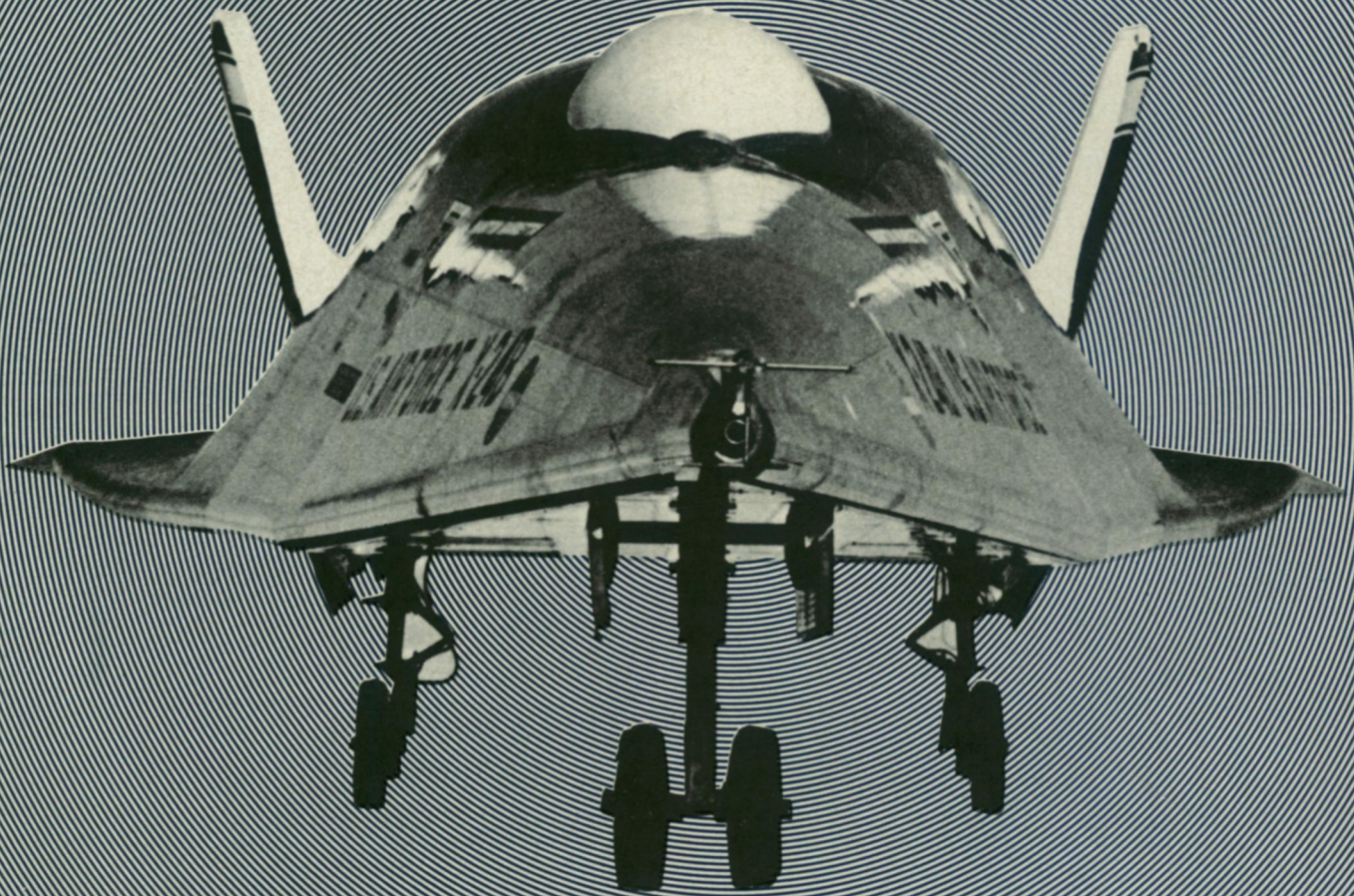


Science news

Sept. 15, 1973
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Energy vs. environment
Toro's close approach
Toward a unified force

Here Comes the X-24B!



Conversation Pieces

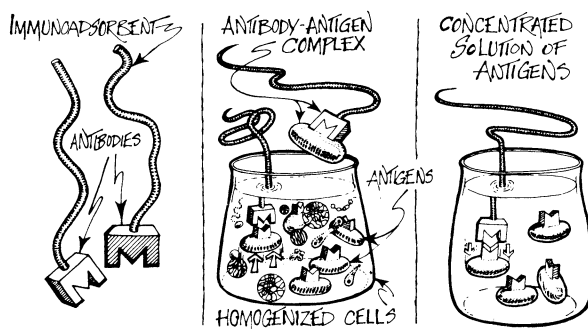
Technically intriguing items
from TRW, guaranteed to add luster to your
conversation and amaze your friends.

Disarming a Virus You, a teenager with mononucleosis, and an African girl with a cancer called Burkitt's lymphoma have one thing in common. Your cells very likely contain a "living molecule" called the Epstein-Barr virus (EBV). But you are in no danger, the teenager will recover from a long and exhausting illness, and the African child may die. Why?

Viruses and cancer are frequently associated, but we don't know much about their exact relationship. Is cancer caused by the virus or by a combination of factors? What makes people react differently to the same virus?

We know that when an organism fights disease it produces antibodies which travel through its bloodstream combining with and deactivating the foreign chemicals, called antigens. But antigens are not only viruses or virus products. The virus-transformed cells themselves make antigens which can cause or contribute to their destruction. When cells are invaded by EBV, five different antigens may be formed.

To best study the properties of antigens, we must separate them from all the other materials found in cells. One way is to use immunoadsorbents, long-chain molecules to which EBV antibodies have been chemically attached. EBV-infected cells are homogenized and the immunoadsorbent is immersed in the mixture. The antigens cling to the antibodies and when the immunoadsorbent is removed, the antigens come with it. The antigens are then freed from the immunoadsorbent and concentrated.



Scientists at the National Cancer Institute hope to isolate EBV antigens and those of other cancer-associated viruses. These antigens could be used to produce serums which would be catalogued and stored in a serum bank. Each serum would contain the antibody to one specific antigen.

TRW researcher Dr. Norman Weliky has been perfecting the immunoadsorbent technique for the National Cancer Institute. His group has prepared a highly purified serum against a mouse leukemia virus, and is now working on EBV-associated antigens. Their work is a small but important step toward the solution of the cancer-virus mystery.

Boomerang Have you ever considered how many hazardous chemicals get into our environment via their containers alone? Paint residues left in the cans and carted to your local dump add 32,700 pounds of mercury, 4.4 million pounds of lead, and 1 million pounds of chromium to the earth and water each year. And what about the packages that held pesticides like dieldrin and herbicides like 2,4-D? How do you clean the solvent that washed the can that contained the powder that killed the bugs that ate the wheat that farmer Jack grew?

The Environmental Protection Agency realized that we don't know enough about hazardous chemicals and their disposal. For instance, mankind has been using the oceans as an ultimate disposal site for centuries without knowing the effects of waste materials on the ocean environment.

TRW Systems was asked to help. In a year of investigation we have compiled and studied a rogues' gallery of over 500 chemicals which are highly toxic, persistent, extremely flammable or explosive, or radioactive. We have also recommended ways of dealing with these ecological menaces, usually by breaking them down completely or isolating them from the environment.

Waste can be like a boomerang; you think you've thrown it away, but it returns, sometimes with destructive force. TRW is working with the EPA to improve waste management techniques in the United States. You should go to the dump, but the dump shouldn't come back to you.

For further information, write on your company letterhead to:

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