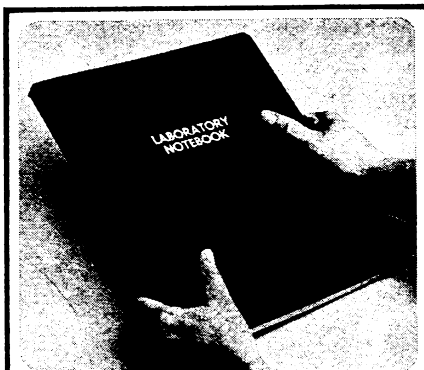

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and brochure accompanying the product. Now the FDA plans to go even further, in the wake of the subcommittee testimony, by requiring on the label specific risk-of-death figures, citation of leukemia cases, and a warning against use during pregnancy. Also planned is an FDA "Dear Doctor" letter urging caution in the use of the drug.

In defense of the drug it is being said that despite its dangers chloramphenicol is highly effective. Even now it is being found to be a potent anti-cholera drug in the Middle East. Most of the physicians prescribing it, furthermore, have had 15 years of unbroken happy experiences with chloramphenicol and are loath to part with a tool of their trade which has been so helpful and seemingly so harmless.

Statistically 20,000 to 40,000 courses of therapy with the drug must be given before a death occurs; the average physician has given fewer than 5,000 courses during his entire practice. The feeling that "it can't happen to me" has fostered a prescribing habit that is proving tough to break.

HEMOPHILIA

Cautious reports

Sir Isaac Newton suggested that for every action there should be an equal and opposite reaction. The law seems true, even apart from the computations of physicists. At the February meeting of the Society of University Surgeons in New York, doctors were chary of announcing advances — apparently in reaction to the immense publicity that attended the world's first heart human transplants—none of which have been decorously reported in medical journals.

In fact, heart transplant was never mentioned openly although at least one pioneer in the technique presented a paper (which did not bear on it).

Dr. Adrian Kantrowitz, who has performed two heart transplants (both unsuccessful) presented a paper on heart assist devices.

A pioneer in spleen transplant to cure hemophilia refused to make any headlines; Dr. John C. Norman of Harvard University would give only the barest outlines of his work pending publication in the journal SURGERY.

In the November 24, 1967, issue of SCIENCE, Dr. Norman published his preliminary findings. Now he has done what he said he expected to do.

"Proof that we have cured hemophilia in dogs has extended over three months," he explains. "We have checked six hemophilic animals 2,000 times."

Dr. Norman found that if their dogs' deficient spleens were replaced with normal ones, Factor VIII solved the bleeding problem. Several of the six animals used have stayed alive as long as three months.

Dr. Norman had previously reported that the spleen is a major site of Factor VIII synthesis and/or storage. Factor VIII is antihemophilic globulin, whose symbol is AHF. There is a circulating Factor VIII substance in the plasma of human hemophiliacs to which the animal spleen is receptive.

In his November report, the Harvard surgeon and his co-workers said, "The data suggest that splenic homotransplantation might alleviate the symptoms of hemophilia." He would go no further.

Another Harvard graduate who is working on a similar problem at the University of North Carolina in Chapel Hill, Dr. Erle E. Peacock Jr., challenges Dr. Norman's proof that synthesized Factor VIII takes care of the bleeding problem. He believes further proof is needed through angiograms that would show continued acceptance of the transplanted spleens.

"I suspect that Dr. Norman is right," he admits, "but I want more proof."

There are approximately 10,000 hemophiliacs in America today.

MINI-PROGRAM FOR MARS

NASA settles for less

Something old, something new, something borrowed, something blue—and all at cut rate prices. That's the story of the space agency's proposed new mini-program for Mars.

The something old is the Mariner design, dating from the early part of the decade, which is evolving into a spacecraft capable not only of flying rings around the Red Planet, but of dropping off a passenger.

The something new is the passenger, a 150-pound ball of instruments packed in balsa wood, aluminum honeycomb or some other such material and equipped with parachutes to help it survive a rough landing on the surface.

Something borrowed is a compact propulsion system, lifted from the Lunar Orbiter program to turn the Mariner spacecraft from a flyby vehicle, which would just zip past Mars and on into space, into an orbiting vehicle capable of circling the planet for more than six months.

Something blue? The officials of the National Aeronautics and Space Administration who had hoped to have, instead of this economy effort, the luxurious Voyager program, replete with clusters of 10-ton space probes and a scientific wonderland of instruments with which to study everything from Martian weather to Martian life.

But money's tight. So instead of

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trying to get Congress to embark on what would have been a $2.4 billion commitment for Voyager, NASA is asking for a timid $38 million this year as the first step in an estimated $500 million program, little more than a fifth of Voyager's cost.

The full-scale Voyager plan called for the launch of two double spacecraft, each containing an orbiter and a lander, atop a single giant Saturn 5 booster in 1973, and another "twin double" launch in 1975.

Planned experiments included visiblelight and infrared mapping, measurements of Mars' precise shape, a search for atmospheric phenomena similar to earth's auroras, a hunt for lifeforms of several different kinds, and many other investigations.

The two Saturn 5 boosters alone for the giant Voyager spacecraft would have cost some 40 percent as much as the entire estimates for the new mini-plan.

The new proposal includes a pair of simple orbiters, modeled after the Mariner probes that have flown by both Mars and Venus, to be launched in 1971. Launched separately by relatively inexpensive Atlas-Centaur boosters (the same type that carried the Surveyor spacecraft to the moon), the orbiters are planned to circle the planet for about three months.

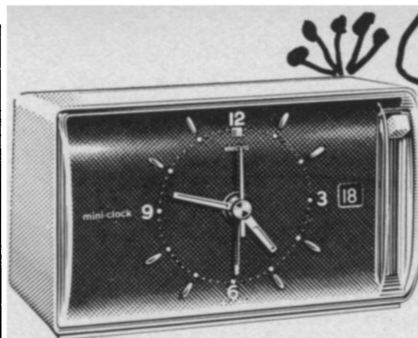
In 1973, two more Mariner-derived spacecraft would be sent, this time accompanied by small rough-landing capsules. The landers would not have the elaborate, heavy and expensive radar-triggered retrorockets planned for Voyager, but would instead be encased in impact-absorbing material and slowed down by parachute for their descent to the surface from orbit. The orbiters, meanwhile, would circle the planet for half a year or more, collecting data and relaying reports from the landers, back to earth.

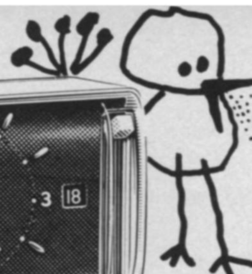
Before the mini-program gets going, however, two conventional Mariners will be sent to fly by Mars in 1969. Already approved and scheduled, these flybys will photograph about a fifth of the Martian surface, compared to Mariner 4, which photographed about one percent of it in 1965.

As usual, NASA officials have formed a united front about the need for planetary exploration, and it shows every time one of them appears in public.

According to Dr. Wernher von Braun, head of NASA's Marshall Space Flight Center in Huntsville, Ala., America ought to apply the lesson learned when the Russians orbited the first manmade satellite, Sputnik 1.

"The U.S. was left standing at the post," he said at a recent gathering. "We had to run like hell to catch up."





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