

disease from an intended target, or from a source of accidental contamination.

Also unknown is the actual amount spent in the chemical and biological field. McCarthy cites a figure of \$350 million for fiscal year 1969, but says that the figure is highly deceptive because of the secrecy which surrounds the program. Research activities, scattered throughout Federal facilities, some 60 university laboratories, and industrial organizations, are channeled through budgets far removed from warfare.

McCarthy has cited 3,300 accidents at Fort Detrick, the Army's biological warfare research center, located near Frederick, Md. Detrick, he says, has one of the poorest records among major biological institutions for infections among its employees and that some danger is posed to neighboring communities. In 1951, one bacteriologist there died of anthrax contracted in his laboratory.

Besides the Utah accident, where nerve gas escaped from a testing area at the Dugway Proving Grounds, re-

The use of chemicals in Vietnam however innocuous their designation by the military, loosens the barrier between policies of "some gas" and "no gas," he declares.

McCarthy charges that the U.S. is clearly engaging in chemical warfare, and has thus changed its self-imposed restriction on military application of poisonous gases designed for use against human beings.

The Fulbright committee accepts its role as a proper forum for CBW investi-

gation in the same way the ABM discussions have come to the committee's attention: because of foreign policy considerations. The ABM, however, is clearly the heavyweight of the two; it will probably continue to occupy a position of priority for most of the committee's time so that CBW will simmer along with no indication of how much inertia must be overcome, or what direction Congressional interest will take when it begins to move through the committee rooms of Capitol Hill.

## WORLDWIDE PUZZLE

### Soft water and heart disease

Japanese water is soft, with less than 42 parts per million mineral content. In the early spring of 1957, Japanese scientists showed data linking some quality of river water with death rates from cerebral hemorrhage, which is the first cause of death in Japan.

In late 1959 studies were made to test a possible relation between drinking water and death rates from cardiovascular disease in the United States. When the Japanese and American experiences were considered together, the conclusion was drawn that some factor in drinking water related to its hardness or softness was in some way related to death.

A report from Canada in the April 10 NEW ENGLAND JOURNAL OF MEDICINE throws new light on the subject. Investigators at the University of Toronto found almost double the number of deaths from ischemic, or blood deficiency, heart disease in soft water areas than in hard water regions.

But this applies to sudden deaths and not to those occurring in hospitals some time after the attack. Thus, they emphasize, water hardness may influence the mechanism of death rather than the underlying disease.

One possible cause of the soft water syndrome may be a metal, cadmium, in piped water. Cadmium is a constant contaminant of the zinc used to galvanize iron pipes; it is dissolved by soft, acidic surface water. For example, enough cadmium can be dissolved by lemonade stored in a galvanized pail to cause acute cadmium poisoning in persons drinking the beverage.

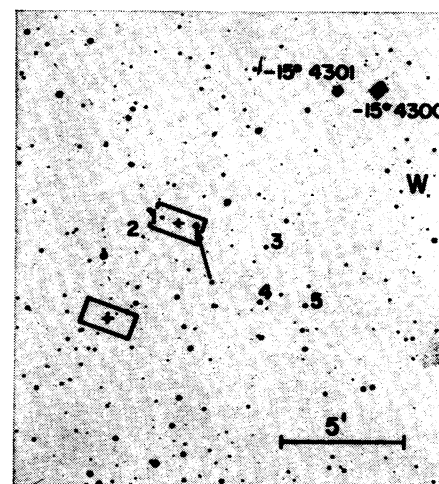
Galvanized pipes have been used in dwellings for more than 100 years, but since World War II they have been increasingly displaced by more expensive copper, which is much easier to install and cheaper in the end. Members of the present older generation living in soft water areas and exposed to cadmium from galvanized pipes could have accumulated cadmium with a resultant tendency to high blood pressure. If

this is the water factor, influence on cardiovascular death rates can be expected to decrease in countries where copper pipes are replacing galvanized iron.

The Canadian doctors, T. W. Anderson, W. H. Le Riche and J. S. MacKay, caution that it is possible that their findings are entirely fortuitous, and that the differences they found in studying three regions are unrelated to water hardness. They might be the result of other factors such as climate, population density and socioeconomic levels. ◇

## X-RAY STARS

### Ganging up on Sco X-1

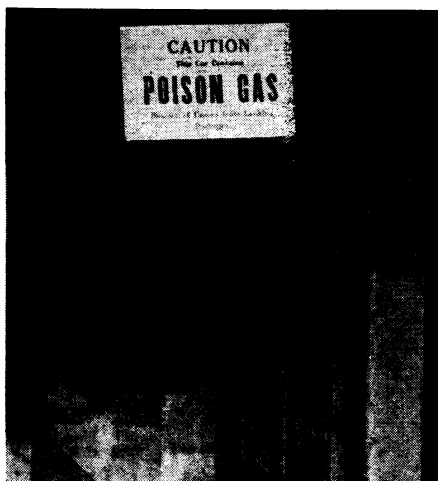


Caltech

*Sco X-1 (arrow) by visible light.*

X-ray stars, concentrated celestial sources of X-rays, have been known to exist for less than 10 years. The nature of the physical processes that enable them to put out the strong signals that they do is one of the important outstanding questions in astrophysics. They have been observed in a variety of frequencies, but seldom in the concerted way necessary to provide really comparable readings.

Now hoping to discover what makes



The Denver Post

*Nerve gas stockpile in freight yard.*

sulting in the death of more than 6,000 sheep, there was a mishap at the Pine Bluff Arsenal in Arkansas, where a toxic substance contaminated a nearby river, forcing the Army to buy up land along the stream. And a 1950's Colorado leakage episode led indirectly to a Colorado man-made earthquake controversy (SN: 4/22/67, p. 377).

Dr. Matthew S. Meselson, a consultant since 1963 for the U.S. Arms Control and Disarmament Agency, told the Fulbright committee CBW has not received the "far-sighted analysis it deserves." In a wide-ranging review of CBW programs, their implications in national policy and the areas of ambiguity which must be clarified in order to establish rational Federal controls, he recommended that the U.S. cease its use of tear gas, nausea-producing gases and defoliants in Vietnam.