

Vitali I. Sevastyanov and Andrian G. Nikolayev to the United States. They toured the Marshall Space Flight Center in Alabama, and went to Houston.

Although it would be premature to speculate when a docking between spacecraft of the United States and the Soviet Union might occur, recent developments, says Dr. Gilruth, auger well for the future. □

#### IN THE SEA

### Ubiquitous mercury

Since last spring when mercury was discovered in fish in Lake St. Clair and Lake Erie (SN: 4/18, p. 388), Federal agencies have stepped up their monitoring programs. The result: Mercury seems to turn up almost everywhere, sometimes in excess of the Food and Drug Administration's limit of 0.5 parts per million in foodstuffs.

Last week, the first reports of mercury in marine organisms came in. According to a National Marine Fisheries Service laboratory in Seattle, the livers of seals caught off the coast of Washington this year contained up to 172 parts per million of mercury, far in excess of the FDA limit. But mercury concentrates in the livers of predatory organisms, and the high levels in seal livers do not necessarily mean toxic levels in flesh of fish used for human consumption.

In fact, an earlier FDA study of marine organisms near two pulp mills discharging mercury into the Pacific Ocean from Washington state showed only one organism out of 85 contaminated with mercury over the FDA limit; this was a crab with 0.7 parts per million.

Seals are highly migratory animals, and Dr. George Y. Harry, director of the NMFS laboratory, says his scientists do not have even a clue to the source of the mercury found in the seals. But a plan for core sampling of sediments and monitoring of nonmigratory organisms is tentatively scheduled.

In the meantime, FDA is doing toxicological studies and Richard Ronk, FDA food guidelines chief, has agreed with local health officials that expectant mothers should not eat fish from contaminated areas; the effects of mercury on human fetuses simply are not yet known.

An additional problem is that no Federal agency yet has sophisticated enough equipment to make more than a gross determination of mercury levels in food. It is still impossible to tell whether contaminant mercury is in the highly toxic methylated form or less toxic inorganic compounds.

FDA has announced it will begin sampling a variety of foodstuffs, in addition to fish, for mercury. Included are bread, milk, beef, sugar and potatoes. □

#### RADIO EXPERIMENTS

### Trying to confirm Weber waves

About a year and half ago Dr. Joseph Weber of the University of Maryland announced that his decade-long search for gravitational waves had been successful (SN: 6/21/69, p. 593). Gravitational waves are energy-carrying waves involving fluctuating gravitational forces and are analogous to electromagnetic waves, which involve fluctuating electric and magnetic forces.

"Weber's experiment is extremely important," says Dr. R. Bruce Partridge of Haverford College in Pennsylvania, "and anything anyone can do to check it is worth doing." A way of checking by radio observation occurred to Dr. J. V. Jelley of the United Kingdom Atomic Energy Authority at Harwell.

He reasoned that any object that was radiating the gravity waves observed by Dr. Weber ought to be sending out a great deal of energy. Some of this might well come as a radio signal. Radio observation would be an independent check on the existence of the gravity-wave source.

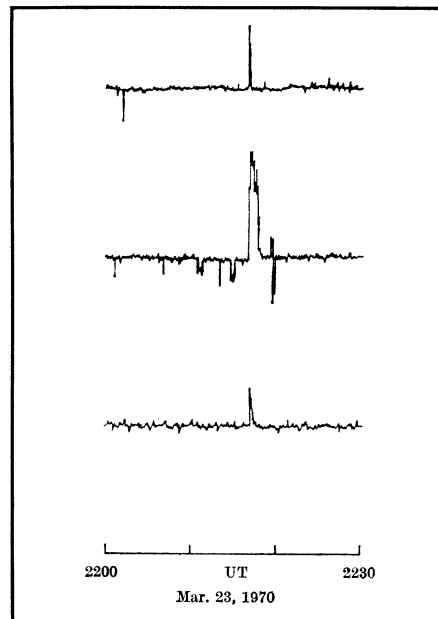
In response to Dr. Jelley's idea an array of radio telescopes was set up on five sites in Great Britain and Ireland—at Harwell, Cambridge, Dublin, Glasgow and Jodrell Bank. In the United States Dr. Partridge and Dr. Remo Ruffini of Princeton University have set up a radio detector.

Nobody has reported any radio observations of Dr. Weber's source or sources, but the observations so far have convinced both the British-Irish and American groups that the experiments are worth continuing.

The British-Irish observations are at 150 megahertz; the American, at 19,000 megahertz. Since nobody can be sure of the frequency range of the possible radio signal from the supposed object, says Dr. Partridge, searches at a number of frequencies may be necessary before something definite is found.

The reasoning behind the British-Irish array was that if all or several of these receivers recorded a pulse of the same shape simultaneously, the pulse would be from a celestial object that might be the gravity wave source. Several multiply coincident pulses were observed, they report in the Oct. 24 NATURE, but the difference in pulse shapes among the stations convinces them that they came from terrestrial events.

Unlike the British-Irish detectors, the Partridge-Ruffini device can be pointed at the center of the galaxy, which is where Dr. Weber believes his signals are coming from. Since it is also roughly at the same longitude as Dr. Weber's detectors it looks at the galactic center at the same time. It can thus compare any received signal directly. The galac-



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*Triple coincidence of radio pulses: Varied shapes rule out distant source.*

tic center is in the sky at different times for the British-Irish group so they cannot compare observations directly with Dr. Weber.

Dr. Partridge expects to present a preliminary report on his work soon. The British-Irish group have installed directional antennas in four of their stations and added one on the island of Malta because the galactic center does not rise very far above the southern horizon in Great Britain. They have started another series of observations with these. □

#### FORMIC ACID

### New space molecule

Interstellar space is rapidly becoming the largest chemistry laboratory in the universe, and its specialty seems to be organic chemistry. The latest organic molecule to be discovered there, reported Oct. 30, is formic acid (HCOOH). It is the second five-atom molecule to be found in interstellar space; cyanoacetylene (HC<sub>3</sub>N) was the first (SN: 10/10, p. 299). Formic acid was found with the 140-foot radio telescope at the National Radio Astronomy Observatory by Drs. Benjamin Zuckerman of the University of Maryland, J. A. Ball and C. A. Gottlieb of Harvard College Observatory and H. E. Radford of the Smithsonian Observatory. It appears in the direction of the object Sagittarius B2 and possibly also in the direction of Sagittarius A. The formic acid was detected by its emission of a particular frequency, 1638.805 megahertz. The cloud located in the direction of Sagittarius B2 is traveling about 60 kilometers per second; the other about 40 kilometers per second. □