

SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication
Volume 131, No. 21, May 23, 1987

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Subscription Department
231 West Center Street, Marion, Ohio 43305

Subscription rate: 1 yr., \$29.50; 2 yrs., \$50.00.
(Foreign postage \$5.00 additional per year.) Change of
address: Four to six weeks' notice is required. Please
state exactly how magazine is to be addressed.
Include zip code. For new subscriptions only call
(1) 800-247-2160. Printed in U.S.A. Second class
postage paid at Washington, D.C., and additional
mailing offices. Title registered as trademark U.S. and
Canadian Patent Offices. Published every Saturday by
SCIENCE SERVICE, Inc., 1719 N St., N.W.,
Washington, D.C. 20036. (202-785-2255)
ISSN 0036-8423

Letters

Plume theories

Stefi Weisburd's "Cloud Conundrums" (SN: 3/28/87, p.204) raised a few questions in my mind regarding the possible causation of the plumes observed emanating from islands in the Soviet Arctic.

As was mentioned, Novaya Zemlya has been a remote proving ground for Soviet nuclear weapons tests. In fact, in 1961 at an altitude of 12,000 feet over the island, the Soviets detonated the most powerful thermonuclear device in history, some 57 to 60 megatons. After the 1963 Atmospheric Test Ban Treaty, they, like their U.S. counterparts, went underground. I wonder if Novaya Zemlya continued to be used as an underground test site or if it was abandoned for more convenient mainland locations.

Like the U.S. operation called Plowshares, the Soviets used underground nuclear explosions in attempts to stimulate gas and oil production. I had no idea that apparently large reservoirs of methane were located in

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Cover: When presented with trays containing pairs of wells with varying numbers of chocolate chips, two chimpanzees consistently chose the tray with more chips. Their "summation" ability, say researchers, may be a precursor of counting skills in humans. In this drawing of the test apparatus, the chimp has chosen the tray to his right. The unchosen tray was withdrawn by an experimenter. In practice, the blind was only a few inches above the trays so the chimp could make a choice without seeing the experimenter. (Illustration: Pat McNeely/Georgia State University)



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that region. You quote Soviet academician Yevgeni Korotkevich as saying that the "study of such phenomena has no practical value." If methane, a gas that does possess demonstrable uses as fuel for modified combustion engines, were found to be available in vast quantities and "easily" extracted, I cannot imagine that the Soviets, a genuinely resourceful people, would kick a gift horse in the mouth, particularly a "free" by-product of underground weapons testing.

The article mentions some 200 Bennett Island plumes spotted in random NOAA imagery searches since 1973. Has there been any attempt to correlate the frequency of observed plumes with suspected weapons tests?

If the Soviets no longer test at Novaya Zemlya, then all of the above is misguided conjecture. On the other hand, if they are testing there, then over the years how might we estimate the magnitude of the volume of methane released into the atmosphere? If testing is not associated with methane seepage, then Korotkevich should be taken at

face value, but if it can be suggested, then the methane plume phenomenon is of practical importance to the study of the causes of the greenhouse effect, a concern to all nations.

Undoubtedly, the delayed Soviet response to the Chernobyl accident influences my reasoning. Do their weapons tests squeeze out methane every time? So, even if they can't use the gas, is there another pollution problem?

Eric H. Christianson
Lexington, Ky.

"Cloud Conundrums" passed my desk at the same time as I was reading an old book on an excursion to Novaya Zemlya. The wind velocity of 38.5 meters per second (86 miles per hour) and blowing snow and dust described in the book may have caused the plumes seen by satellite. At these velocities, it would be easy to justify a plume of 90 to 600 kilometers long.

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