Biomedicine

Gonorrhea and toilet seats

Some two million Americans were treated for gonorrhea in 1973. Most physicians and public health authorities claim that virtually all gonorrhea cases are contracted through sexual intercourse. There is growing evidence, however, that this venereal disease may be transmitted through rest room fixtures.

In 1973 Claes Henning and Lisbeth Jakobsen of Sundsvaal Hospital in Stockholm reported that after dripping strains of gonorrhea bacteria on a toilet seat, wash basin, electric light switch and other inanimate objects, they were able to isolate the bacteria from the objects four hours later. But some American scientists doubted that the gonorrhea strains they used were pathogenic. Their research report did not indicate that the strains were.

Now Val C. Schwartz, an-18-year-old high-school science fair winner from Doraville, Ga., has shown that the gonorrhea strain that is the most pathogenic, Type 1 *N. gonorrhoeae*, can be recovered from toilet seats, flush handles, faucet handles, door knobs, light switches and towel swatches up to an hour after contamination.

The challenge now facing scientists is to inject human volunteers with bacteria recovered from bathroom fixtures. If the volunteers contract gonorrhea, that will be substantial proof that gonorrhea can be contracted through fixtures.

A urine test for cancer mutagens

Many of the chemicals that trigger cancer (carcinogens) may well be chemicals that cause gene mutations (mutagens). But is has been impractical both technically and monetarily to identify these carcinogenic mutagens with mammal tests. Now William E. Durston and Bruce N. Ames, biochemists at the University of California at Berkeley, have devised a test that they believe "will detect a high percentage of the environmental chemicals that cause cancer and mutations in man." It is a simple method for the detection of mutagens in urine.

Durston and Ames propose in the March PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES "that the method be used for the screening of human urines in order to detect mutagenic metabolites of drugs and of dietary components."

Monitoring for crib deaths

Some 10,000 American infants die annually from "sudden infant death," or "crib death." The victims appear to have suffocated, but for no apparent reason since their faces are uncovered. An oxygen shortage is one possible explanation.

Ronald Kane, an electrical engineering student at the University of Michigan, is designing two devices that would monitor infants in the crib and alert parents to dangerous changes. The devices are designed to give parents time to call a doctor or to give artificial resuscitation or heart massage.

One of the devices Kane is working on is a short-range transmitter, which would be enclosed in a nonirritating pad and attached to the chest of an infant. It would send out information on the child's condition in the form of radio signals to a receiver adapted to an FM radio. The receiver would decode the signals and sound an alarm when they indicate a hazardous situation. The other device is a remote sensor, to be placed inside the mattress of a crib. It would pick up an infant's heartbeat, breathing and movement. The sensor has the advantage over the transmitter in that it does not have to be attached to the baby. Further, the sensor could be wired directly to a decoder-alarm, eliminating the need for an FM radio.

Kane believes that his devices, if produced commercially, could retail for about $125.

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billion barrels—not the 590 eventually predicted by USGS—and gas is limited to 1,000 trillion cubic feet—not 2,650. (The current USGS term "petroleum liquids" tends to inflate estimates by including an additional 15 percent of nonoil products.)

The fate of the American petroleum industry rides on which set of numbers is correct, for the Academy figures imply a dire consequence: The committee predicted that discoveries of new oil fields had already peaked in 1957, that oil "reserves" would reach a maximum in 1962 and that peak production would occur around 1969. In fact, the peak of reserves did occur in 1962 and peak production was reached in 1970, one year late. A similar schedule of gas depletion was put forth and now seems to be running two years early, with peak production now expected this year or next. Even the addition of a possible 30 billion barrels of crude oil in Alaska, discovered since the committee's report was made, could shift the schedules only a couple of years. As for the highly touted offshore wealth of the Atlantic coast, Hubbert told SCIENCE NEWS, "It looks like mighty thin pickin's." (SCIENCE NEWS has learned, however, that other major oil discoveries have been reported from the eastern portion of Prudhoe Bay. If the presence of oil is confirmed, the discovery might substantially change the resource picture.)

At the heart of the controversy lie two conflicting assumptions. Obviously, production depends both on how many wells are dug and on how many fields are left to tap. USGS tends to emphasize the former, assuming that enough oil is left to accommodate the steady drilling of new wells (the so-called "Zapp hypothesis," after the USGS scientist who for years dominated the oil prediction scene). Hubbert subscribes to the contrasting theory of Donald F. Hewett, a leading geologist of the 1920's, who said every depletable resource goes through a similar cycle of increasing then decreasing production, accompanied by almost steadily decreasing rate of new discoveries. Since the 1930's, Hubbert points out, the rate of petroleum discovery has decreased rapidly and steadily, rather than remaining constant as required by the Zapp hypothesis.

The revision of USGS figures comes from partial abandonment of the Zapp hypothesis, Survey scientist Richard F. Meyer explained to SCIENCE NEWS. But he emphasizes that the present revision is only a first estimate, and that exploratory drilling off the Atlantic coast and in the Gulf of Alaska will be needed before anything really definitive can be said about these two key regions.

Before the "fuel crisis" heated up and when the old, plentiful resource estimates were still in vogue, the United States was still expected to have to import some two-thirds of its petroleum by 1985 (SN: 5/19/73, p. 343). Now, should prices continue to rise and Hubbert's predictions prove to be correct, "Project Independence" could be seriously jeopardized and the country could find itself in a fuel import crisis much earlier than expected. □