# BIOMEDICINE

## Reserpine status still in doubt

Reserpine, a drug used by about one million persons in the United States to control high blood pressure, has again been linked to cancer in animals.

Last May, the National Cancer Institute issued a study showing a correlation between reserpine and adrenal gland, mammary gland and seminal vesicle cancer in rats and mice who were fed the drug for 103 weeks (SN: 5/12/79, p. 309). An NCI advisory panel quickly asked for a reanalysis of the data.

Last week the Institute confirmed its initial findings, but once again "strongly discouraged" patients from halting use of the prescription drug without consulting their physicians. "The risk to life from untreated high blood pressure far outweighs" the risk of women developing breast cancer (a possibility indicated in one epidemiological study), they said.

In the 1950s and 1960s the drug was one of the most widely used anti-hypertensives, but its use is slacking off, according to the NCI. The National Heart, Lung and Blood Institute now considers it a "second step" drug for the control of high blood pressure.

A spokesman for Ciba-Geigy, one of the major manufacturers of reserpine, says the new report still fails to show a direct relationship between the use of reserpine and cancer. In addition, the International Agency for Research on Cancer has taken a second look at the epidemiology studies that linked reserpine to breast cancer in humans, and has concluded that "none of the studies, either singly or pooled, provide conclusive evidence of a causal association."

## Your cigarette mileage may vary

The actual reduction in tar and nicotine levels in cigarettes in the past 10 years is not as dramatic as government figures indicate, claims a group of Canadian and American researchers in the Sept. 26 SCIENCE. The testing method is responsible for part of the decrease, they report.

The Federal Trade Commission measures tar and nicotine levels using a smoking machine that takes two-second puffs of a set volume of smoke until the cigarette tested reaches a fixed length. Over the years, companies have switched to smaller-diameter cigarettes and faster burning papers, so that the average cigarette now takes a shorter time to burn. The machine gets fewer puffs, and, as a result, the researchers claim, it measures a larger tar and nicotine drop than that due to changes in the tobacco itself. But smokers may compensate by taking more puffs to get the tar and nicotine, says report co-author Neil E. Grunberg of the Uniformed Services University of the Health Sciences in Bethesda, Md.

The researchers looked at 1969 and 1974 surveys of tar and nicotine levels in 12 brands of Canadian cigarettes, since data on puffs per cigarette have not been kept in the United States. They found that decreases in tar and nicotine levels "were strongly associated with decreases in the number of puffs taken by the smoking machine."

Harold Pillsbury, head of tar and nicotine analysis at the FTC, says, however, "I think the way we test is probably the right way." A person smoking a brand of cigarettes that has lowered tar and nicotine levels slowly over many years is probably not compensating by taking more puffs of the faster burning cigarettes, he says.

Both Pillsbury and Grunberg agree that the figures for tar and nicotine levels can still be used to compare different brands of cigarettes, assuming the different cigarettes are smoked at the same rate. But Grunberg feels the numbers cannot be used to make year-to-year comparisons, something done by many researchers studying tar and nicotine dangers.

# TECHNOLOGY

## Kidney stones: The shock of success

German researchers report a smashing success crushing kidney stones inside the body using shock waves. The technique, which eliminates the need for surgery, was conceived by Dornier System GmbH and developed in cooperation with both the Institute for Surgical Research and the Klinikum Grosshadern at Ludwig Maximilian University in Munich.

For treatment, the patient enters a tub of water where he or she is X-rayed to precisely locate the kidney stone. Shock waves generated by a very short underwater spark are then discharged into an elliptical reflector that "bundles" the shock waves and aims them at the kidney stone. The mechanical waves exert such high pressure that stones disintegrate into sand-sized grains that will eventually be flushed out of the body via the urinary tract, according to an account of the research in the Sept. 4 BMFT Newsletter (published by the Bundesministerium für Forschung und Technologie in Bonn).

Clinical tests involving at least 16 patients were conducted earlier this year. Kidney stones were shattered into fragments so small that they were discharged naturally within a few days — "almost without discomfort."

## With an eye for dissolving metal

Chips and splinters of metal — such as copper — can prove dangerous to the eye if they become embedded and start to dissolve. But trying to remove small metal fragments can also be dangerous. What ophthalmologists needed was a tool to detect if the fragment was dissolving (since the eye sometimes safely encapsulates even potentially dangerous foreign bodies and tolerates them). Two Israeli researchers appear to have identified that tool — X-ray spectrometry. A report on their diagnostic technique appears in the July 31 EUROPEAN SCIENTIFIC NOTES (published by the U.S. Office of Naval Research).

Each element is capable of emitting unique and characteristic fluorescence radiation. The technique to detect dissolved metal by its fluorescence, developed by Arye Weinreb of the Racah Institute at Hebrew University and Michael Belkin at the University of Jerusalem's Hadassah Hospital, involves irradiating the vitreous portion of an injured eye with a mono-energetic beam of 11.4 keV X-rays (carefully avoiding the eye's radiosensitive lens). Alternatively, if the fragment is visible, it is irradiated directly. A solid-state silicon-lithium detector reads the emitted spectra, which are then recorded and displayed. Patients—there have been 32 referred to the pair thus far—received an absorbed dose of seven rads to three percent of the eye's surface during the six-minute diagnostic test. According to the researchers, iron, cobalt, nickel, copper and zinc can all be detected in solution at concentrations below one part per million.

## Faster than a speeding bullet

Imagine the stop-action possibilities open to a camera able to shoot the equivalent of 0-2,000,000 frames a second. Robert J. Sanford and colleagues at the Naval Research Laboratory in Washington have built such a system to record such quick events as projectiles penetrating body armor. At its heart are six independent ruby lasers providing illumination via optical fibers in 30-nanosecond ($10^{-9}$) duration pulses; computer programing controls the sequencing of laser pulses. Advantages of the $270,000 system over existing high-speed, spark-gap cameras include: 20 times greater dynamic resolution (ability to stop moving objects without blurring), greater illumination (for lighting larger areas or using finer-grain film), and single-color output (permitting the use of simpler lenses and its application in photoelastic studies).