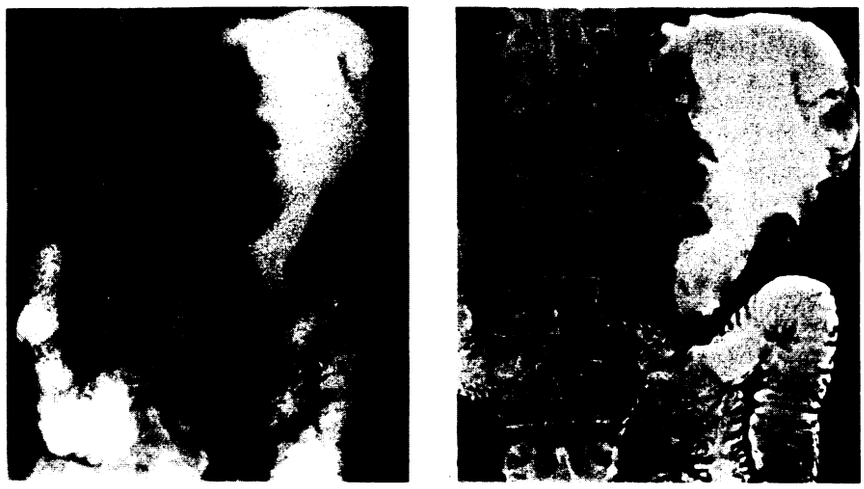
chin. When the blood began to coagulate, the baboon looked around, picked up an old piece of corn cob and used it to wipe the blood from his lower lip. "Whilst we cannot draw conclusions from one episode," say the authors, "it is interesting that, although there were several stones nearby, this baboon selected a softer, more porous and generally more suitable material." Some baboons, it seems, have learned to use napkins.

Tool-use, using an object as a functional extension of the hand, claw, mouth or beak in the attainment of an immediate goal, is not entirely unknown among baboons. Previous researchers have noted that these primates break open hard-shelled fruits with rocks, use stones to squash scorpions before eating them and use sticks to stir up termite nests. In these reports, however, few details of the behaviors or the conditions under which they were observed are given. The van Lawick-Goodall studies, because of their long-term nature, are able to document the amount of tool-use by baboons and chimpanzees and to view tool-use within the context of a variety of behaviors and situations. "As knowledge is gradually accumulated about a variety of different monkey and ape species," says van Lawick-Goodall, "it is possible to trace certain evolutionary trends of increasing complexity, culminating in man." □

Better X-rays for detecting cancer in tissues



Carangi et al/USC

Electron radiograph (right) clearly shows stomach outline; X-ray does not.

A new kind of X-ray device that visualizes soft tissue as well as bone has been developed by researchers at the University of Southern California and at Xonics, Inc., Van Nuys, Calif. It offers a clearer image of deep-body malignancies than is currently possible and should help in cancer detection. Because of its reduced cost, radiation dosage and processing time, it might also be suitable for mass screening of people with undiagnosed cancers, asserts Robert Carangi, USC director of radiological research and one of the researchers.

The process is electron radiography. It is almost identical to the conventional X-ray except that radiation passing through the body creates a flux of electrons in an imaging chamber in ratio to tissue density. An image is formed directly on a plastic or paper sheet inserted into the chamber, in less than 90 seconds, by-passing the conventional darkroom processing operation.

A 'geiger counter' for 20 trace elements at once

Trace elements are elements present in very small amounts in man, animals, plants and the environment. During the past decade or so, biologists have detected some 60 different trace elements in the human body. Some of them are not only beneficial but essential to health. Others may be harmless or detrimental (SN: 9/30/72, p. 223). Ecologists are detecting more and more trace elements in air, soil, plants and water, and a number of them appear to be industrial pollutants (SN: 9/11/71, p. 165). Undoubtedly as methods for detecting them become more sophisticated, scientists will learn more.

Investigators are able to detect only one trace element at a time in samples of blood, tissue, soil, water or other materials, using techniques such as atomic absorption or atomic fluorescence. But after nine years of work, V. A. Fassel, deputy director of the Atomic Energy Commission's Ames Laboratory in Iowa, has devised a technique that can determine concentrations of 20 to 30 trace elements in a sample of material within a minute. The technique is also more sensitive than available methods. It goes under the elegant name of "induction-coupled plasma optical emission analytical system."

At a meeting of the American Chemical Society in Washington recently, the Ames, Iowa, chemist told how his system works. A sample, say of blood, is placed in the bottom of a device that looks like a two-inch torch. Being in aerosol form, the sample of blood is injected up the torch into the plasma. The plasma, which looks like a flame shooting from the end of the torch, is a gas hot enough to give off light and to free atoms and molecules into ions. As atoms of trace elements in the sample are ionized, they give off characteristic atomic spectra. A spectrometer-computer linked to the torch measures the intensities of the spectral lines. The intensities are translated into concentrations. This way the kinds and amounts of trace elements present in the blood are determined.

Fassel's system may link levels of trace elements in the body with types of mental diseases. Slight changes in the level of trace elements, he says, often predict the onset of an illness. The instrument is expected to become commercially available toward the end of the year. Cost: $20,000 each. □