Continued from page 298

Khaw and Haber now use technetium-99m to give a signal detectable by standard scanners. Their initial experiments were done on dogs, but recent clinical studies show that detection and visualization of human heart attack damage is feasible.

Cancer is the target of most of the imaging projects. Hybritech is working on monoclonal antibodies specific for each of three types of solid tumor — breast, lung and liver. "The use of a radioactive label to identify a tumor will help the surgeon to define where the tumor is and the extent of surgery necessary," says Owen. "It will also confirm that the tumor is not anywhere else—that is, whether it is localized or metastasized."

In addition to the work Centocor is supporting on heart imaging, the Pennsylvania company also is attempting to image colorectal cancer using two monoclonal antibodies. "Those studies have been very, very promising up to this point," says Stewart Rosenberg of Centocor. "Tumor imaging has been demonstrated in terms of feasibility." He says that Centocor is currently looking at monoclonal antibodies that bind to other gastrointestinal, breast and ovarian tumors.

"We now stand at the threshold of a new era of highly selective antibody imaging," say Khaw and Haber. "Antibodies to 'tumor-specific' or 'tumor-associated' antigens can now be produced in large quantities by monoclonal antibody technology. As labeling methods undergo still further improvement, new radionuclides become available, and more tumor- or organ-specific antibodies are generated, these methods will play increasingly important roles in diagnosis and therapy."

It may be a short step from imaging with monoclonal antibodies to using them in therapy. If an antibody will seek out a tumor and bind to it, that same antibody may reduce the tumor size. However, if antibodies alone will not correct a medical condition, scientists predict that chemicals attached to the antibodies will make them better able to attack microorganisms or malignancies.

Experiments are already under way testing monoclonal antibodies as therapy in a variety of cancers. One problem anticipated with using monoclonal antibodies produced in rodents is that a patient's immune system will reject them as foreign substances. To get around this problem, techniques are being developed to produce monoclonal antibodies starting with human blood cells. Genetic Systems has filed a patent application for one such technology; Damon Corp. of Needham Heights, Mass., recently announced another (SN: 4/2/83, p. 215).

Scientists at Genetic Systems have produced human monoclonal antibodies against three bacterial infections that are serious problems for patients with depressed immune system function, such as burn victims and cancer patients undergoing chemotherapy. The company is beginning animal studies to determine the therapeutic effectiveness of these human antibodies against the bacteria pseudomonas, *Escherichia coli* and klebsiella. These studies are considered to be the start of a long-term project "because the process of getting FDA approval for a therapeutic agent is such a lengthy one," says Krieger of Genetic Systems.

Another therapeutic use of monoclonal antibodies is in suppressing in a very specific way the immune response of a patient receiving an organ or tissue transplant. With antibodies to specific white blood cells the patient may be unable to reject the transplant, but still have the immune system functioning to fight infections. Monoclonal antibodies against T cells also have been used successfully in a bone marrow transplant to prevent graft-versus-host disease (SN: 10/16/82, p. 245).

Finally, there is promise that monoclonal antibodies will specifically counter human cancer. Clinical trials are underway for a variety of cancers including leukemias and colorectal carcinoma.

In a sense, it is ironic that this antibody production technique, which starts with a cancer cell, is supplying new diagnostic, imaging and therapeutic tools to fight malignancy diseases. The technique thus tames a cancer in the laboratory and employs its prolific growth to supply previously unobtainable amounts of the natural agents for fighting disease. □

Books

Books is an editorial service for readers' information. To order any book listed or any U.S. book in print please remit retail price, plus $1.00 handling charge for each book, to **Book Order Service,** Science News, 1719 N Street, N.W., Washington, D.C. 20036. All books sent postpaid. Domestic orders only.

The Contained Garden — Kenneth A. Beckett, David Carr and David Stevens. Explores with text and illustrations a wide range of plants suitable for containers. Includes correct growing medium, best light and temperature for each specific plant. Discusses choosing the appropriate container, designing with plants and containers and caring for plants and containers. Beautifully illustrated. Viking Pr, 1983, 168 p., color/b&w illus., $26, paper, $12.95.

A Field Guide to Dangerous Animals of North America: Including Central America — Charles K. Levy. A concise survey of annoying or dangerous animals, from bears, bats and snakes to stinging coral, with advice on how best to avoid them. Gives methods of first aid and indicates medical treatment. The animals are described in detail; drawings and photographs aid identification. Greene, 1983, 164 p., color/b&w illus., paper, $9.95.

Finding Your Way on Land or Sea: Reading Nature's Maps — Harold Gatty. Shows how early explorers and primitive peoples found their way on long journeys by observing nature. Explains how you, too, can find your way on land or sea anywhere in the world simply by using nature through knowledge and observation of such things as birds, other animal life, weather, vegetation and the position of the sun, moon and stars. Originally published as *Nature is Your Guide* in 1958. Greene, 1983, 271 p., illus., paper, $8.95.

McGraw-Hill Encyclopedia of Astronomy — Sybil P. Parker, Editor-in-Chief. An up-to-date reference examining current technical knowledge relating to the solar system, our galaxy and the universe. The articles selected for inclusion in this volume are from the fifth edition of the *McGraw-Hill Encyclopedia of Science and Technology.* McGraw, 1983, 450 p., illus., $44.50.

McGraw-Hill Encyclopedia of Physics — Sybil P. Parker, Editor-in-Chief. More than 760 articles from the *McGraw-Hill Encyclopedia of Science and Technology,* 5th ed., examine physics from the basic principles of classical physics to the important developments in modern physics. McGraw, 1983, 1343 p., illus., $54.50.

More Science Braintwisters and Paradoxes — Christopher P. Jargocki. The puzzles are designed to reward the reader with intuition and insight into the physical world. The problems range in difficulty from a few simple tongue-in-cheek questions to subtle ones requiring a lot of thought. Most puzzles are nonmathematical and require only a qualitative application of broad physical principles. Van Nos Reinhold, 1983, 142 p., illus., $14.95.

Renewable Energy: The Power to Choose — Daniel Deudney and Christopher Flavin. This Worldwatch Institute book charts the progress made in renewable energy in recent years and outlines the prospects for renewable energy. The focus is on practical here-and-now technologies. Suggests a strategy for making the transition to renewable energy and evaluates the impact these changes could have on different parts of the world. Norton, 1983, 431 p., charts & graphs, $18.95.