

is vastly more complex than anticipated," Yen and his team conclude.

So even if somatostatin is not helpful in treating acromegaly, it may prove beneficial in treating patients with tumors dependent on growth hormone or prolactin. Or somatostatin may be beneficial in treating patients with diabetes, especially with juvenile diabetes. Abnormal elevation of growth hormone and glucagon has been shown to characterize juvenile diabetes. "Such beneficial effects should be ascertained or disproved in a relatively short time—say in a couple of years—in a great number of patients," Brazeau and Roger Guillemin, also of the Salk Institute, declare in an editorial in the same issue of the *NEW ENGLAND JOURNAL*. □

## DOD to act on defoliation critique

A report on the extent of herbicide damage in Vietnam given to Congress in March by a committee of the National Academy of Sciences said herbicides caused "extensive and serious" damage to South Vietnam's inland forests and destroyed 36 percent of the mangrove forests in the Mekong Delta region. It found "no conclusive evidence" that herbicides caused birth defects and death among humans (SN: 3/16/74, p. 174), though this finding has provoked considerable controversy.

Now the Defense Department (the principal opponent within the Administration to a herbicide ban) will convene a committee next month to study what steps need to be taken to aid the damaged ecology. The formation of this committee is the first direct Government response to the NAS report.

Among the NAS committee's recommendations were that the U.S. provide financial support to a "Vietnamese effort to cope with the consequences of herbicide use." The committee said a massive restoration program could restore the mangrove forests within approximately 20 years. Otherwise, it could take the forests "well over 100 years" to recover.

The committee concluded that a systematic sampling program should be undertaken to determine whether dioxin—one of the defoliants widely used in South Vietnam—has entered the Vietnamese food chain. There have been preliminary findings of dioxin in shellfish. It also recommended that a prompt evaluation of hospital data be made to determine if there is any relationship between herbicides and birth defects, and that reports of death and illness among Montagnard children be further investigated. □

## Electromagnetism and bone repair

During the past decade, scientists have learned that electrical stimulation can enhance bone repair or even induce the partial regeneration of amputated limbs (SN: 11/13/71, p. 322; 3/18/72, p. 184). They got to the point, however, where they could not justify using electricity to speed the repair of routine fractures because the technique involved putting electrodes through skin and next to bone.

So some of the pioneers in the field—C. Andrew L. Bassett, Robert J. Pawluk and Arthur A. Pilla of Columbia College of Physicians and Surgeons—decided to search for a means of manipulating the electrical environment so that surgery would not be required, that is, so an electric field could be applied outside the skin, yet still affect bone. They now believe that they've found it—pulsing electromagnetic fields of low frequency and strength. They report their findings in the May 3 *SCIENCE*.

Two legs on each of 43 dogs were broken. A pulsing electromagnetic field produced by rectangular coils was set up across one broken leg of each dog. The other broken leg of each dog served as a control. The electromagnetic fields were applied to the fractures for 28 days. Then the healing progress of all the fractured legs was examined. The orthopedic researchers found that the breaks exposed to the electromagnetic fields had healed better than the breaks not exposed.

"This study," they say, "demonstrates for the first time, to our knowledge, that low-frequency, low-intensity, external pulsing electromagnetic fields can be inductively coupled to a tissue to achieve an increase in the tempo of a repair response."

In addition to their animal work, they have tried the technique on six patients with bone fractures and will soon try it on four more patients with fractures. Here too the technique looks promising. "We would hope," Bassett told *SCIENCE NEWS*, "that if this thing can be carried along to its ultimate conclusion, that it would provide a rather simple method for the average physician who has to treat a fracture to do so with a simple plaster cast and just incorporate the proper equipment in the cast. It is something that patients don't have to come into the hospital to get done and have all the expenses of hospitalization or the hazards of the operation or anything else."

Bassett says they have not noted any adverse effects from using electromagnetic fields for a month on dog tissues. The dogs' untraumatized soft tissues and bone exposed to the fields appear

entirely normal. So he anticipates that if patients are exposed to an electromagnetic field for two or three months, they would probably not experience harmful effects. "I don't think anyone knows what long-term exposure might do," Bassett admits.

Although Bassett and his colleagues are enthusiastic about using electromagnetic fields to enhance bone healing, they also believe that the fields can be used to control a variety of biological processes. They have evidence, for example, that electromagnetic fields can increase nerve regeneration. □

## Vinyl chloride pesticides banned

The Environmental Protection Agency last week suspended further sales of all pesticide aerosols containing vinyl chloride for use in the home, food handling establishments, hospitals and other enclosed areas. It requested immediate recall of these products from retail shelves. Some 28 products are known to be affected by the decision. In addition, Russell E. Train, EPA administrator, has asked for prompt Congressional action on the pending Toxic Substance Control Act that would make it possible to identify potentially dangerous chemicals such as vinyl chloride before they are marketed to the general public.

Vinyl chloride is a gaseous chemical strongly suspected to be the cause of a rare form of liver cancer known as angiosarcoma that has been diagnosed in 12 industrial workers engaged in the conversion of vinyl chloride to the plastic polyvinyl chloride. The cancer has also been found in test animals exposed to the chemical.

"I am seeking the immediate nationwide cessation of the sale of these pesticides and the recall of existing stocks," Train said. "While the public health implications to vinyl chloride from short pesticides bursts are undetermined, the link between the gas and the cancer is suspected strongly enough to make it prudent policy to ban further use of these products."

All manufacturers and distributors of these pesticides, including some outdoor products not affected by the suspension, have indicated a willingness to recall their products. "This is commendable but the time involved in ensuring voluntary compliance would delay achieving the most rapid possible removal of these pesticides from the marketplace," Train said. □