

Because the eyes of rhesus monkeys are strikingly similar to those of humans, Pounds proposes that chronic exposure to 85 micrograms per 100 milliliters of blood early in life in a child will probably impair night vision even if such lead levels eventually return to normal. A recent U.S. Public Health Service survey found that quite a few American children in high-risk lead areas have lead in their blood in excess of 85 micrograms per 100 milliliters. Their vision might well be impaired without them showing open symptoms of lead poisoning. □

Gene legislation: NAS urges caution

The National Academy of Sciences added its weighty opinion last week to the mountain of recommendations on regulation of recombinant DNA research. At its annual meeting, Academy members passed a resolution expressing concern about proposed federal legislation. Among the authors of the statement were molecular biologists who have argued opposing positions in recent debates on the potential hazards of the research.

The Academy resolution, although favoring extension of the NIH guidelines into law, challenges provisions that allow individual communities to impose regulations stricter than the federal law. "Above all, local option would set a dangerous pattern for the regulation of basic research in a manner that might deprive society of substantial future benefits," the statement says. The Academy also opposes the precedent of a national regulatory commission to govern an area of scientific research, calling the proposal "a wholly new and unfortunate departure."

Philip Handler, president of the Academy, made an even stronger statement in his annual report to members. "I view with great alarm the prospect of any law that would authorize government officials to determine what subject matter it is permissible to investigate as well as the manner in which such research is to be conducted," he said. "As a minimum, one can foresee constraints that will swathe research with bureaucratic complexities. . . . If pursued yet farther, science will be shattered."

Handler said most of the scientists who attended the Academy's recent forum on recombinant DNA research (SN: 3/12/77, p. 165; 3/19/77, p. 181) grudgingly concluded that federal legislation is inevitable and perhaps even desirable, partly to "terminate the feckless debate which has offered outlets for antiintellectualism and opportunity for political misbehavior while making dreadful inroads on the energies of the most productive scientists." But Handler concluded whatever the specifics of the law, "our successors will rue the day this legislation was passed." □

CT scans: Profiteers and gadgets fads

Cross-sectional X-rays of the body (inset) are produced by CT scanners. Despite their diagnostic value, are the costly scanners being over-proliferated and overused?



Ma Jincroft/Institute of Radiology

The new generation of computerized tomographic (CT) scanners, which create cross-sectional X-ray photographs of the body, have brought about a diagnostic revolution (SN: 3/13/76, p. 170). They are particularly effective in detecting tumors in the head, chest and abdomen. But a new study by the Institute of Medicine warns that new standards may be required to limit where new CT scanners should be placed and when they should be used.

Since the devices were first introduced just four years ago, some 350 have been put into operation, about 20 are now being installed and 400 to 500 are on order. At a cost of up to \$700,000 each and annual operating expenses of some \$300,000, the devices have begun to absorb a significant share of the American health-care dollar. The Blue Cross Association thus asked the Institute of Medicine to offer some guidelines on installation and use of the new technology—guidelines almost certain to wind up as insurance company standards for reimbursing examination expenses.

The cost of an examination with a CT scan now averages \$200 to \$225, including a doctor's fee of \$55 to \$60. But the cost can run as high as \$500 in some areas, allowing hospitals and some private doctors to recoup their investment in a matter of months. The chairman of the study committee, Charles A. Sanders, general director of Massachusetts General Hospital, said to "avoid profiteering," the committee was recommending a standard physician's fee of \$35 and an investment amortization period of five years. Standards for use were also suggested.

The committee also recommended that CT scanners be installed primarily in large hospitals that could put them to full use—about 2,500 examinations per year. If the new fee system is implemented, says Blue Cross President Walter J. McNerney, machines now operating at low volume and high price will become unprofitable and "some of the damage can be undone."

Behind this study and its recommendations for controlling the spread and

abuse of a particular technology is the larger question about competition among hospitals and doctors that frequently results in overinvestment in new gadgets. Some control is exercised over purchase of major equipment by laws requiring a hospital to obtain a state Certificate of Need (CON) before investing. But only 29 states and the District of Columbia have CON requirements and private physicians are presently exempted. (Some 15 percent of CT scanners are now installed in private offices or clinics.)

By 1980, federal law will require all states to have CON legislation, and the Institute of Medicine report specifically recommends that such laws be expanded to cover private physicians. Thus the report may well live up to its billing as "a watershed for policy decisions about appropriate distribution and use of costly medical technologies." □

Academy steps up human rights drive

In 1975, Jose Luis Massera, a prominent mathematician in Uruguay, was detained by police and held in prison for one year. After severe torture which left Massera, 62 years old, with a broken hip, he was finally charged with "subversive association" and brought to a closed trial. He is still being held incommunicado and has not been able to answer any of the scientific correspondence sent to him.

In various countries around the world, scientists are undergoing harassment, repression and torture for outspoken political views. From outstanding scholars like Massera—known to the international community—to obscure researchers, scientists have been among those singled out for dissident views. Cut off from friends and colleagues, the scientists seldom have their story heard by the rest of the scientific community.

Last week, the Human Rights Committee of the National Academy of Sciences

announced a new effort to support and identify scientists suffering repression. The committee selected the cases of eight scientists around the world, including Massera, who have been imprisoned for political crimes. In addition, some 250 members at the Academy's meeting volunteered to act as correspondents to bring pressure upon governments to obtain more information and possibly release. The correspondents will also serve to identify other cases of repression.

The Academy's previous involvement in human rights has been on a somewhat piecemeal basis. Individual members have offered aid to emigrating scientists from time to time. In 1973, the Academy as a body protested the Soviet Union's treatment of Andrei Sakharov. Since then, the Academy has become more concerned with the problem of repression, and last year the Human Rights Committee was formed with geographer Robert W. Kates of Clark University as its chairman.

In the case of Jose Luis Massera, the committee has formally asked the Uruguayan government for permission for his family and friends to visit the imprisoned mathematician. The committee also wants permission for members of the scientific community to determine Massera's health and to be present at the legal proceedings. Massera was a member of the House of Representatives and an official in the Communist party. Both the Parliament and the party were outlawed after a military coup in 1973.

Besides Massera, the committee is also seeking full information on the whereabouts of five Argentine physicists who disappeared last year. Gabriela Carabelli, Juan Carlos Gallardo and Antoni Missetich have been accused of association with guerrillas. Federico Alvarez Rojas and Eduardo Pasquini have disappeared without any specific reason.

Two Russian scientists were also selected by the committee. Sergei Kovalev, who has studied the synaptic membrane, was arrested in 1974 for circulating a Lithuanian Catholic newspaper and sentenced to seven years hard labor. Yuriy Orlov, a well-known physicist and member of the Armenian Academy of Sciences, has played a prominent role in the Soviet human rights movement, joining in the defense of Andrei Sakharov. Although Orlov has been arrested since February, no formal charges have yet been brought against him.

At a news conference announcing the new direction, Kates rejected the idea of "linkage"—connecting the drive for human rights with threats of interrupting American-Soviet scientific exchange. Instead, the committee will rely on the weight of public sentiment. "Publicity is a very positive force," said Lipman Bers, a committee member and professor of mathematics at Columbia University. "I think it's true to say publicity helps, silence kills." □

Estrogen-cancer link faces challenge

Several studies in the last two years have linked a widespread treatment of menopause symptoms to an increased risk of cancer of the uterus lining (SN: 1/3/76, p. 9). This week, two Yale researchers challenged that connection and attacked the methodology underlying many epidemiological studies.

The previous studies of estrogen therapy and cancer are biased by differences in disease-detection rates, hospital referral patterns and clinical susceptibilities, Ralph Horwitz and Alvan R. Feinstein told a meeting of the American Society for Clinical Investigation in Washington. These biases can be reduced by using a different control group, they say. For example, the conventional methods of computing risk assume that cases of cancer will be detected equally among women who are and are not receiving estrogen treatment. Horwitz and Feinstein propose that because women on estrogen treatment often develop bleeding, they are more likely to be given the tests that diagnose uterine cancer.

In their new method, the researchers selected both cases of cancer and controls from the records of women who received one of two medical treatments, either di-

latation and curettage (D and C) because of abnormal uterine bleeding or a hysterectomy. All these patients underwent the appropriate procedures to detect cancer of the uterus. From their results, Horwitz and Feinstein calculate that a woman's risk of developing cancer is not significantly increased by estrogen treatment. They suggest that estrogen treatment increases the probability that cancer will be detected, rather than the probability of cancer itself.

Robert Goodman, a researcher at the National Cancer Institute who recently published a study linking estrogens and uterine cancer, flatly disagrees. Because this cancer is relatively rare, affecting about 1.5 percent of women, undetected cancers in a control group just wouldn't have a large effect on the risks calculated, Goodman says. The problem with the Yale researchers' method, he continues, is that they have chosen to study a group of women who have an illness (abnormal bleeding) caused by the same exposure they are investigating. "The question we're interested in is, does estrogen cause endometrial cancer, not does it cause endometrial cancer more than it causes some other condition," Goodman says. □

Success in deciphering human genes

Human genes, like those of viruses and bacteria, are yielding their detailed structure to the onslaught of increasingly powerful analytical techniques. At the annual meeting of clinical research societies in Washington this week, two research groups reported success in deciphering parts of the human genetic blueprint.

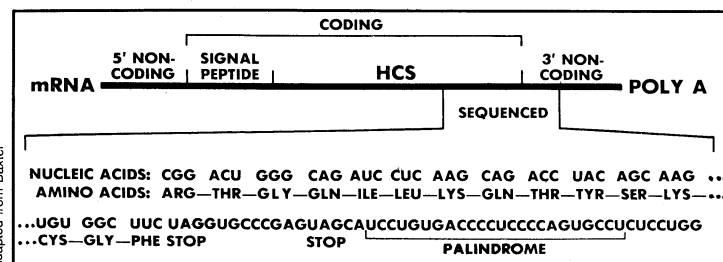
Yale researchers have established much of the sequence of nucleotides in genes for the two major protein chains of hemoglobin, the red blood cell molecule that carries oxygen throughout the body. Sherman Weissman, Bernard Forget, Charles Marotta and John Wilson determined the nucleotide order by analyzing messenger RNA, the cellular molecule that carries information from DNA.

The Yale team compared globin messenger RNA from normal subjects with the amino acid sequences from 10 patients with abnormal blood proteins, such as those in sickle cell anemia. "Amino acid

substitutions are almost always explained by a single base substitution in a unique normal ancestor messenger RNA sequence," Forget says. However, in a few cases, the researchers observed sequences that suggest the existence of "silent" differences between the globin genes of normal individuals.

The other human gene that has been partially sequenced codes for the hormone chorionic somatomammotropin (HCS). Produced by the placenta, HCS influences maternal fuel economy, making more glucose available to the fetus. John Baxter, Peter Seeburg, John Shine, Howard Goodman and Joseph Martial of the University of California at San Francisco have determined the nucleotide sequence of about one-third of that gene.

Although the amino acid order in the globin proteins and in HCS has been known for several years, the nucleic acid sequence adds important information. Be-



RNA specifying a human hormone contains two stop signals and a mirror-image sequence.

Adapted from Baxter