

ness, itching, sweating and peeling. Finally many Michigan subjects complained of a sudden increase in fingernail and toenail growth. Chanda points out that the stricken cattle showed marked growth of their hooves.

Mason Barr of the University of Michigan examined 415 farm children. Although, so far, no objective evidence of disease has been detected, Barr finds a broad spectrum of health problems in the Michigan group. While only one Wisconsin child experienced a sudden increase in symptoms, a third of the Michigan children developed more than ten new symptoms in a year. Thirty-five percent of the Michigan parents thought their children's health had declined over the past three years. But, Barr told the hearing, the Michigan children seem now to be getting better.

The most alarming result is the discovery of serious defects in the immune systems of Michigan, but not Wisconsin, farm residents. Forty percent of those tested had a substantial deficit in the number of cells called T-lymphocytes, which are responsible for rejecting bacteria, viruses and foreign tissues. Instead of normal T-cells, they have "null" cells that look like lymphocytes, but serve no health function whatsoever, reports J. George Bekesi of Mt. Sinai. Furthermore, even the normal lymphocytes function less effectively. John A. Moore of the National Institutes of Health reports that initial experiments on rats and mice also indicate a decreased function of T-cells. The full health effects of this abnormality are not yet known.

The PBB problem may not be limited to Michigan. Thirteen million pounds of the chemical was made between 1970 and 1976 and, being long-lived, may eventually appear in the environment. In February, the Environmental Protection Agency began investigating PBBs under the new Toxic Substances Control Act. Officials told the House subcommittee that an analysis last week showed "frightening" amounts of PBB in three catfish from the Ohio River, near a plant that used PBBs. Earlier this summer EPA scientists found PBB residues in human hair and fish samples near two New Jersey plants that manufactured PBBs and near a Staten Island company that used PBBs in making wire coating. EPA Administrator Douglas M. Costle has ordered development of rules for strict control of PBB production.

Another chemical-related health problem has been discovered in a California plant. No worker in the pesticide-producing unit has fathered a child recently. Medical tests on 15 men revealed that 10 have sperm counts so low as to make conception unlikely. Health officials suspect the culprit chemical is DBCP (dibromochloropropane), which produces sterility in rats. No one knows whether the human sterility is permanent. Occidental Chemical Co. has shut down that pesticide unit. □

Babies bottom out—a 'maybe boom'

The first substantial sign of a reversal in the declining birth rate—and a possible precursor to a new baby boom—has been reported by the National Center for Health Statistics. Figures show that a birth rise began last September and has continued through this April, the latest month for which statistics were analyzed. During the first third of this year, the marriage rate was also up and, for the first time in several years, there was no increase in the divorce rate.

After dropping to a post-World War II low in 1976, the United States birth rate climbed to 15.1 children born per 1,000 population for January through April of this year—an increase of 6 percent over the same period last year, according to the center. Should the trend continue through the entire year, nearly 3.4 million youngsters will be born in 1977, an increase of about 200,000 over what would have been expected at last year's rate.

An "echo" baby boom has been predicted by various demographers for several years (SN: 9/13/75, p. 167). Girls born in the post-war baby boom, which reached its height in 1957, are now passing through their prime years of fertility, researchers note. This trend, combined with signs of a philosophical return to the traditional marriage concept, make an upcoming birth increase inevitable, some researchers suggest.

In addition, the fertility rate for the first third of this year was 68.4 children per 1,000 women of child-bearing age (15 to 44). That is an increase of 5 percent over a comparable span in 1976. The "total fertility rate"—a figure calibrated to the average completed family size at current fertility rates—was also up about 5 percent above the first third of last year. However, the current rate of 1.84 children per woman is still below the "replacement level" of 2.1 children for American society.

While a birth-rate increase would be welcomed by those who fear that prolonged zero population growth would some day produce a geriatric society, there is at least one aspect of the rising trend that bothers even proponents: teenage pregnancies. That problem has been steadily growing during the last few years (SN: 8/14/76, p. 104), and the Planned Parenthood Federation reports that more than one million 15 to 19 year olds a year get pregnant in America. More than half the 21 million persons in that age range have sexual intercourse, the federation estimates. Of those who get pregnant, 28 percent are married before conception takes place, 21 percent give birth out of wedlock, 14 percent have miscarriages and 27 percent have abortions.

University of Michigan psychologist Sylvia S. Hacker traces much of the teenage problem to lack of proper use of contraceptives, caused ultimately by inade-

quate sex education, she says. In a study of teenage practices and attitudes toward sex, Hacker concludes that despite the advent of academic sex education, boys and girls remain "uneasy or uninformed about sex. Sex education classes in this country are a failure," she says. "The classes are dealing with anatomy and reproduction when what kids really want to know about are human relationships—'What will she think if I try something,' or 'How far should I let him go?'" The more uneasy or uninformed a boy or girl feels about sex, the less likely they are to use birth control, she says. "Sex and contraception are still relatively taboo subjects in our post-Puritanical culture," she says. "Even the most liberal parents tend to view sex as a private matter, and the schools treat it as a dry academic subject."

For whatever reasons, teenagers and adults alike are contributing to the current upswing in births. Whether or not this marks the start of a new baby boom remains to be seen. □

Seafarer: NAS sees no basic hazard

Project Seafarer, proposed underground antenna grid for communicating with submarines far below the ocean surface, has been controversial since its conception. Last week, developments moved it nearer to realization, although environmentalists worry that the huge project will upset health or ecology. President Carter described the submarine communications system as essential to national security. House and Senate conferees agreed on a compromise bill approving \$15 million to develop transmitters and receivers and to operate the existing test facility at Clam Lake, Wis. And the National Academy of Sciences issued its final report on Navy plans for a 4,000-square-mile radio antenna, probably to be built in Michigan's upper peninsula, giving it a predominantly clean bill of health on biological hazards (SN: 1/1/77, p. 5).

Concerns for long-term adverse effects on people living in the area were judged to be "invalid and unwarranted," Harvard physiologist J. Woodland Hastings, chairman of the NAS committee, told a press conference last Friday. "We have concluded that it is very unlikely that there will be any harmful effects."

The committee's major recommendations address the possibility that the grid of buried cables would give people electric shocks. The report recommends that at the ground terminals, uninsulated copper wires up to 4,000 feet long, the maximum electric field be reduced by a factor of 10. Although the limit specified by the Navy would not normally harm

those who walk over the terminals, it might give an unpleasant electric shock to a camper dragging an aluminum canoe or a farmer stepping onto a tractor hitched to a plow. The other recommendation is that the Navy should demonstrate a reliable procedure to detect and repair faults, such as a break in cable insulation where current could leak out into the ground and produce electric shocks in animals and people passing near the defect.

The committee evaluated numerous studies of more subtle biological effects of the extremely low frequency radiation (ELF) that the antenna would produce. Tests have included ELF effects on a wide variety of organisms and processes, such as slime mold cell division, flatworm regeneration and primate behavior. Many experiments that had reported significant effects were judged to lack proper controls and guards against researcher bias or could not be replicated by other scientists. The committee judged as incorrect a widely publicized 1971 study which indicated exposure to ELF radiation increases triglyceride levels in the blood. A more recent study by Navy researchers showed no such changes. "The committee's considered opinion is that such fields will not cause a significant and adverse biologic disturbance, except in the event of electric shock, which is of serious concern," the report concludes.

The committee does identify some possible biological effects of weak electric and magnetic fields, but they do not consider them hazardous. Fish in lakes within the grid would probably detect the electric fields, the report states. Such interference might affect their spatial orientation or detection of prey. The committee suggests that, in the absence of more definitive information, ground terminals be placed as far as possible from bodies of water.

Radar tracking of birds flying over the Wisconsin test facility (SN: 3/5/77, p. 153) indicates that the ELF magnetic field has a "real and measurable effect on some migrant birds." The report points out that constructing the grid near a major migratory flyway (such as in upper Michigan) would present more opportunities for potential harm to birds than building it away from major bird routes.

Before any antenna is constructed, the bird migration patterns in the area should be studied, so they can be compared with patterns during antenna operation, the committee states. Furthermore if Seafarer is constructed, research projects should take advantage of the opportunity to learn of the effects of weak ELF fields, knowledge also relevant to life under ordinary power lines and among electrical appliances. "Our concern relating to the possible biologic effects of weak ELF fields is that there should be a commitment to monitor biologic and ecologic systems and to acquire a better, indeed a complete, basic knowledge of the effects of electric and

magnetic fields on living organisms. If there is any single technological feature of our civilization which seems destined to remain with us for centuries to come, it is electricity," Hastings says. "We cannot afford to be without basic knowledge concerning its effects in biological systems."

If harmful biological effects are discovered after the antenna is installed and operating, will it be disconnected? H. Tyler Marcy, assistant secretary of the Navy (Research and Development) says yes. He told the first meeting of the NAS committee last year, "Let me go on record, if there are deleterious effects which are determined, that we will stop the transmission." □

Madagascar's mysterious meteorite

The confused tale of the meteorite (or meteorites) that did (or did not) fall to the east (or south, or northeast, or northwest) of the capital city of Madagascar, possibly creating (or not creating) a crater (or craters) up to 240 meters across, is finally beginning to straighten itself out—or is it?

U.S. researchers were in a brief tizzy last week at unconfirmed reports of two nearly simultaneous meteorite impacts on July 30 in the island republic, the larger of which was described in some early accounts as having created what would be the largest impact crater in modern history (SN: 8/6/77, p. 86). The giant crater was said to be near Fianarantsoa, about 400 kilometers south of the capital, and there were reported eyewitnesses to a "bluish light" in the sky shortly before the stated time of impact.

Now, the "giant crater" part of the story seems to have fallen into disrepute, although there apparently was a meteorite impact, preceded by a spectacular fireball. Robert S. Barrett, interim *charge d'affaires* at the U.S. Embassy there, cabled the State Department in Washington: "Report of impact near Fianarantsoa apparently due to the fact that there occurred a mild natural earth tremor in that area approximately 30 minutes after meteorite impact." Reports of the tremor by local residents were "apparently connected by radio news personnel with meteorite fall." The local broadcast "was apparently picked up by VOA [Voice of America], Radio France and Radio South Africa, the former two adding such details as the size of the crater . . . and specific locations." The local radio version was subsequently "corrected," and Madagascar government accounts thereafter downplayed or ignored that aspect of the story.

The fireball and some kind of impact, however, seem to have been real, although closer to the capital and in an easterly direction. An impact registered on the seismographs of the University of Madagascar observatory, but a team of

two seismologists and two geologists from the observatory had failed to find the meteorite by Aug. 9, after a week of searching with the aid of a Soviet-donated helicopter provided by the Malagasy army.

The observatory's acting director calculated that the object should amount to about 1 cubic meter, Barrett reports. Eyewitnesses near where observatory officials believe it fell described the fireball as "blinding," and much brighter than full daylight. Sharon Wells, an embassy secretary, saw the fireball and described it as about the size of a full moon, moving northeast by north, based on the direction of the road on which she was driving at the time.

But the puzzle won't go away. According to a cable from Barrett to the Smithsonian Institution's Scientific Event Alert Network, "Two detonations occurred nearly simultaneously several minutes after the fireball and are variously described as sounding like sonic booms, artillery shots, bomb explosions or quarrying detonations." Two? Wasn't one of them supposed to have been an earthquake several hundred kilometers away? Or did a quake, a fireball and two meteor fragments all beset Madagascar within barely half an hour?

Stay tuned to this station. □

Alcohol: A heart disease preventive?

Clinical observations have linked heart attacks with a rise in cholesterol in the blood. Still other investigations have associated heart disease with an increase in certain cholesterol-bearing lipoproteins in the blood, but not with others. Because alcohol is known to influence lipid metabolism and transport in the body, a team of researchers participating in the National Heart, Lung and Blood Institute's Cooperative Lipoprotein Phenotyping Study decided to see what effect moderate alcohol consumption has on both total blood cholesterol levels and on levels of specific cholesterol-bearing lipoproteins.

As reported in the July 23 LANCET, the researchers found only a slight correlation between moderate alcohol consumption and total blood cholesterol. Past studies have not linked heavy alcohol drinking with a rise in total blood cholesterol, either. Even more intriguing, the researchers were able to associate moderate drinking with high levels of high-density lipoproteins in the blood, those cholesterol-bearing molecules that have been linked with a resistance to heart disease, and with low levels of low-density lipoproteins, those cholesterol-carrying molecules that have been related to heart disease. "It was awfully surprising to us to find this," declares one of the principal investigators, Tavia Gordon of the NHLBI.