

0.6 percent of the sort of donors who volunteer at hospital and other medically supervised blood banks show blood elements that suggest they may be carrying the disease. The needles that drug addicts use help spread the serum hepatitis; infectious hepatitis spreads in the fecal matter encountered in crowded and unsanitary housing.

Tests of blood samples to screen out hepatitis carriers might seem an obvious way out. But such tests (SN: 6/13, p. 584) are still in a developmental stage. (One of the most interesting of the current experiments involves the use of plasma from prison volunteers given hepatitis in 1951, preserved by freezing for two decades, and taken out of storage for the current work.) Even well-organized and scientifically competent medical center blood banks still have not standardized hepatitis screening tests. Small commercial plasma collectors have scarcely heard of them.

The Academy report suggests that the presence of a supervising physician might reduce the hepatitis hazard and also give the donor the sort of protec-

tion ethics demands. The physician could elicit the donor's medical history—even a simple "Ever have jaundice?" could be useful. The physician could also tell the donor, without confusing medical jargon, that repeated immunization involves the risk of such mysterious autoimmune diseases as lupus erythematosus or lethal diffuse vasculitis at some future time. Another useful moderate reform: careful continuous records of donors and a city-wide record that would prevent derelects from showing up at one collection bank after another.

A more basic reform is implied but not spelled out in the Academy report. The question concerns why commercial unlicensed and unsupervised plasma collection centers are permitted to operate. Such fly-by-nighters get by under the "short supply" qualification of interstate commerce law. The National Institutes of Health Division of Biological Standards, which administers the law's application to biological products, permits unlicensed collectors to operate because there is a wide demand for a limited supply of plasma. □

leadership supports it," says Charles Williams, staff director of the National Goals Research Staff.

Williams points out that alternative development is feasible because "economic viability is less and less dependent on geographical factors." Since Government and the private sector are increasingly engaging in long-range planning, factors such as population density can be taken into account.

In order to affect population redistribution several means are being considered: industrialization of rural areas, building new communities such as Reston, Va., and Columbia, Md., and development of existing small cities. Dr. I. P. Halpern, another member of the goals staff, maintains that rural industrialization or building new cities are less viable means than developing existing small towns and cities. The experimental new cities will not accommodate anticipated population growth, and rural industrialization, he believes, is not feasible.

A recent study by Richard Irwin of the Census Bureau's Population Estimates indicates the feasibility of developing the small towns as alternative population growth centers. During the period of 1960-66, all major metropolitan areas grew at the average annual rate of 1.7 percent. But counties in nonmetropolitan areas that contained a small city (25,000 to 50,000) and a major highway artery grew at the rate of 1.5 percent—only slightly less. Nonmetropolitan counties that contained a small city but no major highway grew at an annual rate of only 0.9 percent.

This type of study indicates the feasibility of encouraging population growth in nonmetropolitan areas where small cities have access to the massive interstate system now being completed in much of the country. Such cities are in optimal positions to benefit from a national policy of population redistribution if the concept takes hold. □

DEMOGRAPHY

Population and national goals



Hagerstown Chamber of Commerce

Hagerstown, Md.: Small cities are a likely target for population dispersal.

A consequence of the industrial revolution has been worldwide urbanization. Labor, capital, resources and markets have bundled together for more efficient production in development of the industrial society. The resulting high population densities have led to the development of the megalopolis—urban and suburban sprawl creating the East's Bos-wash, the Midwest's Chippits and California's San-san.

As Census Bureau computers cough out preliminary results of the 1970 census the continuing trend toward metropolitanism in the United States is once again being statistically confirmed. "The rural areas are con-

tinuing to decline in population," reports Conrad Taeuber, the associate director for Demographic Fields at the Census Bureau, "and very rapid growth in the suburbs is clearly apparent."

The rural population decline is due primarily to industrialized agricultural production.

"There is nothing to indicate that it won't continue this way," says Taeuber.

The Nixon Administration, which has been focusing on the long-range development of American society, has been questioning the inevitability of such projections. "These trends are reversible if an alternate vision of the future can be developed and strong

TEKTITE II

Subsurface science

The message may have been lost amid the excitement of underwater adventure and female aquanauts, but the primary mission of the Tektite II project beneath Great Lameshur Bay off St. John in the U.S. Virgin Islands is scientific (SN: 3/7, p. 240). The basic purpose is to demonstrate whether certain kinds of marine research can be done better by scientist-divers working from a permanent undersea habitat than by scientists working in the traditional ways from the surface. A companion goal is actually to accomplish some useful research. Work along both these lines is progressing well, as indicated by preliminary summary reports

from each of the first four teams to have completed their missions. (See p. 117.) Although the scientists are not making any dramatic claims, they are almost unanimous in their feeling that remaining beneath the surface for periods of two to three weeks gives them valuable advantages in accomplishing their research.

"The reports, in general, clearly reflect that there are distinct advantages with respect to conducting detailed investigations while living on the ocean floor," says Dr. James W. Miller, Tek-tite II program manager.

Probably the most interesting finding in this respect is the geochemical work by three University of Miami scientists indicating that the results of measurements of a few important parameters such as oxygen concentration vary markedly depending on whether the analysis is done immediately in the bay-bottom habitat laboratory or later on the surface. This shows, they believe, that to obtain certain kinds of precise measurements from now on the work must be performed out of an underwater laboratory. But there are other examples.

Two University of Washington fish biologists, Charles Birkeland and Brian D. Gregory, say they could probably have accomplished the specific objectives of their studies of fish predation by repeated surface-based dives, if given considerably more time than they spent in their Tektite II mission, but they still would not have learned as much. "We do not justify saturation diving because we acquire more information, but because we acquire a different kind of information," they explain. Many of the most original and valuable insights came through incidental observations of fish behavior that they would not have had time to make during dives from the surface. They were also able to watch the predatory behavior of a particular individual for days at a time.

Dr. A. C. Mathieson and Richard Fralick of the University of New Hampshire studied the composition, distribution and abundance of vegetation on the bottom of Great Lameshur Bay and compared the results with their previous surface-based studies along the New England coastline. "There can be little doubt in my mind that the habitat provided us with an unprecedented amount of diving time and is a very effective tool," says Dr. Mathieson. "In conclusion I can only say that we could never have studied 20 individual 1,500-square-foot areas in New England."

Tektite II is now into the seventh of its planned 17 missions. By the time the project is finished, around Nov. 1, some 50 scientists will have conducted two to three weeks of research 50 feet beneath the waters of Great Lameshur Bay. □

SCIENCE NEWSBRIEFS

Radioactive wastes

The Atomic Energy Commission, faced with the controversial problem of finding a way of disposing of radioactive wastes from nuclear power plants, hit on the idea of using Kansas salt mines as a repository for the materials. The mines are relatively free of moisture and there is apparently less likelihood of environmental contamination than from other underground sites (SN: 3/28, p. 312).

But the Kansas State Geological Survey has asked the AEC to slow down its plans for use of a mine near Lyons, Kan., until adequate studies can be made. Says Dr. William Hambleton of the Survey: "My expectation is that the studies in the main will be confirmatory (of AEC's desire to use the mines). But now there is virtually no geological information on the site at all."

Dr. Hambleton says AEC has responded favorably to his request for a study lasting about six months. □

Seeding for snow

Cloud seeding to increase the snow-pack this winter over the San Juan Mountains of southwestern Colorado (SN: 5/9, p. 461) will be conducted only in the eastern half of the original target area, the Interior Department's

Bureau of Reclamation announced this week.

Of the four subareas in the original target zone, one—in the Silverton and Ouray area of Colorado—had previously been exempted from seeding because of such problems as the threat of avalanches. This week's addition of a second exempted subarea to the south was made in part because data on wind patterns and precipitation effects were not complete enough there. The action leaves a 1,300-square-mile zone in the region of the Piedra River and Wolf Creek Pass to be seeded under suitable conditions starting in late October. □

Dissertation support

For some time the National Science Foundation has awarded grants for doctoral dissertation research in the social sciences. The awards are intended to improve the scientific quality of dissertations by making it possible for the student to gather more data of better quality. In particular they allow the student to conduct field trips.

This week NSF announced that doctoral dissertation research awards will also be granted for research in the environmental sciences (atmospheric and earth sciences and oceanography) and biological field sciences such as ecology, systematics and biological oceanography. □

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