environment

URBAN PLANNING

Less space means more community

Since World War II, the pattern of growth in the suburbs has been one of automobile-oriented urban sprawl. Housing developments affording large lots to residents have spread over the countryside with no discrete community centers and thus no real communities. Shopping centers are accessible only by automobile and thus offer no authentic centers of life, especially for immobile residents such as the children and the elderly. Inefficiency is great because sewer lines, freeways and streets must be built great distances.

William B. Shore, vice president of New York's Regional Plan Association, offers an alternative in the January-February CITY, a National Urban Coalition publication. "Instead of the homogenized urbanization of spread city, we propose centers, communities and green spaces," says Shore.

Essentially, the proposal would involve creation of distinct community centers of commercial and professional developments. These would be concentrated in far less space than the usual "campus" type suburban office complexes. Around these centers would be residential areas—some within walking distance of the central area—with houses on far smaller lots than in the current kind of development.

Benefits, says Shore, would be an increased sense of community, a wider choice of geographically accessible jobs for residents, facilitation of public transportation, more open countryside, a greater variety of living patterns, more aesthetically satisfying public places (as opposed to the ugly asphalt of the current shopping centers) and smaller and more responsive governments.

GEOTHERMAL RESOURCES

Water as well as power

Researchers at the University of California at Riverside reported last year that Imperial Valley underground geothermal reservoirs might provide a source of water as well as of low-cost nonpolluting power (SN: 11/28/70, p. 415).

Exploratory drilling by the U.S. Bureau of Reclamation tends to confirm this prediction, reports Interior Secretary Rogers C. B. Morton.

The Bureau of Reclamation researchers say their drilling gave strong indications that a geothermal well could produce large amounts of water from beneath the Imperial Valley area known as the Dunes Anomaly at a depth of 2,000 to 3,000 feet. A temperature of 230 degrees F. was discovered at 360 feet.

GENETICS

Breeding short cut found

Breeding hybrid plant strains is a time-consuming process, often requiring months after germination to determine if the hybrid will possess the desired hybrid vigor.

Dr. Robert G. McDaniel of the Arizona Agricultural Experiment Station in Tucson says he has come up with a promising laboratory short cut, which he calls mitochondrial complementation (MC). Mitochondria are the respiratory and energy-budgeting bodies of cells. In the MC test, if the mixed mitochondria of prospective parent cells give a higher respiration rate than either of the parent mitochondria, this is an indication of hybrid vigor, Dr. McDaniel says.

The reproductive cells of higher forms of life—for instance, the scorpion—actually merge their mitochondria when fertilization takes place. This has never been demonstrated for plant reproduction but whether or not it takes place, the MC technique has proved to be an empirically valid indicator, he says.

CONTAMINANTS

Fish contain arsenic, selenium

Two researchers, determining mercury levels in tunafish from supermarket shelves with a spectrometer, accidentally also discovered the existence of selenium and arsenic in the fish.

Drs. Rolf Woldseth and David Porter of Kevex Corp., Burlingame, Calif., ran tests on three samples, including two brands and two qualities. Arsenic and selenium showed up in all three, mercury in two.

Arsenic was found at levels spectrometrically equivalent to one part per million of arsenic trioxide, and mercury equivalent to 0.2 parts per million of mercuric triacetate (less than the legal limit of 0.5 ppm, which is based on the toxicity of the highly toxic organic mercurials).

The findings indicate an enrichment of arsenic and selenium in the fish over levels found in seawater by a factor of 5,000, using the levels of bromine in seawater and the fish as a referent. Arsenic, selenium and bromine are found in seawater in concentrations of 0.003, 0.004 and 65 ppm, respectively.

Elemental selenium is not toxic, but selenides can be highly toxic; both arsenic and arsenides are toxic in low concentrations.

The Food and Drug Administration has established no limit for arsenic in fish, but it has established limits of 2 ppm in pork and 1 ppm in poultry. The Kevex findings indicate no health hazard, says FDA.

FOOD ADDITIVES

Carcinogens in fish

Nitrates and nitrites are used as preservatives and color additives in fish and other foods. But these compounds react with secondary amines occurring naturally in the fish to form N-nitrosamines, potent carcinogens, report five Food and Drug Administration researchers in the March-April JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY.

Although the highest amount of N-nitrosamine found in fish was only 26 parts per billion, Dr. Samuel Epstein of Children's Cancer Research Foundation of Boston—who had earlier warned of possible carcinogenic, mutagenic or teratogenic effects of nitrosamines (SN: 3/28/70, p. 314)—says the FDA-discovered amounts cannot be dismissed as noncarcinogenic.

The FDA researchers warn that until substitutes are found for the preservatives, it would be unwise to remove them from the market because of the risk of food poisoning and botulism in the interim.