MEDICINE

Combining Hospitals

➤ SMALL HOSPITALS should unite with larger ones in neighboring cities under a common board to become more effective, state hospital construction authorities were told.

A study of 237 general hospitals in Michigan, involving nearly 11,000 patients, showed that underuse of hospitals, including early discharge, occurs most often in small hospitals with fewer than 50 beds.

Dr. Beverly C. Payne of the University of Michigan, who reported on the character and effectiveness of Michigan hospital use, with Thomas B. Fitzpatrick, also of the University, said these small hospitals should be built only in isolated areas where some kind of service is necessary.

"These small hospitals are not effective in urban areas," he said, pointing out that even in rural communities, hospitals could be helped by uniting with larger facilities.

Regional, state and local studies patterned after the Michigan study are planned to determine present-day needs for beds.

The Michigan study, still unpublished, was begun in 1958 under pressure of rising Blue Cross subscriber rates. The University conducted it with a grant from the Kellogg Foundation. The study covered population, control, manpower and insurance as well as effectiveness.

The diseases studied included conditions of pregnancy, appendicitis, diabetes, bronchial asthma, pneumonia, fractures and tonsillectomy.

The overall average length of stay was 7.5 days, with longer stays for fractures and surgery. Underuse of the hospital was noted among those forced to pay their own bills.

These state hospital construction authorities met in Washington, D. C., for a two-day conference with Surgeon General Luther L. Terry of the Public Health Service. They are state administrators of the Hill-Burton program, which provides Federal aid on a matching basis for the construction of nonprofit hospitals and related health facilities.

In a discussion from the floor, it was pointed out that too many hospitals admit patients with minor illnesses such as colds.

• Science News Letter, 81:38 January 20, 1962

PUBLIC HEALTH

Foul Odors of Shelters

➤ FOUL ODORS in fallout shelters may affect the health of occupants.

When the outdoor air supply becomes deficient due to failure of air conditioning systems, or when the shelter ventilation system is shut down by the shelter commander, the atmosphere will become heavy with objectionable odors originating from the human body, tobacco smoke, decaying foodstuffs and toilet, James S. Murakoa, project scientist, U.S. Naval Civil Engineering Laboratory, Port Hueneme, Calif., reported in the Navy Civil Engineer, 2:13, 1961.

Such noxious odors in air "may affect the health of occupants by causing a lessening of food and water intake, disturbing sleep, promoting nausea and vomiting, and by creating mental disturbance."

Just how bad the shelter stench will be is influenced, studies show, by the outdoor air temperature and relative humidity at the time of shelter occupancy. The hotter and more humid inside a shelter, the less occupants will be aware of the objectionable odors because of odor-suppressing effects of high temperatures and humidity. This finding is contrary to a general belief that high temperature and relative humidity accentuate odor in air.

If smoking is not allowed inside a shelter, the occupants would benefit greatly from the smokeless atmospheric conditions. However, individuals used to smoking will suffer psychological and physiological stress from the deprivation. During non-smoking tests aboard the nuclear submarine U.S.S. Triton during an 84-day submerged world cruise, deprived smokers showed overt feelings of hostility and irritability.

Air-conditioning is one answer, but most systems require a large amount of water for operation. This obviously would be unsuitable for use in a shelter in which water will be limited at best.

The most desirable method of controlling odor in an enclosed area is to use activated coconut shell charcoal. For typical occupancies, one pound of activated charcoal will purify 100 cubic feet of a shelter area for one year.

• Science News Letter, 81:38 January 20, 1962

HORTICULTURE

Chemical Compounds Protect Citrus Fruit

➤ SCIENTISTS have found two compounds highly effective against post-harvest citrus fruit decay, cause of huge annual losses to the California-Arizona citrus industry.

Drs. J. W. Eckert and M. J. Kolbezen, of the University of California, Riverside, announced they have successfully tested the two compounds on large quantities of lemons and oranges. Both help control decay that costs California and Arizona shippers at least $2,500,000 a year by spoiling fruit on its way to market.

One of the compounds can be placed in cartons in the form of an impregnated paper insert. It is called dibromotetrachloroethane, or DBTCE for short.

The other compound, called 2-aminobutane, can be used during packing either as a fruit wash or in a wax coating.

However, the scientists stated that the two chemical compounds cannot be used commercially until extensive studies have confirmed their complete safety for use on fruit. The materials will also have to be cleared for use by the U. S. Food and Drug Administration.

California and Arizona growers send more than $250,000,000 worth of oranges, lemons and grapefruit to out-of-state markets every year. Even with modern handling, refrigeration and chemical controls, at least one percent of the fruit is lost through decay.

Packers and shippers have been using a chemical called biphenyl to control decay and spoilage. Though this chemical is completely safe, it has disadvantages. It leaves an odor on the fruit, and it does not work against certain types of decay-causing fungi.

In addition, one of the main offenders among the fungi, *Penicillium digitatum*, which formerly was controlled by biphenyl, is now developing resistance to the compound. But the new compound, DBTCE, efficiently controls the most highly resistant strains of this fungus.

• Science News Letter, 81:38 January 20, 1962

SPACE

IGY Warning Network Tracks Satellites

➤ THE IGY (International Geophysical Year) world warning network is now being used for rapid tracking of satellites. This network called SPACEWARN consists of four satellite regional warning centers located at Fort Belvoir, Va., for the Western Hemisphere; Darmstadt, German Federal Republic, for Western Europe; Moscow, USSR, for Eurasia; and Tokyo, Japan, for the Western Pacific.

The SPACEWARN network has provided a channel for quick reporting of tracking observations to computing centers for the purpose of improving future predictions, the National Academy of Sciences reported.

• Science News Letter, 81:38 January 20, 1962

ENTOMOLOGY

Mosquitoes By-Product Of Rice Production

➤ MOSQUITOES are a by-product of rice-growing in California, but there is a mystery as to why some rice fields are practically devoid of mosquitoes while most rice fields are admirable habitats for the insects.

A study by Dr. Richard W. Gerhardt conducted when he was with the California State Department of Public Health's bureau of vector control has not been able to explain why some fields are not a good environment for mosquitoes.

• Science News Letter, 81:38 January 20, 1962