Letters

Side Effects of 5-Thio-D-Glucose

T. H. Maugh II (Research News, 1 Nov., p. 431) reports that 5-thio-D-glucose may be a useful male contraceptive because it interferes with the metabolism of D-glucose, on which spermatogenesis is unusually dependent. Besides spermatogenesis and tumor growth, however, the metabolism of the brain is also heavily dependent on glucose metabolism. In fact, one of the most prominent symptoms of deficient glucose metabolism, usually caused by thiamine deficiency, is Korsakoff's syndrome, characterized by severe memory impairments. If further research is to be done on 5-thio-D-glucose, particular attention should be given to possible side effects of this drug on the brain.

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Safety of Ultrasound Diagnosis

In her interesting and well-informed report on diagnostic ultrasound (Research News, 18 Oct., p. 247), Jean L. Marx describes the rapidly growing use of this modality in medicine and the considerable advantages it has in complementing the use of x-rays. As she states, it is a relatively safe method; there appear to have been no authenticated instances of damage to human tissue under the conditions usually employed.

It is to be hoped that this happy situation will continue. But as usage expands and users strive for ever-better sonic images, there will undoubtedly be a tendency to use higher intensities and longer exposure times. It is thus imperative to follow recommendations (*1*) that threshold determinations be made for the biological effects of ultrasound. "Crash programs" for determining threshold values may be useful, but a long-term sustained effort will also be required. There are many relevant physical and biological variables, and the contributions of numerous investigators with varying kinds of insights will be needed in order to establish a framework of knowledge.

But even if precise threshold values of intensity and irradiation times were known for all significant biological effects, a physician would probably not be able to make use of the information because only a few manufacturers of ultrasonic medical devices provide data on output intensity with their instruments. The American Institute for Ultrasound in Medicine is now taking steps to improve this situation by encouraging its member physicians to request intensity specifications from manufacturers and by offering commendations to manufacturers who provide satisfactory data. At the same time the Bureau of Radiological Health is proceeding toward its goal of developing standards for ultrasonic devices used in medicine. It is increasingly recognized that medical use of ultrasound without knowing the intensity specifications is like administering a drug without knowing its contents.

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References

1. J. M. Reid and M. R. Sikov, Eds., *Interactions of Ultrasound and Biological Tissues* (Government Printing Office, Washington, D.C., 1972); C. Kelsey *et al.*, *Interaction of Ultrasonic Energy with Biological Structures* (Alliance for Engineering in Medicine and Biology, Chevy Chase, Md., 1974).

Breast Cancer Treatments

Informed consent, although traditionally associated with questions of research, is equally applicable to questions of medical therapy within the doctor-patient relationship. The controversy surrounding the National Surgical Adjuvant Breast Project (News and Comment, 18 Oct., p. 246) has centered on two issues. First, the National Cancer Advisory Board was concerned that patients were not receiving optimal medical care. Second, the Center for Law and Social Policy was concerned that women were not being fully informed when asked to participate in the project. Both issues ignore the basic problem: the information provided by practicing physicians to patients about modes of treatment when cancer of the breast is present.

Although life expectancy following radical mastectomy has not improved, and other types of surgical treatment for breast cancer are still being evaluated, surgeons in the United States continue to prefer, recommend, and perform the mutilating radical mastectomy. Patients should be told that breast cancer can be treated in more than one way and informed of the possible consequences of alternative modes of treatment.

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Solar Ponds

Hudec and Sonnenfeld (Reports, 2 Aug., p. 440) discuss natural solar ponds, that is, bodies of water in which a density gradient of salt prevents convection and so allows the bottom temperature to rise considerably above ambient when sunlight is adsorbed at the bottom. They conclude that "density-stratified brines in natural or artificial reservoirs should be reconsidered as solar energy collectors." Several discussions of solar ponds not referenced in their report indicate that what is now needed is not merely reconsideration, but experimental studies of the operation and maintenance of solar ponds of an area of 100 to 1000 square meters.

The first report of a natural density-stratified lake with an anomalous temperature gradient was by von Kalecsinszky (*1*). The physics and technology of solar ponds, together with a limited consideration of economic factors, have been discussed by Tabor (*2*) and others (*3*). Furthermore, a detailed study of the cost and operation of solar ponds