Letters

Youth Suicide

The research on youth suicide reviewed by Constance Holden (Research News, 22 Aug., p. 839) says little about the link between childhood sexual abuse and a desire to die on the part of some young people. Clinicians are discovering that the group identified as at high risk for youthful suicide, children of a depressive mother and an alcoholic father, are most likely to have been sexually abused, usually incestuously.

The reason these children become suicidal in their late teens and early 20's is that they encounter severe difficulties in becoming independent. A child who has never felt secure and adequately cared for does not know how to become a good parent to herself or himself. These young adults become easily overwhelmed by their own feelings. They feel hopeless and blame themselves for their difficulties. They feel intense guilt and shame, sometimes without knowing why, as they often have no conscious recall of their abuses.

Survivors of childhood sexual abuse have most often felt depressed since early childhood. The depression is frequently masked, expressed only through a smiling, overly compliant manner or through acting out self-destructive behaviors such as alcohol and drug abuse, antisocial acts, and abusive sexual relationships. When their feelings cannot be contained any longer, they may resort to more immediately self-destructive behaviors, such as wrist-cutting, to try to get relief from the panic they feel. As the cycle progresses, they may feel occasional strong impulsive desires to be dead in order to stop the cycle. The psychiatric diagnostic category that should be of most interest to researchers of youthful suicide is Post-Traumatic Stress Disorder rather than depression.

If the incidence of childhood sexual abuse were considered as a factor causal to youthful suicide, the whole question of why young people feel the need to abuse and kill themselves might make more sense.

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I was surprised to read Holden's statement that "Freudian psychodynamic theories" have delayed the recognition that "children are as vulnerable to depression and despair as adults." Actually psychoanalysts have been at the forefront of the study of depression in infants, older children, and adolescents, as well as in adults. Indeed Donald J. Cohen, whom Holden quotes, is himself a child and adult analyst. Robert Litman, whose important work she also cites, is a psychoanalyst. An examination of the concepts described in the article reveals that they are based on knowledge psychoanalysts have accumulated and the psychoanalytic theory that continues to develop. A few references will make it clear that analytic contributions have been of overwhelming importance.

In 1946, Rene Spitz (*1*) described anaclitic depression in infants who were deprived of their mothers or adequate substitutes. Erna Furman (*2*) detailed the importance of parent loss in the development of depression in children in 1974. Anna Freud and Burlingham (*3*) observed depressive affects in their study of children deprived of their parents during World War II. Margaret Mahler (*4*) has studied grief in infants and young children even without actual deprivation of parents. Anna Freud, in her 1958 paper on adolescence (*5*), described teenagers' depression and its dynamics. Stuart Asch, in 1971, discovered the importance of attempts to define one's boundaries in teenage girls' wrist-cutting (*6*).

The contributions of psychoanalysts are not minor by any means. They include a recognition and discovery of most of the factors described in Holden's article: psychic conflict, family turmoil, turning of aggression against the self, guilt, ego disturbances, identification with depressed parents, and defenses against depressive affect, to mention only a few.

Psychoanalysts continue their important research on depression and certainly welcome the studies of nonanalysts whom they have influenced and others.

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High-Level Nuclear Waste Disposal

As recounted by Eliot Marshall (News & Comment, 22 Aug., p. 835) and anticipated by Daniel E. Koshland, Jr.'s editorial (27 June, p. 1585), the current national plan for underground disposal of high-level nuclear waste (HLW), mainly spent fuel from civilian power reactors, is in deep trouble. Instead of HLW, the nuclear waste disposal program itself could face deep burial. But this outcome may not be all bad.

The program will either miss its mandated deadline of 1998, or else Congress may have to ride roughshod over the objections of states and communities that do not want an underground storage site within their boundaries. The site selection process is convoluted; it specifically allows for vetoes by affected states and Indian tribes—which Congress can, in principle, override.

Under the circumstances, the best solution may be to let the adversary process of site selection run its course and forget about the deadline, which is artificial anyway. I doubt whether Congress will want to or should force the issue. Any shortcuts, even if legislated, to eliminate this preprogrammed administrative-political gridlock could undermine public confidence in the whole selection procedure.

Until 10 to 20 years ago it was generally assumed that spent fuel would be reprocessed. The inert uranium-238, 95% by weight, would be sold; the fissile uranium-235, plutonium, and other transuranic elements would be incorporated into fuel elements and recycled. Only the highly radioactive fission products, less than 3% by weight, would be immobilized in glass, as is now done in France, and buried. This view changed during the Carter Administration and was replaced by the idea of deep burial of whole fuel assemblies without reprocessing. The low price of uranium was one factor, but the main reason was fear of nuclear proliferation by countries that had acquired power reactors. Most experts now regard this fear as misplaced; there are easier ways to make nuclear bombs than to use the plutonium from spent fuel.

The outcome of this change was the Nuclear Waste Policy Act, often referred to as the "Nuclear WPA" or the "Geologists' Full Employment Act of 1982." For obvious political reasons it mandates not one but two disposal sites—presumably one in the West and one in the East, with each ultimate disposal site requiring investigation of nine candidate sites.

If the site selection process now stalls, then the spent fuel will remain at the reactor sites, air-cooled and protected in "dry casks," after emerging from its 5- to 10-year stay in the existing swimming pools that provide initial cooling. Doing nothing is a reasonable interim solution: it requires little if any transportation of HLW and allows monitoring and retrieval of the spent fuel. The matter of ultimate disposal could be

reconsidered in a decade in light of new technology and changed economic conditions, with the spent fuel cooler and much less radioactive. All options would still be open: (i) reprocessing of HLW, with extraction and recycling of valuable resources; (ii) deep burial of fuel assemblies; or (iii) better long-term disposal methods, including even international arrangements.

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Radiation Effects Research in Japan

The following three statements in Gina Kolata's 11 July News & Comment article about Chernobyl follow-up (p. 147) merit amplification or correction.

1) "The National Academy of Sciences . . . spends $10 million a year to follow 110,000 Japanese survivors. . . ." The $10 million represents about half the cost of the studies, the other half being provided by the Japanese government.

2) "The NRC studies, which are funded by [the Department of Energy] DOE, include annual health exams on 20,000 of these Japanese. . . ." As mentioned above, these studies are funded equally by DOE and the Japanese government acting through the Ministry of Health and Welfare. The examinations are conducted biennially, not annually.

3) "The studies . . . were, for many years, purely a U.S. undertaking. In the mid-1970's the Japanese began helping to fund the studies and Japanese investigators began participating." The early studies were initiated by the Atomic Bomb Casualty Commission (ABCC), a field agency of the National Academy of Sciences, with funds provided by the U.S. government. However, almost from the inception of the studies the Japanese government participated actively in the research. Two branch laboratories of the Japanese National Institute of Health were attached to ABCC in Hiroshima and Nagasaki, and the scientific and technical staff of these branches was completely integrated into the ABCC research. Since 1975, when the ABCC was reorganized into the Radiation Effects Research Foundation, equally funded by the United States and Japan, the staff from both countries continued the investigations begun about 40 years ago.

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Mobile Missiles

Not mentioned in R. Jeffrey Smith's three articles on mobile missiles (News & Comment, 6 June, p. 1186; 27 June, p. 1590; 22 Aug., p. 831) is the best-kept nonsecret of this Administration—the merits of housing a force of single-warhead Midgetman intercontinental ballistic missiles (ICBM's) in individual soft silos with 1-mile spacing in the existing Minuteman fields.

Very simply, a fleet of silo-based Midgetmen could be destroyed only by one nuclear explosion per silo within lethal range (closer than 200 meters). Since more than one attacking warhead must be launched to have one explode within range of a silo, the attacker disarms himself relatively in the attempt to destroy the silo-based Midgetman. Even if all the attacker's warheads were nominally capable of hard-target kill, it is generally assumed that at least two would have to be launched in order reliably to destroy a single silo.

Thus if the United States were committed to having about as many warheads as (for instance) the Soviet Union, and if half of these warheads were deployed in Midgetman silos, they would be essentially self-protecting.

The high prices usually quoted for a Midgetman force (typically $44 billion for 500 mobile Midgetmen) stem from that mobility and the technical uncertainties associated with hardened mobile launchers, together with the large requirements for staff for a mobile missile. Contractor studies for the Fletcher Committee in July 1983 indicated that a force of 1000 silo-based Midgetmen could be developed, procured, and operated for 10 years for some $11 billion—$11 million per deployed warhead. This includes, incidentally, making the Midgetman a fast-burn booster to evade boost-phase intercept of a potential defensive system.

The Midgetman should be developed and the first 450 deployed to replace the Minuteman II in current silos. At the same time, two contractors should be funded to demonstrate rapid silo-plunging capability, so that the United States could match any great spurt in Soviet warhead numbers by the deployment of many individual silos.

Since the Minuteman silos are on some 6-mile centers, the six Minuteman fields that hold 1,000 Minutemen could accommodate some 30,000 Midgetman silos. The command and control and communications for the Midgetman already exist for the Minuteman.

Why do the Air Force and Defense Department speak of $90 million per warhead for mobile Midgetmen and not $11 million per warhead for silo-based Midgetmen? Why does the Defense Science Board (DSB) Task Force on Small ICBM Modernization not even include (*1*) ordinary silo basing among the candidates? First, there is no technological challenge for a silo-based old-technology missile—only benefits for national security. Those who favor the deployment of the MX missile tend not to want early competition for it and don't mind if the only Midgetman proposals carry a high price tag. And some are more interested in perpetuating the myth of ICBM vulnerability as the touchstone for spending on strategic offense or defense than doing something about it.

Most, however, want perfect solutions—a means for deploying just a few more warheads that will be invulnerable. Whether or not we will ever be able to target for destruction mobile warheads in the Soviet Union, our more open society and more restricted operating area will make us uneasy, in my opinion, if we ever do rely on mobility for the security of land-based missiles.

As I testified to the President's Commission on Strategic Forces (*2*) and to the DSB Task Force (*3*), the Midgetman should be committed for rapid deployment in silos, and supplementary mobile basing should be considered only when a credible argument can be sustained that the mobile system will be cheaper than the silo-based system that will have been deployed by that time.

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2. R. L. Garwin, "Presentation to the Commission on Strategic Forces" (unpublished transparencies), 27 January 1983.
3. ———, personal communication to J. M. Deutch, Chairman, Defense Science Board Task Force on Small Intercontinental Ballistic Missile Modernization, providing outline of R. L. Garwin's presentation, 17 November 1985.

Erratum: In the article "Detection of water vapor in Halley's comet" by M. J. Mumma *et al.* (20 June, p. 1523), conflicting numbers were given for the production rate of water on 22 December UT (observing period). The correct production rate is $\sim 6 \times 10^{28}$ molecules per second on that date. The discussion of rotational populations of ortho-H_2O (p. 1527) should have stated that collisional excitation of 1_{10} (not 1_{01}) seems unlikely. The correct citation for reference 22 is *Astrophys. J.* **276**, 782 (1984).

Erratum: In the briefing listing MacArthur Foundation winners (News & Comment, 1 Aug., p. 517), Caroline W. Bynum's affiliation should have been the University of Washington, not Yale University.