gency Fund financed by a small tax on all "exempt" payrolls. ("Exempt" employees are those who are exempt from the provisions of the Wages and Hours Act; that is, they have the privilege of working overtime without being paid for it.) The fund would be utilized to provide emergency employment during times of economic stress. It would allow scientists and engineers to be employed in colleges and universities, government, and nonprofit labs where they could engage in meaningful public service activities and at the same time have an opportunity to maintain or even upgrade their skills. They would then have a launching platform from which to return to regular employment in their professions.

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The employment statistics for U.S. science and engineering doctorates just released by the National Academy of Sciences–National Research Council (*1*) show an unemployment rate of 1.2 percent or 2,600 Ph.D.'s out of 229,400 who were unemployed and seeking employment in 1973. Chemists, at 2.1 percent, had the highest unemployment rate of any field.

Unfortunately, there are no good statistics available on the number of scientists and engineers who are "underemployed" at the doctorate or any other degree level. Some part-time employment is by choice. Surely some postdoctoral appointments are preferentially sought by new Ph.D.'s. Some who are employed outside their field are still seeking science jobs, but others have found new opportunities and do not wish to switch back. This is not to belittle the problem of the underemployed, but to point out that only as we watch changing trends in the measureable figure of "unemployed and seeking" can we see whether supply-demand imbalances are changing and in which direction. Better data on both unemployment and underemployment are needed on a continuing basis—together with assessments and projections of job opportunities for specialized manpower. I agree that we must devise better methods for utilizing scientists and engineers in periods of slackening demand. We must also continue to educate appropriate numbers of young people for these fields if long-term national goals are to be met. How many, trained to what level, is the question we cannot answer adequately without better assessment of manpower demand on a national scale.

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Soviet Dissidents

David Lester (Letters, 26 Apr., p. 411) questions the concern of American psychiatrists about the "alleged" misuse of psychiatry in the U.S.S.R. on the grounds that the allegations have been made without supporting data. However, the Bukovsky documents (*1*), which have been widely disseminated in Western Europe and the United States and which consist of copies in translation of the reports of Soviet psychiatric commissions on the cases of five political dissidents, indicate (*2*) that the Soviets are indeed using the method of enforced psychiatric hospitalization to suppress political protest. Lester also cites the Goldwater poll in *Fact* magazine in 1964 as proof of his contention that there is no substantial difference between American and Soviet psychiatry in this regard. However, the psychiatrists who took part in the poll were roundly criticized by the American Psychiatric Association for their actions, no one was deprived of his liberty as a result of them, and the editor of the magazine was sued by Senator Goldwater and had to pay him damages.

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1. See U.S. Senate, Committee on the Judiciary, subcommittee to investigate the administration of the Internal Security Act and other internal security laws, *Abuse of Psychiatry for Political Repression in the Soviet Union* (Government Printing Office, Washington, D.C., 1972), appendices 2–8, pp. 28–177.
2. P. Chodoff, *Psychiatr. Opin.* **11**, 5 (1974).

Trace Elements in Sludge

Scientists studying the effect of sludge on plant growth have become concerned about the uptake of potentially hazardous amounts of trace elements in sludge applied to agricultural land. It is well known that different species of plants have different tolerances to toxic metals. In many cases, an intolerance to metals is manifested by absorption into the root cells (*1*). Furthermore, the amount absorbed depends not only upon the plant species and variety, but also upon the plant part. Data (*2–4*) on metal uptake by plants grown on sludge-treated soil show that corn, soybean, and tomato fruits do not concentrate the elements of most concern in sludge —cadmium and zinc—to the same extent that the foliage does.

Concentrations of trace elements in corn (*2*), soybeans (*3*), and tomatoes (*4*) grown in sludge-treated soil; ppm, parts per million.

Plant	Cd (ppm)		Zn (ppm)	
	Fruit	Leaves	Fruit	Leaves
Corn	1.03	11.6	152.3	212
Soybeans	2.40	10.2	80.0	249
Tomatoes	0.50	6.1	29.0	153

When the phytotoxicity of sludge-treated soil is considered, the amount of trace elements available to the crop is the important parameter. Because chemical extraction procedures and plant responses vary widely, it is difficult to interpret the availability of the trace elements. Therefore, to have a standard for comparison of results, researchers should present total concentrations of trace elements in sludge-treated soil, which is seldom done (*5*), as well as concentrations in the plant.

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4. T. Konsler, unpublished data.
5. A. L. Page, *Fate and Effects of Trace Elements in Sewage Sludge When Applied to Agricultural Lands, a Literature Review Study* (Report 670/2-74-005, Environmental Protection Agency, Cincinnati, Ohio, 1974).