Letters

Management Techniques

The article "Science and management techniques" by Norman G. Anderson (22 Feb., p. 726) provides an appropriate model to describe the situation that exists in a university. There remains one question to complete the model. How does a performer in a symphony orchestra get word to the conductor that the percussion section is reading the score from the "1812 Overture," the string section, "The Pastoral Symphony," and the brass section "Stars and Stripes Forever"?

T. S. STORVICK
Department of Chemical Engineering, University of Missouri, Columbia 65201

Hurray for Professor Anderson. One can always recognize the managerial point of view. Unfortunately his preoccupation with science has led him to take a production-oriented view of the problems of the symphony orchestra. A more market-oriented view enables one to cut through quickly to the essence of the problem.

Symphony orchestras are nearly all bankrupt and hence a drain on the public purse. The reason, as Anderson almost sees, is that they are labor intensive, and thus face the rising costs associated with the employ of wage earners. At the same time the popularity of symphony programs, and hence revenues, are decreasing.

The answer to the cost-revenue squeeze is simple. A quick look at an orchestra's table of organization reveals the labor problem—too many violins. There are roughly two violins for every other instrument in the orchestra. To resolve the problem, all that is necessary is to drop the ancient habit of having two teams of violins play at once. A second team player need show up only when the first violin player is sick. With such a move the labor cost could be cut 30 percent.

Examination of the revenue question requires market research—also necessary for the market-oriented view. Fortunately, other studies have been conducted. The typical listener would prefer to hear less than 50 works—those the poets call "war horses." If orchestras stopped playing the deservedly obscure stuff they do and concentrated on the works their audience wanted to hear, ticket sales would move up. Moreover, there would be important side benefits. Orchestra libraries could be cut by two-thirds or more (perhaps providing space for a bar); and, much more important, rehearsals could be cut. Orchestras spend 2 hours in rehearsal for every hour in concert. If musicians always played the same thing they wouldn't have to practice so much. The result would be more concerts or fewer expensive labor hours (musicians could teach to maintain their income). By such a move the revenue-cost relationship could be improved 20 to 30 percent.

These two improvements would take orchestras off the dole with one important result—more money left for professors!

JOSEPH L. BOWER
Graduate School of Business Administration, Harvard University, Cambridge, Massachusetts 02163

At last Taylor's "one best way" (*1*) has come to the symphony orchestra. Bows, blows, clops, grunts, and conductorial gestures and paroxysms will soon be specified by therbligs for each work, and all those uneconomical variations in performance will at last be eradicated. Just think: interchangeable musicians and conductors.

But where is consideration for the energy crisis? Could not all the forceful exhalations be gathered together in a tube and the flailing bow-arms linked up to some contraption to perform residual work, say, perhaps to run a small electric generator?

As for violin and piccolo, it's back to the drawing boards. Surely they could be redesigned so that "paramusical" personnel, trainable in a few weeks, could be substituted for experienced musicians, who keep running orchestra budgets into the red.

Meanwhile, scientists rejoice; if Anderson's words are heeded, our modest and clever young management engineer will shortly be with you—even before 1984!

MAURICE O. BURKE
750 Green Bay Road, Winnetka, Illinois 60093

References

1. F. W. Taylor, *Principles of Scientific Management* (Norton, New York, 1967).

Safety of Cosmetics

In his letter on injuries related to cosmetics (29 Mar., p. 1246) John L. Donaldson points out that data from the National Electronic Injury Surveillance System (NEISS) are limited to injuries treated in hospital emergency rooms.

In arriving at my estimates, I utilized the NEISS estimate (*1*) that 62 percent of product-related injuries are not treated in emergency rooms. Thus, my figures are not limited to injuries treated in emergency rooms.

MURRAY BERDICK
Research Laboratories, Chesebrough-Pond's Incorporated, Trumbull, Connecticut 06611

References

1. *NEISS (Natl. Electron. Inj. Surveil. Syst.) News* 1, No. 5 (July 1973).

Radioactive Waste Disposal

In discussions about the problem of nuclear waste disposal, critics are fond of saying that these wastes will be a burden on future generations for thousands of years. However, it should be pointed out that, according to the present plan, these wastes are kept in retrievable form and will become an asset rather than a burden after 500 years. By that time, the gamma ray emissions from fission products will have decayed away, and the principal radioactive hazard will be the easily shielded alpha particle emissions from plutonium and other actinides. The radioactivity of this material will be only 20 times as

intense as that from the naturally occurring mineral pitchblende, so it will be easy to handle. The plutonium and other actinides can then be easily separated out and used as a reactor fuel.

The critics say that it is unfair for us to burden future generations with our waste. But isn't it much more unfair for us to use up in 100 years or so the fossil fuels that have accumulated over hundreds of millions of years? Moreover, in exchange for watching a few buildings for 500 years, future generations will receive from us the technology for powering their civilization. That would seem to be a very fair exchange.

BERNARD L. COHEN
Department of Physics,
University of Pittsburgh,
Pittsburgh, Pennsylvania 15260

Inter-American Relations

In his article "The future of the Americas" (7 Sept. 1973, p. 916) Sol M. Linowitz looks at the problems of the Americas. He expects a better life for all Americans through international cooperation and investment on the part of the developed nations. For the last 15 years I have been considering the problems of a small region of "underdeveloped" rural Latin America. I come to conclusions which are in complete opposition to those of Linowitz. Development aid given by the United States has done little to bring a better life to the Latin American urban worker or unemployed person or to the peasant. It has simply made possible the survival of considerably more people at the same mean level of existence. Moreover, antagonisms toward the United States have been constantly increasing.

During the mid-1950's, crop failures and livestock deaths in the Titicaca Altiplano [highland] in Peru brought the people of this region close to famine. The United States sent food, and catastrophe was averted. No one that I know has acknowledged that U.S. aid saved many lives. Meanwhile, the continuing high birth rate and disbursement of food donated by the United States ensure that the next drought cycle will require even more prodigious efforts on the part of the United States to avoid catastrophe in the Titicaca Altiplano.

The United States should follow a laissez-faire policy with regard to development in Latin America. The U.S. tax dollar should not be frittered away on development schemes, many of which appear to border on fraud. Technical and scientific advice should be available to those countries who ask for it and who are prepared to make reasonable payment for it. Cooperative research efforts involving scientists from various countries should be facilitated. Latin America should stand on its own feet. Latin Americans should work out their own future.

CARL WIDMER
Lake Titicaca Ecological Studies,
Casilla 23, Puno, Peru

Widmer's experience in his "small region of 'underdeveloped' rural Latin America" has led him to some very broad generalizations. I can only say that his own recipe for a "laissez-faire policy" on the part of the United States has been tried during the past several years and found to be dismally wanting, as Secretary of State Kissinger's new approach clearly indicates.

SOL M. LINOWITZ
One Farragut Square South,
Washington, D.C. 20006

Schistosomiasis Research Projects

The Edna McConnell Clark Foundation announces a program of support for research projects on schistosomiasis. Research projects will be supported in three major areas: (i) investigating immunity and immunopathology in animals and man; (ii) increasing the effectiveness of control measures that prevent development of clinical disease; and (iii) determining the medical, economic, and social impact of schistosomiasis.

Proposals from indigenous scientists working in lesser developed countries are encouraged, but the program is open to all applicants. The deadline for receiving materials is 15 July 1974 for a September 1974 decision. Grants will not generally be made for scholarships, fellowships, endowments, or for capital expenses. Interested parties who desire further program information, the proposal format, and proposal requirements should address requests to me.

DONALD B. HOFFMAN, JR.
Edna McConnell Clark Foundation,
Suite 904, 250 Park Avenue,
New York 10017