Letters

Jewish Scientists

Why stop at protesting the Soviet Union's not letting Jewish scientists out (News and Comment, 1 June, p. 934)? For every Jewish scientist who wants to leave there are 1000 non-scientist Jews. Why stop at Jews? Why not let the other 235 million thralls flee (I am subtracting 15 million government bureaucrats and secret police)? Be fair to all.

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The report on the opposition of American scientists to exchanges with Soviet scientists because of persecution of Soviet Jewry was of interest. However, Jews are not the only people suffering religious persecution in the Soviet Union and other communist countries. The Reverend Richard Wurmbrand, a Christian minister who spent 14 years in communist prisons in Rumania and currently resides in the United States, has accumulated considerable data on the fate of Christians who are persecuted by the communist regimes in the Soviet Union and elsewhere. Those of us who are Christians should have concern and compassion for the fate of the Jewish people suffering persecution in the Soviet Union. However, it is our responsibility to also protest similar persecution of our fellow Christians. Unfortunately, the plight of these people has not received very widespread publicity. Hopefully, future documents of protest will be directed against persecution of all religious groups.

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The Brazilian Momentum

Frank Tiller's comments on Brazilian higher education (Letters, 20 Apr., p. 255) reflect a better knowledge of the issues than do those of Hulda Grobman (Letters, 6 Oct. 1972, p. 9). Many universities in Brazil are facing considerable changes in their administrative methods and staff personnel. Their goal is the establishment of a solid structure for high-level teaching and research in the traditional areas of science. In Brazil, as elsewhere, universities located in wealthy cities and states are more likely to meet acceptable standards earlier than those in less developed areas, but the latter are also progressing rapidly. There are two points of considerable importance in this evolvement. First, the Brazilian federal government has selected qualified centers to execute postgraduate programs in a variety of fields and subspecialities (only the degrees issued by these centers are officially recognized); second, there has been a significant increase in financial aid for research in general, aimed at the support of specific projects approved by technical commissions constituted mainly of scientists and economists. The most important agency supporting science is the Brazilian National Research Council. Recently several projects have been developed by Brazilian universities jointly with universities in the United States; some of these projects have been supported by the National Science Foundation and the National Academy of Sciences. The financial aid is given mainly to productive groups of researchers. Most of them have worked for two or more years in North American or European universities.

During the past 10 years, several Brazilian institutions have recruited competent scientists whose prestige is attracting increasing numbers of specialists from other countries to engage in short- and long-term research programs. In this period of transition, from what Grobman calls "the antiquated pattern of Brazil's older universities" to the new era of modern universities with "good leadership, full-time professors, and efficient administrative practices" (Tiller, 20 Apr.), a considerable heterogeneity still exists. Universities are ranked according to the scientific productivity and good teaching of their departments and institutes. A nationwide competition for qualified personnel is already manifest, and it is expected that, as the increasing numbers of departments and institutes meet the best standards for quality of research and teaching, the leading universities will have a more homogenous structure.

The University of Brasilia, with its recently organized departments of physics, mathematics, social sciences, economics, and cellular biology, is a good example of how things can be done fast, as Tiller mentions. Other Brazilian institutions, such as IMPA (Institute for Pure and Applied Mathematics) in Rio de Janeiro, the Institute of Biophysics and COPPE (Coordination of the Postgraduate Programs in Engineering), both at the Federal University of Rio de Janeiro, the Paulista School of Medicine in São Paulo, and the Institute of Chemistry at the University of São Paulo, can hardly be labeled as antiquated schools needing urgent reform. These institutions are being replicated throughout Brazil's vast territory. The Brazilian momentum can be interpreted with confidence as an indication of a very productive future in science and higher education.

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Data on Rat Colonies

I urge all curators of rat colonies to send us a basic description of the resting heart rates and body weights of animals in their colonies. The results of recent studies of colonies of animals specially bred to become hypertensive have suggested that increased heart rate is an important factor in the genesis of the observed hypertension. The animals with spontaneous hypertension have resting heart rates which are significantly greater than the resting heart rates seen in other colonies of rats that do not become hypertensive. The observations are complicated, however, by the fact that normotensive control animals have body weights that are greater than the spontaneously hypertensive animals, and the results must be interpreted according to the dictum that heart rate increases with decreasing body size. There is little data avail-

able that describes resting heart rates in rats as a function of age and mature body size.

This is a request, then, to all scientists who maintain rat colonies to send to us information describing (i) the genetic background of their colony, (ii) resting heart rate, body weight, and age of animal when the data were collected, for as many different ages as possible, (iii) an estimate of the normal systolic blood pressure in the mature animal, and (iv) comments on any extenuating circumstances that might prevent the data from being typical, such as environmental stress, unusual temperatures, or malnutrition. This information would be greatly appreciated and will be used to maximum advantage. Readers interested in helping who do not have active colonies can pass this request along to those who are able to respond. All responders will be sent copies of any final compilations.

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A New Metric System

I am pleased to note the strong effort *Science* is making to convert measurements in its pages completely to the metric system. Other scientific and engineering publications should do likewise. The sooner the whole country converts the better. Scientists should be able to change easily, and engineers can understand the arguments, despite their present adherence to the English system. The problem is to persuade the great mass of nontechnical people that they should change to the metric system. The difficulty with nontechnical people is more semantic than technical. They will be afraid of, and certainly resistant to, strange technical-sounding names which they will be asked to use instead of the familiar inch, foot, pound, and so forth.

I suggest, therefore, that a different approach be used, and that the new system be advertised as an "improvement" over the old. We should present a "new inch" (2.5 centimeters); a "new foot" (30 centimeters); a "new yard" (1 meter); a "new mile" (1500 meters)—already called the Olympic mile by sportswriters; a "new ounce" (weight) (30 grams); a "new pound" (0.5 kilogram); a "new ton" (1 megagram); a "new ounce" (volume) (30 milliliters); a "new pint" (0.5 liter); a "new quart" (1 liter), and so forth.

The nontechnical public need not be pressed with the metric equivalents. It would be sufficient to describe the new system as follows: the "new inch" and "new foot" are each about 2 percent larger than the corresponding old units. The "new yard" is about 9 percent larger than the old. The "new mile" is about 7 percent smaller than the old. The "new ounce" (weight) is about 6 percent larger than the old (avoirdupois). The "new pound" is about 10 percent larger than the old (avoirdupois). The "new ton" is about 2 percent smaller than the old "long ton." The "new ounce" (volume) is about 1 percent larger than the old. The "new pint," the "new quart," and the "new gallon" are each 6 percent larger than the old (United States, liquid). I suggest ignoring English units that are not widely used and eliminating differences between "liquid" and "dry," and "avoirdupois," since these distinctions are not widely appreciated by the nontechnical public anyway. The conversion factors between the new units become

12 new inches = 1 new foot
40 new inches = 3⅓ new feet = 1 new yard
5000 new feet = 1500 new yards = 1 new mile
16⅔ new ounces (weight) = 1 new pound
2000 new pounds = 1 new ton
16⅔ new ounces (volume) = 1 new pint
2 new pints = 1 new quart
4 new quarts = 1 new gallon

Besides the look of familiarity, the new units can have another selling point in that their sizes are for the most part a little larger than the old sizes. The housewife purchasing cloth by the yard, potatoes by the pound, or milk by the quart will be glad to be getting more than with the old units. Merchants can advertise this benefit, while any added price will be largely hidden among the regular rises due to inflation. Once the technical conversion has been made, the new old names can be phased out in another generation or two.

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