saw was a lot of green PhD's coming into a difficult labor market that their graduate schools and professors had not prepared them for. There is an employment crisis.

I left the meeting worried that a good many of the university departments that generate graduate students will continue to do so with the same avidity as in former days. The reason for my belief is that research in physics (or medieval history, for that matter) is a very fascinating game. It thus tends to get increasingly isolated from, and irrelevant to, its immediate environment as its scholars become more and more enamored of their highly specialized disciplines. The usual thing that happens is that the research professors want to do more and more studies with as many graduate students as they can get, and, without meaning to, they "use" graduate students, all in the name of Physics or Research.

I fear that even as they begin to understand the supply-and-demand situation, their overriding research interests will prevent their taking the initiative in tempering their search for new graduate students. It will be up to the students themselves to become aware of the labor market and of the psychology of most researchers in order to be able to make informed decisions about what fields to enter.

By this letter I would like to second the motion made by Wolfgang Zernik (whose letter in the February PHYSICS TODAY completely echoed my sentiments) that APS should expand its scope of concern to include physicists as well as physics.

Finally I would like to say that not all research faculty members are as described above, but I believe a significant number of them are, unbeknownst even to themselves.

HERBERT N. HERSH
Zenith Radio Corp

A COMMENT FROM AIP: The Manpower Studies department at The American Institute of Physics is completing a study to determine the relationship between academic training of physicists and the capabilities required of them in their jobs in research laboratories. Respondents to this study are supervisory staff members whose responsibility it is to staff a research laboratory. Preliminary results of this study show that the production of narrow specialists who are looking for jobs that will enable them to continue their thesis problems is a major concern to industrial employers.

Even summer programs offered by many industrial and government employers are not as effective as they might be. Theoretically they provide a three-month period of mutual inspection between the graduate student and the prospective employer, but very few job offers result from these programs.

Another frequent criticism expressed by employers is that university faculties are very slow in responding to changes in the demand for technical personnel.

This study, known as the "Work Complex Study," to be published later this spring, will substantiate Hersh's feelings.

SUSANNE D. ELLIS
American Institute of Physics

Romania observed

In this letter we report some initial observations of the country of Romania by two scientists who have just discovered it. One of us (JBG), a guest of the Romanian Institute of Physics under a National Academy of Sciences exchange program, toured laboratories in Bucharest, Cluj and Iasi in June–July 1968. The other (EC) visited for ten days to attend the International Conference on Magnetic Oxides in Bucharest, 10–14 Sept. 1968.

Romanian science is a recent phenomenon. 20 years ago the country had not one faculty of physics. Today there are five, training 1500 students. By far the largest effort is in Bucharest, where the Academy of Science is quartered. (Of the 20 million Romanians, about two thirds live in farm communities. Bucharest has a population of about 1.5 million. Each of the next largest cities, Brasov and Cluj, contains more than 200 000 people, and Iasi, the capital of Moldavia, about 130 000 people.) The Institute of Physics of the Academy, only ten years old, now has a staff of about 120 scientists.

Foreign support. As one might expect, Romanian science leans heavily on foreign supports. Most technical equipment must be purchased abroad, and most researchers either have been trained abroad or yearn to be. Shortages of foreign exchange present a particularly severe constraint on the

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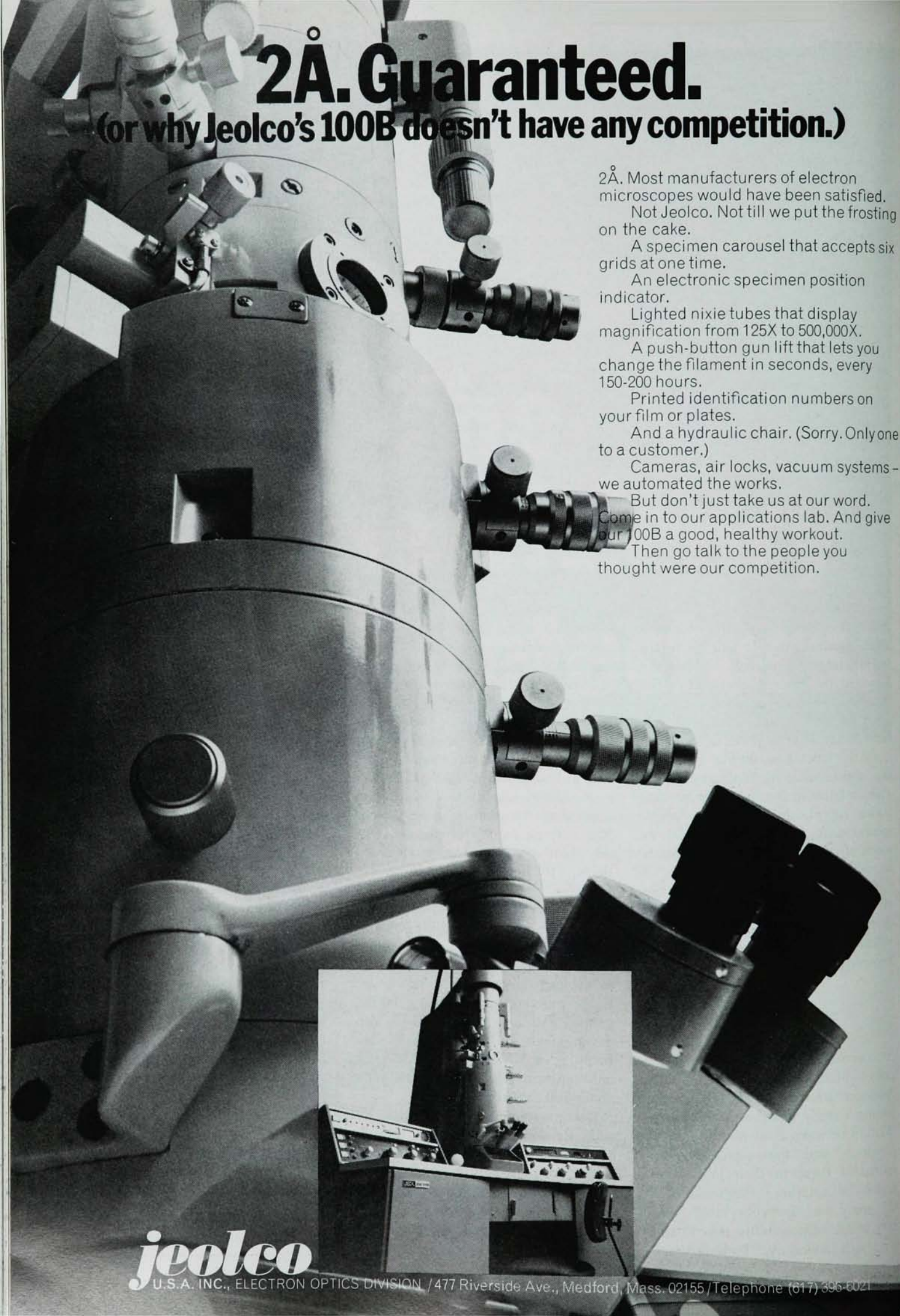

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development of science. Consequently many laboratories are not yet well equipped by western standards, and many fields of research cannot be actively pursued. Nevertheless, work of international interest is being carried on by a few men in fields of research that require only modest investments in equipment. In solid-state physics, for example, the groups associated with Radu Grigorivici and Mihai Rosenberg in Bucharest and I. Ursu in Cluj (Ursu himself has recently moved to Bucharest) represent research in the fields of amorphous semiconductors, magnetism and magnetic resonance. Unfortunately the solid-state physics effort in Romania is hampered by a need for supportive solid-state chemistry. In this respect Romanian scientists are not unique, and their own awareness of this shortcoming was emphasized by their desire to send a few carefully chosen men to the West for training in the preparative, analytical and characterization techniques of solid-state chemistry. The problem here is to find an adequate mechanism for getting invitations from Western laboratories to the most appropriate young people, since the opportunity to work abroad is highly coveted, and general invitations through official channels may experience too large an absorption cross section at higher echelons to reach the most desirable worker at the bench.

Direct personal contacts will be helpful to Romanian science, and these in turn require initiative by the Western scientific community, which has the opportunity to travel. The Romanians, who have maintained an independent, Latin spirit despite a history of foreign domination, offer warm hospitality and look hopefully to the day when Western scientists will choose to include Romania on their travel itinerary to and from other scientific centers in eastern Europe. Language is not a problem even if one does not speak Romanian (they spell it with an "o"). Many speak French, some German, and some, especially of the scientists, speak English.

To increase scientific exchange, the US and Romanian governments inaugurated this past summer a broad new program that encourages mutual grants of fellowships, exchange of scientific information, visits of scholars to lecture and to perform research, and attendance at scientific conferences. The Office of the Foreign Secretary (USSR/EE) of the US National Academy of Sciences, which administers the American program, invites applicants for the 1969–70 academic year. Any American scientist with a PhD or equivalent, or who will have such a degree before the exchange visit, is eligible. Length of visits can be adjusted from one month to one year. Financial arrangements are such as to cover travel costs for short visits and travel plus salary for longer trips. The National Academy has a small sum budgeted for such travel, but so far there have been too few applicants. Unless Americans show more interest in the program, it will not be renewed. This in turn will adversely affect the Romanian participation, since it is an "exchange" program.

We suggest that such a visit will be useful only if the prospective visitor has first determined that there is in fact some interest in the field of his specialization. Some specific Romanian scientist should be contacted directly and should assume responsibility for the visit. The *Directory of Selected Research Institutes in Eastern Europe,* (Columbia University Press, 1967) which lists institutes, directors, and publications will get one started as will the *European Research Index* (Vallancey Research Limited, PO Box 77, Guernsey, via London). A lecture tour, with lectures tailored to the level of the audience, will be particularly welcome. At the better institutes one can lecture on the latest research without compromise. In smaller centers more didactic lectures will be more useful.

Apart from the rewards of increased scientific contacts, traveling through Romania is fun. Unlike in Russia, arranging travel is easy. One simply buys a train ticket and goes. Costs are reasonable; water is potable; food is safely eaten anywhere and tasty. Accommodations are often not effete, but satisfactory. Several historical monasteries are open to tourists, and it is possible to find lodging in a few. There are new hotels in Bucharest, Cluj, the skiing resorts of the Carpathians, on the Black Sea coast, where one finds an exciting variety of beaches, and wherever one is likely to be. An approach to Romania from Vienna by way of a cruise down the Danube can be highly recommended,

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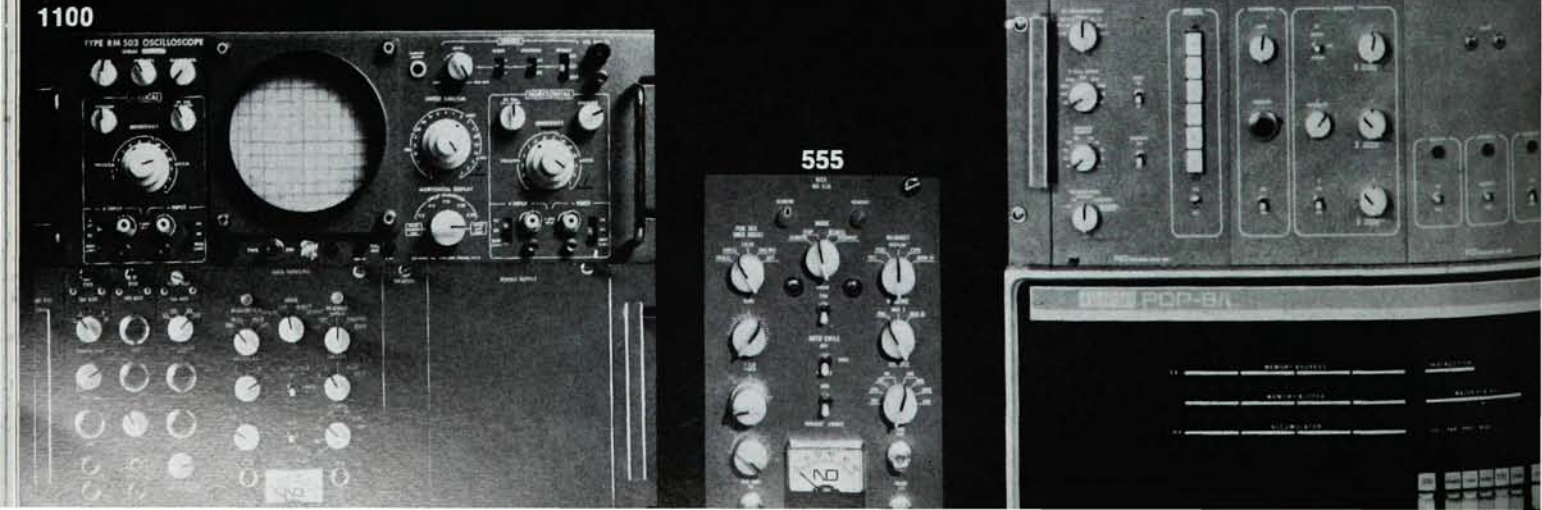

and in the right season bird watching in the Danube Delta is, we understand, a unique experience.

Furthermore, there are important humanistic benefits from a lecture or research tour in Romania, or even in a mere stopover of a few days on a conference orbit. Our government has rightly emphasized the importance of "building bridges" between the two great power blocks. World peace may well depend upon the mutual understanding and affection such visits engender. The Romanian people desire increased ties with the free world. Insofar as the realities of geopolitics allow, the Romanian government pursues a course of economic and political independence. In a small way, perhaps our visits can accelerate political liberalization. It is a worthy effort for an American scientist.

EARL CALLEN
American University
JOHN B. GOODENOUGH
MIT Lincoln Laboratory

The day or the second?

In the September issue of PHYSICS TODAY your man Phimsy mentioned Edward A. Rossit's proposal for a decimal system of time. However, I disagree with Rossit's opinion that the day is "the most rational of present units." I hold that it is the second.

As anyone who has studied the various systems of units that have been proposed over the years knows, the second is universally chosen as the basic unit of time (for example, meter-kilogram-second, centimeter-gram-second, centimeter-gram-seventh-second, meter-gram-second, quadrant-eleventh-gram-second, millimeter-milligram-second, meter-tonne-second, meter-kilogram-force-second, foot-pound-mass-second and foot-pound-force-second).

Thus, I would suggest the present value of the second be retained. I would also suggest that the units of hours and minutes be deprecated and in their place be adopted the kilosecond as a medium value of time between a day and a second. Using this system the time in one day would vary from 1 sec, one second after midnight, to 86.4 ksec, the next midnight. Other times in kiloseconds would be as follows:

1:00 a.m.	3.6
2:00 a.m.	7.2
3:00 a.m.	10.8
6:00 a.m.	21.6
9:00 a.m.	32.4
12:00 noon	43.2
3:00 p.m.	54.0
6:00 p.m.	64.8

This system of telling time has the advantage that it is immediately obvious and logical to anyone familiar with the metric system.

On the practical side, watch and clock movements with digital readouts could be manufactured economically. And if television programs were standardized at 3.0 ksec in length and networks could cram an additional program into prime time.

J. A. PERRY JR
Rochester, N. Y.

A COMMENT FROM BLITZSTEIN (whose letter on the subject Phimsy printed in February): One must consider the confusion that will occur when the change is made. The problems that lasted for centuries when the Gregorian calendar was introduced are a case in point. A minor change in astronomical time keeping (counting a day from midnight to midnight instead of noon to noon) still causes confusion in reckoning time intervals in day and decimals thereof for events that occurred before 1925.

The increased use of electronic computers for processing various kinds of data has reduced the need for expressing time or any other variable in the most useful or practical units. Conversions take but microseconds of computer time.

In conclusion, it is my opinion that reform of the present system of time units in common usage is not urgent in the sense that difficulties are being experienced with it.

WILLIAM BLITZSTEIN
University of Pennsylvania □

A CORRECTION: The editors apologize for two serious errors that they introduced and did not check with the reviewer in Frank Oppenheimer's review of *Lawrence and Oppenheimer* (PHYSICS TODAY, February, page 77). In the picture caption we identified Robert Oppenheimer as Frank Oppenheimer. In the text we identified Charles Lauritsen (father) as Thomas Lauritsen (son).