# Letters

## Exchange of Postdoctoral Students with Japan

The U.S.–Japan Cooperative Science Program appears likely to assume new significance with the support offered by the National Science Foundation to Americans who wish to undertake postdoctoral studies in Japan under the auspices of this joint venture. Some impressions formed and information gained during such a two-month postdoctoral visit to Y. Katsuki's laboratory (Department of Physiology, Tokyo Medical and Dental University) might be of interest.

Language, first of all, poses no very great problem, since most Japanese engaged in basic research, including the graduate students, speak English quite well. There is ample opportunity to familiarize oneself with Japanese viewpoints and to consider current research projects. Many exciting developments are taking place in Katsuki's laboratory alone: Y. Tanaka and K. Yanagisawa are gaining new insights into the cholinergic depression of the endocochlear potential, employing electrophoretic application of acetylcholine to the immediate region of the hair cells; T. Watanabe and Y. Kanno are finding that stimulation of the cat's auditory cortex can enhance or inhibit auditory responses recorded at the geniculate level; T. Hotta is mapping points of interaction of auditory and visual responses in the thalamus of the cat; in conjunction with the Olympus Company of Japan, Katsuki and Kanno are perfecting a "dip-prism" microscope which allows individual brain cells to be seen and selectively penetrated with a microelectrode; M. Nomoto is considering the possibility of cholinergic inhibition in the lateral line of the eel.

In the Department of Anatomy, H. Mannen has developed a technique for obtaining excellent photographs of Golgi-impregnated neurons, which is extremely useful in calculating cell volumes and surface areas. In the neighboring University of Tokyo, K. Uchizono is employing the electron microscope to analyze the frog's sympathetic system and its relation to the fine fibrils present in many capillaries of this animal; M. Ito is interested in inhibitory pathways from the cat's cortex to Deiter's nucleus and to the Purkinje cells of the cerebellum, employing an original ventral approach to expose the brain. In the University of Tokyo Department of Zoology, H. Kinosita is making new observations of melanophore physiology in the squid; Naito has made important findings concerning chemical sensitivity in *Opalina*; Takahashi has discovered an apparently nonmuscular effector which acts as the cog mechanism at the base of certain sea-urchin spines. Prince Yoshinomiya carries on an investigation of cell division in this department.

Research facilities were excellent in the several institutions I visited, particularly for the postdoctoral workers. Good electronic equipment is much in evidence, often having been designed and manufactured for use in a particular laboratory. Japanese graduate students do appear to suffer somewhat because of insufficient equipment and space, but the problem is being met by large-scale building programs. . . .

The hospitality of the Japanese people both in and out of the universities made this visit especially enjoyable . . . . The impression I got was that the Japanese were greatly interested in seeing that this type of exchange got off to a good start. They succeeded admirably so far as I am concerned.

It is to be hoped that cooperative programs such as this will continue to grow, eventually encompassing not only more postdoctoral students, but qualified graduate and undergraduate students as well. While there may be an inadequate representation in Japan of American students of the arts, there is a particularly obvious paucity of American students in science and engineering (with perhaps the reverse being true with respect to the flow of Japanese students to the United States). If there is any significant anti-American sentiment in the Japanese universities, one gets the impression that it must spring primarily from lower levels and not from among the postgraduates or the faculty. Greater opportunity for discussion between Japanese and Americans on the graduate and undergraduate levels would probably do much to cement good academic relations between the two countries. The Japanese students are generally both very competent and adaptable, and exhibit a type of exuberance for life and a closeness to nature which is peculiarly Japanese. Contact with them should have a profound effect on equally competent and adaptable American graduate and undergraduate students.

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## More Than Hypochondria

In his article "One campus, two cultures" (21 Aug., p. 790) Laurence Lafore describes the concern about the alleged existence of two intellectual cultures as a hypochondriac's pain in the big toe. It is his thesis that the two-culture phenomenon, such as it is, is a passing phase in an inevitable progression to more multi-dimensional specialization.

To dwell exclusively on the fascinating cultural dichotomy within the intellectual community is to miss half of Snow's point, however. As I read it, Snow's major thesis in his 1959 Rede Lecture was quite similar to that of his *Science and Government*: that government-public political, economic, and social planning and decision-making were failing to take scientific-technical factors intelligently into account. In *Science and Government* he stressed wartime decisions, and in *Two Cultures* he stressed educational planning. The major points, however, were quite similar and amounted, at the time, to considerably more than an imagined toe pain. The situation has been partially corrected in the intervening years. In the United States, President Kennedy created the Office of Science and Technology to advise and inform the executive branch, and congressional committees have been formed which are intended to do the same for the legislature.

Snow did not do a convincing job of showing that the cultural gap between scientific and literary intellectuals was responsible for the informa-

tion and understanding gap between the government-public and science and technology. Any "cultural" divisions, two or two hundred, among intellectuals may well deserve to be called toe numbness. Lafore has omitted, however, a fundamental difference between the cultures which he otherwise describes so well. Their use of language is basically different. It is characteristic of the scientist and engineer to use language in an operational, objective, and single-valued fashion. The literary artist, on the other hand, uses language in a subjective, many-valued way. This is Aldous Huxley's main theme in *Literature and Science*. It is a feature of the *two* cultures which will not either disappear or proliferate with two hundred specialties. Whether it is significant beyond the social level within the intellectual community cannot be said at this time. But if it inhibits the incorporation of human factors into our scientific and technological future, it may well be very important.

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## Department Heads and Other Problems

The caricature of academia Pollard presents in "How to remain in the laboratory though head of a department" (4 Sept., p. 1018) is very funny —unless you are very close to it. Examples of inappropriate mechanisms for dealing with everyday problems are endless where the cultural lag is great. The academic setting is a fertile source of such anecdotes. But rather than poking fun at the higher-learning environment or finding ways to live with it, I suggest that more effort be devoted to ridding ourselves of a cultural hangover and finding more effective means of doing whatever needs to be done. Three needs come to mind almost immediately:

1) An academic structure that would better accommodate people who arrive at their specialized knowledge through prolonged education rather than by virtue of indentured service. Specialized education is a great leveler. The hierarchical pyramid needs to be flattened, or better, replaced.

2) A more appropriate system of rewards for all the essential participants in the academic setting, whether teachers, researchers, administrators, or other. Certainly, researchers should not be "promoted" out of their fields of competence into an area in which they are grossly incompetent because the academic culture dictates that the highest rewards must go to the department head or administrator.

3) An educational scheme whereby neophytes can progress in orderly fashion through the process of learning, both formal and informal, and with increasing responsibility and rewards. This would remove many of the unnecessary hazards of education, which is now characterized by wide gaps, great leaps forward, financial insecurity, and wastage of human effort.

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Pollard makes explicit the anxieties and frustrations of a scientist required to work in administration. His solutions to the problems discussed are the most practical I have ever seen in print. I think the article merits distribution to all who are responsible for the allocation of funds to support scientific research.

In addition, may I suggest that AAAS set aside several pages each month for the next several months for dialogue between the laboratory scientists and fund administrators? In particular, it might be fruitful to invite comments from scientists who are on the staffs of granting agencies.

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Pollard is unduly hard on the class of young research workers he terms "post-docs." Within my experience as a graduate student the "post-doc" is not a "privileged individual" or "an object of great admiration" among the graduate students. In fact, lacking the status of instructor, he is likely to be ignored by both students and faculty. Because he commonly has a family and is likely to be drawing a modest salary, it must be assumed that his motivation in becoming a "post-doc" is primarily his interest in research—precisely the same motivation that keeps Pollard in the lab! It is no wonder, then, that having been awarded an opportunity to do research for 1 or 2 years, the "post-doc" is not eager to take over the menial teaching chores of members on the staff so that they can have more time in the lab.

Finally, with regard to hiring new faculty members I think it can be argued that it is the post-doc and not the green Ph.D. who is more desirable, if not to the head of the department at least to the other faculty members and the students. Certainly the post-doc will be more widely read in and more thoroughly acquainted with his own and neighboring fields of research. He is likely to be more mature scientifically because of his additional research experience. Finally, if he is going to be a good teacher, that quality can hardly be impaired in the 2 years between graduate school and teaching; if he is not, it would still be difficult for the department head to evaluate his lack of teaching ability objectively from 1 or 2 years served as instructor.

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## News and Comment in Our Journal

I do not agree with Cooke (9 Oct., p. 171) that the section News and Comment is out of place. My interest in reading *Science* and the benefits I have derived from so doing have increased as the scope and content of this section have grown. I know of no other source of comment and analysis of the sort provided so well by Greenberg, Walsh, and Langer. I hope this section will be continued and strengthened.

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. . . A sample vote among my colleagues gives unanimous disagreement with letter writer Cooke.

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. . . Since *Science* is "a forum for the presentation and discussion of important issues related to the advancement of science," in my opinion the discussion of political candidates' views is relevant and proper. I think that we can expect our editors to be objective, and, if there is disagreement about whether they are, we should offer relevant, objective criticism.

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