Letters

Faculty Organization

Dael Wolfle's editorial of 12 January (p. 131), "Increased pay, diminished stature," presents a very logical series of arguments, but seems to start from a premise that does not apply to all institutions of higher education. Thus it would appear to lack general applicability.

Wolfle states that "bargaining over the conditions of academic work undermines the hard-won principle that faculty need freedom from external control." At some institutions I suppose that faculty have that freedom, but at many they do not, and that is precisely why they are organizing. Many faculty units have found that they must organize to deal with working conditions and job security as well as with wages and fringe benefits. Since faculty work is academic work, they must therefore by definition deal with "academic matters." To attempt to separate the two does not deal with the real world. It would be like telling an auto worker that he can bargain over wages, but not over conditions on the assembly line. In case one might think that that is a poor analogy, one serious problem that faculty now face is precisely the same as that faced by auto workers: speedup. More students, more contact hours, more courses. This problem can only be dealt with collectively.

As faculty find that they are not "free" in terms of work load, they also may find that they are not "free" in terms of job security. Tenure and promotion committees usually only advise administration, and may in any case reflect "administration" rather than "faculty" interests and sentiment. Faculty require protection against arbitrary dismissal, against denial of tenure for frivolous reasons, and against prejudice in promotion procedures. They thus require a grievance procedure which guarantees speedy consideration of their case and final appeal to an authority completely outside of their university. The AAUP (American Association of University Professors) Standards have failed many individual faculty members on questions ranging from freedom of speech to dress to unpopular research. Only organization can properly protect faculty members in dealing with these "academic" matters. Collective bargaining historically seems to have been shown to be more effective in protecting the rights and interests of each member of the group than does individual bargaining.

Finally, there are a large number of working professionals on university campuses who are not faculty, but who make a significant contribution to the educational process. We call them the nonteaching professionals, and their rights need to be protected as well. Again, individual bargaining just has not worked for them, and joint collective bargaining with faculty will strengthen both groups.

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Medium for Hybrid Selection

With regard to the Research News report by Jean Marx on somatic cell hybrids (23 Feb., p. 785), I enjoy the notoriety but feel obliged to point out (*1*) that the medium called HAT (hypoxanthine, aminopterin, and thymidine) used for hybrid selection was originally developed not by myself, but for other purposes by Szybalski from earlier work by Hakala and Werkheiser (*2*).

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References and Notes

1. See also J. W. Littlefield and S. Goldstein, *In Vitro* **6**, 21 (1970).
2. W. Szybalski, E. H. Szybalski, G. Ragni, *Nat. Cancer Inst. Monogr.* **7**, 75 (1962).

Brazilian Higher Education

Hulda Grobman's comments on Brazilian higher education (Letters, 6 Oct. 1972, p. 9) indicate a lack of familiarity with what has been taking place since the Decretolei 53 issued in November 1966 laid the basis for the vast changes of the past 6 years.

In cooperation with the Council of Rectors of Brazilian Universities and with financial support from the Agency for International Development (AID), the University of Houston has been involved in several projects: regional seminars in Brazil, short courses for administrators in Houston and Mexico, and in-service training and the sending of consultants to all parts of Brazil. The momentum in higher education initiated by minister Raymundo Moniz de Aragao in the Castello Branco regime and continued under the present minister Jarbas Passarinho has been impressive.

Grobman states that "the model for major reform planned for the new university of Brasilia was abandoned . . . in one of the world's most modern settings, it mirrors the antiquated pattern of Brazil's older universities." Nothing could be farther from the truth. The University of Brasilia has been developing a modern university with good leadership, full-time professors, and efficient administrative practices. It is quick to seize on new ideas and is destined to become one of Brazil's finest institutions.

It is true that the university suffered seriously about 10 years ago, when it was attempting the impossible and was beset by political problems. That is all changed. Rector Amadeu Cury and vice rector José Carlos de Almeida Azevedo may be expected to continue the rapid growth of the university.

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PCB Diet

The study by Allen and Norback (2 Feb., p. 498) clearly demonstrates that a particular gastric mucosal response occurs after the feeding of polychlorinated biphenyls (PCB's) to male rhesus monkeys. The authors suggest that the carcinogenic potentials of these compounds should be investigated. While this is a worthy suggestion, it should

not be based on the particular lesions seen in this study. The lesions which Allen and Norback describe have been reported only in *Macaca* species. It occurs in response to a variety of agents, such as shale oil (*1*), organophosphates (*2*), and putatively noncarcinogenic irritants, such as parasitic infestations (*3*) and gastric bezoars (*4*). It is not surprising, therefore, that the oral administration of irritating compounds such as PCB's resulted in such a response in a *Macaca mulatta*. The results would have had far more impact if a similar response had been induced in a nonhuman primate other than a macaque.

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References

1. C. C. Lushbaugh, *J. Nat. Cancer Inst.* **7**, 313 (1947); *Cancer Res.* **9**, 385 (1949).
2. R. Kimbrough, *Arch. Pathol.* **81**, 343 (1966).
3. C. Bonne and J. H. Sanground, *Amer. J. Cancer* **37**, 173 (1939); H. F. Smetana and T. C. Orihel, *J. Parasitol.* **55**, 349 (1969).
4. R. N. T. W. Fiennes, *Pathology of Simian Primates*, part 1, *General Pathology* (Karger, Basel, 1972), pp. 690–694.
5. E. J. Andrews and W. J. White, *J. Med. Primatol.*, in press.

Allen and Norback state that the concentration of PCB's within their experimental diet was less than an order of magnitude greater than that occurring in random food samples sold in the United States. The term random applies to a very clearly defined scientific concept. It is clear from the context of the report that no attempt was made to obtain food samples, random or not, and that the statement in fact refers to reported maximum values.

A careful evaluation of the evidence, including the low reported values for PCB's in cereal, poultry, and eggs, and the fact that an attempt is being made to keep food containing more than 5 parts per million off the market, leads me to conclude that their experimental diets contained concentrations at least *two* orders of magnitude greater than those in the general diet. There is a degree of acceptance for the view that, insofar as a safe level exists, then such a level might be fixed at an order of magnitude less than the lowest level at which symptoms are known to occur.

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Andrews states that the gastric mucosal response, which consisted of hyperplasia and dysplasia of the mucosa, to PCB's occurs only in the *Macaca* species and occurs as a response to a variety of agents; he denies that the particular lesions we observed are suggestive of a carcinogenic potential for PCB's.

Hypertrophic gastritis, with a similar invasion of the muscularis mucosae, occurs in man (*1*) and has been reported in three species of the genus *Macaca*—*Macaca speciosa* (stump-tailed macaque) (*2*), *Macaca mulatta* (rhesus macaque) (*3*), and *Macaca fascicularis* (Java monkey) (*4*). Similar changes have been produced in the rat (*3*), and two incidences of gastric mucosal changes and the development of adenoma in the baboon have been reported, one of which was accompanied by pyloric mucosal hypertrophy (*5*).

Since it is not practical to use orangutans, gorillas, chimpanzees, or other higher subhuman primates for routine investigations, the paucity of reports describing similar lesions is understandable. The evidence cited above indicates that this is not a lesion peculiar to macaques, and the high phylogenetic position of this animal makes it more suitable for the investigation of disease processes of man than the more primitive primate, such as the marmoset or squirrel monkey.

We are aware that hypertrophic gastritis is a nonspecific response and stated in the text that the changes are "likely due to chronic irritation." One of us (J.R.A.) has also reported this change as a response to irritation from the parasite *Nochtia nochti* (*6*). We reemphasize the association of chronic irritation, regardless of the source, with cancer, particularly of the skin, oral mucosa, larynx, stomach, and bronchial epithelium.

The hyperplastic and dysplastic changes observed after administration of PCB's or PCT's (polychlorinated triphenyls) are suggestive of a neoplastic transformation, but the carcinogenic potential cannot be evaluated from a short-term study. In the reports of the mucosal changes cited by Andrews, the exposure of the animals to the various irritants was of short duration (71 to 213 days of exposure to shale oil) (*3*) or not reported. However, in one reported case of exposure to DDT and organophosphates, hyperplastic gastritis with carcinoma was present after 9 years (*7*). Since spontaneous gastric

carcinomas are nearly nonexistent in subhuman primates (*5*), the carcinogenic potential of irritative compounds which cause gastric hyperplasia and dysplasia must be investigated with adequate controls and over long periods of time.

In regard to Jowett's criticism of the use of the word "random," we listed the highest concentration of PCB's found in food samples randomly taken by the Food and Drug Administration. We emphasize that the gastric lesions were produced by this compound at levels less than an order of magnitude greater than those which have occurred in samples of fish. We concur that the levels in a "general" diet would be lower for most of the population, and we presented the evidence for this conclusion by listing the lower levels found in other food products. We cannot adopt Jowett's acceptance of a safe level being "an order of magnitude less than the lowest level at which symptoms are known to occur" without consideration for the time factor. In our experiment, the animals developed the lesions within 3 months, whereas dietary contamination by the compound would ensure intake for indefinite lengths of time and conceivably for a lifetime. We again recognize the efforts of the Food and Drug Administration to remove contaminated samples which exceed 5 parts per million and urge the support of such actions.

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References

1. A. P. Stout, in *Tumors of the Stomach, Atlas of Tumor Pathology Section VI*, Fascicle 21 (Armed Forces Institutes of Pathology, Washington, D.C., 1953), pp. 16–17; R. C. Horn, Jr., in *Pathology*, W. A. D. Anderson, Ed. (Mosby, St. Louis, 1966), pp. 863–864.
2. H. F. Smetana and T. C. Orihel, *J. Parasit.* **55**, 349 (1969).
3. C. C. Lushbaugh, *J. Nat. Cancer Inst.* **7**, 313 (1947); *Cancer Res.* **9**, 385 (1949).
4. C. Bonne and J. H. Sandground, *Amer. J. Cancer* **37**, 173 (1939).
5. T. C. Ruch, *Diseases of Laboratory Primates* (Saunders, Philadelphia, 1959), pp. 545–548.
6. J. R. Allen and L. A. Carstens, *Lab. Anim. Care* **15**, 103 (1965).
7. R. Kimbrough, *Arch. Pathol.* **81**, 343 (1966).

Reaction to Rhetoric

I would like to comment on Leo A. Orleans' article, "How the Chinese scientist survives" (8 Sept. 1972, p. 864). Whenever we are faced with messages of unpalatable content, someone will provide us with a tranquilizer, saying not to overreact to rhetoric and that people did not mean what they said. To those who believe in this, I recommend the following reading list: (i) A. Hitler, *Mein Kampf*; (ii) G. A. Nasser, *Speeches and Broadcasts*; (iii) M. T. Cicero, *Speeches against L. Sergius Catilina*; and (iv) Demosthenes, *The Philippika*.

The fact that people do not achieve their previously stated programs and goals does not necessarily prove that they did not mean them.

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Snapping Turtle Plea

Surely the most obvious conclusion to be drawn from the findings of Thomas H. Jukes and Richard Holmquist (11 Aug. 1972, p. 530) is that the time has come for a taxonomy based on gross morphological traits to be replaced by one more securely rooted in biochemistry and genetics. One might almost, if one wished to be frivolous, imagine the snapping turtle pleading, in parody of St. Thomas of Celano:

inter *Aves* locum praesta
et a *Boidis* me sequestra.

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Our taxonomically oriented colleagues have reacted tepidly to Nurse's suggestion that a morphologically based taxonomy be replaced by one of biochemical derivation. Furthermore, a telephone call to the California State Board of Education was unproductive. However, a friendly Mock Turtle (*Pseudochelonia dodgsonii*) was quite receptive. "Once," he began, "I was a real turtle. . . ." Examination of his cytochrome c sequence revealed phenylalanine at position 36, aspartic acid at 50, glycine at 89, and asparagine at 103—all identical with bovine—and no less than 12 hypervariable sites, showing evolutionary instability. When we told him this, he rudely gave us the bird.

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