



Update your Zeiss PMQ II

Now you can make a new spectrophotometer of your Zeiss PMQ II, no matter how old it is.

The compact new Digital-Photometer Indicator will let you take full advantage of the PMQ II's great optical system.

You'll get greater versatility and readout accuracy. More convenience in operation. Features like:

- 4-digit display, 0-3.0 O.D., concentration and transmittance, variable high-voltage and calibrated amplification ranges, zero suppression, scale expansion and variable time-averaging.

Linear analog and BCD outputs for recorders and digital documentation.

Attractively priced around \$2000. Even less with your old analog indicator as trade-in.

Write or call

Carl Zeiss, Inc.,
444 Fifth Ave.,
N.Y., N.Y. 10018.
(212) 736-6070.

Nationwide Service

ZEISS

THE GREAT NAME IN OPTICS

Circle No. 321 on Readers' Service Card

Lottery Admissions System in the Netherlands

The editorial "Medical school admissions matching" (2 Aug. 1974, p. 401) and the subsequent letters (11 Oct. 1974, p. 93) have called our attention to the fact that the problem we currently face in the Netherlands is far from unique.

Originally in this country, every student who passed state-controlled high school examinations could enter the academic field of his choice, provided the subjects of his examinations were suitable for that particular field. In recent years, in at least ten fields of study, the number of applicants has greatly exceeded the capacity of the universities to train and accommodate these students adequately. Finally, 3 years ago, a quota system was established for certain fields of study, one of which was medicine.

At present, there are approximately three applicants for each available place, so a selection system was set up to keep the number of students admitted within the allowable quota. Committees were appointed and selection procedures in other countries were carefully studied. The system we ended up with allows entrance to a few students with very high examination scores; for the remaining students, entrance is decided by lottery. This approach, although highly unsatisfactory, at least enables gifted students to study in the field of their choice.

This system has now been in operation for 2 years, and we expected that during this time a quantitative admissions procedure would be developed. However, instead of a selective admissions system, the Dutch government now proposes to limit student admissions by lottery only. This will prevent a number of highly intelligent students from being admitted to the profession of their choice.

We think it is immoral to have a system in which the future of human beings is decided by a game of chance, and we feel that to use a lottery as a means of limiting the number of students admitted to universities is a direct threat to science in general.

FRITS L. MEIJLER

Department of Cardiology, University Hospital, State University of Utrecht, Utrecht, Netherlands

JOHAN VREEKEN

Department of Internal Medicine, Wilhelmina Gasthuis, University of Amsterdam, Amsterdam, Netherlands

Computer Use

In their article "Computer use under a free-access policy" (31 May 1974, p. 957), Luehrmann and Nevison make a case for free access to computing at a university, claiming that it is different from other schemes for allocating resources and that it results in greater educational value. In doing so, it appears that they make some faulty assumptions and draw some misleading conclusions.

First, the authors claim that, at most universities, users must pay for the services they consume. In this, they confuse accounting practice with allocation procedures. At Dartmouth College, faculty and staff bills are sent to users; and so they are at most institutions. Dartmouth student bills are sent to the Dean of Student Affairs; at most universities they are sent to the faculty responsible for the work the students are doing. Accounts are kept and bills are sent in both cases; neither case is analogous to the library procedure, as the authors suggest. The confusion is due to the fact that at most institutions, allocations are made to students in units called "dollars." What they are given in fact are not dollars but shares of the resources of the facility (1). If the input to the computer facility is \$1 million, then the output is assumed to be computing services worth \$1 million; a one-millionth "share" of this output is called a "dollar."

It can be argued that the share system is in fact a more flexible method of allocation and control than the methods in use at Dartmouth, where strict limits are placed on which parts of the system are accessible to the user. In the share system, the user can decide whether he wants to spend his shares on disk storage, tape input-output, CPU (central process unit) cycles, or interactive connect time. It is easier to make the resources match the job, and it is easier for facility management to mold user behavior to minimize conflict.

Second, the authors assert that the free-access policy accounts for the large number of users at Dartmouth. This would be hard to prove. The Dartmouth Time-Sharing System is well designed, user oriented, and includes interesting, exciting, and well-documented software. It is supported by a faculty and administration that makes the importance of computing evident to everyone on the campus.

Chelex 100 vs. heavy metals.



[fatal attraction]

Chelex 100, Bio-Rad's chelating exchange resin, shows a high specific affinity for the ions of copper, iron, and other heavy metals. It's ideally suited for **removing, concentrating, or analyzing** trace amounts of these metals, even in the presence of large quantities of sodium and potassium.

Chelex 100's diverse applications include: **analysis** of trace metals in natural waters, reagents, biochemicals, and physiological solutions • **removal** of trace metals from reagents, culture media, soils, buffers and enzyme systems • **recovery** of metals from process streams • **chromatography** of closely-related metals • **concentration** of trace metals for atomic absorption or anodic stripping voltammetry analyses.

Call or write for bulletin 114.

BIO-RAD Laboratories

32nd and Griffin Avenue
Richmond, CA 94804
Phone (415) 234-4130

People at Dartmouth like the system and the system likes the people. This has as much to do with its wide use as the mechanics of distribution. In a system without this user orientation and on a campus without this ambience, students and faculty are restrained by the quality of service more than by the allocation procedures.

Finally, the authors conclude that free access to computing at other institutions will cause a dramatic increase in the number of users, but only a modest increase in demand. The implication appears to be that something of great value can be purchased at little cost. However, if the 30 to 50 percent of the students at a typical university who have no accounts were given free access to the computer, would they use it for any important educational purpose? If, as Luehrmann and Nevison suggest, their usage would be minimal, its value will probably be minimal as well. The difficult problem that the authors evade is the educational advantage that would accrue from a tenfold increase in number of users or even a 40 percent increase in demand.

One might even argue that there are some disadvantages to a free-access policy. The additional users would be inexperienced and naive; they would require a considerable increase in user services; and this cost would have to be borne by limiting the services now provided to the users to whom computing is more serious and important than it is to the casual user.

CHARLES MOSMANN

*Computer Facility,
University of California,
Irvine 92664*

References

1. C. Mosmann, *Academic Computers in Service* (Jossey-Bass, San Francisco, 1973).

Mosmann seems convinced that Dartmouth's friendly, user-oriented computer environment has been achieved through a substantial commitment of university resources. In fact, it is only a slight oversimplification to say that the reason why the computer system is easy for beginners to use is because Dartmouth has never had the resources that would be needed to train thousands of people to use a complicated system. Even today, contrary to Mosmann's expectation, the user services staff of six people at Dartmouth represents only 5 percent of the computer center budget. Furthermore, none of these is the typical, high-priced ap-

TRICHINELLOSIS

Edited by
Charles W. Kim
State University of
New York, Stony Brook

The sixty-three papers collected here comprise the scientific record of the Third International Conference on Trichinellosis, held in Miami Beach, November 2-4, 1972. The program consisted of symposia covering these aspects of trichinellosis morphology and *in vitro* studies, biochemistry and experimental pathology, immunobiology, clinical and diagnostic aspects, treatment, and epidemiology and control.

Comprehensive in scope, this volume will provide a general understanding of the current knowledge and thinking on various phases of trichinellosis and will serve to stimulate future work in the field.

December, 1974 704 pages
\$37.50

iep
Intext Educational Publishers
666 Fifth Avenue, New York, N.Y. 10019

plications programmer found at most university computer centers.

But this should not be surprising. Reflect for a moment on our favorite analog, the library. In which hypothetical university library environment would the cost of user services be greater—one in which all users could read and follow simple instructions, or one in which literacy was slight and users needing library service were compelled to work with the assistance of reading specialists? Granted, the latter arrangement would drive out the "casual user" of library service, but I fail to see a corresponding benefit to the "serious user." Computer illiteracy is also expensive.

On another issue, Mosmann evidently prefers a system of computer-dollar allocations to the free-access system described in our article. However, virtually all other educational and research resources are treated as cost centers that have little direct responsibility for "recharging" users for their services. The library example is worn thin, yet academic departments themselves are examples. Students do not have "chemistry dollars" to be collected at turnstiles in the lecture room. Instead, the student (or the state) pays tuition, and the university decides the quantity and quality of "chemistry service" that shall be available. While it thereby gives up the possibility of using differential pricing policies to manage demand for different courses, most people seem so convinced of the value of present practice that they would mount the barricades if an administration imposed such a free-market system on academic departments. Is computing so different?

Finally, it is difficult to deny the charge that free-access computing may lead to uses without any important educational purpose. So does free access to books, yet we don't object to a student's reading for pleasure. Setting aside the question of intrinsic value, we have evidence that the perceived value of computing at Dartmouth is very high indeed. In annual surveys of entering freshmen, we find that "availability of the computer" is among the top two or three most frequently stated reasons that the students selected Dartmouth. Our computer policy has thus contributed measurably to the fact that there are about ten applicants for every place in the Dartmouth freshman class.

ARTHUR W. LUEHRMANN

*Kiewit Computation Center,
Dartmouth College,
Hanover, New Hampshire 03755*

Our
"Yes"
Stereomicroscope,

**Wild
M-3**

It should never
just sit around.



Pick your accessory for the work at hand. The Wild M-3 easily converts to a binocular stereomicroscope with adjustable depth; to a trinocular with adjustable and instant photorecording; to a binocular dissecting scope with Camera Lucida.

In all configurations, the M-3 can be equipped for dual reflected lighting, transillumination, and dark-field/brightfield transillumination.

With fatigue free viewing, fingertip convenience, large field diameter and crisp, flat, wide images, what do you end up with?

A superb quality Swiss instrument that says "Yes" to virtually every job expected of a fine, versatile stereomicroscope: **THE WILD M-3. WRITE OR CALL FOR BROCHURE M-3.**

WILD[®]
HEERBRUGG
WILD HEERBRUGG INSTRUMENTS, INC.
465 SMITH ST., FARMINGDALE, NEW YORK 11735 • 516-293-7400
WILD OF CANADA, LTD. 881 LADY ELLEN PLACE, OTTAWA 3, ONT.
WILD OF MEXICO, S. A. LONDRES 256, MEXICO 6, D. F.