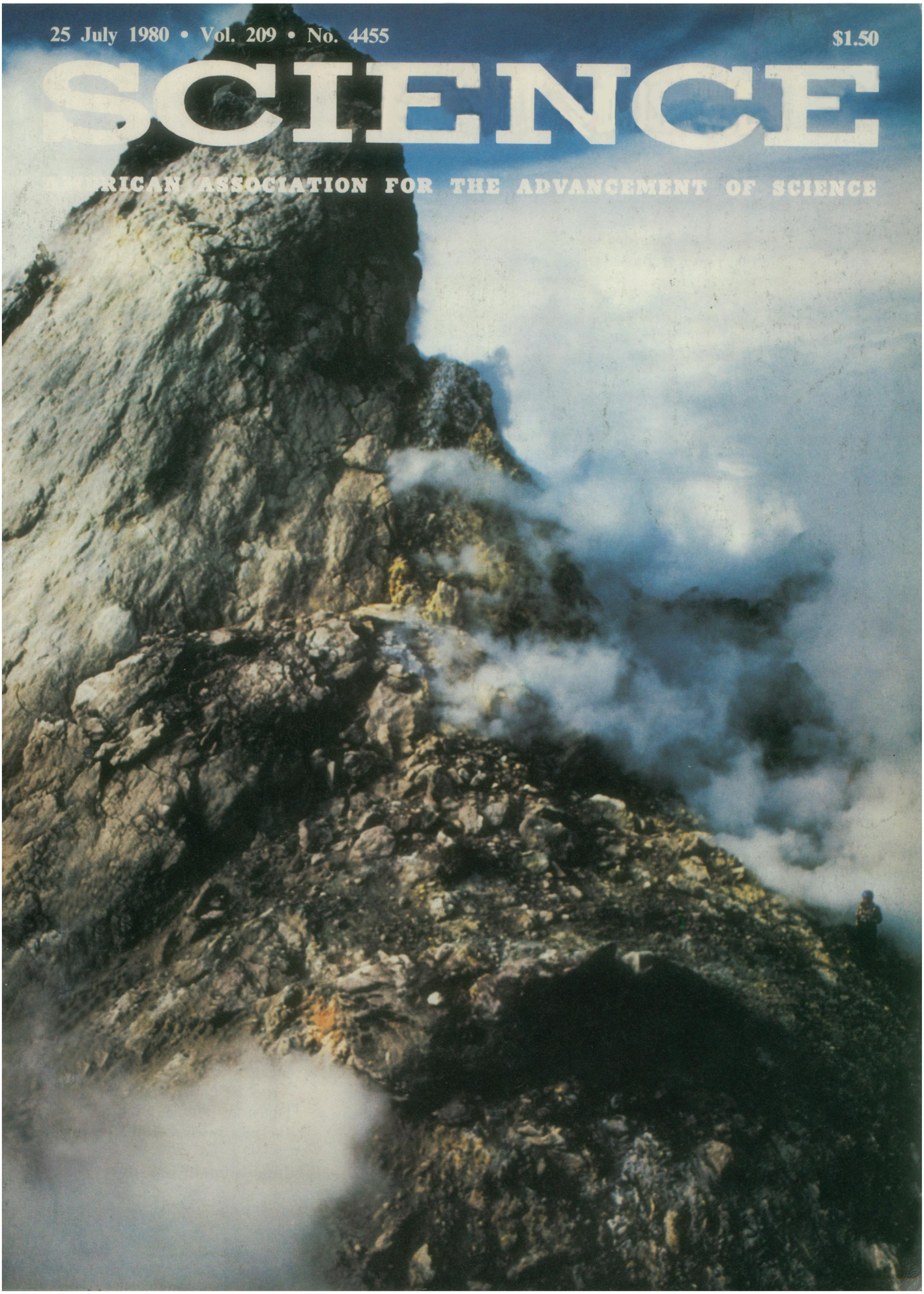
25 July 1980 • Vol. 209 • No. 4455

$1.50

SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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It is more precise, more reliable, more convenient, more advanced and more everything than any other UV-Vis spectrophotometer.

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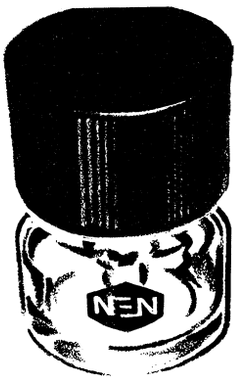

Quality conserves energy: It lets you concentrate on results.

EXCLUSIVE

Squalene [^{3}H]
Farnesyl-PP [^{3}H]

For the study of sterol, steroid, dolichol, terpenoid, and vitamin biosynthetic pathways.

Squalene, [4,8,12,13,17,21-^{3}H]-
2-10Ci/mmol
Hexane: ethanol, 99:1 under nitrogen in sealed ampoule, in dry ice
NET-645 10μCi 50μCi

Farnesyl pyrophosphate, triammonium salt, [1,5,9-^{3}H]-
2-10Ci/mmol
0.15N Ammonium hydroxide under nitrogen, in foil-wrapped sealed ampoule, in dry ice
NET-670 10μCi 50μCi

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Photoaffinity reagent

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Ethanol: water, 1:1, in dry ice
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10μCi 2x10μCi 50μCi 2x50μCi

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High specific activity 800-1200μCi/μg
Stable four weeks from production date
Each lot tested for binding and displacement in a specific RIA

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Lyophilized from sodium phosphate buffer, pH 7.5, containing gelatin and sodium azide.
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Labels DNA in terminal deoxynucleotidyl transferase catalyzed reaction

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NEG-026 500μCi 1mCi

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ISSN 0036-8075

25 July 1980

Volume 209, No. 4455

SCIENCE

:IENCE is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1515 Massachusetts Avenue, NW, Washington, D.C. 005. Second-class postage (publication No. 484460) paid at Washington, D.C., and at an additional entry. Now combined with **The Scientific Monthly®**. Domestic individual membership and subscription (51 issues): $38. Domestic institutional subscription (51 issues): $76. Foreign postage extra: Canada $14, other (surface mail) 7, air-surface via Amsterdam $45. First class, airmail, school-year, and student rates on request. Single copies $1.50 ($2 by mail); back issues $2.50 ($3 by mail); classroom rates on request. **Change of dress:** allow 6 weeks, giving old and new addresses and seven-digit account number. **Postmaster:** Send Form 3579 to *Science*, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. *Science* is lexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

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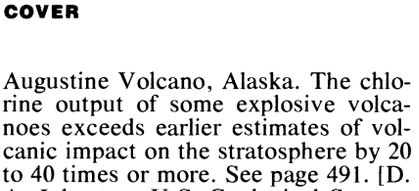
REPORTS

COVER



Augustine Volcano, Alaska. The chlorine output of some explosive volcanoes exceeds earlier estimates of volcanic impact on the stratosphere by 20 to 40 times or more. See page 491. [D. A. Johnston, U.S. Geological Survey, Menlo Park, California]

Give it 60 seconds and almost anything that's dry.

The Brinkmann Centrifugal Grinding Mill is designed to quickly break down to a uniform, specific particle-size range most dry materials up to 6.0 Mohs in hardness.

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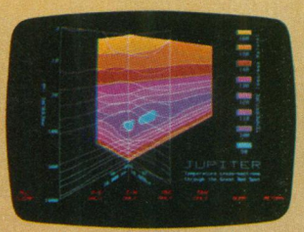
Meet HP's new System 45C color graphics computing center. It plugs into the wall--not into another computer.

Engineering Design



Scientific Research and Analysis

Complex Data Presentation

Management Graphics

Imagine what you could do with a powerful, easy to use graphics system that sits on your desk and is not dependent on another computer. A desktop computer that combines outstanding color graphics and the computational power to handle complex problems. All built into a compact, functionally-integrated unit, and all under your own individual control.

Based on HP's proven Series 45 desktop computers, System 45C is much more than a display. It's a color graphics processing system with significant computational abilities. You get to your solutions faster through new developments in graphics language extensions to BASIC.

High resolution and 4913 bright, crisp colors give you a realistic, lifelike display of your design. A light pen lets you work interactively with color images.

Solving tough problems with an outstanding color graphics system, up to 449K bytes of user-available read/write memory, and high-performance I/O is a rewarding experience when it's done the HP desktop system way — under your total control, and at your own pace. To learn more about the graphics capabilities of HP desktop computers, and to request literature or a demonstration of the new System 45C, please turn the page.

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Scientists and engineers computer systems powerful

Why?

The Power of HP Graphics. Today's Hewlett-Packard desktop systems offer an impressive array of powerful graphics capabilities to help you analyze data more thoroughly and solve complex problems more quickly. With both full-color and monochromatic displays, and a broad range of HP input, output and storage peripherals, it's easy to tailor a graphics system to match your needs. And, you'll realize benefits that reach well beyond the power of display graphics. HP systems today give you powerful computing capabilities with user-available memory to 449K bytes, high-performance I/O, data base management and mass memory options to 120M bytes. Whether you're computing, optimizing a design or acquiring data from instruments, HP graphics systems put big computer power under your individual control.

An Interactive System. Your data can be entered in a number of ways. You can use the desktop computer's interactive keyboard. Or, if you're

working with drawings, photographs, maps and other graphic material, the HP Digitizer enables you to transfer this data to the computer. System 45C's Light Pen provides a natural way to let you move and construct objects on the system's CRT screen.

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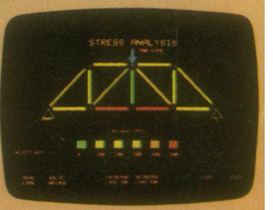
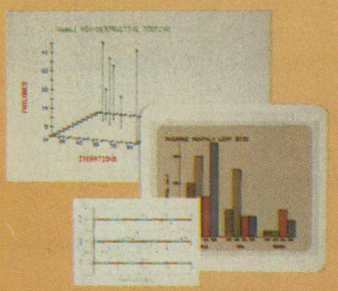


find today's desktop graphics tools.

desktop's built-in printer. Your output can be in the form of color plots or overhead color transparencies, made by an HP four color plotter. These can be useful in group presentations. Printed results, including letter quality output, can also be obtained from HP printers. When your system is assembled to give you the graphic results you want, HP's high-performance language and industry standard I/O will ensure smooth interaction among all the components.



Advanced Graphics Language.

To simplify your development of computational graphics, we've formulated a graphics language extension of HP Enhanced BASIC. With up to 70 commands, our graphics language eliminates numerous statements and hours of programming, letting you quickly manipulate monochromatic and color images from simple charts and diagrams to complex geometrical figures.

Extended Capabilities.

The power and versatility of your desktop system can be extended through two new HP capabilities. Data Comm allows desktops to communicate with larger mainframes in High Speed Asynchronous or Bisynchronous modes. With this capacity, the desktop becomes a very powerful and fully integrated work station in a large computer system. Technical Data Base Management provides HP's award-winning IMAGE facilities that let you access information in the system without writing applications programs. DBM also includes a powerful adaptation of the QUERY inquiry program.

A Choice — and Two New Systems.

We build a broad range of desktop computers, with one just right for your graphics applications. The new System 45C offers powerful color graphics and up to 449K bytes of computational power.

System 45B provides monochromatic graphics (including 3-D) and large read/write memory capacity. The new HP-85 is a modestly priced professional desktop computer with integrated graphics, CRT and printer. All three of these systems can be used with HP peripherals.

A Growth Path.

As your needs expand, HP desktop computers can communicate with the HP 1000 family of real-time computer systems over data links. For dedicated graphics applications that require a multi-user, multi-terminal system, the HP 1000 Model 45 includes a graphics terminal and versatile graphics/1000 software. The multi-programming power of an HP 1000 can be teamed with the graphics devices described above, and can also control up to four full-color graphics display systems.

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For a demonstration. Call the HP regional office nearest you: East 201/265-5000; West 213/970-7500; Midwest 312/255-9800; South 404/955-1500; Canada 416/678-9430.

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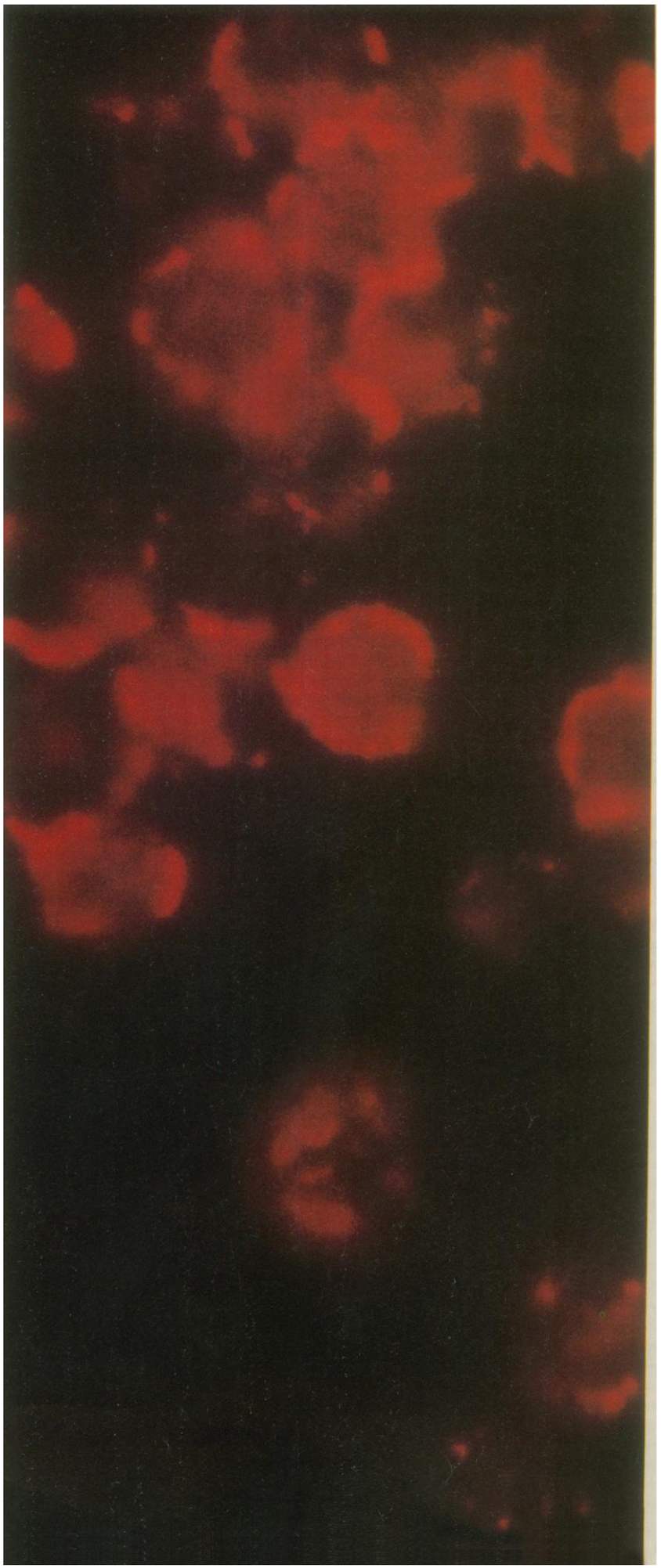

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Immunochemical techniques for identifying and isolating lymphocyte subpopulations are generally preferred over other methods. Antibody mediated procedures offer more precise cell differentiation and greater procedural convenience.

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Learn more about this new immunochemical reagent and how it can enhance your research program by contacting Hybritech, the leaders in hybridoma technology.

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At the present time, Hybritech antibodies are not designed or intended for either

25 July 1980, Volume 209, Number 4455 **SCIENCE**

Regulation and the Universities

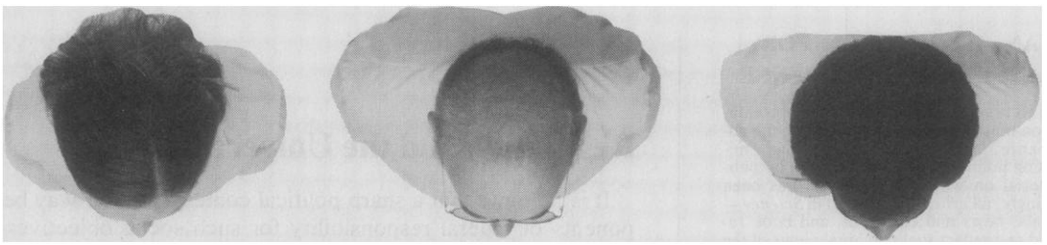
It is no news that a sharp political contest is under way between the proponents of federal responsibility for such social objectives as equality of opportunity and public health, and those who believe that the regulatory apparatus for meeting that responsibility imposes unacceptable costs on other, equally valid goals. Perhaps it is not even news that the universities, once securely counted in the constituency for intervention, are now complaining about it. But it certainly is news when spokesmen for the nation's academic scientists claim that the universities are in league with the federal regulators—having been required, one presumes, to pay off a Faustian bargain the universities made in return for federal patronage.

This last case is not convincing. Most of the regulations that now trouble the universities are neither explicitly related to past federal patronage nor unique to educational institutions. They reflect congressional concern about such general problems as access for the handicapped and the safe handling of carcinogens. Because these concerns are occasionally amplified by demonstrated abuses, the universities will continue to feel their impact—along with the profit sector, which has felt it all along. But the newness of the experience sensitizes the universities to it in a way that is sharpened by frequent insensitivity on the other side—as when they receive compliance letters that begin "Your firm." The increased regulatory attention to universities, however, reflects concerns that are hardly special to the academic sector. In a troubled economy, it is natural for *all* payers, government included, to demand stricter accountability.

Meanwhile, social attitudes about the universities have been changing. In the mid-1950's higher education was felt to merit, because of its special social value, exemption from many obligations that fell to other sectors. Today, to labor organizers, community neighbors, and government regulators at all levels, the universities look not so much *special* as merely *large*. Harvard and Stanford are coming to be perceived, and therefore treated, like General Motors or Boeing.

This perception fits all too well with another: that all large bureaucracies are bad. Philip Abelson implied in this space on 25 April that university bureaucracies are in league with the feds to skim off research funds into administration. That view allows annoyance to overwhelm reason. University administrations *are* larger, but for good reasons. They are engaging in more transactions—processing more gifts, managing more scholarship funds, defending more lawsuits. They are also running bigger plants and running them better than in the 1950's, when undermanaged enterprises survived because the world was simple and the economy growing. And they are *not* working against the interests of scientists in the university. To accuse them of collusion with federal bureaucrats ignores, for example, the intense effort they mounted to ameliorate the recent round of A-21 revisions.

In the end, a good deal of accommodation will be needed to solve the problems of regulation and the universities. For the universities, shifts in public attitudes and the newness of the experience present special difficulties; for the regulators, there is a need to get used to a different clientele. Each party needs to recognize that the work of the other merits a strong presumption of validity. That accommodation will *not* be speeded by the delusion that the universities are special targets, or that their administrators are double agents.—DONALD KENNEDY, *Vice President and Provost, Stanford University, Stanford, California 94305*



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Contact with these parties is better made earlier than later if only we can learn in time at whose door to come knocking. These engineers have much more to think about than film. To them, film is a supply item, as is the paper on which their technical reports are typed. An excellent report can be written on slightly off-color paper. With film, the engineers are fussier. When ready for their first big demonstrations, most look for a film with a good spectral-sensitivity match to the phosphor on the display tube.

There is more to be considered than that. Between the output of the electronic circuitry and the image from which medical judgments will be made when the films are viewed stands all the complexity of *our* art and trade. We do not try to convince anybody that one perfect film can be right for all the kinds of electronic images. Instead, we offer five films for CRT imaging in medical instrumentation.* We hardly expect the selection to be made from an advertisement.

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