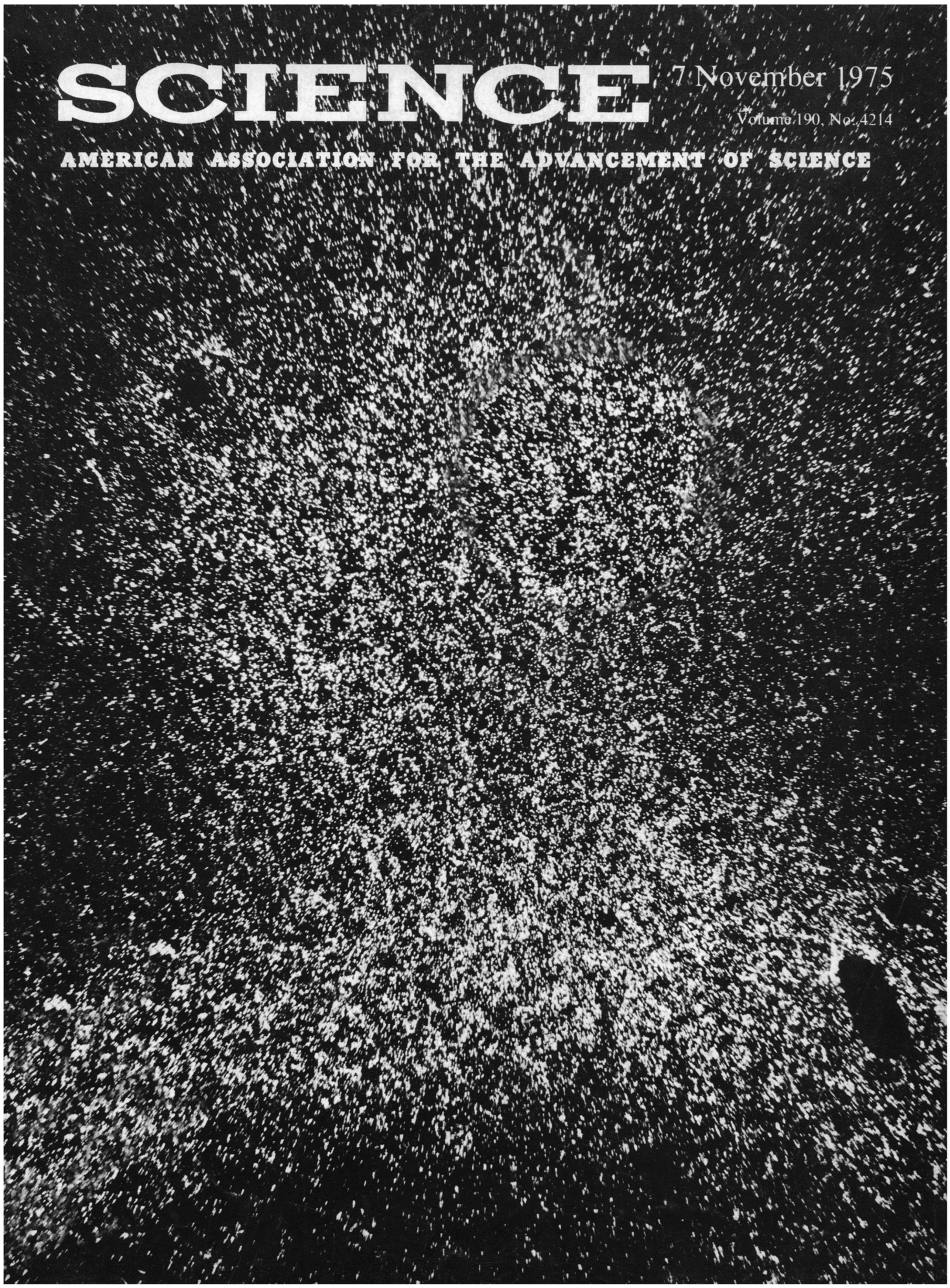
SCIENCE

7 November 1975

Volume 190, No. 4214

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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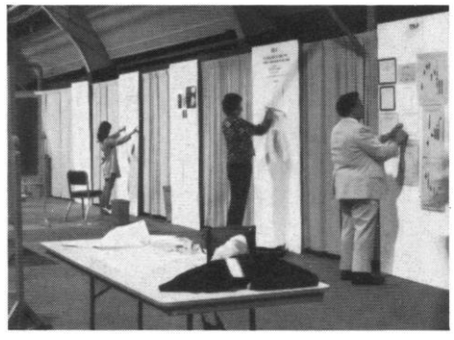
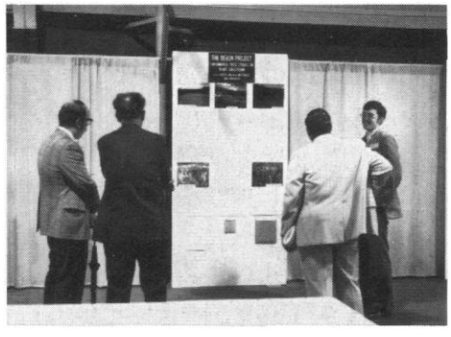
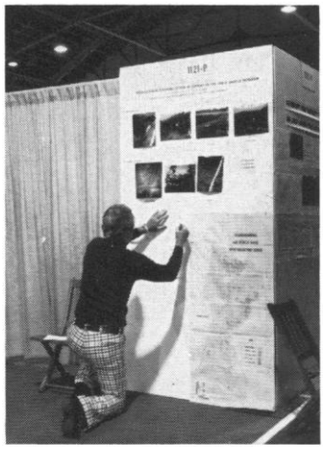
Program chairpersons and committee members of the world, lend us your attention.

There is restlessness among the masses who are expected to sit quietly in the gloom fighting off Morpheus while a succession of fellow scientists, terrified or cocky as the case may be, mumble or declaim. The only questions which need to be asked by those familiar with the subject at hand will—likely as not—be turned off by the chair for lack of time, and the speaker will escape to the dark recesses of a concurrent session.





Here, from a recent meeting of a biological society, we show an alternate way to communicate by word of mouth with one's peers, formally and yet, for both giver and seeker of truth, comfortably. A "poster session" is an adult version of the school science-fair format. The presentation is boiled down to what can be put up in readily legible words and graphics on a board of, say 8 x 10 feet. It remains up for some hours. The peers drift by and look it over. When discussion ensues, the presenter need feel no embarrassment to learn more from the questioner than vice versa. The occasion is less of a performance and more of an exchange at a mutually agreeable level of discourse among parties fascinated by the topic.



Photos taken at 1975 annual meeting of American Institute of Biological Sciences, Corvallis, Oregon.

The passerby need not come ready equipped with that fascination. It can be engendered on the spot, right then and there.

The presenter who would rather have people stop than not stop uses photography to fascinate. A few well-done color enlargements probably work better and easier under the circumstances than projected slides or movies. If table space can be provided for actual specimens and equipment, so much the better. But it's the photographs that attract.

Potential poster presenters who are not photographically inclined personally will generally find that their institutions employ people who are so inclined and are there to render service.

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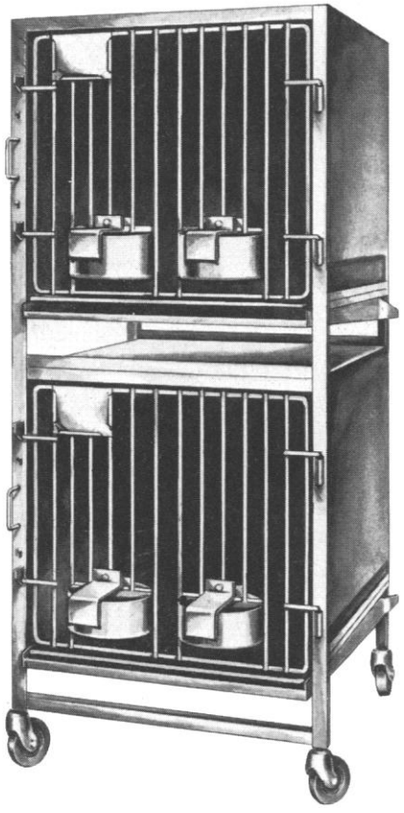

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SCIENCE

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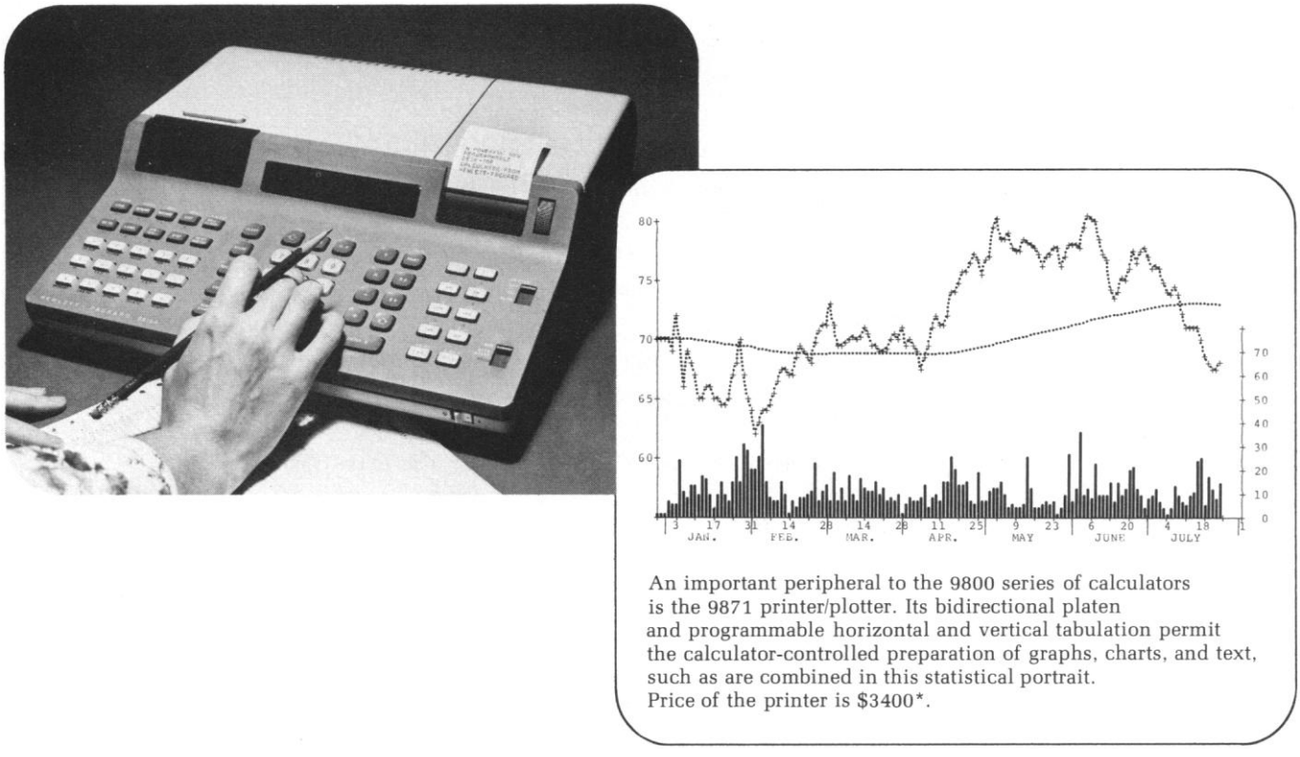
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress. Postmaster: Send Form 3579 to SCIENCE, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005.

COVER

Dark-field photomicrograph of an autoradiograph showing a vertical band of cortico-cortical fiber terminals in layers II, III, and IV of the cerebral cortex of a monkey. The fibers are labeled by axoplasmic transport of radioactive proteins from an injection site in another part of the cerebral cortex (× 120). See page 572. [E. G. Jones *et al.*, Washington University School of Medicine, St. Louis, Missouri]



An important peripheral to the 9800 series of calculators is the 9871 printer/plotter. Its bidirectional platen and programmable horizontal and vertical tabulation permit the calculator-controlled preparation of graphs, charts, and text, such as are combined in this statistical portrait. Price of the printer is $3400*.

A powerful new desk-top programmable that gives you four dimensions of computation.

The HP 9815A provides keystroke calculation for scratch-pad-type problem solving; dedicated problem handling with automatic set-up; programmability for sophisticated problems; and interfacing capability for extended I/O, plus instrumentation control, data acquisition, and data processing. Add its range of peripherals, and its price, and you have a flexible, economical, on-site "computer" for virtually any lab.

Running a program on the new 9815 desk-top programmable calculator is this easy: position the mode switch to AUTO-START, plug in a prerecorded, high-speed data cartridge, and turn on the power. The calculator automatically loads and executes the first program on the cartridge. You can choose from HP's library of prerecorded program pacs in such fields as statistics, electrical engineering, medicine, and surveying. Successive users can quickly personalize the calculator for their particular need.

Program and data storage is compact: a single data cartridge holds up to 48 programs, each up to 2,008 steps long, providing 96,384 bytes of memory.

Bidirectional search and interchangeable data and program storage capabilities give the calculator the power and speed to handle complex programs.

The 9815 contains the computer functions necessary to give you complete programming language and power. Besides facile programmability, it has an extensive preprogrammed keyboard for quick, single-stroke calculations: 28 scientific function keys and 4 arithmetic keys. It has HP's own uncomplicated logic system, to give you answers you can trust. It has a built-in printer that prints instructions, and gives you a permanent, labeled copy of your calculation, plus a numeric display.

The fourth dimension of this new desk-top programmable is its interfacing capability. An optional $200* two-channel I/O module allows a choice of seven different HP peripherals to work with the 9815, including the new HP 9871A printer/plotter.

The 9815 also accommodates the Hewlett-Packard Interface Bus, which allows it to control, gather, and process data from as many as 15 HP-IB-compatible instruments. The 9815 also works well with BCD instruments and devices with 8-bit parallel interfaces.

Quite a repertoire for a price of $2900*.

Highly autonomous Mini DataStation saves computer time and data transmission costs.

Featuring built-in mass storage, HP's second microprocessor-controlled interactive terminal performs by itself many data operations that otherwise require a computer.

The new 2644 Mini DataStation can dramatically reduce computer time and data transmission costs by allowing you to do data preparation and program development completely off-line. Equipped with two fully integrated tape transports, the 2644 provides 220,000 bytes of integral mass storage on interchangeable, shirt-pocket-size data cartridges.

These are some things you can do on the 2644, *off-line*, using only its own microprocessor-based capabilities:

- Enter data from the keyboard using any of its four plug-in, 128-character sets, and view the data instantly on a high-resolution display.
- Store data on tape. Many hours of work at the keyboard can be stored on a single cartridge by pushing a single button—and selectively retrieved in seconds.
- If data entry requires a form, call any of up to 255 variable-length files stored on tape and retrieve the form you want at search speed, usually within 10 seconds—with pushbutton ease.
- Edit the data, using the 2644's full editing capabilities, including character and line insert and delete, cursor sensing and positioning, and programmable protected fields.
- Batch-transmit stored data to the computer directly from the cartridge, at transfer rates up to 2400 baud.
- Move data among the 2644's functional units by pushbutton—between tapes, semiconductor memory, optional printer, and data communications interface.
- Expand terminal applications by using the 2644's dual tape unit so that one cartridge provides a write-protected input while the other provides a separate output.

The 2644 not only conserves computer resources and reduces communications line charges, it also improves the efficiency of data entry and provides a valuable backup during computer down-time. At $4,400* in quantities of six, the 2644 represents another reasoned advance that increases computing and data processing options at the user's level.

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to enforce the law. To quote the U.S. Commission on Civil Rights, "... Clearly, the promise of equal employment opportunities has not been achieved in institutions of higher education; HEW's failure to enforce the Executive Orders has played no small role in frustrating this objective" (*3*). The General Accounting Office has also found that HEW negotiated and conciliated with colleges over prolonged periods rather than requiring them to prepare acceptable affirmative action plans, and has failed to penalize those that don't (*4*).

HEW has dragged its collective feet to the extent that it had to be ordered by a federal court to impose sanctions on ten states that had been in flagrant violation of the law for years (*5*). A suit has recently been filed alleging lack of enforcement of affirmative action by HEW and the Department of Labor (*6*).

Weinberger says that the regulations call for "good faith attempts" rather than strict quotas. However, in the area of affirmative action, the courts have held consistently that "good" or "bad" faith is not the keystone, but rather that the results of policies are what count (*7*). Any recruiting or promotion requirement that has a disparate effect on minorities must be validated as an "essential business necessity," but universities often refuse to do this, and HEW has not pushed the matter. Although academicians may hold as an article of faith that publishing is a valid predictor of future job performance, it is not proven. There are other facets to the job of being a "qualified" faculty member besides doing research (such as teaching and counseling), and these may not be predicted well by the amount of publication (*8*).

Where were the cries of horror and the concern for quality in years past, when the hiring pattern in major universities consisted of "you hire my graduate students and I'll hire yours," a system which perpetuated the old-boy network to the exclusion of women and minorities? It seems to me that universities are being hypocritical if they complain about the possibility of having to hire a *possibly* unqualified minority (without any validation of the standards used for qualification) when, in fact, the percentage of minority faculty members has not increased perceptibly in the last few years.

BERNARD ORTIZ DE MONTELLANO
Society for the Advancement of Chicanos and Native Americans in Science, Post Office Box 3831, Albuquerque, New Mexico 87110

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Hepatitis B Vaccine

In the interest of a more complete representation of the present state of development of a vaccine against the ubiquitous and debilitating hepatitis B virus (HBV), I would like to add some relevant information omitted from Thomas H. Maugh's article (Research News, 11 April, p. 137). Maugh reports that two groups of investigators, one from the National Institutes of Health and one from the Merck Institute, have independently developed a new vaccine against HBV, a vaccine containing hepatitis B surface antigen (HB_sAg) isolated from chronic asymptomatic carriers of HBV.

In 1974, a group from the State Institute of Hygiene, Warsaw, Poland, headed by A. Nowoslawski and myself, developed a vaccine based on the same principle as that of the American investigators. To isolate HBV-derived antigens (HB_sAg, HB_cAg) from the serums of chronic asymptomatic carriers of HBV, we used immunoabsorption column chromatography, followed by formalin inactivation of HBV-derived antigens.

The vaccine has been tested for immunogenicity in humans with both acute and chronic hepatitis B and in patients convalescing from hepatitis B infection (*1*). Safety controls for the first batch of vaccine have been established in chimpanzees, and challenge experiments have been performed, also in chimpanzees, here at the Wistar Institute. Additional batches of vaccine will be available soon, and their protective effect will be checked in humans in HBV endemic areas.

WITOLD J. BRZOSKO
Wistar Institute, 36th Street at Spruce, Philadelphia, Pennsylvania 19104

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SCIENCE

Higher Education: Who Needs It?

In the general run of human activity currently there seems to be a pervasive idea, adhered to by many but perhaps not really accepted, that given time and effort anyone can master anything of an intellectual nature. Thus, the concept of elitism in education has become almost obsolete. It has come to be associated with a high position in society, being better born, rich, and so on. The idea that one individual may be better endowed than another for a particular function or pursuit has remained respectable only in some less essential, although not less interesting, areas such as sports and entertainment.

Few would disagree that, for some, no amount of training would enable them to perform some physical feat such as lifting a 500-pound weight off the floor. Why then is there a general belief that equal mastery of educational course material by all is possible? This is not to say that there are not differences in learning rates. Such differences are certainly the basis for the self-paced method of instruction, which has proved reasonably successful in some areas. Nevertheless, it is recognizing the obvious to say that we do not all develop the same capacity in all endeavors, even though we may be given the opportunity to do so.

Given that there is a natural range of intellectual as well as physical abilities, why do we persist in trying to diminish or even eliminate elitism in education? Why persist in the fiction that exposure to certain types of developed understanding beneficial to a few is of more than passing interest to most? Indeed in some areas like quantum electrodynamics we do not subscribe to this idea, but in many more common ones we do and insist that all of us can attain uniform intellectual skills.

Perhaps this current obsession, the taint of elitism, stems from two attitudes based on experiences of the past. One of these is that the mere acquisition of a certificate of exposure to education has made some feel superior, wrongly of course. The other is generated by the previously demonstrable fact that white collar skills were more highly paid than blue-collar skills, which is no longer true.

If the experiences of the past no longer hold true, why do we cling to the beliefs which sprang from them? It does not follow that making maximum use of those most talented in intellectual pursuits demeans the rest of us. If we applaud the identification and careful nurturing of the talented performer, why not that of the talented mind? The difficulty may be that our dissonant musical notes are readily recognized and accepted, but our inability to master mathematics is not. It is too easy to ascribe limited intellectual ability in one or another area to lack of interest.

This position does not lead to a negative attitude toward equal educational opportunity nor to the attitude that the intellectually able in one field are socially better or generally wiser. It does say that talented individuals are not too plentiful and that talent should be nourished where it appears. In other words, it is unwise to disregard the real differences in intellectual capabilities, both for the individual and for society.

This argument leads inevitably to the conclusion that not all are equally educable. But it also leads to the proposition that that form of training does not necessarily produce wiser or nobler individuals.

So recognize elitism in education for what it is: the opportunity for creative individuals to pursue intellectual goals and ideals somewhat beyond the boundaries confining many of us. If we destroy this environment of creative endeavor, whether it be scientific, artistic, or literary, we will have lost a great gift for humanity.—NORMAN HACKERMAN, *President, Rice University, Houston, Texas 77001*