

High-school students shun careers in physics

As part of an attempt to determine what the prospects for future undergraduate physics majors in our institution might be, the physics department at our institution undertook an extensive survey of high-school students in the Metro-East St. Louis area. Over 1500 students in advanced mathematics, chemistry and physics classes were surveyed in 18 high schools ranging in size from about 200 to 3000 total students. The results suggest that university physics departments might do well to adopt much more flexible curricula if they are to survive in the years ahead.

While a detailed copy of this report is available by writing to the address below, some brief findings are stated here:

- 1) The average GPA of this "select" group of students was 3.2 out of 4.0, and about 90% intended to go to college.
- 2) Only about 1.3% indicated they wanted to major in physics; this compares with about 3.2% in chemistry and 8% in mathematics. The percentage of indicated majors for significant discipline responses is indicated in the table.

About 35% of this group had taken a first course in high-school physics and only about 7% had completed an advanced course. These percentages compared with 75% who had completed a high-school chemistry course. Even more, about 80% had taken algebra and geometry. The number of students who had taken trigonometry was about the same who had taken the first-year physics course.

A few questions on attitudes toward science and career plans were included

Majors chosen by high-school students

Discipline	Percentage of prospective majors
Science	11%
Math	8%
Engineering	5%
Medicine	4%
Biology	3.5%
Nursing	3.5%
Business	3.5%
Chemistry	3.2%
Law	3%
Education	3%
Music	2.5%
English	2.5%
Psychology	2%
History	2%
Physics	1.3%

in the survey form. About 40% of the students surveyed said they "liked science"; another 50% described it as "hard but interesting" or "not bad." About 40% indicated that they planned to earn an advanced degree in some field.

While physics departments will clearly continue to play an important service role for the science majors above, it would appear that they would do well to become involved in much more serious interdisciplinary and multidisciplinary efforts even at the undergraduate level. Broader physical science and applied physics majors would appear to have some appeal to many "undecided" students.

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called "water dowzers" and "diviners" and concluded that some sort of an electromagnetic-wave phenomenon was involved. Instrumentation checks by Tromp in the early 1940's indicated that some legitimate "dowzers" and "diviners" not only appeared to be able to detect underground running water in geologically unpromising areas, but also apparently possessed a magnetometer sense and were able to detect buried and wall-encased pipes and cables. This was later verified with laboratory magnetic solenoids and endocardiographs. Later, much to his surprise, he found some of them were able to detect passive targets such as earth faults, where abrupt changes in soil-resistivity existed. This implied a possible remarkable "proximity-detector" capability via either their own reflected body bioelectric field or thermal radiations. This, in turn, suggested that water "dowzers" are able to detect the underground-stream wet-soil boundary and an electric charge developed by the running water, thus verifying Maby and Franklin's conclusions.

Some casual experiments conducted by the writer many years ago with routine electronics equipment and so-called "psychic" individuals indicated that, while normal physical effects appeared to be involved, poorly understood and abnormally sensitive natural sensory apparatus seemed to be at work.

Poisonous snakes, insects and insect-catching plants have been shown to possess infrared senses. The moth's antenna have been shown to be efficient dielectric-array infrared "eyes." Rather startling electronic instrumentation checks by C. Backster showed that even plants possess some kind of intelligence awareness and telepathic senses. Some human "psychics" such as Rudi Schnieder and Kuda-Bux seemed to have been equipped with infrared "vision" and electric and telepathic senses. Ehrenwald, the psychiatrist, mentioned strange "synchronous" dreams between himself and some of his patients. An internationally-known inventor and a biomedical researcher both made random radio-wave "jammer" tests on a well known "medium" and successfully cut off her "contact" in synchronism with the jammer signals, while she was in her trance state. Sharks have just

Teleneural physics

As R. A. McConnell pointed out in his letter in the May issue (page 13), W. Franklin's "teleneural" suggestions have been anticipated. The Italian medical researcher, F. Cazzamalli, was one of the earliest pioneers in this field, having published biological-radiation papers in the medical journal *Neurologica* about a half century ago. Back in 1946 S. W. Tromp, of the geology department of the University of Leiden in

Holland, referred to it in his book as "psychical physics." Soviet scientists have used the term "biological radiations" in their work. Other technically qualified investigators in this field (many of them well known inventors, electronics engineers, biologists, biomedical researchers, geologists, psychologists, etc.), have used the more familiar terms "parapsychology" and "ESP phenomena."

In the 1930's, the British team of Maby and Franklin investigated so-

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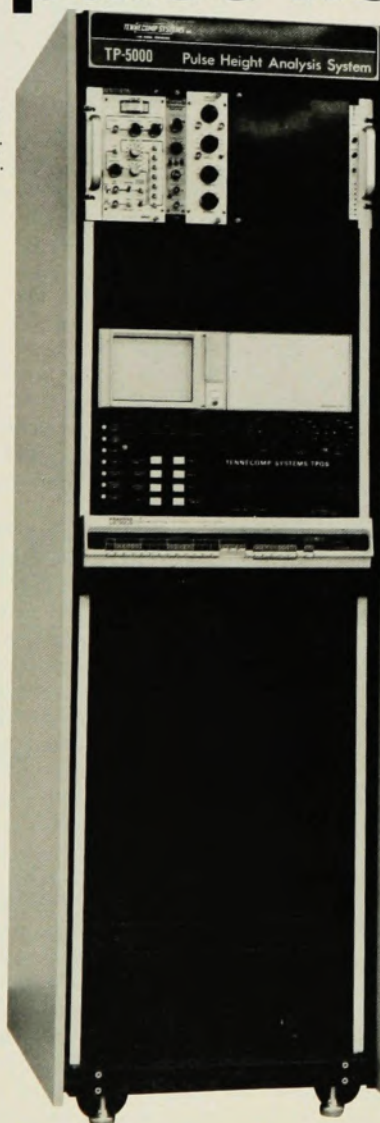
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been found to possess an electric sense with which they can detect and attack fish buried in the mud.

Birds are known to be sensitive to magnetic fields and to radar beams. Their remarkably sophisticated long-range navigation techniques (which include stellar navigation) have been satisfactorily explained, but one sticky riddle still remains—what serves as the telepathic “homing beacon” that enables them to sense their distant destination points across trackless oceans so accurately *beforehand*?

Hence so-called “occult,” “supernatural” or “psychic” phenomena appear to have a rational physical energy-field basis, for the most part. Not only have past investigators suggested “teleneural” control of computers and servomechanisms, but NASA people have actually seriously looked into this possibility for the past decade; and science-fiction writers have belabored this theme for decades prior to this.

A bibliography list on the above items will be mailed to readers interested in this esoteric and little-understood field.

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Browsing library at AIP?

The increasing number and cost of physics books and the concurrent monetary shortage faced by universities have put science libraries into a difficult situation, which is easy to illustrate first hand:

For the 1973-74 academic year our library has budgeted about \$4500 for physics books. During 1973, *PHYSICS TODAY* listed new books (received) having a total retail value of about \$11 700. About 14% of the listed books were reviewed in *PHYSICS TODAY*.

Our science librarian has cheerfully agreed to let the physics department use its expertise to suggest what subset of available books should be purchased by the library from the above-mentioned budget. But even in the New York City area, which is heavily endowed with bookstores and book publishers, it is very difficult to gain direct, efficient access to a reasonably complete display of new physics books. Consequently, it is difficult for us to make confident recommendations, since most of our book information comes from publishers' advertisements.

A natural, significant step toward the solution of the above problem would be the establishment of an AIP Browsing Library. The primary purpose of the library would be to provide a reasonably complete, non-circulating collection of

current physics-related books that could be browsed by librarians and physicists involved in book-acquisition decisions. All books (including conference proceedings) normally listed in *PHYSICS TODAY* would be displayed in the AIP Browsing Library for, say, one year following the date that the book title appeared in the “New Books” section of *PHYSICS TODAY*. It is anticipated that extra copies of those books that *PHYSICS TODAY* decided to have reviewed would be happily supplied by the publishers directly to the reviewers so that as a rigid rule, books would not leave the Browsing Library during the one-year period.

As a possible extension of the above idea, the AIP might explore the possibility of developing a SPIN-type computer filing system where (with proper approval) the table of contents and selected excerpts from the books in the AIP Browsing Library would be available along with the standard Library of Congress information, price, and possibly a mini-review with a standard format (research value, undergraduate text suitability, and so on).

In addition, it is intriguing to consider the possibility of an accessible, permanent, noncirculating physics collection composed of all the books which have served their time in the AIP Browsing Library. Perhaps some well-located public or private institution would agree to house and staff such a collection.

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EDITOR'S NOTE—The American Institute of Physics is actively considering plans to establish a browsing library as proposed above. Further ideas and suggestions would be welcomed.

Invitation from Moscow

The Moscow Seminar on Collective Phenomena cordially invites the participation of visitors interested in a broad range of topics including physics, mathematics, chemistry, economics, cybernetics, linguistics and biophysics. The seminars are held every Sunday at noon, in the apartment of I. and V. Brailovsky, pr. Vernadskogo 99, korp [building] No. 1, kv [apt.] 128. The address may be reached by taxi or by ten minutes walk from Metro Station Yugo-zapadnaya. Visitors are invited to present papers, and are asked to visit the above address the day before the seminar to communicate title and abstract.

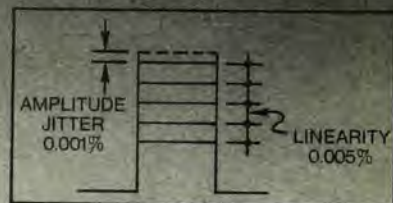
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