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THE WHITE HOUSE
WASHINGTON

April 17, 1992

Dear Yuri:

The period April 26-May 2 is terribly crowded with the NAS Annual Meeting and several out of Washington Commitments on my part.

However, I look forward to seeing you at the National Science Board dinner at the State Department on April 29.

Sincerely yours,



D. Allan Bromley
The Assistant to the President
for
Science and Technology

Dr. Yuri Ossipyan
Russian Academy of Sciences
117901 Moscow
Leninski prospect 14
Russia

РОССИЙСКАЯ АКАДЕМИЯ НАУК
RUSSIAN ACADEMY OF SCIENCES

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FAX TRANSMISSION

Date: April 15, 1992
From: Prof. Ossipyan
To: Prof. D.A. Bromley

Fax (095) 230-2043

Fax No: 202 - 395 32 61

Message (if any):

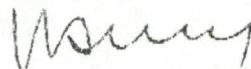
Dear Allan,

According to the invitation of Frank Press I am going to
be in Washington during a week April 26 - May 2.

I hope we'll have opportunity to meet for discussing
our problem.

Looking forward to seeing you soon.

Sincerely yours,



Yuri Ossipyan

Note: If there is any problem with the transmission
of this fax please call (095) 237.68.03

THE WHITE HOUSE

WASHINGTON

March 15, 1991

Dear Bill:

Unfortunately, when Dr. Maryanne Meyers called me to set up an appointment on January 29 it turned out that on that day I was completely unavailable. Of course I look forward to meeting and talking with her, and we have arranged that the next time she comes to Washington, I shall make every attempt to make sure that she gets on my calendar.

Thanks for your efforts in getting us together.

With all best wishes,

Sincerely yours,



D. Allan Bromley
Assistant to the President
for
Science and Technology

Mr. William Golden
Carnegie Commission on Science and Technology
40 Wall Street
New York, New York 10002

THE WHITE HOUSE

WASHINGTON

March 15, 1991

Dear Bill:

This is a belated note to express thanks, both personally and on behalf of the other science advisors who attended the Carnegie-sponsored discussions at Mt. Kisco. Please accept our appreciation--you and Josh, as well as David Hamberg and David Robinson--for, first of all, suggesting the idea and then providing such excellent facilities to carry it forward.

Although it was unfortunate that the science advisors from Canada, Germany, and Italy found it impossible to attend, I can only say that, from my point of view, and I believe from that of the other participants, the meeting was a great success. The ambiance was such that from the very beginning the discussions were candid, open, and frank, and I believe that all of us learned a great deal from them. Equally important, we have developed a personal feeling of friendship and trust that I believe will serve all of us well in the days ahead.

We agreed that we would not discuss any of the details of our conversations and so far I have been holding to that agreement. I was more than a little distressed to find a rather long article in the issue of *LeMond* appearing almost immediately after the meeting, and I can only assume that some reporter managed to find Hubert Curien and extract a fair amount of information from him.

In fact there was nothing really in the discussions, other than the level of detail and candor, that would make it in any way damaging were the proceedings to be made public. But the other advisors and I all felt that we would be better able to assure equal candor in subsequent meetings if there was a recognition that what we said would not within hours appear on the front page of some major newspaper.

You and Dave Beckler were most gracious hosts and the staff at Mt. Kisco went out of their way to make the occasion a relaxed and pleasant one. I am convinced that the occasion was one that has made a major contribution to the entire G-7 plus Soviet scientific communities.

That being the case, it was the unanimous feeling of the participants that having gotten off to such an excellent start, we should plan to continue meetings of this kind. It was also their feeling and mine that if the Carnegie Commission would be willing to do so, it would be nice to hold one more meeting at Mt. Kisco, sometime in October or November of this year. Thereafter other nations would wish to host meetings at their expense and in their territory.

You will be, I hope, pleased to know that, again by unanimous consent, the group has decided that it should be known simply as the "Carnegie Group."

Again, my thanks for coming up with this excellent idea and for making possible what turned out to be an extremely profitable session.

With warmest best wishes,

Sincerely yours,

A handwritten signature in dark ink, appearing to read 'D. Allan Bromley', with a stylized, flowing script.

D. Allan Bromley
Assistant to the President
for
Science and Technology

Mr. William Golden
Carnegie Commission on Science and Technology
40 Wall Street
New York, New York 10002

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*Through January 20, 1989

January 8, 1991

Dear Allan:

Dr. Mary Ann Meyers, a friend of many years from the administration of the University of Pennsylvania, has just become President of the Annenberg Foundation* which, heretofore, has been funded by Ambassador Annenberg on an entirely personal basis.

Dr. Meyers is a fine, thoughtful, responsible, and personable young woman. The primary focus of the foundation's attention will be science and math education for grades K-12. I encouraged her to call you, and I encourage you to see her on some convenient occasion when she is in Washington in the near future. The foundation can be a very constructive influence in the private sector, and I'm confident that a little of your time devoted to get to know her will be time well spent.

With warm regards,

Sincerely,



William T. Golden

Dr. D. Allan Bromley, Director
Office of Science and Technology Policy
Old Executive Office Building, Suite 358
17th St. & Penn. Ave., NW
Washington, DC 20506

* 2.1 billion

THE WHITE HOUSE
WASHINGTON

October 9, 1990

Dear huda mila and Yuni:

Many thanks for your telegram of sympathy. After 44 years with Pat it is difficult indeed to even imagine life without her. There were so many things that we had planned to do in a future that has slipped away. — And so many old friends like you whom we had hoped to have as our guests here in Washington.

At a time like this it is the support and sympathy of old friends that is of greatest help.

Many many Thanks for your note — warmest best wishes. I hope that our paths cross soon.

Sincerely yours
William B. Franke.



АКАДЕМИЯ НАУК
СОЮЗА СОВЕТСКИХ СОЦИАЛИСТИЧЕСКИХ РЕСПУБЛИК
ACADEMY OF SCIENCES OF THE USSR

117901 Moscow
Leninski prospect, 14
Telephone: 237 68 03
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FAX TRANSMISSION

DATE: October 9, 1990

FROM: Prof.Ossipyan

FAX NO: (095) 230 20 43

TO: Prof.Allan Bromley

FAX NO: (202) 3953261

Message (if any):

Dear Allan,

These mournful days we share your deep grief. Please, receive our profound and sincere condolences. With great sorrow we have learned the tragic news of the death of Patricia whom we all loved so dearly. In our memory she will remain nice and charming as she always was.

With love,

Yuri and Ludmila Ossipyan

THE WHITE HOUSE
WASHINGTON

November 3, 1989

MEMORANDUM FOR JAMES W. CICCONI

FROM: D. ALLAN BROMLEY *DAB*

SUBJECT: Presentation to President Gorbachev of the
Premier English-language edition of Quantum

I endorse Bill Aldridge's proposal in his November 1 letter to the President (attached) that the President present the first copy of Quantum to President Gorbachev at the Mediterranean Summit -- as a good will gesture that acknowledges both countries' commitment to education and to the cooperative effort involved in this bilateral educational exchange. I am attaching background material on this new and challenging science magazine.

Quantum, a new English-language physics and mathematics magazine intended for gifted and talented high school science students, is a joint project between U.S. education organizations and the USSR Academy of Sciences.

Quantum is modeled after the popular Soviet student science magazine, Kvant, published in the Soviet Union since 1970 and to which some of the Soviet Union's most distinguished scientists regularly contribute articles. A National Science Foundation grant is underwriting the initial costs of the premiere U.S. edition, which will contain translations of the best items that have appeared in Kvant since 1970, to be supplemented in following issues with articles by American scientists and mathematicians which will likely be translated into Russian and published in future issues of Kvant.

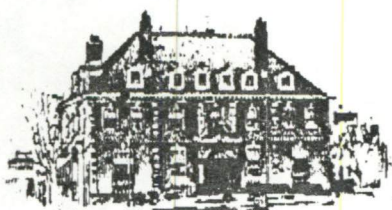
Attachments

Tab A Copy of Aldridge November 1 letter to the President

Tab B Quantum abstract

Tab C NSF press conference, Washington Post and New York Times articles on Quantum

bcc: T. Ratchford
M.H. Kruter
A. Hammond



NATIONAL SCIENCE TEACHERS ASSOCIATION

1742 Connecticut Avenue, NW
Washington, DC 20009-1171

(202) 328-5800
FAX (202) 328-0974

November 1, 1989

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An Affiliate of the American
Association for the
Advancement of Science

The Honorable George Bush
President of the United States
The White House
1600 Pennsylvania Avenue
Washington, DC 20500

Dear Mr. President:

The National Science Teachers Association, in cooperation with the American Association of Physics Teachers and the National Council of Teachers of Mathematics, is involved in a cooperative project with the U.S.S.R. Academy of Sciences. We will be publishing the equivalent of a very popular Soviet student science and mathematics magazine for the English-speaking world. The January issue of this magazine, called *Quantum*, will be premiering on November 27.

I have enclosed information including an abstract and description of the magazine, along with some articles, regarding *Quantum's* premiere issue. This magazine has as its editors-in-chief some of the finest scientists in the world. Editor-in-Chief in physics for the United States is Sheldon Glashow, Nobel laureate, of Harvard University; Editor-in-Chief for mathematics is William Thurston of Princeton University; and Editor-in-Chief in Moscow is Yuri Ossipyan, Vice President of the Soviet Academy of Sciences and Science Advisor to President Gorbachev. Dr. Ossipyan holds the same position in the Soviet Union as Allan Bromley in the United States.

The National Science Foundation has provided financial support to publish this important magazine for our most talented math and science students. Thus, this is a truly cooperative U.S./U.S.S.R. project, but one that has been initiated by the United States. Also, all of the financial support for this project has come from the U.S. The Soviets have provided translations and content for the first issue. As this magazine is offered on a regular basis, it will have half U.S. authors and half Soviet authors and will then be truly a joint international product.

It is especially fitting that the very first copy of the first issue of *Quantum* be delivered by you personally to President Gorbachev on December 2 when you meet. We will guarantee that no other copies of the publication will be released until you hand one to President Gorbachev. We further guarantee that the second copy will be yours to keep.

I would urge you to carry out this important science education act. In this age of international cooperation, I cannot imagine anything that would emphasize more strongly your role as the "Education President" and your willingness to cooperate with the U.S.S.R. on important domestic matters.

Respectfully,

Bill G. Aldridge

Bill G. Aldridge
Executive Director



NSTA NEWS

National Science Teachers Association
1742 Connecticut Avenue, NW, Washington, DC 20009

202-328-5800

Affiliate of the American Association for the Advancement of Science

QUANTUM ABSTRACT

The National Science Teachers Association, in cooperation with the American Association of Physics Teachers and the National Council of Teachers of Mathematics, is initiating a new science publication for young people - Quantum. This publication, a joint effort among United States education organizations and the USSR Academy for Sciences, will offer children in the English speaking world an opportunity to be challenged by interesting science and mathematics articles, stories, puzzles and problems. Through a grant from the National Science Foundation, NSTA will be producing two pilot issues of the magazine.

Quantum is a new physics and mathematics magazine for gifted and talented high school students. Quantum is one of the first US-USSR magazines to be published. Quantum is based on the popular student science magazine, Kvant, which has been published in the Soviet Union since 1970 and has a paid circulation of 200,000. Quantum is designed to entertain students while challenging their intellectual agility and stamina.

Pilot issues of Quantum will contain translated versions of articles which have appeared in the Russian language, Kvant. Quantum is intended to nurture those students who will eventually become scientists and mathematicians. Quantum will provide them with supplemental resources and enrichment experiences while they are still in high school.

The gifted high school math and science group is one of the few target student audiences to which no specialized math and science magazine is directed. This magazine will provide these students with opportunities to hone their creative thinking skills and develop their problem solving abilities. The problem solving pages will help U.S. students become familiar with the kinds of problems used in international competitions, such as the International Physics Olympics, for which the judging criteria is based on student solutions to science and math problems.

-more-

During the first two years of publication, Quantum will primarily contain translated articles by noted Soviet scientists which have previously been published in Kvant. After the first year, the content will be supplemented with articles by American authors, and the American contribution is expected to grow each year. It is likely that the articles written by American scientists and mathematicians will be translated into Russian and published in future issues of Kvant.

Quantum will be a 48 page magazine, and will contain original works of art by Soviet artists, which have appeared in Kvant. The articles and artwork has been obtained through an agreement between NSTA and the Quantum Bureau in the Soviet Union. The Quantum Bureau has been established specifically to work with the U.S. with the production of Quantum.

The National Science Teachers Association is the world's largest professional organization dedicated to improving science education on all levels- preschool through college. NSTA believes that a quality education is important for all students, not just those who will pursue careers in science. Founded in 1944, with its headquarters in Washington, D.C., the association's current membership of almost 50,000 includes science teachers, scientists, science supervisors, institutes of learning and others interested in science education.

The National Council of Teachers of Mathematics is a professional organization who's primary interest is improving classroom instruction in mathematics at all level. NCTM has a membership of nearly 40,000 members.

The American Association of Physics Teachers is a professional organization with a goal of improving Physics education at all levels. AAPT has a membership of almost 15,000 physics teachers and those interested in improving Physics education.

QUANTUM

Premiere Issue
Fall 1989

Feature articles

- D. B. Fuchs, *Bend This Sheet (But Do Not Fold, Staple, or Mutilate)*: An exercise in paper bending that explores the notion of "developable surfaces." Fuchs asks the reader to physically perform certain operations as well as mentally follow the myriad contortions of a paper sheet. He makes a point of avoiding formal proofs--"all our proofs," he says, citing an ancient Indian manuscript on geometry, "will in fact consist of only one word: 'Look!'" The article ends with a discussion of the mathematical version of the "swallow-tail," which serves to explain the beautiful but strange watercolor at the beginning of the piece.
- A. L. Stasenko, *It's Beautiful--But Is It Science? (There's Something Fishy About Those Waves)*: An analysis of a popular Russian painting that leads to contradictory conclusions about its subject. Stasenko examines two types of waves created by a body moving in water: vertical waves at the object's leading edge and concentric surface waves. Estimates of the size of certain elements in the painting are gathered by polling observers; in the course of averaging the measurements obtained by this imprecise method, Stasenko touches on the theory of errors in physical experiments.
- Alexander Soifer and Edward Lozansky, *Pigeons in Every Pigeonhole (. . . and New Yorkers, and Chess Pieces . . .)*: An elaboration of the pigeonhole principle (also known as the Dirichlet principle), which plays a special role in mathematics and pops up at mathematical competitions. The principle is easy to state and easy to prove, but it's sometimes difficult to figure out how to apply it. Soifer and Lozansky present seven examples of how to frame and solve a problem with the pigeonhole principle, then offer fourteen problems for their readers to solve themselves.

- A. N. Pegoyev, *Don't Stand Under the Bulb! (Just When You Thought It Was Safe To Turn On the Light)*: A discussion of the physics involved when a light bulb burns out. Three failure modes are examined: (1) burnout of a small segment of filament; (2) burnout of a large portion of filament; (3) burnout of part of the input lead. Modes 2 and 3 can sometimes cause light bulbs to shatter. Pegoyev also examines two other unusual cases of bulb failure: the bulb that disintegrated the moment it was turned off and the string of twenty bulbs that burned out simultaneously.

Quantum's Lab

- A. A. Borovoy, *Holding Up Under Pressure (Bridges of Stone, Concrete--and Paper)*: A hands-on treatment of how to maximize rigidity and minimize mass in engineered structures. Borovoy asks his readers to make various paper bridges, pointing out at the end that "many famous inventors and engineers took their first career steps by making models of various machines and structures."

Math and Physics Through the Years

- Yu. P. Solovyev, *Van Roomen's Challenge (And Vieta's Triumph)*: A narration of how the Frenchman Franciscus Vieta brought renown to his country in the sixteenth century. The Dutch mathematician Adrien Van Roomen's had produced a monstrous, puzzling equation and challenged the world to solve it--neglecting, however, to notify the French, because there were no French mathematicians of international fame. Vieta not only solved the equation but pointed out a mistake in the statement of the problem. Later, among Vieta's students in Paris one could find--Adrien Van Roomen.
- Alexey Sosinsky, *Of Amoebas and Men (True Adventures in Topology)*: The story of how a renowned algebraic topologist (J. F. Adams) lost a bet with his graduate student. He certainly knew his topological theory--it's just that he'd forgotten about the dinner jacket the amoeba was wearing . . .

Kaleidoscope (large-format centerfold)

Kith and Kin (Amicable Numbers and Prime Twins): A kaleidoscopic tour of one small neighborhood of number theory.

Problem Corner

Five problems in math, five in physics.

Quantum in the Classroom

V. Nakhshin, Equations Think for You: How mathematics can help us reject incorrect assumptions while performing physics computations.

Recreational Problems

Five problems in physics and math.

Quantum Smiles

B. Bolotovskiy, One Problem Leads to Another: An article that shows there's a funny side to all these numbers and equations.

Happenings

N. N. Konstantinov, The Tournament of Towns (A More Relaxed Approach to Math Competition).

Alexander Soifer, The Summer Institute at LaSalle.

Answers, Hints, Solutions

Answers for Problem Corner, Recreational Problems.

Chess Page

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550



OFFICE OF THE
ASSISTANT DIRECTOR
FOR SCIENCE AND
ENGINEERING EDUCATION

REMARKS OF BASSAM Z. SHAKHASHIRI,
ASSISTANT DIRECTOR, NATIONAL SCIENCE FOUNDATION
(SCIENCE AND ENGINEERING EDUCATION)
AT "QUANTUM" NEW CONFERENCE
SEPTEMBER, 26, 1989

In the name of the National Science Foundation, I want to congratulate the National Science Teachers Association, the American Association of Physics Teachers and the National Council of Teachers of Mathematics for creating "Quantum", the new school-level science magazine, and thus opening new vistas for thousands of young people who will be shaping American science and technology a generation from now.

Gifted students--especially gifted science students--are a vital national resource to which, I fear, we have paid too little attention in the past. That inattention has cost us dearly in recent years, as study after comparative study of the performance of American and foreign math and science students has demonstrated clearly. We have seen that young Americans in the elementary and secondary grades are far behind contemporaries in countries as culturally varied as Canada, Poland and South Korea in science achievement. Even juniors and seniors in advanced science and math classes in our high schools fare poorly in comparison with similar students in other countries.

We are in a struggle for economic survival. If we wish to maintain the technological leadership we will need in the twenty-first century, we must improve the relative standing of "our side" in this vital international sweepstakes.

"Quantum" is a intriguing approach to the cultivation of excellence among students of science. Let me use an unstylish word to describe it: enlist. There is no ambiguity about Quantum's intended audience--it is the elite among students of science, the gifted few percent of youngsters for whom the horizons of the mind know no limits.

"Quantum" is, in good measure, the brain child of Ed Lozansky here, who was one of the original editors of the magazine "Kvant" when it was started in the Soviet Union nearly twenty years ago. There is nothing quite like it in the United States, but there is no reason why the Kvant idea can not gain a substantial following

here. The National Science Foundation was impressed when a group of science and math teacher association leaders headed by Bill Aldridge proposed an English-language analog to Kvant, to be cooperatively produced by American and Soviet scientists and editors; in fact, we were impressed enough to provide more than a third of a million dollars in seed money for the project.

The first issue will be off the press soon, and I predict that it will find an enthusiastic audience among budding scientists in our high schools. I'm hoping that "Quantum" won't preach solely to the converted, that it will reach other questing young minds and spark in them a desire to make science--and the teaching of science--their life work.

Let me offer a personal note. For several years (almost 20), first at the University of Wisconsin where I am a professor of chemistry and more recently here in Washington, I have put on programs at Christmastime and throughout the year dedicated to the proposition that "Science is Fun." Fun is only a part--an important part--of science, of course; in its basic purpose, science is a most serious endeavor, dedicated to understanding the universe and bettering the human condition. But science is fun too, and that's one of the things I find so appealing about "Quantum"--it will be fun to read. Another thing I find appealing is that "Quantum" will be helping to span a great gulf of understanding--or maybe misunderstanding is a better word--that has separated the United States and the Soviet Union for so long. Ideas that have stimulated bright Soviet kids will now, in translation, be available for the stimulation of bright American kids, and in time, American ideas about science will stimulate the minds of bright Soviet kids.

To those skeptics who might ask what the Russians have to offer Americans in the way of science, let me just mention an obscure schoolteacher named Konstantin Tsiolkovski, who at the turn of this century wrote a paper on rockets that formed the basis for later work by Hermann Oberth in Germany and Robert Goddard in the United States. Out of those simple beginnings came the Apollo moon program, the Soviets' "Mir" space station, and the incredible twelve-year flight of Voyager to Neptune and on out to the endless reaches of interstellar space.

Soviet science has a long and rich tradition. So does American science. "Quantum" and "Kvant" are two sides of a coin that will enrich not only our two countries, but the whole world. It's a pleasure and a privilege to be in at the beginning of this promising and noble endeavor.

WEDNESDAY, SEPTEMBER 27, 1989

U.S., Soviets to Develop Youth Science Magazine

By Sean Kelly
Special to The Washington Post

Professors from the Soviet Academy of Sciences have agreed to help United States educational organizations develop a science magazine for high school students who are gifted in math and physics.

Quantum, the English-language equivalent of the popular Soviet science magazine, Kvant, is to be published by the National Science Teachers Association (NSTA) in cooperation with the American Association of Physics Teachers and the National Council of Teachers of Mathematics. The project is being funded by the National Science Foundation. The first issue is scheduled for November; the NSTA announced yesterday.

"Quantum is an intriguing approach to the cultivation of excellence among students of science," said Bassam Shakhashiri, assistant director of NSF's science education directorate. "There is no ambiguity about Quantum's intended audience—it is the elite among students of science."

One of the first joint magazines with the Soviets, Quantum's 48-page pilot issue will consist primarily of articles by noted Soviet scientists translated from previous issues of Kvant, which has been in publication since 1970. However, a year from now Quantum's content is expected to have articles by American authors, which in turn will be translated into Russian for Soviet high school students.

There are no other publications designed for American students gifted in math and science.

"We have a very good tradition to publish special magazines for advanced high school students, especially in physics and math," said Yuri Ossipyan, vice president of the Soviet Academy of Sciences. "If you try to compare the [American] curriculum to the high school education of ours, I must say that we pay more attention to high school programs in math, physics, chemistry and biology."

Quantum, which after two pilot issues is to become a quarterly publication in November 1990, was conceived by Edward D. Lozansky, a former Soviet author for Kvant who immigrated to the United States in 1976. While working as an international education consultant for the NSTA, Lozansky wrote a letter suggesting the idea to the Soviet Academy of Sciences.

Last April, Lozansky and two Americans, Bill Aldridge, executive director of NSTA, and Sheldon Lee Glashow, a Harvard University physicist and Nobel laureate, met professors at the Soviet Academy of Sciences and signed an agreement for the magazine's joint effort. Glashow is to be Quantum's editor in chief for physics.

Quantum will be made available in all English-speaking countries and parts of Western Europe, Aldridge said. To save money on the magazine's production costs, the NSTA sent a computer and laser printer to the Soviet Union, where all articles will be translated.

"Soviet science has a long and rich tradition," Shakhashiri said. "So does American science. Quantum and Kvant are two sides of a coin that will enrich not only our two countries, but the whole world."

For Top U.S. Science Students, a Soviet Magazine

By MALCOLM W. BROWNE

A SOVIET magazine that helped America's student team win top honors in this year's International Physics Olympiad will soon be distributed to top high school science students throughout the United States.

The Soviet magazine, *Kvant* (for Quantum, as it will be called in this country), is intended to fill a longstanding gap in American science education. Timothy M. Weber, managing editor of *Kvant's* American

translation, said the United States has never had a counterpart, so "our organizers turned to the Soviet Union to get us started."

The Physics Olympiad, a grueling series of competitive examinations, was held in Warsaw in July. For the first time in the four years the United States has entered the competition, the Americans won a gold medal (awarded to Steven Gubser of Englewood, Colo.) and scored highest overall in a field of 30 nations.

The first issue of *Quantum* will be distributed this autumn to 100,000 American high school students taking

part in physics or mathematics programs for the gifted. The first two issues will be free, but if the magazine proves successful, students will thereafter pay \$9.95 for four issues. Eventually, the plan is to bring it out nine times a year. At first, all the articles will be translations from the Soviet magazine, Mr. Weber said that eventually American scientists would contribute to *Quantum* and their articles would be made available to *Kvant*.

Money to start *Quantum* was provided by the National Science Foundation, but eventually the magazine

will have to support itself. Unlike its Soviet progenitor, *Quantum* carries some advertising.

Articles by the Soviet contributors challenge students by posing important problems in mathematics and physics in terms of everyday experience rather than abstract theory. In the first issue, for example, subtle ideas in solid geometry are presented in terms of the folds required to make a paper bird, and the student is advised to look for relationships rather than work out formal mathematical proofs.

The organizers of the Soviet-American

Quantum collaboration were Dr. Sheldon Glashow of Harvard University, who shared the 1979 Nobel Prize in Physics; Dr. Edward D. Lozansky, a physicist and former Soviet dissident who emigrated to the United States in 1977, and Dr. William Al-dridge, executive director of the National Science Teachers Association.

"This collaboration would not have been possible in the days before Gorbachev," Dr. Lozansky said. "We are also working on Soviet-American student exchanges and on an American university we hope to found in Moscow. There has been a vast change in climate. Two years ago, all this would have been inconceivable."

But Dr. Lozansky said the Soviets want something in exchange. "They recognize that we are ahead of them

in business education, economics and computer science," he said.

Quantum's American staff, based in Washington, acknowledges that some examples used in the magazine might seem more pointed to Soviet readers than to Americans. For example, an article by A. N. Pegoyev, "Don't Stand Under the Bulb!" deals with the physics of different ways in which light bulbs burn out — or explode, something they rarely do in America.

American scientists also acknowledge that some of the problems published in *Quantum* might be beyond the preparation of its American readers. "But our goal," Dr. Lozansky said, "is to improve American education. *Quantum* will serve as a beacon to aim at."

QUANTUM

QUANTUM will be a quarterly magazine. This rate card applies to the two premiere issues—Fall and Spring. *QUANTUM* is a publication of NSTA, AAPT, and NCTM.

Publisher's Editorial Statement

QUANTUM is a magazine for high school students who are gifted in physics and math. It is modeled on the very successful Soviet magazine *Kvant*, a colorful, entertaining compendium of feature articles and problems written by leading Soviet scientists and teachers. The bulk of the premiere issue will consist of translations of the best items that have appeared in *Kvant* since its inception in 1970. For subsequent issues our editors will solicit material from American scientists and graphic artists—eventually, half of *QUANTUM* will be generated in the U.S.S.R., half in the U.S.

QUANTUM will entertain its student readers while challenging their intellectual agility and stamina. It will help students prepare for science competitions and math olympiads by offering (and solving) problems that are typical of those encountered at such events. It will give students a flavor of Soviet academic life and culture in general, creating a further basis for understanding as contact with the U.S.S.R. increases. And *QUANTUM* will do what no magazine currently does: make math and physics appealing to students and attract them to careers in these fields.

Closing Dates

Advertising is accepted up to capacity for the premiere issue of *QUANTUM*, with a final closing date of October 16, 1989. All copy must be received by October 23, 1989. Where change of copy or insertion order is not received by closing date, advertising will be inserted as previously rendered.

Advertising

All advertising and reading notices are subject to review and publisher's acceptance policy:

•Publisher reserves the right to alter any negatives received if they vary from established mechanical requirements.

•Advertiser and advertising agency assume liability for all content (including text representation and illustrations) of advertisements printed, and also assume responsibility for any claims arising therefrom made against the publisher.

•Proofs of ads can be supplied. If materials are not reviewed, or proofs are returned late or uncorrected, publisher assumes no liability for errors, including key numbers in ads.

•Publisher assumes no liability for film or mechanicals beyond the normal careful handling.

•Publisher does not guarantee printed results from materials not identified as acceptable for conversion.

•Advertisements ordered set will be charged at printer's cost.

Commission

Agencies receive 15 percent commission (no cash discounts).

Cancellations

No cancellations after closing date, including reservations for two and four color ads. Failure to notify publisher will result in full charge at the prevailing rate. Covers reserved after October 16, 1989, are noncancelable.

Circulation

This rate card is based on a circulation of 100,000. Readership consists primarily of secondary level science students and education personnel across the U.S. and in Canada. Circulation also includes scientific institutions, science departments and school libraries.

NSTA Advertising Department

1742 Connecticut Ave., N.W., Washington, D.C.
20009. For information or space reservations:
Telephone—202/328-5800 (ext. 37);
FAX—202/328-0974

PREMIERE ISSUE RATES

Full Page, BW	\$2,970
2/3	2,190
1/2	1,720
1/3	1,340
1/4	1,030
1/6	710
One inch	260
2nd/3rd Cover	3,050
4th Cover	3,170

PREMIERE ISSUE COLOR CHARGES

Black & One AAAA Color	\$ 598
Black & One Match Color	650
Four Color	1,740

Mechanical Requirements

Ad Sizes In inches (picas)	Width	Depth
Full page, type page	7 1/16 (42 1/2)	9 1/2 (57)
Full page, bleed	8 5/8 (52 1/2)	11 1/4 (68 1/2)
2/3 page, vertical	4 9/16 (28)	9 1/2 (57)
2/3 page, horizontal	7 1/16 (42 1/2)	6 3/8 (38 1/2)
1/2 page vertical	4 5/8 (28)	7 (42)
1/2 page horizontal	7 1/16 (42 1/2)	4 5/8 (28)
1/3 page, vertical	2 3/16 (13 1/2)	9 1/2 (57)
1/3 page, horizontal	7 1/16 (42 1/2)	3 (18)
1/3 page, square	4 5/8 (28)	4 5/8 (28)
1/4 page, near square	4 5/8 (28)	3 1/3 (21)
1/4 page, horizontal	7 5/16 (42 1/2)	2 1/4 (13 1/2)
1/6 page, vertical	2 3/16 (13 1/2)	4 5/8 (28)
1/6 page, horizontal	4 9/16 (28)	2 1/4 (13 1/2)
1 inch	2 3/16 (13 1/2)	1 (6)

BLEED

Page size 8 5/8" x 11 1/4"
Keep live matter 3/4" from top; 3/4" from bottom; 1/2" from side; 1/2" from gutter.

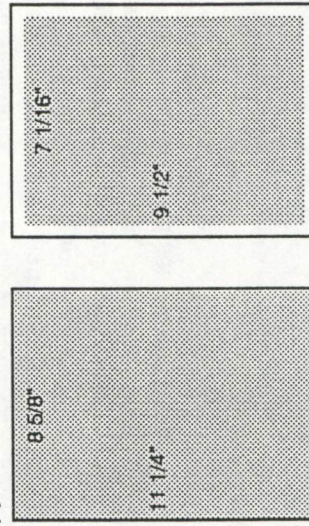
Binding Method—Saddle-stitched.

	2/3 page, vertical	2/3 page, horizontal
	1/3 page, vertical	1/3 page, horizontal

Copy should be furnished for printing by OFFSET LITHOGRAPHY as follows—film positive or negative, reproduction proof, camera-ready copy, one-piece original art or velox print with all elements in position. In case of color, overlays keyed to original. ANY ADDITIONAL PREPARATION SUBJECT TO EXTRA CHARGES. All ads must conform precisely to space dimensions specified above. No extra charge for bleed.

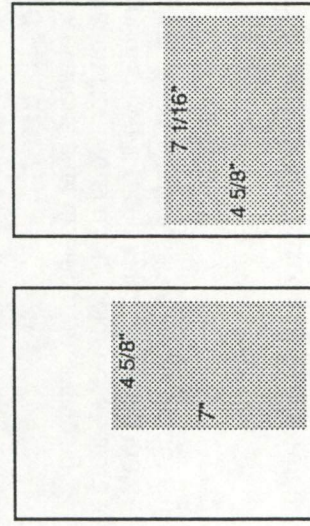
PRINTING SPECIFICATIONS

- 133 screen/133 or 150 line screen (halftones).
- Page trim size—8 1/4 x 11 inches
- Three columns to a page
- Bleed size—8 1/2 x 11 1/4 (Keep live matter 3/4" from top and bottom; 1/2" from sides)
- Column width—2 3/16 inches (13 1/2 picas)
- Column depth—9 1/2 inches (57 picas)
- Color sequence: black, cyan, magenta, yellow. SWOP standards apply.



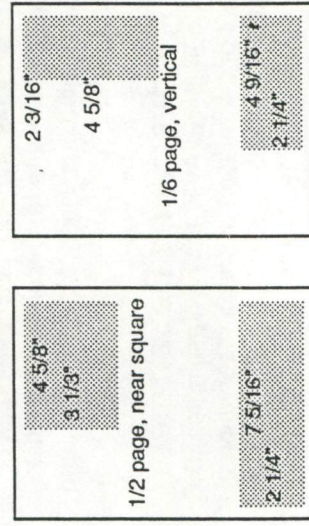
Bleed

Full page



1/2 page, vertical

1/2 page horizontal



1/4 page, horizontal

1/6 page, horizontal

RATE CARD

NATIONAL SCIENCE TEACHERS ASSOCIATION
AMERICAN ASSOCIATION OF PHYSICS TEACHERS
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

PREMIERE VOLUMES—FALL, SPRING
EFFECTIVE SEPTEMBER 6, 1989
EXPIRES JUNE 30, 1990

QUANTUM

PERSONNEL

Executive Director—Bill G. Aldridge
Managing Editor—Timothy Weber
Production Manager—Elisabeth Tobia
Advertising Director—Paul Kuntzler