

state & society

Frosch sees period of evolutionary exploration for NASA

President Jimmy Carter and his White House staff may still harbor serious doubts about such major NASA commitments as the Space Shuttle, according to Robert A. Frosch. Frosch, the newly confirmed Administrator of the National Aeronautics and Space Administration, told us in a recent interview that it is his aim to shift the space agency away from "space-for-its-own-sake" endeavors toward greater emphasis on applications and scientific investigation; he sees such a shift as in harmony with the Carter Administration's preferences and as a continuation of present trends within NASA. Manned exploration efforts and human habitation in space would not cease with such a policy, he said, but would probably proceed in a more "evolutionary" manner rather than through "space spectacles."

NASA's budget fared well in Congress after initial worries. Earlier this year the House, following the recommendation of Congressman Edward Boland's (D-2nd CD, Mass.) House Appropriations Subcommittee on HUD and Independent Agencies, had caught NASA by surprise with its deletion of funds for the Jupiter Orbiter-Probe project, one of the agency's two "new starts" for the 1978 fiscal year. But all came out well for the JOP project



FROSCH

(whose total cost is estimated at \$285 million) when its initial \$20.7-million appropriation was approved in both houses of Congress after a House-Senate

conference. The Space Telescope, a 2.4-meter optical telescope to be placed in orbit above the Earth's obscuring atmosphere when the Space Shuttle is operational, is NASA's other new start for FY 1978; Congress granted \$36 million in start-up funds for the \$435-470-million instrument with little dispute (see PHYSICS TODAY, April, pages 18 and 71).

Frosch, who has a PhD in theoretical physics from Columbia University, joined Columbia's Hudson Laboratories in 1951 as a research scientist and became director in 1956. From 1963 to 1966 he was employed by the Department of Defense's Advanced Research Projects Agency, where he reached the position of deputy director. He then served as Assistant Secretary of the Navy for Research and Development (1966-1973) and as Assistant Executive Director of the United Nations Environment Program (1973-1975) before becoming Associate Director for Applied Oceanography at the Woods Hole Oceanographic Institution, a post he held until he was selected to head NASA.

Midcourse corrections for NASA. "I think probably they have lots of questions still," Frosch told us, referring to the White
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AIP will ask authors to transfer copyright under new law

The American Institute of Physics, along with other scientific publishers, has revamped its policies and procedures in anticipation of the new US copyright law (*General Revision of the Copyright Law, Title 17 of the United States Code*), becoming effective on 1 January 1978. Perhaps the most significant change in AIP's publishing policies is that a formal written transfer of copyright, from an author to AIP, will be required for each article in AIP-owned journals. Similar policies are being adopted by member societies of AIP, and organizations such as the American Chemical Society and the Institute of Electrical and Electronics Engineers are in the process of developing new copyright policies along the same lines. (For a description of the situation created by the new copyright law and a

discussion of the transfer of copyright required by AIP, see the Editorial on page 104.)

Out with the old. Under the old law (established in 1909), there were two separate copyrights: One was a "common-law copyright" for unpublished articles, and the other was copyright applicable to published works. Copyright was established when a publisher registered his copyright with the US Copyright Office. The new law does away with this distinction between published and unpublished works by establishing copyright at the time a work is created; therefore, copyright is initially vested in the author. Consequently, legal procedure requires that a transfer of copyright from the author to a publisher must be obtained in writing.

In the past most publishers of scientific journals have regarded this transfer as an implicit assumption upon manuscript submission, although some publishers, such as the American Psychological Association, have required a written transfer for many years. To continue operations of marketing, sales and reprint permissions, publishers now must obtain this transfer in writing at the time of submission.

Need for transfer. According to H. William Koch, director of the American Institute of Physics, when an author transfers his copyright to a scientific-society publisher such as AIP, he is transferring his rights to his *collective* colleagues—the same people who have participated in the development of standards for peer review and, in general, influence the way in which

Copyright transfer agreement

Copyright to the article entitled "_____," by _____ is hereby transferred to the AMERICAN INSTITUTE OF PHYSICS (for US Government employees: to the extent transferable), effective if and when the article is accepted for publication in _____. However, the authors reserve the following:

1. All proprietary rights other than copyright, such as patent rights.
2. The right to grant or refuse permission to third parties to republish all or part of the article or translations thereof, in the case of whole articles, such third parties must obtain AIP's written permission as well. However, AIP may grant rights with respect to journal issues as a whole.

3. The right to use all or part of this article in future works of their own, such as lectures, press releases, reviews, text books, or reprint books.

To be signed by at least one of the authors (who agrees to inform the others, if any) or, in the case of a "work made for hire," by the employer.

(Signature)

(Print Name)

(Title, if not Author)

(Date)

The signed statement must be received by the editor's office before the manuscript can be accepted for publication. Address requests for further information or exceptions to the director of AIP Publications Division, 335 East 45th Street, New York, New York 10017.

This transfer statement will be printed in a journal issue, probably once a year in the first issue of a volume, and prospective authors may photocopy the form and send it in with a paper. According to the wording of this form, the agreement becomes legally effective only if the paper is accepted and on the date of acceptance; otherwise, acceptance is conditional and further processing for publication will be delayed until the editor receives the properly executed form.

"Works for hire" are articles produced as part of employment, most often in an industrial laboratory. In these cases, the employer holds the copyright and an authorized corporation representative must sign the transfer form. Some authors are government employees and their articles may not be eligible for copyright, depending on whether the preparation of the article is an

official requirement of employment. AIP's copyright transfer form attempts to bypass potentially complicated legal issues by merely asking these government employees to transfer copyright "to the extent transferable."

The majority of physics articles have more than one author and, as a rule, each co-author's contribution is considered an inseparable part of the whole. Only one author need sign the transfer for an article. The terms "work-for-hire" and a "work of the US government" apply only if all the authors have written an article under the same conditions. For example: if one author not employed by the government contributes to an article that is signed by four others who are government employed, the article is not considered a "work of the US government."

AIP journals are published.

The chartered purpose of AIP is the advancement and diffusion of the knowledge of physics, which is accomplished primarily through book and journal publication, translation of foreign journals and republication (reprints, microforms and computer tapes). Without the transfer of copyright from the author, explained Koch, reproduction and distribution of material would be greatly inhibited; permission for use of an article would have to be obtained from individual authors, employers (in the case of a "work for hire") or even an author's heirs.

Other aspects of the new law. Several important changes have also been made in the copyright law with respect to journals. The law distinguishes between the copyright of a collective work, such as a journal of articles, and the individual-article copyright, which is separate and distinct from the publisher's copyright on the collective work as a whole. Each separate contribution may bear its own notice of copyright. However, the single notice covering the publisher's journal copyright will protect each contribution published in a specific issue of a copyrighted journal, even though the ownership may be with the authors.

The duration of copyright ownership has now been extended from the present 28 years (renewable for an identical period) to the lifetime of the author plus 50 years after the author's death. The copyright owner has exclusive rights to reproduction and distribution of the work and the preparation of derivative material based on the copyrighted work—a violation of these rights constitutes copyright infringement. A major exception to the rights of the copyright owner is in the case of "fair use," which is defined under the new law as reproduction for purposes such as news reporting, teaching, scholarship and research.

Policies developed. After the new copyright law was passed in September 1976, the AIP Governing Board appointed a writing committee, which is headed by J. A. Krumhansl (Cornell University). This committee is responsible for developing a suitable copyright-transfer statement, including exceptions (reserved rights to the author), and statements to be included with the journals' standing information for authors and readers. The drafts produced by the committee were submitted to AIP's Publishing Policy Committee (also headed by Krumhansl), reviewed by the Executive Committee on

7 June, and by mail ballot to the full Governing Board. The final text of the transfer statement appears in the figure on this page.

Authors of articles in the following AIP-owned journals will be asked to sign this statement—PHYSICS TODAY, *Journal of Chemical Physics*, *Journal of Applied Physics*, *Applied Physics Letters*, *Review of Scientific Instruments*, *Physics of Fluids* and *Journal of Mathematical Physics*. Transfers will also be requested from those contributing to AIP's Conference Proceedings series. Authors in journals owned by AIP member societies will be asked to sign similar statements transferring their copyright to the society (rather than to AIP) because, even though a journal of an AIP member society may be published for that society by AIP, the copyright of the journal is always in the name of that society.

A statement of AIP's copyright and permissions policy will appear on the inside-front cover of each AIP journal. In addition, a copyright notice will appear on the first page of every article specifying whether the author or the publisher is the copyright owner.

Keeping things as they were. All the new procedures (such as those described in the figure on this page) are intended to maintain AIP's relationship with authors as it was before; therefore, along with the formalized written transfer, rights reserved to the author have been explicitly stated in the agreement. They include proprietary rights, such as patent rights, and the right of an author to use all or part of his article in a future work. A concise statement regarding third-party permissions was also included in the transfer statement in an attempt to accommodate a variety of situations.

As in the past, the author retains the right to be asked for permission to have his article republished. Written permission to republish a complete article is required from AIP—the reason for this is so that AIP can determine the purpose of the requested republishing and assess fees if appropriate. In the event of systematic republishing of an entire journal, AIP may waive the requirement of author consultation.

AIP provides numerous republishing services that facilitate the rapid dissemination of research information; these services also provide income that supplements decreasing subscription income from journals. All these services will be protected by copyright under the new law, because all original works, if fixed in any tangible medium of expression from which they can be perceived or reproduced (either directly, or with the aid of a machine or device), will be eligible for copyright. These services include:

- ▶ Reprints as single copies or in bulk,
- ▶ Back issues and complete back volumes,
- ▶ Microfilm editions of journals,

- ▶ Translation journals and rights, available to foreign-language publishers,
- ▶ Computer tapes of abstracts and titles, available to abstracting and indexing services, and
- ▶ Reprint books and republishing rights, available to reprint-book publishers (subject to author's permission).

Payment for reprints and royalties from republication are always received by the journals.

Problems for industry. The new copyright law specifies that photocopying done by an institution operated for commercial advantage is subject to greater restrictions than photocopying done by academic institutions.

The industrial community has been particularly interested in a clear delineation of publishers' policies on reproduction of scientific articles since the passage of the new law. Publishers in general have been urged by libraries of industrial organizations, including those of AIP Corporate Associates, to establish procedures that would permit them to photocopy as they have in the past.

Clearance center. In July a group of technical, scientific and medical publishers incorporated a copyright-clearance center, which is intended to serve as a clearinghouse for money paid and received for photocopied articles (copied for reasons other than fair use). This center, which will operate on a non-profit basis, is the result of a proposal by the Association of American Publishers with the participation of AIP, IEEE, and the ACS among others. The center will be of particular assistance to industrial laboratories.

Koch, who is one of the five founding members of the board of directors, ex-

plained to us the system that will be used: When an article is copied, an extra copy of the first page of an article is made and sent as a "coupon" to the clearance center. In turn, the center tallies these coupons and bills the user. Koch contends that this system will substantially lower order-processing costs and, as more and more recopying is done, the income lost in lowered subscription numbers (cover-to-cover editions of journals) will be replaced by sales and fees for individual journal articles.

What is the situation for authors whose papers will be published early in 1978, yet who have not signed a statement of transfer? During this transition period, AIP intends to publish without the transfer of copyright if need be; however, these authors will be asked to complete the form so that journals and other publications of AIP will eventually obtain copyright for all the articles for the first calendar year, 1978, under the new law.

—BCC

Frosch of NASA

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House commitment to space exploration and NASA in general, "as to whether we really need the Shuttle, whether it's really worth it." Those who regard the future as assured for Federal projects on which much time and money have already been spent might do well to recall the fate of the Clinch River Breeder Reactor. However, the new Administrator also said that the President and his staff do have considerable interest in space applications—such as the Landsat and Seasat programs, communications technology and aeronautics progress. Frosch told us,

"I'm pushing a shift in the nature of NASA in the direction of useful applications and good science" as the basis for the agency's continued funding; "this has already begun to happen," he added.

With such a scaling down of objectives, we asked, is it really necessary that NASA continue as an independent agency, or could it function as a departmental appendage, like NOAA? (The National Oceanic and Atmospheric Administration operates within the Department of Commerce.) According to Frosch, NASA must remain independent if it is to do its job well. "The applications business alone drives NASA into working with a number of Governmental departments," he told us, naming NOAA (and other parts of Commerce), Interior, Agriculture, Transportation, Defense and the Coast Guard as examples. "Traditionally, it has been difficult for an agency within one department to work effectively across departmental boundaries."

"I've been saying NASA has four functions," says Frosch. He lists them as aeronautics and aviation ("... which I've taken to saying first because people have taken to leaving it out"); useful applications, such as surveying and weather monitoring; science, including not only the traditional planetary, solar and interstellar research efforts but also the "downward-looking" sciences (for example, geology and atmospheric science), and the production of the technology needed to do the first three better. The technological component may also include, he said, NASA's development of techniques valuable in themselves; technology discovered in space applicable to industrial activity is one example.

Continued vacancies at L5. We asked why Frosch failed to name sending humans into space as a function of the space agency, to which he replied, "My view is that you do manned activities because you need people on hand to do something; if you're very specific about what it is you want to do, very precise about what data you're looking for, then you can probably send a machine." Human brains and hands need be present only when the work—general exploration, for instance—involves a large measure of the unanticipated. A manned mission to Mars, he said, "probably could" have settled on the spot the question of Martian life, but at much greater expense than the ambiguous Viking experiments. Frosch described the Viking effort as a constrained, primitive version of a new category of mission instruments he calls "extensors"—remote-operation, remote-viewing devices that permit a type of delayed-response exploratory activity midway between the manned and unmanned mission options. As Frosch puts it, "The man is *here*, but his hands and senses are, to some degree, *there*." He believes the extensor option will receive increased attention in the future.

Washington Bulletins

★ Funding for Isabelle, Brookhaven National Laboratory's proposed colliding-beam proton accelerator, moved a step closer to reality when the House and Senate passed a public-works appropriation containing \$5 million for detailed design and some procurements for the project. The question of authorization, deferred over the Congress's August recess, should be coming up soon. The House's FY 1978 authorization bill for ERDA includes \$10.5 million for Isabelle's construction; the project has enjoyed strong and consistent support from Congressmen Jerome A. Ambro (D-3rd CD, N.Y.), Otis G. Pike (D-1st CD, N.Y.), Thomas J. Downey (D-2nd CD, N.Y.) and John W. Wylder (R-5th CD, N.Y.).

★ **Two out of three for NRC.** The Senate Committee on Environment and Public Works has voted in favor of the nominations of Joseph M. Hendrie and Peter A. Bradford to membership on the Nuclear Regulatory Commission; Kent F. Hansen, a third nominee and a supporter of the Clinch River Breeder Reactor project, failed to win committee approval. Since 1975 Hendrie, a nuclear physicist, has headed Brookhaven's applied-science department.

★ **An appropriation of \$861.3 million for the NSF** in FY 1978 is the outcome of a House-Senate conference—\$85.4 million more than was approved for FY 1977 but still \$23.7 million less than the Administration had requested. A total of \$783.2 million is allocated for research and related activities, including \$63 million for the Research Applied to National Needs program, and science education receives a 24% increase—to \$73.2 million—in the new bill.