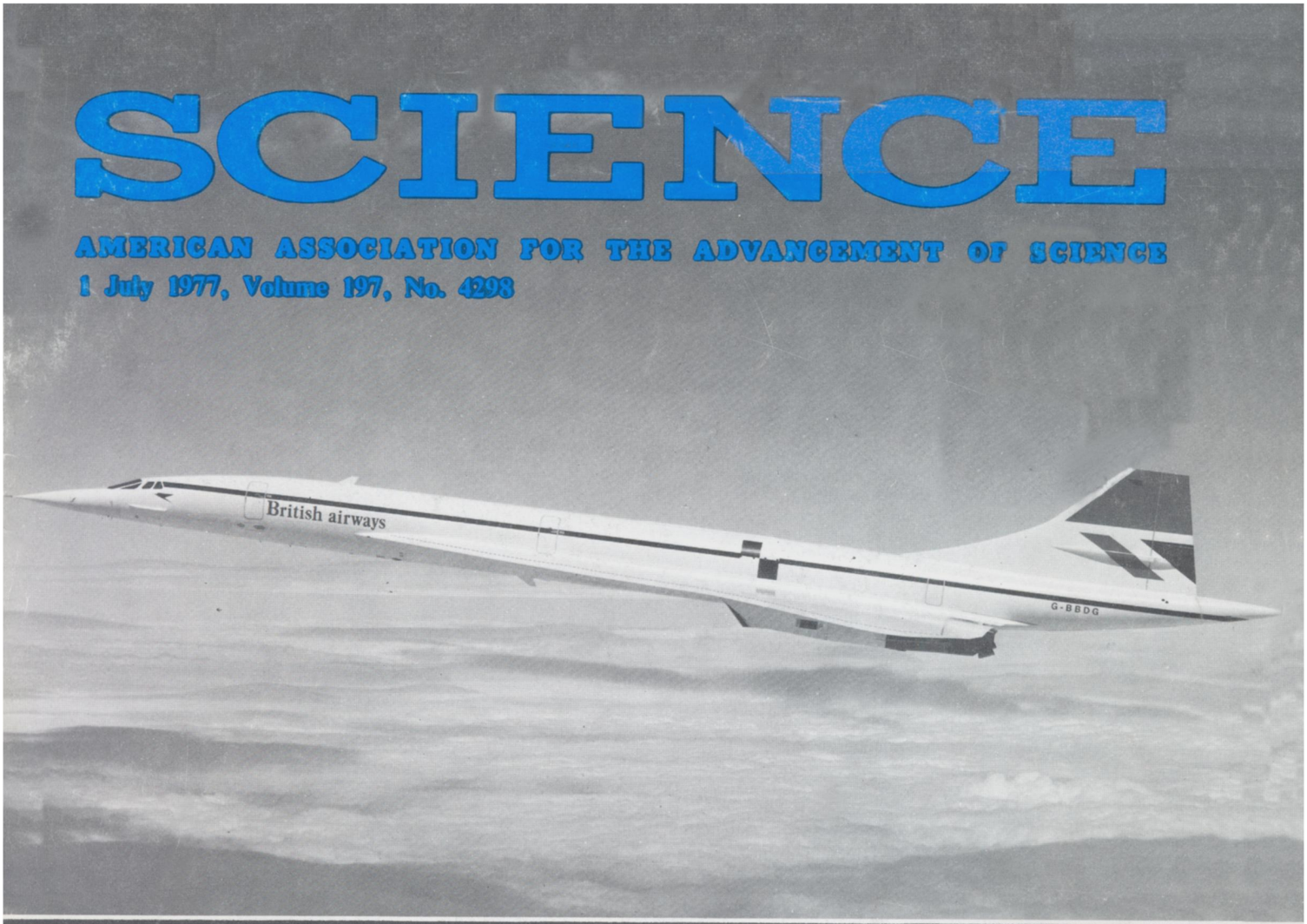
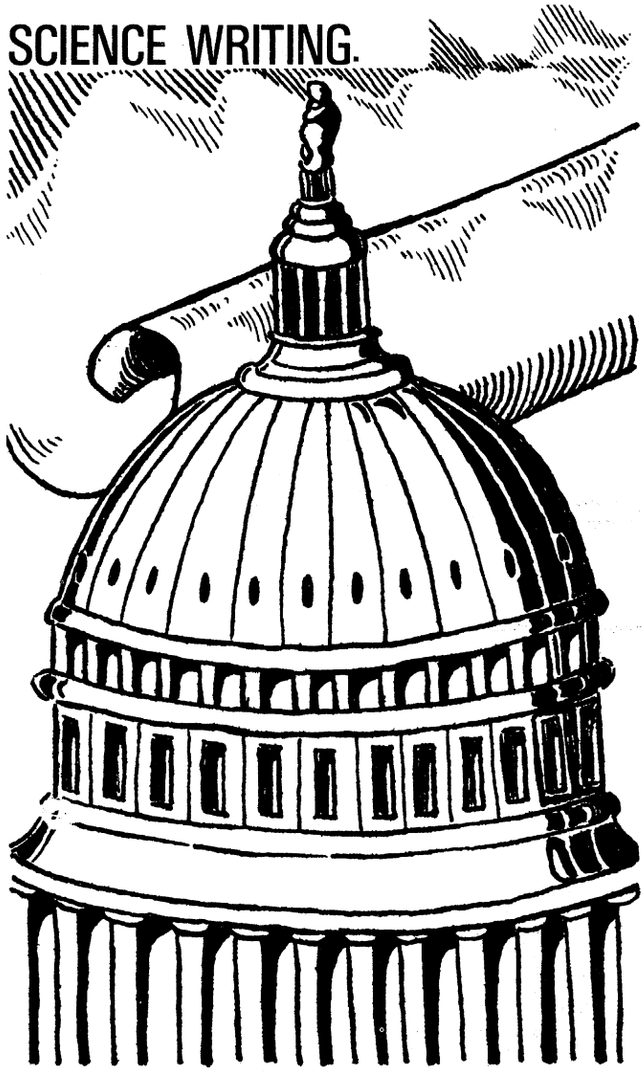
SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
1 July 1977, Volume 197, No. 4298



1977 AAAS-Westinghouse SCIENCE WRITING AWARDS FOR NEWSPAPERS AND MAGAZINE SCIENCE WRITING.



RULES

1) The aim of this competition is to encourage and recognize outstanding writing on the sciences and their engineering and technological application in newspapers and general circulation magazines. The following categories are not eligible: articles on the field of medicine, articles published originally in AAAS publications, articles by employees of the AAAS or Westinghouse Electric Corporation.

2) Each entrant in a newspaper award competition and each entrant in the magazine award competition may submit three entries.

3) An entry for a newspaper competition may be any of the following: a single story; a series of articles; or a group of three unrelated stories, articles, editorials, or columns published during the contest year. A magazine entry may be a single story or series published during the contest year.

4) A completed entry blank must be submitted together with five copies of each entry in the form of tear sheets, clippings, reprints, or syndicate copy (not over 8½" x 11"), showing name and date of the publication. ENTRIES MUST NOT BE ELABORATE.

5) Each entry must have been published in a newspaper or general circulation magazine within the United States during the contest year — 1 November 1976 through 31 October 1977. (In the case of a series, more than half of the articles comprising it must have been published during the contest year.) Date on the issue in which an article appeared will be considered as the date of publication. All entries must be postmarked on or before midnight, 15 November 1977.

6) Persons other than the author may submit entries in accordance with these rules. Entries will not be returned.

7) Winners of the 1976 awards are not eligible for the 1977 awards. Persons winning three times are no longer eligible.

8) The Judging Committee, whose decisions are final, will choose the winners. There are three awards of $1000: for the winning entry in the over-100,000 daily circulation newspapers competition, for the winning entry in the under-100,000 circulation newspapers competition; and for the winning entry in the general circulation magazine competition. For award purposes, newspaper circulation will be sworn ABC daily circulation as of 30 September 1977. The Judging Committee may cite other entries for honorable mention.

9) The awards will be presented at the dinner meeting of the National Association of Science Writers, during the 1978 meeting of the American Association for the Advancement of Science in Washington, D.C. Travel and hotel expenses of the award winners will be paid. Entrants agree that, if they win, they will be present to receive their awards, unless prevented by circumstances beyond their control.

Grayce A. Finger

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

1515 Massachusetts Avenue, N.W. Washington, D.C. 20005

1 July 1977

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SCIENCE

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

REPORTS

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.

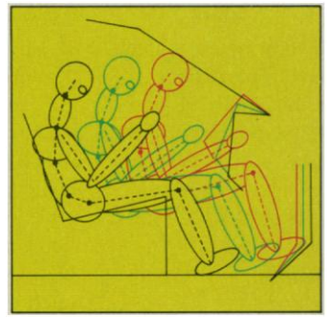
COVER

Sonic booms from supersonic transports such as the Concorde may be used to probe the upper atmosphere. Acoustic signals of relatively high amplitude and low frequency, generated by the sonic booms, are reflected from both the stratosphere and the thermosphere and can be used to determine temprature and wind conditions at the reflection levels. See page 47. [British Aircraft Corp./Aerospatiale France]

A 73-year-old stuntman, Henri LaMothe, dives 35 feet into 13 inches of water. He does it regularly. Without harm. Now that says something about body toughness.

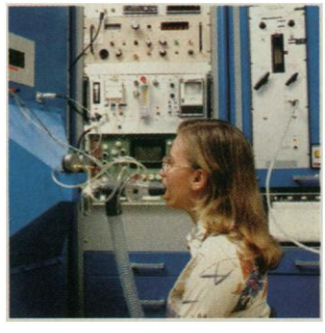
Once, in a less severe dive, our instruments went with him. And we found that his chest safely withstands "g" forces beyond those commonly thought to be injurious.

Learning about the impact response of the body is just one phase of our extensive biomedical research program at the General Motors Research Laboratories. The goal in this phase: Develop a better understanding of man's reaction and tolerance to collision forces.



To this end we have done mechanical response and trauma studies on the head, chest, and leg; on tissue; and on the body as a whole. We've also developed mathematical models of the man-car system for simulating crashes in a computer and predicting car occupant kinematics.

Another phase of our work concerns the health effects that may be related to GM products. It includes respiratory response to air pollutants, the dynamics of air flow in the lungs, and toxicity investigations.



The program in biomechanics started here some 15 years ago. It spawned the first energy-absorbing steering column put into production... a head-injury-severity index used by the United States Department of Transportation and football helmet designers ...a sophisticated anthropomorphic test dummy.

Our biomedical research continues, through meaningful data, to promote GM's most important commitment to society: a safer, practical car and a healthier environment.

We're expanding the body of knowledge about the human body.

GM

General Motors Research Laboratories
Warren, Michigan 48090

1 July 1977, Volume 197, Number 4298 **SCIENCE**

Coal: The New Swing Fuel?

For some time now, imported oil has been the country's "swing fuel": it supplies the extra unit of energy demanded. The Carter Energy Plan's goal of holding imports at 7—and possibly 6—million barrels per day would end this. With the decline in domestic oil and gas production and long lead times for nuclear capacity additions, the swing role would fall to coal. Achievement of the 1985 coal target thus becomes crucial to the Plan's success.

While different Administration documents contain or imply different tonnage figures, a target of 1250 million tons of coal mentioned in recent testimony before the Joint Economic Committee by Mr. Schlesinger seems closest to the Plan's arithmetic and thus a good starting point. However, the odds on reaching it in 1985 are long.

To begin with, the stipulated tonnage will include a greatly increased portion of western coal. Should these plans become reality (a low probability, as time deals unkindly with such expressions of intentions), the 1985 share from the Rocky Mountain and Northern Plains States would constitute no less than one-third of national output. Since the heat value of western coal ranges 20 to 25 percent below that of eastern coal, the average heat content of coal would decline from its present 23.5 to 22 million Btu per ton or less. By way of compensation, the import goal of 7 million barrels per day would have to rise by some 1.5 million barrels per day, or the coal target rise to over 1.3 billion tons.

The Energy Plan makes no mention of this factor. Further, the program advocates that *all* new coal-burning facilities use "best available technology"—that is, sulfur-reducing scrubbers. This would deprive western coal, which has a low sulfur content, of a crucial competitive advantage over eastern coal. The problem is sharpened by the fact that coal use by facilities other than utilities is envisaged to nearly triple and account for 38 percent of all coal use in 1985, but a higher cost for western coal would deter its use, add to the economic and logistic obstacles that expanded industrial coal use faces in any event, and greatly slow down conversion to coal.

Yet, reaching the 1985 coal output target rests heavily on rapid, large-scale growth in the surface-mining areas of the Rocky Mountain and Northern Plains States, where few but very large mines have been planned. Expansion in Montana, for example, involves only seven mines, with a projected output of 75 million tons, equivalent to 11 percent of total production. No such mines have existed in the past, nor are they feasible east of the Mississippi. Depriving low-sulfur coal of its advantage is tantamount to writing off rapid output expansion.

Finally, there is the long well-known catalog of obstacles interposed between plan and achievement: land use problems, water allocations, community perturbations, manpower problems, transportation inadequacies, federal leasing policies, states' prerogatives, Indian land issues. These are the problems least likely to be rapidly resolved by the workings of the marketplace. Yet the Plan's silence on policies designed to resolve them indicates that in this of all areas the Administration may intend to rely primarily on the market to call forth the targeted output. If so, the outlook is for a gaping hole in the 1985 energy balance, equivalent to perhaps 3 million barrels of oil per day.

All in all, the new swing fuel has a tough climb ahead, and so far the government's bag of tricks seems to contain none for coal. Coal expansion in 1976 may have been primarily "demand-limited," but at the levels contemplated for 1985, creating demand cannot be relied on to sweep away the obstacles to expansion on the Energy Plan's timetable. Far more drastic demand reduction, relaxation of the import goal, a stretching of the time horizon, or a combination of all three may be needed to correct for what right now seems a substantial overestimate of coal's contribution to meeting the projected energy demand.—HANS H. LANDSBERG, *Resources for the Future, 1755 Massachusetts Avenue, NW, Washington, D.C. 20036*

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Annual Meeting Washington
12-17 February 1978

Call for Contributed Papers

Following the success of the contributed-paper sessions in Denver, AAAS will again have such sessions at its next Annual Meeting in Washington, D.C. (12–17 February 1978). Contributions must be submitted according to the instructions given below, by **14 October 1977**. *All contributions must be submitted (and signed) by a AAAS member or fellow* (although this person need not be one of the authors). Contributors will be informed about where and when they will make their presentations in late November 1977. Contributed paper sessions will be of two types: *slide sessions* and *poster sessions*. In the slide sessions each contributor will have 15 minutes to present his material and entertain questions; a 35-mm (2 × 2) slide projector will be available for use. In the poster sessions each contributor will have a bulletin board on which to place text and graphic material (of an oversized nature) for an extended period of time so that he can discuss his work at length with all interested parties. (See *Science*, 28 June 1974, page 1361).—ARTHUR HERSCHMAN

Instructions for Contributors

Type abstracts, using a clean (new) ribbon, on ordinary white bond paper (8.5 by 11 inches; 21.5 × 28 cm) according to the format shown on the right (the example is reduced to about one-half of the linear dimension; your abstract will be printed *directly from your copy* at about two-thirds of its linear dimensions). Indicate at the top of the page the letter of the AAAS Section which comes closest to your subject matter (a full list will be found at the bottom of the contents page of any issue of *Science*), as well as two or three words which describe the subject. Also indicate whether the paper is to be presented at a slide session or a poster session.

It is very important to keep your abstract within the limits of a 5-inch (12.7-cm) square. If it is too wide, it will not be printed (only title and author will be printed); if it is too long, it may be arbitrarily cut. Note that your original will be our camera-ready copy, so type and letter as neatly as possible.

At the bottom of the page, left side, type the name and address of the person who should be contacted regarding the abstract (that is, the person we should notify of where and when the presentation should be made). On the right side, type the name and affiliation of the AAAS member or fellow who is submitting the abstract and have this person sign the abstract. *The privilege of submitting a contributed-paper abstract for the Annual Meeting is limited to AAAS members or fellows.*

Send the *original* together with two copies of your abstract to:

Contributed papers
AAAS Meetings Office
1776 Massachusetts Avenue, NW
Washington, D.C. 20036

NOT LATER THAN 14 OCTOBER 1977.

Abstract submitted for the AAAS Annual Meeting in Washington (12-17 February 1978).

AAAS Section nearest subject matter (letter) _____

Subject (in words) _____

Abstract is for _____ session.
(poster or slide)

5 inches (12.7 cm)

5 inches (12.7 cm)

Indent Five Spaces and Type Title in Upper and Lower Case Letters and Underline. AUTHOR'S NAME (Institution in Parentheses), SECOND AUTHOR (Institution).*

Skip a space and type abstract. The full width of the column of typed material should be 5 inches (12.7 cm) and must not extend beyond that. Abstracts which are wider than this will not be printed (only the title and authors will be printed). The total length of the material, from top of title to bottom of footnotes, should not exceed 5 inches (12.7 cm); material which takes up more than this space is subject to arbitrary cutting. All special symbols and signs which must be hand lettered (e.g., π) should be rendered in reproducible black ink as clearly and carefully as possible. The entire submission should be of camera-ready quality so that it can be photographed, turned into a plate, and printed. The printed abstract will be about 2/3 the size of the typed version. Avoid paragraphing as this wastes space. However, you may use your alloted space to neatly letter in equations and diagrams, as you deem necessary,

$$-\frac{\hbar^2}{2m}\nabla^2\psi + V\psi = i\hbar\frac{\partial\psi}{\partial t}$$

as indicated in this example.

*Skip a space and type footnotes. Author's names should be in all upper case letters; institutions in upper and lower case letters.

Person to be contacted about abstract:

Full Name
Complete Address

Submitted by AAAS member:

Type name of member
Type affiliation of member

_____
(signature of member)