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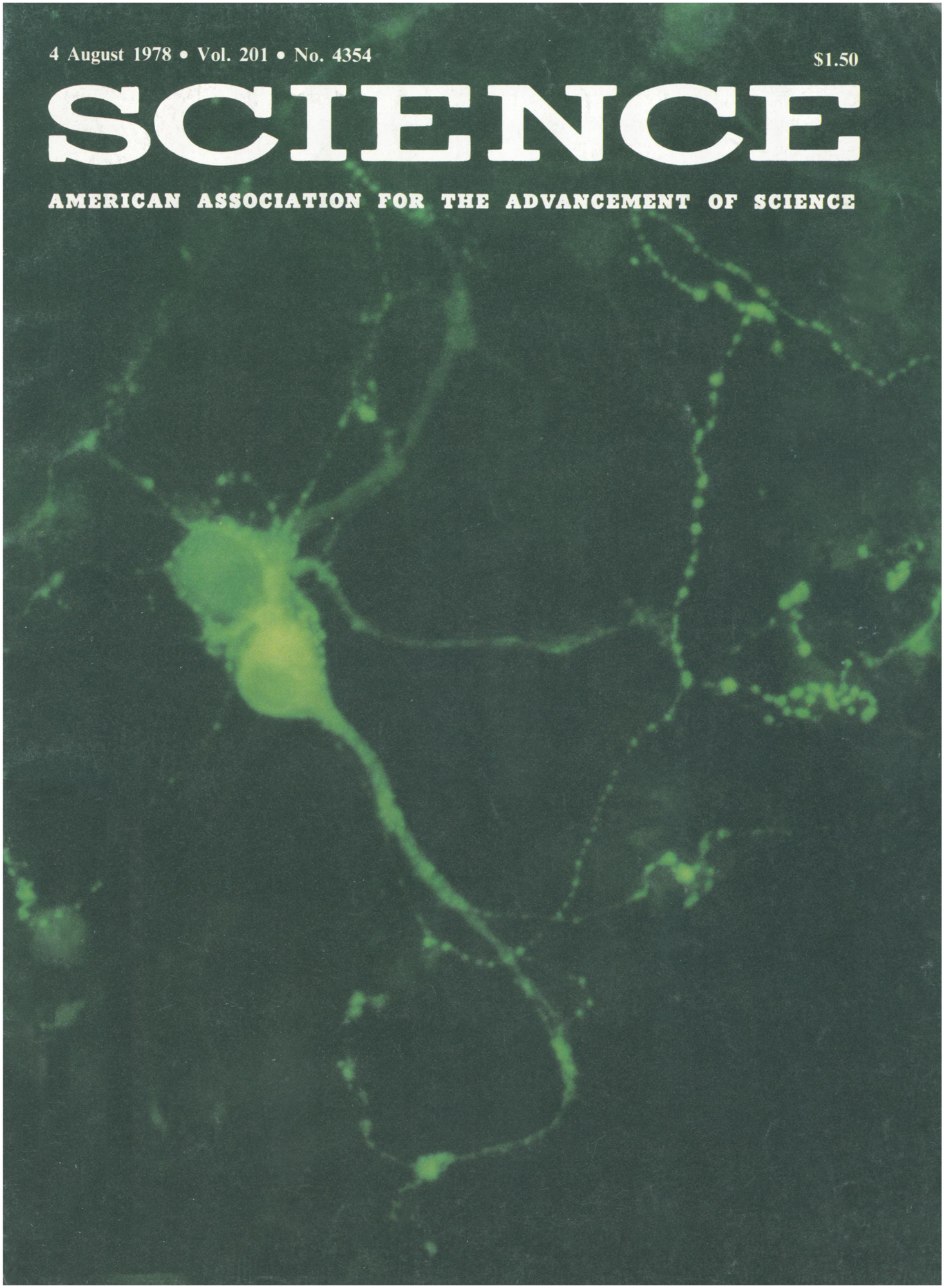
SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



executive health

the report that briefs you on what to watch

Volume XIV, Number 10 • July, 1978 • Pickfair Bldg., Rancho Santa Fe, Calif. 92067 • Area 714:756-2600

New research findings . . .

ON WALKING . . . nature's own amazing *"anti-age antibiotic"!*

Not running, not jogging, but *walking* is your most *efficient* form of exercise and the *only* one you can *safely* follow *all* the years of your life!

Today, after some 2000 years, modern medical researchers are demonstrating (somewhat to their surprise) that Hippocrates, "the father of medicine" was right . . . walking is man's best *"medicine"!*

Take one example. At a three-day conference on *Exercise in Aging—Its Role in Prevention of Physical Decline* (held October 27-29, 1977, at the National Institute of Health, Bethesda, Maryland) researchers from across the United States, Canada and Western Europe presented papers on this (until now) largely neglected area of research. As their papers were presented, these important points of agreement emerged:

(1) Walking is the most *efficient* form of exercise . . . and the only one you can safely follow all the years of your life.

(2) Exercise can enable your body to maintain a *vital reserve* which has a protective effect during stress.

(3) Exercised *bones* do not demineralize. As a result they are far less likely to break or lose their range of motion.

(4) Exercised *lungs* still exhibit the emphysema-like changes of age, but are far less diminished in their capacity compared to the lungs of sedentary people.

(5) Exercised *cardiovascular systems* show a similar maximum preservation of function.

(6) The benefits of exercise in preventing or correcting obesity are striking.

(7) Late-onset diabetes is almost entirely reversible by exercise if you are overweight.

(8) Daily exercise permits greater food intake and better blood circulation, thus improving each body cell's nourishment while preventing obesity.

(9) The physically impaired, particularly the arthritic, can perhaps benefit the most from exercise . . .

"HOW LONG WILL I LIVE?"

Discover what research scientists now know about how to take the best care you can of the only body you will ever have!

Aging is not due to the passage of time — but to the events that occur during the passage of time.

The errors of our younger years are drafts upon our older years, payable (with interest) some 30 years from date.

The so-called "diseases of old age" are essentially the diseases of 50 to 70 . . . **"the dangerous years!"**

Research scientists find that people who survive these "dangerous years" **successfully** (without acquiring some "chronic" disease such as cancer or heart trouble) are likely to live on for another **healthy** quarter of a century. They seem to have developed what might almost be called an **immunity** to these killers. Why? To find out, some careful studies have now been made of these extraordinarily long-lived individuals.

May we suggest that you get the benefit of these new research studies for yourself? Do as so many thousands of executives do. Subscribe to Executive Health Report. The members of our **Editorial Board** are among the world's most distinguished authorities on preventive medicine. Their wise advice can help you not only live longer but enjoy those extra years! (Note their high qualifications as shown on opposite page.)

Executive Health Report is not sold on newsstands but only by private subscription at $18 a year in the U.S.A. and its possessions. $20 a year in Canada and Mexico. Individual reports (back issues) $1.50 per copy. All other countries $26 by surface mail, $30 by air mail. (Only International Money Order or check cashable on U.S. bank will be acceptable.)

Subscribe now under this unusual introductory offer:

(1) Your choice of any three of the reports listed below ($1.50 each) FREE!

(2) If you are not *completely* satisfied with your first issue, your money will be *promptly* refunded.

Never forget. **"Men's lives are chains of chances,"** but as Euripides saw clearly so long ago, **"Chance fights ever on the side of the prudent."** Your only insurance against "tomorrow" is what you do today. You have but one life . . . doesn't it make sense to find out how to take the best care of it you can?

Please study the reports listed here and circle your three choices:

New research findings On Walking . . . nature's own amazing "anti-age antibiotic"!

Albert Szent Gyorgyi, M.D., Ph.D.: How new understandings about the biological function of ascorbic acid may profoundly affect our lives.

Linus Pauling, Ph.D.: For the best of health, how much vitamin C do you need? People who take the optimum amount of vitamin C may well have, at each age, only one quarter as much illness and chance of dying as those who do not take extra vitamin C.

George C. Griffith, M.D.: On those irregular heart beats (Arrhythmias). Some mean little or nothing, but others warn your heart is in trouble.

Miles H. Robinson, M.D.: On sugar and white flour . . . The dangerous twins. How, with the best or intentions, we have managed to process natural foods into appetite-tempting, disease-breeding trouble-makers . . .

Roger J. Williams, Ph.D., D.Sc.: On your startling biochemical individuality. Some amazing facts about your body you need to know if you want to understand yourself (and other people) better.

Alexander Leaf, M.D.: On the physical fitness of men who live to a great age.

Linus Pauling, Ph.D.: On vitamin C and heart disease. Can vitamin C protect you, and how much should you take?

James F. Toole, M.D.: On Strokes and "Little Strokes" . . . their causes and what you should know about them to help protect yourself!

Sir Hans Krebs, M.D.: On the Overuse and Misuse of Medication.

Alton Ochsner, M.D.: "On the Role of Vitamins C and E in Medicine." A world-famous surgeon tells you how he uses these two essential vitamins.

John K. Lattimer, M.D., Sc.D.: On That Treacherous Gland . . . Your Prostate.

John Yudkin, M.D.: On "This Slimming Business" . . . The truth about the prevention and cure of overweight!

Linus Pauling, Ph.D.: What About Vitamin E? Eminent investigators now suspect it may be one of the key factors to help resist disease and slow the aging process.

Linus Pauling, Ph.D.: On Vitamin C and Cancer. Recent studies show that vitamin C has a large life-extending effect for patients with advanced cancer and suggest a similar large effect for earlier stages of the disease.

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Alton Ochsner, M.D.: On "The Chair Disease" . . . Why blood clots in your veins are a little-realized occupational hazard of desk-bound executives.

Hans Selye, M.D.: On Stress Without Distress. Your mind can make or break you!

Hardin B. Jones, Ph.D.: On The Problems Executives Must Anticipate With the Growth of Marijuana Smoking. The Senior Scientist at the world-renowned Donner Laboratory of Medical Research, University of California, Berkeley, explains some little-understood facts that executives should know as the growth of marijuana use continues among employees.

The B Vitamins . . . Part II. On Vitamin B_6 (Pyridoxine) "The Sleeping Giant of Nutrition."

Stephen R. Elek, M.D.: On "The Hurry-Up Disease." Why it may be a key factor that triggers heart attacks as early as age 40.

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SCIENCE

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Spinal cord cells grown in dissociated cell culture. The yellow fluorescence throughout the central nerve cell represents endogenous neuronal reactivity to antiserum against enkephalin antibody. The intimate apposition of the "opiate peptide" containing neuronal processes and nonreactive cells suggests the possibility of peptide-mediated communication. See page 467. [Joseph Neale *et al.*, Georgetown University, Washington, D.C.]

4 August 1978, Volume 201, Number 4354 **SCIENCE**

The Management of Weather Resources

"The history of our time is sprinkled with instances of new technologies running ahead of the social, economic, environmental, international, and institutional thinking that should accompany them. Precisely because the science and technology of weather resources management are still at such an early stage, there is an excellent chance in this field to do things right—that is, for policy to be made and institutions to be built in parallel with the scientific discoveries and technological innovations."

The comment above is part of the reply* by the 17 members of the Weather Modification Advisory Board to the question posed by Congress in the National Weather Modification Policy Act of 1976: in effect, What should the federal government be doing about changing the weather?

What can be done? The euphoric predictions of a generation ago, when cloud seeding was first invented, have not been borne out, but significant results have been obtained. The Advisory Board concludes that a more vigorous and better focused research and development effort can yield regional increases in mountain snowpack in the 1980's, increase the rainfall in areas such as the High Plains and the Midwest by late 1980's, reduce hurricane winds and hail damage by the 1990's, and very soon poke holes in the clouds over cities to let the sun shine through. The changes expected would be 10 to 30 percent increases for snow and rain; 10 to 20 percent reductions for some hurricane winds (with much greater reductions in wind damage); and up to 60 percent reduction for hail in some kinds of storms.

Should it be done? The case for managing local weather is very strong. The economic benefits of delivering more water in the right places—for irrigation, hydroelectric power, and municipal and industrial use—far outweigh the costs. Population growth and migration to sunny coastal areas are multiplying the number of people at risk from hurricanes and other severe storms.

To achieve a better grasp of these problems will take 10 to 20 years of concentrated R & D. At present, physicists cannot follow with assurance the chain of cause and effect through a cloud; we are still too heavily dependent on statistical inference. Yet people in 74 countries with interests at stake have bet good money on operational cloud seeding without the kind of semicertainty that would pass muster in a scientific journal. In the United States last year, clouds were seeded in 88 projects in 23 states, covering 260,000 square miles or 7 percent of our land area.

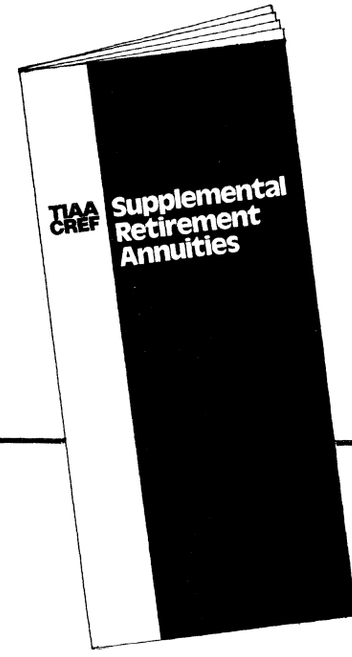
How should it be done? The air and clouds are a public good, belonging to no one. So we must make sure people intervene with prudence in the great envelope around the globe. The Advisory Board feels that we should resist the temptation to place a heavy regulatory hand on an industry still struggling to be born. But it does propose that the federal government license weather modifiers, just as pilots are federally licensed.

Managing the weather to serve human needs is in itself an environmental impact. Those who experiment in the sky need to go beyond guessing the outcome ahead of time; they should monitor during and assess afterward the ecological changes they may provoke. Deliberate changes in the atmosphere should also be designed in open consultation with the people likely to be affected, not all of whom are Americans.

As things stand, no one is in charge of the future of weather resources management. We are still tackling a 20-year problem with 5-year projects staffed by short-term contracts and funded by 1-year appropriations. It is not nearly good enough. The Advisory Board recommends putting the federal government's weather modification R & D in one consolidated action program (not a "lead agency"), and giving it a clear mandate to produce a kit of useful tools with which to make the best of the only environment we have. If we start now, there *is* a chance to do things right, for a change.—HARLAN CLEVELAND, *Aspen Institute for Humanistic Studies, Chairman, Weather Modification Advisory Board, Washington, D.C. 20230*

**The Management of Weather Resources*, vol. 1, *Proposals for a National Policy and Program* (Department of Commerce, Washington, D.C., July 1978).

TIAA-CREF Supplemental Retirement Annuities



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Annual Meeting
Houston
3–8 January 1979

Call for Contributed Papers

Poster Sessions Only. Deadline: 5 September 1978

Following our newly established tradition of the two recent Annual Meetings, AAAS will again have contributed paper sessions at its forthcoming Annual Meeting in Houston (3–8 January 1979). However, because the next Annual Meeting is some 6 weeks earlier in the year than the one just past, we will have less time to prepare for it and therefore we will be unable to schedule slide sessions. The Houston Meeting will have poster sessions only. All abstracts must be submitted according to the instructions given below, not later than 5 September 1978. Abstracts which fail to meet the requirements as indicated below will be returned. *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 October 1978. Contributed paper sessions will be of the poster session type only; in such sessions each contributor will have a bulletin board on which to place text and graphic material (of 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).

Instructions for Contributors

Type abstracts, using a clean (new) ribbon, on ordinary white bond paper (8.5 by 11 inches; 21.5 by 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 give the subspecialty involved.

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 be returned; 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:

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1776 Massachusetts Avenue, NW
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5 SEPTEMBER 1978

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

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

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.

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