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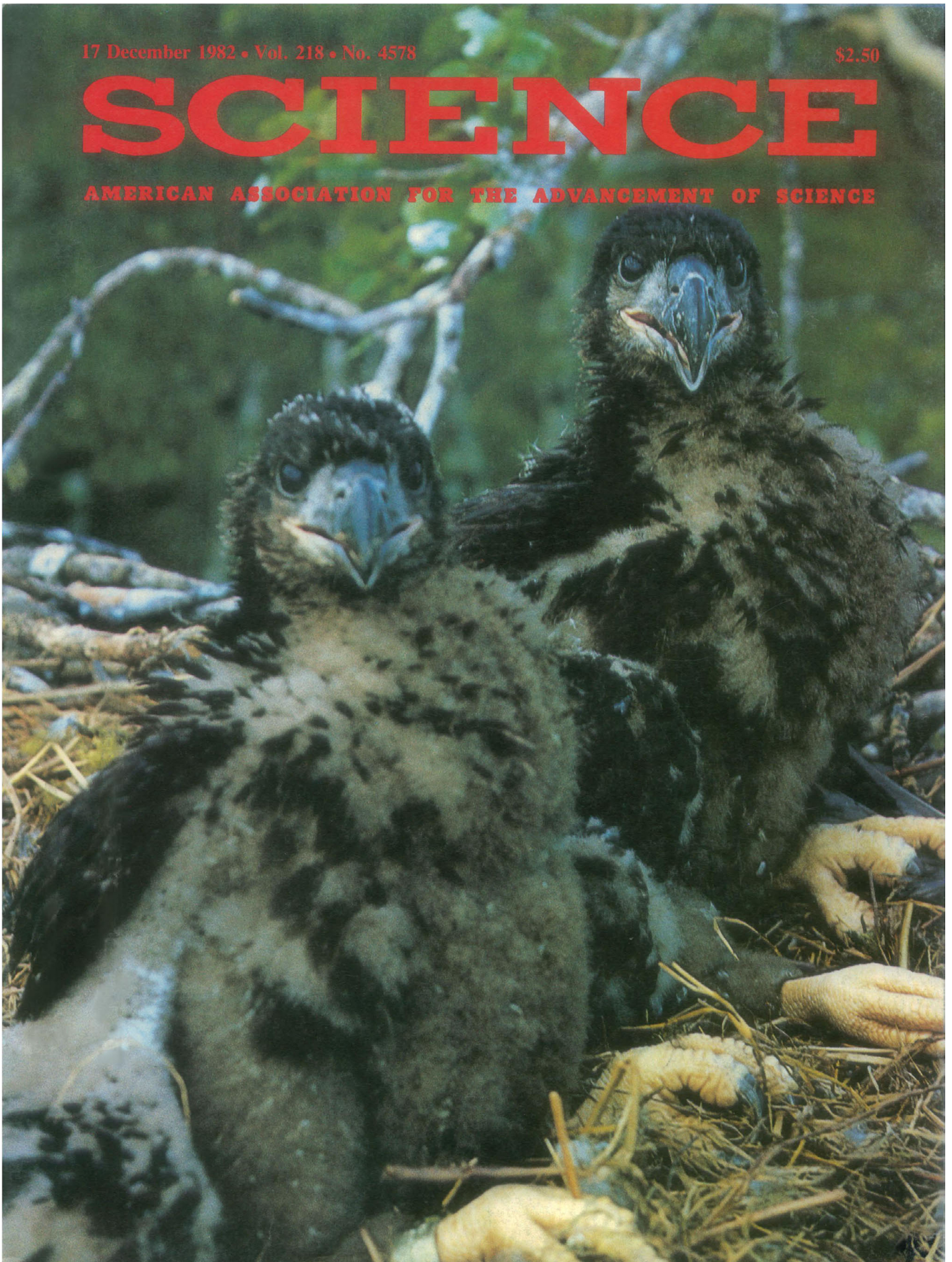

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COVER

Nestling bald eagles (*Haliaeetus leucocephalus*), about 5 weeks old, in northwestern Ontario, Canada. The birds fledge when 10 to 12 weeks old and acquire the familiar white feathers on the head and tail at age 4. These birds have been banded (visible on leg in foreground) for individual identification. Reproduction of this species increased markedly following the ban of DDT. See page 1232. [James W. Grier, North Dakota State University, Fargo 58105]

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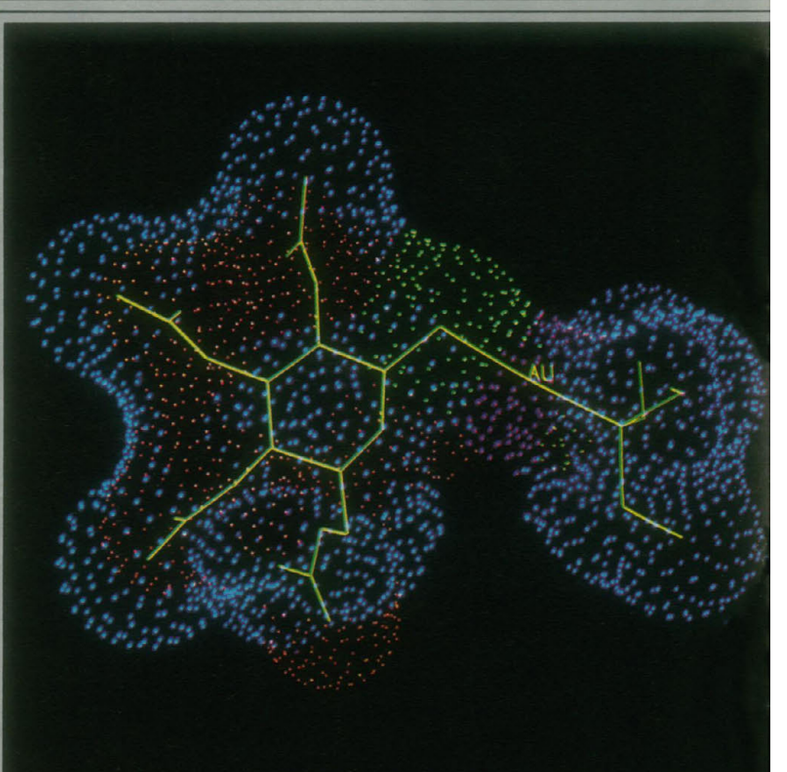

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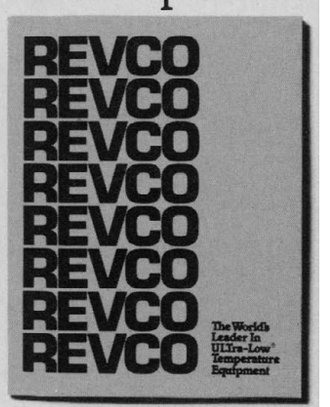

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CONSENSUS WORKSHOP ON FORMALDEHYDE

The Regulatory Work Group on Science and Technology, White House Office of Science and Technology Policy has requested that the

National Center for Toxicological Research

convene a consensus workshop on the science of formaldehyde to discuss and seek general agreement on the existing scientific data and identify research needs.

It is anticipated that the workshop will be conducted in

OCTOBER 1983

at a site to be announced.

The Consensus Workshop on Formaldehyde will discuss and evaluate relevant scientific evidence on formaldehyde in the general areas of Exposure, Epidemiology, Toxicology and Risk Estimation. The endpoints to be discussed for each of the above general areas may include, but not be restricted to: carcinogenicity, genotoxicity, irritation, reproductive effects/teratology, behavioral effects, immunotoxicology/sensitization, neurotoxicity, biochemical effects/metabolism and histopathology effects.

Nominations are solicited for scientific experts to serve on Workshop Subcommittees in the general areas of Exposure, Epidemiology, Toxicology and Risk Estimation. This notice also solicits questions which may be addressed by the Consensus Workshop on Formaldehyde concerning these areas/endpoints. If more than one nomination and/or question is submitted, please rank by preference. Nominations of experts and questions to be addressed will be accepted until January 14, 1983. To assist workshop participants in their deliberations, NCTR has established a clearinghouse for on-going research on formaldehyde.

Questions to be addressed, nominations of experts and requests for clearinghouse data input forms should be submitted to Dr. William F. McCallum, HFT-100, National Center for Toxicological Research, Jefferson, Arkansas 72079. (501) 541-4513 or FTS 542-4513.

that some important types of nuclear reactor accidents could result in huge releases of radioiodines to the atmosphere (*10*).

It appears, therefore, that potentially serious nuclear reactor accidents could occur and that thyroid blocking would offer one of the few practicable strategies for mitigating their consequences. The FDA has determined that potassium iodide is safe and effective for this purpose. The task now is to develop recommendations for the states concerning distribution schemes that would make potassium iodide available to the population downwind from a major release of radioactive iodine when needed. Thus far no federal agency has been willing to undertake that task. That is why Representative Edward Markey (D–Mass.) held the congressional hearing which originally sparked this exchange of letters (News and Comment, 19 Mar., p. 1485).

FRANK VON HIPPEL
Center for Energy and Environmental Studies, Princeton University, Princeton, New Jersey 08544

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ACS Electioneering

With respect to Eliot Marshall's article "Acid electioneering at ACS" (News and Comment, 29 Oct., p. 455), I think it would be well to clarify a bit what was said or implied in the article. The "grass roots group" does not want the American Chemical Society (ACS) to abandon any of its admirable educational and scientific efforts but to add to those a strong professional activity. This stance is supported not only by industrial chemists (65 percent of the ACS) but also by many academic chemists and for many good reasons. One is that in the last decade the median salary of chemists has decreased 18 percent in terms of constant dollars, with a loss of at least $2 billion to the membership. On 1 July 1980, the California Section Executive Committee of the ACS passed a resolution calling on the board of directors to take steps to rectify this situation to the greatest extent possible. In spite of this, and subsequent urging, the ACS has done little to deal with this problem or to show any real interest.

Finally, petition electioneering can cut both ways. Last year two prominent industrial chemists were regularly nominated, and friends of Fred Basolo of Northwestern University petitioned to get him on the ballot; he won narrowly.

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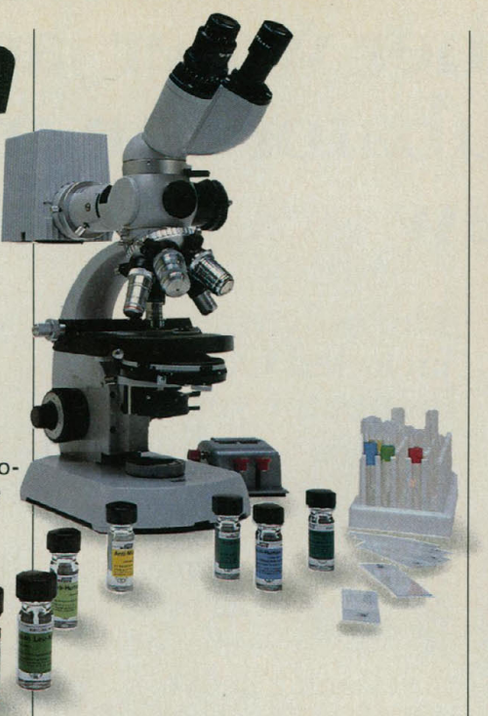

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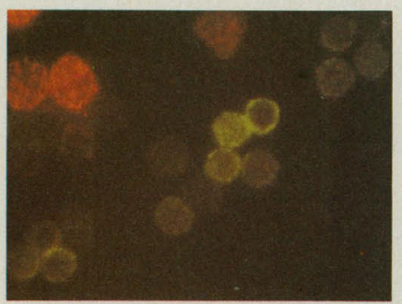

Two color immunofluorescence staining of monocytes and T cells in normal human peripheral blood. Monocytes labeled with Anti-Leu-M1 (red), T cells labeled with Anti-Leu-4 (green). Photo courtesy of John Kearney, PhD., University of Alabama in Birmingham.

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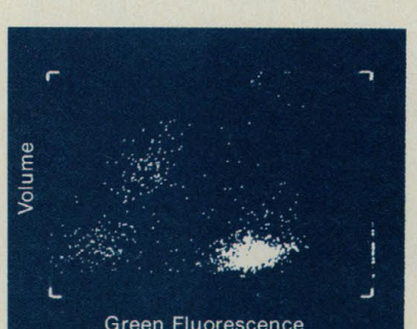

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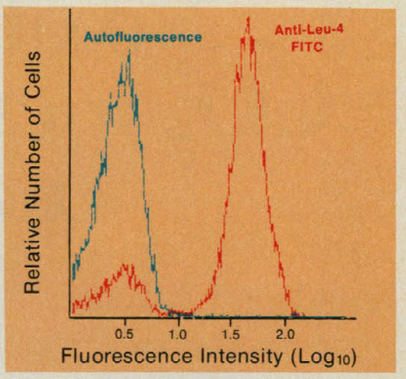

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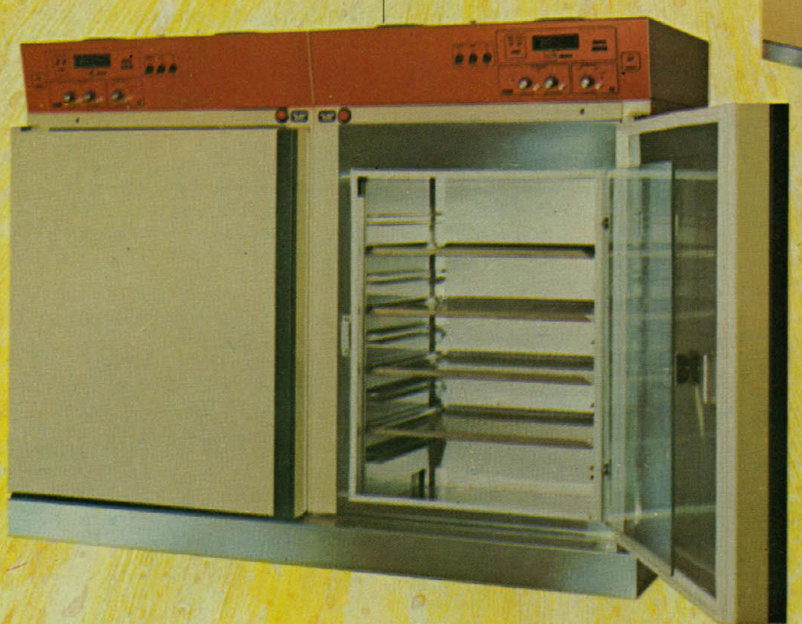

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17 December 1982, Volume 218, Number 4578 **SCIENCE**

Foot-and-Mouth Disease Vaccines

The AAAS–Newcomb Cleveland Prize for 1981–1982 has been awarded to a group of researchers whose report appeared in the 4 December 1981 issue of *Science*.* The report described the preparation of a vaccine and its successful use in an important viral disease of animals.

Foot-and-mouth disease (FMD) is a highly contagious, severely debilitating infection to which some 32 species of cloven-hoofed animals, including cattle, swine, sheep, and goats, are susceptible. The causative agent is a picornavirus which can withstand comparatively adverse conditions and remain infective for substantial periods. For the time being the disease has been eradicated in a number of countries, including the United States. However, it is endemic in large parts of the world.

The U.S. Department of Agriculture maintains a center for research on FMD at Plum Island off the shore of Long Island. In the 1950's and 1960's a team led by Howard Bachrach succeeded in isolating the virus and growing it in tissue culture. Later a vaccine containing killed virus was produced. Forms of the vaccine are still used. The product is not entirely safe. Half of the recent outbreaks of FMD in Europe are traceable to the vaccine or to escape of virus from research centers. In addition, the vaccine is relatively unstable and it does not confer long-lasting immunity. An important discovery by the Plum Island group was that VP_3, one of the four proteins that coat the viral RNA, is an effective antigen in producing immunity to the virus. This knowledge led to application of recombinant DNA techniques in producing the new vaccine.

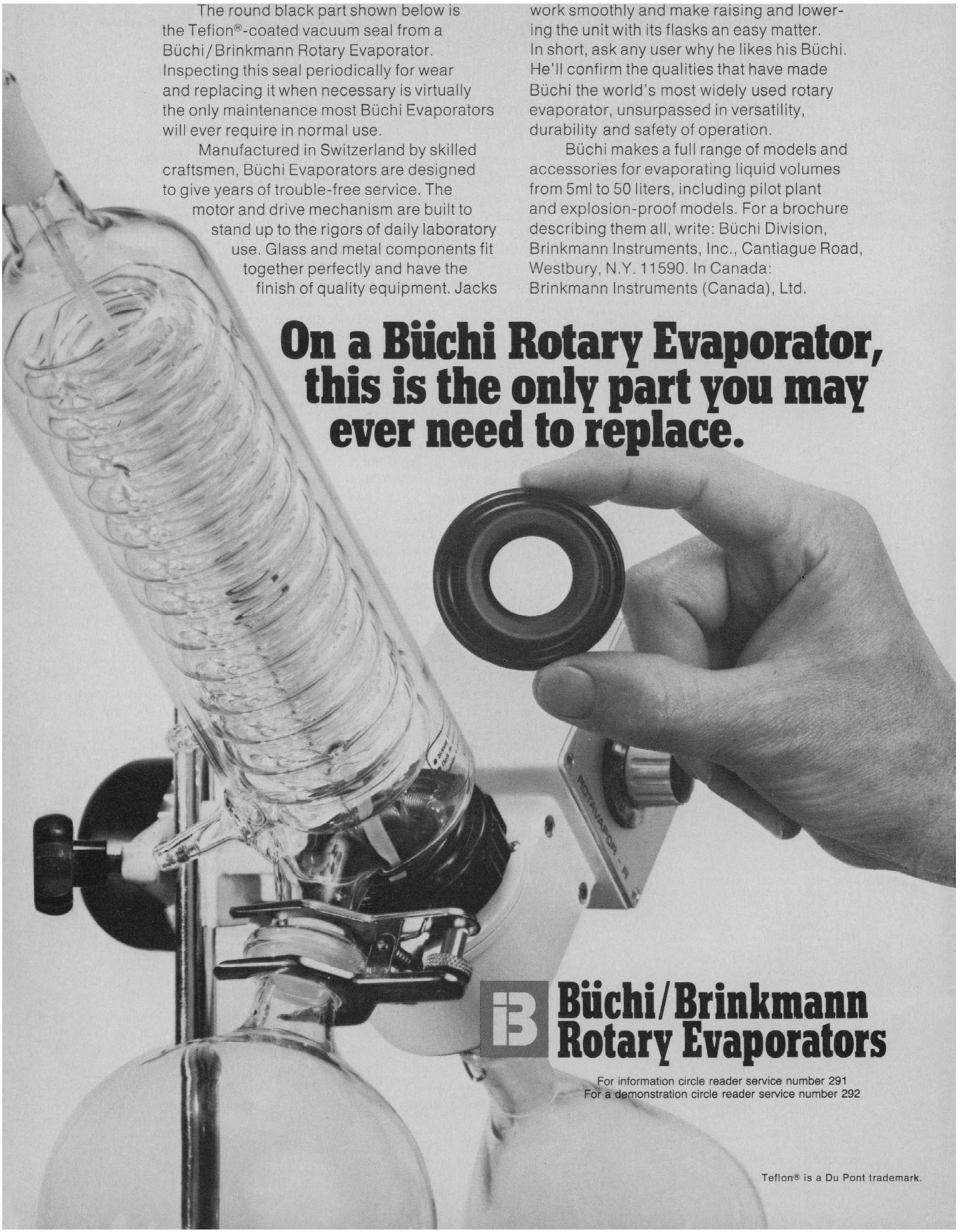
The viral RNA contains about 8000 bases. The portion coding for VP_3 is near the center of the genome. DNA complementary to a 2000-base segment of RNA was produced and spliced into a plasmid of a special mutant of *Escherichia coli* at Genentech. Later, information about the terminal amino acids of the VP_3 protein was used to identify the segment of DNA that coded for it, and this was then introduced into a plasmid. *Escherichia coli* containing these plasmids produced an insoluble moiety that included the desired protein. Yields were excellent. The protein is stable: it can withstand a temperature of 100°C. A purified product contained a sequence of about 211 amino acids. Two injections of 250 micrograms of this protein in an oil adjuvant produced a good antibody response in cattle and swine and protection against a challenge dose of virus. The vaccine is completely safe.

Since there are many strains of FMD viruses, a comprehensive vaccine against all of them will not be available immediately. But much has been learned about the viruses. The amino acids near both the carboxyl and amino ends of the VP_3 protein seem to be conserved. However, the sequences of the amino acids of VP_3 of various virus strains differ by as many as 36 residues. It is probable that an effective comprehensive vaccine will need to include as many as 15 different proteins or polypeptides. However, it should be relatively easy to produce them by applying what is now known. Some eight major companies are seeking to create commercial products. Prospects seem good that within this decade FMD will come under more effective control worldwide.

Two diverse streams of knowledge came together to make this achievement possible. Long-term support for basic research on FMD by the Department of Agriculture provided a necessary foundation for the application of recombinant DNA. In turn, the commitment of the National Institutes of Health to long-term support of basic research led to the unexpected recombinant DNA technology. The award of the AAAS–Newcomb Cleveland Prize recognizes only one of the many important benefits for humanity that come from enlightened support of science.

—PHILIP H. ABELSON

*The researchers are Dennis G. Kleid, Daniel Yansura, Barbara Small, and Donald Dowbenko of Genentech and Douglas M. Moore, Marvin J. Grubman, Peter D. McKercher, Donald O. Morgan, Betty H. Robertson, and Howard L. Bachrach of the Plum Island Animal Disease Center.



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