

# SCIENCE

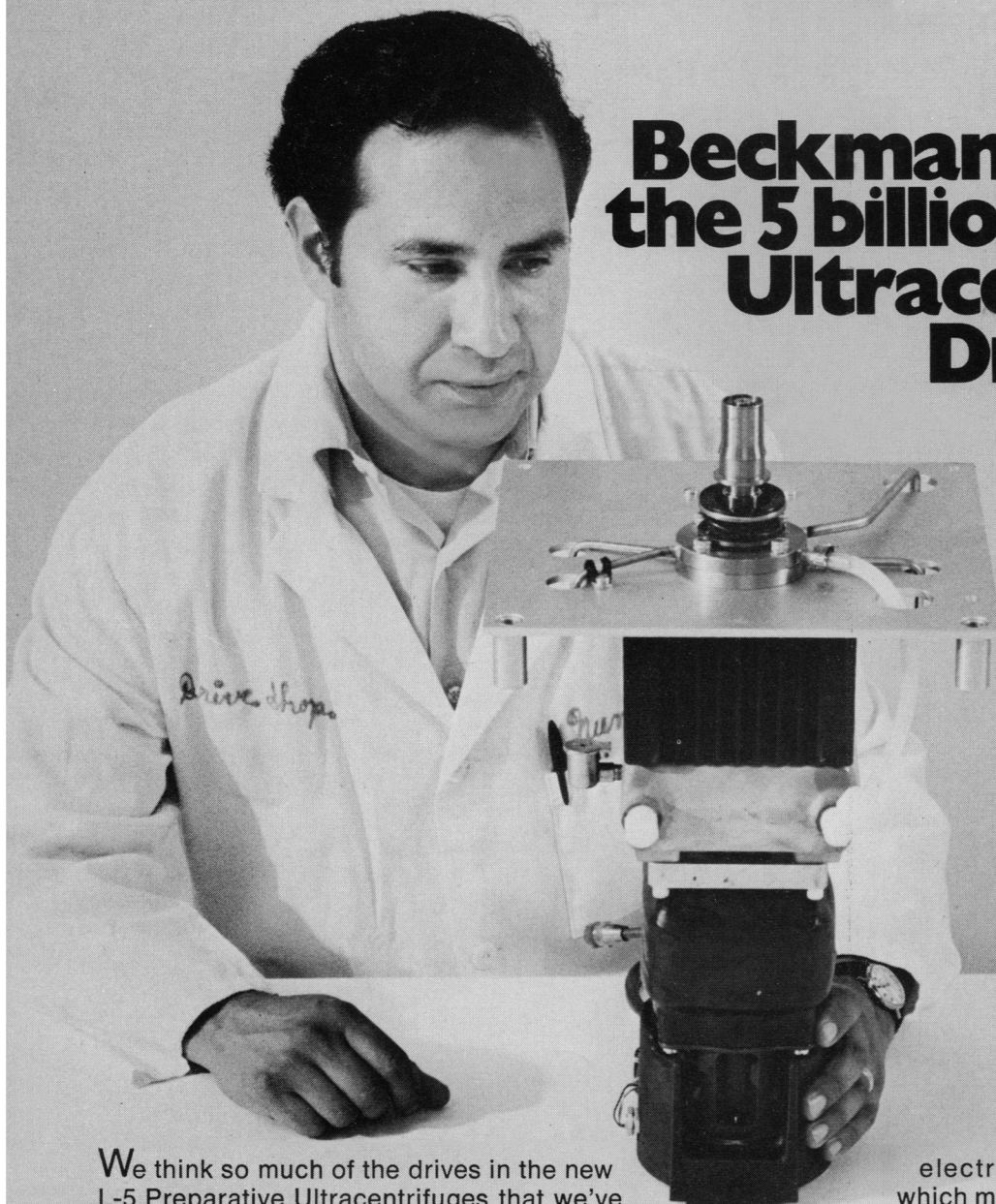
29 November 1974

Vol. 186, No. 4166

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



# Beckman announces the 5 billion revolution Ultracentrifuge Drive



We think so much of the drives in the new L-5 Preparative Ultracentrifuges that we've doubled the drive warranty from 2.4 billion to 5 billion revolutions. If the drive doesn't last that long, all you pay for are the revolutions used, and at a cost much less than under the previous warranty.

All L-5 electric drives are now d.c. driven to provide the high torque necessary to get rotors rapidly to speed. For example, the L5-75 accelerates a titanium rotor to 75,000 rpm in just 11 minutes, compared to 19 minutes for the earlier Model L2-75B.

Both L5-65 and L5-75 drives have a new system (patent pending) which collects and reuses oil that would normally be consumed. This system compensates for normal wear and significantly extends drive life. The long-lasting drives in the Models L5-40 and L5-50 are permanently lubricated.

All four Model L-5's now feature a rotor imbalance detector which automatically shuts off the drive if a rotor is significantly out of balance, further protecting the drive system, the rotor, and the ultracentrifuge itself.

Beckman drives bring you more than just long life. When the total drive system is considered, Beckman

electric drives have relatively few parts, which means a minimum of elements to be concerned with. And when you do need to replace a Beckman drive, your replacement is not just a portion of the drive, but a complete drive system with a new 5-billion revolution warranty.

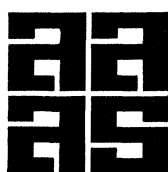
In terms of energy requirements, the Beckman electric drives are highly efficient and consume comparatively little power. They have an efficient braking system to bring rotors rapidly and smoothly to rest. And they are so quiet that you can hardly hear an L-5 running.

Superior drives are only one of the reasons to choose a Beckman L-5 Preparative Ultracentrifuge. For the full story of the L-5's, send for Brochure SB-400 to Beckman Instruments, Inc. Spinco Division, 1117 California Avenue, Palo Alto, California 94304.



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AUDIO



TAPES

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## COVER

Black-throated blue warbler (top left), yellow-rumped warbler (top right), and black and white warbler (bottom) are typical of migratory songbirds which show a decline of DDT and metabolites for the decade 1964-1973. See page 841. [Samuel Grimes, Jacksonville, Florida]

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.

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# On Incrementing a Hurricane

Scientific studies of national decision-making have shown that democracies tend to abhor comprehensive planning and major shifts in strategy, preferring instead to "increment" or muddle through, making adjustments through a series of small steps aimed at moving away from a mess rather than at moving toward clearly stated, positive goals. Thus, a study of our country's federal budget shows that the allotment for most federal agencies will usually be within 10 percent of last year's—come hell or high water. National priorities may change, new crises may be identified; but as a rule agencies entrusted with new missions will grow only slowly, while the custodians of obsolescent missions and downgraded priorities are likely to continue to draw "their" billions.

It has been argued that it is the genius of democratic policy-making that it takes into account the large variety of needs and interests represented in the populace, and does not lend itself to a sudden shift to one side to the neglect of others. Thus, it is "undemocratic" to suggest cutting the NASA budget by a factor of 4 while quadrupling that of the Office of Energy. This would be "unfair" and unsettling to the industries that grew up around the space effort and to the congressional districts in which they are located. Gradual transitions, which do occur, allow for less painful adjustments. Finally, master plans often do not work anyhow, the future is too complex to be anticipated and molded, today's grand designs are tomorrow's discarded charts. Muddling through, the incrementalists conclude, is not just a fact of life, but the best way to live.

While much of what the incrementalists say is valid, there are moments when muddling through just will not do to get a country out of a serious predicament. France discovered this when it was invaded in 1939. The United States realized it had to double the defense budget, within one year, in terms of percentage of the gross national product, at the onset of the Korean War.

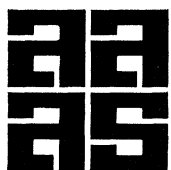
The energy crisis has so far elicited chiefly rather modest attempts at muddling. A year after the crisis broke we still have no national policy, let alone a program commensurate with the problem. The ideas being kicked around, which are a long way from attaining even the status of policies, are quite incremental in nature.

Project Independence, aimed at making us self-reliant in 20 years, is little more than a slogan. Major decisions about the sources of energy to focus on, how to develop them, even whether independence is worth the gigantic costs it would exact, have in effect not been made. Most importantly, the American people have not yet been prepared for the fact that whichever way we turn—toward consuming a good deal less energy or paying *much* more for its development—the American way of life will have to be *significantly* adjusted over the next decade. Estimates of how much Project Independence will cost run to \$700 billion.

While incrementing might well be the genius of democracy under most circumstances, to try to muddle through a hurricane is folly. The nation must be told that this crisis is not temporary and that it will require a not trivial reduction in the American standard of living, albeit not a radical one. It will require more master planning and national coordination than we tend to welcome in peacetime. It will require more leadership and less incrementation.—AMITAI ETZIONI, *Professor of Sociology, Columbia University, and Director, Center for Policy Research, Inc., 475 Riverside Drive, New York 10027*

For studies on incrementing, see Richard Fenno, *The Power of the Purse* (Little, Brown, Boston, 1966) and Aaron Wildavsky and Arthur Hammond, "Comprehensive vs. Incremental Budgeting in the Department of Agriculture," *Administrative Science Quarterly*, vol. 10 (1965). For an analysis of the democratic basis, see Charles Lindblom, *The Intelligence of Democracy* (Free Press, New York, 1965). For critique, see Amitai Etzioni, *The Active Society* (Free Press, New York, 1968), chapters 11 and 12.

# AUDIO



# TAPES

## Selected Recordings on the Environment

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