Schlesinger and the AEC: New Sources of Energy

Through the decade of the 1960's and up until late last year, the Atomic Energy Commission led a somewhat cloistered existence, shielded by its own leadership, and by the Joint Committee on Atomic Energy (JCAE), from the slings and arrows of the usual fortunes of federal agencies. Now, with the coming of the new chairman, James R. Schlesinger, the shield has dropped a bit, the cloisters are crumbling, and the AEC is enduring a major upheaval.

Under the leadership of Glenn T. Seaborg, the commission enjoyed an unusual degree of inner stability, a freedom from top managerial tumult that most federal agencies might savor but few ever attain. During the Seaborg years, through a succession of three presidents, the AEC tended a fluorishing—and for the most part, carefully invested—research budget, and it presided over the slow, trouble-plagued birth of civilian nuclear power. And in all that time, even in the late 1960's, as the environmental movement gathered force and began lobbing well-aimed brickbats at the AEC, the agency somehow escaped the purges and reshufflings that normally attend new social movements and the arrival of new presidents.

But whatever the obvious benefits the years of stability may have brought, they were purchased at a price. There is the general impression among those who have watched the AEC's affairs for many years that the old Promethean vigor which marked the agency in its early years had long since begun to fade—that the AEC was growing stagnant.

To be sure, the graying of the AEC was a gradual process, but the signs of creeping infirmity were unmistakable. One highly placed observer, an employee of the AEC since the Truman Administration, describes it this way:

> In the last 10 years most key vacancies have been filled from within, and little empires have grown up. By the end of the Seaborg era, the agency was getting too heavily burdened with people dating back to the Manhattan Project—and they're getting older, less energetic.
>
> There has been a real slowing down in the AEC. It was getting to be a very dead agency, and anything the new chairman can do to enliven it will be to the better.

Schlesinger seems intent on doing precisely that. Two months after taking office, he first caught the public eye with his declaration of a new neutrality toward thriving segments of the nuclear industry. He caught it again, for better or for worse, willingly or not, with his family outing to Amchitka Island for the Cannikin blast. Then last month he galvanized his newly inherited agency with its first major reorganization since the mid-1950's, and the most drastic since 1948.

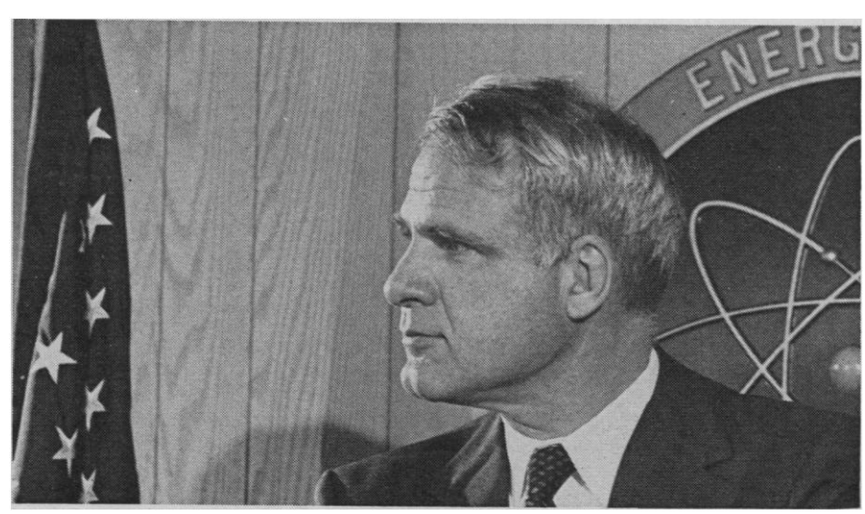
Certainly all of this is consistent with a desire to bolster the AEC's badly sagging public image, but it would be a mistake to attribute the agency's new look in any large measure to flackery. Schlesinger, it seems, has set out to work a metamorphosis on the AEC, and one which penetrates beyond public relations and deeper than cosmetic alterations of organization charts. Not the least of the contemplated changes, for instance, involves an expansion of the AEC's role in energy research to include new activities in nonnuclear R & D. The transformation thus touches on the basic goals and attitudes of the AEC. And more, it appears to be rooted in a view of nuclear energy, a spectrum of interests, and a style of administration distinctly different from those of Seaborg.

The early months of the transition from Seaborg the Nobel chemist to Schlesinger the economist have illuminated a number of contrasts between the two chairmen, some of them superficial and some more fundamental.

It would seem, for one, that Schlesinger is more interested in matters of internal administration than Seaborg was in his decade as chairman. "Essentially he took things as he found them," an old acquaintance of Seaborg's says. He adds that "As the years went by and the agency grew, there was a diffusion of responsibility, a confusion of authority, and little empires grew up." If diffuse authority proved maddening to the staff, which it often did, it seemed not to perturb Seaborg. He is described as a patient and tolerant administrator whose need for clear-cut lines of authority was diminished somewhat by the fact that "he knew personally everyone he had to know."

The complex web of authority at headquarters in Germantown, Maryland, did bother Schlesinger, however. One of his first acts on the job was to hire the Arthur D. Little management firm to examine the AEC for structural defects. The firm's report, submitted in November, became the basis of the reorganization.

Other contrasts in style between Schlesinger and Seaborg can be found



AEC Chairman James R. Schlesinger.

in their relations to the four other commissioners. Previously, meetings of the commissioners were run much in the fashion of a graduate seminar, with Seaborg presiding but not dominating. "He'd bend over backwards to bring all the other commissioners in on a discussion, as well as key staff," one observer recalls. "An issue would be discussed many times, worked through to some practical solution. He was very cautious, very patient, and often will-

Briefing

FDA's "Prudence" on Hexachlorophene

The Food and Drug Administration (FDA) last week announced sweeping restrictions on hexachlorophene, the antibacterial agent to which the public is now exposed through some 400 different products ranging from soaps to cosmetics and vaginal deodorants. "The only prudent course is to reduce the total human exposure to hexachlorophene," explained FDA Commissioner Charles C. Edwards.

The FDA's handling of the hexachlorophene affair affords in several respects a notable case study of regulatory action. If the FDA had not allowed the use of hexachlorophene to mushroom in the absence of adequate safety data, the situation would not have arisen in which millions of consumers are being exposed daily to a potentially brain-damaging chemical. Moreover, the various regulatory positions adopted by the agency appear to be markedly out of phase with the scientific data on which they were presumably based. The results of crucial experiments indicating that hexachlorophene causes lesions in the brains of rats were made available to FDA decision-makers in April 1970 and were communicated in preliminary form as early as July 1969 (*Science*, 19 November 1971). Yet as recently as 10 November 1971 agency spokesmen said there were no plans to seek an outright ban on hexachlorophene, only to require certain products to carry warning labels.

The only new evidence that appears to have come to light between then and last week's restrictions is a study submitted to the FDA on 19 November by Winthrop Laboratories, in which newborn monkeys washed daily for 90 days with a 3 percent hexachlorophene solution were found to have developed brain damage similar to that observed in rats. There is no immediately obvious reason why such a study, a necessary confirmation of the rat data, was not required or instituted by the FDA 21 months ago, when the rat experiments were first reported. (These experiments were carried out by FDA scientists based in Atlanta, Georgia, but because of the agency's protracted delay in granting permission to publish, the data have reached the public domain only in the last few months. In published documents, the FDA misleadingly refers to this data as a "recent" study.)

Few drugs are totally free of risk, but in most instances the risks are far outweighed by the benefits. Such is not the case with many of the uses of hexachlorophene; a report by the Drug Efficacy Study Group of the National Research Council, which was released last month by the FDA, concludes that hexachlorophene preparations are "lacking in substantial evidence of effectiveness for . . . the broad claim as a vaginal douche, in the treatment of chronic eczema, in irrigating or cleansing wounds and burns, and as an 'aid to personal hygiene.'"

An *FDA Drug Bulletin* issued last month gives the impression that this important study is of recent origin by stating that it was published by the FDA on 8 December 1971. In fact, the study has been in the FDA's possession for nearly 3 years, since April 1969.

The market for vaginal deodorants, most of which contain hexachlorophene as the principal active ingredient, has grown from nothing 5 years ago to a business worth $53 million a year and involving 24 million women. Probably more than half of this growth has occurred since mid-1969, by which date the FDA knew both that hexachlorophene was ineffective as a vaginal deodorant and that it was potentially damaging to mammalian brains.

The FDA has the strictly legalistic defense that vaginal deodorants are a cosmetic, and cosmetics, unlike drugs, are not required by the Federal Food, Drug, and Cosmetic Act to be proven safe and effective prior to marketing. The hexachlorophene incident seems to have stimulated an important reinterpretation of this *caveat emptor* policy. In a statement to be published this week in the *Federal Register*, the FDA professes, "It is fundamental that no manufacturer of a consumer product has the right to place that product on the market without first substantiating its safety. . . . In the case of a cosmetic, although the act does not require FDA approval prior to marketing, it necessarily contemplates that the manufacturer has obtained all data and information necessary and appropriate to substantiate the product's safety before marketing."

Because this has not been the case for hexachlorophene, the FDA found it necessary last week to ban the use of hexachlorophene as an active ingredient in cosmetics (it may be used as a preservative at a level no higher than 0.1 percent) and to require that soaps and other skin cleansers containing more than 0.75 percent hexachlorophene be available by prescription only. All antibacterial ingredients used to replace hexachlorophene in cosmetic compounds must be adequately tested for safety prior to marketing, failing which the packet must bear a prominent warning.

This regulatory action, which will safeguard the millions of consumers who use vaginal deodorants and high concentration hexachlorophene cleansers, is the direct—albeit long delayed—consequence of work by the scientists at the FDA's toxicology branch in Atlanta (the branch has since been transferred from the FDA to the Environmental Protection Agency). The scientists are Renate D. Kimbrough and Thomas B. Gaines, who first discovered the brain-damaging properties of hexachlorophene when they fed it to rats. These results were confirmed and extended by August Curley and Robert E. Hawk, also of the Atlanta toxicology branch. It is presumably indicative of the value placed by the FDA on good science that these scientists have not yet received any word of official praise or recognition for their achievement.

In a review of the hexachlorophene question made available to the FDA in May 1970, Kimbrough concluded "At the present state of our knowledge, the unnecessary use of concentrated hexachlorophene should be curtailed." Some 21 months later, Commissioner Edwards has acted on Kimbrough's advice.—N.W.

ing to hold up a decision for months until everyone could be brought into it."

Schlesinger shows less of his predecessor's tolerance for rambling seminars and niggling detail, and he is said to feel less certain that a committee of five is the best way to run an agency as vast as the AEC. As a result, the commissioners now work more independently, each tending his own special area of emphasis. (William O. Doub, for instance, works on environmental affairs.) Commissioners' assignments have been more sharply delineated, their meeting agendas more tightly circumscribed. The easy ambience of the seminar has given way to the greater formality of the corporate boardroom.

Elements of style such as these often lead to the suggestion that Schlesinger may evolve as a latter-day Robert McNamara, enamored with systems analysis and cost-benefit approaches to management. The parallel with the former Secretary of Defense may be facile but is has a point. Clearly, Schlesinger's interests lean less in the direction of research and the production of new transplutonium elements, and more in the direction of management technique, environmental affairs, and weaponry.

"The present chairman is by no means hostile to research," says one insider. "But he is not strongly allied with science. It's inevitable that he will begin to ask what we're getting from the national laboratories, and how much we ought to be spending on nuclear research. You probably couldn't have asked that of Seaborg. Research was, by definition, good."

Schlesinger is far less of a proselytizer than Seaborg. One hears little talk from the top of the AEC these days about burning the earth's rocks and the sea for their limitless stores of nuclear energy. Instead, the new chairman talks about tempering the single-minded preoccupation with nuclear technology which—perhaps necessarily—characterized the AEC through its first quarter century.

"Nuclear energy is not an end in itself, but it serves still higher national aims," Schlesinger emphasized in a recent interview. With this in mind, he continued, the next few years should find the AEC "looking more in terms of alternative means for satisfying national objectives. We must broaden our range of instrumentalities in the whole energy field."

Inevitably, he said, this changing perspective will require "getting away from the attitude, to wit, that atoms are beautiful. Historically, this attitude is understandable. But in fact, atoms may or may not be useful, depending on the circumstances."

In keeping with this view, Schlesinger, with the blessing of the JCAE, wants the AEC to expand its activities to include research and development in other—nonnuclear—fields of energy. Congress and the White House willing (which the latter seems to be), the AEC would thus become a major new focal point in the next few years for all sorts of energy research having little to do with atomic energy. In an interview, Schlesinger said that, in cooperation with other agencies, this program could range from work on coal gasification to geothermal steam to development of improved techniques for transmitting electric power.

None of this goes to say that the AEC will deemphasize nuclear energy. The agency intends to press on vigorously with the fast breeder reactor program, warmly endorsed as it is by President Nixon, as well as to give new emphasis and money to controlling thermonuclear fusion.

Under the new scheme of things, however, the national laboratories will be allowed to apply some of their vast talent and ambition to work on what Schlesinger calls "new, alternative instrumentalities" for satisfying the nation's appetite for energy—preferably, as the Administration slogan has it, for "clean energy."

Prominent among these alternatives are magnetohydrodynamic (MHD) generators, which would produce electric power by burning fossil fuels and passing the resulting combustion gases

Divorce, Environmental Style?

The marriage of regulatory and promotional functions embodied in the Atomic Energy Commission has not always been a happy one for the AEC, and from time to time various commissioners have talked about an eventual divorce. Now six small conservation groups are attempting to force an early dissolution of the union by a suit in federal district court in Washington, D.C., challenging the constitutionality of the Atomic Energy Act of 1954. They base their complaint on the assertion that no unbiased forum exists in government for critics of nuclear energy policies, and that this alleged deficiency violates the public right to due process of law.

For the AEC, the problem has been one of maintaining a semblance of autonomy for its two potentially conflicting arms, while keeping open lines of communication between them. The effort has not always been successful, although former AEC Chairman Glenn T. Seaborg insists in his recent book, *Man and Atom,* that this arrangement has actually been "symbiotic," in the sense that it helped the commissioners understand both the needs of the safety R & D program and the needs of the regulatory staff. Still, Seaborg and co-author William Corliss prophesied that "continuing growth of the nuclear industry will lead ultimately to a complete separation of the two functions."

The AEC has not yet responded to the suit, the first to challenge the constitutionality of its founding act. A few weeks ago, however, the new chairman, James R. Schlesinger, told *Science* that the idea of severing the AEC's regulatory arm and giving it to another agency remained "a lively question" within the commission. Although the recent reorganization bypassed the regulatory staff, Schlesinger went on to say that the agency's new structure was "consistent with" a divorce but could not be said to presage it. He indicated that the AEC means to retain its regulatory staff until it works its way out from under an enormous burden of paper work imposed by the Calvert Cliffs decision (*Science*, 27 August 1971) and until the staff is "working smoothly." Thus the AEC may be expected to fight the conservationists' suit, but with mixed feelings toward the possible outcome.—R.G.

through magnetic fields at extremely high temperatures. More efficient than conventional steam-turbine plants, MHD generators would presumably help conserve fossil fuels and reduce thermal pollution. (One drawback, however, is that their high operating temperatures would result in large amounts of nitrogen oxide emissions.)

To date, neither government nor industry has spent much money on MHD. A small cooperative effort exists in the bowels of the Interior Department, but the program is said to be making little headway. The sticking point, as the President's science adviser, Edward E. David, pointed out in a speech last April, is that the utility industry is simply unwilling to suffer the high costs and risks—and unwilling to wait for the long deferred payoffs—of coaxing a radical new technology through various stages of laboratory testing and pilot and commercial demonstrations. The fact that just this kind of commercially targeted R & D has been the AEC's stock-in-trade for 15 years gives its new mission a compelling logic.

A Boost from the White House

Initially, the impetus to expand the AEC's jurisdiction came from the White House. As long ago as last January, S. David Freeman, then head of energy policy in the Office of Science and Technology, suggested that "perhaps the AEC's research role should be much broader . . . AEC has been tremendously successful, but after 25 years you need to give an agency a new mission." Then last June, in his message on "clean energy," President Nixon declared his intention to concentrate authority for federal energy policy in the Department of Natural Resources which he has several times asked Congress to establish. The AEC, Nixon said, would remain intact to carry on its nuclear programs "and any other related energy research" which might complement the energy programs of the new department.

Congress, in fact, seems to be in no mood to approve further executive reorganizations, least of all in an election year. Nevertheless, the JCAE wasted no time in staking its claim to a prospective new bonanza of R & D money. It quickly and quietly pushed through an amendment to the Atomic Energy Act of 1954 allowing the agency to engage in nonnuclear energy research on its own, something not previously allowed under the act. Plucking whole phrases from the energy message, the JCAE stated in July that henceforth the commission now could use its laboratories for nonnuclear R & D of its own or for work farmed out by other agencies, all in order to pursue "the blessings of both a high energy civilization and a beautiful and healthy environment."

The AEC's new nonnuclear program still exists chiefly on paper, lacking as it does both a director and money. And the question remains whether the White House and the JCAE can see their way clear to spending new money on this program, or whether others will be reduced for its benefit.

The most tangible evidence of the metamorphosis now under way, of course, is the drastic reorganization of the AEC's large headquarters staff at Germantown, announced on 7 December. It was the first major reshuffling since the mid-1950's, and it literally reassembled the top three tiers of the Germantown staff into a sleeker new structure that reflects Schlesinger's concern for his agency's higher "end purposes."

The reorganization failed to live up to prior rumors that the old "Manhattan" guard might be purged from key posts, though there were a few suggestive promotions and demotions. More important though, individual programs and whole divisions of the AEC —formerly scattered helter-skelter on an organization chart that had grown to resemble the tangled root ball of an aging elm—were grouped into six discrete units according to function. Each unit, or program area, is headed by an assistant general manager who answers directly to the AEC general manager (the staff director) Robert E. Hollingsworth and his newly appointed deputy general manager, John A. Erlewine.

One of the six new units contains the functions of producing and managing raw radioactive materials and nuclear fuel. These functions were formerly part of a larger branch of the AEC which included isotope development and the division of peaceful nuclear explosives (Project Plowshare). This new segregation of production programs paves the way for their scheduled transfer to the proposed Department of Natural Resources, if and when the department is created.

A second unit combines several divisions dealing with internal administration. The remaining four reflect the agency's higher reasons for being. They are: research (divorced now from reactor development and applied technology); national security (military and intelligence segments of AEC); energy and development (reactors and applied technology, including nonnuclear energy programs and Plowshare); and environment and safety.

The most obvious feature of these new arrangements is a commonsense consolidation of related activities, a melding of the little boxes that had proliferated across the organization chart over the years. The AEC's military programs, which consume just over half its $2 billion budget, provide an example.

Before, military programs—consisting mainly of naval reactor development; the design, testing, and fabrication of nuclear weapons; intelligence; and classified research—were divided among three assistant general managers. Now these programs are grouped under one acting assistant general manager, Air Force Major General Edward B. Giller. (His "acting" status has led to speculation that Schlesinger may eventually place a civilian in charge of AEC military affairs.)

Overall, the number of AEC divisions has been reduced from 34 to 30, three new divisions were created, and the number of assistant general managers has gone from nine to six.

Fusion's Brighter Future

More than cosmetology is involved here, however. Apart from the neatening up that took place, some new priorities have emerged.

The division of peaceful nuclear explosives, which has hobbled along on a starvation budget for several years now, was abolished. Project Plowshare was reduced in grade to one of several programs in the new division of applied technology, itself part of the larger ken of energy and development. Conversely, an ad hoc office of environmental affairs created in 1970 moved up to divisional status and, presumably, swings weight commensurate with its new rank. In regard to this promotion, Schlesinger comments that tradeoffs will inevitably continue between the AEC's developmental and environmental arms, but that "the voice of caution should be stronger than in the past."

Similarly, the controlled thermonuclear research (CTR) program, has turned out to be the Cinderella of the

new research branch. Once consigned to a niche in the physical sciences division of the research and development branch, CTR now rates a division all its own in the new research unit. Thus promoted, fusion research will compete for funds within the AEC on a footing of equal influence with all the combined programs of the physical sciences.

Implicit in the elevation of CTR research is the AEC's intention to put new emphasis on demonstrating the technical feasibility of controlled fusion. "Without engaging in a crash program," Schlesinger says, "we are eager to press on, to push it as rapidly as seems appropriate in the light of a long-term program." He said that the AEC hopes to begin "major construction" of new facilities sometime "in the next couple of fiscal years."

Other sources say this construction would almost certainly involve building as many as three large new experimental machines—each to test a different approach to sustaining a fusion reaction. The goal of the machines would be to achieve a fusion plasma hot enough and dense enough to release as much energy as needed to kindle it. The first machine to reach this "break even" point will be regarded as having demonstrated the feasibility of controlled fusion, much as Enrico Fermi's atomic pile at Chicago opened the way to fission reactors. Roy W. Gould, the director of the new CTR division, has said that a stepped-up program such as this would cost $616 million through 1980, or about twice what the AEC said last year that it planned to spend on civilian fusion work in the 1970's.

For the national laboratories—especially for those not heavily involved in weapons work—the new regime at headquarters promises to bestow mixed blessings. In one respect, the new emphasis on nonnuclear R & D should provide added opportunities for the laboratories to show, as they have long clamored to do, that big science and high technology can be applied to the problems of society. Moreover, a new measure of freedom for the laboratories is in the offing. Although the reorganization changed nothing fundamental in the laboratories' relations with the AEC, some laboratory directors will now find themselves communicating with assistant general managers, one notch higher than their divisional ties of the past.

What this means, says Schlesinger, is that the laboratories won't have to package their commodities—their programs—in terms of narrow divisional interests:

"We want to provide greater leeway to the labs so that, if they get a damned good idea, they can work on it without having to distort it to sell it."

Audible sighs of relief may be restrained, however, in the knowledge that with freedom comes a new measure of discipline:

"There has been an atmosphere in the labs wherein a researcher who doesn't want to work on an assigned task doesn't have to—that this is all part of the spirit of free inquiry. Well, we can't automatically permit researchers to follow this proclivity. Development tasks such as the LMFBR [liquid-metal fast breeder reactor] have got to be done, and hopefully on some kind of rough time schedule."

Whip-cracking was never a hallmark of the Atomic Energy Commission, least of all during the Seaborg years. Schlesinger's predilection for it—evidenced in his scolding of the nuclear industry, and elsewhere—signals the advent of a new and very different style of administration at the AEC. How much this style, and the renovations of the agency already accomplished, will alter the character of the AEC can scarcely be guessed this soon. But it's safe to say that the AEC has reached a watershed in its history.

At the age of 25, of course, the commission is still young. But the pull of the past upon the present has been stronger here than in most agencies; many of the commission's key staff have been part of it from the very beginning. They helped to shape its policies and its character in the late 1940's and to preserve its personality through the years. Now the dominion of the visionaries is gradually ending. At the quarter-century mark it seems as if the spirit of Manhattan is near its last hurrah.

In place of the visionaries are coming the grimmer pragmatists of the Nixon team. They are bringing with them an instinct for firmer management and, perhaps, a new sense of purpose for the AEC.

—ROBERT GILLETTE

University Women's Rights: Whose Feet Are Dragging?

When the Department of Health, Education, and Welfare (HEW) hand-delivered to Columbia University President William J. McGill on 4 November 1971 a letter that threatened cutoffs of federal funds to Columbia if the university did not provide certain data on hiring and promotion of women and minorities, it seemed to many that HEW was setting the stage for a crackdown on the issue of discrimination in universities.

The move against Columbia was prompted, like many of HEW's recent university investigations, by charges filed in January 1970, by the Women's Equity Action League (WEAL). Since then, WEAL's head, Bernice Sandler, has organized the filing of charges of alleged discrimination at about 260 campuses.

The WEAL charges have sparked a lot of reaction: Increased activity by women's liberation advocates, an appearance by Sandler on the NBC *Today* show, and several HEW investigations. Sky-high hopes have been raised concerning the prospects for proportional representation of minorities and women on faculties, equal admission of women to all colleges, equal consideration for financial aid, and the like. Indeed, starry-eyed proponents of women's rights have promised that their movement could ultimately transform the university scene far more than has the campus-based radical antiwar movement of the last 5 years.

But the feminists may be frustrated by HEW's performance. Already, some are critical of civil rights chief J. Stanley Pottinger for not enforcing the rules. Pottinger and HEW staff reply that the program of enforcement is only just getting under way.