

United States Senate

January 17, 1967

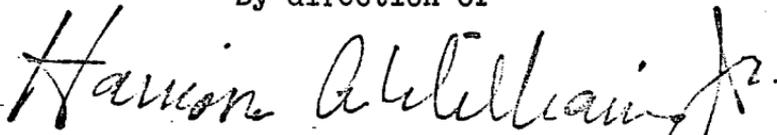
Respectfully referred to

Mr. John J. Burke
Director, Office of Congressional Relations
Atomic Energy Commission

Washington, D. C.

for such consideration as the communication
herewith submitted may warrant, and for a report
thereon, in duplicate to accompany return of
inclosure.

By direction of



Harrison A. Williams, Jr. U. S. S.

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U.S. ATOMIC ENERGY COMM:
OFFICE OF THE
GENERAL MANAGER

United States Senate

COMMITTEE ON
LABOR AND PUBLIC WELFARE

OFFICIAL BUSINESS

Harmon Williams

U. S. S.

Mr. John J. Burke
Director, Office of Congressional Relations
Atomic Energy Commission
Washington, D. C.

The Conservation Center

866 UNITED NATIONS PLAZA NEW YORK, N. Y. 10017

SENATOR
HARRISON WILLIAMS
JAN 5 2 56 PM '67

January 3, 1967

Senator Harrison Williams
Senate Office Building
Washington, D.C.

Dear Senator Williams:

The Conservation Center has been acting as a link between citizens concerned about the over-rapid development and careless siting of nuclear power plants.

Within three months three giant nuclear reactors have been proposed for the Hudson River area.

In addition to the prototype AEC #1 reactor operated by Consolidated Edison at Indian Point, there is now a second and giant nuclear power plant under construction. Niagara-Mohawk has announced plans to build a nuclear plant opposite Bemis Point, New York, and over the New Year weekend Central Hudson Power and Light announced it would construct another plant on the Hudson River near Hudson, New York.

With great pains we attempted to intervene in behalf of concerned citizens because of a sincere belief that another nuclear plant should be located underground at the time public hearings were held (September 14-15) on the application of Con Ed to build at Indian Point. Our reason for questioning the safety of this plant are:

- (1) The Atomic Energy Commission's own Committee on Reactor Safeguards has advised against locating plants in populous areas. (There are 14 million people within a 30 mile radius of Indian Point.)
- (2) Experts have cautioned against locating nuclear reactors on major rivers.
- (3) Dr. Edward Teller has urged as a matter of elementary safety that all nuclear reactors be located underground as in Sweden.

In the light of the magnitude of a disaster which the AEC itself calculated as possible--however remote--it would seem obvious that Consolidated Edison should be required by the

Senarator Harrison Williams
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State of New York--if not the AEC--to place this reactor underground. It is said to be the largest yet to be given a construction license. This same utility found it possible when citizen opposition developed, to place its entire Storm King hydro plant underground for scenery's sake. In a statement before the SEC, the company stated that this did not require material added cost. The AEC in its 1962 report to Congress mentioned that nuclear reactors could be "hardened" by placing them underground at little if any extra expense.

In the light of these facts, isn't it extraordinary that a group of citizens can't be heard?

Sincerely,

Larry Bogart

Larry Bogart
Director

LB:jr

Enclosure: December ROTARIAN reprint

ATOMIC POWER and the Problem of Public Safety

By HELEN MATHESON

HOW SAFE is that new atomic power plant your town or your nation is so proud of?

In Chicago and New York and Detroit and Hallam—in other big cities and country towns around the earth—you have heard a lot about the thrilling step into the atomic age. But if something goes wrong, you and your city near such a plant face a catastrophe like Hiroshima's. In one man's opinion—and I'll introduce that man shortly—that plant is "as dangerous as an atomic bomb."

An official estimate of what might happen in case of an "incident" at a big city plant refers to deaths in the thousands, injuries in the tens of thousands, and losses in the billions of dollars.

But surely safeguards make such an accident impossible?

There were safeguards supposed to make it impossible for a major electric power shutdown to paralyze New York. There were safeguards supposed to make it impossible for a woman's sleeping pill to maim her un-

born baby. There were safeguards supposed to make it unthinkable for anyone to mislay a hydrogen bomb.

But accidents happen.

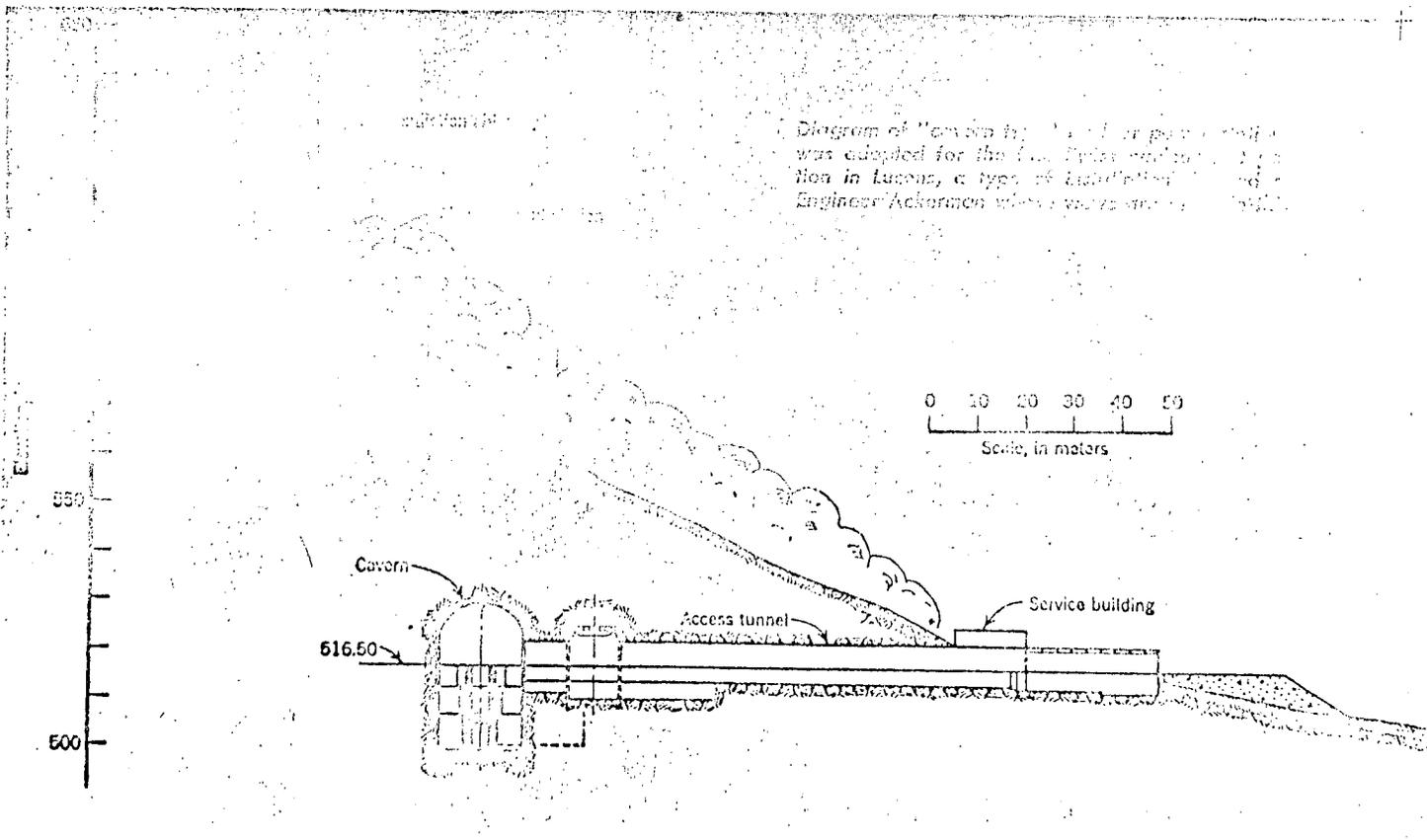
If you'd like to see what your insurance company thinks of the risks around an atomic plant, get out your householder's policy and read the fine print. It probably says something like:

"Nuclear Clause . . . The word 'fire' in this Policy or endorsements attached hereto is not intended to and does not embrace nuclear reaction or nuclear radiation or radioactive contamination . . . and loss by nuclear reaction or nuclear radiation or radioactive contamination is not intended to be and is not insured against by this Policy . . . and nuclear reaction or nuclear radiation or radioactive contamination . . . is not 'explosion' or 'smoke.'"

These "incidents" can't happen—but insurance companies are very careful not to cover them all the same.

If one *did* happen, it could be pretty bad. Estimates made a few years ago by the Atomic Energy Commis-

Diagram of "cavern type" reactor plant which was adopted for the first type reactor installation in Lucens, a type of "cavern type" reactor. Engineer Ackerman writes: "The cavern type reactor is a type of reactor in which the fuel is contained in a cavernous structure." (U.S. Atomic Energy Commission)



sion are that property damage from accidental failure—or from sabotage—in a reactor near a big city with heavy release of radioactive materials would result in "lethal exposure" that could "involve" as many as 3,400 persons.

In layman's language that means up to 3,400 people might be killed. Some 43,000 probably would be injured. Property damage could involve the evacuation of up to 460,000 persons from an area of 760 square miles at a cost of \$2,300,000,000. General restrictions might be imposed on some 3,800,000 persons in an area of 8200 square miles—costing up to \$2,800,000,000. Agricultural restrictions might be imposed on an area of 150,000 square miles at a cost running up to \$4,000,000,000. Even 10 percent of these estimates would represent an unprecedented industrial catastrophe. The financial liability for human casualties was not evaluated and is, obviously, beyond comprehension.

Since that study was made, the projected size of atomic power plants has been trebled and quadrupled

along with multiplication of the peril.

In case of such a catastrophe in your city—hopefully assuming you survive it and are in any shape to care: who is insuring you?

Not your own insurer. Not the company that built the plant; their insurance company refused to underwrite more than a fraction of the risk.

You—if you live in the U.S.A.—are doing the insuring yourself with your own life and property and as a taxpayer.

When insurance companies refused to cover the risk involved in the first U.S. atomic power plant planned near a large city, the plant was not redesigned to provide greater safety—moved underground and away from the city, for instance.

Instead, the risk was shifted to the people in the neighborhood and to the taxpayers at large. In 1957 the U.S. Congress enacted the controversial Atomic Energy Indemnity Act which provides for an "insurance subsidy" by paying up to \$500,000,000 out of the Fed-

About This Article

IN October, 1965, THE ROTARIAN presented an article *Atomic Power Comes of Age*, by Joseph P. Blank, a free-lance writer of the United States of America. Reporting on the "virtually insatiable" need of the world for electrical power, the author termed "atomic power . . . the most economical way out" and chronicled the development of nuclear-power in Britain, Switzerland, Italy, France, Germany, the U.S.S.R., and the U.S.A., and reported plans of other nations to buy or produce power made in such plants. Describing "advantages," "costs," and "where and when," Author Blank also discussed "safety."

Among letters the article evoked was one from John R. Wrage, Ph.D., President (1965-66) of the Rotary Club of Madison, Wisconsin, U.S.A. "With sincerity and within the excellent principles and practices of Rotary" he urged that we present an article "giving the other side of atomic power and its imminent dangers" and he proposed that we obtain such an article from Adolph J. Ackerman, consulting

engineer and member of the Rotary Club of Madison since 1962, who, said Dr. Wrage, had taken strong exception to statements in the article.

We invited Rotarian Ackerman to prepare a statement of his views for presentation in our *Your Letters* column. He responded that, in the interests of good communication, he thought it better if a professional writer were to review his comprehensive studies in the field of atomic power and write an article of a length comparable to the Blank article, and he proposed that Helen Matheson, a writer and executive of a Madison newspaper be chosen for the job.

Here is her article. We present it in the interests of hearing all sides, reiterating the statement that appears monthly in our masthead data: "As the official publication of Rotary International, this Magazine carries authoritative notices and articles about Rotary International. Otherwise no responsibility is assumed for statements of authors."

—THE EDITORS

THE ROTARIAN

An International Magazine

THE CONSERVATION CENTER
866 UN PLAZA, RM. 419
NEW YORK, N. Y. 10017

DECEMBER, 1965

...the property position in
...incident.

In the opinion of one Rotarian who has devoted a major part of the past ten years to the study, "the Indemnity Act has spawned a whole new set of evils by breaking down the traditional system of engineering, legal, corporate and actuarial disciplines and responsibilities. The situation is one of grotesque exploitation of public confidence in the engineering profession.

"It presents, also, a terrifying breakdown in the ethical commitment of the engineer to serve the public

About the Author

A seasoned newspaperwoman, Helen Matheson is assistant managing editor of the Wisconsin State Journal, a daily newspaper (circulation 64,000) in Madison, Wis. She is also a member of its seven-man editorial board. Born in Washington, D. C., she was graduated in journalism and political science from the University of Wisconsin where she was elected to Phi Beta Kappa. After launching her newspaper career she returned part-time to her campus to lecture in the school of journalism, then, on assignment from her paper, travelled round the world and later to Russia, Africa, and the South Pacific. In demand as a speaker, she once addressed a Ladies Night of the Rotary Club of Lake Mills, Wis., met and soon married its President Earl V. Rupp. The safety director at the University of Wisconsin, he is now a member of the Rotary Club of Madison. . . . The portrait at left is of Adolph J. Ackerman, the Rotarian whose views Helen Matheson Rupp expounds.



interest above all others," says Adolph J. Ackerman, internationally known Madison, Wisconsin, consulting engineer.

"The great 'hoax' in atomic power was perpetuated when in September, 1965, Congress was persuaded to extend the Indemnity Act for another 10 years," he charges.

Ackerman has set aside other work opportunities in recent years to fight for what he holds to be the public interest against pressures of many kinds from those eager to promote atomic power.

He is anxious about the danger to families living near atomic power plants who trust assurances that "nothing can go wrong."

He is alarmed about the economic disaster that a severe plant "incident" could touch off.

He is keenly concerned over the plants' potential for "catastrophic sabotage."

He is agonizingly disturbed by what he sees as a betrayal by a few engineers and utility directors of their ethical obligations to the public.

...constitutional government.

He is annoyed by "arrogant" scientists and political strategists, who, he feels, "are by-passing responsibility and ethical engineering and building up a revolutionary system of technocracy."

And he is downright angry at the few individuals who "maneuvered" the Indemnity Act through Congress. Good legal opinion, he maintains, considers this Act unconstitutional. Ackerman's point is: "Instead of providing an 'insurance subsidy' for the benefit of prospective survivors, greater safeguards should be provided for the prospective victims by engineering safer and insurable plants and repealing this subsidy."

Ackerman, the son of a New Ulm, Minnesota, Lutheran minister, trained as an engineer in electrical and civil engineering in Milwaukee and at the University of Wisconsin. After jobs in his own country and Canada, he worked on the Madden Dam for the Panama Canal; as director of engineering of Dravo Corporation, Pittsburgh, where he won a Navy citation for outstanding service when the firm was the "lead" shipyard building LSTs in World War II; and as chief of engineering and construction for the São Paulo and Rio de Janeiro Tramway, Light and Power companies in Brazil where he directed construction of the first sizeable underground power stations in the Western Hemisphere.

Entering private practice in Madison in the early 1950s, Ackerman made a comprehensive study of Brazil's power facilities and future needs for the U.S. Joint Commission; made power system studies in Peru, Chile, Panama, Cuba, Venezuela, Uruguay, India, Canada, Puerto Rico, Mexico, and the Dominican Republic as well as reports for other consulting firms and banks; and he served on the board of consulting engineers for the \$1,750,000,000 Feather River project to supply more water for Los Angeles. He is an active member in a number of leading engineering societies. Today he is a dignified, soft-spoken, grey-haired man with a knack for lucid language and the air of quiet assurance of a man of proven achievement.

He feels deeply this is his duty as an engineer—"to clearly identify the truth and to declare it . . . to speak up."

Ackerman got involved in the atomic power issue shortly after the first legal steps were cleared for development of peacetime uses of the long-secret new power source in atomic fission. (For the production of electricity an atomic power reactor is just another type of heat source in place of an oil- or coal-burning steam boiler.)

He was named by the presidents of both the American Society of Civil Engineers and the American Institute of Consulting Engineers to represent them on a National Policy Committee on Atomic Energy, and later, after the committee was discontinued in 1959, he was urged to serve as a "watchdog" for the Institute.

This task became Ackerman's chief commitment and he turned down other work which might compromise his professional independence.

He has filled a library with references and research material; written articles for professional journals; presented a friend-of-the-court brief to the United States Supreme Court in a case involving an atomic power plant; filed protests with boards and congressional committees; spoken before engineering groups; and conferred with directors of public utility boards—warning them that they were getting deep into the atomic power business without knowing all the answers.

Sometimes he gets results: an atomic power plant cancelled on the East Coast and another in the West; plans scrapped for using atomic power on the Feather River project.

Sometimes he is heard with respect—and nothing happens.

Sometimes people won't even listen. Recently he received a letter from a top-flight business executive (a retired military expert) who strongly supports Ackerman's position. This executive had vainly attempted to persuade a director of a company in the atomic power field to reconsider. The letter closed with: ". . . but this caused no concern. Some day someone will have to review this entire question in the aftermath of a catastrophe."

With the help of his engineer son William, who turned from writing guided missile texts to work with his father, and an associate, John W. Forster, Ackerman has studied every scrap of information he can find on atomic power production. His library is lined with complete copies of reports of the Atomic Energy Commission, Congressional hearings, court decisions, corporation reports, etc., bound and indexed in detail.

Sorting out the basic facts in such a complex issue has demanded a thorough study of all available references and particularly opinions contrary to his own.

Piecing together information from varied sources, Ackerman has come up with studies of the actual experience of atomic power plants that contrast notably with the cheery accounts published by their sponsors.

His reports show repeated service interruptions—some for more than six months at a stretch—at the six "working" atomic power plants in the U.S.

Of eight operating atomic power plants Ackerman surveyed, only one cost what it was supposed to. The others ranged from \$5,000,000 to \$79,000,000 over estimates. One of the eight was still being tested when he made his study; the current output of the others ranged from a maximum of 78 percent to only 15 percent of the power they were built to produce. Two plants had installed steam boilers to substitute for ailing reactors.

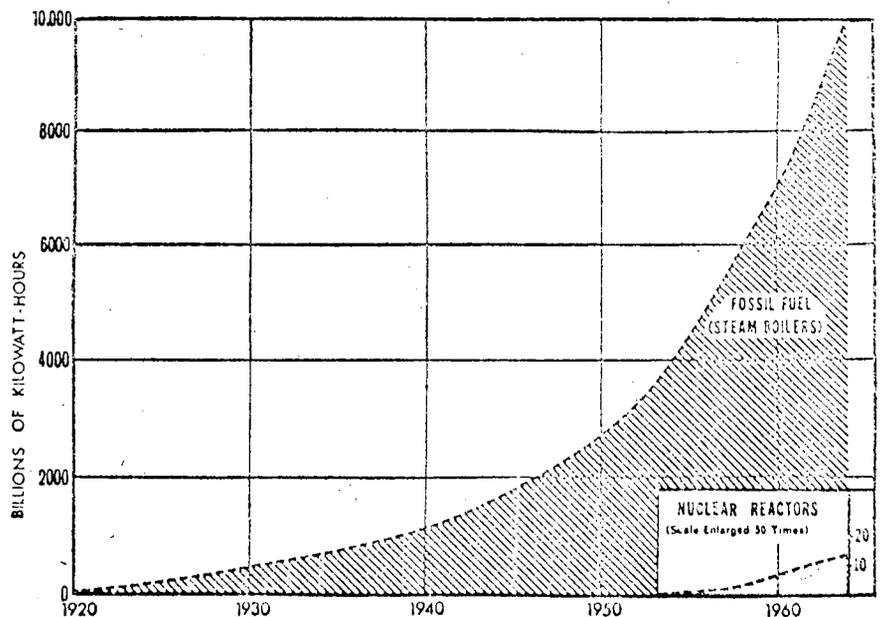
"Rosy propaganda by reactor manufacturers, by a few utility executives, and by the Atomic Energy Commission tends to give the false impression that atomic power has 'arrived' and that it is as safe, reliable, and economical as coal- or oil-fired steampower or hydro power," he says.

"The fact is that it comprises less than a half percent of the country's installed electric power." He estimates that the total experience with conventional steam power sources and their safety compares with atomic plants at a ratio of 1,000 to 1.5.

"A basic absurdity in this new technology," Ackerman declared, "is the breakdown of insurance disciplines, the high pressure promotion and the indecent haste before the engineering art and adequate standards of responsibility have had a chance to develop. Quite aside from the dangers involved, it's like expecting a three-year-old child to play a violin concerto."

He points to a number of cancellations and failures. In one 18-month period, plans for three major atomic power plants were cancelled, including one in New York City. "This seems to indicate [Continued]

Chart showing production of electricity by U. S. utilities—by coal or oil-fired steam plants (upper curve) and atomic power plants (lower curve—in enlargement). Chart provided by Engineer Adolph J. Ackerman.



ATOMIC POWER

(Continued)

that the growing record of adverse experience is forcing some utility managements to take a more realistic look at atomic power," Ackerman holds.

He cites some illustrations:

First. A New York utility's plans for a 1,600,000 kw plant in the densely populated Queens area of New York were called off the same day in January, 1964, that Ackerman had a conference with a company director to present his "adverse" information.

Second. A 325,000 kw plant was planned by a U.S. west coast utility at Bodega Bay, 50 miles north of San Francisco, in spite of warnings of "extreme earthquake risk" in the area. After strenuous public protests in which Ackerman assisted, the plans were dropped finally in October, 1964, when the excavation for the reactor turned up a secondary earthquake fault.

"These cancellations," Ackerman believes, "have thwarted an effort to prove that 'you can put a reactor anywhere.'"

Third. In another case plans for a 260,000 kw atomic power plant near Rochester, N. Y., were cancelled in February, 1965, after the selected builder declined to guarantee the plant's dependability.

Fourth. The State of California and the Atomic Energy Commission in January, 1965, announced agreement on plans to build a 525,000 kw atomic

power plant for pumping water at Tehachapi Crossing on the Feather River project. The cost was estimated at \$253,000,000. As a consulting engineer on this project during the basic planning stage, Ackerman had vigorously opposed using this "unproven technology for such an important service." In December, 1965, the AEC announced termination of the plans to build the plant because of "fuel element problems."

Fifth. The Enrico Fermi 150,000 kw plant at Lagoona Beach near Detroit, Mich., was started in 1956 by several midwest utilities. The reactor plant ran into many difficulties and was taken out of "utility service" in December, 1965, after an investment of \$111,000,000. It was replaced in 1964 by a 150,000 kw oil-burning boiler to produce steam.

Sixth. At Oak Ridge, Tenn., the AEC's 22,000 kw atomic power plant was closed down in January, 1966, because of a variety of obstacles after \$57,000,000 had been spent on it.

Seventh. The Hallam, Nebr., 75,000 kw plant, built at a cost of \$54,700,000, started operating in January, 1963, but was shut down in August, 1966, that the plant will be torn down because of "technical difficulties" experienced in operation.

The fact that nonetheless other atomic plants are being built now near cities gives Ackerman grave concern about the issue this new power source raises for his own profession.

To contrast the professional responsibilities of an engineer with the work of a scientist, he likes to quote a statement made by Dr. Edward Teller in a Milwaukee, Wis., address: "The most common activity in which a scientist is engaged is to make mistakes, to recognize them, and to correct them, and out of that comes discovery."

"In contrast," Ackerman says, "The engineer is trained not to make mistakes. One mistake can ruin his career. In terms of that definition we can see that a scientist is primarily committed to *discovering a scientific truth and communicating it* . . . the engineer is called upon to render a judgement involving a broad spectrum of problems and to produce an answer that will best serve the public interest. Herbert Hoover has stated our duty in simple terms: 'Technology without intellectual honesty will not work.'

"We can recall notable records of great civil engineers assuming heavy responsibilities and contributing their professional judgments and decisions in matters of far-reaching importance. We need only think of the great miracle of our drinking water and the high standards of engineering performance which make safe drinking water available throughout the United States. . . . The public simply takes such professional performance for granted.

"Today, however, we find ourselves in the midst of the scientific revolution. The world changed on December 2, 1942, when sustained nuclear fission was first achieved and the tremendous energy in the atom, which had been locked up since the beginning of the world, was released.

"On that day man discovered the means with which, in time, he could destroy all life. This discovery, as an event in human history, ranks with the Creation of Adam and the Birth of Christ.

"Obviously such a tremendous new force—a force heretofore reserved to the Almighty—must be treated with profound respect and reverence. Our future now hinges on what has taken place since that day. The control of this new force is basic to the welfare of every human being. This calls for a new sense of responsibility and for ethical commitments of the most difficult type."

Ackerman has reason to know how difficult they are.

According to a colleague, "Mr. Ackerman has carried out these [watchdog] activities as a public service at his own expense. But he found that the cost of such service extended beyond the immediate financial outlay involved.

"He declined assignments from commercial interests that were participating in the atomic power program in order to avoid any conflicts of interest. His

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	Average No. Copies Each Issue during Preceding 12 Months	Single Issue Nearest to Filing Date
A. Total number copies printed (net press run)		
B. Paid circulation	438,843	440,500
1. Sales through dealers and carriers, street vendors, and counter sales.	95	25
2. Mail subscriptions.	427,112	428,585
C. Total paid circulation.	427,207	428,610
D. Free distribution (including samples) by mail, carrier, or other means.		
E. Total distribution (sum of C and D).	7,405	7,702
F. Office use, left-over, unaccounted, spoiled after printing.	434,613	436,312
G. Total (sum of E and F—should equal net press run shown in A).	4,230	4,188
	438,843	440,500

I certify that the statements made by me above are correct and complete.

(Signed) KARL K. KRUEGER

standing on principle interfered with the plans of some powerful political and financial interests who sometimes found it easier to attack him as an individual than to respond to his arguments.

"His challenges to the engineering profession made a number of its members uncomfortable and aroused their resentment; their efforts to ostracize him were not without effect," the colleague added drily.

As the editorial doors of professional publications swung shut on him, Ackerman sometimes managed to jam in a persistent toe. In spite of rebuffs, he has published and won increasing professional support over the years with articles like *The Engineer's Obligation to Disclose All the Facts* (CIVIL ENGINEERING, 1961); *Atomic Power, A Failure in Engineering Responsibility* (ASCE TRANSACTIONS, 1963); *Atomic Power Program is Undermining Engineering Responsibility* (AMERICAN ENGINEER, 1963); *Engineering Responsibility in Atomic Power* (WISCONSIN PROFESSIONAL ENGINEER, 1963); *Using Engineering to Enslave You* (CIVIL ENGINEERING, 1964); *Atomic Power Plants—What's Wrong with Them?* (AMERICAN POWER CONFERENCE, 1965); and *The Engineer's Responsibility and Duty to Dissent* (CONSULTING ENGINEER, 1965).

He has also been working on a book intended to identify the various areas of responsibility in this new technology for engineers, educators, public utility managements and directors. His aim, he explains, is "to provide guidelines for eventually merging atomic power into the U.S. economy in a way that will safely perpetuate the great miracle of America's electricity supply.

"At present too many directors of public utilities continue to rely on the industry's traditional lines of responsibility and authority, and are unaware how these lines, in the area of atomic power, have become snarled up into a

horrible mess."

He cites a recent comment on ethics by Chief Justice Warren: "Society would come to grief without ethics which is unenforceable in the courts and cannot be made part of law. . . . This Law beyond the Law, as distinct from Law, is the creation of civilization and is indispensable to it. . . ."

In one of his papers Ackerman declared: "It may be legal but it is not ethical for a chief engineer . . . to design and locate an atomic power plant where an accidental failure or sabotage could be disastrous for a community, when such a peril can be reduced or eliminated by an alternative plan costing more money . . . to shift his responsibility in matters involving public safety to his management or to a government agency . . . to design an atomic power plant without adequate knowledge of the magnitude of the energy released in the event of a reactor failure . . . to certify that his design is safe when he has no resource of demonstrated experience as to what is safe, such as prevails with high pressure steam boilers. . . ."

"It may be legal but it is not ethical for a board of directors . . . to suddenly abdicate its corporate responsibilities and authorize construction of a new power plant so perilous to the public that it is not fully insurable under its traditional policies . . . to abdicate traditional corporate responsibilities in the event of a major reactor failure and to rely on the taxpayers to compensate the survivors of such a disaster . . . to exploit public confidence by authorizing the construction of an atomic power plant near a populous area without disclosing the fact that the available third party liability insurance is grossly inadequate. . . ."

"It may be legal but it is not ethical for engineers, lawyers, and manufacturers . . . to create a new vocabulary of propaganda designed to minimize public concern by avoiding such words as

'peril,' 'public hazard,' 'future,' 'disaster,' etc., and introducing new words such as 'incident' for 'accident.'"

"In recent years," Ackerman says, "it has been my lot to bear witness to a number of decisions of an extremely harmful type as far as the public interest is concerned. In such cases an independent consulting engineer is expected to clearly identify the truth and to declare it publicly. He must choose either to speak up or to remain silent.

"This is a personal decision involving tremendous responsibilities.

"Unfortunately, when great political forces are involved, an adverse opinion generally means jeopardizing one's professional career. At such stages a little prying becomes helpful.

"When I was in the midst of one of these problems my wife and I attended church services in New York to hear Dr. Norman Vincent Peale. Quite remarkably the theme of his sermon was 'Never be afraid of any situation, however tough. . . . Never be afraid of another man.'"

It's a long, lonely crusade involving complex and unpopular questions. But Ackerman has found some helping hands. In the area of alerting the public John Chamberlain, the columnist, provided moral support at a critical time. And Ackerman adds: "I have an abiding faith in the sincerity and integrity of top-flight people in business and the professions. Given the facts they will make the choice that best serves the public interest."

And what does he hope to do next?

"There is just one answer," he says. "We need to prove in our courts that the Federal Indemnity Act is unconstitutional. We could then return to sanity by applying traditional insurance practices and corporate responsibilities to this new technology, and at the same time develop the requisite structure of constitutional law and responsible engineering principles and practices which would protect the public interest."