licensing of new nuclear plants while its recommendations are being carried out. The members were taken to task on this point by several congressmen, including Hart and Udall, who have proposed a 3-year moratorium on new licenses. Hart wanted to know why, if 8 out of 12 commissioners favored a moratorium, and if all agreed the NRC was "unable to fullfill its responsibility for providing an acceptable level of safety," the Kemeny group did not ask that plant licensing be delayed. The explanation, according to Commissioner McPherson, was that it was impossible to get a majority to agree on how a moratorium—once begun—would be called off.

In their appearance before Congress on 31 October, several of the commissioners argued that their report asked for a de facto moratorium. They cited recommendation number eight for reform of the NRC, which says that before the federal regulatory agency issues new operating or construction permits, it should "assess the need to introduce new safety improvements recommended in this report," review the competence of the applicant in light of the recent findings, and "condition licensing upon review and approval of the state and local emergency plans." Many state and local jurisdictions have no plan for dealing with a nuclear accident. Presumably they should not be allowed to have a new reactor built within their borders.

For the most part, the Commission focused on the future. It gave few specific directions concerning the 70 plants already in operation or the 92 that have received construction permits. In the future, the report says, power plants should be built "in areas remote from concentrations of population." As for plants in operation or under construction, it simply recommends that federal regulators demand better training of operators, improve safety analysis and enforcement, and try more diligently to discover generic technical problems. The government should force utilities to solve these problems and make corrections within firm deadlines. It should also "adopt criteria for revocation of licenses," and sanctions short of revocation such as putting a plant on probation or ordering an immediate shutdown.

There were few surprises in the Commission's findings of fact, except for those having to do with the hydrogen bubble. The investigation revealed that the NRC was profoundly ignorant of the radiolytic chemistry in the reactor coolant during the accident. The Commission's experts concluded that, contrary to what the NRC had feared during the first weekend after the accident, there never was and never could have been any risk of a hydrogen explosion in the reactor vessel.

More remarkable than this, the investigation found that the NRC escorted the President on a visit to the reactor control room on Sunday, 1 April, even though some of its highest officials believed there was a chance the hydrogen bubble might explode. It was not until after the President had left, at around 4 p.m., that the NRC concluded there was no danger of an explosion. The Kemeny Commission was unable to determine how the bubble disappeared as quickly as it did.

The impact of the accident on public health was negligible, except in terms of mental health. The Commission found that there was "immediate short-lived mental distress" among people living within 20 miles of the reactor. The maximum radiation dose received by any person off-site, excluding employees of the utility, was estimated to be 70 millirems, or, as a technical paper put it, "about one-half the normal exposure the average American receives from natural background radiation each year." The effect in terms of increased cancer incidence should be undetectable.

The damage to the fuel core was severe. At least 90 percent of the fuel rods burst, the center of the core slumped downward, and, during the hottest period of the accident, the core became partially molten. A staff paper concludes that the fuel will not begin to reheat, provided that it continues to be cooled by water containing boron at a concentration of 3180 parts per million. (The utility is keeping the concentration at 3500 parts per million by adding boric acid.) A hypothetical accident analysis done for the Commission concluded that if the fuel had become entirely molten, it probably would not have penetrated the containment building floor. Even if the fuel had gone through the concrete, the report said, it probably would not have gone through the rock that underlies the floor.

If the plant can be refurbished, the Commission estimates that the total cost of the accident will be between $1 billion and $1.86 billion, figures that include the cost of buying replacement power from other utilities.

The worst news, as one commissioner said, is that the accident is still in progress. It will not be over until the utility has removed and disposed of several hundred thousand gallons of radioactive water and tens of thousands of cubic feet of radioactive gas trapped in the containment building.—ELIOT MARSHALL

Academy Takes a "Million Dollar Bath" with Einstein

An embarrassed National Academy of Sciences is taking what one spokesman called a "million dollar bath" in its efforts to raise money for its controversial statue of Albert Einstein. The memorial cost $1.8 million, and a national fund-raising campaign begun almost a year ago has not come close to its goal.

In an apparent effort to offset the lag in contributions, the Academy has sold, for a record-breaking $455,000, two sets of rare books by naturalist John James Audubon. The Academy has also been accused in two lawsuits of skirting payment of $114,000 in commissions.

The Einstein fund fell short because of bad press, according to Academy officials. Late last year, critics attacked sculptor Robert Berks for his "bubble gum" style, the astrological connotation of the star-studded base, and the statue's cost (*Science*, 23 January). Berk's fee, which he says was "due on delivery" last 22 April, came to $1.1 million. "We had an agreement," he says, "and they lived up to it." Academy president Philip Handler says many corporations and individuals have turned down requests for contributions. More than 150,000 letters seeking donations were sent out.

Last 18 April, a few days before Berks was paid, the Academy sold for $425,000 their four-volume set of Audubon's *Birds of America*, which was published in London from 1827 to 1834. They also sold for $30,000 the *Viviparous Quadrupeds of North America*, which was published in the 1840's. Only 200 sets of the oversized edition of *Birds of America* were published, and 134 exist today, 94 of them in the United States. The Library of Congress has two copies, and the National Gallery of Art and the Smithsonian have one each.

The Academy received its copies of the books in 1932 as a gift from John Campbell Merriam, an Academy vice president. Handler says the sale is unprecedented and that "no other treasures have been sold."

A suit has been filed by a consultant to the Academy, David Schaff, and by Sotheby Parke Bernet Inc., one of the

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nation's leading art auctioneering firms. The Academy had hired Schaff, an art historian, to negotiate a sale. The two suits charge, however, that the Academy's direct sale of the Audubon works to a San Francisco bookseller was made to avoid paying commissions. The Academy has countersued Schaff for allegedly violating his trust as the Academy's $125-a-day consultant on the Audubon sale by negotiating a secret agreement last January under which Sotheby's would pay him up to 4 percent of the sales price of the books. Schaff says there was no such contract, and that the Academy had agreed to pay him 3 percent of the sales price in lieu of further day-to-day payments. The Academy contends Schaff did not seek additional buyers because of the deal with Sotheby's.

The Smithsonian had been holding the Academy's Audubons for nearly 20 years because the Academy could not care for the delicate, handmade, rag-paper books that require specially humidified display cases.

Handler says the Academy hoped to keep the books. But after learning last year that restoration and proper display would cost $25,000, the Academy council decided to sell them. Though Handler now maintains that "there is no tie between the sale [of the books] and the Einstein thing," Schaff disagrees. He says the sales were necessitated by the depletion of the Academy's treasury for expenses of the Einstein statue.

This seems unlikely, since before the statue was erected the Academy is said to have borrowed about $1 million from a local bank for the project, and by the time the statue was unveiled an additional $800,000 in donations had come in.

Yet in a deposition taken on 28 September before Schaff's attorney, Handler seemed to agree with Schaff's assertion. When asked why he decided to sell the Audubon books, Handler replied, "We were having difficulty raising enough money to pay for the Einstein monument. That was damaging our cash position. . . . We had been puzzled as to what we could do with them for several years. Once we understood our own financial position, we thought it was wise to utilize the opportunity to recoup our financial circumstances and get our own accounts in order."

Caribbean Med School in Washington, D.C.?

When hurricane David ripped into the tiny Caribbean isle of Dominica late last August, it leveled not only 95 percent of the homes but also the fledgling University of Dominica—one of a half-dozen havens in the Caribbean for students rejected by U.S. medical schools (*Science*, 23 February). Forsaking the ramshackle buildings that once housed the "university," school officials shipped the students north to American University (AU) in Washington, D.C., where the would-be doctors are now enrolled as nondegree students.

It is not the first time the University of Dominica "medical school" has set up shop in the United States. In October 1978 the promoter of the school, Robert Ross, a grain exporter in New York, worked out a deal with the Pennsylvania College of Podiatric Medicine in Philadelphia to use its facilities in the evenings while a medical school on Dominica was readied. But the Philadelphia students, faculty, and finally the Pennsylvania Department of Higher Education protested the move, and the deal soured. Ross beat a retreat from Pennsylvania and opened doors on Dominica for the 20 students of the first class in April 1979. But quarters were cramped. This fall, he sent the 20 students to Washington, D.C., while 40 new recruits were slated to start classes in September on the mountainous isle some 300 miles off the coast of South America. Then came the August hurricane.

"We took in the students for humanitarian reasons, and they are only staying for one semester," says Don Triezenberg, a special assistant to AU's president and provost. Officials at the Caribbean school pushed for a longer stay, says Triezenberg, "but we did an investigation, and our actions speak for themselves. We turned down a good offer for a long-term relationship."

American University has no medical school. Except for general biochemistry, which is part of a regular course given by AU's chemistry department, all classes for the Caribbean students have been especially designed. AU hired an instructor from George Washington University to teach "special topics in physiology," and an instructor from Catholic University to teach "medical microbiology," while the nursing school at AU designed the course "normal and therapeutic nutrition." When University of Dominica officials pleaded for a gross anatomy course, AU administrators drew the line. "We're not pretending to be a medical school," says Triezenberg. "Who wants to get into handling cadavers?"

Dominica students have already sent their standard $2750-a-semester checks to Ross in New York. AU officials are sending Ross a bill that comes to about $2000 per Dominica student (AU's regular $135 per credit hour for nondegree students times 15 credits). Triezenberg says compassion was the reason for taking in the Caribbean students, but the $120,000 gained in tuitions (plus housing and other expenses) surely cannot hurt AU's financial situation. Tuition pays for about 85 percent of AU's annual operating budget, and though the number of degree-seeking students at AU has remained steady during the past decade, the nondegree population has dropped from about 6000 to 2700.

Since the University of Dominica is chartered on the island of Dominica, the U.S. boards that would normally license a medical school in Washington, D.C., have no jurisdiction. And while local governments also usually take part in regulating medical schools, no one at the D.C. Educational Licensing Commission seems to have heard about the Caribbean refugees.

After finishing school in December, the students are slated to return to Dominica, according to Ross. "We're hopeful that the facilities will be ready in January or February," he told *Science*. And if they are not? "Well, we're hopeful. At this point it's very optimistic." According to several U.S. universities, however, the University of Dominica has been looking for other U.S. campuses where they can set up their roving medical school. Officials at the Association of American Medical Colleges fear the Caribbean school will become a medical merry-go-round, never staying long in one spot, and having its students come back to Dominica only for the degree-granting ceremony.

William J. Broad