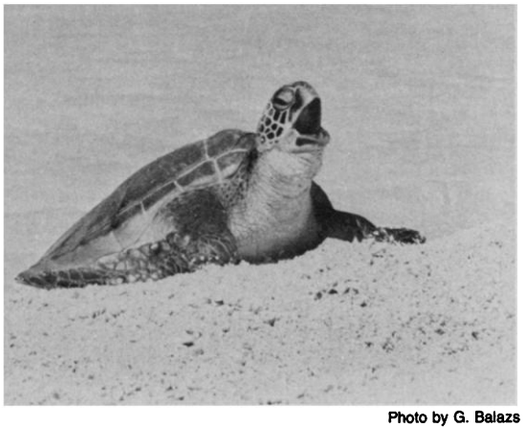

Photo by G. Balazs

Green turtle basking and yawning on Hawaii beach.

lantic ridleys are the most endangered of the lot, and it is believed that there are no more than 500 to 1000 nesting females left. The Atlantic ridleys have thus become the object of some extraordinary efforts to preserve them. Last spring, when their only nesting beach, Rancho Nuevo in Mexico, was threatened by the oil spill in the Gulf of Mexico, Mexicans and Americans collaborated in airlifting newly hatched turtles from the beach with the aid of a Pemex helicopter and dropping them in parts of the gulf that were free from oil.

In Galveston, the National Marine Fisheries Service is conducting an experimental head-start program in which hatchlings are kept in a laboratory during their vulnerable first year of life. Officials are trying to establish a second rookery for the ridleys at Padre Island National Seashore in Texas. They go to Rancho Nuevo and collect eggs as they are being laid by the mother turtle, before they hit Mexican sand. The eggs are packed in Padre Island sand and then flown to hatch at Padre Island. When they hatch, the little turtles are allowed to run down the beach for the all-important "imprinting" that will enable them to return to the beach as adults to nest. They are then collected and held in individual basins at the Galveston lab until they are big enough to be released safely into the gulf. At present, says Peter Pritchard of the Florida Audubon Society, "we don't know if this is just an expensive way of killing turtles." All are tagged, however, and so far it appears they are surviving well, although it is too soon to know whether the females, who take about 8 years to reach sexual maturity, will be returning to Padre Island.

Although everyone at the conference wanted to save sea turtles, there was one issue on which they were sharply divided: the virtue, or lack thereof, of turtle farming. There is only one turtle farm, the Grand Cayman Turtle Farm on Grand Cayman Island, which raises green turtles for meat and other products. The farm was established in 1968, went bankrupt, and in 1974 was purchased by a German-British consortium. It is extremely expensive to run, what with its artificial beach, aquatic system, and special high-protein pelletized turtle chow, and has still not made a profit. However, it now has a breeding stock of 1200 turtles, which this year produced 45,000 eggs. It plans to slaughter 12,000 turtles a year, and according to a report by the wildlife trade-monitoring group TRAFFIC (USA), "it is probably the largest exporter of green turtle meat in the world."

The turtle farm people did not seem to be very popular at the conference because most conservationists believe that commercial mariculture will only stimulate the market for turtle products. They also make enforcement of trade restrictions more difficult because illegal traffickers in turtle meat may represent their product as coming from the farm. In recognition of this, the United States recently added farmed turtle products to the forbidden list in CITES. Judith Mittag of Düsseldorf, one of the farm's proprietors (and also, incidentally, the gynecologist who invented the tampon) argues that the farm's product only displaces the demand for turtle meat from illicit to licit channels. She added: "There are only two alternatives: either a resource is exploited sustainably or it's exploited nonsustainably." She said research on the farm could help Third World countries learn how to manage their turtle stocks, and held out the possibility that farm turtles could be used for restocking the wild. This argument does not carry weight with most turtle experts, who point out that all commercial turtle products are luxury items and it would be better to avoid developing a taste for them.

The convention, which was presided over by World Wildlife Fund president Russell Train, closed after presentation of a "sea turtle conservation strategy" that contained specific recommendations on everything from basic biological research to a global survey of laws relating to sea turtle conservation. While acknowledging that we still want the turtles for human use, the strategy says that "as long as sea turtles remain endangered, the ending of commercial exploitation of all sea turtle products" is the ultimate, or at least ideal, goal.

A standing committee is being formed to monitor progress on the plan; it will meet in 1981 in association with the third CITES conference.

—CONSTANCE HOLDEN

Energy R & D Fueled by Few Countries

Despite the widespread belief that most economically advanced countries redoubled their efforts to research and develop new means of obtaining energy after the 1973 Arab oil embargo, the facts show that many of them did not. A few actually cut back, according to *Science Indicators 1978*, recently released by the National Science Foundation (NSF).

The significant exception was the United States, which increased its energy R & D some 435 percent since the oil cutoff. Total U.S. expenditures for energy R & D now stand at $2.8 billion—more than 10 percent of all federal R & D funds. Of the 24 member nations in the Organization for Economic Cooperation and Development (OECD), the only other exception was Italy, which by 1976 had pushed energy R & D up to 22 percent of its total public funding.

In Denmark, Finland, Germany, and France, on the other hand, expenditures remained steady. In Belgium, Switzerland, and Canada, public funding of energy R & D declined in the years following 1973. In the Netherlands, only a third as much public money was spent on energy R & D in 1976 as in 1971.

The NSF *Indicators*, the fourth edition of a biennial report to the President on the state of U.S. science and technology, also noted that the overall U.S. commitment to science and technology is building up at an "encouraging rate." Many science policy-makers have been concerned that U.S. research expenditures were falling in relation to the nation's total economic output, but the NSF report says the decline is ending. In recent years, it notes, the United States "spent more on research and development than the United Kingdom, France, West Germany, and Japan combined." Other highlights from the report:

- Women and blacks continue to be underrepresented in scientific careers. The number of women, however, has increased at almost twice the rate of men during the 1970's, and the number of blacks who received doctoral degrees grew by 35 percent, compared to 26 percent for whites and 70 percent for Asian-Americans.

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• Fewer academic positions are opening up for young, untenured scholars—a trend that some experts fear will lock new talent out of the research community.

• U.S. firms have been increasing their earnings from technology-licensing agreements overseas. Receipts from these agreements in 1977 reached $4.7 billion—more than ten times the amount paid for importing foreign technical know-how.

• The percentage of scientific papers published by U.S. researchers went down in every field except clinical medicine and biomedical research. The largest drops were in mathematics, where the number of articles published decreased from 48 percent of the world total in 1973 to 41 percent in 1977; and in biology, where the number decreased from 46 to 42 percent. This trend is partially explained by the fact that countries such as Mexico, South Korea, and Brazil started to publish scientific papers at a significant rate during the 1970's.

More Science for Media

Eighty-four journalists who were in the dark about the technological aspects of nuclear power and safety sought help from the Scientists' Institute for Public Information (SIPI) during the hectic week after the accident at Three Mile Island. The nonprofit New York–based organization put the reporters in touch with scientists who could answer their questions. Since then, calls have remained heavy, averaging from 75 to 100 a week, up from 50 a week before the accident. To help keep the supply of scientific information in step with the demand, SIPI recently announced an expansion of its "Media Resource Service" and held a successful ($94,000) fund-raising event to back the venture.

Set up in 1963 to inform the public on controversial science issues, SIPI has grown into a 16-person half-million-dollar-a-year information agency. The institute has on file the names of several thousand scientists, cross-referenced by area of expertise, who have agreed to take questions from reporters. Fred Jerome, the public information officer at SIPI, says recent increased demand for referrals has come in part because of the mention of SIPI in a *New York Times* story on reporters' difficulties in covering Three Mile Island. But the number of calls has increased steadily over the years.

Jerome says most reporters who call want answers to questions about energy, and that the majority of calls come from New York and Washington. To geographically expand the service, SIPI is thinking of installing a WATS line (800 area code telephone exchange) so that reporters at smaller publications around the country would be encouraged to call.

Program expansion will also include more scientists to take telephone referrals and more background seminars to be held on controversial issues before they become hot news. Expecting widespread interest in Skylab, for instance, SIPI held a press briefing in New York that brought together Jerry Grey, of the American Institute for Aeronautics and Astronautics, and Carl Hammer, director of computer sciences at Sperry Univac. SIPI also plans to hold seminars on emerging issues in science policy that are not getting adequate attention in the press. They are planning a series, for example, on the implications for the 1980's of the computer in criminal justice, banking, and everyday life.

To help pay for the new projects, SIPI held on 5 December a fund-raising reception at which a representative of the Ford Foundation announced that a grant of $75,000 would be given to the institute. Other contributions in the course of the evening totaled $19,000.

A Reprieve for Galileo

His heresy was pointed out to the Roman Inquisition by a Dominican priest, and the Inquisition ordered the heretic to abandon his beliefs. When he did not, Pope Urban VIII sentenced the dissenter to life imprisonment and then commuted the terms to permanent house arrest. The heretic still wrote, but the Congregation of the Index forbade the printing of his books. His sight failed, and the Pope denied his request to consult doctors. When he died, an admirer wanted to erect a tomb but was told that to do so would be frowned upon by the Holy Office. He was buried in a simple grave.

The heretic was Galileo Galilei, and now, some 350 years after the scientist fell from grace with the Catholic Church, Pope John Paul II has issued what amounts to a reprieve.

Galileo had been condemned for his views concerning the revolution of the earth around the sun, which during the 17th century was at odds with Church dogma on the incorruptibility of the heavens. Pope John Paul II recently raised the subject at a special session of the Vatican's Pontifical Academy of Sciences, which was celebrating the centenary of Albert Einstein's birth. The Pope quoted the Pastoral Constitution *Gaudium et Spes* No. 36/2 of the Second Vatican Council that said, "We cannot but deplore certain attitudes that have led many to conclude that faith and science are mutually opposed."

These words, said the Pope, apply to "the founder of modern physics" in particular. "I wish that theologians, scholars, and historians might examine more deeply the Galileo case and, in an honest recognition of wrongs on whatever side they occur, might make disappear the obstacles that this affair sets up in many minds to a fruitful accord between Church and world."

Upton to Quit NCI

Rumors that National Cancer Institute (NCI) director Arthur C. Upton was going to quit started making the rounds last July. Three months later Upton confirmed the rumors at a press conference. It therefore comes as no surprise that the event has finally come to pass.

Upton announced on 6 December his decision to resign his post at the end of the year and to join the faculty of New York University. He will become director of the University's Institute of Environmental Medicine. Vincent T. DeVita, director of NCI's division of cancer treatment, will serve as acting director until a successor is chosen.

President Carter, in replying to Upton's resignation letter, said he accepted the decision "with regret" and commended Upton for filling "a very demanding and critically important post in government with high professional standards and deep personal commitment." Upton became director of NCI in July 1977.

William J. Broad