BIOMEDICAL TSUNAMIS
Worldwide Catastrophes Caused by US Public Health Service (PHS)

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I. EXECUTIVE SUMMARY

Dr. Eleanor Storrs of Gulf South research Institute (GSRI) in New Iberia Louisiana initiated a multi-national program to develop a vaccine for the prevention of leprosy by growing vast numbers of the bacilli needed to produce it in nine-banded armadillos. Captain Waldemar Kirchheimer of US public health service (PHS), a former collaborator, sabotaged her program by spreading false rumors that GSRI had caused leprosy in wild armadillos by accident or design. We will show that Kirchheimer was a psychopathic liar who forged his medical credentials with the connivance of PHS. He was a risk to national security. His charges proved to be false, but PHS has refused to clear GSRI or Storrs by name of causing a leprosy zoonosis in Louisiana armadillos.

The shock of his wild accusations triggered a biomedical tsunami that hurled mountainous waves of waste and frustration over India, Venezuela, and Malawi. It shook the headquarters of World Health Organization (WHO) in Geneva, and the National Institute for Medical Research (NIMR) in London. A wave of allegations with the destructive power of Katrina engulfed the laboratory in New Iberia where Storrs had started her research. Her secret of growing vast numbers of leprosy bacilli in armadillos was lost forever because of the wanton destruction of her research program.

Yields of bacilli plunged catastrophically. More than 321,000 people were injected with weak and watery vaccines prepared by Burroughs Wellcome Ltd in England from armadillo tissues containing woefully low numbers of leprosy bacilli. Some were so diluted that they were transparent to the naked eye. Medical teams toiled futilely under hot tropical suns for 14 years. Vast sums of money were squandered. The work of a generation of leprologists was swept away. Leprosy research still stagnates in the backwaters of medical science.

Hordes of wild armadillos with the most contagious form of human leprosy now roam freely over the highways and byways of Louisiana and Texas. They must have contracted disease from patients at the National Leprosarium at Carville. They have infected Louisiana citizens, causing 30 to 40 cases of human leprosy each year.

We recorded these global catastrophes in prestigious international journals (1, 2). PHS executive officers did not contest our conclusions. Instead, they hid behind the skirts of their powerful Congressional colleagues. Sen. Bill Frist (R-TN) and Rep. Dave Weldon (R-FL), both practicing physicians before being elected to Congress, aided their colleagues in PHS instead of honoring their legislative and professional obligations.

They deprived a heartbroken woman scientist (Eleanor Storrs) of her constitutional right to petition congress for the redress of grievances by refusing to grant her a hearing to clear her name of slanderous charges, and restore her miraculous discovery to its full potential for fighting disease. They violated the Hippocratic oath by refusing to help 1.4 billion people who are exposed to leprosy infection. They turned their backs on the teachings of our Lord and Savior Jesus Christ who bestowed special grace on leprosy victims by healing ten of them on his way to Jerusalem, and raising their Patron Saint, Lazarus, from the dead.

Tragically, the leprosy tsunami is only one wave in long lines of thundering breakers that threaten to overwhelm world confidence in the integrity of American medical science. High-level crimes by PHS officers in cancer, Aids, and DDT research threaten the health of billions.

The damage done by this tsunami did not stop with research on diseases. The collapse of Storrs' laboratory dragged down with it budding programs on environmental sciences and oceanography that could have solved problems relating to global warming, hurricane damage, and the world petroleum shortage. The investment made by the Louisiana legislature and Iberia Parish to create a better Louisiana by founding GSRI to perform research in these fields was wiped out by the actions of PHS.

Sen. Frist and Rep. Weldon have refused to investigate these crimes even though the consequences of them grow more ugly each day. This month a web site on this subject that I had painstakingly constructed was broken into and devastated. The home page is still there but all of the hyperlinks radiating from it to incriminating evidence were destroyed.

Links to the life and works of Eleanor Storrs have vanished from Internet. Could PHS have attempted to erase the gifts of an Angel of Mercy from history?

My castle has been invaded. Has the government declared total war on my civil rights by mangling my website? Is it guilty of breaking into, entering, and destroying my property? Do law enforcers sit back and laugh at our sorrows?

I could repair this website or close it but it is more instructive to do neither. I will leave it in shambles, so that the entire world can see what American justice is really like by entering the virtual funeral parlor of democracy at http://pandoras-box.org/ to tinker with the broken links. PHS may choose to let this crippled website linger on as a warning to other whistle blowers, or blast it out of existence altogether. Only the shadowy men who pull the strings that control Frist and Weldon know what atrocities will come next.

I beseech President Bush to order the Department of Justice to make a full-scale investigation of this rape of civil rights in order to protect the health of people of all

nations, the lives and property of citizens of Louisiana, and the inalienable right of Eleanor Storrs to a fair hearing so that she can redeem her miraculous discovery for the glory of God and healing of humanity.

A. Triumph and Treachery

The seeds of this tsunami were sown in 1974 when Dr. Eleanor Storrs of Gulf South Research Institute discovered that armadillos could produce vast numbers of leprosy bacilli. According to a definitive article in the journal Vaccine (3)

> ***The development of a possible anti-Mycobacterium leprae (leprosy) vaccine has been advanced by the isolation of organisms from the infected tissues of the nine-banded armadillo, Dasypus novemcinctus*.**

The author of this paper made it abundantly clear that 125,000 doses of vaccine could be prepared from one infected armadillo. Storrs was the first and last person in the world to achieve this production level. She knew at once that her discovery made it possible to eradicate a crippling disease that has plagued mankind since the days when God struck Miriam with leprosy during the flight of the Children of Israel from Egypt.

Storrs' great humanitarian dream collapsed when Capt. Waldemar F. Kirchheimer and his associates at the PHS Hospital at Carville LA forced closing of her laboratory by spreading false rumors that she had let experimentally-infected armadillos escape or had otherwise contaminated the environment with leprosy bacilli (2). These charges have been disproved beyond a shadow of a doubt.

Banishment of Storrs from leprosy research gave rise to a catastrophic decline in bacterial yields (1). Productivity remains at this low level as attested to in a web site sponsored by National Institutes of Health (NIH) (4). PHS, Department of Health and Human Services (DHHS), and Congress have refused to take steps to restore the productivity of armadillos in order to protect the reputation of Capt. Kirchheimer and other PHS officers who caused this decline and consequent failure of a multinational vaccine program.

In November of 1974, WHO officials began the most ambitious attempt ever made to develop and test a leprosy vaccine. It was based on Storrs' discovery. They planned to evaluate it in 470,000 people on three continents. This number was later reduced to 321,000. The program lasted for 24 years from the time that WHO began laboratory work until the last people vaccinated were examined for symptoms of leprosy.

The best minds in leprology, immunology, and epidemiology were mobilized to achieve this goal. A World Tissue Bank was established in London to receive and process armadillo tissues. An Immunology of Leprosy (IMMLEP) Committee was established in Geneva to guide the program.

The vaccine was tested for safety on nurses in Norway. Arrangements were made to recruit test subjects in Venezuela, Malawi, and India for evaluating vaccine effectiveness.

The downfall of this elaborate program started a year after it began. In December of 1975, Storrs startled the scientific world with her announcement that ten percent of wild armadillos in Louisiana were naturally infected with human leprosy (5). This was a deeply disturbing discovery that aroused doubts and fears worldwide.

However, it was greeted with spiritual relief in some countries. Many people felt that it was more important than her finding that armadillos could be infected in the laboratory because it helped to conquer a deep- seated fear of the disease that made leprosy victims outcasts. Storrs' work dispelled an ancient stigma. Her finding of leprosy in wild animals silenced those who claimed leprosy was a curse of God visited only on sinners (6).

Capt. Kirchheimer and others at Carville turned her discovery into a weapon to destroy her program. They were no doubt trying to conceal the fact that leprosy in wild armadillos originated at Carville because of gross carelessness (Section II. E.). Kirchheimer was also motivated by extreme personal jealousy.

Storrs had invited him to serve as a consultant on her original grant application to develop the armadillo as a model for leprosy. When she succeeded he claimed that the discovery was his and resigned from her program to start an armadillo colony at the PHS leprosarium at Carville (2). He was singularly unsuccessful while her program flourished. Her success filled him with rage and jealousy. Glaring discrepancies in his biographical records show that he was a psychopathic liar who was coddled by PHS (Section V.A.)

Kirchheimer claimed that GSRI had planted infected animals in the wild in order to raise grant money to study them, or had let infected animals escape. He broadcast these charges in PHS house organs (7, 8), scientific journals (9), and newspapers (10, 11) throughout the world.

The editor of International Journal of Leprosy joined in this witch-hunt (12). He suggested that GSRI had discarded carcasses of diseased animals on its campus without adequate incineration, and that wild armadillos had contracted leprosy by eating them. The impact that these claims had on the scientific community is illustrated by an editorial written by Dr. Jacinto Convit of the Biomedical Institute of Venezuela (13).

> ***The initial reaction produced in the scientific community by the finding of indigenous leprosy in armadillos oscillated mainly between total rejection and passive doubt; very few investigators considered the fact in all of its importance and magnitude. The basis to adopt a negative position towards the finding reported by (GSRI) were the possibilities that the infected animals were animals that had escaped from Gulf South Research Institute where armadillos were being used experimentally . . .***

Ten years later, after Kirchheimer had retired, a team of six Carville officers and associates admitted in print that the epidemic started before GSRI was founded or Storrs moved to Louisiana 14). Yet, they refused to exonerate her by name or

apologize for the terrible damage that followed. They banished her to a scientific purdah where no man can see her face, hear her voice, or witness her grief.

NIH responded to the Carville onslaughts by giving Kirchheimer a Distinguished Service Award (15) and slashing Storrs' financial support (16). Thus, the Captains and Admirals of the most powerful warships in the PHS fleet opened fire on her little lifeboat for humanity. They blew it out of the water in a few months. They did not attempt to rescue survivors.

The public furor and financial loss caused by their broadsides forced GSRI to dismiss her from leprosy research. Four years after her coronation as a New Iberia Mardi Gras Queen, she was forced out of the City on the Bayou Teche that she had grown to love.

Her public abasement by an ungrateful government is summarized in a biography of Armauer Hansen (the discoverer of the leprosy bacillus) that can be accessed on Internet (6). It is also described in a treatise on bacteriology (17). An excerpt from the Internet article reads as follows.

> ***A major advance in experimental leprosy occurred when Eleanor Storrs reported a leprosy infection in the nine-banded armadillo. During the course of obtaining normal tissues from captured armadillos, some animals were found to be infected with acid-fast bacilli similar to Mycobacterium leprae.***
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> ***These findings caused considerable public and scientific controversy in America. The possibilities of an infected animal escaping from the experimental farm, insect vectors or healthy animals scavenging on dead animals were all proposed to explain the transmission of leprosy disease to armadillos.***
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> ***Unfortunately, some skeptics questioned the validity of experimental infection of armadillos with M. leprae and suggested that the Louisiana workers were detecting the indigenous disease. This view has not prevailed. USPHS banished Storrs from leprosy research before this controversy was resolved. Yet, her discovery revolutionized research on all aspects of the disease.***
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> ***A few armadillos can supply enough of the once-scarce reagent, lepromin, to meet the world's needs. NIH has funded a program to map the genome of the leprosy bacillus. Trials are in progress on 470,000 people in India, Malawi, and Venezuela on armadillo-derived vaccines. A recent WHO report describes a broad spectrum of programs in immunology and biochemistry made possible by her vision.***

This biography gives a concise summary of the humiliation that Storrs suffered at the hands of male PHS officers. Never before in the annals of medicine has a female scientist achieved so much and yet received so little thanks from the medical profession and the government of her country. It illustrates man's inhumanity to a

successful female scientist that will rankle forever in the hearts of people committed to equal rights. It will now be on Internet for all women to read, and read they will.

Worse was to come. After being hounded out of GSRI by Capt. Kirchheimer and other PHS officers, Storrs fled to the Florida Institute of Technology (FIT) in Melbourne where WHO and NIH gave her service contracts to produce leprosy bacilli from armadillos. She was reduced from the status of a research scientist to a nameless supplier of bacilli to male scientists who did the work that she once hoped to do.

For example, Storrs submitted a proposal from GSRI to NIH to study the biochemistry of the leprosy bacillus. NIH turned her down. After her exile to Florida, NIH awarded a similar contract to Patrick Brennan of Colorado State University, and gave Storrs a service contract to supply Brennan with bacilli (4). This was the most shameful exploitation of a woman's discovery in the history of science. It was as if the French government had rewarded Marie Curie for the discovery of radium by deporting her to French Equatorial Africa to dig radium ore for exclusive use by male professors at the Sorbonne.

B. Collapse of the Leprosy Vaccine Program

The wanton destruction of Storrs' laboratory in New Iberia caused the bottom to fall out of bacterial production. She had been suspended from leprosy research at GSRI in 1976, and did not harvest her first animals at FIT until 1981, so was unaware that no one had been able to reproduce the fantastic yields that she had obtained at GSRI.

WHO had funded three other organizations to grow bacilli. They were the PHS leprosarium at Carville LA, under the direction of Capt. Kirchheimer; the Armed Forces Institute of Pathology (AFIP) at Washington DC under the direction of Dr. Gerald P. Walsh; and the National Institute for Medical Research (NIMR) in London under the direction of Dr. R.J.W. Rees.

The results obtained by the four laboratories (18) were compared in 1982. Capt. Kirchheimer produced tissues containing only 0.5 percent of the number of bacilli obtained by Storrs in New Iberia (1). The tissues produced by AFIP were virtually worthless. Storrs' yields in Florida were only 2% of those she had obtained at GSRI. Those obtained at NIMR were comparable to those obtained by Storrs. This latter program was the smallest of the four, and used Florida animals supplied by her.

The tissues from the four laboratories yielded only 56,000 doses of vaccine, compared to the 4 million doses anticipated from Storrs' original results. The quality was poor because of difficulties in processing tissues containing small numbers of bacilli. They had cost WHO 40% of its annual leprosy budget. Vaccination of 470,000 people was scheduled to begin in two years. The premise on which the program was based had collapsed.

WHO did not attempt to pinpoint the cause of this shocking decline. Although obviously connected with the torpedoing of Storrs' program in New Iberia,

WHO officials did not have the courage to mention this possibility aloud or question the motives of PHS.

Only one adjustment was made. WHO canceled its contract with AFIP and allocated the funds to Storrs. This action doubled production of usable tissues but it was too little and came too late. The crippled program plunged downhill like a runaway juggernaut, to crush the hopes of Third World people.

The vaccine injected into the arms of 29,000 human subjects in Venezuela (19) was so watery that it was transparent to the naked eye (20). Some of this vaccine and other lots were used on 121,000 volunteers in Malawi (21) in the largest leprosy vaccine trials ever conducted in Africa. They were no more effective than water from Lake Malawi. The prospects looked dismal.

Then, in India, a miracle burst through the black clouds of despair. The expansion of Storrs' program in the 1980s had resulted in small but significant improvements in the quantity and quality of the vaccines. They protected two thirds of the test subjects in the southern state of Tamil Nadu (22). This showed that a vaccine was feasible. However, it was too costly to manufacture.

Final results were published in late 1998, 24 years after research on the vaccine began. Vaccinations were initiated in 1984. More than 321,000 people had been vaccinated, multimillions of dollars had been spent, and thousands of physicians, paramedics and field hands had labored in vain for 14 years. Of the 470,000 people included in the original plan, 150,000 were vaccinated with worthless vaccines, 171,000 were vaccinated with vaccines too costly to produce, and 149,000 were not vaccinated at all. This enormous experiment was a heart-breaking failure that cast a long shadow over our lives.

C. Cause of Low Bacterial Yields

Storrs and I still hoped that something of value could be salvaged from the wreckage. She had started this program at the peak of her career. She had given it the best years of her life. Thousands of innocent people had suffered and millions of dollars had been spent because of her unbounded faith in the value of her discovery. It was our duty to God and mankind to find a way to redeem this gift from heaven for the benefit of all His people.

Slowly, the reason for the collapse in armadillo productivity was revealed to us (1). While working in New Iberia, Storrs had inoculated armadillos that were born and raised in captivity. They were immunologically naïve, and therefore highly susceptible to infection.

After the rape of her program, WHO specified the inoculation of wild-caught armadillos in a fixed protocol proposed by PHS. These animals had acquired immunity prior to capture because of exposure to soil mycobacteria, which are closely related to M. leprae and contain many of the same antigens. In Louisiana, these included the leprosy bacillus itself (5). Both Carville and AFIP used Louisiana animals exposed to leprosy. They were resistant to infection, so yields were very low.

Storrs discovered that armadillos in central Florida are free of leprosy. Therefore, specific antigens for it are not present in the environment. Thus, the animals inoculated at FIT and NIMR had acquired partial immunity by exposure to free-living soil mycobacteria, but could not develop specific immunity to leprosy. Bacterial yields were far lower than those obtained on immunologically naïve animals, but appreciably higher than those obtained on animals with both cross and specific immunity.

In summary, the armadillos that Storrs inoculated in New Iberia were immunologically naïve, the wild Florida animals that she and NIMR inoculated possessed cross- immunity only, while the wild Louisiana animals that Carville and AFIP inoculated possessed both cross and specific immunity to leprosy.

Therefore, wild Louisiana animals did not yield appreciable amounts of vaccine while Florida animals yielded small amounts of moderately effective vaccines. Vaccines prepared from animals raised in the laboratory were no longer available for testing, but have the potential of eradicating leprosy.

D. Sand in the Wheels of Justice

These insights gave us renewed hope. We felt certain that we could heal Storrs' crippled discovery to make a spectacular comeback in this epic fight against disease. We could show the world that the armadillo still had great potential in medical research. We could restore luster to her proud Yankee name and regain the respect that our Cajun friends in New Iberia had shown to us.

We sharpened our pencils and rebooted our computers. In March of 1999, Storrs published a letter in International Journal of Leprosy describing the catastrophic decline in bacterial yields and a method for restoring productivity to its original level (1). In September, I published a review paper in World Journal of Microbiology and Biotechnology explaining why this decline took place (2). These papers were strongly endorsed by the reviewers.

I submitted copies to Dr Harold Varmus, then Director of NIH, requesting a hearing on restoring the productivity of armadillos for use in leprosy research and production of vaccines. Varmus moved on to a new job with Sloan-Kettering Institute without replying.

Admiral Marilyn Gaston responded on his behalf by sending me a memorandum by anonymous PHS officers that contained a litany of lies and evasions. It seethed with inchoate rage. They accused me of mass mailings and use of the Internet to plead my cause like it was a crime to ask my fellow scientists for help in securing justice.

Gaston adamantly refused to give us a hearing. I sent this information to Donna Shalala, then Secretary of DHHS (23). I also sent her an open letter requesting a hearing (24). She did not reply. The greatest cover-up in the history of medicine was underway.

I appealed to Congress for help. Dr. Dave Weldon, our local representative from the 15th Florida district, told me that DHHS adamantly refused to

grant us a hearing and that he could do nothing to help. Next, I turned to Sen. Bill Frist, who was then Chairman of the Senate Subcommittee on Health, and since has become the Senate Majority Leader.

I felt very hopeful about him since he had been a medical missionary in Africa, and must have seen many leprosy victims during his tour of duty. Surely, he would sympathize with their plight. In addition, his brother Tom, an outspoken leprosy activist, wrote a book entitled Don't Treat Me Like I Have Leprosy! He had met Dr. Storrs at a leprosarium during one of her missions to Brazil. He was also a past president of American Leprosy Missions, and took an active role in the affairs of the International Leprosy Association (ILA).

Tom was aware that the vaccine program held center stage in leprosy research during the last quarter of the 20th century, that Dr. Storrs was the leading lady on it, and that deep animosities isolated her from PHS. In short, Sen. Frist had ready access to all the facts from his brother Tom[1]. I had forgotten that Tom was a member of the Program Committee of ILA that refused to let Storrs give papers on the sabotage of her program by PHS at the 14th International Leprosy Congress that was held in Orlando FL in 1993.

In March of 2002, I sent Bill a 22-page petition asking for a Congressional investigation. He did not have the courtesy to acknowledge receipt of this document. The only reply I got was an unsigned e-mail note telling me that my petition "sucked". It contained a virus that caused my computer to malfunction. It was the only e-mail I opened that day.

I had a technician examine my PC and give me a report. I sent this information and the address of the technician to Sen. Frist and Attorney General John Ashcroft asking for FBI protection. They did not reply. A month later I got a letter from a FBI congressional liaison officer telling me to take my problem to local law enforcement officials.

It was a total brush-off. We had suddenly become unpersons outside the protection of the law, by questioning the benevolence of this agency. We had aroused the antagonisms of people as evil as Dr. Josef Mengele, the Angel of Death of Auschwitz.

The icy behavior of Weldon and Frist was totally inconsistent with the maudlin efforts they made to prolong the empty life of Terri Schiavo, a comatose woman with a hopelessly damaged brain.

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[1] I learned later that the Frist family fortune is based on Columbia/HCA (Hospital Corporation of America), the largest for-profit hospital chain in the country. In December of 2002, this company, of which Tom is a co-founder, agreed to pay the federal government $631 million to settle Medicare fraud claims. This brought the total paid to the government to a record $1.7 billion. Thus, he Frist family was at the center of the biggest swindle in the history of medicine.

They fought against removal of her feeding tube by every strategy they could muster. Weldon offered to go to Florida to diagnose her case personally. Frist claimed that she was cognitive after watching an hour or so of videotapes. He supported a Senate bill to get her a judicial hearing.

Neither man was an expert on brain damage, but they questioned the judgment of specialists who were. A subsequent autopsy showed that she could never have recovered.

Many pro-life people will applaud their effort to save Terri Schiavo, but they and every other decent human being will be sickened to learn that they refused to give Eleanor Storrs a hearing that could have helped 600,000 healthy people per year from contracting leprosy. They violated the oath of Hippocrates and denied the teachings of Christ in order to protect their confreres in PHS.

PHS committed genocide by killing the leprosy vaccine. Frist and Weldon ratified genocide by blocking efforts to resurrect it. They did this to protect an impostor who, with the help of government officials, had faked his medical credentials. The Attorney General and FBI failed to take action. My website on this problem was macerated in 2006. Who is behind this conspiracy?

E. Fitting the Pieces Together

The steely refusal of DHHS to grant us a hearing and the violation of our constitutional rights by Congress caused me to take a close look at our past dealings with PHS for clues to its arrogant behavior. The first step was easy. I had resigned my position as Officer-in-Charge of a PHS laboratory in 1967 to protest an order that destroyed a national program on the toxicology of DDT (Section III). This program had been inspired by a 1963 book by Rachel Carson entitled Silent Spring that had aroused nationwide concern about the safety of chlorinated hydrocarbon insecticides.

A powerful clique within PHS opposed any research that would lead to a ban or curtail use of DDT for control of household or agricultural insects. They ignored the fears of the public by deliberately sabotaging our program. DDT was banned anyway. The results were catastrophic for the people of tropical countries.

The reasons for the capricious arrogance of PHS officers became clear. They could rely on the automatic support of Congress and the administration because the news media licked their hands like puppies, begging for scraps of gossip on the latest miracle cures. They were regarded as pyxes of medical knowledge. Actually, they were loose cannons in a powder magazine.

We had also become involved with the activities of National Cancer Institute (NCI) through a program on the carcinogenesis of pesticides. I was Principle Investigator and Storrs Chief Toxicologist. We also served on advisory panels. We were amazed at the lack of direction and capricious shifts in emphasis in this program. It soon became apparent that the war on cancer (Section IV B) that President Nixon declared in 1972 would never be won without drastic changes in the PHS High Command.

The skids to hell were greased by the emergence of Captain Robert C. Gallo as Chief of the Tumor Cell Biology Branch of NCI. His dishonesty and sloppiness became legendary. Because of a sudden change in emphasis, he switched his research field from cancer to AIDS research with no change in laboratory administration. He converted a putative cancer virus that he probably stole from the Japanese into the cause of AIDS by stealing the AIDS virus from a Frenchman.

A quarrel over ownership of the virus and a patent for measuring it in blood became so acrimonious that it required mediation by President Chirac of France and President Reagan of USA. Afterwards, it became clear that the position of USA was indefensible. In 2002, a Pulitzer Prize winner from the Chicago Tribune published a meticulously documented book showing that Gallo and other PHS employees were guilty of plagiarism and many other acts of gross misconduct.

A review of this book in the Washington Post reported that Gallo, his co-workers, and his rivals in government were guilty of " deception, misconduct, incompetence, fraud, sabotage, back-stabbing, double-dealing, overstatements, half-truths, outright lies, a clandestine affair with a co-worker, a bribery attempt, denials, evasions, cover-ups and serial rewritings of history." The reviewer concluded that the book documented "enough treachery, negligence, and megalomania to make even the most trusting of readers skeptical of the scientific establishment."

Yet, DHHS has continued to defend Gallo ferociously, and Congress has continued to pour multibillions of tax dollars down the voracious maw of PHS for tainted research without asking questions. Business executives guilty of such crimes would be pilloried in public by the news media, tried in court, and sent to jail. The crimes committed by Enron officials are trivial compared to those attributed to Gallo and his associates. Enron played dirty tricks with people's money— PHS plays dirty tricks with people's lives.

To show that Gallo's exaggerations were not unique in PHS circles I have reviewed and compared the biographies of Capt. Kirchheimer that were prepared by him and PHS. They are assembled in appendix I for lovers of the arcane to read. They contain a phantasmagoria of improbable events that even his Confessor would not bereave. These are summarized below.

•He fought for Franco in the Spanish Civil War between the time that he completed his medical studies in Germany in 1937 and arrived in Seattle Washington on a tramp freighter in 1938.

•Although Kirchheimer was Jewish, PHS claimed that he had been a long distance runner on a German Olympic team during the regime of Adolph Hitler. Only one Jew was on the German team in the Berlin games of 1936. Her name was Helene Meyers.

•PHS claimed that he arrived in United States in 1938 as a stowaway on a ship that he boarded in Spain without knowing where it was going. No mention is made of his whereabouts or employment in USA until 1946.

•According to PHS, he received his MD degree from the University of Giessen in 1937. Most Jewish students had been expelled from German universities by the Nazis by then. The rector of the University of Giessen was a notorious anti-Semite.

•Kirchheimer contradicted PHS by claiming that he received his MD degree from Giessen in 1947. University records on Internet show that the medical school of Giessen was closed from 1946 to 1950 because of bomb damage suffered during World War II.

•According to Kirchheimer, he first began work in USA as a physician at Kings County hospital in Seattle in 1946, received a MD degree in Germany in 1947, and, a PhD degree from the University of Washington in 1949. This sequence of events is logistically impossible.

•Kirchheimer joined the Commissioned Corps of the US Public Health Service in 1961 at the age of 48. The maximum age for enlistment in the Corps is 44. Kirchheimer and PHS agree on his age, so his appointment must have been illegal.

•He was promoted to the rank of Medical Director (Captain) in 1965, although there is no evidence that he held a medical degree.

•Kirchheimer supplied WHO with a biological reagent (lepromin) for use on third word people that he prepared from wild armadillos that were infected with leprosy (25).

•His publications in scientific journals are weighted down with a mass of fabrications and falsifications (26) but the Office of Research Integrity of DHHS has refused to investigate them.

•Kirchheimer served for five years as Deputy Director of Safety at the U.S. Army biological warfare laboratory at Fort Dietrich MD (15). He must have had many juicy opportunities for espionage.

It is unconscionable that Senator Frist, the Attorney General, FBI, and Office of Research Integrity of DHHS would refuse to investigate a refugee with this highly suspicious record. They demonstrated total disregard of national security and integrity in science. They were grossly unfair to the State and people of Louisiana.

The investment that the people of Louisiana made to found Gulf South Research Institute was trashed by his outrageous behavior. GSRI was established by the state legislature in 1964 to create a better Louisiana through science and technology (Section VI). Plans to implement this program by studies on environmental sciences and oceanography were well underway when PHS torpedoed our laboratory to hide the fact that PHS had caused a leprosy epidemic in wild armadillos.

During the 30 years that elapsed between my leaving the post of Scientific Director and the arrival of Katrina, GSRI could have made spectacular progress in control of hurricane damage. The fusion of old ideas with new events that have happened since the collapse of GSRI have led me to a unified theory which explains the interrelations between the world petroleum crisis, global warming, and the terrible fate that overtook New Orleans (Section VI C). The chief feature is a new concept in energy production that will free the environment of manmade pollution.

It involves production of hydrogen for use as a fuel by the action of sunlight on water that is bound in the high altitude ice fields of Greenland and Antarctica. Nothing like it has ever been proposed before. This process could eliminate the

dependence of United States on OPEC oil and solve problems resulting from global warming and mounting hurricane damage.

Eliminating the need for Mid-East oil could make it possible to stop the unpopular war in Iraq which is now costing $100,000 per minute to wage, and has already cost the nation 250 billion dollars. The savings could be used by the Federal government to transform the polar glaciers and lost wetlands of Louisiana into wonders of the modern world. All I ask in return is a full investigation of the circumstances that are handicapping research progress on the prevention and cure of cancer, AIDS, and leprosy.

Many people will characterize my proposal as visionary. Scientists are hired to have visions of the future. A plan proposed by a former Scientific Director and Institute Scientist with a record of solving international problems (Section VII A) cannot be ignored with impunity. I may have had a vision, but it is the vision of a lost world redeemed. No risk is too great to take to make it come true.

I am not asking the government to buy a pig in a poke. The feasibility of my proposal can be evaluated at low cost by scientists already working in the Scott – Ahmanson National Oceanographic and Atmospheric Administration laboratory at the South Pole. Their results could be compared to those obtained at the NOAA laboratories in American Samoa and Point Barrow Alaska. At the cost of one cent per capita or 30 minutes of war in Iraq, America could get an answer to the greatest problems that face the world today. What is your decision, Mr. President?

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II. THE LEPROSY TSUNAMI

A. Murder of a Mardi Gras Queen

1. **The Scene of the Crime.**
2. **Experimental leprosy in armadillos.**
3. **Fatal discovery - leprosy in the wild.**

The research of Eleanor "Polly" Storrs on transmitting leprosy to armadillos began at Gulf South Research Institute (GSRI) in New Iberia Louisiana in 1968. She was brilliantly successful. Her achievements promised to bring recognition and economic stability to a city that had undergone a long series of disappointments.

In 1974, she was proclaimed Queen of the Mystic Krewe of Iberians, the greatest honor that the community ever bestowed upon a Connecticut Yankee, and one impossible to forget. Two years later, she made another momentous discovery that pierced the medical world to its quick. She found that many wild armadillos in Louisiana were already infected with the most virulent form of human leprosy. PHS screamed from the rooftops that she had faked this outbreak of disease or started it by carelessness.

The "Cotton Mathers" of PHS metamorphosed an Angel of mercy into a Salem witch, who they burned at the stake. They painted a rising Clara Barton as a "typhoid Mary" for all eternity to revile. The gentle Queen was dead!

This character assassination was far more than a personal tragedy. PHS killed the hopes of the community, the future of leprosy research, and the prayers of billions of people in cold blood in order to cover up the fact that PHS had started a leprosy epidemic in wild armadillos by locking up leprosy victims from all over the United States in a concentration camp at Carville.

To fully understand the impact that her public humiliation had on her many friends and her beloved City, it is helpful to know something about the history of the Institute where she worked and its emotional and financial ties with the City and Parish.

1. <u>The Scene of the Crime</u>. GSRI was founded in 1964 as a not–for-profit research Institute by the Louisiana State legislature in order to enhance utilization of the natural and human resources of the region. Startup funds were supplied by the Louisiana State Science Foundation, but the Institute was eventually expected to become self-supporting.

It was associated with the state universities by joint appointments on the Council of Trustees, Board of Directors, and staff. Dr. Storrs and I became adjunct professors at the University of Southwestern Louisiana (USL) at Lafayette. Dr. Fred Zurberg of USL and a member of the GSRI Council of Trustees served as liaison officer to our laboratory.

A committee of research institute executives from other states had been appointed to select a site from a list of 27 municipalities that were in contention. Martin Goland of Southwest Research Institute later told me that the city fathers showered them with compliments, kisses, and gin to win their votes. The dazed committee members finally decided to locate headquarters and laboratories in Baton Rouge, and laboratories in New Orleans and New Iberia.

This was a bad decision because not enough money had been appropriated to start three research centers at the same time. The money allocated to Baton Rouge and New Orleans was spent on costly new buildings that were never adequately staffed.

The entire operation should have been concentrated in New Iberia. Surplus government buildings were available there because the Federal government had decided to locate an airbase in the region for training pilots.

By 1960, the Navy had selected Iberia Parish as the site, and had expropriated 4,000 acres of prime sugar cane fields just outside city limits. This enraged the Grange, and thereafter anything that happened at the base caused angry dissension. But as buildings went up and pilots moved in, tempers cooled. The base would employ 3,000 men, and they and their families would bring new riches to the city. In anticipation of growth the community built new schools, and widened Forty Arpent Road leading to the base, renaming it Admiral Doyle Drive.

By 1964, the Navy had completed half the base, providing barracks for officers and men, a pilot training building and an air control tower. Support buildings housed a cafeteria, theater, chapel, and sickbay. In all, they finished 14 buildings. The 10,000-foot runway, ten feet thick, was second longest in Louisiana. The Navy spent 27 million dollars, about 10 times more than the state spent to found GSRI.

Then the echo of gunfire in Dallas disrupted their plans. A year after President Kennedy was killed, the Johnson administration shut down operations and packed personnel already there off to Corpus Christi, Texas. The local people were furious and rightly so. Rich cane fields lay fallow, expansion of the school system was for naught and hopes for economic growth had crumbled.

The community started a drive to get the University of Southwestern Louisiana in Lafayette to establish a second campus at the base. This aroused the wrath of Lafayette boosters who didn't want business siphoned from their city. Also, the two cities were traditional rivals. Lafayette was the bustling oil capital of Acadiana and New Iberia the fun-loving agriculture center, Queen City of the Bayou Teche, source of Tabasco sauce and home of the Sugar Cane Festival.

Lafayette residents took the case to court. After a long battle, the court ruled that establishing a second USL campus at the base would be unconstitutional. This decision dashed New Iberia's hopes again.

When GSRI was conceived, city and parish officials swung into action. The Parish held a bond election to authorize purchase of an 80,000 square foot warehouse, an adjacent solvent storage building, and 63 acres of land from the Federal government to offer to the new Institute. It passed overwhelmingly.

However, the cost of converting this cavernous building into laboratories turned out to be painfully high. Nonetheless, the site selection panel couldn't resist the pleas of Iberia Parish, so it became the third center for the fledgling institute.

When I assumed my duties as Scientific Director of the Atchafalaya Basin Laboratories in 1967 (later called the Division of Life Sciences), I expected a building capable of housing a staff of 200 would be available. I was soon disillusioned. The building had changed little since I first visited it, startup funds provided by the State were already spent, and GSRI had borrowed heavily from Louisiana banks.

When rumors became rife in town that financial collapse was just around the corner, I was besieged with questions I could not answer. The people were shaken to the core by the thought that another disaster was in the making. Joe and Danny Davis of the Davis Furniture store warned me that GSRI had become as sacred as motherhood, and that I must do something to save it. This was a daunting challenge.

I had come to New Iberia to develop a research program, not to minister to the emotional needs of a traumatized community. I did not have the training, experience, or temperament for it. Yet, there was no place else where we could go.

Returning to PHS was unthinkable (Section III). We had burned are bridges to the past. There was nothing we could do except to do our best to save this sick but sacred cow.

I persuaded Keith Lanneau, a glib member of the GSRI Board, to give a reassuring talk at a Rotary meeting at the Frederick Hotel. However, I don't think anyone believed him, and I certainly didn't. Only 17,000 square feet of warehouse space had been converted to laboratories and the cost had sapped the strength of GSRI.

A swarm of ravenous parasites was devouring the remaining funds. There had been no one in charge to fight them off. Getting them out of our offices was as traumatic as overturning the tables of the moneychangers at the Temple of Jerusalem

Our research revenue was only $200,000 per year, most of it captive funds from the Louisiana State Science Foundation. Within a few years, we would have to begin paying Iberia Parish $40,000 per year rental on the warehouse. We could expect no financial assistance from GSRI headquarters.

A few quick calculations showed that a successful operation was impossible. I showed my figures to Mark Pharr, a native New Iberian on our staff who held an MBA from Harvard. He agreed with me.

A close look at the surroundings suggested that the abandoned Navy buildings located nearby could easily be converted to laboratories and animal quarters if we could acquire them. There was precedence for this, because the PHS laboratory that we recently left on the South campus of the University of Miami had formerly been the 2000-acre Richmond Naval Air Station. After World War II, the Federal government had granted it to the University with the understanding that it would be used for research and education.

The toxicology department of the medical school was located there. It paid no rent. There were no near neighbors to complain if the howler monkeys howled at night.

This site eventually became the home of the Miami Metro Zoo. By a strange quirk of fate, it also became the final home of Jimmy-G, a gigantic but gentle silverback gorilla, who grew up with us in New Iberia. We paid him many nostalgic visits after leaving Louisiana. He was our last link to a lost world.

At my urging, GSRI applied for 9 buildings on 400 acres of land. The grant was approved. This property would be owned by GSRI outright at the end of 30 years of productive occupancy. This was a turning point in the history of the base. On April 25, 1968, the Daily Iberian published an account of the award and an outline of my plans for using the property for research and education.

However, this was only the first step in solving our problem. We had a huge warehouse purchased by Iberia Parish and nine Navy buildings that could house GSRI for the next ten years, but couldn't afford to maintain them. The Navy buildings were far more suitable for our research than the warehouse, but we didn't have the money to move.

To help solve this problem, the leading citizens of the city and parish formed a Liaison Committee. Members included Milton Voorhies, a leader in the drive to bring GSRI to New Iberia, lawyer Jake Landry, and banker Don Delcambre. Later, John Duhe, law partner of Pat Caffery, the New Iberia congressman, joined us. This group met regularly at the Beau Sejour coffee shop or French House to make plans and arrange meetings with Mayor Daigre, Police Jury President Fouquier and other officials to get their approval.

The Liaison Committee helped solve many problems that arose during our stay in New Iberia, and always acted in the best interests of GSRI and the community. It found a tenant for the warehouse, Otis Corp. of Dallas, which rented it for manufacture of prefab houses. As part of the deal, Otis paid the cost of moving our laboratories into the Navy buildings. Thus at one stroke, we upgraded our facilities, avoided future rent payments and satisfied our occupancy agreement with the Feds.

The Committee also arranged for a vocational school to take over four of the Navy buildings. Thus, we were left with 5 brick and masonry buildings in prime condition at no expense to GSRI. The community gained a manufacturing plant, a vocational school, and a viable research institute at no extra cost to the taxpayers. The committee also launched a successful fund drive for GSRI long after other communities in the state had lost interest.

The future of GSRI in New Iberia seemed assured. We planned to stay there for the rest of our lives, regardless of how the struggling branches in Baton Rouge and New Orleans made out. The crawfish bisque with hot French bread from the brick ovens of LeJeune's Bakery in Jeanerette was too fabulous to leave. Then there were the crawfish dinners at Pat's in Henderson, the po-boys at the Shrimp Festival in Delcambre, and boudin, boulets, cracklings, and crabs everywhere.

"Polly" Storrs became Mardi Gras Queen in 1974, and the "good times rolled." The inimitable Lloyd Porter, a School Board official who lived on Duperier Avenue across the street from us was usually at the center of them. He was a flawless host. In his selections of music for an evening, he always included the Battle Hymn of the Republic. This was a gentle reminder of our Yankee past.

The first member of Polly's family to visit the city was Lieut. Col. Samuel Storrs of the 52nd Massachusetts Volunteers. He was posted to New Iberia for provost duties during the Bayou Teche campaign of 1863. The Week's mansion on the Teche (The Shadows) would have been young then.

Col. Storrs was the son of a Congregational minister with strong abolitionist views. His brother Charles was a Captain in the 32nd United States Colored Infantry. His name is inscribed on the African American Memorial in Washington. Despite their commitment to abolition, these brothers could command the respect of French Louisianans of the old school.

According to family tradition, they were descendents of a Frenchman, Philip du Storrs, who was stores provider for William, Duke of Normandy in 1066 when he conquered England by force of arms. Nine hundred and eight years later, Philip's distant Yankee granddaughter conquered New Iberia with love and kindness.

Playing our stirring battle hymn was Lloyd's way of reassuring us that Yankees who were respectful of its traditions were now welcome on the banks of the Bayou Teche. We felt thoroughly at home in the community, and wanted to do everything we could to justify its trust in us.

By 1975, our annual research revenue had climbed to 2.5 million compared to $200,000 in 1967, and none of it was captive state money. We contributed $200,000 to Baton Rouge overhead, and still showed a net profit of $80,000. We had one of the largest payrolls in Iberia Parish.

The success of New Iberia stemmed from a good physical plant and strong programs on causes of cancer; human diseases in primates, toxicology of pesticides, environmental sciences, oceanography, and studies on the analysis of drugs and pesticides. We housed many thousands of experimental animals and conducted field studies on crops for USDA and testing explosives for use in Viet Nam. This work would have been impossible in the urban facilities constructed in Baton Rouge and New Orleans.

2. <u>Experimental leprosy in armadillos.</u> These programs were the body of GSRI, but armadillo research promised to be its soul. Storrs' inspiration to develop the armadillo as an animal model for study of leprosy succeeded beyond her wildest dreams. The news media heralded her breakthrough worldwide. It was the most exciting advance in leprosy research since a Norwegian physician (Gerhardt Henrik Armauer Hansen) discovered the bacillus in 1874.

WHO started a multinational vaccine program based on her discovery. Scientists from all over the world flocked to New Iberia. Within a few years, we had grown from a bawling baby into a world-famous Research Center.

Storrs was the sharpest blade on the cutting edge of science. To my knowledge, nothing like it had ever happened before. It was a heady experience for a fledgling laboratory deep in Bayou country.

The people of New Iberia were fascinated by Storrs' discovery because leprosy was a sotto voce part of New Iberia folklore. It was widely believed that it was brought to Louisiana by French refugees from Acadie during the days of Evangeline and Gabriel.

We now know that the disease occurred in New Orleans in French colonial days, since a hospice called "La Terre de Lepreax" stood near the city then. In 1872, Dr. W.G. Kibbe of Abbeville, about 20 miles west of New Iberia, sent Felecien Ourblanc to New Orleans for diagnosis. Felecien had leprosy.

Some years later, a reporter from the Daily Picayune wrote a story about a girl from New Iberia with leprosy. She was shipped to New Orleans in a boxcar labeled freight, and lodged in a "Pest House." The reporter interviewed her, and in his story claimed neglect and possible starvation.

During our stay in New Iberia, we heard many tales about local people with leprosy. One family who had two children with the disease kept them locked up in an attic to hide them from Federal health officials.

Katherine Avery (a member of the Tabasco clan and former nurse) told us that many leprosy victims had taken refuge in remote parts of the Atchafalaya Basin wilderness. A great flood drove more than 40 of them to high ground, where people saw them wandering in nearby towns.

Ivory ____ caught many armadillos for Storrs near Lake Dautrive, but I never met him. He had a disfiguring skin disease, so hid from strangers. Most of Storrs' contacts with him were through his family. One day she went to his house to pick up animals. His wife told her that he had died.

We will never know for sure if Ivory had leprosy. Much later we learned that people who handle diseased armadillos could catch leprosy from them. We captured many wild armadillos with leprosy in the area where poor Ivory once hunted.

I had faith that Storrs' spectacular success with this disease would attract the talent that GSRI needed to grow. It was the key to the future. It gave us an indelible signature in every country in the scientific world that was as recognizable as the diamond-shaped label on Tabasco sauce.

Most of our other work consisted of service contracts. If people in government or industry needed a job done, and didn't have the in-house capabilities for doing it, they put it out on bids. This work was useful, and often fascinating, but the results were the property of the sponsor and could not be published without his permission. The principal investigator at GSRI, however innovative, was a hired gun at the mercy of the sponsor.

This arrangement wouldn't attract creative talent to New Iberia, and world-class talent was what we needed for growth. The great opportunities that the armadillo program offered for original research are summarized in reference 6.

PHS officers would not let this happen. They killed the future of GSRI and the hope for a leprosy-free world. Storrs' grant funds ran out. Applications for renewals and new grants were rejected or given such low priority that they could not be funded (16).

The charming theory that grants are awarded only by independent research panels melted away. It is as quaint as the Geneva Convention. This simply does not happen when Federal interests are involved. GSRI threatened the monopoly that PHS hospitals and CDC held on leprosy research, so had to die. A once-thriving program became an economic wasteland.

3. <u>Fatal discovery-- leprosy in the wild</u>. In 1975, we published a sensational paper that exposed us to a frontal attack by PHS (5). We reported that ten percent of wild armadillos in Louisiana were naturally infected with human leprosy. The National Leprosarium in nearby Carville LA exploded with howls of rage. The PHS staff

immediately accused GSRI of starting this zoonosis by letting leprous animals escape from our colonies (2).

These claims were preposterous. Storrs and I had to make 63 bayou crossings on our way from New Iberia to the spot where the nearest infected animal was captured. However, the public believed these charges because they were trumpeted abroad in stentorian tones by gold-visored officers of the US Public Health Service with the blessings of the Federal government.

Even our capture of a leprous armadillo in Texas, 350 miles away, did not save us. PHS claimed that we had planted infected animals in the wild in order to raise grant money to study them. PHS was out for our blood.

GSRI suspended us from leprosy research in the summer of 1976. La Reine etait mort! The citizens were led to believe that the Angel of Mercy who became their Queen had jeopardized their health. The plans that we had made to bring a new energy economy to Louisiana were swept away. We had to make plans to move elsewhere, but vowed that someday the truth would come out for all our friends in New Iberia to read.

These slanderous attacks spelled the beginning of the end of GSRI. Sponsors were reluctant to give contracts to an institution that was accused of releasing infected animals to raise grant money. Gifted job candidates were afraid to invest their futures in an institution that had incurred the wrath of PHS.

The quantity and quality of research slowly withered away. There is no point in detailing this sordid story. Blow by blow accounts of this shameful decay are reported in the Daily Iberian (Section VII B) and other publications throughout the world. GSRI closed the New Iberia labs in 1985. The remaining solid timbers of a once sturdy structure were deeded to USL.

By encouraging these slanderous attacks, the Federal government exposed Louisiana to double jeopardy. The Navy expropriated 4000 acres of prime farmland to build an Air Base. It was abandoned before it was finished because of the assassination of President Kennedy.

The Parish fought back by purchasing land and buildings from the government to attract GSRI. This move promised to repair the damage done to the local economy. Then, PHS destroyed GSRI by making wild claims that we had let leprous armadillos escape.

PHS discredited GSRI to cover up the fact that it had created a major biomedical disaster by unlawful imprisonment of leprosy patients in Carville. Overwhelming evidence shows that PHS brought this curse of God down on Louisiana by using the state as a dumping ground for leprosy victims from all over the nation.

The zoonosis it caused is a threat to public health, property values, and the tourist industry that could cost the state more than hurricanes Katrina and Rita combined. The courts should order the Federal government to pay Louisiana an indemnity to clean up this biohazard and the problems it caused.

B. The Theft That Crippled Multitudes

1. **Origin of the concept**
2. **Government authorized piracy**
3. **Victory in Europe**
4. **Stillbirth of a vaccine**

Storrs arrived in New Iberia on the Sunset Limited on Christmas Day of 1967. We drove immediately to our new home on Duperier Avenue that we had purchased the previous month from Pete and Franie Olivier. It was a joyous moment. Little did we know that 10 years later to the day, we would leave it forever under the most hideous cloud that ever hung over American medical science.

Storrs was accompanied by our daughter Sarah, age 3, and our son Benjamin who had been born in New Orleans in November. He spent the first month of his life in a room on Gravier Street. While awaiting his arrival, his mother had written three proposals that shaped the future of the New Iberia laboratories.

- **The first was a proposal to PHS on the study of kuru disease in primates. This program was funded by Capt. Carleton Gajdusek of PHS, the only Nobel Prize winner ever jailed for pederasty. After the contract was funded, she assigned it to Dr. William Greer. It was the basis of a primate program that still survives as the New Iberia Research Center of University of Louisiana at Lafayette (ULL).**

- **The second was a grant application to NIH on the development of the armadillo as a laboratory animal model. It was funded in December of 1968. It was the forerunner of all armadillo-leprosy programs in the world.**

- **The third was a proposal to study the metabolic disposition of the drug dapsone by leprosy patients. It led to the initiation of the leprosy program.**

1. **<u>Origin of the concept</u>. A site visit team headed by Capt. Charles C. Shepard of CDC visited New Iberia on March 19, 1968 to discuss this latter proposal prior to the award of a contract. Storrs suggested the armadillo as an animal model for leprosy. Her reasons are valid today. A personal account of this seminal suggestion is described in National Geographic Magazine (27).**

Capt Louis Levy, a member of the team, suggested that she visit Capt Waldemar Kirchheimer of the PHS hospital in Carville LA to get background information and a supply of bacilli. She decided to convert her inspiration to reality as soon as possible.

The next week, Storrs visited Kirchheimer at Carville to get his cooperation. During subsequent visits the director of the leprosarium (John Trautman) and Kirchheimer agreed to collaborate on a grant program on which Storrs would be Principal Investigator and Kirchheimer a consultant in microbiology (2).

Storrs submitted a grant application to PHS in January of 1969. PHS awarded a grant to GSRI in October of that year. Storrs was designated as Principal Investigator and Kirchheimer as a consultant.

Otis Gaspard of New Iberia collected armadillos for her. She paid him two dollars for males and three dollars for females. He often kept them at his house for several days before bringing them to GSRI in burlap bags dangling from the handlebars of his bicycle. His Père complained because the animals crawled into his bed at night.

In February of 1970, Storrs inoculated four of them with bacilli obtained from Dr. Chapman Binford of Armed Forces Institute of Pathology. He had obtained them from a leprosy victim in Surinam. Kirchheimer was in India at the time. One of these animals developed leprosy in the spring of 1971. It became world famous as armadillo # 8. The first four animals had been inoculated with dead bacilli from Carville.

2. <u>Government authorized piracy.</u> In July of 1971, Storrs gave the carcass of armadillo # 8 to Kirchheimer for routine microbiological examination. Kirchheimer refused to give Storrs a report on this animal, which she needed to apply for renewal of her grant. He would not return the tissues. Carville had the carcass of # 8 mounted by a taxidermist and put it on display in the lobby of the administration building.

Kirchheimer claimed that the discovery was his. He submitted a paper on it with himself as senior author to International Journal of Leprosy without her knowledge or consent. He applied for a grant of his own without including her.

He belittled her work in a letter to PHS grant officers by falsely claiming that he had written her application "word for word" (28). He stated, "Dr. Storrs' grant renewal application envisions only continued inoculation of more and more armadillos by the same techniques and the same process of evaluation as outlined for her by myself when the grant was first applied for." He sent a copy of this demeaning letter to Storrs' Project Officer at CDC.

Rear Admiral Jack Butler, Director of PHS Hospitals, held a press conference in Rockville MD in August of 1971 to announce the discovery (29). The stars of this show were Capt. Kirchheimer, and Rear Admiral John Trautman, head of the Carville hospital.

We were warned about it in advance. A PHS officer told me that Storrs would be refused admission if she attempted to attend. At the briefing, <u>Kirchheimer claimed he had captured the animals on the hospital grounds at Carville</u>. Admirals Butler and Trautman gave full credit to Kirchheimer and Carville. They did not mention Storrs or GSRI.

I wrote a letter of protest to Admiral Merlin K. DuVal, MD, Assistant Secretary for Health of Department of Health, Education, and Welfare (now U.S. Department of Health and Human Services), complaining about this conference. He replied as follows (30).

At the press briefing held in Rockville, Maryland, on August 19, 1971, the enclosed background statement was read at the onset of the briefing, and together with other material available to the reporters, the collaborative effort of GSRI and the Carville PHS Hospital was stressed.

The time and place of the briefing was dictated by the fact that Dr. Kirchheimer was receiving the Department's Superior Service Award for his past accomplishments in the leprosy field. The briefing was set up by the Department's Federal Health Program Services to take advantage of his presence in Rockville. No slight to GSRI or Dr. Storrs was intended by any Department official. GSRI was furnished with all the materials made available at the briefing and, in addition, was offered a tape of the session. Of course, we do not control what a particular newspaper or news service chooses to include in their stories, and it is sometimes unfortunate that all parties do not always receive full recognition.

This account was a "big lie" by the nation's top doctor. He became an accomplice in stripping a woman of credit for her great medical discovery. The first lie was that Kirchheimer was in the Rockville area on August 19 of 1971 to receive a Superior Service Award. According to Kirchheimer's CV (31), this honor was not bestowed on him until May 22, 1972. This is prima facae evidence that Duval lied.

The second was that there was no background statement contained in DuVal's letter. GSRI was not given handouts. GSRI was not offered tapes. The enclosures that DuVal sent me were junk documents that did not mention the news conference or discovery. They were envelope stuffing placed in government files to show that DuVal had answered my complaint and found it wanting. Copies of these fake documents have been deposited in the National Library of Medicine.

Dr. Chapman Binford attended the briefing and was widely quoted in news reports. He confirmed that no mention was made of GSRI or Storrs. He published his observations in American Society for Microbiology News (32). PHS ignored his letter. The Rockville briefing was engineered at a high administrative level to set the stage for a PHS takeover of Storrs' discovery.

Kirchheimer had already established an armadillo colony at government expense in Carville before December of 1971 without informing Storrs. He resigned from her program in May of 1972. Carville unilaterally severed all relations with GSRI.

We hired a New Iberia attorney, Leon Roy Jr. to look into this problem. After a long and costly study, he told us that there was nothing that he could do. He said that the discovery that armadillos could contract leprosy was not patentable. We had not suffered a financial loss so could not bring suit, he said.

We had put our trust in the wrong man. Many years later, the Daily Iberian reported that Roy had been indicted for defrauding the Iberia Parish School Board. He has since been disbarred.

GSRI also asked Sen. Russell Long, Sen. Allen Ellender, and Rep. Pat Caffery for help. They attempted to give it, but their efforts were brushed off with glib talk by the PHS bureaucracy. Appeals to the Office of Equal Opportunity (OEO) were ignored. The machinery of Democracy had ceased to function.

Without legal backing, we could not ask Sheriff Wattigny of Iberia Parish to arrest uniformed captains and admirals at government installations for theft of an idea! There is very little that private citizens can do when high-ranking officers with polished brass on their visors decide to steal intangible property. Those charged with enforcing the law are blinded by the glitter, and the press suddenly runs out of ink.

3. <u>Victory in Europe</u>. We decided to lay our case before scientists from foreign countries. The time was ripe to do this in the fall of 1972, since 21 armadillos had developed advanced leprosy since Carville broke relations with GSRI (33). These animals yielded a vast amount of new information and astronomical numbers of bacilli.

Therefore, Storrs made a pilgrimage to Europe to give lectures and plead for support for a vaccine program. She was warmly received and given promises of help. Europeans could not understand why her country had rejected her.

She also gave lectures in Argentina, Brazil, and Venezuela that were sponsored by Pan American Health Organization. She helped them to establish colonies of indigenous armadillos for medical research. She drew praise in every country in the world but her own.

In 1973, she and her collaborators gave a series of eight papers at the 10th International Leprosy Congress in Bergen Norway that were enthusiastically acclaimed. Kirchheimer gave only one lackluster paper. None of his animals had contracted leprosy. It was obvious to all the delegates that the Carville claim to priority was spurious.

The Carville delegation stomped out of the final session of the Congress in high dudgeon when the Secretary of International Leprosy Association, Dr. Stanley Browne, thanked Storrs for her landmark contributions. She scored the greatest triumph ever achieved in a public scientific confrontation. She did it against tremendous odds. A brave woman, backed by seven stalwart knights, routed the combined might of an evil empire on neutral soil. Yet, her country refused to recognize her victory. It still does.

4. <u>Stillbirth of a vaccine.</u> After Storrs returned to New Iberia, she was deluged with requests for armadillo tissues. The vast numbers of bacilli that they contained astounded WHO scientists. Drs. R.J.W. Rees of UK and Tore Godal of Norway took the lead in confirming her enormous yields.

In November of 1974, WHO appointed an Immunology of Leprosy Steering Committee. Its principal task was to guide WHO in developing an anti-leprosy vaccine. WHO contracted with GSRI and Carville to supply armadillo tissues.

Carville was included even though the PHS delegate (Charles C. Shepard) knew that Carville could not produce tissues containing enough bacilli to

prepare them. Carville got credit for bacilli produced by GSRI, since WHO did not identify the source in distributing them to program participants.

Worse was to come. In June of 1975, NIAID awarded Carville a contract to grow leprosy bacilli even though it was high bidder and had no track record. Storrs was low bidder and had produced tissues containing up to a trillion bacilli per gram. This discrimination crippled her program financially. It also cut off the supply of bacilli that she was sending to 39 other institutions in collaborative programs.

Then, in December of 1975, GSRI announced discovery of leprosy in wild armadillos (5). PHS officers attacked her like sharks in a feeding frenzy. CDC insinuated that the bacilli that Storrs had grown in armadillos were not human leprosy bacilli and that the entire WHO program was based on a false premise (34). They did not wait for confirmatory tests that had already been started on human subjects in Malaysia and Venezuela (35). They denounced the program in Medical World News (34) before it got off the ground.

At a WHO meeting in Geneva, PHS delegates accused GSRI of letting infected animals escape. The Chair of the WHO Steering Committee sent a preemptory letter to GSRI demanding an investigation (2). Later, CDC sent an epidemiologist, Capt. David W. Fraser, to New Iberia in an attempt to browbeat Storrs into surrendering her laboratory notebooks so that he could prove this charge.

Capt. Kirchheimer claimed that GSRI had planted infected armadillos in the wild in order to raise grant money to study them (10). Later, he switched to claiming that infected animals had escaped from GSRI or that we had contaminated the environment with infectious wastes (9). PHS and its allies started rumors that we had dumped carcasses of infected animals on the grounds of our laboratory that were eaten by wild armadillos and vultures (10, 11, 12).

Capt. Kirchheimer published a forged map (9) in Leprosy in India purporting to prove our guilt. Rear Admiral John Trautman, Carville director, did nothing to restrain him. These unfounded claims and loss of grant support forced GSRI to cancel all leprosy research in December of 1978 (16). The Angels of Death had set the stage for collapse of a program that could have benefited the health of untold millions of people.

C. Genocide in the Third World

1. **Corruption of the vaccine.**
2. **Cover-up of the decline.**
3. **An unconscionable decision.**
4. **Ordeal of the volunteers.**

By sabotaging this vaccine, PHS has led United States into a confrontation with the colored races of the world. This could cause domestic unrest and poison foreign relations. The geographic distribution of leprosy shows this. Human leprosy is endemic in the Asian countries of India, Myanmar, and Indonesia; the black and Arab nations of Africa; the rainbow nations of Latin America; and the Polynesian and Melanesian islands of the Pacific. Vaccine trials were made on the dark complexioned people of India, Malawi, and Venezuela.

Leprosy is seldom found in Western Europe and United States. It occurs in all Muslim countries, including Indonesia, Malaysia, Bangladesh, Pakistan, Egypt, and Sudan. White Westerners ran the program. All of the vaccine lots were manufactured in England by Burrows Wellcome Ltd. United States supplied all of the armadillos. R.J.W. Rees and Philip Draper made the telltale bacterial counts at the WHO armadillo tissue bank in London.

Chairmen of the WHO Steering Committee, which managed the program, were, in order of appointment, Tore Godal of Norway, Barry Bloom of USA, and Patrick Brennan of Ireland/USA. Capt. Charles C. Shepard, perennial Chairman of the powerful US Leprosy Panel of NIAID, was the dominant figure on the Steering Committee. He opposed use of the armadillo implacably because of his stake in the use of the mouse for leprosy studies. He agitated constantly against it. He was the great white devil behind the failure of the program.

The circumstances leading to the rise and fall of the vaccine are well known in all Third World countries. Eleanor Storrs of New Iberia, Louisiana discovered that each armadillo could produce enough leprosy bacilli to vaccinate 125,000 people (3). This opened the door to the eradication of leprosy for the first time in its long history.

Leprosy probably originated in East Africa three to four thousand years ago, and was first described accurately in Sanskrit manuscripts about 600 BC. It ravaged the bodies and souls of people in ancient Egypt, Mesopotamia, and the lands that became India and China. It was then, and has remained, a red badge of physical and spiritual defilement. Hebrews believed it was a curse of God. Its victims were banished from society. Worshipers of Jehovah, Allah, Brahma, and Buddha gave joyful thanks for the deliverance promised by the lowly armadillo. Their hopes were short lived.

1. <u>Corruption of the vaccine</u>. Storrs agreed to supply tissues containing bacilli to WHO in 1974. Two years later, PHS officers engineered her banishment from the program. She had to move from Louisiana to a new location in Florida where WHO gave her a supply contract. Her new colony did not get into production until 1981. Five years had elapsed since she last examined an armadillo with advanced leprosy.

During her long exile, yields of leprosy bacilli plunged dramatically. We now believe that this was caused by the fact that PHS recommended substitution of wild-caught armadillos for the laboratory-born animals that she had used in Louisiana.

WHO was not greatly concerned at first because of the enormous backlog of bacilli that Storrs had deposited in the Armadillo Tissue Bank in London during the halcyon days of the program. WHO was confident that PHS scientists would easily make up for lost time because of the vast resources at their command. This did not happen.

In PHS hands, armadillo productivity dwindled by two orders of magnitude. Storrs' once-bountiful yields shrank into pittances. The backlog slowly melted down and trickled away. Researchers became angered and bewildered about what had happened. Most believed that she had exaggerated her success and left them holding an empty bag. Her friends melted away with the shrinking backlog.

WHO and PHS maintained a stony silence. Disaster loomed on the horizon. The WHO Steering Committee must have known by mid 1982 that a high-quality vaccine at reasonable cost was no longer possible.

In that year, the WHO Armadillo Tissue Bank issued a report comparing the yields obtained by the four laboratories supplying tissues during 1981-82 (18). These included the PHS hospital in Carville LA, the Armed Forces Institute of Pathology (AFIP) in Washington DC, the National Institute for Medical Research (NIMR) in UK, and Storrs' laboratory at Florida Institute of Technology (FIT).

Storrs had found refuge there after PHS torpedoed her program in Louisiana. She had been forced to use wild-caught armadillos by the terms of her contract. Even with this handicap, she made her presence felt.

The four contractors had harvested 32 animals. They had cost WHO 40 percent of its annual leprosy budget. According to WHO projections, they should have yielded 4 million doses of high-quality vaccine (3). Instead, half of the tissues contained too few bacilli to process. The remainder contained 4,000 doses of a low quality and 52,000 doses of a medium quality vaccine.

Storrs produced 90 percent of the high-yielding tissues. NIMR produced the remainder from armadillos provided by Storrs. Carville and AFIP produced the equivalent of 3,000 doses of low-grade vaccine between them.

The output of Carville scientists was minuscule. They produced only 1.3 kg of tissues. Half of them contained too few bacilli to process. The rest contained 1 to 5 billion bacilli per gram.

PHS yields did not improve appreciably with time. In 2002, Brennan (4) published data showing that Carville now harvests eight armadillos per year, which yield 2g (wet weight) of bacilli. Thus, their tissues (liver and spleen) contain an average of 2 billion bacilli per gram. Total world production of armadillo derived bacilli, all from Carville, is now equivalent to only 5,000 doses per year compared to the 1 million that could have been achieved by Storrs with the same level of effort.

Reversal of this decline is essential to the future of leprosy research. However, it must first be confirmed under oath by the researchers whose work revealed it. Their publications (4, 36) show without doubt that it took place. However, they are reluctant to confirm it. They are committed to protecting PHS.

The principal witnesses are Patrick J. Brennan of Colorado State University and Philip Draper of NIMR, London. In 1983, the latter published a paper (36) claiming:

> ***Bacteria in the liver and the spleen (of armadillos) may reach levels of 1012per g tissue. From such soft tissues it became possible to isolate M leprae in quantities as great as might be obtained from bacteriological media though with rather more trouble, so that a serious study of the properties of the organism could begin.***

Thus, in his laboratory, armadillos produced 500 times more bacilli than can now be obtained by Brennan. This is close to the maximum. Much more, and the livers and spleens would be composed entirely of leprosy bacilli!

The truth must be forced out of them for the entire world to hear. Restoration of high yields could then proceed by the use of laboratory-raised animals as proposed by Storrs (1) and Burchfield (2).

2. <u>Cover-up of the decline</u>. PHS will do everything possible to conceal the decline and its cause. This is illustrated by an article, which Capt. Charles C. Shepard published in the December 1982 issue of New England Journal of Medicine (37).

He was then head of leprosy research at CDC, Chairman of the US Leprosy Panel, and a member of the WHO Steering Committee. He had access to more information than anyone else in the program did. He was the voice of PHS on all matters pertaining to leprosy. His article was published six months after the WHO report was issued, so was up to date.

He wrote that each armadillo produced 3 trillion bacilli. This figure was a product of his imagination. According to his figure, the tissues of the 32 animals submitted to WHO contained 160,000 doses rather than the 56,000 actually obtained. He inflated the yield to make the program look better than it was. At the same time, he prepared the leprosy community for failure by admitting that a vaccine made from these armadillo tissues would be prohibitively expensive.

However, he did not suggest the obvious solution of restoring armadillo productivity. Instead, he urged that efforts be made to grow the leprosy bacillus in artificial culture media. This was a red herring as big and smelly as a rotting whale. Scientists had spent a century in futile efforts to do this. The leprosy bacillus is the quintessential obligate parasite. It could not then or never will be grown outside of living cells.

Shepard knew that the vaccine program was in its death throes, and that he had mortally wounded it by trashing Storrs' program in New Iberia. Yet, he proposed an impossible method for salvaging it to avoid admitting his guilt. He condemned Third World people to one of the greatest miseries of the human race to hide it. The torture of a few prisoners in Iraq is a blip on the screen of history compared to his premeditated abuse of innocent people in Third World countries.

He and other members of the WHO Steering Committee must have known that the program faced disaster. Production of the vaccine had fallen to only 1.4 percent of the amount anticipated. The quality was poor and the cost high. It was folly to launch a campaign to protect 1.4 billion people with 56,000 doses per year of low-grade vaccine, which had cost WHO 40 percent of its leprosy budget.

3. <u>An unconscionable decision</u>. Despite the great odds against them, the managers of this program prepared for battle. They recruited an army of trusting volunteers from the outbacks of the Third World to fight without pay in a losing war against leprosy. The volunteers were not warned that the vaccine might be defective. No

consideration was given to their human rights. They were sent into battle to salve the pride of vainglorious generals, who would not admit that someone had pissed on their cannon powder.

All work on production and testing of this vaccine should have come to a screeching halt in 1982. This would have been done without any question if the vaccine had been intended for use in Europe and United States. A failure of this magnitude would have caused heads to roll and governments to fall. Black, Indian, and Arab people did not have the political clout to protect themselves against the intrigues of their glory-seeking benefactors.

Only 56,000 doses of a weak and costly vaccine had been produced to protect 1.4 billion people. The foundation on which the program was built had collapsed. The Steering Committee should have launched a thorough investigation of the decline in yields.

Storrs should have been called to WHO headquarters to give testimony to an expert panel because the program was based on her work and she was the only person in the world who had produced significant numbers of bacilli. She was the key to the problem. An expert panel with access to all the information would have had no problem deciphering what had gone wrong.

Her Project Officer at NIH nominated her for the US Leprosy Panel so her voice would be heard. She was blackballed. Carville, CDC, and the Panel were determined to keep her quiet at any cost. They are still trying. A curtain of silence fell over the program. Never again was she made privy to the yields at Carville.

We could not prove how low they were until 2002 when we first saw Brennan's account on Internet (4). It was a welcome revelation. Before then, it was risky to claim that Carville yields were always low based on results obtained on 1.3 kg of tissues during one year of a 24-year program, although circumstantial evidence strongly indicated this. Brennan's website dispelled all doubts. It opened the door to making quantitative calculations, which we could present to the scientific community with confidence.

WHO made cosmetic changes that staved off immediate disaster. The AFIP program was terminated and Storrs' funding increased. We do not know what changes, if any, were made in the Carville program. It was not prudent to ask.

We now know that Carville could produce tissues containing only 2 billion bacilli per gram. They were virtually worthless. Storrs' contained 7 billion per gram. These allowed WHO to go through the motions of completing the program. They were responsible for the partial success of the vaccines in India (22).

4. <u>Ordeal of the volunteers.</u> The grief that this failure brought to Third World people is a disgrace to Western medicine. In 1984, two years after this shortfall was chiseled in stone, vaccinations began on 29,000 Native Americans and Hispanics in the llanos and barrios of Venezuela (19). The quality of the vaccine was so poor that its low turbidity was apparent to the naked eye (20). Laboratory tests made later showed that it contained very few leprosy bacilli and had very low immunizing power.

A few years later, doses of this vaccine and two other lots were injected into the arms of 121,000 black people in the Karonga District of Malawi (21). About 1.2 percent of the country's population was vaccinated. It was the largest leprosy vaccine trial ever made in Africa. The vaccines prepared from armadillo bacilli provided no protection whatsoever.

Vaccinations with two new lots of the armadillo and comparison vaccines began on 171,000 Tamils in south India in the early 1990s (22). The quality of these lots was somewhat improved because of the expansion of Storrs' program. By then, she was in full production. However, the vaccines had become prohibitively expensive and were contaminated with animal debris because of the huge amounts of armadillo tissues needed to manufacture them.

Results on all of the field tests were available by late 1998. The vaccine failed dismally in South America and Africa, but a ray of hope gleaned brightly from Asia. The armadillo vaccine protected 67 percent of the volunteers in India (22). However, no further work can be done because of the obduracy of PHS and DHHS. They have plowed under the sacrifices and hopes of people on three continents without taking the trouble of reviewing the facts.

The massacre of this program was the most heinous medical crime ever committed by the rich against the poor. For 14 years, Western scientists toyed with the lives of humble working people with the utmost callousness. These patient victims answered questions, bared their arms to vaccination, and underwent follow-up examinations to test concoctions which held no more promise than the waters of the Congo and Ganges rivers.

In some regions, over half of the population was vaccinated. Some had painful reactions. All were traumatized by the results. Thousands of paramedics and field assistants suffered with them. The donors who paid for these mock trials gave their money in vain. The odious treatment of these people would have wrenched the hearts of Father Damien, Mother Teresa, Princess Diana, and other Angels of Mercy who devoted their lives to leprosy victims.

D. Pulverization of a Medical Milestone

1. **Sabotage by PHS.**
2. **Role of immunity in history.**
3. **Limitations of drug treatment.**

Armadillos are burrowing mammals that feed on soil insects, worms, and scraps of carrion. They swallow small amounts of soil while feeding. It contains bacteria related to the leprosy bacillus. They can also assimilate these bacilli through inhalation and skin abrasions. These can immunize them against leprosy infection.

Storrs avoided this by inoculation of juvenile animals which were born in captivity and raised in the laboratory in the absence of soil. They were not germ-free but were scrupulously clean. They had never been exposed to soil microorganisms, so were immunologically naive, and therefore highly susceptible to disease. It is self-

evident that heavily infected animals contain more bacilli than mildly infected ones do. She spelled out this procedure in her work plans, reports, and publications.

She had 200 of these exquisitely-susceptible animals ready for inoculation. Most of them were members of identical quadruplet sets, which could be used to determine the effects of inheritance on susceptibility. WHO had estimated that 150 would be sufficient to complete research and prepare the trial vaccines. A classic experiment was in the making that could have solved the problem of genetic control of susceptibility and provided WHO with 25 million doses of high quality vaccine.

The most spectacular achievement in the history of preventive medicine was within her reach. She set it up alone on a shoestring budget. It was a brilliantly conceived and skillfully executed experiment, which was brought to the brink of success in breathtaking time. It could have solved age-old mysteries and modern problems. She must have been guided by God.

1. <u>Sabotage by PHS</u>. The Angels of Death brought Storrs down with a barrage of false accusations. The ferocity of their fire blew her unique animal colony into bits. They willfully destroyed a masterpiece of science and the laboratory where it had been conceived.

These brigands ignored her results and jettisoned her procedures. This was a macho act to demonstrate their independence from a meticulous woman researcher. No matter what she did, they felt impelled to do it differently. They stamped out the dying embers of her program.

They imposed their decision to use wild-caught animals on WHO. It had no scientific merit whatsoever. They returned animal science to the dark ages when animal suppliers stole pets and raided dog pounds.

They dragged armadillos from their burrows and inoculated them a few weeks later. They knew nothing about their ages or previous exposure to disease. Some old armadillos contained a brown pigment that rendered the vaccine prepared from them unfit for human use. In all cases, these animals were immunized in nature by life-long contact with soil mycobacteria that contained many of the same antigens as the leprosy bacillus itself.

In Louisiana, these included bona fide leprosy bacilli. These animals acquired specific immunity to leprosy infection. Low yields were inevitable. Leprosy does not occur in the wild in Florida. Therefore, armadillos captured there yield three to four times more bacilli than Louisiana animals do. Nevertheless, NIAID canceled its contract with FIT without bothering to find out why.

Carville advocated use of wild caught animals in defiance of all accepted practices of laboratory animal science. It was their responsibility to show that it had no effect on yields. They failed to do this and also ignored the lessons of history.

2. <u>Role of immunity in history</u>. NIAID violated a basic principle of immunology. It is well known that people who are never exposed to bacterial antigens

are highly susceptible to infection, while those who live in contaminated environments become resistant.

For example, white settlers introduced leprosy bacilli into pristine Hawaii. Incidence of disease was very low among them. However, it decimated the native Polynesians who had never been exposed. White authorities in Honolulu exiled them to the island of Molokai where an Angel of Mercy, the Blessed Father Damien, sacrificed his life in caring for their needs.

This scenario has been repeated many times throughout history. Many Native American tribes were annihilated by white men's diseases. The Black Death, imported from Asia, killed millions of Europeans. Immunological differences helped to shape world history.

PHS officers learned nothing from these lessons. They failed to grasp that the same principles that govern infection and immunity in humans might apply to lower animals.

3. <u>Limitations of drug treatment.</u> Apologists for PHS officers claim that they should be forgiven for this crime because a leprosy vaccine is no longer needed. They claim that the disease can be eliminated by using a mixture of drugs (MTD). This is not possible. MDT has reduced the prevalence of disease by 90 percent. However, the disease continues to smolder like Mount St. Helens.

The number of new cases of leprosy remains at 600,000 per year and may be increasing. Vast reservoirs of infection exist in nature, which are beyond the reach of drugs. Those that are now used for treatment will lose their effectiveness because of development of bacterial resistance. This has already happened with dapsone and the drugs used to treat tuberculosis. A new eruption of this sleeping giant is inevitable.

Far from being a disease of the past, leprosy has gained a new lease on life by transmission to vast numbers of wild armadillos. Mangabey and rhesus monkeys can be infected with armadillo bacilli. For the first time in history, a replicating reservoir of bacilli has been found in nature. Southern United States has replaced India as the region with the highest potential for human infection.

E. Leprosy in the Wild – Chernobyl of Microbiology

1. **Compensation of Carville patients**
2. **Infection of armadillos by patients**
3. **Damage to health and property**
4. **Leprosy vs. Mad Cow Disease**

Exiling leprosy patients to Carville was the cruelest and most disastrous decision ever made in the history of American medicine. It was the Chernobyl of microbiology. It created what might well be the highest concentration of human pathogens of a single species in the world. There may be more opportunities for infection with leprosy bacilli along the Mississippi River than there are on the banks of the Amazon, Congo, Nile, and Ganges Rivers combined. Because of the slow growth

rate of Mycobacterium leprae and its long life in the environment, it may be many years before its impact on human health can be assessed.

This tragedy began on February 3, 1917 when the US Senate passed bill number 4086 authorizing a national leprosarium. There are more than 300 references to this infamous bill on Internet. The Chairman of the Senate Committee on Health and National Quarantine, the Surgeon General of the United States, and a former officer of American Leprosy Missions drafted the bill. Not even the executive order of World War II that resulted in internment of American citizens of Japanese origin was more discriminatory.

PHS responded by purchasing the Louisiana Leper Home in Carville LA from the state. It became United States Marine Hospital #66. It was located on a bend of the Mississippi River 16 miles south of Baton Rouge. Operations began in 1921.

Leprosy patients from all over the USA were rounded up and transported to Carville by PHS officers. They changed their names to conceal their identities. Sidney Levyson, a pharmacist from Boerne Texas became Stanley Stein, leprosy activist and founder of the STAR, the patient's newspaper. They were cut off from society by barbed wire fences, Louisiana swamps, and a steep levee of the Mississippi. PHS officers treated them like common criminals.

A book by Stein leaves no doubt about this. Anyone found more than two miles from the hospital was handcuffed and thrown into jail. They were allowed 10 to 15 days each year to visit their families, but first had to get approval from public health officials in their home states. They also had to provide their own transportation, because Federal law prohibited them from riding on trains, busses, or other common carriers. Marriage was discouraged. They were deprived of the right to vote until 1946. They were walled out of human society because of a crippling disease.

Carville physicians used them as guinea pigs in unethical drug tests. Many of them experienced severe side effects. Although unethical, these experiments yielded worthwhile results. In the 1940s, Dr. Guy Faget found that dapsone, an experimental drug developed for treatment of tuberculosis, could arrest leprosy, although it did not completely cure it. This was a boon to leprosy patients all over the world. By 1950, control of leprosy seemed to be in sight.

Faget committed suicide. His death was a harbinger of disaster to come. When Storrs and I joined the leprosy program in 1968, we were aghast to learn that Capt. Charles C. Shepard of CDC was advocating a dosage form of dapsone (DADDS) that was certain to breed drug resistance. It produced very low levels of dapsone in blood that allowed the hardiest organisms to survive and multiply.

My warning was not heeded. Drug resistance became a major problem. A sharp increase in the number of cases occurred. Today, dapsone, when used alone, has no value for the treatment of leprosy. It has been replaced by treatment with a combination of drugs, which is known as multi-drug therapy (MTD).

1. Compensation of Carville patients. Carville patients have not been compensated for their exile and inhumane treatment. In 2001, a Japanese court ordered

the government to pay compensation to former leprosy patients banished to island wards under a law passed in 1953. The victims sued the government over the Leprosy Prevention Law, which required patients to be isolated in special centers for treatment. A court in Kumamoto ruled that the law violated the human rights of 127 leprosy patients and ordered compensation of £660,000 to each of them.

2. <u>Infection of armadillos by patients</u>. The 1917 bill passed by the US Senate had infinitely worse consequences than the Japanese law because leprosy patients imprisoned at Carville contaminated the entire state of Louisiana with their bacilli. This massive contamination can truly be called the revenge of the lepers. It must be the loudest backfire ever heard on a human right's violation.

At that time, there were no drugs which could kill leprosy bacilli in patients, so the leprosarium and its surrounding grounds became hotbeds of infection. Hordes of hungry armadillos surged into Louisiana from Texas during the 1920s and 1930s, grubbing in the rich moist soil for insects, worms, and scraps of carrion. They became entrenched in the Carville countryside by 1940.

Attracted by the odors of the incurable sores of the inmates, they could easily climb over or dig under the barbed wire fences that surrounded the hospital grounds. Once there, they could have come into contact with leprosy bacilli by snuffling through human wastes.

However, it is likely that more massive exposure took place. In Mayan legends, armadillos are referred to as gravediggers. Therefore, burial records of all Carville patients should be evaluated to determine if their remains were accessible to armadillos.

In theory, armadillos could not have been infected in locations other than Carville, because PHS officers escorted patients there immediately after diagnosis. More important, armadillos have coexisted with leprosy victims in countries such as Brazil for 400 years without becoming infected.

All of the evidence points to more massive exposure of wild armadillos to human bacilli at Carville than took place anywhere else in the Americas. Epidemics start only in crowded areas with high population and bacterial densities such as Carville was before drug treatment began.

DNA evidence shows that humans infected armadillos. Several strains of leprosy bacilli are known to exist. The genomes found in bacilli isolated fro Louisiana armadillos and Carville leprosy patients are identical.

After initial infection took place, the disease spread through a long series of animal-to-animal contacts from the epicenter at Carville into Texas and other regions of the Deep South. In the meanwhile, armadillos elsewhere were continually expanding their territorial range.

Since Storrs' early observations, armadillos have surged northward into new territories in Kansas, Missouri, Tennessee, and Illinois. They will someday range as far north as Cape Cod in the East and Vancouver in the West. Only 12 of the 48 adjoining

states of USA seem to be immune from invasion. Leprosy infection is likely to follow them from the spreading epicenter in Louisiana.

3. Damage to health and property. Carville has now admitted that almost one-third of the adult armadillos in Louisiana and east Texas harbor leprosy bacilli (38). Severely infected armadillos contain 100 times more bacilli than the average leprosy patient does. The armadillo population of United States is estimated at 30 to 50 million. Even if only one percent of these armadillos become infected, their combined capacity for causing disease would equal that of 30 to 50 million untreated leprosy victims.

At present 30 to 40 new cases of indigenous leprosy are reported in native-born Texans and Louisianans each year (38). The pattern of infection has changed completely since infected armadillos and humans became co-existent.

Formerly, leprosy was believed to be transmitted only by prolonged personal contact with people infected with M. leprae. It was most prevalent in family members of leprosy patients. This is no longer the case. The familial relationship has almost disappeared. Human leprosy is now found most frequently in people who reside in the low-lying wetlands of the Gulf States (38). These areas are clearly delineated in satellite photographs. Armadillo leprosy occurs most frequently in these infectious regions.

It has been demonstrated unequivocally that armadillo bacilli can infect humans. A technician in Storrs' laboratory developed disease after accidentally jabbing her finger with a contaminated hypodermic needle. The disease was diagnosed at Carville. She was able to return to work after treatment with a mixture of drugs (MDT) which is now recommended by WHO (Section II. D.3).

Carville has shown that some people develop "Inoculation lepromas" indicating infection from an environmental source (39).

They described patients with single lepromatous skin lesions on the elbow, leg, and forearm. The lesions were clinically and histopathologically similar to lepromas that develop at the sites of experimental inoculation of leprosy bacilli in armadillos.

They concluded that these sites are likely to be bruised accidentally and subsequently become infected with leprosy bacilli deposited in the soil by diseased armadillos. They suggested that these patients had acquired the infection from the environment and therefore developed inoculation lepromas.

A study in Houston, Texas, published in 2000, showed that among 69 patients diagnosed with leprosy, 71 percent reported either direct or indirect contact with armadillos (40).

In 2003, lepromatous leprosy was reported in a heart transplant patient in Shreveport LA (41). His physicians believed he might have contracted it from armadillos.

As of 2004,outbreaks of leprosy in armadillos and in people who have handled them are confined to Texas and Louisiana. This situation could change for the worse. The public may not be getting the full truth. PHS has a long record of lies and deceptions. Its deceitfulness has terrifying ramifications.

A full measure of this deceit is the fact that PHS has published a web site on leprosy in wild armadillos without mentioning GSRI or Storrs (39). This is like publishing an account of the discovery of the polio vaccine without mentioning the University of Pittsburgh or Jonas Salk. O weep for the integrity of American science. It is dead, and its corpse lies naked on Internet for the entire world to see!

4. <u>Leprosy vs. Mad Cow Disease</u>. PHS is minimizing this threat to the health of Americans. It spends a miniscule amount of money for research on wild armadillos compared to the vast sums that it spends on Mad Cow Disease (BSE), which is confined to a few groups of beefeaters in Europe. In a sense, BSE is an elective disease, which can be avoided by shunning meat.

The huge amount spent on it must be irksome to vegetarians and the people of India who do not eat beef and have the highest incidence of leprosy in the world. In brief, leprosy is a disease of the poor while BSE is a disease of opulent beefeaters. The former are being short-changed.

Infection from armadillo leprosy bacilli is a far greater hazard to Americans than transmission of BSE from cattle, as shown by the following comparisons.

Leprosy infects about one million armadillos in USA. Only three cows have been reported in USA with BSE.

About 30 to 40 cases of leprosy per year are reported in Texas and Louisiana alone. Not a single case of human BSE has been reported in USA.

Leprosy is a bacterial disease that is transmitted by contact with infected people, armadillos, or their refuse. A deformed protein causes BSE. It can be contracted only by eating contaminated meat or transfusions.

Leprosy bacilli shed by armadillos can contaminate soil. They remain infectious in some soils for many years. The protein that causes BSE is not known to be an environmental contaminant.

BSE could be prevented by prohibiting use of animal byproducts in cattle feed. Presently, there are no practical methods for preventing leprosy. Vaccination was a possibility, but the effort to prepare a vaccine has been blocked by PHS with the approval of influential congressmen.

Three reasons can be advanced to explain this imbalance in research funding. Firstly, PHS caused leprosy in wild armadillos. It does not want to call public attention to this disaster by asking for tax dollars to study it. Leprosy develops slowly, so PHS can bequeath this problem to future generations.

Secondly, PHS can easily scare ranchers, meat processors, and fast food chains into believing that BSE threatens their profits. These groups have powerful lobbies, which can pry money loose from Congress for research. Vegetarians and Hindus do not have much political clout in Washington.

Thirdly, BSE is on the cutting edge of research. It is caused by an exciting new infectious particle called the prion, while leprosy is caused by an old degenerate bacillus that has been hanging around for 3000 years.

Prions, Mad Cow Disease, and kuru are rich sources of Nobel Prizes. Dr. Carleton Gajdusek, a convicted pederast, received one. When he was released from prison, he was treated like a persecuted hero by the adulating scientific elite and press.

PHS officers and their coterie are far more interested in garnering prizes than in improving public health. Sometimes these objectives coincide, but only by accident.

NIH is a many-splendored stage on which resplendent PHS officers and the palace favorites can parade their virtuosity before the Stockholm judges at public expense. Improving world health is secondary to advancing their personal ambitions.

F. Casualty Lists

1. <u>Victims of Defective Vaccines</u>.

• About 150,000 volunteers in Malawi and Venezuela who were used to test a grossly defective vaccine.

• About 171,000 volunteers in India who were used to test a promising vaccine, which is now too costly to manufacture.

• Nurses in Norway who were injected with a grossly defective vaccine in safety tests.

• Physicians, paramedics and field workers who were encouraged to evaluate these vaccines in the belief that they were performing a service to humanity.

• Charitable and government organizations in England, India, and Venezuela, which financed field tests on these vaccines.

• About 1.4 billion Third World people who have been deprived of a vaccine in perpetuity.

2. <u>Victims of Leprosy in Wild Armadillos.</u> Former inmates of the PHS leprosarium at Carville LA who were deprived of their civil rights by illegal quarantine. A court in Japan has recently awarded damages of £660,000 each to plaintiffs in a similar case.

•Leprosy patients in Third World countries who were injected with contaminated skin test reagents, which PHS had prepared from tissues of wild armadillos (25).

• Residents of Texas, Louisiana and Mississippi who contracted leprosy from armadillos or by contact with soil contaminated with leprosy bacilli shed by armadillos.

• Residents of Iberia Parish who approved a bond issue to establish GSRI in New Iberia.

•Employees of GSRI who lost their jobs because of these false allegations.

G. Reparations for Louisiana

1. Importance of a public trial
2. Call for truth and justice

There is no doubt whatsoever that US Public Health Service and the US Senate (bill number 4086) caused leprosy in Louisiana armadillos by illegally confining leprosy patients from all over United States in the National Leprosarium at Carville LA. Details are given above.

These animals have contaminated the entire state with infectious bacilli. Positive measures are needed to bring this disease under control. A full-scale investigation is needed to determine if PHS is morally fit to be entrusted with this task.

There is ample published evidence that PHS wrongly blamed GSRI, and Dr. Eleanor Storrs, for causing this zoonosis. PHS now admits that this was impossible, but has adamantly refused to vindicate them by name. Thus, they will carry the burden of this stigma throughout history unless steps are taken to make all the details public.

We request Governor Kathleen Blanco and Attorney General Charles C. Foti to institute a suit for recovery of damages for cleanup of this contamination. It would automatically absolve GSRI and Dr. Storrs of guilt. All proceeds from such a suit would accrue to the State of Louisiana and Iberia Parish. GSRI no longer exists, and Storrs will make no claim.

The evidence that the Federal government (PHS) systematically maligned GSRI and endangered the health of Louisianans is convincing and complete. Every scrap of paper related to it has been preserved. Articles have been published in prestigious journals. Newspapers carried the story into every country in the world. All objections to our findings have been countered with facts. Armadillos with leprosy still roam the highways and byways of Louisiana. PHS cannot wave a magic wand and make them disappear.

The basis for such a suit is as follows:

•The US Senate and the Surgeon General acted illegally by confining leprosy victims to a leprosarium in Louisiana without their consent.

•PHS officers endangered the health of Louisiana citizens by permitting these inmates to infect wild armadillos with leprosy.

•PHS officers falsely accused GSRI and Storrs of causing leprosy in wild armadillos, which resulted in collapse of the GSRI program and loss of their services to the state.

Here is a thumbnail resume of what happened. PHS hosed helpless leprosy victims from all parts of United States into Louisiana to clean up the rest of the country. A horde of armadillos swept into the state from the West. The two groups collided in Carville. The conflagration they caused spread leprosy from Forked Island to Shreveport and burned its way into Mississippi and Texas.

A Mardi Gras Queen discovered the blaze. She rang the alarm to warm the people in her realm of the dangers they faced. PHS officers accused her of arson. They turned their fire hose on her and swept her out of the state with a stream of false accusations. They drowned her career, GSRI, and the future of leprosy research without giving her a chance to testify.

Then, they built a firewall to prevent the public from learning the awful truth. The wall is defended by PHS officers who bear an uncanny resemblance to Major General Benjamin "Beast" Butler, Military Governor of Louisiana during the Civil War. Butler decreed that the brave and defiant women of New Orleans were legally whores if they insulted Federal soldiers. His General Order No. 28 reads "when any female shall, by word, gesture, or movement, insult of show contempt for any officer or soldier of the United States, she shall be regarded and held liable to be treated as a woman of the town plying her avocation."

Nothing has changed. Any man or woman who criticizes PHS officers will be portrayed as lewd and lascivious. These offenders will be branded as moral delinquents and deprived of Federal funds. Fear of misfortune will follow them all of the day's of their lives, and they will dwell in the house of the meek forever.

The boorish refusal of PHS and Congress to give a Louisiana Mardi Gras Queen a trial to defend her honor and protect the health of the people of her realm is a measure of the abject fear that revelation of this awful truth has instilled in their hearts. These officers with the help of Congress and the legal profession (American Bar Association) have exposed America to charges of Stone Age barbarism by illegally refusing to hear Storrs' testimony.

1. <u>Importance of a public trial</u>. Brief histories of two famous French women will illustrate the supreme importance of open trials in the development of individuals and nations. Marie Antoinette, Arch Duchess of Austria and last Queen of France, was given a two-day trial by the revolutionary tribunal during the Reign of Terror. She was hated by the French people because of widespread reports that she was extravagant, frivolous, and licentious. She was found guilty and guillotined in Paris in 1793.

However, the Queen's courage and dignity at her trial aroused widespread admiration at the time, even from her enemies. The innate nobility of her character has been noted by writers such as Thomas Carlyle, Edmund Burke, Stefan Zweig and Antonia Fraser. Without the trial, she would be remembered only as an empty

– headed voluptuary whose giddy conduct contributed to the fall of the French monarchy.

The two trials of Jeanne d'Arc, the Maid of Orleans, assured the victory of France over England in the 100 years war. The first trial was presided over by Peter Cauchon, the mean-spirited Bishop of Beauvais. It lasted from January 9 through May 23, 1431. The nineteen-year-old Jeanne faced the Bishop fearlessly. Her shrewd answers, honesty, piety, and accurate memory often embarrassed the inquisitors and impressed onlookers profoundly.

Despite the justice of her cause, she was found guilty of heresy, and turned over to the English invaders who burned her at the stake. As smoke curled up from her pyre, John Tressart, secretary to the English King, threw up his hands in horror. "We are lost! We have burned a saint!" he cried.

Jeanne's tormenters threw her ashes into the river Seine, but she rose from them like the Phoenix. Twenty-five years after her martyrdom, she was granted a second trial by Pope Benedict at the behest of her loving parents. She was acquitted. A legend was born. A peasant girl became a saint. The flaming fighting spirit of the Maid of Orleans led France to victory over England, and has inspired the world for almost 600 years. George Bernard Shaw and Ingrid Bergman flowered in the glory of her sunlight. Without these trials, she would have tumbled into darkness.

These women of bygone ages, from a highborn Queen to a sturdy peasant girl, were given their day in French courts to record their final thoughts. They were the most critical days in the lives of the Queen and peasant girl. They preserved their images for posterity.

The Queen of France saved her reputation. The peasant girl saved France. The world gained two legends. If these two women had vanished into nothingness like the two little princes who mysteriously disappeared behind the walls of the Tower of London during the reign of Richard III, they would be no more than footnotes in history.

2. <u>Call for truth and justice</u>. The Mardi Gras Queen was walled out of the halls of justice by the American government. She became a "nonperson" whose work to help the poor and needy has been trampled out of history to satisfy the unbridled ambition of greedy men.

The Lord Protectors of civil liberties and human rights in America did an about face and marched backward in time to the gates of the Stone Age of justice that were old before Hammurabi learned how to chisel his name. They slogged through the many splendored Age of Chivalry without so much as a sidelong glance at the towering figures of Roland, Bayard, and Du Guesclin-- knights sans peur et sans reproche.

This pitiful melt down of American honor and justice is set forth in this document for the men and women of Louisiana to read. They can learn first hand how a scofflaw gang of Federal officers pirated the discovery of a Mardi Gras Queen, reduced it to dung, and spread pestilence throughout the land. The people of the world will learn how they committed crimes against humanity.

The State of Louisiana can bring this trial to pass by filing a multi-billion dollar suit for damages against the Federal government. It could use the proceeds to rebuild a better Louisiana, dedicated to preservation of the spiritual and material values of its glorious past.

The amount requested should be substantially greater than the $1.7 billion fine imposed on HCA Inc. for defrauding Medicare and Medicaid. This firm is owned by the family of Senate Majority Leader Bill Frist (R-TN). He is now being investigated by SEC for selling stock in this firm using inside information.

He has adamantly refused to investigate leprosy in armadillos to hide the misdeeds of medical malefactors. His machinations are described in Section I. D.

Frist has presidential aspirations. This suit will focus the attention of the voters on the fact that this insidious doctor and his felonious family firm have no compassion for sick and needy people. They treat them as profit centers. His election would deliver the health of America and the world into the hands of a profiteering medical empire that would start wars to create a market for bandages.

III. PRELUDE TO DISASTER-- The DDT- Malaria Tsunami

Two years before joining the staff of GSRI, I accepted a position as Officer-in-Charge of the Pesticides Research Laboratory of PHS in Perrine Florida. My job there (1965 -1967) was to organize a new laboratory to determine the long-term effects of low levels of DDT and related pesticides on human health.

During my work there, I reported to a Rear Admiral and two Senior Captains of the PHS Commissioned Officers Corps. A Captain, two Commanders and several junior officers were assigned to my staff. I hired about 50 scientists and technicians. Many of the people I interviewed were Corps members. Thus, I had a two-year crash course during which I had the opportunity of evaluating their capabilities and moral standards at all professional levels. This experience was a portent of disaster to come.

I resigned in protest because senior Corps officers gave me orders that sabotaged the mission of the program. The loss of information that this caused led to a ban on DDT for control of mosquitoes that transmit malaria. This resulted in malaria epidemics in many tropical countries that have cost more lives than World War II. Africa was hit hardest. One African child dies of malaria every 30 seconds.

A. The Lab that Rachel Carson Built

The Office of Pesticides of PHS was created in reaction to a book entitled Silent Spring that was published by Rachel Carson in 1962. Carson had raised many serious questions about the toxicity of pesticides that caused national alarm. They had to be answered.

This task was assigned to rear Admiral Robert Anderson, Chief of the Bureau of State Services (BSS) of PHS, and Dr. Herman F. Kraybill, a civil servant who

became Acting Chief of the new Office. They decided to open a new laboratory on the South Campus of University of Miami to study the long-term toxic effects of low levels of DDT and related insecticides.

Work there would be supplemented by a network of State public health laboratories. Thus, PHS needed a manual of standard methods of procedure so that results obtained from all over the country would be comparable.

PHS selected me to write the manual (42). At that time, I was Institute Scientist at Southwest Research Institute in San Antonio Texas. Storrs was employed by the Clayton Foundation Biochemical Institute of the University of Texas. I was given only six months to complete this task. Part way through it, my chief assistant (Dr. Donald Johnson) was called up for National Guard duty. Storrs arranged for a leave of absence from the University to help me get the manual completed on schedule.

It received favorable comments from committees that were appointed to review it. Anderson wrote the preface. It was published by the Government Printing Office. I also designed an analytical instrument intended specifically for the measurement of pesticides in human tissues (Micro-Tek Model MT220 Gas chromatograph). This was a consensus instrument that had the input of all of the leading specialists in the field.

Admiral Anderson then asked me to take the job as Officer–in–Charge of the new laboratory. He offered Storrs a position as Senior Pesticides Chemist, waiving all rules about husbands and wives working together. I would be the first civilian ever appointed head of a PHS field laboratory, he said. He offered me a million dollars to buy equipment and 50 positions to fill. We would also be responsible for training scientists from state public health laboratories.

I could not refuse. It was the challenge of a lifetime. Everything would be mew-- the problem, the methodology, the laboratory, the staff, the equipment—everything! If we failed, I would have only myself to blame.

Before leaving for Florida, I asked Anderson about the status of Dr. Kraybill who was then acting head of the program. I had hoped that he would be made permanent chief since we worked well together. Anderson told me that he wanted a commissioned officer in this position, and had already appointed Capt. Robert Weiger of National Cancer Institute.

Anderson was severely injured shortly after this conversation and was forced to go on sick leave. Weiger assumed full command. He was unsuitable for the job. He knew nothing about pesticides and was not willing to learn. He claimed that he was a generalist who could not be bothered with trivial details. He was a politician rather than a scientist.

He kept the Washington office in turmoil for the first year of the program. I could watch his antics with detachment, since he took very little interest in what was happening in the Florida laboratory. This gave me time to recruit staff and train people in the state public health laboratories without worrying about the turmoil in Washington.

My paramount task was to recruit a staff of 50 experienced people from other organizations. We had no time to spend with trainees. It soon became clear that the most competent and reliable people came from private industry, academe, civil service, and the commissioned corps in that order. Many of the latter, like Capt. Weiger, were generalists who prided themselves on knowing a little bit about many things. Often, they knew nothing about everything.

Most of them looked forward to retirement at the age of 44 when they could become representatives of pharmaceutical companies. Those who could not get cushy jobs by 45 would stay on until the age of 64 as readers of the nation's health programs.

There was no way to escape them. Many were arbitrarily assigned to my laboratory by Washington headquarters over my objections. They either were misfits or given paid vacations to bask in the Florida sun. I had to tailor jobs to fit their abilities. The few who looked promising were usually spirited away by Washington without explanation. Most of them just drifted away when they found out that they were not going to be pampered.

By the end of the first year, we had recruited a first-class staff from academe and civil service, and had magnificent equipment. We had graduated two classes from our training school. We were set to find answers to the many questions that Rachel Carson had posed in Silent Spring. Then, a series of catastrophes engulfed the program.

Admiral Anderson was invalided out of service because of his injury. He was replaced by Admiral Richard Prindle who knew nothing about pesticides and had no interest in learning. He replaced confusion with chaos. He got rid of Capt. Weiger by transferring him to the National Institute for General Medical Studies, where he became a grants officer.

Then Admiral Prindle gave our program the kiss of death by assigning it to CDC under the direction of Capt. S.M. Simmons, an entomologist whose specialty was the control of insects with DDT. His Chief Toxicologist was Capt. Wayland Hayes who had won dubious fame by feeding massive amounts of DDT to Federal prisoners in Atlanta to prove that it did not kill them outright (43). He took no interest in long-term effects.

Prindle had put ravenous foxes in charge of Anderson's hen house. CDC had made its name in the 1940s by developing DDT for controlling malaria. It was committed to defending its brainchild.

Capt. Hayes had proclaimed many times in public that our laboratory was founded to look for "toxic effects that did not exist." Our proposed studies on the long-term effects of low doses of pesticides were anathema to him and Simmons. They could not close down our laboratory openly because it was mandated, and fears aroused by Rachel Carson's book still ran high.

Instead, they sabotaged our program to prevent us from producing data that might support Carson's viewpoint.

They accomplished this by ordering me to inject crude extracts of human tissues into the Micro-Tek Gas Chromatograph for measurement of pesticides without prior cleanup. This procedure was known to yield spurious results and damage the instruments.

This procedure was adopted against the advice of all of the acknowledged experts in the field. Capt. Simmons legitimized his decision by having it approved by a majority vote at a closed meeting in Atlanta that was packed with office staff and other non-technical CDC personnel. He made a mockery of democracy.

Simmons compounded this crime by ordering me to teach this destructive procedure to chemists in all of the state public health laboratories involved in the program. This would have reduced the output from this nation-wide program to meaningless junk. It was scientific sabotage on a grand scale.

I resigned from PHS to protest this unethical conduct and misuse of public funds. This was a difficult decision to make, since I had recruited the best-qualified staff in the country to work on the chemistry and toxicology of DDT. I have never directed a group with this potential before or since. But I knew that I would lose their trust if I meekly accepted this destructive order.

My plans to get definitive answers to Carson's claims were swept away. This vacuum led to wild speculations about the toxicity of DDT. Many people panicked. They could not distinguish between uses that were harmful and those that were essential to public health.

Captains Simmons and Hayes killed a group that could have aided their cause. They destroyed our program because they thought that we might get evidence that would lead to the ban of DDT. DDT was banned anyway. We could have produced evidence to save it for restricted use.

We left Florida with great regrets but high expectations. The President of GSRI convinced Storrs that New Iberia would be an ideal place to test her theory that the armadillo would be a valuable model for biomedical research. He promised to get her a grant from Louisiana State Science Foundation for pilot studies. She had no way of knowing that Admiral Trautman and Captain Kirchheimer of the PHS leprosarium at Carville LA would blow her back to Florida by pirating and maligning her program.

B. Fall of DDT: Rise of Malaria

In 1972, William Ruckelshaus of Environmental Protection Agency (EPA) banned all uses of DDT without considering the benefits. By that time, we would have been able to demonstrate that DDT was safe for household use and was essential for disease prevention. Ruckelshaus would have had to back down because of our designation as the premier government laboratory for DDT research and the prestige of the Surgeon General of PHS.

Ruckelshaus was a novice in this field. Most responsible scientists at EPA and elsewhere opposed the ban. Without doubt, we could have obtained an exemption for malaria control. However, the Commissioned Corps had stopped us from completing this work. By this time, a wave of prejudice against DDT had swept away all reason.

Other policy makers followed EPA's lead. Use of DDT to control mosquitoes that transmit malaria was severely cut back.

This was a terrible mistake (44, 45). Mosquito populations burgeoned. Incidence of disease soared. More than 300 million people are now infected with malaria. It kills 1 to 2 million of them each year, of whom 90 percent are black Africans.

The unjustified ban of DDT for controlling malaria was a crime against the Third World. It has already killed more people than World War II. Deliberate sabotage of our DDT program by the Commissioned Corps prevented us from getting information that could have saved their lives.

C. A Job for the Peace Corps

In 1948, Paul Muller won a Nobel Prize for discovering the insecticidal properties of DDT. In 1970, National Academy of Sciences issued a report stating, "To only a few chemicals does man owe as great a debt as to DDT . . . In little more than two decades, DDT has prevented 500 million human deaths, due to malaria, that otherwise would have been inevitable."

This discovery was emasculated in 1972 as the result of scientific misconduct and the spreading of false and misleading information by agencies of the US government. The news media could help these people by exposing the misdeeds of PHS officials to the public. Stopping this plague would be a great boon to humanity, which would earn them the gratitude of all people in malaria-ridden countries.

Death rates could be cut by 80 percent by use of DDT with no appreciable risk to wildlife or the environment. DDT is not toxic to humans and, contrary to popular belief, does not cause cancer. Applying it inside dwellings to kill or repel mosquitoes would not lead to build-up of residues in the food chain.

DDT is inexpensive and is highly effective for mosquito control. It has undergone the most extensive toxicological testing in history. The world was awash in it for 25 years during the heyday of its unrestricted use in agriculture. The fact that most people survived unharmed is a tribute to its safety. Excessive use promoted by USDA and ignorance spawned by PHS destroyed a great discovery. It is as dead as a dodo in agriculture, but is still needed for insect vector control.

If the news media could shame the US government into action, the Peace Corps alone could save the lives of tens of thousands of African children each year by showing their parents how to combat malaria with DDT. It is available at low cost in India and Mexico. Equipment for applying it is cheap and readily available.

The cost would be miniscule compared to one day of feeding an army in Iraq. The American people would earn the gratitude of the Third World by shaming their government into undertaking this humanitarian project.

IV. SCIENCE FICTION – The AIDS – Cancer Debacles

A. Does HIV Cause AIDS?

1. How a cancer virus became the cause of AIDS
2. Master of Science fiction

When a business executive commits a crime he usually gets fired. He may even go to jail. However, PHS officers who commit crimes are often praised, and at worst reassigned. A powerful propaganda machine rolls out on deck to gloss over his errors. The PHS high command springs to his defense with sabers raised no matter how guilty he may be.

The worst of these cases involves Capt. Robert Gallo, former Chief of the Tumor cell Biology Laboratory of National Cancer Institute. He and other wrongdoers like him have caused turmoil in Aids research for 20 years.

He first attracted international attention in 1983, when he stole credit for the discovery of the AIDS virus from a French scientist. This theft took place 12 years after Capt. Kirchheimer stole credit for the discovery of the leprosy model from Storrs. If executive officers of the Corps had punished Kirchheimer for plagiarism in 1971, the Gallo affair might never have taken place. By this time, medical science might have been able to prevent both leprosy and AIDS. Unfortunately, the US government threw its ponderous weight behind the thieves.

The pundits of the press made light of Gallo's crimes compared to the harsh treatment they usually mete out to high officials for minor felonies. Washington Post (with the help of Mark Felt) nailed Nixon for a bungled burglary, and other reporters and tipsters almost got Clinton for having an affair with Monica Lewinsky. Yet, they failed to warn the public of biomedical crimes that threaten the lives of millions. The American people are paying a terrible price for the love affair between PHS and the news media.

This affair has a disreputable cause. The press is utterly dependant on PHS for stories on "miracle cures" that appear regularly in the evening news. If newscasters criticized PHS, these bread and butter stories would melt down. It seems to make no difference that most of them are baseless deceptions intended to gull the public into thinking that progress is being made.

1. <u>How a cancer virus became the cause of AIDS.</u> Capt. Gallo began pilfering the research of his colleagues while working on retroviruses during Nixon's war on cancer. At that time, PHS backed the concept that retroviruses were the chief causes of cancer other than radiation and environmental pollutants. Everyone in cancer research wanted to be first to prove it.

Gallo's overweening ambition to achieve this goal won him more notoriety than fame. A recent book by John Crewdson (1a), tells how one of his proposed human cancer viruses turned out to be a mouse virus. Another isolate (HL-23) turned out to be a mixture of wooly monkey, baboon, and gibbon viruses. His sloppiness became legendary.

The closest Gallo came to proving that a virus caused cancer was with HTLV-I (Human T-Cell lymphoma Virus-). Two of his laboratory assistants discovered it in a lymphoma patient. They did not tell Gallo about it until after confirming that it was not a known animal virus because of his habit of making a monkey out of himself and coworkers with premature news releases.

This virus was isolated from only one patient. It was never proven that it caused his cancer. Gallo's lab could not find it in most other patients having his symptoms. It was an orphan virus in search of a host.

Then Gallo learned that a similar disease called Adult T-Cell Leukemia (ATL) had been discovered in Japan. Some people believe that Gallo may have obtained a sample of the virus causing it and labeled it HTLV-I in order to claim credit for the Japanese discovery.

Then, NIH changed horses in the middle of the stream. Retroviruses were cut loose. Oncogenes were hitched up. Suddenly, many devotees of retroviruses became redundant. They had to write new job descriptions. Robert Gallo was one of them. He deftly transformed his cancer virus (or was it his?) into the cause of AIDS.

In 1983, Luc Montagnier of France's Pasteur Institute sent Gallo a sample of a virus that he believed to be the cause of AIDS. He called it LAV. Gallo renamed it HTLV–III and obtained a lucrative patent for measuring it in blood.

In 1984, Gallo and Secretary Margaret Heckler of DHHS proclaimed to the world in stentorian tones that HTLV-III caused AIDS and that Gallo discovered it. A cabinet member became an accessory to theft after the fact. Gallo was criticized severely for announcing this discovery before it was published in a scientific journal. Few people realized at the time that he had stolen it from the French.

In 1986, the International Committee of Viral Taxonomy recognized that HTLV-III and LAV are the same entities by renaming both of them human immunodeficiency virus (HIV). Koch's postulates had not been satisfied. Scientific protocols had not been observed. Larceny in science was legitimized.

This checkered background led to deep distrust. Many scientists now question whether HIV is the sole cause of AIDS. It could be a passenger virus that is only casually associated with it. This feeling is strengthened by failure of NIH to make progress on a vaccine.

NIH scientists still insist that Gallo was right (2a), but a large number of dissidents in USA and abroad believe that HIV is only a cofactor or plays no role at all (3a–9a). The issue has not been settled, but where there's smoke there's fire, and this battlefield reeks with smoke. The defenders of the Gallo theory pretend they don't smell it. They control the grant money, mass media, and politicians, so can perpetuate his theory.

This is pseudoscience. Scientific truths are not established by money, majority votes, or Cabinet members. They are found only by careful sifting of all facts and all interpretations. Even then, they can be flawed.

PHS has never learned this. For the good of the nation, they must learn it or perish. The future direction of AIDS research and the well being of multitudes of people depend on it. PHS is avoiding a confrontation with the dissidents in order to protect its mystique of infallibility and the memory of a long- discredited buccaneer of science.

2. Master of science fiction. Capt. Gallo's peccadilloes have been reported in scientific journals. Yet, DHHS officials have defended him fanatically. Dr. Bernadine Healy, then Director of NIH, told the Chairman of a Congressional Committee, Rep. John Dingell, D-MI, that she felt she had to "save Bob." Dingell reported "she attempted, by every means possible, to fulfill her pledge" to PHS.

In April of 2002 John Crewdson published a full account of Gallo's nefarious activities in Science Fictions: a Scientific Mystery, a Massive Cover-Up, and the Dark Legacy of Robert Gallo (1a). Several book reviews are summarized below.

New Scientist: In 1989, the Chicago Tribune published a harshly critical 55,000-word report on virologist Robert Gallo and his conduct of AIDS research, written by Pulitzer Prize journalist John Crewdson. In that rendition, Crewdson judiciously attributed Gallo's claim of priority in AIDS research to "an accident or a theft." Gallo escaped an official guilty verdict. In the eyes of the law, he had not cheated the Pasteur Institute of its deserved glory for discovering the AIDS virus.

Now, over a decade later, with the ardor of Captain Ahab and Inspector Javert, Crewdson continues his pursuit . . . As pre-publication news of this book circulated, there were groans of despair all round. Was there any need to revisit the Gallo affair? For devotees of historical accuracy and completeness, the answer is an emphatic yes. As a blow to the mystique of scientific purity, Crewdson's work is the most powerful and revealing since James Watson's The Double Helix. . . Crewdson tells the tale of how US prosecutors, facing Gallo's legal specialists in the intricacies of scientific fraud, dropped the misconduct charges in 1993. Gallo was by then a powerful figure in virology, chief of the multimillion-dollar Laboratory of Tumor Cell Biology at the National Cancer Institute. Yet he was also derided for crude personal manners and aggressive professional behavior. Occasionally these attributes came into public view, spectacularly so in Crewdson's Tribune article. The prosecutors, says Crewdson, dropped the charges because they feared that they could not prove law-breaking intent on Gallo's part . . .

The 1989 Tribune article ignited investigatory spirits at the National Institutes of Health's Office of Scientific Integrity and on Capitol Hill, where Representative John Dingell had been sniffing out scientific fraud. In 1991, government investigators brought charges of scientific misconduct against Mikulas Popovic, who managed Gallo's virus cultures, alleging that he had falsified data on the source of the AIDS virus in a 1984 Science paper, to the detriment of the French.

The investigators concluded that Gallo merited "significant censure." Six months later, a panel of the National Academy of Sciences condemned him for "essentially immoral" behavior in rebuffing collaboration with other AIDS researchers

and thus impeding research on the disease. Nevertheless charges of scientific misconduct against Gallo and Popovic were dropped.

Crewdson follows the trail to 1994, when Nobel laureate Harold Varmus, the newly appointed director of the NIH, agreed to the Pasteur Institute's demands for a greater share of the blood-test royalties. Asked whether Gallo would comment, Varmus replied, "Dr Gallo is no longer here" . . . Gallo moved smoothly from NIH to the $300,000-a-year founding directorship of the Institute for Human Virology, financed by the state of Maryland to bring biotech riches to economically depressed Baltimore. Little, however, has actually come out of the institute, Crewdson asserts, despite claims of important findings. In a final blow at Gallo, Crewdson scorns his scientific record, stating that "for the tens of millions of dollars that flowed into Gallo's lab the taxpayers had gotten precious little."

Washington Post. The tale of Dr. Robert Gallo's role in the discovery of the virus that causes AIDS is one of those stories that wouldn't be believable as fiction . . .Science Fictions is bursting with allegations leveled at Dr. Gallo, his associates, rivals and enemies, that include deception, misconduct, incompetence, fraud, sabotage, back-stabbing, double-dealing, overstatements, half-truths, outright lies, a clandestine affair with a co-worker, a bribery attempt, denials, evasions, cover-ups and serial rewritings of history . . . Science Fictions documents enough treachery, negligence and megalomania to make even the most trusting of readers skeptical of the scientific establishment.

Baltimore Sun. No one knows whether someone in Gallo's lab stole the French virus or if it contaminated their samples through sloppy practice, and it really does not matter . . . And as Crewdson shows, the biggest discoveries in Gallo's career — his claim to have identified the virus that causes AIDS and the patent on the AIDS blood test — both belong to someone else.

San Diego Union-Tribune. Robert Gallo's hour was not the brightest for American science. In fact, it may be one of the darkest. The two-decade-long sequence of events described in John Crewdson's new book resembles more the actions of a megalomaniac intent more on self-promotion and profit than on a way to stop the AIDS epidemic.

These harsh judgments contrast dramatically with the leniency shown to Gallo by DHHS officials. They engineered a series of delays, obstructions, about faces, and a "save Bob" campaign that made the cover-up of his case the laughing stock of the world. Cecil Fox (11a) summed up these clumsy maneuvers in a letter to The Scientist.

The case of Robert Gallo seems to have a life of its own and has dragged on with the perverse complexity of the O.J. Simpson story or the Dreyfus affair. . . When the first major accusative article regarding the Gallo laboratory appeared in the New Scientist in 1987, it would have seemed that the executives of the Commissioned Corps of the United States Public Health Service should have made an immediate decision about the fitness of the director of the laboratory. Failing that, the then director of NIH should have made a decision about the administration of the Gallo lab. When that did not occur, the then director of the National Cancer Institute should have determined whether the laboratory should have been allowed to spend sums involving multiple

millions of dollars. In any industrial enterprise in the private sector, the issue would have been settled in a matter of hours. Each of these executives failed to act and instead a second and subsequent series of minutely researched articles appeared . . . There was still no executive reaction, and instead a dismal succession of bureaucrats was appointed to investigate the matter in a string of Keystone Kop encounters involving congressional staffs and self-appointed vigilantes of scientific probity. While amusing, these events do not build confidence in the executives administering the most prestigious health research institution in the world.

There can be no doubt that the stubborn and partisan defense of Capt. Gallo has become the Maginot line of US science policy. It has been no more effective than the French original. This affair continues to have a baneful effect on all medical research. In his review of the Crewdson book (10a), David Crowe concludes.

In a crime novel, the villain usually ends up in jail or killed. But, in Crewdson's story, Gallo is simply fading away. He has not yet been punished for any of his alleged wrongdoings. Worse yet, nothing has really changed in the institutions that allowed these events to happen, and it could all happen again. In fact, Crewdson briefly mentions some cases where fraud appears to have occurred, but the institutional barriers against findings of scientific misconduct were too great to act against powerful scientists.

Crewdson, Fox, and Crowe provide a coherent picture of crime without punishment that has never before been equaled in the world of science. Congress, DHHS, Office of Research Integrity, and the scientific societies cannot or will not do anything about it.

They preach truth and honor from every available pulpit. They punish scientists from the private sector for misdemeanors and minor felonies. Yet, officers of the PHS Commissioned Corps are held to be above criticism and above the law. The terrible price that the American people have paid because of the blind faith of their High Priests in these false gods is discussed in the following Sections.

B. Bogged Down War on Cancer— Thirty-three Years of Frustration

1. **Retroviruses**
2. **Oncogenes**
3. **Aneuploidy**
4. **Foggy bottom**

In December 1971, Congress passed the National Cancer Act, and President Richard Nixon signed it (12a). At a ceremony that made front-page headlines in newspapers across the country, Nixon declared, "This legislation -- perhaps more than any legislation I have signed as President of the United States -- can mean new hope and comfort in the years ahead for millions of people in this country and around the world."

Most people expected that National Cancer Institute would comfortably fill the huge footprints left by the Manhattan Project and NASA. It didn't. Nixon's well-meant war on cancer turned into the most expensive boondoggle in medical history.

Storrs did more for leprosy research during 1970-76 than all of NCI did for cancer during the 33 years war.

1. Retroviruses. In the early 1970s, the Cancer High Command believed that most cancers were caused by viruses that triggered major changes in cellular metabolism, and that these changes accounted for the tumor's uncontrolled growth. Abnormalities in the genes of the cancer cells were thought to be incidental, rather than fundamental, to the disease.

The virus hypothesis was advanced because there were about a hundred viruses that were known to cause cancer in lower animals. These were retroviruses that contained RNA rather than DNA. In this respect, they are similar to plant pathogens such as tobacco mosaic virus.

Retroviruses invade normal animal cells, copy their genes into a DNA form, and then take over the normal functions of the cells for their own reproduction. Therefore, the PHS High Command believed that most human cancers would prove to be caused by retroviruses. They spent billions of dollars in tax money in a futile effort to prove this assumption.

2. Oncogenes. A new soap bubble was blown in the early 1980s. Michael Bishop and Harold Varmus of the University of California at San Francisco proposed that the seeds of cancer are present within our natal chromosomes. These seeds are oncogenes, genes that can cause cancer when they mutate into lethal forms. Although the significance of oncogenes was not clear, the theory that most cancers were caused by retroviruses and a multibillion-dollar investment in them were dropped like melting snowballs.

A new hierarchy was born. Varmus won a Nobel Prize and later became director of NIH. The cold retroviruses spigot was turned off. The hot oncogenes spigot was turned on. This change in dollar flow does not mean that the war on cancer will be won in the near future. So far, it has not been easy to produce cancers in normal diploid tissues with oncogenes obtained from cancer cells. Moreover, the oncogene theory requires more assumptions than many scientists feel comfortable with. It appears to be bleeding to death from cuts from Occam's razor.

3. Aneuploidy. Some dissident researchers argue that damage to chromosomes that causes aneuploidy are more likely to cause cancer than mutations of a few genes (13a). This viewpoint is gaining momentum despite the fact that it is unpopular with the Cancer High Command.

We may be on the threshold of a Second about-face that has the potential of succeeding. The sad thing about this is that the aneuploidy theory was first proposed in 1890–1914 when German workers observed that cancer cells contained 60 to 90 chromosomes instead of the usual complement of 46. The cells were dysfunctional.

As an undergraduate student, I was taught that such cells were cancerous. Later, I worked on many chemicals that caused cancer. They all caused aneuploidy. Many, but not all, caused mutations. I assumed that cancer was caused by any substance or condition that damaged chromosomes and interfered with cell division.

Many years later, when I read about retroviruses and oncogenes, I assumed that spectacular new discoveries had made this simplistic mechanism obsolete. So far, I have been unable to find any such evidence. This old theory seems to be as good as new.

It now appears that the wheel has made a full turn. After spending billions of dollars, publishing thousands of papers, and winning dozens of prizes, cancer researchers are back where their great grandfathers started. Never before in the history of science have so many spent so much to achieve so little. Scientists have learned a great deal about viruses and genes, but very little about how to cure cancer.

4. <u>Foggy bottom</u>. All efforts to develop broad-spectrum treatments based on the retrovirus and oncogene dogmas have failed dismally. Stories on wonder drugs pop up in the news media regularly. Hopes deflate almost as quickly. Perpetuating these emotional ups and downs is not fair to the victims.

According to an article by Bailar and Smith, which appeared in New England Journal of Medicine in1986, no significant progress had been made in the war against cancer since its inception. The paper was extremely controversial. However, Bailar and Gornik published a more sophisticated analysis in the same journal, entitled Cancer Undefeated (14a). The authors analyzed all cancer deaths between 1970 and 1994 according to age, sex, and type of disease. They concluded that there had been a 6 percent increase in mortality due to cancer since Congress and President Nixon declared war on it.

NCI countered by claiming that the death rate fell 2.6 percent between 1991 and 1995 (15a). This was nitpicking. Some rare cancers can be cured. Others may soon be added to this list. However, the general population is still vulnerable to a broad spectrum of malignancies. NCI now reports (October 2005) that death rates from all cancers combined declined by only 1.5 percent per year in men, compared to a 0.8 percent decline in women during the most recent 10-year period. Much of this decline can be ascribed to improved methods of cancer prevention such as early diagnosis and removal of carcinogens from the environment.

After three decades of incremental (creeping) progress, there has been no major reduction in the incidence of the main solid tumors of the breast, lung, liver, prostate and colon. We do not need statistics to prove this. The gravestones of our relatives and friends are bitter reminders that the war has not been won.

In the meanwhile, NASA spaceships have landed on Mars, circled Jupiter, and been flung out of the solar system. PHS has not produced a cure for the common cold. PHS wails that these space explorers are only engineers who exploit established principles. PHS has had a detailed map of the human genome for years now, but has been unable to plot a course to new discoveries. NASA reaches for the stars while PHS gropes blindly through the fogs of miasmal swamps.

Cancer and AIDS research are bogged down because PHS has spent huge sums of money on a few infertile ideas hatched by a closed clique of medical Mandarins. Their ideas soon became dogmas. Competing ideas became heresies.

Independent thought was discouraged. Heretics were banished from the banquet table. Original thinkers drifted away. The army of sycophants who remained to feast on the juicy fruits of victory could not divine the future. The conceptual diversity, which drives science forward, was lost. The American people deserve a better return for their money.

C. Killing of a Concept-- Lost Opportunities in Cancer and AIDS

1. Integrated Model for Cancer Research.
2. Resolution of the HIV-AIDS controversy (17a).

The armadillo, an armored relict from the Eocene epoch, could have played an important role in cancer and AIDS research but was not given a chance to do so because it did not fit into familiar patterns of thought. In addition, it had become a center of controversy within the Commissioned Corps. Some officers claimed it as their own (Capt. W.F Kirchheimer et al.), while others looked upon it as a dangerous rival (Capt. C.C. Shepard et al.). Without intending to be funny, Dr. Chapman Binford, a leading leprologists of the time, described it as a "political football" (16a). The rival teams scrimmaged so hard for possession that they deflated its bladder.

Many dispassionate observers thought that it held great promise. Barry Bloom (now Dean of the Harvard School of Public Health) pointed out the possibilities in an editorial in the New York Times (17a), which was reprinted in the Congressional Record. He entitled it Consider the Armadillo.

The essence of fundamental research is that no one can predict what area of knowledge can contribute crucially to long-range progress in another. A case in point is the armadillo. Absurd as it may seem to believe that the armadillo could have any practical relevance, it has become clear that the lowly armadillo holds the key to the possible eradication of leprosy . . . For those who demand relevance closer to home, it may be added that cancer researchers believe that leprosy patients will provide insights into the failure of cancer patients to reject their tumors.

1. Integrated model for cancer research. Storrs believed that this widespread interest opened the door to a study of cancer in armadillos. She submitted a proposal for a $30,000 pilot study on transplantation of human tumors into them, and induction of tumors with human carcinogens. It seemed certain to yield useful information, but PHS did not bother to reply. This rudeness could have resulted from the dispute over priority that had erupted between Storrs and the PHS hospital in Carville.

The immunologically naïve armadillo could have played an important role in cancer research. At the time this proposal was submitted, the advantages of the nude (ethylic) mouse as a recipient of human cancer transplants was just being realized. The SID mouse had not been developed. The armadillo offered advantages over both. These are summarized below.

•Both cancer and leprosy result from the failure of the immune systems of susceptible individuals to reject foreign tissues. The armadillo is the only morphologically intact animal species that will develop disseminated human leprosy. Leprosy in wild armadillos is 100 times more severe than in humans as measured by bacterial counts. These animals are more susceptible to leprosy than nude mice, which

accept human tumor transplants. Leprosy in immunologically naïve armadillos is 100,000 times more severe than in humans. Their ability to reject human tumors should be greatly impaired.

•Susceptibility to both leprosy and cancer is genetically controlled. The armadillo regularly produces genetically identical quadruplets. These would be invaluable in selecting susceptible and resistant genomes for advanced studies and replicating experiments.

•The armadillo has a life span of 12 to 15 years. This would make it useful for long-term studies on ontogenesis, metastases, immunotherapy, and chemotherapy.

No other animal model possesses these characteristics. The armadillo could have provided an integrated model for the study of the cause, metastases, and treatment of a wide variety of neoplasms. It would be equivalent of having a 1000-bed hospital of cancer patients with all types of tumors and minimal restrictions on their use. Each animal could be treated as an individual patient over a period of many years. Genetic control of susceptibility could be studied.

2. <u>Resolution of the HIV-AIDS controversy</u> (17a). In 1987, the chimpanzee was the only animal used for AIDS research, and it was far from a complete model. An article in Chemical & Engineering News read as follows.

A frustrating aspect of AIDS research has been the lack of animal models available to researchers. HIV infects and causes disease only in humans who obviously cannot be used for research purposes. The virus also infects chimpanzees but it does not cause disease in the animals. Chimpanzees are expensive and difficult to work with, they are a (threatened) species, and there simply aren't enough to go around.

Then, there were about 70 chimpanzees used in AIDS research. Capt. Gallo said the shortage of chimpanzees was hampering research on a vaccine against AIDS, and called for an extensive breeding program.

In 1988, the Jane Goodal Institute, the World Wildlife Fund, and the Humane Society of United States, petitioned the US Fish and Wildlife Service to change the status of the chimpanzee from threatened to endangered. They charged the international biomedical trade with threatening the existence of wild chimpanzees.

The chair of the PHS Animal Model Committee said that the allegations were absolutely untrue. He claimed that conservation in the wild had nothing to do with biomedical research, and that making chimps endangered would endanger NIH research. In a letter to the US Fish and Wildlife Service, the NIH director warned that reclassification could "significantly compromise our current ability to make selective use of chimpanzees in research to fight human disease."

By 1987 Storrs had concluded that armadillos would be ideal models for AIDS research. They are inexpensive and easy to handle. They are not endangered. About 30 to 50 million inhabit USA. Most people regard them as pests that dig up their lawns. They arouse no more sympathy among animal lovers than possums or turtles.

Most important, they have enormous potential for studies on AIDS. They are susceptible to virus diseases such as encephalitis and foot and mouth disease. Moreover, Storrs had shown that they are highly susceptible to leprosy, a disease that has long been a classic model of diseases, which are potentiated by immune deficiencies.

The armadillo could have provided vital new information and at the same time quelled the uproar that had been caused by use of chimpanzees. However, Storrs had been banished by NIH from all discussions on animal models, so she knew that it would be futile for her to apply for a grant.

Instead, SEMA, Inc. of Rockville MD submitted an application with Storrs as a consultant and supplier of animals. The handpicked reviewers turned it down. They wanted to know why SEMA selected armadillos. Why not try woodchucks, ferrets, or a half dozen other species, they asked.

They ignored completely the fact that the armadillo had received international recognition as a model for immunological diseases because of its hyper-susceptibility to leprosy. They also knew that Storrs already had animals in her laboratory that could have been used for exploratory work.

Moreover, NIH should have tested all of these species. An animal model for AIDS was needed urgently, and no one could predict with certainty which one of many candidates could fill the role. The cost to PHS of testing 30 armadillos would have been $27,000 or less than the cost of two chimpanzees.

The refusal of PHS to risk this small investment is absurd, considering the impact of AIDS on world health, and the uproar caused by their use of chimpanzees. Why did they refuse? The fact that Storrs' name was on the proposal is the only logical explanation. They sacrificed a realistic opportunity to prevent AIDS in order to continue their vendetta against a female scientist.

A simple experiment could have been performed with the armadillo that would have answered once and for all whether or not HIV causes AIDS. Wild armadillos yield two billion leprosy bacilli per gram of tissue 18 months after inoculation. Under the same conditions, immunologically naïve armadillos yield 400 billion bacilli per gram.

Wild armadillos could have been inoculated with HIV and, after a suitable interval, with leprosy bacilli. If HIV multiplied, and yields of leprosy bacilli remained the same, HIV could not cause immunodeficiency (AIDS) in armadillos. If HIV multiplied and bacterial yields increased to 100 to 400 billion bacilli per gram, HIV would be the cause of AIDS. In this latter case, scientists would have a limitless supply of HIV for the preparation of vaccines, and an animal model in which to test them. If HIV failed to multiply in armadillos or immunodefficient armadillo cells, its low metabolic vigor would make it suspect as a pathogen.

Regardless of the answer, this would have been a classic experiment in medical microbiology. PHS refused to risk $27,000 to get an answer to this multi-billion dollar question. Seventeen years later, the controversy over whether HIV causes AIDS

still rages. Officers of PHS risked the health of multitudes to deny a female scientist of recognition for her work. Congress has approved their decision. "Those whom the gods seek to destroy they first make mad."

V. COLLAPSE OF MORAL VALUES-- Poisoning the Milk of Human Kindness

A. Contrasts in Moral Character

1. **Robert Charles Gallo**
2. **Eleanor Emerett Storrs**
3. **Waldemar Franz Kirchheimer**
4. **Right to a hearing.**

This Section begins with descriptions of the moral characters of three of the people who are featured in this analysis. According to his biographer and a book by John Crewdson, Captain Robert Gallo was not fit for government service, let alone being in charge of AIDS research. He is painted as crude, bellicose, untruthful, and a megalomaniac. Other sources confirm this analysis. Eleanor Storrs was brought up in the same part of the country as Gallo and attended the same high school. Nevertheless, she is courteous, honest, and devoted to good science. Capt. Waldemar Kirchheimer, a refugee from Nazi Germany, faked his personnel records to obtain a research job with the US government with the full knowledge of PHS. He may have been a threat to national security.

Several other examples of character defects in officers of the PHS Commissioned Corps are worthy of passing mention. Capt. Carleton Gajusek visited GSRI in 1968 to initiate a program on kuru disease in primates. We were shocked to learn that he was in the habit of importing young boys from Pacific islands to live with him at his home in Maryland. This was common knowledge at NIH but nothing was done to curb him. In the 1990s he was arrested for pederasty and sentenced to prison. At his trial, it came out that he had imported 56 Melanesian boys over a period of 30 years. Most of them were the sons of female cannibals who he was treating for kuru disease.

In 1966, I was ordered to report to the office of Captain SM Simmons of CDC who had just been given command of our program on the toxicology of DDT (Section III) at our new PHS laboratory in Florida. When I entered his office he was sitting on top of his desk with his long skinny legs crossed like an old and balding Buddha. Given his infirmities, it must have taken him at least 10 minutes to assume this awkward posture. He was showing me in ludicrous terms who was boss. He gave me orders that destroyed the mission of our laboratory. His ridiculous antics on top of his desk destroyed my respect for the Commissioned Corps. He looked like a bit player in a comic opera.

1. <u>Robert Charles Gallo</u> was born in Waterbury Connecticut. His family became dysfunctional during his boyhood because of grief over the death of a younger sister from leukemia. According to his biographer (46), "Gallo grew into a guaglione, a street-corner wise guy ready to challenge or shout down anyone who dared to get close to him. The streetwise bullying carried over into his adulthood."

During his senior year in high school, an injury forced him off the basketball team. This injury and the death of his sister from leukemia caused him to think of a career in medicine. He obtained a BS degree in biology from Providence College and an M.D. degree from Jefferson Medical School in Philadelphia. He never earned a research degree.

Despite his social and professional shortcomings, he became Chief of the Tumor Cell Biology Branch of National Cancer Institute where he had vast sums of money at his disposal. He won international notoriety by stealing the landmark discovery of the AIDS virus from a French scientist. Despite reams of incriminating evidence, PHS defended him fanatically. When his position at NIH became untenable, he was eased into a $300,000 per year job in nearby Baltimore, where he has accomplished nothing of value.

Meanwhile, the discovery he misappropriated developed serious flaws. PHS deprives scientists who point them out of research funds. The government is goose stepping to the tune of a cheating pied piper in its search for a cure for AIDS.

2. <u>Eleanor Emerett Storrs</u> was born in Cheshire Connecticut. Like Gallo, she attended high school in Waterbury, where she played the flute in the marching band with the spirit of a Yankee Doodle Dandy. After graduation, she enrolled in the University of Connecticut at Storrs. She earned a BS degree with distinction, and later a Distinguished Alumni Award. She was also a three-letter athlete who played guard on the varsity basketball team. She worked summers at Connecticut Agricultural Experimental Station while at UConn, and full time at Boyce Thompson Institute (now at Cornell University) and Clayton Foundation Biochemical Institute while pursuing her graduate studies.

She earned her MS degree in cell biology from New York University, and her Ph.D. in biochemistry from University of Texas. Her doctoral research on the biochemical individuality of armadillo quadruplets (47) drew national attention in magazines ranging from Time to the Proceedings of the National Academy of Sciences. It became the basis for her landmark discoveries on leprosy.

Like Gallo, she had a French connection, but it was honorable. While working in a fledgling laboratory in French Louisiana, she made a landmark discovery that could have helped leprosy victims as much as did the deeds of Blessed Mother Teresa, the Angel of Mercy of Calcutta. Then she discovered leprosy in wild armadillos. The Angels of Death beat her into a pulp in the news media to cover-up the fact that PHS had caused it. They reduced her to a professional cripple who had to spend the remainder of her career at menial labor on a program that was doomed to failure.

She labored diligently to produce bacilli from resistant animals. It took a week in Florida to get as many bacilli as she had obtained in an hour in Louisiana. Nevertheless, her toil, sweat, and tears produced enough bacilli to show that a vaccine was possible. She eked out enough bacilli from her stingy animals to enable male scientists in the great research centers of the world to do the work that she was superbly qualified to do (48). Not a cent came to New Iberia whose citizens had given their time and money to get GSRI started.

3. Waldemar Franz Kirchheimer, the officer who did most to destroy her program, has a mysterious background that merits a full FBI investigation because of outrageous inconsistencies in dates in his biographical records. He was born in 1913 in Schneidemuhl, Germany, (now Pila Poland). He was Jewish. According to his PHS-generated obituaries (49,50), he was a long distance runner on a German Olympic team and received an MD degree from the University of Giessen in 1937.

PHS claimed that he fought against Generalissimo Francisco Franco in the Spanish Civil War to protest Reichsführer Adolph Hitler's dictatorship in Germany. If true, he deserted from the Spanish Republican Army shortly after enlisting. According to an obituary by Capt. Robert Hastings (49), he graduated in Germany in 1937, fought in Spain, and sailed to United States in 1937 or 1938 from a Spanish port as a stowaway on a freighter that he boarded without knowing where it was going.

He landed in Seattle Washington penniless in 1938. No mention is made of how he got by immigration officials. There is no record of his employment in USA until 1946, when he became a research physician at the Kings County hospital in Seattle. Where was he and what did he do during this eight-year gap?

The PHS obituaries are public relations fantasies that have no relation to historical facts. The blurb in the Carville STAR (50) states, "He was a long-distance runner and a member of their (Germany's) Olympic team." This is highly improbable because of his Jewish background. The Olympic games of 1936 were held in Berlin. Hitler used them as a showcase for demonstrating the superiority of Aryans, but needed a token Jew to camouflage his anti-Semitism.

He selected Helene Meyer, who was living in United States, because she was tall, Nordic looking, and had an international reputation as a fencer. She was a Jewish Brunhilde wielding a dazzling sword who even the Nazis had to respect. She was also the only Jew on the German team. Helene gave the Nazi salute after she received her silver medal, and then went back to America.

Kirchheimer was smallish, about 5' 6" and narrow chested. It is hard to imagine him in the same stadium with the Afro-American sprinter Jesse Owens. If he were the best that the Third Reich had to offer, the vaunted image of the Nazi Superman would have gone down the drain, and World War II might never have been fought. His chances of making the German Olympic team in Berlin were no better than those of a straw man in hell. We can find no evidence that he took part in the Olympic games of 1932 at Los Angeles. Yet, PHS still boasts of his athletic prowess.

His medical credentials are just as doubtful. Kirchheimer would have had to enter medical school in 1933 to get an MD in 1937. Most Jews were expelled from German universities within two years after Hitler came to power. All Jews were stripped of German citizenship by the Nuremberg Laws of August1935. During the horrendous Kristallnacht (Night of Broken Glass) of 1938, Nazi hoards throughout the Reich smashed the windows of Jewish shops.

In late 1938, a headline in the principal Nazi student newspaper proclaimed, "The goal is achieved! No more Jews at German Universities." The rector of the University of Giessen went so far as to invent ethnic (Jewish) features in order to

weed out Jews. He described an applicant's appearance as "not particularly Jewish, although the eyes show some Jewish features. In regards to his racial soul, he did not give the impression of a Jew, although I had only a short time to observe him." The chances that Kirchheimer could have deceived this bigot are vanishingly small considering his irascible personality.

In all probability he was not awarded an MD degree by Giessen in 1937. His biographies confirm this conclusion.

The statements made by PHS and Kirchheimer are contradictory. Two of his autobiographies (31,51) state that he receive his MD degree from University of Giessen (Germany) in 1947, ten years after the date claimed by PHS. Since his date was contained in two biographies that were formatted differently, it is unlikely that it was a misprint.

Germany and USA were at war from 1941 to 1945. The University of Giessen was utterly destroyed by bombing during the war and was closed in 1946. The medical school did not reopen until 1950. Obviously, Kirchheimer could not have earned his MD degree at Giessen in 1947 as he claimed.

We may never know all of the facts because Giessen, and presumably all of its records, were "totally destroyed" by allied bombing during World War II. It was the only German university to suffer this fate. Perhaps this is why Kirchheimer selected it as his alma mater when he sat down at his desk in the Carville leprosarium three decades later to weave this strange tale.

However, we do not need additional evidence to show that it was fabricated. According to Kirchheimer's CVs, he received his MD degree from University of Giessen (Germany) in 1947 and his PhD degree from the University of Washington in Seattle in 1949. This Baron Munchausen of medicine would have had to wear seven-league boots in order to become a research physician in Seattle in 1946, earn an M.D. degree in Germany in 1947, and fulfill the requirements for a PhD at University of Washington in 1949. He was spared this exhausting quest for knowledge because the Giessen medical school was shut down from 1946 to 1950 in the aftermath of war.

He posed as a physician without having a medical degree. He was a fraud from sole to crown. We may never know for certain who and what he really was.

Examination of other government archives may be the only way to shed further light on this mystery. Before employment by PHS, he did a five-year stint with US Army Research Laboratory at Fort Dietrich Maryland. The Angels of Death who worked there developed biological warfare (BW) agents that caused anthrax, botulism, tularemia, brucellosis, Venezuelan equine encephalitis, and Q fever (52). They tested the infectivity of these agents inside a gigantic sphere, called the eight ball, in which animals of many species were tethered.

It was a top-secret operation. Anyone who worked there would have to have security clearance. Kirchheimer's record must have been scrutinized carefully because of his foreign birth and position as Deputy Director of Safety. Perhaps some of

the mysteries in his background can be cleared up by examining the Fort Dietrich archives.

In 1961, he moved to NIH. He was appointed to the PHS Commissioned Corps at the age of 48. Corps regulations stipulate that new appointees must be US citizens under the age of 45. Thus, the Corps must have waived this long-standing regulation in order to accommodate him.

He transferred to Carville in 1962, where he began his late-blooming career in leprosy research. In 1965, he was promoted to the rank of Captain (Medical Director). He was not qualified for this position. In the first place he was over 44 years old when first appointed to the PHS Commissioned Corps. Secondly, his claim to having received a MD degree from Giessen in 1947 was obviously false. The assertion by PHS that he received an MD degree in 1937 seems equally impossible.

This evidence suggests that Kirchheimer was the agent of a foreign power who was planted in PHS with the aid of insiders to carry out subversive activities. He may have also been planted at Fort Dietrich for the same purpose. At the very least, he was sponsored by a pro-Jewish clique that furthered the careers of refugees from Nazi Germany. This group could also have been engaged in undermining health research programs that could benefit Muslim nations. This is a subtle form of biological warfare that CIA should investigate. These statements are bound to be controversial. Thus his biographies are lumped together in Section X. A. so readers can reach their own conclusions.

His research career was undistinguished until 1971 when, at the age of 58, this grizzled veteran with no great victories behind him, seized credit for Storrs' discovery. Within a year, DHEW created a new position for him as Chief of the Laboratory Research Branch at Carville, and gave him a Superior Service Award. According to his CV (31 he received this award in May of 1972. According to Admiral Merlin K. DuVal he received it in August of 1971 (30). During this trip to accept it, he attended a news briefing at Rockville MD during which he claimed credit for Storrs' discovery. DuVal and other PHS executives supported him to the hilt.

In 1975, GSRI researchers reported the discovery of leprosy in wild armadillos (5). It appears now that Carville caused this epidemic. However, Kirchheimer immediately (1976-1979) blamed it on GSRI in a campaign of vituperation the like of which had never been seen before. Storrs was dismissed from leprosy research in 1976.

In 1977, DHEW honored Kirchheimer with a Distinguished Service Award (51). Until contradictory evidence is available, all the world must assume that Kirchheimer was given this award for protecting PHS, and bringing about the downfall of Storrs.
Thus, the US government is guilty of disgracing a daughter of American Patriots with the help of a foreign adventurer in order to cover up its blunders.

In 1978,PHS turned down all proposals for leprosy research submitted by GSRI (16). The Institute donated the infected animals and equipment to the Armed forces Institute of Pathology. A program that had earned worldwide praise in 1971 was stamped out completely.

Kirchheimer was also appointed to the influential US Leprosy Panel. When Storrs was nominated for membership in that group, she was rejected by Rear Admiral Richard M. Krause, Director of NIAID, even though he knew at the time that she was the only person in the world who could produce useable armadillo tissues and had been nominated by her NIAID project officer (Dr. Darryl Gwinn) for that reason.

Kirchheimer must have had the backing of Angels of Death in high positions, because he made no positive contributions to armadillo-leprosy research. His publications in this field were polluted with fabrications and falsifications (26). These were so numerous and contradictory that they suggest he was a compulsive liar.

PHS executives and public relations men helped this elderly psychopath to destroy the mission of an Angel of Mercy. The most telling evidence that they were involved is that they featured Kirchheimer as the principal architect of the armadillo discovery in his obituaries (49,50) and a history of the Hansen's disease Center (53). However, his autobiography in WHO's Who does not mention the armadillo at all (31!

Clearly, he coveted Storrs' discovery, but was afraid to take the ultimate step of claiming it in his official Curriculum vita! Would James Watson have submitted a biography to Who's Who in which he forgot to mention the double helix? Would Harry Truman forget to mention that he became President? Kirchheimer's CV is signed evidence that he played no significant role in development of the armadillo concept.

Kirchheimer's abnormal behavior extended far beyond his publications. He had an uncontrolled temper and was verbally abusive to our staff. In late 1971, we complained about this to Dr. Paul Brand of PHS who had been designated to mediate disputes between Carville and GSRI. Brand told us that Kirchheimer had been persecuted by the Nazi regime and that his tirades were a reaction to this stress. We had to give him special consideration because of his persecution by gentiles, Brand said.

This was absurd. He fled Germany before the outbreak of World War II. Thus, he had escaped the air raids and concentration camps endured by other Germans. We were not responsible for the Nazi atrocities and had often denounced them. We could sympathize with his hardships, but they did not give him the right to abuse American citizens. Besides, the war had been over for 26 years.

Kirchheimer's psychopathic lying, the megalomania of Capt. Gallo, the grotesque pederasty of Capt. Gajdusek, and the unholy defense of these cutthroats by the PHS High Command give an unsavory image of the moral and professional standards of the PHS Commissioned Corps. It would be folly for the American people to leave their fate in the hands of medical assassins.

4. Right to a hearing. Storrs is a daughter of American patriots who braved the perils of the Atlantic on the Mayflower, fought at Bunker Hill, and founded a great university at Storrs Connecticut (UConn). Her uncle was killed and her father wounded on battlefields in France. Her personal achievements are a credit to America. She has been a basketball star, Mardi Gras Queen, lecturer, musical performer,

vestrywoman, finalist in a statewide cooking contest, supportive wife, and a devoted mother. Above all, she is a loyal citizen with a high sense of duty to God and her country.

Her research has been featured in National Geographic, Smithsonian, and National Wildlife magazines, and has been broadcast internationally in TV documentaries. She has traveled to the far reaches of the world and the beginning of history in pursuit of her work on wildlife and diseases. Her discoveries have had a more profound effect on medical science than those of any other American woman. Yet, Drs. Frist and Weldon, on behalf of the US Congress, refused to grant her a hearing.

Storrs has a God-given right to a hearing based on the deeds done by her family for America, her personal achievements, and the importance of her testimony to resurrection of her humanitarian discovery. Refusal of Congress to review her case was an insult to humanity and American womanhood. Frist and Weldon must be mortally afraid of letting the public know who her enemy is.

As Shakespeare and others would have put it, "Something is rotten in the state of Denmark." It smells like a dead mackerel, stinking and shining in the moonlight. Its blurred shape is human but it has no soul. For their own safety, the American people should demand to know who it is, so they can drag it into the daylight and drive a stake through its heart.

B. Triumphs and Tribulations of an Angel of Mercy

Thanks to the armadillo, human knowledge of leprosy expanded more rapidly during the 20th century than that of any other bacterial disease. In 1900, the presumptive cause of leprosy was known only as an acid-fast rod-shaped bacterium that would not grow in artificial culture media or experimental animals. Its dormancy was the microbiologist's enigma.

By the year 2000, the mystery had been solved. Mapping of the genome with armadillo-derived bacilli showed that the nucleus had lost huge chunks of chromosomal material during the course of evolution, and much of the remainder was composed of "junk" DNA (54). M. leprae could not grow outside the cells of living organisms because it lacked the enzymes and cofactors needed for cell division and growth. This crippler of humankind is itself a microbiological basket case.

Moreover, slight differences in the composition of DNA from patients all over the world gave valuable clues to the origin of leprosy (55). The disease probably originated in East Africa or Central Asia. It may have been carried into West Africa by slave traders. The DNA found in bacteria isolated from armadillos and humans in USA is identical, adding a strong steel bolt to our contention that patients at Carville infected wild animals.

Concurrently, the composition and structures of the cell walls and cytoplasm were determined. Metabolic pathways were charted. Immune responses were measured. Once-scarce biological reagents became plentiful and new ones were discovered. A vaccine became possible.

Once thought to be a disease confined to humans, leprosy was found to infect large numbers of wild armadillos. The availability of armadillo bacilli made it possible to infect primates. New windows for studies on the epidemiology, pathogenesis, and transmission of disease were opened.

A century of progress was compressed into a few years. All of this marvelous work was made possible by a beleaguered woman in a small laboratory in Evangeline country who was fighting an army of ruthless men for her home and professional survival.

When Watson and Crick discovered that DNA was a double helix their struggles were over. They could rest on their laurels. There was no shortage of DNA or double helices. All researchers had them in abundance. They could find them in their children, their dogs, their orchids, and even in viruses causing their colds. All living creatures had them.

This was not the case with Storrs' discovery. She was the only significant source of leprosy bacilli in the world. Scientists from a dozen countries clamored for them. According to the unwritten laws of science, she had to supply them to the best of her ability. However, her small laboratory could not meet the demands.

Dr. Laszlo Kato of University of Montréal called upon PHS to fund an armadillo tissue bank so that she could supply them in abundance (56). He wrote --

> ***The cultivation (of the leprosy bacillus) however, will not be achieved without an armadillo-leproma bank. Who else could do it better than the team of Dr. Stoors (sic) who has the greatest knowledge in this field . . .. If such an armadillo bank cannot be achieved, then we had better raise some funds to provide 15 million leprosy sufferers with "Horn, Clapper or Bell" as in the Middle Ages to signal their miserable presence and to solicit alms.***

Dr. J. Languillon of Dakar, Senegal, seconded his plea (57)-

> ***The most admirable work of Dr. Storrs resulted in the successful transmission of the disease in the armadillo permitting an unlimited supply of lepromata . . .. Establishing the urgently needed armadillo leproma bank is the best possible investment in leprosy research since the discovery of the leprosy bacillus one hundred years ago.***

PHS refused to help. Therefore, Storrs and I made our problems clear to the scientific world by stating in a note to Leprosy Scientific Memoranda (58) that the projects to which we were supplying armadillo tissues and bacilli:

> ***Involve 57 senior investigators working at 39 research institutions located in 12 countries of the world and 10 States of United States . . .. This program developed spontaneously without planned growth and has become too unwieldy for (us) to handle effectively. Consequently, we must reserve our remaining resources for a few key programs that we believe will produce the most valuable information. . . We feel that we***

have, in effect, operated a World Leproma Bank, and perhaps more than this, during the past two years. However, it was too small to service all of its customers and, unfortunately, is now in the process of closing its doors because of lack of financial support.

The US Leprosy Panel of NIAAD responded to these pleas by awarding a contract to produce leprosy bacilli to Carville. Storrs was overcome by grief and anger by this decision. She gave vent to her anguished outrage in a letter to Dr. Charles C. Shepard, Chairman of the Panel-

I was very stunned to learn that it has been decided, on the basis of technical proficiency that we will not be awarded a contract for supply of armadillo leproma material to NIH. It is inconceivable to me, that the group who originated the work, has done 99% of all work on leprosy in the armadillo, is the only laboratory in the world with experience in handling large colonies of armadillos, and is without doubt the fountainhead of all knowledge on armadillo husbandry, can be told that they are technically less qualified for a program of this sort which calls for maintenance, production, and supply of leproma material in the armadillo, than another laboratory.

We had been working for years towards stabilizing our armadillo leprosy program through such a contract as past correspondence with Mr. George Yee, and others will attest, and were not even awarded the courtesy of a site visit by the U.S.-Japan panel to view our facilities and programs.

Shepard did not reply. Carville could not produce bacilli and Shepard knew it. He deliberately killed the vaccine program, the future of leprosy research, Storrs' career, and GSRI in cold blood in order to demolish a female rival who threatened to outshine him. He poisoned the milk of human kindness.

Six months later we announced the discovery of leprosy in wild armadillos (5). The avalanche of accusations by Carville and CDC that this caused buried us. GSRI officials became convinced that Storrs and I were wasting their time and money by fighting this losing battle. They believed that we had poisoned relations with the Institute's most powerful sponsor (PHS) because of the battle over credit for the discovery of the armadillo model.

At the instigation of Gerald P. Walsh, a GSRI microbiologist, GSRI management in Baton Rouge appointed an advisory committee consisting of Quentin Myrvik of Bowman Gray School of Medicine, Vernon Knight of University of Texas, and Wayne Meyers of AFIP). The committee recommended replacement of Storrs with Dr. Walsh, and me with Mr. Ralph J. Wheeler, an analytical chemist and my technical assistant who I had brought with me from Southwest Research Institute.

This drastic upheaval did not placate PHS. All requests for PHS financial support were denied, and vitriolic attacks on GSRI in the news media mounted. Finally, Drs. Chapman Binford and Wayne Meyers of AFIP arranged to fly the remnants of the program to their lab in Washington DC, where it would be supported by WHO. These

actions gave Dr. Walsh a prize that he had long coveted and that he and Dr. Meyers had worked to obtain.

An article in the January 18, 1979 issue of the Daily Iberian read--

Gulf South Research Institute's research on leprosy in armadillos has been discontinued because the institute lost its grant and the program ended up costing the institute a considerable amount of money, according to Ralph Wheeler, a GSRI official.

The program was ended in the beginning of December, and shortly afterward, the diseased animals, the specialized equipment, and the director of the program, Gerald Walsh, were shipped to Washington. "An Air Force cargo plane transported them with our blessings," said Wheeler.

C. Death of Her Brainchild

Sometime between the kidnapping of Storrs' brainchild in New Iberia and its airlift to Washington, its vast capacity for producing bacilli had vanished from the earth. PHS has refused to consider Storrs' scientific explanation for this loss. There are other possibilities. Theologians might argue that it was caused by a divine thunderclap in punishment for the desecration of a gift from heaven that was brought to earth by an Angel of Mercy. Whatever the cause, the damage done to her brainchild was fatal. God may forgive the people who kidnapped this child, but we will never forgive those who murdered it.

In 1982, WHO compared the productivity of the four laboratories supplying leprosy bacilli (18). Productivity had plummeted disastrously across the board, but that of Walsh and Meyers had hit the gates of hell. Their yields fell1000-fold below those that Storrs had achieved in New Iberia. This humiliation forced AFIP to withdraw from the WHO program.

This failure did not diminish the influence of Meyers or Walsh. In 1984, two years after yields of bacilli had plunged to the pits of hell, Pope John Paul II granted an audience to leprosy researchers from United States, India, Brazil, Belgium, Norway and Venezuela in Vatican City (59,60) to bring the Holy See up to date on the testing of the vaccine. The WHO delegation was headed by Dr. Hubert Sansarricq, head of WHO leprosy research. Myers and Walsh were there as guests of the Papal Academy of Sciences (61).

Dr. Carlos Chagas, president of the Papal Academy, summarized the views of the delegates for the Pope (59). He told His Holiness that the vaccine had been administered to volunteers in Venezuela by Dr. Jacinto Convit of the National Dermatological Institute.

He described the vaccine as having "the potential to eliminate leprosy as a health problem for future generations." He said that similar tests were planned in other countries, including Brazil and India. Sansarricq described safety studies on human subjects in Norway, United States and Great Britain.

Storrs did not hear about this audience until she read about it in the New Orleans Times-Picayune (60).

Her exclusion from this Pontifical Audience was the most disastrous act of discrimination in the history of mankind. Storrs had supplied the armadillo concept and all of the bacilli used for research on the vaccine. All of the WHO delegates knew her personally. Nevertheless, WHO did not mention her contributions to His Holiness. This slight was, by itself, a minor vexation.

Sansarricq, Meyers, Walsh, and other delegates committed a mortal sin by not acknowledging that the program faced utter disaster because of the plunge in armadillo productivity and that only she could save it. They deceived the Papal Academy and Holy Father by claiming that the vaccine was on the brink of success. They would not admit to the Pontiff that they needed help from a woman to complete this holy mission.

They did not mention her name because of fear of PHS, jealousy, or both. They decided that keeping her in servitude and out of the public eye was more important than the success of the vaccine. Their sin was worse than a crime against humanity. They had deceived God's Vicar on Earth.

The results of these tests became known eight years later. The vaccine was an utter failure (18,19). Convit had vaccinated 29,000 people with concoctions that were no more potent than water from the Orinoco River. He was not a member of the inner circle who knew that armadillo productivity had collapsed beyond the point of no return, so was taken completely by surprise. He wrote (62)--

> ***We cannot deny the feeling of enormous frustration associated with the efforts and support of so many individuals at the Institute of Biomedicine, Venezuelan medical and paramedical research personnel, and the general population interested in a trial that we believe has not permitted a fully adequate evaluation of the (anti-leprosy) vaccine.***

In the early 1990s, at the insistence of Convit, WHO convened a committee to determine causes for the poor quality of the vaccine. Storrs was not invited to participate. Her exclusion from the research field that she had created was complete. After months of sterile discussion and laboratory tests, the committee concluded that the vaccine either was bad to begin with or had deteriorated in storage (18). The quality of the tissues used to make it was not considered. The vast yields that Storrs had obtained in New Iberia were not mentioned in the committee report. Discussion of them had become taboo.

D. Cover-up of the Murder

Storrs and I attempted in vain to inform the scientific community of this disaster by writing a letter on the decline to International Journal of Leprosy (63). The Editor did not acknowledge its receipt.

Next, I published an open letter on Internet to Dr. Mark Frankel of American Association for the Advancement of Science (AAAS) describing this affair (64). Frankel heads the Association's program on scientific freedom, responsibility, and law. He did not answer in a meaningful way. Sigma Xi claimed that its staff did not possess the scientific expertise to evaluate the problem (65).

Dr. Caroline Whitbeck of Online Ethics Center at Case Western Reserve University answered my request to publish a letter and supporting evidence on her website as follows --

- ***The problem is complicated because the events are long passed. The dispute is one (of many, unfortunately) that involves a credit claim among former colleagues. Perhaps because so many collaborative relationships "go bad" and raise serious questions of credit—government-funding agencies no longer consider charges of plagiarism or other credit misappropriation lodged by one investigator against another former collaborator about the research that was the subject of their joint collaboration and was funded by that agency.***

- ***Your case is complicated by a dispute about the science, namely whether leprosy existed in armadillos in the wild, a scientific question that was decided against you by some parties. We are in no position to advise you on the scientific dispute.***

- ***You said, "We would like information on how best to present our case in your newly established letters section. Tentatively, we would refine the summary contained in this letter and add publications, supporting documents, and correspondence as attachments."***

- ***Unfortunately, we decided several weeks ago to eliminate that section, because, as you can see, we have not had any contributions to it in the seven months it has been open, despite the large volume of correspondence of other sorts that we receive. In any case, what you describe goes well beyond a "letter".***

There is no doubt that PHS spoon-fed Whitbeck this gobbledygook. Her evasive words show that she and other self-styled defenders of truth and honor in science are committed to concealing the cruelest crimes ever committed in the history of medicine. She barred open discussion of a well-documented scientific disaster in order to protect scientific malefactors of great power. Her refusal to let me summarize the facts was a betrayal of the American people, victims of disease, a pioneering woman scientist, and the eternal truths on which science is based.

PHS has hammered a tight lid on this rotting barrel of inequity. Even so, driblets of information are oozing out through the seams. In 1998, after Meyers had soared to the presidency of International Leprosy Association, he published a bowdlerized account of the armadillo debacle (66) that stated--

In 1971, with the development of experimental lepromatous leprosy in the nine-banded armadillo, for the first time there was an animal model for studying the lepromatous form of leprosy in humans and one that was reproducible in laboratories around the world. Tissue of these animals abounded with leprosy bacilli with as many as 10^{13} (sic) bacteria per animal. It was most unfortunate that deep-seated controversy surrounded research on this animal model and, as a result, the armadillo was soon largely relegated to an "industrial" role- namely, the manufacture of large numbers of leprosy bacilli for in vitro biochemical, immunologic, chemotherapeutic, and eventually molecular biologic studies.

Meyers said nothing about the nature of the controversy. He also did not mention the most important part of the story- the decline in yields and failure of the vaccine. His figure of 10^{13} bacilli per animal was pulled out of a hat. He knew first hand that the supply of bacilli for "industrial uses" had dried up, but was afraid to say so. He was better qualified than most to speak out. He and Binford had worked closely with Storrs at GSRI in the halcyon days when armadillos yielded 10^{14} bacilli per animal. He knew that the spleens of these animals were bags of bacilli held together by a gauzy filament of fibers.

He must have been shocked to the core when, a few years later, the yields that he and Walsh obtained at AFIP plunged to less than 10^{11} bacilli per animal. This was not their fault. They had used wild Louisiana animals that had been exposed to M. leprae antigens in their natural habitats. Therefore, I sent a letter to Meyers asking if I could add his name to a list of reviewers that I was compiling for the editor of the journal that was evaluating my paper on the causes of the decline (2).

He should have jumped at the chance of vindicating AFIP for its abysmal performance. Instead, he complimented me on the thoroughness of the paper, but refused to review it. He said that he had been too deeply involved in the controversy. Earlier, he had refused to accept papers on the origin of the armadillo controversy that Storrs and I had submitted for presentation at an ILA congress. He had been a staunch ally before the collapse of the GSRI program and resulting decline in yields, but afterwards, his courage failed him.

In retrospect, the reasons for his defection are easy to understand. He was not a free man. He was hemmed in by fellow members of the Organizing Committee of the ILA Congress (74). These were Capt. Robert Hastings of PHS, then Editor of IJL; Tom Frist, brother of future senator Bill Frist; and Felton Ross, then President of American Leprosy Missions and a devoted Carville disciple. He could not let us tell our stories at a scientific meeting without incurring the wrath of PHS henchmen. Legions of these palace guards have infiltrated all American biomedical organizations. They are pledged to suppressing discussion of the decline in yields and the unethical attacks that PHS made on Storrs and GSRI.

Meyers decided that my paper on the decline in yields was too hot for him to handle. Leaders of other influential groups also scurried for cover. Chicken Little (PHS) had convinced them that the many-splendored sky of science was about to fall down and that big pieces of it would hit them on the head unless they helped to prop it up. PHS propagandists --

•warned university scientists that exposure of PHS to charges of plagiarism and fraud would result in massive decreases in their grant and contract support;

• warned government scientists that exposure of PHS to charges of malfeasance would discredit all Federal scientists in the eyes of the public;

•deluded officers of biomedical societies into thinking that exposure of PHS to charges of fabrication and falsification would disillusion the public about the moral purity of all scientists;

•persuaded members of congress that exposure of PHS to charges of bungling major health programs would alert the voters to the fact that their elected representatives had endangered their lives and fortunes by approving huge PHS budgets;

•frightened the news casters into thinking that exposure of PHS to charges of crimes against humanity would dry up stories on sensational medical breakthroughs that would bring billions of dollars to their news companies and false hopes to millions of people.

•and convinced, charitable organizations, Churches, and missionary societies that Third World people would lose confidence in Western medicine, culture, and religion if they are told about this sickening betrayal.

Thus, PHS shocked establishment leaders into covering up its misdeeds by dwelling on the terrible damage that revelation of them would do to the reputation of medical science and their personal interests. This cover-up will tarnish the image of America because it has jeopardized the health of millions of unprivileged people. Exposing them to disease will be seen by history as a far more heinous crime than torture of prisoners at Guantanamo bay and Abu Ghraib, because many of the victims were innocent children and the torturers were heartless doctors masquerading as Angels of Mercy.

Congress has overlooked the fact that American citizens will be equally afflicted. Americans will live in shame and fear until the government looks into this case with the view of upgrading the ethical standards and quality of biomedical research. Our ultimate objectives are to--

•restore allegiance to the chivalric code of truth, honor, freedom, and courtesy[2] that permeated science before World War II, when Federal funds were scarce and most scientis[2]ts were Spartan idealists rather than profit-seeking entrepreneurs.

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[2]**A knight there was, and that a worthy man,**
That fro the tyme that he first bigan
To ridden out, he loved chivalrie,
Trouthe and honour, freedom and curteisie.
Ful worthy was he in his lordes werre,
And therto hadde he ridden, no man ferre,
As wel in Christendom as hethenesse.
And ever honoured for his worthinesse.

--Geoffrey Chaucer, Canterbury Tales

•protect this code by creating an international Court of Inquiry on Research Conduct with disciplinary powers to ensure equal justice for all people who practice this life-enhancing profession.

•create a Legion of Honor in which membership is based on character as well as accomplishments. Scientists who accept royalties from medical discoveries would be automatically disqualified.

The age of chivalry is long past and our vision of its purity of purpose may have been exaggerated during the passing of the years. However we must hold fast to the faith of its people in the Creator of all things, their respect for truth and honor, and their love of the milk of human kindness. Without these moral guideposts, law and order would degenerate into chaos. The Four Horsemen of the Apocalypse— pestilence, famine, war, and death-- would charge into the maddened crowds, riding down the poor wretches who stood in their paths.

VI. COLLATERAL DAMAGE- Spark Plug for a New Economy

When I was appointed Scientific Director of the Atchafalaya Basin Laboratories of GSRI, my first duty was to formulate research plans based on the avowed goals of the Institute, regional geographical opportunities, and capabilities of the staff. We launched successful programs in environmental sciences, agricultural chemicals, primatology, toxicology, and leprosy in armadillos.

The latter program led to the utter obliteration of our laboratory. We uncovered a biomedical tsunami, started by PHS, that spread leprosy bacilli throughout Louisiana. The closing of our laboratory to hide this catastrophe had a cascading effect that is still being felt in Louisiana today.

By 1975, we were positioned to expand into the more demanding areas of hurricane and alternative energy research. This budding program was aborted by the Federal government to cover-up the leprosy tsunami.

During the 30 years that elapsed between this nefarious deed and the arrival of Katrina, GSRI could have made spectacular progress in control of hurricane damage. The fusion of old ideas with new events that have happened since the collapse of GSRI have led me to a unified theory which explains the interrelations between the world petroleum crisis, global warming, and the terrible damage that overtook New Orleans. The chief feature is a new concept in energy production that will minimize
world petroleum crisis, global warming, and the terrible damage that overtook New [2]Orleans. The chief feature is a new concept in energy production that will minimize impact on the environment. Production of hydrogen on polar icecaps could spark a new economy.

I offer this concept to the nation and State of Louisiana as a public service. It can be used to clean up biological contamination and prevent future hurricane damage. I

ask nothing in return except that the events leading to the ruination of the armadillo program in New Iberia and the cause of the leprosy zoonosis in Louisiana armadillos are reviewed in public by expert panels to put them in historical perspective.

A. Hurricanes, Global Warming, and Peak Oil

1. **Strategic position of Louisiana.**
2. **State investment in GSRI**
3. **Portent of disaster**
4. **Hurricane cannon**
5. **Global warming and The Epsilon Epoch.**
6. **Vulnerability of New Orleans**
7. **Travels with Hurricane Betsy**
8. **Lessons from the Johnstown Flood**
9. **Sabotage of a mission**
10. **View from the World Trade Center**

1. **<u>Strategic position of Louisiana</u>. The prosperity and good will of Louisiana are uniquely essential to the economy of United States. In the unlikely event that Florida or Maine was sold to Cuba or Canada to pay off the national debt, it would not cause major economic dislocations. Americans would sorely miss their lobsters, orange juice, and vacation spots, but otherwise conduct of business in the rest of the country would go on as usual.**

Crippling of Louisiana would cause profound disruptions. Louisiana is the gateway connecting America's heartland with all the oceans and continents of the world. The port of Southern Louisiana is the largest in the nation. It is the main outlet of the Mississippi – Missouri River Basin, which extends from the Allegheny to the Rocky Mountains, a region that comprises 41% of the contiguous United States. The Intercoastal Canal connects it with Gulf and Atlantic coast ports.

Land acquired by the <u>Louisiana Purchase</u> makes up two thirds of the Mississippi Basin. It is the mainspring of American agricultural and industrial might. Louisiana is the master valve on the pipelines for distributing the produce of Middle America. Almost 30 percent of all oil and gas consumed in the United States passes through Louisiana by tanker, barge, or pipeline. Distribution of energy for most of eastern United States begins here. If this valve freezes, the entire nation will get chilblains. It is the responsibility of the Federal government to keep it functioning.

In addition to being the master switch at the crossroads of trade, Louisiana is a major food and fiber producer. It leads the lower 48 states in fisheries catches, including 40 percent of the oyster harvest. It also produces 90 percent of the nation's crawfish in fresh-water farms. Louisiana is among the top ten states in the production of sugarcane (2nd), sweet potatoes (2nd), rice (2nd) and cotton (6th). It is also a major producer of beef cattle. Louisiana is the sole source of the Tabasco sauce that makes plain food piquant around the globe.

Mineral production does not lag far behind. Louisiana ranks 2nd in natural gas and 4th in crude petroleum production. In 2001, it ranked 2nd in refining

capacity and 2nd in primary petrochemicals production. It is a major producer of pure salt and sulfur. The massive salt domes mined at Avery, Weeks and Jefferson Islands are among the geological and culinary wonders of the world.

Louisiana is not a major wheat producer. Yet, most of the wheat exported from the Breadbasket of America is shipped from the port of Southern Louisiana. Much of it is grown in states like Kansas that were once part of Louisiana Territory. Louisiana is arguably the most strategically important State in the Union considering its position as a funnel of world trade and high productivity.

However, Louisiana means much more to America and the world than the sum of its economic parts. It is a jambalaya of Mediterranean and Caribbean cultures spiced with Mardi Gras, French accents, jazz, voodoo, and gumbo. It is where the good times roll. People from the four corners of the Earth fly into Louis Armstrong airport to partake in a festival of musical, gastronomic, and architectural wonders. People go to Broadway to watch life on stage, but come to Louisiana to live it to the full.

Despite its great economic and cultural riches, Louisiana ranks 43rd in per capita income among the 50 American states. The poverty of its people reflects two centuries of exploitation and neglect. Economically, it is still a slave state. Louisiana has been treated like a pearl cast before swine by the Federal government. For example—

- **The barrier islands and wetlands of the Mississippi Delta have eroded to the point where they can no longer protect New Orleans from hurricane flood surges.**

- **The levies protecting New Orleans and other coastal regions cannot withstand the buffetings of major storms.**

- **The government has compounded these problems by refusing to investigate a leprosy epidemic that threatens the health of the people.**

Solution of these problems is essential to the health and prosperity of the State and nation. The Federal government has failed to take action to solve them. Instead, it interfered with the efforts of the State to help itself by destroying the Atchafalaya Basin laboratories of GSRI. The voters deserve an explanation of why the Federal government spends billions of dollars a month to bring the trappings of democracy to Baghdad while endangering the lives and property of millions of people at home.

2. Investment in GSRI. As stated in Section II A, the Louisiana State Legislature founded GSRI in 1964. Start-up funds were provided by the Louisiana State Science Foundation, which was established for this purpose. Iberia Parish held a bond election to raise funds to purchase a building for the Atchafalaya Basin laboratories. Additional funds were provided by the business community. This program had the full support of the Governor and, the Council for a Better Louisiana.

Their goal was to create a research dynamo with the size and scope of Stanford, Southwest, or Midwest Research Institute to take the lead in development and

protection of the natural and human resources of the state and region. This included protection against natural disasters.

The two most significant achievements of the Atchafalaya Basin Laboratories during their 20 year existence were a) establishment of the armadillo as a model for leprosy and b) discovery of leprosy in wild armadillos. These findings were beneficial to Louisiana. The Federal government deliberately destroyed the credibility of New Iberia by making false accusations about these discoveries. It also illegally deprived the Institute of research funds. These injuries, by themselves, justify legal action.

However, the damage done to Louisiana by the sabotage of the Atchafalaya Basin Laboratories was not confined to stopping armadillo research. Most of the objectives envisioned by the founders of GSRI to build a better Louisiana through science and technology were never achieved.

The chief casualties were termination of all programs on environmental sciences and oceanography. This ended research that could have provided Louisiana with better protection against hurricanes. Much of the flood damage caused by Katrina might have been prevented by the careful planning of a strong and imaginative Gulf South research Institute.

Louisiana ranks only 36th among the 50 states, District of Columbia, and Puerto Rico in terms of the amount of Federal research funds granted each year. The Federal government destroyed the State's initiative and gave little in return. The record will show that PHS deprived the citizens of Louisiana of a flourishing research institute and their personal safety in order to satisfy the ambitions of greedy public servants who falsified records. Will members of Congress and the FBI continue to violate the Constitution by suppressing this information?

3. <u>Portents of disaster.</u> The vulnerability of New Orleans to hurricanes was obvious to me and other scientists more than 50 years ago, as I will show. The damage inflicted by Katrina proves that we were right. It could have been prevented by a concerned Federal government.

I first learned about the vulnerability of Louisiana to flooding in 1951 when I was Director of Research on a plantation In Sumatra staffed by Dutchmen, close to where the giant tsunami of 2004 slammed into Banda Aceh. Dutch engineers told me that the dikes (levees) protecting the Netherlands and New Orleans were highly vulnerable to storm surges. Their warning was prophetic.

In 1953, the southwestern coast of the Netherlands was hit by a flood of biblical proportions. The Dutch levee system collapsed in hundreds of places. More than 1,800 people drowned, and another 100,000 had to evacuate.

The Dutch said "never again!" Like the symbolic Hans Brinker, the nation stuck its finger in the dike. It built a new flood control system costing $5 billion. Rebuilding it at today's prices would cost $16 billion. It was designed to protect the Netherlands from floods that occur only once every 10,000 years! By contrast, New Orleans was protected against hurricanes that occur every 50 years. Thus, protection from sea surges is 200 times better in Rotterdam than in New Orleans.

Looking at this risk in another light, the levees in New Orleans were built to withstand hurricanes no stronger than category 3. During the hurricane seasons of 2004 and 2005, five hurricanes of categories 4 and 5 hit Gulf States, anyone of which could have destroyed New Orleans. Katrina hit the target and Rita sideswiped it, aggravating the flooding caused by Katrina. It was a one-two punch that left Big Easy sagging on the ropes.

3. Hurricane cannon. Eight of the most violent (Categories 4 and 5) and damaging hurricanes in modern American history have entered the Gulf of Mexico between western Cuba and Fort Lauderdale Florida, a distance of 250 miles. They exploded on a 440-mile front of the Northern Gulf Coast between Galveston Texas and Gulf Shores AL. The distance that they traveled in the Gulf can be visualized from the fact that the distance between Key West and New Orleans is 630 miles.

Five of these storms made landfalls within 100 miles of New Orleans after being shot from the Florida hurricane cannon. Two more of them caused damage on the Louisiana coast before making landfalls in south Louisiana and Texas. Hurricane Ivan prompted evacuation of New Orleans. Additionally, two Category 4 hurricanes impacted New Orleans in 1909 and 1915 that came by a different route.

It is clear that New Orleans is the prime target of a Hurricane cannon. The storms that define its scope are as follows.

•In 1900, the murderous Galveston hurricane (Category 4) killed 8 thousand people. It passed over Western Cuba before hitting Galveston, which is 304 miles from New Orleans. It caused damage along the Louisiana coast during transit.

•In1947, an unnamed hurricane (Category 5) passed over Florida in the vicinity of Fort Lauderdale. The eye passed directly over New Orleans causing 125 mph winds. Much of the city was flooded, including the airport and parts of Jefferson Parish.

•In 1965, hurricane Betsy (Category 4) caused major damage in New Orleans. She passed over Key Largo Florida before making landfall at Grand Isle LA, which is 59 miles from New Orleans.

•In 1969, hurricane Camille Category 5) passed over Western Cuba before making landfall at Bay St. Louis MS, 40 miles from New Orleans. She grazed the city and caused major damage in Mississippi and Alabama and flooding in Virginia, resulting in 256 deaths.

•In 1992, hurricane Andrew (Category 5) did major damage in Miami before it crossed the Gulf of Mexico to make landfall within 20 miles of Morgan city LA, which is 80 miles from New Orleans. He caused 153 mph winds in New Iberia.

•In 2004,hurricane Ivan (Category 5)) crossed over Western Cuba while entering the Gulf of Mexico. He made landfall at Gulf Shores Al, 134 miles from New Orleans. More than one-third of the population of Greater New Orleans was evacuated. **About a thousand patients with special-needs were housed in the Louisiana Superdome during the storm.**

•In 2005, hurricane Katrina (Category 5) passed over Florida just north of Miami before making landfall at Buras-Triumph, 56 miles from New Orleans. She caused catastrophic damage in New Orleans.

•In 2005, hurricane Rita (Category 5) passed through Florida Straits before making landfall between Sabine Pass TX and Johnson's Bayou LA. The former is 239 miles from New Orleans. She caused flood damage in New Orleans and massive damage in southwestern Louisiana.

Many other Atlantic Basin hurricanes have impacted Florida without entering the Gulf. It is probable that many of them could have done so under different atmospheric conditions. In any event, their number and power appear to be increasing because of global warming.

Those listed below were Florida and Eastern seaboard storms that we selected because of the impact that they had on us personally. We did this to show the public that hurricanes are not rare events that will occur in one locale only once every 50 years. Betsy is included a second time because of the key role she played in this shameful tale of neglect and ruin.

•Connie and Diane (1955). These twin hurricanes made landfalls in North Carolina five days apart. They caused enormous flood damage in Connecticut that destroyed the business of my sister and her husband. Their losses changed their lives, but were infinitesimal compared to the total damage of $10 billion caused by these twin termagants. President Dwight Eisenhower declared Connecticut a disaster area.

•{Betsy (965). We drove to the eye of Betsy in a Volkswagen. This experience will be related in detail later in this document. }

•David (1979). David killed over 2000 people in Hispaniola and forced us to evacuate our barrier island home in Florida. We waited in our laboratory on the mainland for him to pass by. He landed near Savannah Georgia, and caused $320 million in damage in United States.

•Erin, 1995. Hurricane Erin made landfall in Vero Beach, 32 miles south of our home. We were forced to evacuate. After crossing the state to the Gulf of Mexico, he made a second Florida landfall at Pensacola Beach. Erin caused six deaths and $700 million in property damage.

•Floyd, 1999*. We were ordered to leave our home because of Hurricane Floyd. He caused the largest peacetime evacuation in history that involved 3* **million people from South Florida to Cape Hatteras. He made landfall in North Carolina. Floyd claimed 51 lives and cost $6 billion in property damage.**

•Charley, 2004. This Category 4 cyclone passed directly over Orlando Airport only 57 air miles away from where we live. Later in the season, we fled to this Airport twice to escape his twin sisters.

•Francis and Jeanne, 2004. These twin hurricanes (Frances and Jeanne) hit our town in Florida in the 2004 season. We were forced to evacuate to Orlando twice within a month. Only a month earlier, the eye of hurricane Charlie had passed over the place where we stayed.

•Wilma, 2005. She whirled by us offshore, damaging docks and felling trees throughout our neighborhood.

5. Global Warming and the start of The Epsilon Epoch. The above information shows that hurricanes are no longer rare events that occur once a century to Lilliputians who live on Gulliver's Island. They have been increasing in frequency, power, and destructiveness for the past decade.

The 2005 season that ended on November 30 underscores this. It produced 27 named storms, 14 hurricanes, 7 major hurricanes and 3 category 5 hurricanes (Katrina, Rita and Wilma). Tropical Storm Epsilon intensified into a hurricane after the season officially ended. It died in the sea and was reborn in the sea. Zeta was the clincher.

This violent hurricane season is bound to be followed by a sharp upsurge in the number of mid-west tornadoes, also caused by global warming.

The frequency of these events and the mounting cacophony of the storms that preceded it caused me to think of the 2005 season as the beginning of the Epsilon Epoch. This name will commemorate the greatest peacetime tragedy in the history of this nation.

It is time for the weather forecasters to stop fooling themselves and the public. The 2005 deviation from the norm is too great to be part of an annual cycle. We have entered a new phase in the weather pattern of the Atlantic Basin.

The most probable explanation for this change is global warming. Hurricanes are fueled by large expanses of warm water in the Atlantic, Caribbean, and Gulf of Mexico. When the heat is dissipated, the hurricanes cease.

It is reasonable to suppose that the heat is generated by a greenhouse effect produced by the combustion of fossil fuels to yield carbon dioxide. The costs of global warming are difficult to quantitate. Perhaps the best way of accomplishing this in the future will be by study of hurricane damage.

Our industrialized economy sowed the wind with CO_2 and reaped the whirlwind. This explanation will not be popular with politicians, the petroleum industry, and OPEC because it will rivet attention on the fact that burning petroleum is a sinful waste of a petrochemical resource, a cause of global warming, and a cause of war between nations. It will threaten their livelihoods.

What is worse, fossil fuel reserves are rapidly being depleted, and nothing is in sight to replace them. We are approaching a day when automobiles will be stranded permanently in city streets because of lack of gas to tow them to junkyards. Liquefied coal can stave off the day of reckoning but will also cause global warming.

People who live on the Gulf coast are more exposed to hurricane flooding than any other group in the nation. Residents of New Orleans are at highest risk. The Federal government has endangered their lives and property as shown below.

6. Vulnerability of New Orleans. New Orleans is the prime target on the North Gulf Coast for the Big Bertha of the hurricane world, but this is only half of the story. It is also the most vulnerable large city in America to hurricane flooding. It is situated near the mouth of the Mississippi, the Father of Waters. It is threatened by Lake Pontchartrain, the largest lake in Louisiana. About 80 percent of the land is below sea level. The ground is unconsolidated and sinking.

The City has been shorn of its natural protection by bad planning. The barrier islands and salt marshes that once shielded it from storm surges have been steadily shrinking, thanks to river diversion projects that have prevented the river from depositing silt and sand in the delta. Instead, priceless topsoil from the heartland of America has been dumped beyond the continental shelf to be lost to America forever.

The levees were constructed to protect the city against a category 3 hurricane. some studies suggest that they might fail under the stress of a slow moving category 2 storm.

Congress failed to fully fund an upgrade requested during the 1990s by the Army Corps of Engineers. Funding was cut in 2003-04 despite a study by Federal Emergency Management Agency (FEMA) warning that a hurricane in New

Orleans was one of the country's three most probable disasters. The shortsighted Scrooges of Congress refused to authorize reinforcing the levees to resist a Category 5 hurricane because it would cost more than $2 billion.

Total damages done by Katrina are estimated to range between 70 and130 billion dollars. Death toll in Louisiana is estimated at 1,100. About 3,500 people are still unaccounted for. Katrina was the costliest tropical cyclone of all time. Members of congress did little or nothing to prevent this damage.

7. Travels with hurricane Betsy. Betsy was the 1965 alarm bell that should have warmed Washington of the perils facing New Orleans. Congress and the bureaucracy thumbed their noses at this warning and the experiences of the Dutch in 1953. They put out the welcome mat for the arrival of Katrina.

We were not as complacent as the government was because we witnessed Betsy's fury firsthand and became alarmed at the damage she did as she churned her way across land and sea from Florida to Louisiana and beyond. At the time she appeared in the Caribbean we were getting ready to move from Texas to Florida to found a new laboratory for the PHS Bureau of State Services to study the effects of DDT on public health.

This research was inspired by a 1963 book by Rachel Carson entitled Silent Spring. It was our task to determine if her warnings of ecological doom were justified.

Our path crossed Betsy's several times during this trip. She damaged laboratory equipment that was essential to the success of our mission. This program turned out to be a greater disaster than Betsy, so this tumultuous trip has burned grooves in our minds. Details of the sabotage of the DDT program by an anti-Carson cabal at PHS are described in Section III.

We began our perilous game of hide and seek with Betsy In early September of 1965 when we left San Antonio Texas in a Volkswagen camper to drive to a strange rental home about 18 miles north of Key Largo Florida. We were an accompanied by our daughter Sarah, then eight months old, and our dog Blanco.

We had heard vaguely that Betsy was wandering around the Caribbean and was expected to move north to the Carolinas. We assumed that she would be hammering Cape Hatteras by the time we arrived in Florida. We did not have a car radio to check on changes in her travel plans, and in fact were not very much interested in them.

We left Texas in early September. Our first business stop was in Baton Rouge to visit Micro-Tek instruments Corp. This firm was building 40 gas chromatographs according to our specifications for use in a national PHS program to Measure DDT in human tissues. Five of them would be shipped to our laboratory in Florida. I was anxious to check on progress since I would be giving a paper on their design at a scientific meeting in Atlantic City New Jersey shortly after my arrival in Florida.

Our stop in Baton Rouge was far more important than I realized at the time. Two years later, after the PHS program on DDT turned into a technological nightmare, I would talk to the President of Micro-Tek, who was also on the Board of Directors of GSRI, about joining its staff. He was my first contact with this newly founded Institute. It was a turning point in our lives.

Late that afternoon we drove to New Orleans where we had made reservations at the Monteleone hotel. After oysters at the Acme bar, we had a late dinner at the Court of the Two Sisters, followed by a visit to Preservation Hall. We made no attempt to determine the whereabouts of Betsy, and took very little interest in her future.

I had planned to stop at the Louisiana Department of Health in the morning to discuss the gas chromatographs that I had ordered for them for analysis of

DDT. However, I learned that the Director planned on sending Lois LaGarde to Florida to take our training course, so decided to talk to her then. No one mentioned Betsy.

The night after leaving New Orleans, we slept in our Camper near Apalachicola Florida, isolated from the outside world. As we neared Miami the following day, we noticed that all of the traffic was headed north. We did not realize that we were driving into the eye of a hurricane until after we reached our rental house about 18 miles north of Jewfish creek, the channel that separates Key Largo from the mainland.

Rain poured through the roof, and it was empty of food, tap water, and dry beds. The palms around us bent with the wind as they bombarded us with coconuts that hurtled through their fronds.

We parked our bus in a sheltered spot and waited for the winds to die down. Instead, they surged to hurricane force and stayed there for 12 hours. The Camper with its water tank, ice chest, and Coleman stove became a hurricane support center. We had often read about daring reconnaissance pilots who drove their plane through the eye of a storm, but we never expected to do this in a Volkswagen accompanied by a baby and dog!

Later, we learned that Betsy had changed her mind about the Carolinas and looped south to roar over Key Largo, the nearest key to the mainland. She straddled the island right in front of us and engulfed us with her 40-mile eye. We suddenly realized who she was. We had come face to face with a Whirling Dervish who we had traveled1500 miles to meet.

She brought to mind a 1948 film called Key Largo (starring Humphrey Bogart and Lauren Bacall) in which a Florida hurricane yellowed the livers of a gang of big-city thugs. It was déjà vu. The winds bent the celluloid trees into arcs. As the hurricane raged outside a rickety motel (owned by Lionel Barrymore) gangster Johnny Rocco (a.k.a. Edward G. Robinson) clutched an impotent pistol in a gun hand frozen with fear. "If it doesn't stop, shoot it," sneered Bogie. We felt as helpless and stared as the cowering Rocco.

The next day we visited our new laboratory on the south campus of the University of Miami. Damage was moderate. The wind gusted softly and the sun was bright. However, the Celestial City of our Dreams that we had left only three days before was doomed to nightmarish shambles. After whirling out of Florida, Betsy picked up steam from the warm waters of the Gulf. She roared into Louisiana killing 74 people. She caused a storm surge in Late Pontchartrain that broke the Florida Avenue levee in New Orleans, causing severe flooding in the impoverished 9th ward and Chalmette. Many people fled to their attics where some of them drowned when water rose above the rooftops.

The 9th ward was submerged again by Katrina in August of 2005, and for a 3rd time by Rita in September of 2005. Don't try to tell the superstitious black people of the 9th ward that hurricanes only strike once.

Betsy stirred up a flurry of political action, but it was not enough. President Lyndon Johnson came to New Orleans to wring his hands over the wreckage.

He spent time patting the heads of black children in the refuge at the George Washington school. He assured Mayor Victor Schiro that the resources of the Federal government were at his disposal and that "all red tape will be cut." He scored a public relations triumph that drew attention away from the escalating war in Vietnam.

The Army Corps of engineers reinforced the levees so that they could withstand fast-moving category 3hurricanes. Forty years later, powerful Katrina huffed and puffed and blew them in. United States failed utterly to profit from the lessons learned by the Dutch in 1953 when North Sea surges broke the dikes of the Netherlands.

The war in Vietnam was costing too much to do a good job. The nation is facing the same problem today. Killing brown people in Baghdad and Kabul seems to be billions of dollars more important to the government than saving black lives in New Orleans.

After devastating New Orleans, Betsy whirled up the Mississippi to blow the roof off of the Micro-Tek Instruments Corp. building in Baton Rouge. Keith Lanneau (the president) had agreed to custom-build 40 gas chromatographs that we had designed for pesticides analysis in PHS laboratories throughout the country.

In exchange for Micro-Tek's cooperation, I had offered to recommend this product for use in industrial and academic laboratories. Betsy caused hidden water damage to the electronics of the instruments that made them malfunction. It took several months to discover this problem and correct it.

Nine days after Betsy blew over Key Largo, I boarded a plane to Atlantic City to give a talk on this instrument at a meeting of the American Chemical Society. I had not heard about the damage. By that time, Betsy had deteriorated into thunderclouds. As I spoke, her weak remnants drizzled down malevolently on the roof of the lecture hall. I am sure that listeners who bought this defective instrument blamed its malfunction on me instead of this rheumy harridan.

A year later this instrument (Micro-Tek Gas Chromatograph MT-220) played a central role in a disaster which made Betsy look like a summer afternoon's shower. Officers of PHS ordered me to inject crude extracts of human fat into this instrument in order to measure DDT. This time the damage was fatal. They killed the instrument and countless millions of people. The results were worthless. The injection ports became clogged. The separation columns were ruined. The detectors were fouled.

This was not science. It was more like throwing chunks of human fat into a bonfire to see if we could smell the DDT in the smoke. PHS officers sabotaged a national program important to world health so that they could continue unrestricted use of DDT for insect control. The horrific damage that they did is described in Section IIII.

We decided to resign from PHS in public protest as soon as we could find new jobs. I immediately called Keith Lanneau at Baton Rouge to inquire about openings at GSRI. He arranged for me to meet the president, Bruce Graham, in New Orleans to discuss terms. Bruce took me to New Iberia to show me the budding Atchafalaya Basin laboratories. I liked what I saw.

I announced my resignation at a meeting of the New York Academy of Sciences but it got no attention. Later, I learned that the establishment press does not criticize members of the PHS Commissioned Corps unless compelled to do so by the notoriety of the case. The conviction of Capt. Carleton Gajdusek of NIH in the most horrifying case of mass pederasty in American history was barely mentioned.

Outrageous violations of truth are explained away as "honest differences in scientific opinion." Theft is dismissed as a "dispute over property ownership." Whistleblowers are described as "whackos." Criminal misdeeds are hidden in clouds of euphemisms.

Six months later, we packed our daughter, dog, and worldly goods into our Volkswagen camper and headed back west, following the trail that we and Betsy had blazed two years before. Storrs got off the Volkswagen bus in New Orleans where she worked at Louisiana Department of health until our son was born.

I continued on to New Iberia to become Scientific Director of the Atchafalaya Basin Laboratories. I was pleased with this title because it connected my name with one of the great ecological problem areas of the country that was the key to Mississippi River flood control.

The future Mardi Gras Queen with her daughter and infant son joined me in New Iberia three months later. Six months after her arrival in New Orleans, she conceived her revolutionary idea that the armadillo would be an ideal model for the study of leprosy. Our problems with criminal misconduct by PHS were just beginning.

8. <u>Lessons from the Johnstown Flood</u>. I was sensitized to the horrors of Noachian floods at an early age because my mother was the daughter of a large antediluvian family in Johnstown Pennsylvania. Johnstown lies in a deep valley that serves as the meeting place of two rivers to form the Conemaugh, so is naturally susceptible to flooding. Lake Conemaugh was located 14 miles upstream from the town and contained 20 million tons of water that was impounded by South Fork dam.

Vivid tales of the breaking of this dam are among my earliest memories. I was baptized with the waters of the flood. A 40-foot wall of water and broken buildings moving at 40 miles per hour roared down the Conemaugh Valley, killing 2200 people out of a population of 30,000. Less than half an hour elapsed between the time the dam broke and the wall of terror hit the city.

My mother was left behind in her highchair when her family of nine fled for the hills. "My God we forgot the baby!" her sister Edna screamed. They turned back to save her, and barely escaped with their lives. Exactly 99 entire families were wiped out on that terrible day. The Fearl family nearly made it an even 100. If that had happened, my father would have married a girl from Pittsburgh, and I would never have been born.

Those who did not drown, were burned alive in 30 acres of wooden wreckage that piled up and caught fire behind a stone railroad bridge. The bodies of 777 unidentified victims are buried in Grandview Cemetery within shouting distance of my grandparent's graves. About 80 of them burned alive in this funeral pyre that lit the sky for three days. I can still hear their screams in my dreams.

Johnstown was flooded again in 1936 and 1977. In the flood of '36 my mother and her sister Edna were marooned in the third floor of their family home. Their sister Agnes (my Aunt Wee) rescued them in a rowboat.

The house and all its relics were torn down after the flood of '77 and the beautiful garden of my childhood covered with gravel. The '77 flood also marked the beginning of the end of Bethlehem Steel Corp. which had been the community's like blood since its founding as Cambria Iron Company in 1853. It closed its doors forever in 1992. The giant coal mines at nearby Nanty Glo also closed down.

These deluges swept away the last mementos of my family except for the lonely graves near the gate of Grandview cemetery on Mill Creek Road. "O lost, and by the wind grieved, ghost, come back again." These ordeals were previews of what may be in store for many people with roots in New Orleans.

The 1889 disaster was caused by collapse of a poorly built and sloppily maintained earthen dam that was weakened by a phenomenal storm. The dam was located at the head of a water sluice leading to the town. The people of Johnstown were the victims of greed, carelessness, and bad planning by millionaire landlords in far away Pittsburgh who took no interest in the community or the precarious environment in which it was built.

Their names and faces will be pilloried in the pages of American history forever. Andrew Carnegie and Ford Frick are prominent among them. May they live in infamy! A list of the owners of the South Fork Fishing & Hunting Club can be found on Internet for the entire world to scorn and revile.

However, they were far less guilty than the Congressmen and government officials who took no action to prevent damage by Katrina. They had made no promises to the voters. They had not been elected to office. They were private citizens who were pursuing their own pleasures and interests. The courts decided that the flood was an "act of God."

A few of them actually gave money to help the people rebuild. Andrew Carnegie paid for the Carnegie Library on Washington Street across from the Penn Traffic store. It became my study hall. It is now a Flood Museum, which much of a once vibrant city has become.

These land barons did not thwart relief efforts of others. The government of today not only refused to help Louisiana build strong levees and preserve wetlands. It frustrated the work of people who could have done it. GSRI could have played a leading role in this effort.

9. <u>Sabotage of a Mission.</u> Before I came to GSRI as Scientific Director of the Atchafalaya Basin Laboratories in New Iberia, I knew that there was a problem and had formulated plans to solve it. This was not a new task for me. I had made a business out of recognizing and solving problems. This is the duty of Institute Scientists, a title that I had earned at Southwest Research Institute in San Antonio.

Scientists from academe do basic research, those from industry seek profits, and their counterparts in government blow bubbles. Institute Scientists are hired to find out what needs to be done and find out how to do it.

When I visited New Orleans in 1967 to discuss joining GSRI, Dr. Bruce Graham, the first president, took me to the revolving lounge of the bar on top of the new World Trade Center at the foot of Canal Street to watch the city creep by. The circular lounge made one rotation every 90 minutes. We could see for almost 40 miles in every direction. The views were far more breathtaking than the clouds of cigarette smoke in the Carousel Bar at the Monteleone Hotel where I stayed.

We were Kings on top of a mountain. Not a single skyscraper higher than ours stood between us and the far horizon. The Superdome was still a dream. The French Quarter was a tiny splotch below. But I could see trouble ahead from our crow's nest on the 33rd floor. The city was not in control of its destiny.

The panorama before us chilled my bones to the marrow. The crescent of the mighty Mississippi curved close below, and in the distance loomed Lake Pontchartrain. Bruce told me that 80 percent of the city was below sea level. Dutch engineers had told me that the levees were weak. Visions of the ruins of the South Fork Dam (now a National Memorial) churned in my mind. By the time we had completed our first circle and second Sazerac, I was convinced that GSRI could help to ward off flood danger by development of a strong capability in environmental sciences and oceanography.

Bruce and others were cool to my concept, so I had to tread water for a while. After he left the Institute, I appointed Keith Price to be head of Environmental Sciences. His department flourished. I also assigned Wilma Subra to work on environmental chemistry. We later published a joint paper on the ecology of Barataria Bay on a project that was supported by National Oceanic and Atmospheric Administration (NOAA).

In 1971, I secured an appointment to the Board of Trustees of Gulf Universities Research Consortium (GURC) of Galveston TX through my long-time association with the president, Dr. James M. Sharp. This group was dedicated to developing collaborative programs in oceanography with emphasis on air—sea interactions. Our Baton Rouge branch had also conducted ecological studies on Louisiana lakes, rivers, canals, and wetlands. By 1975, GSRI was well positioned to play a major role in the ecology and oceanography of the Gulf region.

Then, PHS deliberately smashed our lab and all the good things we had planned just as it had smashed our DDT program in 1966 (Section III), 10 years earlier. Its reason for doing this had nothing whatsoever to do with New Orleans or flood control. PHS was trying to conceal a hideous blunder that Storrs and I had uncovered.

Keith Price resigned in 1976 because of the brouhaha created by PHS over leprosy in wild armadillos. His department faded away. He later became vice president of Mote Environmental Services. Wilma Subra resigned a few years later to start her own environmental sciences firm. Her name has been mentioned frequently on Internet in connection with hurricane Katrina.

It would not be feasible to discuss all of the ways by which this team could have helped save New Orleans. Two examples will suffice. Twenty years after the break-up of our program, it was found that blocks of expanded polystyrene (EPS) could be used in construction of levees to reduce subsidence. This is the porous plastic that is used to make beverage coolers. Since 1995, many lectures have been given on the use of EPS in building levees at seminars and workshops around the world, including one sponsored by the American Society of Civil Engineers in New Orleans in 2000.

Wilma Subra might have improved on the product. She was working on new uses for bagasse, the pulp left after grinding sugarcane. It comprises 30 percent of the crop. She might have added it to EPS during manufacture to lower cost and improve the stability of the levees. This idea is not as far-fetched as it may seem. After all, the ancient Egyptians added straw to mud to make bricks.

Another way by which GSRI might have helped is described in Section VI C below. These wonderful things never happened. GSRI was nipped in the bud. We cannot prove that GSRI could have saved New Orleans from hurricane Katrina. We were not given the chance to find out. The people of New Orleans were robbed of this chance.

10. <u>View from the top of the World Trade Center</u>. A Noachian flood swept over New Orleans. If I could have climbed the 33 stories to the top of the Trade Center Building a week after Katrina swirled past it, I would have seen a vastly different city than the one I beheld in 1967.

In my minds eye, the 2005 scene looked like this. The Carousel stood still. The good times had stopped rolling. The deep river and menacing Lake were still there. From the north windows of the silent lounge, I could see the causes and effects of the braking of the levees.

The once pristine view was cluttered by a bulging Superdome and a bevy of skyscrapers arising from forsaken streets. In 1967, the Trade Center was the tallest building in the city. Now, ten skyscrapers towered over it. Many others crouched beneath.

These buildings were hollow shells. Their power was gone and the workers scattered all over the land. The Superdome was packed with the homeless and hungry instead of cheering fans and bruising players. These despairing victims would find refuge in Houston and beyond. Many would never return to the city of their birth. The French Quarter was dry but desolate. The black wards were under water.

Some of the reasons for this misery were silhouetted against the sky. Rivers of money that should have flowed into strengthening levees and protecting wetlands were diverted to skyscrapers and lavish civic buildings. The Superdome Cost $163 million to build in 1975. The Convention Center was built in 1985 and expanded in 1999.

The far away war in Iraq also drained funds. These superstructures were built on a flood threatened base. It the skyscrapers were laid on their sides and stretched out, they could have formed levees.

Glassy architectural behemoths are not what French Louisiana is all about. The essence of New Orleans and Acadiana is in Café du Monde, Preservation Hall, St. Charles Street, Shadows on the Teche, crawfish, hot pepper sauce, rice paddies, sugar cane fields, Creoles, Cajuns, Voodoo, and, above all, Mardi Gras, gallantry, and joie de vivre. These priceless legacies must be protected before French Louisiana is sunk by the ponderous new monsters of the 21st century.

Until this happens, let New York have the skyscrapers, Pasadena the Rose Bowl, and United Nations the responsibility for democracy in Baghdad. Southern Louisiana should aspire to these high-tech edifices of civilization only after it has solid ground on which to build them. GSRI was founded to turn soggy into solid ground by advances in science and technology.

This firm ground was not built because a Mardi Gras Queen made a horrifying discovery that could have embarrassed PHS. PHS killed the bearer of bad news. The US Senate is too cowardly to admit that it had these Louisiana as a dumping ground for rejects from human society, and in its callousness, covered the State with leprosy bacilli.

This insidious contamination befouls all of the rural areas of the State from the coastal wetlands to the cotton fields of the north. The Federal government refuses to acknowledge responsibility.

This was only one of a dismal string of environmental insults that Washington heaped on the body of the state. Congress neglected the levees. The Corps of Engineers diverted sediment from the Mississippi delta. Protective barrier Islands and wetlands eroded away. The levees broke. New Orleans was inundated with a thick layer of miasmal muck that may have left behind a time bomb of latent bacteria.

Louisiana is an ecological disaster area that has been contaminated with bacteria and refuse from floodwaters, and deprived of natural protection from hurricanes. To top it all, the government pilloried a Louisiana institution (GSRI) that could have prevented these catastrophes. Now, the government wants Louisiana to foot the bill for cleaning up the monstrous mess that it caused.
We ask nothing in return except that the events leading to the ruination of the armadillo program in New Iberia and the cause of the leprosy zoonosis in Louisiana armadillos are reviewed in public by expert panels to put them in historical perspective.

B. New Orleans—A World Capitol Without a Country

United States has ignored the fact that Louisiana was the platform from which it catapulted to world power. Instead of being grateful, it is now treating the state like a conquered enemy. This subjugation has a long history.

The French colony of Louisiana was founded at Biloxi in 1699 by Pierre Le Moyne, Sieur d'Iberville, and named in honor of the Sun King, Louis XIV. New Orleans was founded in 1718 by Jean Baptiste Le Moyne, Sieur de Bienville, and named in honor of Phillipe, Duke of Orleans, the Regent of France.

Bienville is known to some as the Father of Louisiana, and was four times its Governor. Streets in the French quarter are named after him and his brother Iberville.

In1722, Father Francois Xavier Charlevoix, a Jesuit historian, wrote "This wild and desert place, which the weeds and trees still cover almost entirely, will be one day, and perhaps that day is not distant, an opulent city, and the metropolis of a rich and great colony." And so it came to pass.

The descendants of the early French and Spanish settlers are often called Creoles. They have developed a distinctive culture and style of living with rich contributions from the West Indies and Africa. They Share credit for this fusion with the Cajuns.

The Cajuns are descendents of French Canadians from Nova Scotia and New Brunswick who were expelled by the British in the 18th century. Their travels from Grand Pré to their new homeland in Louisiana are told in an epic poem by Henry Wadsworth Longfellow. He made the Atchafalaya and Bayou Teche come alive for me while I was still in grammar school.

It is true that his heroine and her lover, Evangeline Bellefontaine and Gabriel Lajeunesse, were not historical figures, but neither was Roland, Paladin of Charlemagne and blower of the oliphant horn at Roncesvalles. They epitomize the spirit of France.

In Louisiana, this spirit still lives. Counties are parishes. David is pronounced Dah-veed. The symbol of New Orleans is the old French royal fleur-de-lis, which is also on the helmets of the Saints football team. The town of Kaplan celebrates Bastille Day. Louisiana is the only state in the Union whose legal system is based on civil law, sometimes called the "Napoleonic code". Our children were taught French in primary school by instructors from Québec and France. Gov. Blanco, a native of New Iberia, took her oath of office in both English and French.

Louisiana's most venerated military hero is not Andrew Jackson the victor of the Battle of New Orleans, but Jean Lafitte, the gentleman buccaneer of Barataria Bay, who fought at his side. He is accounted a great romantic figure in Cajun Louisiana and is mentioned in a poem by Lord Byron. Gen. Pierre Gustave Toutant-Beauregard of New Orleans, victor at Fort Sumter, was scarcely less glamorous.

New Orleans is a world capital without a country. Two hundred years ago, United States stripped it and Louisiana of the colossal wealth of their hinterlands without compensation. The most dreadful day in their history occurred on April 30 1803, when a war-impoverished Corsican by the name of Napoleon Bonaparte sold French America to United States for a paltry $15 million.

Bonaparte signed away 820,000 square miles, thus doubling the area of the infant nation. He included St. Louis and all of the Mississippi River from its source to the Delta, which was discovered by French explorers. Their names ring in the halls of history like a roll call of the Twelve Peers of Charlemagne.

- ***Father Jacques Marquette and Louis Joliet reached the Mississippi River in 1673 and established a French presence in Central North America. Britain occupied the East and Spain the West.***
- ***René-Robert Cavelier, Sieur de la Salle was the first European to sale the entire length of the Mississippi. La Salle named the Mississippi basin Louisiana, in honor of the King, and claimed it for France.***
- ***Henri de Tonty accompanied La Salle on his exploration of the Mississippi. He later joined forces with Sieur d'Iberville and settled in Mobile Alabama.***
- ***Jean Nicollet was the first European to travel through the Great Lakes area, visiting Lake Michigan and what are now Wisconsin and Illinois, possibly reaching the Mississippi River.***
- ***Antonie Laumet de La Mothe de Cadillac was the founder of Detroit and became Governor of Louisiana.***
- ***Pierre Laclède and Auguste Chouteau founded St. Louis in 1764. They were sponsored by the New Orleans merchant Gilbert Antoine Maxent.***
- ***Pierre Esprit Radisson and Médard Chouart de Groseillier were the first European explorers to visit what is now Minnesota.***
- ***Daniel Greysolon, sieur Duluth won the Lake Superior and upper Mississippi region for France. Duluth Minnesota was named after him. His treatment of the Native Americans gained their lasting friendship.***
- ***Julien Dubuque, a French Canadian, settled Dubuque Iowa. He was given a land grant by the governor at New Orleans. At the time of his death in 1810, the Sac and Fox tribe accorded Dubuque a chief's burial and built a monument over his grave.***

There was no plebiscite to approve this purchase. The deal was financed by Barings Bank of London. The people were sold into slavery. The new Yankee owners carved up New France into 12 Anglo-American states and left the pioneering Creoles, Cajuns, and African blacks a flood-prone remnant that serves as a sewer line to the Gulf. Sewage flows through it, cargo flows out of it, and not even silt flows in.

It this infamous day could be erased from history, New Orleans would be a national capitol of stately elegance, protected by gleaning marble levees impervious to acid rain, beautified by boutiques, bridal paths, and hanging gardens that would have been wonders of the New World. They would be elevated esplanades with balustrades overlooking the Mississippi, Lake Pontchartrain, and a new Celestial City.

Café du Monde would have become as worldly as Café de la Paix in Paris. Canal street would have become a Champs Elysées and Jackson Square a Champs de Mars. The Museum of Art would have become as grand as the Louvre, and St. Louis Cathedral as sublime as Notre Dame.

These dazzling white levees, green gardens, and broad boulevards would have been built with the wealth of a prosperous New France, a Gallic domain extending from the Gulf of Mexico to Canada. Quebec would be a province of New France and northeast capitol of the commonwealth.

To the southeast would lie the rejuvenated Haiti ofToussaint d'Ouverture, the Martinique of Empress Josephine , and Guyane where Dreyfus languished on Devil's Island until freed by the passion of Zola's words. French would be the language of art, culture, and diplomacy.

American expansionism would have died on the banks of the Mississippi. The boastful doctrine of Manifest Destiny would have been drowned in its freshened waters. Mexico would be an El Dorado, enriched by the gold of California and the Southwestern states, and the oil and cattle of Texas. The Halls of Montezuma would never have been sullied and the treaty of Guadalupe Hidalgo never written.

United States would be a benevolent republic east of the Mississippi, which eschewed "foreign entanglements" and preached the Christian gospel of peace on earth and good will to men like the Pilgrim and Founding Fathers would have done. If this had happened, the nations of the Western world would live in harmony, unencumbered by desert wars. New Orleans would be the most iridescent jewel in the many colored crown of the Americas.

Expansionistic Americans of the 19th century did not take the high road to freedom and equal rights for all. To atone for their sins, Congress owes it to the people of Louisiana to clean up their polluted environment and transform the levees and lost wetlands of the Mississippi Delta into wonders of the world that all humankind would flock to see.

To pay for the enormous cost of this glorious enterprise, I give and bequeath a proposal to United States for consideration by Congress. It contains a plan that could hold in check the triple threat of hurricane damage, global warming and peak oil for many years to come.

It must be acted upon with out delay, because global warming is rapidly melting the polar glaciers on which the proposal is based. The Columbia glacier of Alaska, named after my alma mater, is already turning to slush. The time to act is now.

C. Proposal for Solar Power from Polar Icecaps

1. **Sources of clean energy**
2. **Limitations of hydrogen power**
3. **High altitude ice fields.**
4. **Global distribution**
5. **Power from ice on the moon?**
6. **Alternative polar energy sources.**
7. **Challenge to Congress and the Voters.**
8. **Link to the cosmos.**

In the early1970s, six seminal events occurred that rekindled my longstanding interest in replacing fossil fuels with hydrogen. They stimulated new ideas for research proposals that could have revitalized GSRI and the nation's energy programs. However, by this time, PHS had undermined confidence in the scientific integrity of GSRI throughout Federal granting agencies, so our efforts to obtain support for this research came to naught.

Since then, the energy crisis has worsened, so it is worth while to bring these old ideas up to date to determine if they could help to rescue America from the threats of energy shortage, global warming, and hurricane damage. The old channel markers pointing to new directions in energy research were:

•1970- Clean Air Act. This Congressional act regulating the emission of air pollutants by motor vehicles showed that the American people were fully aware of the threats posed to public health and the environment by noxious fumes of fossil fuels.

•1973- OPEC Oil Embargo. The imposition of this embargo by Arab countries in retaliation for US support of Israel caused nationwide fuel shortages. For the first time in history, Americans were forced to think in terms of energy – efficient cars and alternative fuels.

•1973- Federal Energy Office. President Nixon established this office in order to cope with problems caused by the oil embargo. It served as a focal point for submission of new ideas. It evolved into the Department of Energy (DOE).

•1971- Peak Oil. Domestic oil production in USA reached a peak in 1971, and has been declining ever since. In 1956, Dr. M. King Hubbard predicted that this would happen and was widely ridiculed. It soon became clear that the world's once abundant oil reserves would drizzle away in the early 21st century.

•1970 - Hydrogen Economy. General Motors (GM) engineers first introduced this term. They made an old concept proposed by science-fiction author Jules Verne in 1870 "respectable." The door was opened to phasing out fossil fuels.

•1972- Japanese workers obtained small yields of hydrogen by the action of sunlight on water. This pointed the way to the best of all alternatives to fossil fuels.

The Japanese achievement opened the door to solving the energy problem. GSRI was not able to take advantage of this opportunity because PHS had destroyed its reputation worldwide by making false accusations that we had caused a leprosy epidemic in wild armadillos.

GSRI no longer exists and we are no longer active in research, so cannot submit a formal proposal to do this work. Nevertheless, we do not want to see this concept wither on the vine. It means too much to us and humanity to let that happen.

Therefore, we have brought it up to date and summarized it briefly below in the hope that world opinion will force Congress to begin work on it in existing Federal facilities. If Federal agency administrators decide to boycott this proposal, as they have done with our pleas for prevention of leprosy, their action will send shock

waves of apprehension around the world. People everywhere would lose confidence in the good will of America's leaders.

However, I still have faith that far-seeing American citizens will use their power at the voting booths to support a pilot program for production of hydrogen on the high plateaus of Antarctica and Greenland that has the potential of solving the twin problems of peak oil and global warming. A feasibility study can be done with existing staff and facilities. My reasons for believing that this can be done are summarized below.

1. <u>Sources of clean energy.</u> For many years, I had believed that sunlight, geothermal energy, and gravitation, mediated by water and air, were the only environmentally acceptable alternates to fossil fuels. They are the five building blocks of clean and inexhaustible (in human terms) of non-carbon power sources. Water and wind power are derived from them. Nuclear energy is best produced on the sun.

The world needs a major program to prepare hydrogen (or a high energy derivative) from water and sunlight for use in fuel cells and combustion engines. It leaves no residue and does not use up exhaustible natural resources. It is the answer to the "peak oil" dilemma and global warming.

Cleavage of water by sunlight to yield hydrogen has been accomplished in the laboratory. The reaction is simplicity itself.

2 H_2O (water) + sunlight ----→ 2 H_2 (hydrogen) + O_2 (oxygen)

The hydrogen burns with a smokeless flame to yield water vapor, which returns to earth as rain or snow. It has enough kick to boost a man to the moon.

In 1972, Honda and Fujishima published a paper in Nature (67) describing the essential catalyst -- titanium dioxide, also known as Titania. Their

achievement was a landmark advance. It was also environmentally acceptable. Titania is a cheap, readily available mineral that is easily recycled.

Titanium is the ninth most abundant element on the surface of the earth, comprising 0.1 % of its crust. Hydrogen ranks tenth in earth's crust and first in the universe. Titania is no more toxic than sand, is whiter than driven snow, and is often used to add gleam to toothpaste and paint. A system for the production of energy that used only water, titania, and light, and produced only hydrogen and oxygen would be environmentally safe. titanium can also store large amounts of hydrogen as its hydride T_iH_2).

In 2004, researchers at the University of New South Wales (Australia) described experimental conversion panels that utilized titania photo electrodes that had good semi conducting properties and were resistant to corrosion by water (68). They predicted that hydrogen generation panels with no moving parts would be ready for commercialization in seven years.

Professors Janusz Nowotny and Chris Sorrel estimated that Installation of panels on the roofs of 1.6 million houses would produce enough electricity to satisfy Australia's needs. This would be a tremendous achievement but would not entirely replace fossil fuels.

Many regions of the world like America's Pacific Northwest are too cloudy for solar generators to work efficiently. Many applications require too much instant power. There is no way that solar panels on the fuselage of an Airbus could get it off the ground on a 1000-foot runway. Use of hydrogen-filled Zeppelins is not an acceptable alternative.

Housetop panels and suburban factories will be essential in any hydrogen – based economy. However, hydrogen will also have to be massed produced in very large factories and shipped in pressurized containers or as hydrides for use in moving vehicles and many industrial applications because of the low power of sunlight.

2. <u>Limitations of hydrogen power</u>. Sunlight shining on the earth's upper atmosphere delivers 1400 Watts of energy per square meter (solar constant), which is reduced to 1020 watts by absorption by the air before it reaches ground level. By the time sunlight is converted to electricity, power is reduced to 50 watts at high noon.

A battery of photovoltaic panels on the roof of a house would supply enough electricity to enable the homemaker to turn on her electric stove, but she couldn't cook after dark. Also sufficient solar energy would not be available to operate the mechanized farms that grow the food that she cooks in her oven.

It now takes 5 to10 calories of fossil fuel to grow one calorie of food because of the cost of operating farm machinery, irrigation, and application of fertilizers and pesticides.

Another hidden cost lies in packaging the food and transporting it from the canner to the kitchen. The ingredients in a bottle of ketchup sometimes travel further than the average hot dog hound does in a lifetime. Oranges from Spain and shrimp from Thailand are sold regularly in Florida supermarkets at prices competitive with the local products. We pay for the difference in cost at the source with fossil fuel.

Although the total energy of sunlight is vast, it is far more dilute them that of fossil fuels so must be concentrated cheaply before it can replace them. To accomplish this, scientists must develop mile-high POWER FARMS that are comparable in area to the farms that condense weak sunlight into fats, starches, and proteins.

On food farms, green plants use sunlight to convert water and CO_2 into high-energy foods and oxygen. Carbon would be omitted in power farms. Sunlight and a recyclable catalyst would convert water to hydrogen and oxygen. Both food and mile-high power farms would replenish the air.

My interest in this problem arose while I was a graduate student at Columbia University taking courses in thermodynamics and quantum mechanics from Professor Harold C. Urey. These courses are basic to an understanding of the

interactions between light, heat, and, matter. Urey was an inspiring teacher and leader in hydrogen chemistry. He had recently earned a Nobel Prize for his discovery of heavy water. This is ordinary water with its hydrogen replaced by its isotope, deuterium, which has twice the mass.

After leaving Columbia, Urey and Stanley L. Miller created amino acids by exposing a mixture of hydrogen, methane, ammonia, and water vapor to simulated lightning. They showed how life on Earth may have started. The science of exobiology was born.

After getting my master's degree in physical chemistry, I earned a doctorate in plant biochemistry. I became fascinated with the mechanism by which plants use chlorophyll to split water into oxygen and hydrogen derivatives. Later, I initiated a research program at Southwest research Institute to grow green plants (algae) in heavy water to produce organic compounds containing heavy hydrogen. I also did research on the gas phase hydrogenation of organophosphors, nitrogen, and halogen compounds to yield phosphine, ammonia, hydrogen halides, and methane.

I realized that hydrogen could be a tremendous source of cheap and clean energy, but was impractical because it required chlorophyll, a complex organic molecule found only in plants. The discovery that titania, a simple inorganic compound, could catalyze splitting of water change the picture. However, yields were still too low to make it practical.

Our journeys to many regions in the far North and South--Antarctica, Greenland, Iceland, Alaska, Scandinavia, and Southern Patagonia--suggested ways of overcoming this problem. I could see how the combination of glaciers, clean cold air, bright sunlight, and vast expanses of empty land could make this long-cherished dream come true.

The long days kept me awake all night.

It dawned on me that large areas of sparsely inhabited land having constant climatic conditions are necessary to produce enough hydrogen to run the complex machinery of civilization. It would be folly to use land that is suitable for the production of food and fibers or set aside for wildlife preserves.

At first glance, deserts such as the Sonoran, Arabian, or Sahara seemed to be most suitable because of their hot and sunny days. However, they are dry, dusty, and owned by belligerent countries. Water would have to be piped in. Sandstorms could damage equipment needed for sunlight collection. Some native people and animal species would be displaced, and many majestic vistas marred. Bedouin sheiks in flowing robes, camels, and oases would become memories of a distant past.

The Atacama Desert of Chili is the driest desert on earth (except for the McMurdo Dry Valleys in Antarctica) and is virtually sterile. Yet, it supports a surprisingly large number of mammals including screaming armadillos, Peruvian foxes, alpacas, and huemul deer.

The dry valleys of Antarctica unlike most other ecosystems are home only to bacteria, fungi, algae, and a few tiny insects. Higher forms of life are absent. The gigantic polar ice caps are virtually uninhabited by men, mammals, reptiles, or higher plants.

Antarctica has been in deep freeze for 35 million years. There are no archaeological ruins to preserve. Most fossil bones are protected bi thick blankets of ice. The high glaciers could be used for industrial development without defacing the landscape. The glacial water used to generate hydrogen would be replenished by snow.

The new industry that I propose could stop glaciers from melting. A complete meltdown would cause a 230-foot rise in sea level. The mean elevation of Louisiana is 100 feet. The state would become one vast estuary containing a few scattered islands near the Arkansas border. Most of the world's great seaports would be under water.

3. <u>High Altitude Polar Ice Fields.</u> Paradoxically, polar ice fields may be superior to burning sands for harvesting solar energy. Those of Greenland and Antarctica are the largest and highest in the world. They are also uninhabited antipodes that are now unproductive in terms of human needs.

The area of Greenland is 836thousand sq mi, about the size of the Louisiana Purchase. Over 80% of it is covered with glaciers and is virtually uninhabitable. The southernmost elevation of the icecap reaches 9,000 feet, and the northernmost elevation 10,500 feet above sea level. They are ice cream pies in the sky that are threatened with meltdown by global warming as they slowly slide toward the sea.

The area of Antarctica is 5.4 million sq mi, so is 1.5 times the size of United States. About 98% of it is covered with ice. It is the highest continent in the world, with an average elevation of 6,500 feet. There are no permanent residents other than penguins, which live in lowlands close to the shore.

The thickness of the ice fields vary tremendously with location, but an average of 1.5 miles is a conservative estimate. Together, Antarctica and Greenland contain about 90 % of the world's fresh water. Thus, a limitless supply of ultra-pure water at elevations of a mile or more is available for conversion to hydrogen.

These ice fields possess similar climates and topographies. For the most part, they are situated on high plateaus. The temperature at the South Pole ranges from -71°F June to -19°F in December at an elevation of 9,355 feet. The temperature in northern Greenland ranges from -19°F in December to +30°F in June at sea level. The average temperature on the Greenland icecap is – 22° F and breaches a high of + 14° F in July.

The central ice fields never thaw. The bone-dry air is clear, dust-free, and usually cloudless. Antarctica is the biggest desert in the world. The average snowfall is equivalent to less than 2 inches of water each year, which is about the same as that of Death Valley. Average rainfall in the Sahara desert is 3 to 5 inches per year. Rainfall in the Sonoran desert is twice as much. The great Antarctic desert offers the

biggest, highest, driest, coldest, and cleanest shield of air in the world under which to produce solar energy. Greenland does mot lag far behind.

The ozone layer in the stratosphere is usually thinner at the equator than at the poles. However, this distribution was reversed during the 20th century by air pollutants that caused an "ozone hole" over Antarctica and a smaller decrease in the far North. This resulted in an increase in intensity of ultraviolet radiation at the poles, which would promote the photolysis of water.

Greenland and a huge slab of Antarctica are images of one another on opposite sides of the earth. The geographic coordinates of Greenland are 70° N, 40° W, and those of its antipode are 70° S, 140°E. The silhouette of the southern antipode lies in what used to be the French (Adele Land) and Australian sectors of Antarctica, south of Sidney Australia. All national claims to ownership of it were suspended in 1961 by international treaty, so it is world community property.

Greenland is a self-governing colony of Denmark, which has a population of 57 thousand, concentrated in southwestern coastlands that lie outside the ice fields. Other arctic islands that contain areas suitable for power production fields include Iceland, Baffin Island, and Spitsbergen.

These antipodes have opposite seasons. While Greenland is basking under a midnight sun, its down – under image is freezing in noonday night. Their positions are reversed every six months. When operated synchronously, mile-high fields in these white wastelands could supply the world with hydrogen power 24 hours per day and 365 days per year. Thus, diurnal and seasonal fluctuations in power supply would be eliminated by construction of antipodal power plants.

The amount of solar energy hitting collection panels placed flat on the ground would be far lower than in the tropics because light would shine on them at obtuse angles. In simple terms, the son would not be directly overhead. However, this handicap could be overcome, in part, by mounting the panels on steep banks of thermally insulated ice or snow, so that their photochemical eyes would stare directly at the face of the sun.

Sunlight would have to pass through a longer column of air near the poles than in the tropics. However, this would be compensated for by more favorable atmospheric conditions as noted below.

Losses of energy by absorption by the bone dry air would be small because of the miniscule amounts of water vapor contained in it. Industrial smog and desert dust would be absent. Cloud cover would be rare. "Ironically, holes in the ozone layer caused by humanly generated halogen compounds (CFCs) would let through ultraviolet radiation needed for splitting water.

These holes in the ozone layer may be completely closed by 2065 because of the ban on halocarbons specified in the 1987 Montreal Protocol. However, doped titania catalysts could be developed before then that would utilize more light from the visible spectrum.

The drawback of slanting sunlight could be overcome by intelligent use of the super-abundance of snow and ice found everywhere. These glittering law materials, available at no materials cost, could be used to make sunlight condensers, structural components, and supply the basic feedstock – ultra pure water. They could be used to build factories, the likes of which the world has never seen before. They could be recycled using the heat that they produce, leaving no discernible wastes.

Snow can reflect up to 90% of the sunlight shining on it. Lenses made by sculpturing clear ice or freezing deairated water in concave molds can set fire to flammable tinder as any Boy Scout knows. The refractive index of ice is only 1.3 compared to 1.5 for glass, but making large ice lenses at sub-zero temperatures would be far easier and cheaper than making glass lenses because of the abundance of glacial water. Using volcanic heat to melt and boil snow before refreezing it in molds is only one of many possibilities.

These lenses and mirrors could be fixed in place by blocks and pillars of ice welded together with oxy-hydrogen torches using glacial ice as solder. They would be built on ice rather than solid ground, so allowances would have to be made for flow.

Dry polar air could be blown on the optical surfaces to keep them cold and clean. Bone-dry snowflakes would be less abrasive than desert sand. Sunlight could be guided to solar panels throughout the long polar days by walls of snow and batteries of ice lenses in a myriad of configurations. If designed properly and made by skilled hands, they would endure as long as the Elgin marbles in the British Museum. These sparkling ice fields could make the world habitable for the next five thousand years.

4. <u>Global Distribution</u>. Singapore, Sidney, Comodoro Rivadavia, and Cape Town could serve as gateways to Asia, South America, and Africa for this burgeoning power giant. In the North, St. John's Newfoundland could serve as a gateway to North America and Reykjavik, and Murmansk as gateways to Europe and Northern Asia. Headquarters could be established in Nuuk or Copenhagen to recognize the territorial contribution of the Inuit's and Danes.

Engineers working with natural gas could easily figure out how to pipe thermally condensed hydrogen from caches under a 100-yard thick ice pack at -70_0 F to temperate climes through whirling turbines. These embrittlement -resistant tubes should cost far less per mile than the oil pipeline from Prudhoe Bay to Valdez, or the kiloton leviathans that vomited oil into Prince William Sound (Exxon Valdez) and the Mississippi River (Westchester).

They could not pollute the oceans or oyster beds. They would be uncloggable arteries of power that could snake around the world as long as the sun shines from the heavens and clouds pour rain on the face of the earth.

5. <u>Power from ice on the moon</u>? This plan is far from fantastic. In fact, it is almost mundane. Congress has already appropriated money to investigate building factories at the north and south poles of the moon to generate energy and oxygen from water, where unbound water is scarce or may not occur at all.

In 1998, NASA spent $63 million to send an orbiter, Lunar Prospector, to craters at the moon's poles to find if there was enough water there to produce energy and oxygen for future astronauts. A NASA spokesman said that if water were found, this would be "the most valuable piece of real estate in the solar system".

NASA's claims to have found thick layers of ice on the moon were refuted by scientists from Smithsonian Institute and Cornell University. Nevertheless, NASA plans to send Lunar Reconnaissance Orbiter to the moon in 2008 to determine if small amounts of ice are hidden in the dust of deep dark craters shielded from the sun. This is a forlorn hope.

Future historians will long debate why Congress voted funds to split water at the desiccated poles of the moon while ignoring a proposal to generate hydrogen at poles that contain 90 percent of earth's fresh water. It speaks of discrimination too deep to comprehend.

6. <u>Alternative polar energy sources</u>. Before planning any more power plants for imaginary men on the moon, it would be a good idea to take a closer look at the overall potential of the earth's poles. All of the power that could be generated in polar regions is not solar.

Strong winds and ocean currents invite the use of turbines. The Antarctic current, between Patagonia and The Antarctic Peninsula, powered by the spinning of the earth and steady winds, moves 150 million cubic yards of seawater per second through Drake Passage. On the Greenland icecap, the prevailing wind direction is westerly, but is deflected to the southwest on the East Coast by the Coriolis force. In some regions, wind speeds reach 150 miles per hour.

All types of renewable energy devices could be investigated in these pristine environments. Many prototypes are now available.

Geothermal energy has great promise as shown by the luxuriant growth of the Madagascar cactus in heated Icelandic greenhouses. Iceland is a cosmopolitan island, the only place on earth where it is possible to stroll across the Mid-Atlantic Ridge from the Eurasian tectonic plate to the North American plate without being late for lunch.

This area is a source of hot rock layers lying just beneath the surface, which is used to generate electricity. Some of this electricity is now being used to generate hydrogen from water by electrolysis. The hydrogen is used to power fuel cells of experimental busses. Iceland expects to be entirely independent of OPEC oil by 2050. It could then become an exporter of hydrogen. Investors should take note of this.

We have vivid memories of steaming geysers in Iceland, and a volcano on Deception Island, off the coast of the Antarctic Peninsula. The last violent eruption took place in 1969. The continent is split into East and West Antarctica by a volcanic rift. The 12,444-foot Mount Erebus, where the US McMurdo Station stands, is the southernmost active volcano in the world. Its cone can spurt steam like a teakettle. Its heat could be used for melting glacial ice to cast gigantic ice lenses for focusing

sunlight on catalytic panels, or it could be used directly to generate thermoelectric power as has been done with Grimsfjall volcano in Iceland.

Then, there is the mysterious Lake Vostok that lies under 2.5 miles of ice. How could a fresh water Lake 10 times the area of Lake Pontchartrain and 2,000 feet deep remain a unfrozen for millions of years unless warmed by the bowels of the earth? What power resources lie buried beneath its bed? The water might be crystal clear after eons of sedimentation and pressure to squeeze out the last bubble of air. Perhaps gem –quality lenses could be made from it to focus light on solar panels and find unknown stars in the Southern Cross.

We need not sacrifice the purity of Lake Vostok to make this dream come true. More than 70 sub glacial lakes have been found in Antarctica, any one of which might do. Their environment is as fantastic as the Xanadu of Kubla Khan "where Alph, the sacred river, ran through caverns measureless to man, down to a sunless sea." Certainly, Intrepid explorers and scientists could uncover new sources of power in this vast sub-glacial empire. They might even find fossil fuels.

7. <u>Challenge</u> <u>to Congress and the Voters</u>. Congress has refused to investigate crimes that wrecked a landmark discovery, ruined the reputation of GSRI, exposed Louisianans to infection with leprosy, and caused 321,000 3rd world people to be injected with biological slush, in order to protect the reputation of the PHS Commissioned Corps. FBI has become involved in this scandal. It covered up atrocities that are more barbaric than any of those committed by Al Qaeda. Congress has allowed America to become the land of the freebooter and the home of the knave.

To further test the accountability of these scofflaw legislators, I am presenting them with this method for solving 3 of the most critical problems that plague the country today. These include peak oil, global warming, and a terrifying increase in the frequency of hurricanes. If members of Congress refused to review these life-saving procedures, I urged the voters to turn them out of office in the next presidential election regardless of their political affiliations.

The method that I have proposed is startlingly new so is bound to be controversial. I will be first to admit that I do not have all of the data needed to back it up. My age and resources would not permit trips to the poles. However, these data could be gathered at minimal cost by using facilities and staff already paid for by the government.

National Science Foundation (NSF) operates the Amundsen-Scott South Pole Station in Antarctica. The National Oceanographic and Atmospheric Administration (NOAA) staff a laboratory there, which is well equipped to make atmospheric measurements. NOAA's polar ark could rescue the world from a great flood at the cost of a handful of old Hebrew coins.

NOAA's crew could easily deploy simulated solar collectors in concentric circles at various distances from the South Pole to record data. These panels would be equipped with pyrheliometers, photovoltaic cells, and other devices to obtain the necessary information. In a nutshell the objective would be to measure the opacity of the earth's atmosphere at right angles to the sun as a function of latitude, altitude, time

of year, and wavelength. Hopefully, they will find that the earth's atmosphere resembles a splotchy glass shell that fades into clear quartz at the poles.

Methods for enhancing radiation intensity by reflection and refraction could also be studied. This basic information would be useful in many applications. The results could be compared with those obtained at NOAA installations in American Samoa, Mauna Loa Hawaii, and Point Barrow Alaska. Comparative computer models could be made.

NOAA's crew need not be concerned with hydrogen generation. This information could be obtained from scientists at the University of New South Wales in Australia and the US Department of Energy.

The cost of doing this would be miniscule compared to the NASA mission to the moon to find out if ice exists in the craters of the North and South lunar Poles. I can assure Congress from personal experience at no cost to the taxpayer that ice in abundance can be found now in Antarctica and Greenland. No one can predict how long it will last.

Comparing costs of gasoline and hydrogen in today's market is not relevant. Fossil fuels are being burned in a funeral pyre and cannot be replaced. Comparing them with hydrogen is like comparing stale dinosaur eggs from Jurassic Park with Eggs Hussard at Bremen's restaurant on Royal Street. Fossil fuels are as obsolete as mummy powder, whale oil, and Model T Fords. It is a flash in eternity. Hydrogen has been burning since the Big Bang, and there is still plenty of it left.

New ideas from imaginative people that interrupt the sleep of politicians are always greeted with derision. Thus, when Secretary of State William Seward bought Alaska from Russia for $7,200,000, his critics ridiculed him by describing his purchase as "Seward's Folly", "Seward's Icebox', "Icebergia"" and "President Andrew Johnson's Polar Bear Garden".

Actually, it was the biggest steal since the Louisiana Purchase. As of 2005, the central North Slope of Alaska alone has produced 15 billion barrels of oil and still has reserves of 7 billion barrels of oil and 35 trillion cubic feet of natural gas. The state's 2003 total gross product was $31 billion. Its per-capita income was 14th in the nation. Seward's Folly became America's fortune!

Moreover, advances in science and technology have made it possible to achieve the improbable. In 1911, Roald Amundsen climaxed the heroic age of polar exploration by mushing to the South Pole on leg and sled dog (Greenland husky) power to become the first man to get there. He beat the ill-starred Robert Falcon Scott by 33 days. It was the most grueling and glorious race in the history of mankind. It took Amundsen 99 days to travel 1860 miles. The world shouted its acclaim. Scott became a hero in death like the Greek messenger who dropped dead after his run from Marathon.

Only 58 years later, Neil Armstrong rode to the moon in a space capsule powered by hydrogen engines to take a "giant step for mankind." His capsule with reclining seats was cozy and warn compared to Amundsen's dog sledges. His

240,000-mile journey took only 5 days. His speed had increased by a factor of 250 in 58 years. Miracles are possible if the cash is available and the basic concept is sound.

8. Link to the cosmos. The achievements of Amundsen, Scott, and Armstrong were giant steps in exploration, but establishment of hydrogen power would be divine. Mankind would have forged a link to the pool of energy that has fueled life since creation. Since that blessed day, the Lord of the Sun, whether his name be Ra, Helios, or Huitzilopochtli has stoked the fire of life with atomic hydrogen to make helium and a vitalizing stream of sunlight.

Humans could burn molecular hydrogen generated by celestial light to make rain to grow crops and power to do the work of God. This celestial sequence could go on for eternity without raiding natural resources or polluting the planet. Lord Vishnu, the Preserver, would smile down on us from a Hindu heaven.

D. The Petroleum Economy— A Fossilized Concept

Petroleum and coal are family heirlooms, legacies from early life on earth. They are too valuable to burn as fuels. They contain the building blocks of lubricants, plastics, dyes, pharmaceuticals and a host of other treasures that make life sweet. Setting them on fire is an abomination. It is like chopping up Chippendale chairs to roast chestnuts.

Drilling oil wells for fuel is not a time – honored ritual like harvesting the bounty of the sea or sowing and reaping of grain. It was a make-shift expedient in the early days of the industrial revolution that has become as obsolete as steel mill smoke in Pittsburgh and scrotal cancer in London chimney sweeps.

1. Peak oil in Pennsylvania. Wholesale burning of petroleum had a recent birth and has a short life expectancy. The first commercial oil well was drilled by Edwin Drake in 1859 in Titusville Pennsylvania, about 50 miles from where my grandfather Burchfield' grew up. Fired up by Drake's legendary strike, he became a wild catter in search of liquid gold.

In 1873, he drilled a string of wells in Butler County. His first lucky strike became known as the Summit well. He started pumping in 1874. The well cost $10,000 to drill, which was not peanuts in those days. It was the "best well in the neighborhood", originally producing 15 barrels per day. However, productivity of the Summit well fell to 10 barrels per day within eight years. His experience was not unique. Production in Butler County peaked in 1877. By 1881, it had dropped by 75 percent.

My grandfather died after battling a blaze on one of his rigs. I never knew him, but a photo in the family Bible made him look like a big, bearded, prophet rather than a wildcatter who was down on his luck. Photographic studios were as good at covering up blemishes back then as they are today. His family became one of the earliest victims of peak oil.

My grandmother, then a young and beautiful widow, had to give up her comfortable house in Butler to find work as a seamstress in Pittsburgh to support her two small children, my father and aunt. They were the loveliest people on earth. Her

life was not easy, but she remained proud, dignified, and passionately loyal to her hero to the end.

She always claimed that crooked dealings by John D. Rockefeller and Standard Oil of Cleveland, who were the principal buyers of Pennsylvania crude, caused her husband's downfall. Shifting the blame to scheming businessmen in Cleveland soothed her pride, but was probably wistful thinking. In the glory of her youth, she had married an old and weary wildcatter who was slow to learn that oil wells, unlike De Beers' diamonds, are not forever. I cannot pass their house in Butler without shedding a tear.

All of this took place in the age of kerosene lamps and candle wax before the invention of the automobile and the dramatic increase in demand for petroleum fuels. In 1901, a quantum jump took place. The Spindletop geyser of Texas began spewing oil at a rate of 100,000 barrels per day.

Two years later, a swarm of little black Fords hatched on the streets of America. Spindletop ran dry in 32 years. Today it is no more productive than my grandfather's Summit Well. Descendents of the little black Fords and their gargantuan mutant offspring now overrun the countryside like Biblical locusts, guzzling every gallon of gas they can suck up.

Petroleum production in USA peaked in 1971, and plunged by 35 percent by2005. Output of the bonanza on the North Slope of Alaska has fallen by 75% since it reached a peak in 1987. World production is expected to peak by 2010. My grandchildren will live in the twilight of an oil boom that my grandfather helped to start. A treasure trove that took the creator 200 million years to build will have been burned by greedy men in 200 years. A funereal pall will hang over the face of the earth.

2. Götterdämmerung. The end of the Bacchanalian oil orgy is in sight. However, this does not mean that global warming will stop. Petroleum will be replaced by liquefied coal when Bacchus drinks the last drop of sweet light crude. Then the fury of Hades will begin in earnest. Mine shafts will collapse and miners will die in a frantic search for the last lump of coal.

Coal production will not peak until 2050 or later, even with this added drain on reserves. Global warming and hurricane frequency will continue to rise until fossil fuels are gone. Decay of ice shelves and glaciers has already begun. Sea levels will rise. Barrier islands and wetlands will be battered by roaring waves. Unless Draconian action is taken, marine waters will continue to warm, and hurricanes will continue to wax in frequency and fury for another hundred years.

The opinions of uptight scientists who can read the handwriting on the waves will be suppressed or belittled. Dissident government scientists will be shipped to "turkey" farms. Those from industry are already at the mercy of merchants of malodorous fuels. Agitators from academe will lose their grants and tenures. If they are mentioned at all by the news media, they will be portrayed as yowling yodelers of doom.

Readers who do not believe that top news editors would be willing to cover-up medical crimes are invited to telephone Nicolas Wade of the New York Times,

Elizabeth Vargas of ABC, Martin Baron of the Boston Globe, and Rosalind Reid of the American Scientist to ask why they have squelched this story. These Judases of journalism have betrayed the people of Louisiana, truth in medical science, and their reason for existence, in order to win favor with a secretive council that meets in a tower with windowless rooms.

An ominous cloud of omerta hangs over a threatened world. The silence of these mouthpieces will speak louder than words. The Fourth Estate that once fought for freedom of speech has become a front for fossil fuel makers and medical fakers who are relentlessly turning pauperized and pigmented people into pitted skulls and bones.

VII. QUALIFICATIONS AND EVIDENCE

A. Qualifications

Congress and DHHS cannot justify refusing us a hearing because of shortcomings in our scientific backgrounds and experience. These are outlined briefly below. Dr. Storrs is my wife and long-time professional associate. I was also Scientific Director of the laboratory in New Iberia in which she made her discoveries. Her record as an American citizen and scientist are unexcelled.

We have been employed by research institutes, universities, private industries, and directly by PHS for 45 years. We have served on advisory committees of NIH and EPA. We have supervised research grants and contracts on infectious diseases, animal resources, cancer, pesticides, and environmental sciences, which were sponsored by NIH, CDC, FDA, EPA, NOAA, USDA, NASA, DOD and leading private corporations and trade associations.

Highlights of our research achievements are encapsulated below. Our employment records are contained in Who's Who in America (69) and Who's Who in the World (70). Copies are provided in Section X.

- ***Storrs investigated differences in the biochemistry and morphology of individual members of sets of identical armadillo quadruplets in order to determine the relative importance of genetic and somatic effects on mammalian inheritance. Her PhD thesis was reported in the lay and scientific press throughout the world. Although this dissertation was published in 1968, about 40 references to it can be found on Internet.***

- ***While Storrs was employed at GSRI, she discovered that armadillos are naturally susceptible to the most virulent form of human leprosy. She cut the Gordian knot of leprosy research. All research goals that were previously impossible, suddenly became practical. In 1974-75, Storrs received the Griffin award of American Association of Laboratory Animal Science, the Distinguished Alumni award of University of Connecticut, and the gold award of the American College of Pathologists. After her discovery of leprosy in wild armadillos, all honors and research support abruptly ceased.***

- ***Storrs discovered that wild armadillos in Louisiana and Texas are infected with human leprosy. This was the first time that leprosy had ever been found in nature. Her finding dispelled a long-held superstition that leprosy was a curse of God visited only on sinners. This spectacular achievement led to her demotion. Despite the universal significance of her discovery, PHS refused to give Storrs and her collaborators funds to follow it up. Capt. Richard Truman omitted her name from the PHS website on this subject.***

- ***After Storrs left GSRI, she discovered delayed birth in armadillos. Most females give birth to identical quadruplets nine months after mating. She found that some females in captivity do not produce young for one to two years after fertilization. This phenomenon had never been previously reported in mammals. If observed in humans, it would require drastic changes in child support laws.***

Some of her achievements resulted from our joint research efforts.

- ***We developed analytical methods for study of the metabolic distribution of dapsone (an anti-leprosy drug) in human and armadillo tissues. This method featured the use of "internal standards" in combination with gas chromatography to quantitate the results. We had previously introduced the internal standards concept for the analysis of 2,4-D and described it in our book on "Biochemical Applications of Gas Chromatography" (48). Our method is now in general use in most analytical laboratories. About 100,000 Internet references mention it in addition to the 40,000 that cite armadillo-leprosy research. Despite this evidence of professional acceptance, Congress has refused to give Storrs a hearing.***

- ***Prior to the advent of the armadillo, the main thrust of our joint research had been on the reaction kinetics of biological alkylating agents with amino acids, peptides, and proteins. This class of compounds includes many fungicides and drugs used for the treatment of cancer. We have published many research papers and book chapters in this field. Storrs' research for her master's degree was based on the interactions of 1-flouro-2,4-dinitrobenzene (FDNB) with bovine serum albumin. We later discovered that FDNB participates in a molecular (Smile's) rearrangement on reaction with the amino acid cysteine.***

- ***We developed a rapid method for measuring the toxicity of insecticides by counting the number of mosquito larvae treated with them that could reach a pre-set finish line one minute after stimulating them to swim at top speed to escape the sudden glare of an incandescent lamp. It became known as "analysis by paralysis". This procedure made it possible for the first time to determine whether different insecticides attacked the same or different metabolic targets***

in the insects. This information was needed for studies on how insects developed resistance to insecticides.

- ***We have published many joint research papers, book chapters, and a manual of methods (42) on the colorimetric and chromatographic analysis of pesticides and plant growth regulators. These methods have prevented exposure of the public to high concentrations of these potentially dangerous chemicals.***

My personal contributions to science and America include the following.

•I was laboratory chief at the first synthetic rubber (called GR-S or Buna) factory to become operational in United States during World War II. It was located near Naugatuck Connecticut, and was constructed by US Rubber Company under contract with the US government's Rubber Reserve Co. Laboratory methods that I developed there for product and process control of GR-S production were subsequently used in all GR-S factories throughout the nation. I served as a consultant and troubleshooter for them. This work was a significant contribution to the Allied war effort because supplies of natural rubber from the Far East had been cut off by Japan. Without GR-S, all motorized equipment in the military and civilian sectors would have been inoperable. The war would have been lost before the atomic bomb was born.

•I also developed rapid tests for distinguishing between natural and synthetic (GR-S, Perbunan, Neoprene, and Butyl) rubbers. The Chicago Rubber Group of the American Chemical Society gave me a prize for this work. These methods were adopted as standard by the American Society for Testing Materials (ASTM). The basic procedures have been published on Internet. They were essential to recycling rubber for the war effort since mixtures could not be processed or yielded inferior products. The production of reclaimed rubbers for the war effort would have fallen into disarray without these methods. They were also used extensively to identify the elastomers used in the construction of captured German military equipment.

•I conducted a research program for the Office of Naval Research on the synthesis of new heterocyclic compounds containing sulfur and nitrogen for use as high explosives. D. K. Gullstrom and I were awarded US patent no. 3054800 on 1-methyl-3, 5-dinitro-triazole, a new composition of matter equal in explosive power and physical properties to TNT. It can be located by authors and patent number on Internet. We also synthesized 4-nitrotetrazole, a powerful detonator, from diaminotriazole (guanazole) in a one step process. This compound is now being touted as an environmentally safe primary explosive because it can replace lead azide! Internet contains 12,000 websites mentioning our heterocyclic explosives.

•After the end of World War II, I was appointed Director of the Plantations Research Department of US Rubber Company to revive the production of natural rubber in Indonesia (Sumatra) and Malaya that had languished during the Japanese occupation. This product is still superior to synthetic rubbers in some strategically important applications. We were harassed continually by the minions of the Sukarno government in Indonesia and the Chinese communists in Malaya. These leaders are long gone but the Muslim people can still be provoked in to Jihad against the West. This experience made me conclude that it would be in the best interests of national security to establish rubber plantations in Christian Brazil, the land of its origin. I have sufficient experience in the chemical, genetic, and ecological control of rubber diseases to overcome the constant threat that the South American leaf blight (the bane of Henry Ford) poses to production there.

•In collaboration with RJ Wheeler and JB Bernos of GSRI, I was first to devise a fluorescence detector for analysis of polynuclear arenes by gas chromatography. These constituents of tobacco smoke cause lung cancer. Our paper was published in 1971. There are now 45,000 references on Internet that mention analysis of cancer-causing chemicals by modifications of this procedure, and 360,000 references to fluorescence detectors for gas chromatography. Our method has helped to reduce the exposure of countless millions of people to chemicals that cause cancer.

• Under sponsorship of Flavoring Extracts Manufacturing Association (FEMA), I studied the chemistry of vanilla beans from Mexico, Madagascar, Comoros and Tahiti. I developed a procedure for the detection of adulteration of vanilla extract's that was adopted by the Association of Official Agricultural Chemists (AOAC) and is used by FDA for regulatory purposes. My work made it possible for all people who enjoy the flavor of natural vanilla obtained from orchids from being turned off by foods flavored with synthetic vanillin made from wood pulp wastes.

•I made studies on the physical chemistry of fungicidal action at Boyce Thompson Institute, including the effects of rainfall, sunlight, and soil type on environmental degradation. I developed a mathematical method for calculating the optimum particle sizes and specific areas of fungicides that would give maximum protection against plant diseases. More than 25,000 references now on Internet relate particle size to plant protection. These innovations reduced the cost of protecting food crops from plant diseases with degradable fungicides.

•In 1882, P.M.A. Millardet of France developed Bordeaux mixture to prevent downy mildew of grapes. He saved the vines that yielded the Grand Crus of Bordeaux and other humbler growths. He was made a

Chevalier of the Légion d'Honneur. His magic potion was an aqueous suspension of lime and copper sulfate, but its chemical structure had never been determined. In 1959, using chemical and x-ray diffraction methods, I showed that it was a complex mixture of polybasic cupric calcium sulfates, and that addition of crystallization inhibitors and surface active agents could greatly improve its fungicidal activity for control of banana diseases in Central America. Bordeaux mixture is now obsolete commercially, but I take pride in completing the pioneering work on it that Millardet, the father of the science of plant pathology, began. Only five websites link my name with Millardet but they and a bottle of Chateau d'Yquem are reward enough.

Our contributions to public health, the quality of life and the environment, and national security, should entitle us to a hearing by Congress for the redress of grievances. However, the government has denied us the justice for which our ancestors fought by attacking our personal computer and Internet website to silence us. We are fighting alone against a foe with the power and viciousness of Adolf Hitler's Sturmabteilung.

Therefore, we hope that these thumbnail sketches will convince the American public that we are qualified to propose and perform the research suggested in this document. Our plans to establish power plants on polar icecaps may seem fantastic to some, but they are no more speculative than other projects with worldwide impact that we have tackled in the past. We hope that the power of public opinion will force the government to give this plan a fair trial.

B. Evidence

This case is exceptionally well documented. Evidence for these statements has been published in international scientific journals (1,2) and documents deposited in the National Library of Medicine (71) and the Archives of the Armed Forces Institute of Pathology (72). Backup copies have been sent to libraries in Europe and Asia.

1. <u>Newspaper Archives (1967 – 1985).</u>

Articles from the Daily Iberian and other Louisiana news sources give a vivid account of the rise and fall of the armadillo program and the New Iberia laboratory. The two are forever intertwined. These stories give a poignant account of the great expectations and dashed hopes that Eleanor Storrs and the community went through together.

They begin with our arrival in the city and her first grant applications on armadillos and leprosy. She was buoyantly hopeful. When success came, the Daily Iberian gave it banner headlines.

The news flashed around the world. The paper published glowing accounts of the honors bestowed on her and the visits of many scientists to her laboratory. The paper also published accounts of successes in research on primates,

toxicology, and environmental sciences, which opened up new job opportunities in the community.

She had two identities. At work, she was Dr. Eleanor Storrs, scientist. In other venues, she was Polly Burchfield, participant in many public affairs. In the latter role, she became a vestrywoman of the Church of the Epiphany and portrayed the Duchess of Strasbourg at the Mardi Gras Ball. A year later, she reigned as Queen of the Mystic Krewe of Iberians.

Occasionally these roles overlapped. In 1975, Rev. Elmer Boykin of the Church of the Epiphany presented her with a $25,000 check from the National Council of Episcopal Bishops to support her work on leprosy. The newspaper report led some church members to think that this money came out of their collection plates. But Publisher "Red" Wolcott quickly got Rev. Boykin off the hook with an explanatory editorial in the Daily Iberian.

She also gave talks on science for civic groups, and became known for her interest in nature and wildlife. The Daily Iberian ran an article by Diane Moore on how she had hand-raised a mocking bird and blue jay that she had rescued from the jaws of cats. Her children named them Emily and Ku-Ku bird. The article went on to describe how she was trying to hatch ostrich eggs for the bird sanctuary at Avery Island, and hoped that these seven-foot birds wouldn't imprint on her! Mrs. Moore is now Archdeacon of the Episcopal Diocese of Western Louisiana.

The first portent of doom fell in1976, when the Daily Iberian reported that GSRI had found leprosy in wild armadillos. This was bad news, but at first, we did not see how it could hurt GSRI. We had made a careful study of the distribution of disease before releasing the data, and found that it could not have originated at GSRI. We supplied information on new cases to the newspaper regularly to keep the readers up to date on this threat to their health.

We never intimated that the disease might have originated at Carville, although this was the most obvious source. Nevertheless, PHS published a torrent of accusations claiming that we had set infected animals loose or allowed them to escape from GSRI. A devastating attack appeared in the Baton Rouge Advocate that was quoted throughout the state.

Storrs' program collapsed. News of cancellation of all GSRI leprosy research was announced in the Baton Rouge Advocate. Shipment of the orphaned armadillos to Washington in an Air Force cargo plane was reported in the Daily Iberian.

The quality of work in New Iberia slowly disintegrated without her guidance and example. The Daily Iberian reported "bum research," discrepancies," "conflicts of interest", and "layoffs." All work in toxicology was shut down.

The end came quickly. The residual programs were turned over to USL in Lafayette. The Daily Iberian wrote the obituary under the heading: GSRI LEFT MARK IN SCIENCE FIELD. It featured the armadillo and primate programs.

Storrs is long gone from New Iberia, but traces of her presence still linger. In1968, she wrote a proposal that resulted in the establishment of a large primate colony at GSRI. She turned this contract over to Dr. William E. Greer who managed it skillfully. It developed into the New Iberia Research Center of the University of Louisiana at Lafayette (ULL). It is a thriving laboratory, but still only a shadow of what it might have been if PHS had allowed GSRI to survive.

These newspaper accounts provide no new facts on the rise and fall of the leprosy program beyond those that can be found in scientific journals, but they add a human dimension to this story. They tell the events as seen by reporters at the time they happened and the effects that they had on the community.

This conflict was not just a personal dispute that involved Dr. Storrs and a few PHS officers. It involved GSRI, the community, and eventually people all over the world. It changed many of their lives. It left an ugly stain on medical history that can never be erased.

These articles will give the Louisiana public a glimpse into the havoc wrought by PHS that could never be gleaned from dispassionate journal pages. Eventually, they will be published on Internet to give all the people in USA an insight into the hazards that their elected representatives and the news media are concealing from them. It would take a conflagration far greater than the burning of the library in Alexandria (Egypt!) to destroy them.

VIII. ACKNOWLEDGMENTS

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Ms. Daisie Barbin, my Administrative Assistant at GSRI for 10 years processed most of the documents quoted in this manuscript. She refreshed my memory concerning the events described in them. She also edited this manuscript without compensation as a service to science and humanity.

The late Dr. Laszlo Kato of University of Montreal urged me to undertake this investigation despite the opposition of the biomedical establishment (73). He also confirmed the catastrophic decline in bacterial yields from data obtained in his laboratories. Dr. Philip Draper of NIMR also confirmed the decline in a letter to Dr. Storrs.

I would also like to thank the anonymous reviewer's of IJL (1) and WJMB (2) who passed judgment on our publications. In particular, I would like to thank Dr. Jerome Smith, formerly of University of Texas, who sent me a signed copy of his lively comments.

IX. REFERENCES

Martin Luther faced a formidable problem in the 16th century. He believed that the Church of Rome was wrong in selling indulgences, but had to find a way of getting his message across to the parishioners. Sending hand-written letters to the Cardinals and Bishops would do no good since they were part of the problem, and the monastic scribes who could have penned copies worked for them. So he translated

the Bible into German and made thousands of copies with Gutenberg's new printing press. The congregations got the message and the reformation began.

A similar problem faces us in the 21st century. We know that the medical research establishment in Washington\Bethesda is selling false promises, and need to find a way of getting this message across to the patients and taxpayers. Writing to Congress and the news media has done no good since they are part of the problem and own the printing presses. We are in the midst of translating printed documents into HTML and publishing them on Internet. This will be a long and arduous task. Many faded documents and newspaper articles must be computer enhanced before they can be processed and distributed globally from whirling disks. When we are finished, the reformation in medical science can begin in earnest. Here is a small start.

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X. APPENDICES

A. Biographical Material on Waldemar F. Kirchheimer

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Waldemar F. Kirchheimer, M.D., Ph.D., Chief of the Laboratory Research Branch at the U.S.P.H.S. Hospital, Carville, La., is internationally recognized for his studies in Hansen's disease (leprosy). He has published some 50 papers on his research in professional journals and has presented many others to professional groups throughout the world. He is currently serving as a member of the Leprosy Panel of the United States-Japan Cooperative Medical Science Program.

Born in Schneidemuhl, Germany, January 11, 1913, Dr. Kirchheimer took his M.D. degree at Ludwigs University Medical Faculty at Giessen in 1947, and his Ph.D. at the University of Washington in 1949 He also served as a Research Associate and later as Instructor in Microbiology at the latter school. From 1949 to 1955, he served on the faculty of Northwestern University, first as Assistant Professor and then as Associate Professor of Bacteriology. His subsequent positions included research assignments at Fort Dietrich, Maryland, and the National Institutes of Health, before joining the Carville Hospital as Chief, Microbiology Research Section in 1962. He later served as Chief, Laboratory Branch, and since July 1971, he is Chief of the newly created Laboratory Research Branch.

In addition to his regular duties, Dr. Kirchheimer serves as Associate Professor of Microbiology at the Louisiana State University Medical School and as Project Officer for a research contract between the U.S. Government and the Republic of India on research into "The Role of Arthropods in the Transmission of Leprosy."

On May 28 of 1972, Dr. Kirchheimer was awarded the Superior Service Medal of DHEW'S Health Services and Mental Health Administration. He received this award--the second highest Civilian honor given by HEW--for his extensive microbiological research related to the leprosy bacillus. Dr. Kirchheimer is a member of the American Society of microbiology and the American Public Health Association and is the recipient of several other awards for outstanding performance in his field.

CV IN Who's Who IN The South and Southwest (Marquis).

KIRCHHEIMER, WALDEMAR FRANZ, physician, microbiologist: b. Schneidemuhl, Germany, Jan. 11 1913; M.D., U. Giessen (Germany), 1947: PhD, U. Wash, 1949; m 1945. Research physician King county Hospital Seattle, research assoc. U. Wash, 1946-47, instr, microbiology, 1948-49, asst. prof. bacteriology, Northwestern U, Med. School, 1949-53, Assoc. prof., 1953-56; dep. safety dir., med. bacteriologist, Ft. Dietrich Md., 1956-61; mem. research staff U.S. Inst. Allergy and Infectious Diseases, 1961-62, Chief, microbiol, sect. USPHS hospital Carville La, 1962--64. chief lab. branch. 1965-71. chief lab research br.1971--; assoc. prof. microbiology, tropical medicine and med. parasitology, La. State U. New Orleans, 1973-; mem. leprosy panel U.S.-Japan Joint Med. Sciences Program, 1965-72; project for research in India on transmission of leprosy U.S. Govt. 1972- Med. dir. U.S. Public Health Service 1965-. Recipient, Superior Service Medal HEW, 1972, Distinguished Service Medal 1977. Mem. Amer. Soc. Microbiology. Research leprosy treatment, immunology, biology of the leprosy bacillus, host-parasite interaction, experimental leprosy. Address: USPHS Hosp Carville, LA 70721

B. Unpublished or Difficultly Available Documents

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Indigenous Leprosy in the Armadillo Dasypus novemcinctus The publication of the unusual finding by Walsh et al. in relation to the existence of indigenous leprosy in the nine-banded armadillo, Dasypus novemcinctus, only a few years after the armadillo was presented as an experimental model for the transmission of leprosy by Storrs (9) and after the successful transmission of the disease to this animal was reported by Kirchheimer and Storrs (6), constitutes one of the most outstanding contributions in the field of research in leprosy. The supposition that leprosy was a disease which appeared specifically and only in human beings had been accepted as an indisputable fact and the idea that some other species might acquire indigenous leprosy in the wild had not been even remotely considered. The importance of this new contribution may supersede the former achievement of the experimental transmission of leprosy to the armadillo.

The initial reaction produced in the scientific community by the finding of indigenous leprosy in armadillos oscillated mainly between total rejection and passive doubt; very

few investigators considered the fact in all of its importance and magnitude. The basis to adopt a negative position towards the finding reported by Walsh were the possibilities that (a) the infected animals were animals that had escaped from Gulf South Research Institute where armadillos were being used experimentally, or (b) wild armadillos living in the vicinity of this Institute might have become infected with waste products from it. Another of the arguments presented with frequency against the possibility of indigenous leprosy in armadillos was the fact that no such finding had been reported from any of the countries in South America where human leprosy is an endemic problem and where armadillos (D. novemcinctus) are abundant. A paper presented during the Workshop on the " Armadillo: An Animal Model for Research," which was held in Caracas in May, 1977, reported that in a group of 19 armadillos (D. novemcinctus) captured in Venezuela inoculated intradermally with human leprosy and kept under observation during 4 or 5 years, did not did not show disseminated leprosy lesions.

Only one animal developed a local lesion, which involuted spontaneously. This observation contrasted with the fact that the same paper reported that another type of armadillo native to Venezuela, experimental leprosy in 28.8% of the cases (3). In small groups of 3 and 21 animals D. novemcinctus inoculated with human leprosy and kept under observation during nearly 3 years in Brazil and Paraguay, no experimental lesions had been observed (4) and D. Opromolla, (personal communication.) These partial observations, which should be increased in the future, suggest the possibility that the South American D. novemcinctus at least in Venezuela, Brazil. and Paraguay might be resistant to leprosy and, therefore, it would not be possible to find the natural disease in this armadillo, while the Dasypus novemcinctus of the United States seems to give great susceptibility for the disease. Therefore, the argument of not having found indigenous leprosy in the South American D. novemcinctus could be explained logically by the possible resistance of these armadillos to infection. This, then, could no longer be used as an argument to deny the existence of indigenous leprosy in the armadillo in Louisiana, since these animals are clearly very susceptible to develop the disease. Later work (2, 7) showed, according to the criteria at disposal at the moment, that the mycobacteria isolated from animals with the indigenous disease were identical to human M. leprae. The histopathological lesions seen in indigenous leprosy also had a great similarity to those observed in human leprosy. Indigenous leprosy in nine-banded armadillos was reported (1, 5) as having been found in animals from the states of Louisiana and Texas in the United States. Recent work (8) which is being published in this issue, reports having found disseminated leprosy in 2 out of 20 armadillos (D. novemcinctus) examined (10%). This is confirmation by an independent worker of the finding of indigenous leprosy in this species of armadillos.

Once the doubts in relation to the existence of indigenous leprosy in nine-banded armadillos of the United States were overcome and the possibility of an accidental infection due to waste material from research laboratories was discarded, this finding has been accepted as of great scientific importance, whose transcendency we can see only partially at the moment. This transcendency will no doubt increase after a more detailed epidemiologic study which defines both the extension and characteristics of this phenomenon and which might also clarify aspects of the transmission of the infection as well as of possible carriers without clinical manifestations. Another subject which should be very interesting to study would be the determination of whether the natural disease shows a spectrum of clinical manifestations such as happens in human leprosy, and as has been described for the experimental infection in armadillos (D. sabbatical) in

Venezuela (3). Another point which also seems important to point out and which could be included in the proposed studies is that since the armadillo is a recent arrival in the USA (it seems it rived about 45 years ago from Mexico) the need arises to carry out a simultaneous, cooperative study along both sides of the borders between Mexico and the United States with the purpose of clarifying the possible origin of the indigenous disease. On the other hand, the study of the relationships between the human and the armadillo disease should also be given priority. It may be that the armadillos might have been infected indirectly through contact with waste products of leprosy patients, but there is also the possibility that the infection could have been more direct when, according to the custom in many countries, these animals are used as household pets. Also, if the armadillo had come into the United States already infected, it would be interesting to determine the intensity and antiquity of the indigenous disease in where it originated and even, considering this last point, the possibility that the site indigenous leprosy in armadillos in Mexico might have different characteristics from those in the United States. Since indigenous leprosy seems to be a disease which has appeared in animals in the United States only recently, it may be that a population of susceptible animals develop phenomena of immunological tolerance which would favor the development of systemic disease. If it can be definitely shown that South American D. novemcinctus are resistant to both experimental and natural infection with leprosy, this would suggest genetic differences between the animals in the two continents. The origin of these possible differences offers many intriguing possibilities for study.

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Instituto Nacional de Dermatologia
Esquina de San Nicholas (San Jose)
Caracas 101, Venezuela

16. Anon. 1979. GSRI shuts down leprosy research program. Inter. J. Lepr. 47: 72. From Baton Rouge Advocate

GSRI, whose scientists have reported finding leprosy-infested wild armadillos in South Louisiana, has shut down its leprosy research program for lack of funding. The program has been absorbed by the American Registry of Pathology, an entity which works with the AFIP in Washington, according to Roger Rowland president of GSRI. In January 1976, GSRI researchers reported they found leprosy in armadillos captured for experimental use near the swampy coast of Louisiana some 30 miles southwest of its New Iberia laboratories. The announcement startled the scientific world because GSRI was claiming a natural occurrence of leprosy in wildlife as opposed to the deliberate cultivation of the disease in laboratory animals. Rowland said GSRI had applied for a multiyear grant from the National Institute of Allergy and Infectious Disease, a division of the NIH, to continue its leprosy research. The leprosy research program was approved, but the NIH considered it a low priority program, he said. Therefore, the program was not funded. He said leprosy is not considered a disease imminently dangerous to Americans as is heart disease and cancer. It has been estimated that only 3,000 to 4,000 persons in the U.S. have leprosy, compared to 10 million persons worldwide. Ralph Wheeler, associate director of GSRI's life sciences research, said the previous NIH grant ran out in April 1977. That agency had been a funding source on and off for eight years, he said. The

only funding source left was the WHO, Wheeler said. The WHO, however, would not allow any overhead costs, only salaries and supplies to be charged against its grant. Rowland said GSRI decided it could not underwrite the program to cover the loss of the NIH grant. Rowland said diseased armadillos and any specialized equipment used at the GSRI laboratory in New Iberia have been shipped to Washington. --(Adapted from article in Baton Rouge Advocate).

XX-1. DuVal, M.K. 1972. Letter to H.P. Burchfield.

Dr. H. P. Burchfield
Scientific Director
Atchafalaya Basin Laboratories
Gulf South Research Institute
Post Office Box 1177
New Iberia, Louisiana, 70560

Dear Dr. Burchfield:

This is in reply to your letter of June 19 concerning Dr. Eleanor E. Storrs of your staff, her work with the armadillo as a laboratory animal for leprosy research, and her applications for Federal support.

I have learned that Dr. Storrs' grant application RR-455 to the National Institutes of Health, Division of Research Resources, recently was renewed for three years at a higher level than that of the current year and that her application CC-476 to the Center for Disease Control (CDC) was recommended for approval for one year (after October 1, 1972). The priority score on this latter application is such that Dr. Storrs has been notified that there is no assurance the grant will be paid until the Center for Disease Control FY 1973 appropriations and allocations are made.

Dr. Milton Puziss of the National Institute of Allergy and Infectious Diseases wrote to Dr. Storrs on April 28, 1.972, explaining why the NIB Division of Research Grants Study Section (a peer review group composed primarily of scientists) did not recommend approval of her grant application (Al-10927). The National Advisory Council of the National Institute of Allergy and Infectious Diseases concurred with the Study Section recommendation.

I am aware of the joint efforts of the two Louisiana--based institutions -- Gulf South Research Institute (GSRI) and the U.S. Public Health Service Hospital at Carville -- leading to the development of the armadillo for possible use in leprosy research. The enclosed story which appeared in the HEW Newsletter No. 23 mentions both Dr. Storrs and Dr. Waldemar Kirchheimer of Carville. At the press briefing held in Rockville, Maryland, on August 19, 1971, the enclosed background statement was read (no statement was enclosed or read)) at the onset of the briefing, and together with other material available to the reporters, the collaborative effort of GSRI and the Carville PUS Hospital was stressed.

The time and place of the briefing was dictated by the fact that Dr. Kirchheimer was receiving the Department's Superior Service Award for his past accomplishments in the leprosy field. The briefing was set up by the Department's Federal Health Program Services to take advantage of his presence in Rockville. No slight to GSRI or Dr. Storrs was intended by any Department official. GSRI was furnished with all the materials made available at the briefing and, in addition, was offered a tape of the session (no materials or tape were furnished or offered. Of course, we do not control what a particular newspaper or news service chooses to include in their stories, and it is sometimes unfortunate that all parties do not always receive full recognition.

Dr. Kirchheimer was a member of the U.S.-Japan Leprosy Panel from 1965 to 1971. He is not a member of an NIH study section or advisory council and does not have direct access to privileged Information regarding GSRI grant proposals unless given to him by GSRI. You may be interested in knowing that the Congress recognized the legitimate need for doctors and scientists at the Veterans Administration and the U.S. Public Health Service Hospitals to have access to biomedical research funds by making these two the only Federal governmental units that can legally receive NIH research grant funds. All research grant applications are subject to review by the NIH Division of Research Grants Study Sections and are rated solely according to their scientific merit.

In regard to Dr. Storrs' letters to Mr. George Yee not being answered concerning the possibility of additional support for her armadillo studies - I have been informed that Mr. Yee did communicate with Dr. Storrs by telephone (this is not true). U.S.-Japan Program inquiries were made to Dr. Storrs to ascertain whether she would be willing to serve as a contractor to provide animals for other investigators, but apparently Dr. Storrs was interested only in a contract which would include other leprosy research. I understand that the U.S.-Japan Program does not have any immediate plans to supply armadillos to interested investigators.

Concerning the Leprosy Scientific Memoranda (LSM), this publication was set up to provide a means for active scientists working in the field of leprosy to exchange information informally and quickly with their colleagues throughout the world. Research findings communicated via the LSM are treated as "personal communications" from fellow investigators. All contributors are aware that, among other items, they may submit negative findings, discussions and criticisms of published papers to the LSM. The note submitted by Dr. Peters might have been interpreted as a criticism of the findings of Dr. Kirchheimer as well as Dr. Storrs; in fact, Dr. Kirchheimer subsequently rebutted the Peters' contribution in the LSM.

I trust I have clarified the essential points you raised in your letter.

With kindest regards,

Sincerely yours,
M. K. DuVal, M.D.
Assistant Secretary for Health and Scientific Affairs
_____-

XX-2. Binford, C.H. 1976. Full text of letter to the editor. ASM News 42: 660-661.

FULL TEXT OF LETTER BY DR. CHAPMAN H. BINFORD TO THE EDITOR OF AMERICAN SOCIETY OF MICROBIOLOGY NEWS*. (ASM NEWS 42: 11,1976 PP 660-661)

The short item in the July 1976 issue of the ASM NEWSLETTER that called attention to the discovery at the Gulf South Research Institute, New Iberia, Louisiana, of a naturally occurring leprosy-like disease in armadillos was unfortunately captioned "Army Surgeon General to take Leprosy Research out from the AFIP". Apparently, the writer having learned that a large part of the microbiology laboratories at the AFIP were to be occupied by the new Uniformed Services Medical School and that adequate substitute space was not provided, assumed that the exciting research on the recently discovered "leprosy" in armadillos could no longer be done at the AFIP. However, the histopathology examinations on armadillos by Dr. Wayne M. Meyers and me was not affected by the loss of the microbiology laboratories but Dr. Meyers' important mycobacterial studies required for the identification of the viable mycobacteria and his program for attempting to grow the mycobacteria in tissue culture and in cell-free media had to be crowded into laboratory space not designed for infectious agents.

The letter of Dr. W.F. Kirchheimer, Microbiologist, USPHS Hospital, Carville, La., commenting on the article has caused me to review the files containing the history of the development of the nine-banded armadillo in biomedical research and its use as a model for experimental leprosy.

Dr. Eleanor E. Storrs, while a graduate student in biochemistry, University of Texas, Austin, had published a thesis on "Individuality in Monozygotic Quadruplets of the Armadillo, Dasypus novemcinctus Linn." In 1964 she had established a colony of armadillos in a converted tool shed behind her home in Texas. After accepting a position in the Pesticide Research Laboratory of the USPHS in Florida, she housed her armadillos in a shower room of an old barracks building on an abandoned Navy base. Her interest in the armadillo increased as she continued to work with her little colony.

After transferring to work in biochemistry at the Gulf South Research Institute, New Iberia, Louisiana, she was awarded a grant to develop the nine-banded armadillo for use in biomedical research by the Division of Research Resources, NIH.

A summary of the salient memoranda and contact reports recorded at GSRI serve to establish the history of the initiation and subsequent development of Dr. Storrs' program to transmit leprosy to armadillos. On March 19, 1968, members of the Leprosy Panel, Geographic Medicine Branch, NIAID, visited GSRI at New Iberia to discuss a program concerning analytical methods for dapsone (DDS), the sulfone drug universally used to treat leprosy. During their visit Dr. Storrs suggested the armadillo for leprosy transmission because of its low body temperature and long life span. The panel members expressed interest and gave Dr. Storrs names of people to contact at Carville including Dr. Kirchheimer.

On March 21, 1968, Dr. Storrs visited Dr. Kirchheimer at Carville to discuss leprosy with him and suggested the possibility of the armadillo as an animal model for leprosy. Dr. Kirchheimer expressed interest. After several visits and consultations by telephone there

developed what appeared to be an excellent cooperative research program between the GSRI in New Iberia, La., where Dr. Storrs and her staff had developed unique competence in handling the 9-banded armadillo as a laboratory animal, and the USPHS Hospital at Carville La, with a staff experienced and competent in laboratory and clinical research in human leprosy. Dr. Kirchheimer agreed to collaborate in microbiology, and Dr. Richard E. Mansfield pathologist, agreed to collaborate in histopathology.

Dr. Storrs as Principal Investigator submitted on 1 February 1969 to the NIH a proposal titled "Transfer of Mycobacterium leprae to armadillos. The innovative aspects of this proposal were embodied in the background discussion of the characteristics of the 9-banded armadillo, and the reasons for trying this animal as a model for leprosy research. The microbiologic aspects including the preparation of inoculum, the counting of bacilli, the testing for viability, and the methods for inoculation of the animals were similar to those used by many scientists who had attempted to transmit leprosy to other animals. The grant was approved and funded, however, it was transferred from the NIH to CDC in Atlanta which served as the granting agency.

On February 4, 1970, I called Dr. Storrs informing her that I had fresh lepromatous tissue from Surinam which I could share for the armadillo program. Dr. Kirchheimer had gone to India. His laboratory in Carville received the specimens and prepared the suspension which Dr. Storrs personally on 11 February 1970 brought to New Iberia. Dr. W.E. Greer, veterinarian GSRI, immediately inoculated 4 armadillos intracutaneously. In Carville, Dr. Storrs had been told that the inoculum was contaminated with cultivable non-acid-fast bacteria, but she knew that contamination from skin bacteria would cause no problem when inoculated intracutaneously in laboratory animals.

After Dr. Kirchheimer returned from India, Dr. Storrs visited him on 25 February 1970. He stated that the contaminated Surinam material would be no good and advised no further use of Surinam material, unless the surgeons would collect specimens under sterile conditions. Obviously, had Dr. Kirchheimer been at Carville when the Surinam tissue was received, the now famous armadillo No. 8 would not have been inoculated.

Members of the staff of GSRI on 24 May 1971 and 1 July 1971 biopsied infiltrated lesions that had appeared at the sites of the inoculations of armadillo No. 8. Dr. Kirchheimer found numerous acid-fast bacilli and lepromatous type infiltration in the tissues along with nerve invasion by the bacilli. Dr. Kirchheimer was the "pathologist" for the studies of armadillo No. 8, because Dr. Mansfield had left.

This exciting discovery brought an early end to the collaborative program between Carville and the GSRI. Dr. Kirchheimer promptly, without clearance by Dr. Storrs, the Principal Investigator on the grant, sent a note to the LEPROSY SCIENTIFIC MEMORANDA distributed by NIAID, reporting the success of the inoculation placing his name as senior author. He reported the success at the Joint Meeting of the U.S. - Japan Cooperative Medical Science Program that was held at the NIH 27-30 July 1971.

At this meeting he showed me a manuscript in preparation. He had placed his name as the senior author even though Dr. Storrs felt that as Principal Investigator she should be the senior author of the first scientific report of work supported by her grant.

Dr. Kirchheimer through the period of the collaborative program with GSRI had several times discussed the program with me and had shared with me sections of the biopsy specimen which clearly showed that the disease in armadillo No. 8 was histopathologically similar to lepromatous leprosy in man. At the time of the meeting in Bethesda in July, I offered to prepare photomicrographs for the report and suggested some changes in the histopathologic descriptions. I took the photomicrographs which were printed in color (IJL 39:693-714 /1971). The legends carry the AFIP negative numbers.

Armadillo No, 8 died on 15 August 1971. Dr. Storrs stated that Dr. Kirchheimer was notified immediately. He came over to witness the autopsy which was done by members of the GSRI staff. A contact report of July 16, 1971 stated that Dr. Kirchheimer and others came over to collect the material from armadillo No. 8 which had been preserved in wet ice. Dr. Kirchheimer with the permission of Dr. Storrs took the carcass to Carville for further study.

On August 20, 1971 the Department of Health, Education and Welfare convened a press conference in Rockville, Md., to feature the breakthrough that the 9-banded armadillo was susceptible to the human leprosy bacillus. I attended the conference. There were 8 or 10 reporters from the news media. Dr. Kirchheimer was the principal spokesman. As far as I can remember, this meeting focused entirely on the work at Carville with no mention being made of any contribution from the GSRI. The following Sunday the Washington Post and the Washington Star reported the conference but no mention of GSRI or Dr. Storrs was made in either article.

The Director of Research Resources, NIH, sent a letter to the Washington Post protesting the failure to mention the role of Dr. Storrs and the GSRI. He stated: "All of the animals inoculated were from the Gulf South Research Institute colony. The inoculations and surveillance of the biologic conditions of the armadillos were performed at the Gulf South Research Institute. The recent press conference neglected to inform the science writers present about the work of Dr. Storrs and her colleagues at the NIH-supported animal resource. Because this was an indispensable part of the story, we wanted to get these facts to the public since this work has promise and the public has a need to know." I do not know if the Post published the letter.

Dr. Storrs in reporting a contact by telephone on August 27, 1971 with a representative of the CDC office handling her grant, learned that when Dr. Kirchheimer had been questioned concerning his reporting of tissues emanating from the CDC grant project at GSRI, stated that the minute the tissues left New Iberia, the GSRI no longer had anything to do with them.

At the time of the Washington press conference I discussed with Dr. John R. Trautman, Medical Officer in Charge at Carville, my concern that the relationship between Dr. Kirchheimer and the staff at GSRI had deteriorated and emphasized that each institution needed the other in pursuing the great opportunity offered by the armadillo as a model. He asked me what could be done to keep the two groups working together. After much deliberation I decided, under the auspices of the Leonard Wood Memorial, American Leprosy Foundation, to sponsor a meeting attended by representatives of the staffs of GSRI and Carville. I arranged a meeting at the Hilton Inn at the New Orleans airport on 3

September 1971. Invited to attend were 3 staff members of GSRI, 3 staff members of the Carville Hospital, Dr. Charles Shepard from CDC and Dr. Myron Willis, the CDC representative for the grant. I chaired the meeting and Dr. Shepard was recorder.

At this meeting, Dr. Storrs saw for the first-time the manuscript already in press "Attempts to Establish the Armadillo (Dasypus novemcinctus Linn) as a Model for the Study of Leprosy". This paper of which Dr. Kirchheimer was senior author reported results obtained under a grant for which Dr. Storrs was Principal Investigator. She was listed as co-author.

In reporting the conference, Dr. Shepard recorded "that since the contention about the origin of the idea for the inoculation of armadillos had caused significant misunderstanding, it might be stated here that the first record of the suggestion indicates it arose during a visit of the members of the U.S. Leprosy Panel (U.S. -Japan Cooperative Medical Science Program) to the GSRI in New Iberia on March 19, 1968". This confirmed the contact report that Dr. Storrs had made of the visit during which she had suggested to members of the Leprosy Panel that the armadillo be tried and they had shown interest.

As a result of this "Peace Conference" on 3 September 1971 a senior scientist of the Carville staff and a senior scientist of the GSRI staff were asked to comprise an advisory group that would serve to resolve problems that might arise in the future concerning the armadillo program. This plan worked for a few months but early the next year the relationship between the institutions completely deteriorated. Some time after the success with armadillo No. 8, Dr. Kirchheimer started a program at Carville on transmission of M. leprae to armadillos.

On May 2, 1972 he sent a letter to the Chief of the Bacteriology and Mycology Branch, Extramural Programs, NIAID, in which he discussed his research proposal to use the armadillo as a model for leprosy research. In that letter he stated "I have no longer time to spare for collaboration with Dr. Storrs. I believe that this course of action is particularly justified because Dr. Storrs' grant renewal application has nothing new to offer and in fact envisages only continued inoculations of more and more armadillos by the same techniques and same process of evaluation as outlined for her by myself when the grant was first applied for." Thus the collaborative program so carefully planned and officially agreed to by the directors of the two institutions came to an end.

In his Letter to the Editor, Dr. Kirchheimer mentioned that he was senior author on a paper in the INTERNATIONAL JOURNAL OF LEPROSY 40: 229-242, 1972. This was the autopsy report on armadillo No. 8. He failed to mention that I, as third author, had collaborated in the histopathologic descriptions and provided, with legends, the 4 color and 7 black and white illustrations used for this paper. The AFIP negative numbers are included with the legends.

He was correct in stating that I was present at only 2 autopsies of the 15 we reported in the IJL 44: 80-83, 1976. These were the first 2 infected armadillos autopsied after No. 8. Because at that time GSRI was not staffed for adequate histopathologic processing of armadillos, as Registrar for Leprosy, I agreed to carry out the histopathologic studies at the AFIP. Dr. Sohan L. Issar submitted carefully selected tissue on which I made the

official reports. At GSRI the files of the 7 animals autopsied by Dr. Issar were searched but no histopathologic reports were found. In the absence of adequate histopathologic processing of armadillo tissues at GSRI, the staff there could not understand Dr. Kirchheimer's statement that Dr. Issar had made the histopathologic evaluations. I had provided the colored slides used by Dr. Issar in 1973, when he reported the histopathologic features of the experimental disease.

Dr. Kirchheimer in the last 3 paragraphs of his "Letter to the Editor" mentioned the discovery of a naturally occurring leprosy-like disease in armadillos that had been reported by Walsh et al from the GSRI in the December 1975 issue of the JOURNAL OF THE RETICULOENDOTHELIAL SOCIETY.

He expressed skepticism as to the validity of this report because be had failed to find any naturally infected animals in 233 armadillos which he had examined between 1974 and 1976. He stated: "In summary, it must be said that the reported great contribution made to leprosy research credited to a cooperative effort of AFIP and GSRI has no factual basis."

He failed to mention the paper in the INTERNATIONAL JOURNAL OF LEPROSY, 42: 251-259, 1974 by Yoshizumi, Kirchheimer and Ashbury on "Light and Electronmicroscopic Study of Peripheral Nerves in an Armadillo with Disseminated Leprosy. The armadillo subject of this paper was inoculated at Carville in the skin of the abdomen on 16 March 1972. Three months after inoculation a walnut-sized subcutaneous swelling of the left thigh area was biopsied. Bacteriologically and histopathologically this was an advanced leproma. Approximately 190 days after inoculation acid-fast bacilli were present in the nasal discharge of the armadillo. The animal was killed and autopsied 196 days post inoculation. There was a severe disseminated lepromatous infection with acid-fast bacilli in the median nerve which formed the basis for the EM studies. This animal obviously was naturally infected, probably as long as 18 months before Dr. Kirchheimer used it for his inoculation experiment.

The research staff at GSRI during the past year has continued surveying armadillos in search for naturally infected animals. Most of the infected animals have come from lower Louisiana near the Gulf. The 10% positive rate that had been mentioned by Dr. Walsh was gained from a study of animals in the areas where positive animals had been found and not for the entire state of Louisiana. In one locality 18 of 75 animals examined had the disseminated naturally occurring disease.

In addition to the foci of infection in lower Louisiana, a focus has been found in the Jackson-Bienville area of northern Louisiana which is about 175 miles from New Iberia. Reports of these investigations are being prepared for publication. Dr. Wayne M. Meyers of the AFIP staff will make a comprehensive report on the status of the naturally acquired leprosy in armadillos at the meeting of the U.S. and Japan Leprosy Panels which will meet in Tokyo later in September.

Chapman H. Binford
Armed Forces Institute of Pathology
Washington, D.C.

***This letter was condensed prior to publication. Binford sent Storrs a copy of the unedited text.**

XX-3. Burchfield, H.P. 1999. Letter to Science.

26 March, 1999
Editor, Science
Dear Sir:

Re: Armadillos and a failed vaccine program

Science is requested to publish this letter to protect the reputation of Eleanor E. Storrs. She was named a Fellow of AAAS in 1976. This honor grew out of a report she wrote for Science entitled " Leprosy in the Armadillo: A New Model for Biomedical Research (1). The vast numbers of leprosy bacilli available from armadillos inspired WHO to establish an international program for the development of an anti-leprosy vaccine. During a 24-year program, this vaccine was used in field trials together with alternate vaccines and placebos on 29,000 volunteers in Venezuela (2), 121,000 volunteers in Malawi (3), and 250,000 volunteers in India (4). When tested in combination with BCG, the vaccine did not afford significantly greater protection than BCG alone.

In 1995, laboratory tests conducted by WHO showed that 2 of 6 lots of vaccine possessed little or no immunoreactivity (5). It is probable that all the vaccines were inferior because they were prepared from armadillo tissues that contained from 10^9 to 1010 bacilli per gram. Tissues containing fewer than 10^9 bacilli per gram could not be processed. Thus, borderline materials were used throughout the program.

The WHO program was based on the finding by Storrs that armadillos produced tissues containing 10^{11} to 10^{12} bacilli per gram (6). Her high yields were affirmed in a news article in Science (7). The decline in armadillo productivity by more than 2 orders of magnitude undoubtedly contributed to the failure of the vaccine program.

The decline took place because Storrs' laboratory was closed abruptly before methods for obtaining consistently high yields could be defined. Other laboratories were unable to repeat her work. The talisman for obtaining high yields was lost, never to be rediscovered. In retrospect, it appears likely that her high yields resulted from use of laboratory-raised animals that were immunologically naive. The other laboratories attempting to repeat her work used wild-caught armadillos with acquired immunity. Storrs' program was closed prematurely because U.S. Public Health Service scientists falsely accused her laboratory of starting a leprosy zoonosis in wild armadillos, either by contaminating the environment or permitting inoculated armadillos to escape (8). These charges were published in the scientific and lay press throughout the world (9). Seven years after her laboratory was closed down, U.S. Public Health Service published a paper showing that leprosy occurred in wild armadillos before 1961 (10). Storrs inoculated the first animal to develop experimental leprosy in February of 1970 (11). Therefore, she could not have been responsible for the occurrence of a leprosy zoonosis in wild animals. Also, she did not cause the decline in armadillo productivity that led to the

collapse of the WHO vaccine program. This responsibility must be borne by those who undermined her program before all the facts were known.

References

1. Storrs, E.E., G.P. Walsh, H.P. Burchfield and C.H. Binford. Leprosy in the Armadillo: A New Model for Biomedical Research. Science 183: 851-852, 1974.

2. [11]Convit, J., Sampson, C., Zuniga, M., Smith, P.G., Plata, J., Silva, J., Molina, J., Pindaric, M.E., Bloom, B.R., and Salgado, A. Immunoprophylactic trial with combined Mycobacterium leprae/BCG vaccine against leprosy: preliminary results. Lancet 339 (1992), 446-450.

3. [12]Karonga Prevention Trial Group. Randomized control trial of single BCG, repeated BCG, or combined BCG and killed Mycobacterium leprae vaccine for prevention of leprosy and tuberculosis in Malawi. Lancet 348 (1996) 17-24.

4. Nath, I. A vaccine for leprosy. Nature Medicine 4 (1998) 548-550.

5. Immunology of mycobacterial diseases (MMYC) steering committee, World Health Organization. Analysis of vaccines prepared from armadillo-derived M. leprae, results of an inter-laboratory study coordinated by the World Health Organization. Int. J. Lepr. 53 (1995) 48-55

Reference 68. Letter from American Scientist (Sigma Xi)

American Scientist
99 Alexander Drive ·
P.O. Box 13975 · Research Triangle Park, NC 27709-3975

Monday, October 4, 1999

Harry P. Burchfield
72 Riverview Terrace
Indialantic, Florida 329034640

Dear Dr. Burchfield:

I was saddened to hear from Peggie Hollingsworth about your unsuccessful efforts to obtain recognition for your wife's research on leprosy. I hope that you will be able to find an appropriate remedy. It was appropriate to ask whether there might be something that Sigma Xi and American Scientist can do; however, I must respond that the case lies quite outside the mission and capability of the magazine.

American Scientist is a secondary publication devoted to the communication of current scientific research and discussion of matters pertaining to science and engineering and the relations between the research enterprise and other social institutions. Like most magazines we work within prescribed and time-honored formats for doing this, and we have a staff qualified to work within those formats. Your case, as an individual professional matter, does not fall within the type of material we are qualified and charged to publish.

Specifically: The rules for Letters to the Editors say that we accept letters that comment on material published in previous issues of the magazine. Among letters that meet this criterion we select for publication those that provide a comment on published articles that will interest the readers. This limitation allows us to publish short letters--all we have

space for, since color pages are very expensive--satisfying to our regular readers, who often have questions about articles they have read. We cannot broaden this criterion without changing the magazine substantially and acquiring additional resources.

Dr. Hollingsworth and I discussed whether this strict rule should be loosened in cases such as yours. We have never relaxed the rule, and I would not wish to do so unless the magazine were to change its Letters policy and restructured to handle these matters. The current staff is not qualified to judge the merits of such letters, and we have no criteria for dealing with them. I regret that there appears to be no channel through which you can remedy the situation, but neither am in position to offer one. I wish you the best.

Sincerely,

Rosalind Reid, Editor

cc: P. Blair

P. Hollingsworth

XX-4. STORRS, ELEANOR E. Biography From Who's Who in America (Marquis, 1996)

STORRS, ELEANOR EMERETT, research inst. exec.; b. Cheshire, Conn., May 3, 1926; d. Benjamin Porter and Alta Hyde (Moss). B.S. with distinction in Botany, U. Conn., 1948; M.S. in Cell Biology, N.Y.U., 1958; Ph.D. in Chemistry, U. Tex., 1967; m. Harry Phineas Burchfield, Jr., Nov. 29, 1963; children-Sarah Storrs, Benjamin Hyde. Asst. biochemist Boyce Thompson Inst. for Plant Research, Yonkers, N.Y., 1948-58, head, instrument. analysis lab. 1958-62; research scientist Clayton Found. Biochem. Inst., U. Tex., Austin, 1962-65; biochemist Pesticides Research Lab., USPHS, Perrine, Fla., 1965-67; dir. dept. biochemistry Gulf South Research Inst., New Iberia, La., 1967-77; adj. prof. chemistry U. Southwestern La., Lafayette, 1974-77; research prof. biology, head, comparative mammalogy and biochemistry laboratory, Fla. Inst. Tech., Melbourne, 1977-; cons. in rehab. and prevention deformities leprosy Pan Am. Health Orgn., WHO, Venezuela, Argentina; Brazil, Mex., 1972-; dep. v.p. Coll. Hansenology in Endemic Countries, 1980-. NIH grantee, 1968-; Centr. for Disease Control grantee, 1969-73; WHO grantee, 1973-, leprosy program grantee, 1978-; German Leprosy Relief Assn. grantee, 1973-; Nat. Council Episcopal Church grantee, 1975-77; Brit. Leprosy Relief Assn. grantee, 1981-; recipient plaque La. Health Dept., 1972, Distinguished Alumni award U. Conn., 1975; gold award Am. Coll. Pathologists and Am. Soc. Clin. Pathologists, 1974, Gerard B. Lambert award, spl. recognition, 1975. Fellow AAAS, N.Y. Acad. Scis.; mem. Internat. Leprosy Assn., Am. Chem. Soc., charter member, pesticides div. Internat. Soc. Tropical Dermatology, Bot. Soc. Am., Reticuloendothelial Soc., Am. Forestry Assn., Am. Soc. Mammalogy, Am. Assn. Lab. Animal Sci. (Charles A. Griffin award 1975), Wildlife Disease Soc., Sigma Xi. Episcopalian (vestryman). Clubs: Appalachian (Boston); Green Mountain (Bear Mountain, N.Y.); Mystik Krewe of Iberians (mem, ct. in 1972, queen 1974). Author: (with H.P. Burchfield) Biochemical Applications of Gas Chromatography, 1962; (with Burchfield, D.E. Johnson) Guide to the Analysis of Pesticide Residues, 2 vols., 1965; also articles, book chpts. Pioneer devel. leprosy in exptl. animal (armadillo). Home: 72 Riverview Terr Indialantic FL 32903 Office: Florida Institute of Technology, Box 6075, 150 W. University Ave., Melbourne, FL 32901-6988. Children display interests early in their

lives, and in my life, this early interest in animals, and the beauty of nature, is one which I have never lost, but one which seems to become more important now with the passing of years. Parents can help mold a child, but should mold the child in the child's interests, as my parents did, not in a mold designed by them.

XX-5. Burchfield, Harry. Biography in Who's Who in the World ((Marquis, 1985)

BURCHFIELD, HARRY PHINEAS, JR., consultant; b. Pitts Pa., Dec. 22, 1915; s. Harry Phineas and Florence Faye (Fearl) B.; A.B., Columbia U., 1938; M.A., 1938, Ph.D., 1956; m. Eleanor Emerett Storrs, Nov. 29, 1963; children-Sarah Storrs, Benjamin Hyde. Chemist, Nat. Oil Products Co., Harrison, N.J., 1938--40; rubber and pesticides chemist Uniroyal Corp., Naugatuck, Conn., 1940-50, dir. plantations research dept., Indonesia and Malaysia, 1951-52; vis. scientist Inter-Am. Inst., Turrialba, Costa Rica, 1950; pesticides chemist, Boyce Thompson Inst. for Plant Research, Yonkers, N.Y., 1950-51, 1952-58, assos. dir. 1958-61; inst. scientist, mgr. SW Research Inst., San Antonio, 1961-65; chief pesticides research lab. USPHS, Perrine, Fla., 1965-67; sci. dir. Gulf South Research Inst., New Iberia, La., 1967-76; prin. scientist Research Assos., 1976; adj. prof. chemistry U. Southwestern La., 1967-77; prof. chemistry, head div. molecular biology Med. Research Inst., Fla. Inst. Tech., Melbourne, 1977-81. Trustee, Gulf Univs. Research Consortium, 1971-76; mem. Carcinogenesis Panel of Secs., HEW Commis. on Pesticides, 1969; mem. nat. tech. adv. com. pesticides EPA, 1971-72, project reviewer research grants, 1972; cons. plant pathology United Fruit Co., La Lima, Honduras, 1955; cons on Carcinogenesis Nat. Cancer Inst., 1965-67; cons. leprosy PanAm. Health Orgn., WHO, Caracas, Venezuela, 1974; lectr. internat. symposia profl. and sci. assns. Recipient of award: Chicago Rubber Group, 1946, EPA grantee 1976-; Nat. Inst. Environ. Health Scis, grantee, 1977-. Mem. Am. Chem. Soc., Lecture Tour Speaker, 1972-77, Soc. Toxicology, Am. Inst. Biol. Scis., AAAS, N.Y. Acad. Sci., Fla. Inst. Tech. Soc. Univ. Fellows (charter 1978). Episcopalian. Author: (with Eleanor E. Storrs) Biochemical Applications of Gas Chromatography, 1962; (with D. E. Johnson and Eleanor Storrs) Guide to the Analysis of Pesticide Residues, 1965; contbr. to other books, also articles in profl. jours. Home and Office: 72 Riverview Terr Indialantic FL 32903

XX-6. Kato, L. 1992. Letter to H.P. Burchfield. August 4. http://pandoras-box.org/my11011.htm

Dr. H. Burchfield
72 Riverview Terrace
Indialantic
Florida 32903
U.S.A.

Dear Dr. Burchfield,

Your detailed report, "Controversies surrounding the development of the armadillo as a model for leprosy", is a well documented, objective description of a typical case of scientific piracy. The content of your manuscript is well known to me in every detail. A discovery made by a lady scientist changed the course of one of the greatest health problems of mankind. The transmission of leprosy into the armadillo led to the

production of a vaccine, opened now avenues in the bacteriology, immunology and therapy of leprosy.

How sad it is that this most important discovery became the subject of unacceptable, often cruel, manipulations by not one, but a group of people against one defenseless lady scientist. At stake were fame and success, but mainly the almighty grants.

The scientific community should join me in expressing our gratitude to you for exposing the documented facts about a case of injustice against which few have dared to raise their voices.

During my half century of academic career I have often witnessed unacceptable practices among scientists. However, the case you expose is obviously shameful. How is it possible that a co-worker can describe an important discovery, prepare a manuscript, and submit it to a reputable periodical for publication without the knowledge and consent of the principal investigator? How would any scientist feel, reading his discovery published by his co-worker, without her consent and knowledge, not to speak of the fact that her name was added sotto voce to the second line of the authors.

Scientists are instrumental in building a better world. How can we expect well-deserved respect and admiration if some of us behave like pirates of our art? Crimes committed against persons, races, nations or humanity are and have to be exposed to prevent such things from ever happening again.

The well-documented facts brought out in your report should be investigated by competent and responsible authorities. The facts must be exposed to the public and, if substantiated, publicly condemned.

This is in the interest of all of us who toil in the workshops of science. It is in the interest of future scientists. The public at large is entitled to know that scientific piracy is not tolerated and that we use their financial support according to the laws of honesty. The victimized scientist also deserves the objective attention of qualified investigators.

I am convinced that responsible authorities will consider your well-documented report with due attention and will act in the interest of those they serve.

Thank you for entrusting me with this document.

Sincerely yours,

Laszlo Kato, M.D.

Director of Research

LK/mm
C.C. To Whom It May Concern

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C. Web Publications Subject to Termination

1 Storrs, E. E. 1999. A lost talisman: catastrophic decline in yields of leprosy bacilli from armadillos used for vaccine production. Int. J. Lepr. 67: 67- 70.
http://www.uow.edu.au/arts/sts/bmartin/dissent/documents/Burchfield/alc02.html

TO THE EDITOR:
International Journal of Leprosy
GWL Hansen Research Center at Louisiana State University
Post Office Box 25072
Baton Rouge, Louisiana, 70894, U.S.A.

The editorial by Meyers in the March 1998 issue of IJL addresses timely and important issues on the role of the armadillo in leprosy research [1]. He states, "It was most unfortunate that deep-seated controversy surrounded research on this animal model and, as a result, the armadillo was soon largely relegated to an industrial role- namely, the manufacture of large numbers of leprosy bacilli for in vitro biochemical, immunologic, chemotherapeutic, and eventually molecular biologic studies." He also states that armadillos yield 10^{13} leprosy bacilli each. This is a misconception. Using present production methods, yield is only 10^{11} to 10^{12} Mycobacterium leprae per animal. [2] At Gulf South Research Institute (GSRI), yields were as high as 10^{14} M. leprae per animal. This difference of 2 to 3 orders of magnitude had a profound effect on the WHO Immunology of Leprosy (IMMLEP) program, and will handicap any future programs dependant on armadillo-derived bacilli.

As Principal Investigator on projects that produced high yielding armadillos at GSRI and low yielding armadillos at Florida Institute of Technology (FIT), I am uniquely qualified to piece together the details of what happened. In late 1973, we sent 4 g of infected tissues from GSRI to Tore Godal of WHO. He estimated they contained 10^{11} AFB. This prompted him to send a 2 g sub-sample to R. J.W. Rees of National Institute for Medical Research (NIMR). Rees found that they contained 1.1 x 10^{12} AFB per gram (wet weight), and that one gram of bacilli (dry weight) contained 1.4 x 10^{14} M. leprae. By June of 1974, Rees had found that seven tissue samples taken from four GSRI animals contained an average of 4.4 x 10^{11} AFB/g (Table 1). One armadillo, No. 5, contained enough bacilli in its liver and spleen alone for preparation of 132, 000 doses of the vaccine eventually developed by WHO. High bacterial yield was confirmed independently by Laszlo Kato of University of Montreal who isolated 60 mg dry weight of bacilli from 10-12 g of tissue [2].

Table 1. Comparison of numbers of M. leprae produced by armadillos at GSRI and Florida Institute of Technology (FIT)

Number	Year (s)	Source	Tissue	Counted by	AFB/gram
1	1973	GSRI	leproma	NIMR	1.1 x 10^{12}
2	1974	GSRI	leproma	Kato	8.0 x 10^{11}
3	1974	GSRI	leproma	NIMR	8.0 x 10^{10}
4a	1874	GSRI	leproma	NIMR	8.2 x 10^{10}

4b	1974	GSRI	lymph node	NIMR	3.7×10^{10}
5a	1974	GSRI	liver	NIMR	3.4×10^{11}
5b	1974	GSRI	spleen	NIMR	6.4×10^{11}
Average 256 animals*	1973-1974	GSRI	all listed and spleens	NIMR- Kato	4.4×10^{11}
Average of	1981-1992	FIT	livers	FIT-NIMR	7.0×10^{9}

*372 animals with AFB counts < 10^9 per gram were excluded from the average as unusable. Thus, effective yield was 2.4×10^9 AFB per g of tissue harvested.

At the first meeting of the Immunology of Leprosy (IMMLEP) Project Group in Geneva during November of 1974, GSRI agreed to supply the IMMLEP Tissue Bank, headed by Rees, with infected armadillo livers and spleens. The first shipment was made in January of 1975. In October of 1975, Rees[3] reported that 323 g of tissue had yielded 492 mg (dry weight) of M. leprae, equivalent to 2.1×10^{11} AFB per gram. Bacterial yields from various batches of tissue differed by less than 7%. Some 300 mg of freeze-dried M. leprae had been distributed by the bank to various investigators on behalf of IMMLEP.

In an article in Vaccine, Stewart-Tull[4] confirmed the figures published by Rees, and quoted him as saying that the average armadillo would yield 125,000 doses of vaccine, and that 150 armadillos would be needed to obtain 180 g dry weight of M. leprae. This latter statement shows beyond doubt that Rees, and consequently WHO, expected armadillos to produce 1.7×10^{14} M. leprae each.

In a 1982 paper in Tubercule, Draper[5] bestowed the ultimate accolade on the armadillo as a source of bacilli for leprosy research by writing that that they would yield as many as 10^{12} AFB per gram, as many as might be obtained from bacteriological media though with rather more trouble. Of course, the latter has still not been accomplished. Draper based this assessment on a report issued by WHO in 1980. Hence, it must have been founded on armadillo tissues shipped to London from 1975 through 1978, when the GSRI program still existed.

In 1982, Maugh[6], writing for Science stated that armadillos yielded as many as 10^{12} leprosy bacilli per gram, a sufficient number for both research and vaccine production. However, estimates from people closely associated with the WHO program had already begun to decline. In 1980, Rees told an Associated Press reporter that each armadillo would yield 25,000 doses of vaccine, down from his original estimate of 125,000 doses. Expectations shrank further in 1981 when Barry Bloom, in an interview with Nature[7] said that each armadillo, 3 years after infection, would yield 2.5×10^{12} AFB, enough for only 4,000 doses. The talisman for bountiful yields had been lost.

By then, I had left GSRI to begin manufacture of leprosy bacilli for WHO at Florida Institute of Technology (FIT) using a fixed IMMLEP protocol based on inoculation of wild-caught armadillos. I had great difficulty in producing tissues containing more than 10^{10} AFB per gram, and was gravely concerned. Low yields were confirmed by a report issued by WHO in 1982[8, p.8] stating low yield of M. leprae from many armadillos was a cause for concern. They had analyzed the data on sources of inocula, sources of armadillos; length of infection; and bacterial titers of inocula. None of these factors appeared to account for the low yields.

In 1982, WHO had contracts with four laboratories to supply M. leprae. FIT had produced 38 % of the usable tissues, and most importantly 91% of the high yielding tissues; those

containing more than 5 x 10^9 AFB per gram. FIT was comparatively successful but even so; our productivity was 2 orders of magnitude lower than WHO had projected at the beginning of the IMMLEP program.

Our final report to IMMLEP illustrates the magnitude of the shortfall. During a period of 14 years, we had produced only 265 animals (out of a total of 637 inoculated) containing more than 10^9 AFB per gram of tissue. Total production was 3 x 10^{14} M. leprae, about equal to the number found in the liver, spleen, and lepromas of GSRI animal No. 5 (Table 1) only 19 months after inoculation. Most importantly, our average yield on the 265 successfully inoculated animals was 1.2 x 10^{12} AFB per animal compared to 1.7 x 10^{14} AFB per animal projected by Rees, a 142-fold difference. These figures are unequivocal. The original IMMLEP goals had become impossible to attain.

The WHO Tropical Disease Research Report for 1989-19909 confirmed this catastrophic decline by stating that research on leprosy bacilli was handicapped by the small numbers of bacilli produced by armadillos. The bacilli took 2 years to grow, it read, and yields were limited to 10^{11} to 10^{12} M. leprae for each successfully infected animal. Nevertheless, the report continued, despite limitations of growing M leprae in armadillos, significant progress was made towards understanding the organism.

WHO damned the armadillo with faint praise. As a source of bacilli, it had fallen far short of expectations, yielding less than 1% of the extrapolated number of M. leprae. The problems saddled on vaccine researchers by low AFB titers are lamented in a 1982 WHO report[8, p.11].

Purification of the bacteria from infected tissue has been a major subject of the research. The criteria of high recovery, preservation of bacterial antigens, and elimination of host derived material are not easily reconciled. The method currently used achieves high yield. . . . Some problems remain: (I) The suspensions from some batches of liver tissue. . . are contaminated with a particulate iron-containing brown pigment. . . . (ii) The bacteria are contaminated by absorbed host components. . . (iii) There is strong evidence that limited proteolysis occurs during homogenization and that bacterial polypeptides are degraded. . . (iv) Several workers attempting the purification process have been concerned about low recoveries. . . attempts to process tissues with very low bacterial counts (109/g) seem to result in poor yields, probably because of ineffective pelleting of the bacteria.(v) The possibility that some of the observed properties of M. leprae are related to its growth in the armadillo host should be considered. . . . Meanwhile, attempts to cultivate M. leprae in culture should be encouraged.

The clouds of frustration and wishful thinking enveloping vaccine development could have been dispelled in an instant by a bountiful supply of tissues containing >10^{11} AFB/g. Any metallurgical engineer knows that a smelter designed to process ores containing 10% of the sought after metal will not function properly if the feedstock drops to 0.1%. It is not surprising that 2 of 6 lots of vaccine produced for WHO did not meet minimum standards[10] and field trials on 141,000 volunteers in Venezuela[11] and Malawi[12] showed the vaccine did not afford significant protection against leprosy infection. A trial is still in progress on the IMMLEP vaccine on 37,000 volunteers in South India. However, India has already bypassed it by approving a vaccine based on Mycobacterium w[13]. The IMMLEP program did not result in an effective vaccine and did not even give a clear-cut answer as to whether such a vaccine is possible.

What caused this catastrophe? The answer may be amazingly simple. At GSRI, we harvested most of the tissues supplied to WHO from young animals born and raised in

captivity[14]. Thus, they were isolated from soil mycobacteria from time of birth which prevented them from acquiring mycobacterial immunity. In Florida, all of the armadillos inoculated for the IMMLEP program were wild-caught adults with acquired cross-immunity. The immunologic gap between the two groups could have caused the difference.

We did not use laboratory-reared animals at GSRI with the specific intent of increasing yield, although we realized this was a distinct possibility[15]. At first we used them to achieve our long-range goal of developing an inbred strain of armadillos highly susceptible to leprosy. Immunologic naivete was an automatic result of the overall research plan. Later, we used them in efforts to avoid inoculating wild-caught adults whom we feared might be infected with the then unknown organism causing a leprosy-like disease in wild armadillos[16]. When the GSRI leprosy program was terminated prematurely, the talisman leading to high productivity was lost.

I cannot prove that decline of armadillo productivity occurred exclusively because of acquired immunity of wild-caught animals, but the basic concept is enshrined in medical lore. For generations, leprologists have preached that acquired immunity protected white settlers in Hawaii from infection during the storied leprosy outbreak of the 19th century when multibacillary leprosy led to exile of immunologically naïve Polynesians to Molokai. Regardless of the mechanism, I'm certain that yield did not dwindle by more than two orders of magnitude without cause. This cause must be sought. M. leprae has not yet been grown in artificial media. Armadillos are still the major source of supply.

Premature termination of the GSRI program may have killed hopes for an anti leprosy vaccine irrevocably, but many research goals of the future will require bountiful supplies of M. leprae. These could be obtained by rediscovering the talisman lost at GSRI or pursuing the seemingly endless quest for cultivation in artificial media. Experience has shown that it is easier to restore a lost art than create a new one for which there is no preexisting template. I earnestly hope that the potential of the armadillo will be reevaluated by the next generation of leprologists. Perhaps the lost talisman can be rediscovered.

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Subject: Answers by Dr. Marilynn H. Gaston, Assistant Surgeon General, Department of Health and Human Services, to statements made to Dr. Harold Varmus, former Director of National Institutes of Health.

I. BACKGROUND STATEMENT

On 1 September, 1999 I wrote to Representative Dave Weldon (R-Fl) concerning misconduct in science by members of U.S. Public Health Service that had an adverse effect on world health. In brief summary, World Health Organization (WHO) initiated a program for the prevention of leprosy based on the finding by Eleanor E. Storrs of Gulf South Research Institute (GSRI) that armadillos could produce vast numbers of leprosy bacilli that could be used to prepare a vaccine. Storrs' program was shut down because of false allegations made by U.S. Public Health Service. The secret of obtaining high bacterial yields from armadillos was lost and has not been rediscovered. The vaccine program was unsuccessful and other research requiring large numbers of leprosy bacilli was severely handicapped.

On 8 October, a Department of Health and Human Services (DHHS) official notified Rep. Weldon that the case had been assigned to Dr. Harold Varmus, Director of National Institutes of Health. To make certain that he had all the facts, I wrote to Dr. Varmus on 18 November highlighting 12 key issues. Varmus did not reply. On 28 of December, Dr. M. H. Gaston, Assistant Surgeon General, wrote to me refusing to give me a hearing. She enclosed rebuttals to the statements I had made to Varmus. These rebuttals contain misrepresentations of data contained in published documents.

The statements I made to Varmus, Gaston's rebuttals, and my comments and conclusions are itemized in Section II of this memorandum. I do not know whether these rebuttals reflect her opinions, those of Varmus, or those of other DHHS staff members. Therefore, I have listed the authors of these statements as Gaston et. al. In a letter to Rep. Weldon, Gaston answered three specific questions that I had posed in my 1 September letter to him. Her answers are contained in Section III.

II. STATEMENTS, REPLIES, AND COMMENTS

1. STATEMENT MADE TO DR. VARMUS. Discovery of the armadillo as a model for leprosy by Dr. Storrs was the most important advance in leprology in the 20th century. Tissues from infected animals yielded as many as 1012 bacilli per gram making it possible for the first time to study the organism in depth. After Storrs' program was terminated because of false charges made about her laboratory, yields decreased to 1O9 bacilli per gram and have remained at that level. The original high yields were verified by P. Draper of National Institute for Medical Research (U.K.) and L. Kato of University of Montreal. The decline in yields can be followed easily by reading reports in Vaccine, Science, Nature, and the New England Journal of Medicine.

Reply by Dr. Gaston et al. The M. leprae made available from armadillos was a great boom to leprosy research. However, early estimates of bacillary content were based on examining small quantities of tissues, mainly lepromas (hard granulomatous nodules containing many bacilli). Fractionation of bacilli from lepromas proved difficult and reticuloendothelial organs (they refer to livers and spleens) were found to yield bacilli of greater purity, even though the average bacillary content of those tissues is lower.

Comments. This statement contains major misrepresentations of fact. In late 1973, Dr. Tore Godal of WHO found that a leproma (4 g) supplied by Gulf South Research Institute (GSRI) contained vast numbers of leprosy bacilli. The amount of tissue supplied to him far exceeded that required for accurate bacterial counts. He sent a 2 g portion of it to Dr. R.J.W. Rees of National Institute for Medical Research (U.K.) who determined that it contained 1 x10^{12} bacilli /g. GSRI then sent him lepromas from two other infected armadillos. They contained 8.0 x 10^{10} and 8.2 x 10^{10} bacilli/g. Next, tissues from armadillo L-124 were sent to him. The liver weighed 225 g and contained 3.4 x 10^{11} bacilli/g. The spleen weighed 36 g and contained 6.4 x 1011 bacilli/g. The lepromas weighed 383 g, of which a 12 g sample was sent to Dr. Lazlo Kato who reported a count of 8 x 10^{11} bacilli/g. Total yield was 646 g of tissue containing more than 3 x 10^{14} bacilli. Rees also reported that the bacilli could be isolated in a much higher degree of purity from livers and spleens than from lepromas which were supplied to him previously. The isolations had been done by Dr. Philip Draper, also of NIMR. Rees visited GSRI in June 1974 and proposed to E. E. Storrs, G. P. Walsh and H. P. Burchfield, that GSRI supply WHO with livers and spleens only, since they were easier to process and contained about the same

numbers of bacilli as lepromas. U. S. Public Health Service employees were not present at these discussions.

The first meeting of the WHO Immunology of Leprosy Project Group took place in Geneva in November of 1974 at which GSRI agreed to supply infected armadillo livers and spleens to WHO. The decision to go ahead with the vaccine program was made on that basis. Use of lepromas was never contemplated. The vast numbers of bacilli in livers and spleens made their use unnecessary. At a meeting of the U. S.-Japan Leprosy Panels in October of 1975, Draper (Int. J. Lepr. 44: 95,1976) of NIMR presented a paper on yields of M. leprae from tissues obtained from GSRI. Typically, he obtained 25 mg (dry weight) of M. leprae from 13 g of armadillo liver, corresponding to 2.7 x 10^{11} bacilli /g. At the same meeting, Rees (Int. J. Lepr. 44, 280, 1976) described isolation of 492 mg (dry weight) of M. leprae from 323 g of liver and spleen, equivalent to 2.1 x 10^{11} bacilli /g of tissue. Bacterial yields from various batches of tissue differed by less than 7%. Some 300 mg of freeze-dried M. leprae had been distributed to various investigators on behalf of WHO.

In a review paper in Vaccine (2: 238; 1984), Stewart-Tull confirmed the figures given by Rees, and quoted him as saying that the average armadillo would yield 125,000 doses of vaccine, and that 150 armadillos would be needed to obtain 180 g dry weight of M. leprae. These latter figures show unequivocally that WHO expected armadillos would produce 1.7 x 10^{14} M. leprae per animal based on livers and spleens only. In a paper in Tubercule (64:, 43,1983), Draper bestowed the ultimate accolade on the armadillo as a source of bacilli for leprosy research and vaccine production. "'Bacteria in the liver and the spleen (of armadillos);" he said, "may reach levels of 10^{12}/g tissue. From such soft tissues it became possible to isolate M. leprae in quantities as great as might be obtained from bacteriological media though with rather more trouble, so that a serious study of the properties of the organism could begin." Draper based this assessment on a 1980 report published by WHO. Hence, it must have been founded on armadillos harvested from 1974 to 1979.

Yields decreased dramatically after termination of the GSRI program in 1979. By then, Storrs had relocated to Florida Institute of Technology (FIT) where she was given a WHO grant to produce leprosy bacilli by a protocol which specified inoculation of wild caught armadillos. The average yield obtained by Storrs (Int. J. Lepr. 67: 67, 1999) at FIT from 256 armadillos was only 7 x 10^{9} bacilli / g. An additional 372 animals contained too few bacilli to be processed, cutting this figure by half. During a period of 11 years, Storrs was able to produce only 3 x 10^{14} leprosy bacilli, less than the number obtained from the liver, spleen, and lepromas of one GSRI animal. Even so, her productivity was substantially higher than hose of the other laboratories producing bacilli for WHO.

The decline was confirmed by Dr. Philip Draper in a 1998 letter to Storrs. who wrote as follows: "Many thanks for the copy of the interesting document about leprosy-infected armadillos. You provide a very plausible explanation for the observed decline in yields from the infected livers and spleens. Incidentally the comment you quote from me came from our own data, which was also given to WHO - I did all the early suspensions and Dick Rees and his assistants counted them. I can remember being very excited because we managed to isolate nearly a gram of bacteria on one occasion. "

Draper also commented that inoculation of young animals that had been raised in the laboratory could result in higher quality bacterial suspensions. "I think your explanation also serves for this business of the brown pigment, which causes many suspensions to be rejected for human use. Your early infected animals were young and kept in rather stress-free conditions, whereas wild-caught animals are entirely unpredictable in both

these respects. The pigment is almost certainly lipofuscin or 'age pigment' . . . .The people in Fort Collins (Dr. Patrick Brennan) and I have tried all sorts of ways of removing the pigment with marked lack of success. Clearly, the solution is to use animals without it in the first place."

Draper developed the method that was used for the isolation of bacilli from armadillo tissues that was used throughout the entire vaccine program. He is in a better position than anyone else to attest to the decrease in yields and the presence of interfering compounds in the preparations.

Conclusion. It has been shown beyond a reasonable doubt that the production of leprosy bacilli by armadillos declined by 2 to 3 orders of magnitude after Dr. Storrs' armadillo program at Gulf South Research Institute was terminated prematurely. The shortfall of bacilli that ensued had an adverse effect on all phases of leprosy research requiring large numbers of bacilli. Gaston et. al. have proposed an explanation for this decline which has no basis in fact.

a) Gaston et. al. state that early estimates of bacterial numbers were made on small amounts of tissues, mainly lepromas. Fact: Very large numbers of lepromas were available on which bacterial counts could be made with high accuracy. b) They state that low yielding livers and spleens were substituted for high yielding lepromas because they were easier to process. Fact: The bacterial counts on the various tissues were not significantly different. c) The Gaston et. al. account is entirely fictitious. USPHS staff were not present at the meeting at which these decisions were made.

2. STATEMENT MADE TO DR. VARMUS. Based on the high bacterial yields obtained from Storrs' laboratory, WHO initiated a program to develop an anti-leprosy vaccine. Field trials were made on 200,000 volunteers in South America, Africa, and Asia. The program failed because of the poor quality of the vaccines prepared from low yielding armadillo tissues. Details can be found in WHO reports and papers in Lancet, International Journal of Leprosy, and Nature Medicine.

Reply by Dr. Gaston et al. The development of armadillos as propagative hosts for M. leprae made it possible for public health officials to consider the use of vaccines to prevent leprosy. Unfortunately, early results from those trials show poor efficacy. This could be related to any number of factors including the quality of leprosy bacilli, the dose, delivery mechanisms, or many complex immunological phenomena such as differing environmental exposures.

Comments (a) Dr. Storrs' letter in IJL contains a quotation from a WHO report indicating that great difficulty was encountered isolating M. leprae from tissues with low bacterial titers. (b) In 1982, half of the tissues submitted to the WHO tissue bank contained fewer than 109 AFB/g and could not be processed. The remainder were marginal. (c) In 1995, a WHO expert committee reported that the M. leprae vaccine used in Venezuela had little or no immunoreactivity. (d) The vaccine was tested on 29,000 people in Venezuela. Half of them received BCG alone and the other half BCG + M. leprae. Protection of both groups was moderately good but the vaccine containing M. leprae was no more effective than BCG alone. BCG served as an internal standard, showing that failure of the trial was caused solely by the low efficacy of the M. leprae component. If the delivery system etc. had been at fault, the vaccine wouldn't have worked at all. I point out that BCG confers cross-immunity to leprosy while M. leprae should confer specific immunity and thus should be more effective.

Conclusion. The preponderance of evidence suggests that the vaccine trial failed because of the low bacterial titers of the armadillo tissues.

***3. STATEMENT MADE TO DR. VARNUS*. Because of the availability of bacilli from armadillo tissues, programs were initiated on elucidation of the M. leprae genome, biochemistry of the bacillus, and intermediary metabolism. While much valuable information has been obtained, progress has been delayed and costs increased enormously by the decrease in supply of bacilli.**

Reply by Dr. Gaston et al. There has always been keen interest in obtaining greater quantities of M. leprae. The hypothesis that laboratory reared armadillos may result in enhanced yields has not been tested in a controlled scientific study and it is unclear why Dr. Storrs did not pursue this proposal anytime over the last 25 years of her scientific career.

Comments. It is an established fact that armadillos harvested at GSRI from 1973 to 1979 produced 100+ times more bacilli per animal than armadillos from all other laboratories. An all out effort should be made to find out why this occurred so that the productivity achieved at GSRI can be restored. Storrs has suggested that it occurred because she used immunologically naïve armadillos at GSRI while all other laboratories used animals with acquired immunity. While this is the most likely reason, other possibilities must be explored.

Gaston implies that Storrs was negligent for not working on this problem for the last 25 years of her career. Let me review the facts. Storrs first established high yields in 1974. The WHO vaccine program was initiated in November of 1974 based on bacterial counts made by WHO on tissues she supplied. In February of 1976, Carville initiated a campaign to blame GSRI for causing a leprosy zoonosis in wild armadillos. As a result, GSRI suspended Storrs from the leprosy program in August of 1976. Her successor, Dr. Gerald P. Walsh continued to inoculate animals from the laboratory-raised colony she had developed. Storrs did not find out that a decline in yields had taken place until the 1980s after she had relocated to Florida Institute of Technology. In 1982, she learned that yields were low elsewhere when WHO published data comparing results of other laboratories supplying tissues. By that time use of wild-caught animals had become standard operating procedure. However, even so, her yields were substantially higher than those of the other laboratories. This was puzzling since the protocols they used were identical. As the years went by, it became evident that sylvan leprosy did not occur in Florida in contrast to Louisiana where 33 % of the wild animals harbor M. leprae. This suggested that Florida animals may acquire cross-immunity by exposure to non-pathogenic soil mycobacteria while Louisiana armadillos possess both cross immunity and specific immunity to M. leprae. Painstaking review of publications an fragmentary laboratory records salvaged from GSRI, indicated that the high yielding GSRI animals were laboratory raised and thus protected from acquiring both cross and specific immunity. By the time she reached this conclusion she had retired from FIT and it was no longer possible to initiate work to make a direct comparison.

Conclusions. The explanations given by Gaston et. al. to statements #1 and #3 are inconsistent. In reply to #1, they claim that yields decreased because of substitution of high yielding lepromas with low yielding livers and spleens. In reply to #3 they claim that laboratory-raised animals have not been shown to produce higher yields in a controlled study. This latter reply confuses cause (use of animals having acquired immunity) with effect (decline in yields). The fact is that yields at GSRI were 100-fold greater than elsewhere.

***4. STATEMENT MADE TO DR. VARMUS*. An artificial shortage of the prognostic reagent lepromin was created by award of a sole source contract by WHO to manufacture it to the U.S. Public Health Service Hospital in Carville, LA. During 7.5 years, Carville produced 18.5 liters of lepromin from 11 armadillos. The same amount of lepromin could have been produced from the spleen of one heavily infected animal from Storrs' laboratory. The Carville work is described in a paper co-authored by J. Walter of WHO.**

Reply by Dr. Gaston e al. This statement is misleading and its relevance unclear. Lepromin is prepared from armadillo lymph node tissues and has a shelf life of only 2 years. Several batches using different animals would have been prepared over any 7.5 year period. Designation as a sole source supplier was a WHO decision.

Comment. My statement shows that GSRI animals were far more productive than Carville's as shown by the fact that one GSRI spleen could have equaled the entire Carville production over 7 1/2 years. This was widely known at the time. A 1974 report in Time magazine indicated that one GSRI animal could have yielded 15 million doses of lepromin. Carville produced only 167,000 doses from 1974-1981. Publications from endemic countries continued to indicate that lepromin was still a scarce commodity.

Conclusion. In 1974, GSRI could have produced an inexhaustible supply of high-quality low-cost lepromin for use in clinical laboratories of developing countries. Although aware of this capability, U.S. Public Health Service officials did not invite GSRI to participate in this program because of their unwillingness to recognize their inadequacies. A letter from NIAID to GSRI requesting a donation of this material was all that would have been required to alleviate this shortage. It was never written.

***5. STATEMENT MADE TO DR. VARMUS*. Preparations of M. leprae used for research worldwide were contaminated with cultivable soil mycobacteria. Extensive work was done on this problem by Dr. Francois Portaels of Institute of Tropical Medicine, Antwerp, and many others. Contamination was caused by inoculation of wild-caught armadillos carrying soil bacteria. This problem could have been avoided by use of laboratory-raised animals as practiced by Storrs. Introduction of saprophytic bacteria would have been minimized and yields of M. leprae increased by 100 to 1000 -fold. Thus the purity of armadillo-derived bacilli as well as the quantity was reduced by untimely closing of her program.**

Reply by Dr. Gaston et al. No cause and effect relationship has been established. Though it may seem reasonable to assume that lab reared armadillos might be more free of soil borne contaminants than free ranging animals, it remains unclear if the contaminants found in those studies evolved from the outside environment or from within the laboratory. The suggestion that lab reared armadillos have higher yields of leprosy bacilli remains to be addressed in a controlled scientific study.

Comment. Any knowledgeable microbiologist would agree that wild animals carry higher bacterial loads than animals born in the laboratory and raised in sterilized pens on laboratory bedding. Contamination of these animals with soil microorganisms would be considered evidence of poor colony management. It is an established fact that GSRI animals raised under these conditions yielded 100+ times more M. leprae than wild-caught armadillos.

Conclusion. The quality as well as the quantity of M. leprae preparations was reduced by inoculation of wild-caught armadillos. Many scientists had to interrupt their normal research activities to work on the problems this created.

***6. STATEMENT MADE TO DR. VARMUS*. Some leprologists believed that the discovery by Storrs that wild armadillos are naturally infected with human leprosy was more important than development of the animal model. Yet, Carville denied the existence of this zoonosis for 11 years, or alternatively claimed that if it did exist; Storrs had caused it by contaminating the environment or by allowing escape of infected armadillos. Smith et al. of University of Texas confirmed this discovery in 1978, and subsequently reported leprosy in 23 animals in the Journal of the Reticuloendothelial Society. Between them, Carville and CDC reported only three cases between 1974 and 1985. In 1979, Carville published a forged map in Leprosy in India implying that Storrs had caused leprosy in these animals.**

Reply by Dr. Gaston et al. I am unaware of any forgeries or false statements. The discovery of leprosy infections among wild armadillos was a startling finding that aroused considerable public concern, and prompted professional speculation about how this disease could have evolved. Early survey reports contained a number of inconsistencies in reported prevalence rates, but subsequent studies by Carville scientists confirmed that armadillos are a large natural reservoir of the infection and that the disease is most common among armadillos in coastal marsh and bottom-land hardwood habitats. Little to no leprosy is found among armadillos in better drained locales. Considering the locations where animals were sampled in the map referenced, the variances in results from your personal observations are consistent with our knowledge about the geographical distribution of armadillo leprosy infections.

Comments. Gaston et. al. have ignored a vast amount of published evidence. My paper in the September-October 1999 issue of World Journal of Microbiology and Biotechnology shows beyond any doubt that Carville launched an attack on GSRI in February of 1976 that did not abate until January of 1979, claiming that GSRI fabricated or caused leprosy in wild armadillos. These charges appeared in Leprosy Scientific Memoranda, Public Health Reports, Leprosy in India, and newspapers throughout the world. A particularly damaging attack was printed in the Baton Rouge Advocate in March of 1978 which was slanted to deprive GSRI of financial support from the State of Louisiana. An article appeared the same day in the Washington Star in which U.S. Public Health Service officials dismissed the possibility of leprosy being a natural disease of armadillos as an entire impossibility. Copies of these damaging accusations are attached. Jacinto Convit, President of International Leprosy Association, deplored the hostile reaction to the GSRI discovery and pleaded for establishment of constructive research programs to explore various opportunities opened up by this discovery. His plea was unheeded. The relentless attacks by Carville culminated with publication of a bogus map (click fabrications) purporting to show that GSRI was the geographic center of infection. This was not an honest difference it scientific opinion. It was a witch-hunt.

Leprosy in wild armadillos was confirmed by University of Texas scientists in 1978. Carville did not confirm it until 1986. Now, Gaston et. al. boast of their achievement. These unwarranted attacks utterly destroyed the leprosy program of GSRI and ended the research career of Dr. Storrs. She was forced to spend the remainder of her working years in a laboratory with a leaking roof and inadequate air conditioning inoculating wild-caught armadillos that could not possibly produce high bacterial yields. It was as though the Government of France had exiled Marie Curie to Equatorial Africa to dig pitchblende with a broken shovel in recognition of her discovery of radium.

Conclusion. Gaston et. al. have denied that U.S. Public Health Service employees made defamatory statements about GSRI even though these statements were published in scientific journals and the lay press. They have denied the evidence of their senses.

***7. STATEMENT MADE TO DR. VARMUS*. Carville admitted the existence of leprosy in wild armadillos in a paper published in 1986 in the American Journal of Tropical Medicine and Hygiene, but fabricated a 1968 environmental contamination hypothesis' to shift the blame for the rumors they had started to O.K. Skinsnes who had discussed this rumor in an editorial in the International Journal of Leprosy. Skinsnes made no mention of such a hypothesis. The first armadillo in the history of medicine known to develop leprosy was not autopsied until July 1971. How could a hypothesis have been formulated to explain the zoonosis in 1968?"**

Reply by Dr. Gaston et. al. The paper mentioned was authored by individual researchers from Carville and Louisiana State University. The editorial cited was published by Dr. Skinsnes in 1976 and mentions accidental contamination of the environment by leprosy researchers as among the possible origins of enzootic leprosy. The work referenced here of Carville scientists showed that armadillos harbored M. leprae long before the animals were ever used in leprosy research.

Comment: This reply avoids the issue. I enclose a copy of the editorial by Skinsnes showing that he did not propose a "1968 environmental contamination hypothesis" to explain the origin of sylvan leprosy (3rd item in damaging accusations). I also include a copy of the title page of the 1986 Carville paper by Truman et al. in which this hypothesis is advanced for the first time. I emphasize once more that workers of University of Texas confirmed leprosy in wild armadillos eight years earlier.

Conclusion. In papers and memoranda published from 1976-1979, Carville falsely accused GSRI staff of causing a leprosy zoonosis, but did not admit their error until 1986. Even then, they did not clear GSRI or Dr. Storrs of their false allegations. Instead, they fabricated a "1968 environmental contamination hypothesis" to cover up their wrongdoing. No amount of circumlocution will change these facts.

***8. STATEMENT MADE TO DR. VARMUS*. Because of their refusal to acknowledge the existence of leprosy in wild armadillos, some of the lepromin Carville supplied to WHO and clinical laboratories in developing countries was prepared from armadillos that had contracted leprosy in the wild. At the time it was not known whether the disease found in armadillos was identical to human leprosy.**

Reply by Dr. Gaston et al. The Carville laboratory exercises many safeguards to help protect the integrity of lepromin and other bacillary preparations. There are no facts to support this claim.

Comment. A paper by Walter and Kirchheimer in Leprosy in India (54: 525, 1982) states that Carville armadillos No. 16 and 16-F-3 were used to prepare lepromin for distribution to WHO and endemic countries. The preponderance of evidence contained in earlier Carville publications shows that Carville armadillo No. 16 was naturally infected with leprosy before capture. This information is included in the section on fabrications. WHO could have obtained this quality of lepromin at much lower cost by collecting carcasses of leprosy-infected armadillos killed by motor vehicles on Louisiana highways.

Conclusion. Gaston et. al. denied the existence of evidence contained in publications by staff of U.S. Public Health Service.

***9. STATEMENT MADE TO DR. VARMUS*. In addition to being a source of leprosy bacilli, armadillos had great potential for basic and applied research on leprosy. According to Dr. Wayne Meyers, a past President of the International Leprosy Association, "many opportunities for research using the armadillo model on epidemiology, transmission and pathogenesis of leprosy were lost because of 'deep seated controversy'."**

Reply by Dr. Gaston et al. We agree. This matter has dragged on now for nearly 30 years and many young scientists have been dissuaded from the field due to Dr. Burchfield's continuing activities.

Comments. Gaston et. al. agree that deep-seated controversy resulted in many lost opportunities for using the armadillo for studies on the epidemiology, transmission, and pathogenesis of leprosy, but omitted the time frame during which this occurred. The statement by Meyers in the March 1998 issue of International Journal of Leprosy reads as follows. " It was most unfortunate that deep-seated controversy surrounded research on this animal model . . . In the era 1971 to the latter 1980s there were probably many missed opportunities in the use of armadillos for basic research on the epidemiology, transmission, and pathogenesis of leprosy. "

The protagonists in the deep-seated controversy which took place within this time frame were members of the Carville staff who claimed that sylvan leprosy was an artifact or was caused by GSRI and those who disagreed with their claim. The latter included Drs. Chapman Binford and Wayne Meyers of Armed Forces Institute of Pathology, Dr. Gerald Walsh of GSRI and later of AFIP, and Drs. Jerome Smith and Dean Folse of University of Texas. I did not take part in writing any of the letters or publications that resulted from this controversy. I did not take active steps to pursue this matter until 1986 when U.S. Public Health Service admitted that leprosy was a natural disease of armadillos but failed to apologize for the ruination of our program.

Conclusion. Opportunities for studies on the epidemiology, transmission, and pathogenesis of leprosy were lost prior to 1986 because U.S. Public Health Service refused to admit the existence of sylvan leprosy and blocked the research efforts of Armed Forces Institute of Pathology and University of Texas by denying them funds to investigate the problem. Gaston et. al. have no justification whatsoever for fixing the blame on me.

***10. STATEMENT MADE TO DR. VARMUS*. The armadillo possessed outstanding characteristics for studies on the chemotherapy of leprosy because (a) it is the only animal model to develop disseminated disease, and (b) Storrs had shown that it was an excellent model for studies on the metabolic disposition of anti-leprotic drugs. This opportunity was unique in the annals of medicine. Yet, it was lost forever by termination of her program. As a result, studies on the treatment of leprosy by multidrug therapy (MDT) were carried out almost exclusively on human patients in developing countries. This was unethical use of human volunteers.**

Reply by Dr. Gaston et al. Armadillos are medium sized mammals weighing approximately 3.5 kg. As insectivores, they have high active metabolism. Because of the high numbers of animals needed in drug studies, the large quantities of candidate drug compounds that would be required for animals of this size, and the unknown pharmacokinetics of drugs among insectivores, armadillos are not good general models for chemotherapeutic studies.

Comments. The armadillo (Dasypus novemcinctus Linn.) belongs to the order Xenarthra (formerly Edentata), not Insectivora as Dr. Gaston implies. Also, it has a low rather than

high metabolic rate. In nature, armadillos eat large numbers of invertebrates, but also consume vertebrates and plants. In captivity, armadillos are fed a diet consisting almost entirely of commercial laboratory cat chow on which they thrive. Dietarily, like humans, they are opportunistic omnivores, which means that they eat the food most readily available to them.

The claim that armadillos would require prohibitively large amounts of experimental drugs for chemotherapy studies is not correct. Armadillos weigh 3 to 5 kg which is about one third the size of a beagle, a dog frequently used in metabolism studies. Storrs has shown that armadillos excrete the antileprotic drug dapsone at rates comparable to those of dogs, and rodents. However, armadillos possess an enormous advantage over these species- they and humans develop systemic leprosy while dogs and standard rodents do not. Thus, it would be possible to study therapeutic activity and development of drug resistance in relation to plasma and tissue levels of drugs and their metabolites only in armadillos. It was never proposed that armadillos be used for primary screening. This would be done by conventional in vitro tests on cultivatable mycobacteria followed up by secondary evaluations in mouse footpads. Only candidate drugs suitable for use in multidrug therapy would be used to correlate metabolic distribution with therapeutic effects and drug resistance. The armadillo provides the only complete system in which such interactions could be studied.

Conclusions. Gaston et al. have misrepresented the taxonomic classification, metabolic rate, and dietary habits of the armadillo in order to disqualify this species as an animal model for drug studies. The correct information is available in many scientific publications and reference books.

***11. STATEMENT MADE TO DR. VARMUS*. Members of the USPHS Study Groups gave false evidence to block renewal of Dr. Storrs' grants. In the critiques of two grant applications submitted to CDC and NIAID in different years it was claimed that armadillos would be difficult to inseminate artificially because they possessed a cloacal plug that would be difficult to bypass. Therefore, the armadillo would be unsuitable for research on leprosy. The armadillo is a placental mammal that does not have a cloaca. There is no obstruction whatsoever between the urogenital sinus and the uterus. This was an established anatomical fact at the time her grant applications were reviewed.**

Reply by Dr. Gaston et. al. In science we occasionally get bad reviews. It is the responsibility of the grant writer to appropriately educate the reviewer or to rebut their comments. Resubmission is the norm.

Comment. The identities of members of study groups are not available to grant applicants; so there is no way to "educate" them. Clegg and Storrs published their comments in Leprosy Scientific Memoranda, but NIH staff and members of study groups did not respond. When these statements are combined with those contained in statement (9) above a grotesquely inaccurate picture of the armadillo emerges. The reviewers must have mistaken the armadillo for a reptile or bird since these classes of vertebrates possess cloacae whereas placental mammals do not. Gaston et. al. claim that the armadillo has a high metabolic rate. The only vertebrates that possess both cloacae and high metabolic rates are birds. If we combine the comments of the grant reviewers and Gaston et al with the known facts about armadillos we arrive at the following contradictions. Fact: The armadillo is a placental mammal belonging to the order Xenarthra that his changed little during the past 55 million years. Fiction: The armadillo is a bird. Fact: The armadillo is an opportunistic omnivore that in captivity will thrive on commercial laboratory chow. Fiction: The armadillo belongs to the order Insectivora and

eats only insects. Fact. The armadillo has a low metabolic rate and long life span which make it suitable for leprosy research. Fiction. The armadillo has a high metabolic rate.

Conclusion. Grant reviewers misrepresented the reproductive system of the armadillo to disqualify it as an animal model for research. The facts can be found in many textbooks on mammalogy.

***12. STATEMENT MADE TO DR. VARMUS*. Carville staff published many papers on the microbiology, pathology. and immunology of leprosy in armadillos that contained fabricated, falsified, or erroneous information. This plethora of falsehoods may mislead other workers in the future. They should be corrected to insure the integrity of the scientific record. These papers appear in the International Journal of Leprosy, Microbios, Leprosy in India (now Indian Journal of Leprosy) and American Journal of Tropical Medicine and Hygiene. A list of references to these publications and others cited in this letter will be supplied on request.**

Reply by Dr. Gaston et al. The number of individuals familiar with your salacious claims are dwindling. This inflammatory allegation appears to be an attempt to perpetuate old controversy by enrolling another generation of Carville scientists as perceived conspirators. I cannot add any new information about this old matter and am sorry that time has not put that old controversy to rest.

Comments. In support of my statements, I attach a manuscript entitled FABRICATIONS AND FALSIFICATIONS that I am preparing for publication. Other evidence is contained in NEGLECT OF A ZOONOSIS and my 1999 paper published in World Journal of Microbiology and Biotechnology. References are included in these compendia.

Conclusions. I have alleged that statements made in certain Carville publications contain erroneous or false information based on comparative analysis of their contents. In reply, Gaston et al have alleged that my claims are salacious (lewd, wanton, lascivious) and inflammatory and that I made them with the intention of injuring innocent or uninvolved people. Further debate at this language level would be futile. It is your responsibility, Madam Secretary, to appoint an unbiased panel of experts to review these papers and report their findings. Guilt or innocence of any of the individuals involved would be determined solely by the conclusions of the panel and the authorship of the publications.

III ANSWERS OF DR. GASTON TO QUESTIONS POSED ON MY BEHALF BY REPRESENNTATIVE DAVE WELDON (R-FL)

(1) Question. Did the Chief of Laboratories of the U.S. Public Health Service Hospital in Carville, LA publish a fabricated map intimating that Gulf South Research Institute caused a leprosy zoonosis in wild armadillos?"

Answer. I am unaware of any false maps or statements of any sort from any time.

Comments. Figures 1 and 2 in fabrications show beyond a reasonable doubt that an officer of U.S. Public Health Service fabricated such a map with malicious intent. The preponderance of evidence indicates that he also falsified statistical data.

Conclusion: Dr. Gaston denied the evidence of her senses. (2) Question: Was the armadillo-leprosy program at the Gulf South Research Institute discontinued in 1979 because of failure of the U.S. Public Health Service to support it?

Answer: We are not able to address the Institute's thought process in making its business decisions.

Comment: In a report in International Journal of Leprosy Roger Rowland, President of Gulf South Research Institute, is quoted as saying that "GSRI had applied for a multiyear grant from the National Institute of Allergy and infectious Diseases (NIAID), a division of the NIH, to continue its leprosy research. The leprosy research program was approved, but the NIH considered it a low priority program, he said." Therefore, the program was not funded. Rowland said GSRI decided it could not underwrite the program to cover the loss of the NIH grant.

Conclusion Dr. Gaston denied the evidence of her senses.

(3) Question: Is it reasonable to believe that production of leprosy bacilli by armadillos declined by 99 percent or more after Storrs' program at Gulf South Research Institute was terminated?

Answer: In her recent postings, Dr. Storrs suggests that she used laboratory-reared armadillos at GSRI and that these animals can yield 100 times more leprosy bacilli than other armadillos. This hypothesis has not been tested in a controlled scientific study, and there is no experimental evidence to either support or deny the reasonableness of that belief.

Comment. In her 1999 letter to the editor of International Journal of Leprosy Storrs showed beyond a reasonable doubt that the production of leprosy bacilli decreased by 99 % or more after the leprosy program at Gulf South Research Institute was terminated. This is a fact. The reason why this decline took place, although important, is secondary.

Conclusion. Dr. Gaston evaded answering the question posed to her on my behalf by Rep. Weldon.

H.P. Burchfield, Ph.D.

24. Burchfield, H.P. 2000. Open letter to the Honorable Donna Shalala, 17 May. http://www.uow.edu.au/arts/sts/bmartin/dissent/documents/Burchfield/alc01.html

Dear Madam Secretary:

Re: Crimes against humanity

This open letter to you will inform the scientific community that members of U.S. Public Health Service have committed acts of misconduct in science which escalated into crimes against humanity. Because of their misdeeds, the most important discovery in applied leprosy research of the20th century was corrupted, and vaccine trials on 200,000 volunteers in developing countries came to naught. Research on the immunology, biochemistry, and genome of the leprosy bacillus was needlessly retarded. A leprosy zoonosis (epidemic) in wild armadillos was neglected by the government for 11 years, and as a result, many opportunities were lost for studies on the epidemiology, transmission, and pathogenesis of leprosy. Your department, Madam Secretary, has abetted these crimes by adamantly refusing to determine the facts so that remedial actions could be taken.

This tragedy began in 1971 when Eleanor Storrs, a scientist working at a private laboratory in Louisiana, and her collaborators from U.S. Public Health Service discovered that leprosy could be transmitted to the nine-banded armadillo. Although Storrs had originated the concept and was principal investigator, her collaborators claimed that the discovery was theirs, disparaged her in a letter to National Institutes of Health, and set up a competing armadillo-leprosy colony at the U.S. Public Health Service Hospital in Carville, Louisiana. The Carville program was doomed to mediocrity from the beginning. By dissolving their partnership with Storrs, they cut themselves off from animal resources in her laboratory that were essential to success. Throughout the entire course of their program, they failed to realized that a key ingredient was missing.

While their program lingered in the doldrums, Storrs' burgeoned beyond all expectations. In 1974, she found that infected armadillos could yield 200 trillion (2 x 1014) leprosy bacilli each. These vast numbers made it feasible to launch programs on the prevention and cure of the disease that previously had been considered impossible. WHO initiated an effort to develop an anti-leprosy vaccine with the expectation of testing it on half a million people in Africa, Asia, and South America. Immunologists, microbiologists, and physicians, from all over the world gave this project their best efforts. It mushroomed into a multinational program with a single goal-- the conquest of leprosy.

Then disaster struck. Storrs discovered that 10 percent of the wild armadillos she captured in Louisiana were already infected with leprosy. A vast reservoir of leprosy bacilli existed in nature whose occurrence had never been remotely contemplated. Instead of recognizing the enormous research opportunities opened up by this amazing discovery, Carville scientists launched a witch hunt to undermine Storrs' credibility which eventually destroyed her program. At first they claimed that she faked the discovery in order to raise grant money. Then, they claimed that the diseased animals had escaped from her laboratory, or had become infected from contaminated wastes that she had released into the environment. Their witch-hunt culminated with publication of a fabricated map intended to show that her laboratory was the geographic center of infection. The furor this caused resulted in loss of research funds and closing of her laboratory.

The Carville scientists triumphed, but their victory was won at the expense of the leprosy sufferers of the world. With the closing of Storrs' program, production of bacilli by armadillos decreased by 100 to 1000- fold. An unrecognized talisman necessary for high yields was lost in the wreckage of her program. Research and production goals that seemed within easy grasp became difficult or impossible to achieve. They had killed the goose that laid the golden egg. The labors of a generation of leprosy workers were buried beneath the ruins of this disaster. The decline was never acknowledged publicly. No one had the courage to admit that the productivity of armadillos had fallen far below the projections of the leprosy hierarchy or that U.S. Public Health Service might have been responsible. There was no rational scientific basis for explaining the decline; so many people unacquainted with the circumstances may have assumed that the high yields originally reported by Storrs were greatly exaggerated.

Storrs and I were certain that this was not the case. We also realized that the decline was too precipitous to have been caused by minor experimental variations. A profound change in procedure must have taken place suddenly. What could it have been? We

spent many years poring over fragmentary records searching for an answer. The answer, when it came, was amazingly simple. Storrs had inoculated laboratory-raised armadillos that were immunologically naïve. These were exquisitely sensitive to infection. All other laboratories had inoculated wild-caught armadillos that had acquired cross immunity from exposure to free-living soil mycobacteria, and in many cases specific immunity from exposure to the leprosy bacillus itself. They resisted infection; so therefore produced much smaller numbers of bacilli. This phenomenon is reminiscent of the great leprosy epidemic in Hawaii in the 19th century. Polynesians who had not been previously exposed to leprosy antigens were decimated. Caucasians with acquired immunity were relatively unscathed. Thus, in some aspects, the armadillo experience in Louisiana mirrored the earlier human experience in Hawaii.

Storrs published our conclusions in the March 1999 issue of International Journal of Leprosy(67:67), and I supplied the background information in the September-October 1999 issue of World Journal of Microbiology and Biotechnology (15: 653). In November, I wrote to Dr. Harold Varmus, then Director of National Institutes of Health, requesting a scientific review of the evidence. I listed 12 key topics that should be considered. In a letter dated 28 of December, Dr. Marilyn Gaston, Assistant Surgeon General, U.S. Public Health Service, refused to review the case and enclosed rebuttals to the statements I had made to Varmus. They contained many misrepresentations of fact of which I will highlight only three: 1) she fabricated reasons to explain the decline in numbers of bacilli produced by armadillos, 2) she gave false information about the metabolic rate, familial relationships and food requirements of the armadillo, 3) she denied the evidence of her senses by disclaiming knowledge of a forged map and false data published by officials of your department. I accuse Dr. Gaston of making false statements to conceal acts of misconduct in science committed by former members of your department. In doing so, she slammed the door with reverberating finality on revival of the full potential of the armadillo for the war against leprosy. I am prepared to submit documents supporting these allegations to any individual at any time. However, past experience has shown that it is useless to appeal to your department. Therefore, I am appealing to prominent scientists and news media throughout the world to publish this open letter as a service to truth in science and the victims of leprosy.

Open letters played an honorable role in relieving the miseries of Hawaiian leprosy victims who had been exiled to the island of Molokai by public health officials. In 1889, Robert Louis Stevenson wrote such a letter to Reverend Dr. C.M. Hyde of Honolulu that was published in the Sydney Presbyterian. He admonished Hyde fiercely for demeaning the character and Herculean labors of Father Damien, who gave his life to minister to these maimed outcasts from society. Stevenson's passionate defense of Damien and his outrage at the sufferings of the exiles kindled worldwide efforts to improve the lot of leprosy patients.

Treatment of leprosy and leprosy victims is incomparably better than it was in Stevenson's day. Yet, the old saying that an ounce of prevention is worth a pound of cure still holds true. Smallpox and polio have been conquered by vaccines, not drugs. About 1.4 billion people are exposed to leprosy of whom 600 thousand become infected each year. The attempt to develop a vaccine for prevention was aborted by the miscalculations of a few greedy men. A new trail has now been blazed, but Dr. Gaston and others have littered it with untidy heaps of scientific rubbish that hinder progress. I hope that defenders of truth and champions of human welfare from all over the world will urge you

to sweep away this debris so that research on conquering leprosy can surge forward once more.

Respectfully yours,

H. P. Burchfield, Ph.D.

17 May 2000

25. Burchfield, H.P. 2000. Contaminated lepromin.
http://www.uow.edu.au/arts/sts/bmartin/dissent/documents/Burchfield/alc06.html

The first major contribution of the armadillo to public health was a bountiful supply of infected tissues to replace human lepromas for preparation of lepromin (Storrs, 1976). Highly infected human tissues had become very scarce, since the only source was patients with advanced disease who were not being treated with drugs. WHO selected Carville to prepare armadillo-derived lepromin (lepromin A) for worldwide distribution (Walter & Kirchheimer, 1982). When sylvan leprosy in armadillos was first discovered it was by no means clear that the disease was caused by the human leprosy bacillus. Therefore, WHO published guidelines to prevent animals infected with wild bacterial strains from being used in IMMLEP programs (Rees, 1983).

Contamination of lepromin was the most sensitive concern, since it is used throughout the world to perform skin tests on leprosy patients. Errors in prognosis arising from use of non-human bacilli could have threatened the health of thousands of patients. The fact that Carville supplied "contaminated" lepromin to endemic countries is of great concern. The source of the contamination was armadillo No. 16 which was infected with sylvan leprosy when captured. Bacilli from it were passed to armadillo No. 16-F-3 which was also used to prepare lepromin. Details are contained in Case History of No. 16 and shown schematically in Figure 3. Its use in the preparation of lepromin is shown in Table 4.

In 1974, Carville shipped lepromin prepared from animals Nos. 16 and 43 to Burma (Myanmar), India, Japan, Ethiopia, and WHO (Walter & Kirchheimer, 1982). Armadillo No. 16 harbored sylvan leprosy bacilli and, according to other Carville accounts, animal No. 43 did not die until 1975. Either its date of death was listed incorrectly, or another armadillo of unknown history was used. Thus, the pedigree of all lepromin shipped the first year was tarnished.

In 1975, they shipped all of their output to WHO, and all of it was derived from No. 16-F-3. In 1976, they shipped material to Togo, Brazil, Mexico, Norway, Germany, and WHO. It was prepared from No. 16-F-3 and three other armadillos which are not listed in other Carville publications. This material went to Mexico, Togo, Brazil, Norway, Germany and WHO. In 1977, they shipped material containing bacilli from No. 16-F-3 and two other animals to Paraguay, El Salvador, Mexico, India, Somalia, Togo, and Belgium. Thus, during four consecutive years, they supplied lepromin prepared from bacilli native to wild armadillos to laboratories and clinics in Africa, Asia, Latin America, and Europe. During the 7 1/2 year report period they supplied 18.5 liters of lepromin, enough for skin tests on 167, 000 people.

Were other Carville shipments contaminated with wild strains of bacilli? Of that we can't be certain, but data in Table 4 show it's probable. Accession numbers of armadillos

ranged from 16 to 257 during the 7 _ years, suggesting that as many as 10 to 20 Carville animals had sylvan leprosy when captured. During the report period, nine armadillos, in addition to Nos. 16 and 16-F-3, were used to prepare lepromin. It seems likely that IMMLEP animals other than No. 16 could have had leprosy when captured.

U. S. Public Health Service may claim no harm was done since the organisms infecting wild armadillos are identical to human leprosy bacilli. However, no one knew this at the time. Many believed, with considerable justification, that the infectious agent might be a species specific for armadillos, just as M. lepramurium causes a specific leprosy-like disease in rodents. If this had been the case, enormous harm could have been done. The irony is that WHO could have saved much time and money and gotten just as good results by procuring lepromin from Louisiana road kills.

26. Burchfield, H.P. 2000. Fabrications and falsifications.
http://www.uow.edu.au/arts/sts/bmartin/dissent/documents/Burchfield/alc06.html

The Carville map

The 'Armadillo War' did not end with the confirmation of leprosy in the wild. Instead, the argument focused on how the zoonosis began. A month after the Smith et al. (1978a) memorandum proving the existence of sylvan leprosy appeared, Kirchheimer & Sanchez (1978b) finally reported a wild animal with leprosy. In an interview given to the Baton Rouge Advocate (McRae 1978), Kirchheimer reported that it was one of 17 caught in February of 1978. The staff immediately suspected that it had leprosy. The animal was in overall poor condition and died in May. Leprosy bacilli were found in the animal's blood, skin, and vital organs. Kirchheimer said 'It evidently had leprosy for quite awhile."

In January of 1979, Leprosy in India published a paper from Carville (Kirchheimer 1979) confirming leprosy in this animal. The paper featured a map purporting to show that GSRI caused the zoonosis (Figure 1).

Figure 1. Redrawing of map published by Carville purporting to show sites (in circles) where GSRI staff collected animals with sylvan leprosy (Kirchheimer, 1979). The crude template map of Louisiana used by Carville was replaced by a tracing of a Rand-McNally map. The arrows used to show sites where Carville collected animals were replaced with squares.

According to Kirchheimer:

Figure 1 is a map of Louisiana and shows the Mississippi River with Carville situated at the east bank. Farther to the west is the Atchafalaya River. Gulf South Research Institute is to the west of the Atchafalaya at a distance of 50 air miles (85 km) southwest of Carville in what is known as Acadian Louisiana. The numbers in arrows (changed to squares in redrawn map) indicate where Carville's armadillos came from and the numbers in circles where Gulf South Research Institute found "natural" leprosy in 10 percent of wild armadillos . . . . The possibility . . . needs to be investigated that infection of wildlife might have originated from conditions which permitted experimentally infected armadillos and/or contaminated materials to reach the outside.

The GSRI data (Walsh et al. 1977) are shown in (Figure 2).

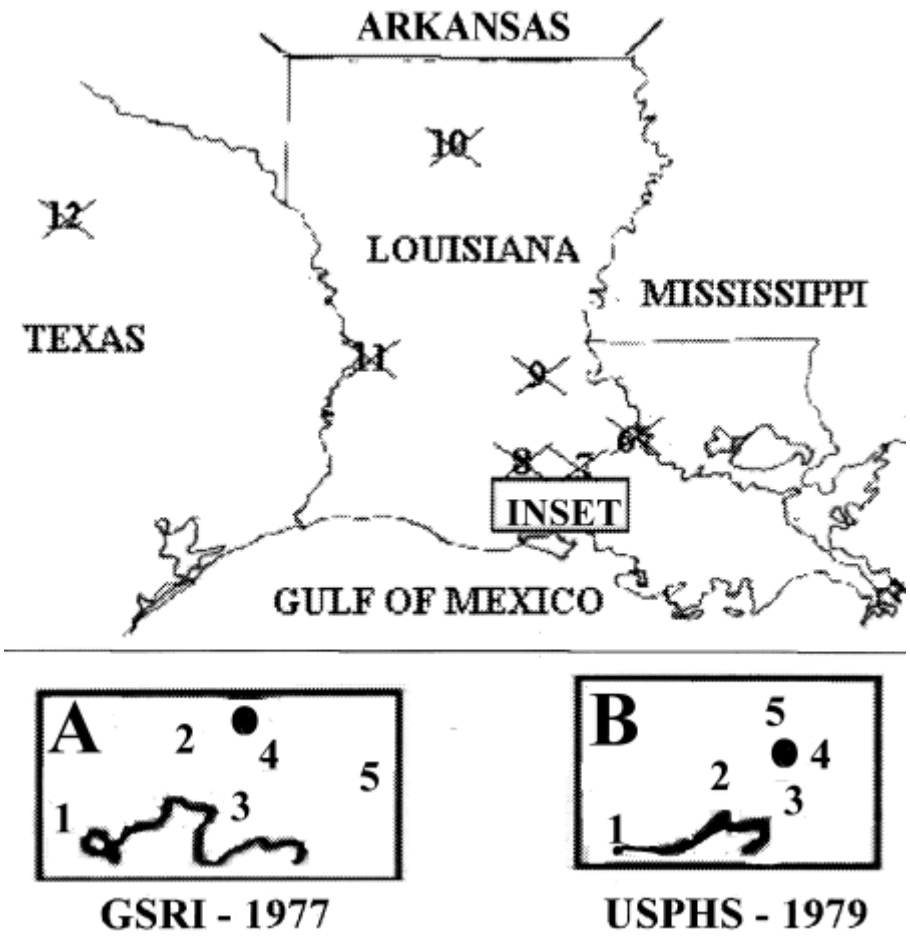

Figure 2. Map showing 12 numbered sites where GSRI staff collected animals with sylvan leprosy (Walsh et al.1977). X's indicate sites omitted by Carville in Figure 1. Inset A is an enlargement showing the seven sites closest to GSRI on the GSRI map. Inset B is the same area with the five GSRI collection sites (encircled numerals) from the Carville map (Figure 1) superimposed on it, showing relocation of GSRI collection points.

They were misrepresented on the Kirchheimer map. Of 12 GSRI collection sites, two were relocated and seven were omitted altogether. These latter are overwritten by X's in Figure 2. Figure 2A is an enlargement of the seven sites closest to GSRI where armadillos with leprosy were collected by GSRI staff. Figure 2B represents the same area with the GSRI collection sites as fabricated in the Kirchheimer paper superimposed on it. Sites 3 and 5 on the Carville map were moved closer to GSRI than on the GSRI map. Most revealing, site 5 was moved 50 km northwest to complete the encirclement. Thus, GSRI was pinpointed as the center of infection. Sites 7 and 8 were omitted.

Five remote sites where GSRI staff found armadillos with sylvan leprosy were also omitted. These would have exonerated GSRI. The home range of adult armadillos is less than three hectares, and there are no proven insect vectors for leprosy. During the great migration of armadillos from the Rio Grande Valley of Texas to Louisiana through new territory, the north easterly perimeter of their range advanced by an average of 10 km per year. Therefore, spread of disease to remote areas by random animal-to-animal contact would take decades if not centuries.

Site 6 is 70 km from GSRI but only 10 km from Carville. Obviously it had to be omitted from the Kirchheimer map. Site 9 is 90 km NNW of GSRI. The prevalence of leprosy at Site 10 in north Louisiana, 300 km from GSRI, was almost 30 percent, the highest in the survey. Site 11 in west Louisiana, 190 km from GSRI and site 12, in Texas, 490 km from GSRI were far too remote to incriminate GSRI.

The 1979 Kirchheimer paper did not mention that Fox et al. (1977) reported an infected animal east of the Mississippi river about 150 km northeast of GSRI or that infected animals had been found in Texas 400 km northwest of GSRI (Anderson 1978; Anon. 1978). Altogether, eight remote collection sites were omitted from the Carville paper, any one of which would have exonerated GSRI.

Kirchheimer also reported that 365 armadillos were captured in Louisiana and other Gulf Coast states before finding leprosy. The total number from Louisiana was given as 306. Krahenbuhl (1996) of Carville later reported the prevalence of leprosy in Louisiana armadillos as 15 percent. Truman et al. (1986), also of Carville, estimated it could be as high as 20 percent using a serological test with a clinical disease rate as high as 5 percent. Later, Truman et al. (1991) estimated that nearly a third of adult armadillos in Louisiana harbor leprosy bacilli. Thus, estimates of prevalence depend on the diagnostic method as well as collection site. The best estimate for prevalence of leprosy in Louisiana at the time of the controversy is given in the paper by Walsh et al. (1977) in which animals were collected at 11 locations and examined by standard clinical techniques (Table 1). Average prevalence was 10%. Lowest prevalence was 4% at Site No. 6. Highest prevalence was 30% at Site No. 10. Probabilities of collecting 305 armadillos from these populations before finding one with leprosy are 1.1×10^{-14} (average location), 3.9×10^{-6} (low prevalence), and 5.8×10^{-48} (high prevalence) respectively.

Carville made an effort to collect animals at sites where GSRI had found leprosy as shown by figure 1. Collection of 305 animals by them before finding one with leprosy strains credulity.

A disquieting aspect of this controversy is that the director of the Carville Hospital was explicitly warned in 1976 that an animal that his staff had inoculated had contracted leprosy before capture. Armadillo No. 34C was inoculated on 16 March 1972 and by 13 June had developed a walnut-sized swelling at an uninoculated site on its thigh (Yoshizumi et al. 1974). A biopsy specimen was sent to Binford (1976a) who concluded it must have contracted disease in the wild at least one year before inoculation. He reported his diagnosis in detail in a letter to the director of the Carville hospital (Binford 1976b). Binford was dean of American leprosy pathologists and the only one with a knowledge of armadillos. Moreover, he was respected worldwide for his integrity. The director chose to ignore his letter.

Sylvan leprosy at Carville

Overwhelming evidence exists that the first two leprous animals reported by Carville had contracted disease before capture. Precisely when Carville realized this is arguable. The animals in question were No. X (unknown) and No. 34 [1]. The first problem was to identify the unknown animal. This was not a straightforward task because Carville publications often do not include accession numbers and tend to give experimental results as averages with little information on individual animals. There was one salient exception to this. Job et. al. (1978) published a retrospective paper on the liver pathology of the first Carville armadillos with leprosy. It contained accession numbers and so

became the “Rosetta Stone" that made identification of No. X as No. 16 possible, and opened the way to decipherment of other Carville publications.

The “Rosetta Stone” paper by Job et. al. (1978) was actually an extension of a memorandum by Kirchheimer & Sanchez (1972) describing leprosy in 1 of the first 16 animals inoculated by Carville. Two more animals had developed leprosy, ten negative animals were subtracted, and ten positive animals added. In the " Introduction and Results" sections they wrote:

In this paper, a retrospective study . . . was made in seven male and six female armadillos infected intracutaneously and simultaneously with 10^7 M. leprae H (derived from human lepromas) from the same inoculum to evaluate the pathogenesis of the experimental disease . . . . The 13 autopsied armadillos belonged to a group of 16 animals infected simultaneously with the same number of M. leprae and by the same route. Three of these animals are alive after more than five years. One of the survivors has signs of disseminated leprosy and the other two have no detectable sign of leprosy. Such observations in other groups of animals have been reported by Kirchheimer et. al. and are thought to reflect differences in susceptibility.

This putative inoculation group of 16 armadillos contained 13 leprous armadillos with accession numbers ranging from 5 to 43. These numbers immediately suggest that the animals were members of different groups totaling at least 38 armadillos. Comparisons with related publications shows that animals from four to five groups were combined, each group having been infected with different inocula (Table 2).

Group I consisted of the 16 animals inoculated on 3 December, 1971 with 1 x 10^7 AFB (Kirchheimer & Sanchez (1972). This is the core group. Group II was made up of 20 animals inoculated in the spring of 1972 (Kirchheimer & Sanchez, 1973). Its identity was established by the life span of No. 34 (Yoshizumi et al.; 1974) following inoculation (see Case history of No. 34). For reasons to be discussed later, it was divided into subgroups A and B. Group IIII consisted of five animals inoculated in April of 1972 with 2 x 10^8 AFB. Its identity was established by a paper describing lepromin testing of animal No. 40 (Job et. al, 1983). The identity of Group IV is uncertain, but published data suggest that it may have consisted of seven animals inoculated on or about 10 April 1972 with 7 x 10^7 bacilli (Kirchheimer & Sanchez, 1977). Thus, the claim that these 13 animals were members of a single inoculation group of 16 animals was manifestly unfounded.

What was the reason for making this claim? First, the authors had available liver tissues from 13 unrelated animals and wanted to publish on them. They could not simply submit a straightforward paper on their pathology since a paper on 15 random animals had already been published by Binford et. al. (1976).

The Binford paper had provoked Kirchheimer and Sohan Issar, a former GSRI pathologist. They wrote a joint letter to the editor of IJL (Kirchheimer & Issar, 1977) claiming that credit for the work rightly belonged to them. Kirchheimer based his claim on the fact that the pathology of GSRI armadillo No. L-8, described by Kirchheimer, Storrs, & Binford (1972), was included. Issar’s claim for credit was based on routine autopsies and preparation of tissue blocks on seven animals. Binford (1977c) rebutted his claim.

Since a paper on the pathology of 13 randomly selected animals would contribute nothing new, Carville selected seven severely infected animals and six less severely infected from these disparate groups. Then, they deleted animals from Group I and

replaced them with animals from Groups II-IV to make it appear that all 13 animals had been infected at the same time with the same dose of the same bacilli.

An opportunity to magnify success rate provided a second incentive for padding Group I. Kirchheimer & Sanchez (1973a) had claimed only 15% of armadillos were susceptible to leprosy. By 1977, GSRI had achieved a success rate of 65%. This placed them in an unfavorable light. They sought to improve their image by transferring all the infected animals from Groups II - IV to Group I, thereby increasing success rate from 19 to 81%.

They amplified success rate still further by using the same group of animals twice, claiming that their findings were confirmed by observations reported on other groups of armadillos inoculated by Kirchheimer & Sanchez (1977). The two groups were made up of the same animals as shown by Table 3. No. 16 was not included in the latter group, but otherwise the data are the same except for changes in morbidity and mortality that would be expected during the 1 1/2 years elapsing between the two reports. Thus, Carville published two reports differing in detail, on the same group of animals and referred to the first report as independent verification of the second.

Case History of No. 16

Armadillo No. X, a female, was one of a group of 16 animals inoculated on the abdomen with 1 x 10^7 human bacilli on 3 December, 1971 (Kirchheimer & Sanchez, 1972). Four months later, it had developed two nodules at uninoculated sites on the abdomen. A punch biopsy taken on 25 April contained numerous acid-fast bacilli. It must have contracted leprosy it the wild. It belonged to the first inoculation group reported by Carville. Accession numbers were not given. Its case history is shown schematically in Figure 3.

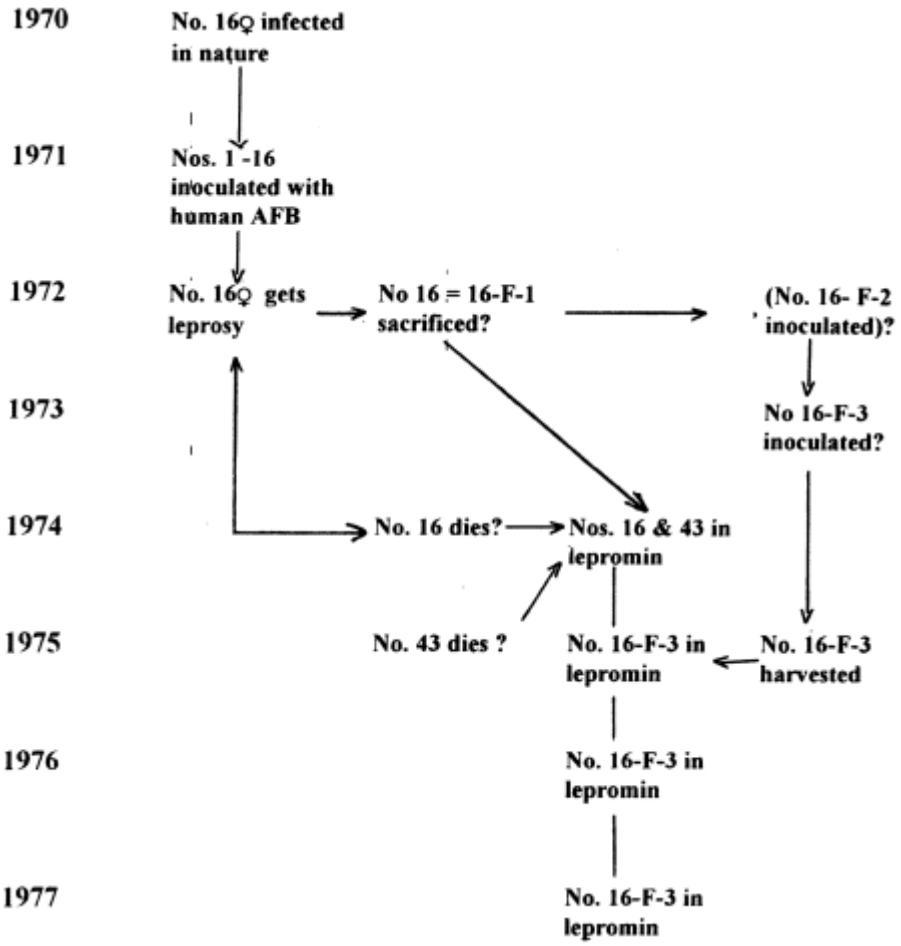

Figure 3. Schematic diagram of case histories of No. 16, No. 16-F-3, and No. 43 by year. These animals were used by USPHS to make lepromin for distribution to endemic countries by WHO.

No. X was tentatively identified as 16 from the Rosetta Stone paper (Job et. al. 1978). Armadillos Nos. 5, 15, and 16 were listed (Table 2). Nos. 5 and 15 were males; 16 was a female as was the unknown animal. Therefore, No. X had to be No. 16. But it did not turn out to be that simple. Job et. al. claimed No. 16 was euthanized 26 months after inoculation. It is unlikely that an animal with macroscopic nodules at 4 months could live for an additional 22 months.

Confirmation that No. X was indeed No 16 was deduced from a paper authored by Walter & Kirchheimer (1982). Carville had supplied WHO with lepromin prepared from No. 16 in 1974. There was no dating problem with that. According to Job et. al. No, 16 was euthanized in January of 1974. The incriminating clue was that Carville supplied WHO with lepromin prepared from No 16-F-3 in 1975. 1976, and 1977. This identification number can have only one meaning. No. 16-F-3 was an armadillo inoculated with third passage bacilli from No 16. Carville would have considered M. leprae from No. 16 to be first passage material although, in fact, it was not. Actually, the correct designation for the passage animal should have been 16-F-2.

In our experience (Storrs et. al., 1985) based on 304 animals, the average time elapsing between inoculation and harvest of M. leprae is 16 +/- 3 months. Assuming No. 16 was harvested at 6 months, No. 16-F-3 would have been ready for harvest in mid-1975. This would not have been possible if the 26-month figure was correct. Therefore, we consider identification of No. X as No. 16 to be reliable, and the Job et. al. post-inoculation survival time of 26 months to be unreliable.

Attempts to delete No. 16 from medical history were made in papers by Kirchheimer & Sanchez (1976, 1977) describing results on a group of 15 animals. Internal evidence shows conclusively that this group was the same as the group of 16 animals inoculated in 1971 [2]. They reduced the number of animals from 16 to 15, thereby removing No. 16.

The authors discussed the longevity of five armadillos belonging to this group which died with LL during the first 1095 days (3 years) after inoculation (Kirchheimer & Sanchez, 1977). This was an artificially contrived group. As shown in Table 2, only two animals in Group I (15 and 16) developed leprosy within 3 years. This fabrication was exacerbated in the 1977 paper by an arithmetic blunder. The shortest life span was given as 397 days, the longest 1016 days, and the average 973 days. Even if all three middle animals survived for 1015 days, the average would be only 892 days.

Although No. 16 was removed numerically from this group, its specter lingered on. Table 1 in this paper showed that one of the LL animals did not have AFB at the inoculation sites, suggesting it was infected in the wild. It was most likely an imprint of No. 16 that the authors neglected to erase.

Case History of No. 34 This animal was inoculated at Carville on the abdomen on 16 March 1972, and by 13 June had developed a lepromatous swelling on its left thigh. It was autopsied 196 days after inoculation, and peripheral nerve specimens sent to M. O. Yoshizumi of Harvard Medical School, and A. K Asbury of University of Pennsylvania for light and electron microscopy. Yoshizumi, Kirchheimer, & Asbury (1974) published a paper on their findings in IJL. Shortly after Carville started the "armadillo war," Binford (1976a) wrote to John R. Trautman, Medical Officer in Charge, stating:

Evidently, Dr. Kirchheimer had not brought to your attention an armadillo which was the subject of the excellent paper "A Light (and) Electron Microscopic Study of Peripheral Nerves in an Armadillo with Disseminated Leprosy" by Yoshizumi, Kirchheimer, and Asbury that appeared in the International Journal of Leprosy, July/September 1974. You will note on the first page of that article (page 251 of the IJL) that this armadillo had been inoculated on 16 March 1972 in the skin of the abdomen and that on 13 June 1972 a walnut-size subcutaneous swelling of the left thigh area was biopsied and was shown to be a leproma. This reminded me that in the summer of 1972 Wally sent me a section from this walnut-size nodule. It was a compact, mature leproma lesion in which the macrophages were teeming with bacilli. At the time, although I found it difficult to believe that M. leprae could develop so fast, the possibility of a spontaneous leprosy-like disease did not occur to me. In the IJL it was stated that at approximately 190 days after infection, an upper respiratory tract disorder became apparent and numerous acid-fast bacilli were present in smears made from the voluminous nasal discharge. The animal was euthanized 196 days after infection and autopsied. The autopsy demonstrated severe mycobacterial infection. The bacteria were dopa oxidase positive and identified as being M. leprae. It was stated that the viability was being tested in mouse footpads. The mucosa of the nose and larynx were involved and acid-fast bacilli were in the peripheral blood macrophages. The median nerve, as it entered the forepaw, was found to be involved and sections from this were used for the report. In armadillo No. 8, the first

animal reported (IJL 39:693, 1971), only a few intraneural phagocytes with M. leprae were found in large nerves. In the summary of 15 autopsies that I gave at the October meeting in Bethesda, last October, the large nerve involvement, other than that noted for No. 8, was in animals that had been inoculated 23 months before or longer. In the few biopsies that I have studied from inoculation sites of armadillos, I found at 6 or 9 months after inoculation mild round cell infiltration and a few clusters of bacilli in histiocytes.

Binford (1976b) also published a memo concluding No. 34 must have been infected at least a year before inoculation with M. leprae. Despite his letter, the Carville attacks on GSRI continued. Two years later when faced with the facts, the Star Editorial Board (1978) reported:

An unexplainable discrepancy caused furor when no mycobacterial infection was found by Carville researchers in 309 feral armadillos . . . from the same . . . region . . . where GSRI reported a 10% prevalence of mycobacteriosis. . . . "It's statistically difficult to understand" Carville PHS Hospital Director, John Trautman says. "It may be just plain coincidence that we didn't find any (leprosy) where GSRI did."

A discrepancy in the Yoshizumi et. al. paper on the identity of the bacilli used to inoculate No. 34 deserves comment. According to the authors:

Armadillo 34-C, a mature female, was inoculated 16 March 1972 in the skin of the lower abdomen with 2.0 x 10^8 viable leprosy bacilli (mouse footpad multiplication) from a leproma of a leprous armadillo.

This statement cannot be correct because armadillo lepromas were not available then. They were first described by Storrs et. al. (1972c) six months after No. 34 was inoculated. Only two armadillos containing leprosy bacilli were known before then. GSRI armadillo No. L-8 was autopsied in July of 1971 but lepromas were not mentioned. GSRI armadillo No. L-5 was biopsied in October of 1971 but lepromas were not excised. The first Carville animal with leprosy was not biopsied until 25 April 1972 (Kirchheimer & Sanchez, 1972). The only extant armadillo lepromas then nested within the bodies of wild animals. Actually, human inoculum must have been used. In a paper published in Microbios, Kirchheimer & Sanchez (1973b) described inoculation of 20 animals with human bacilli. One of them was autopsied 196 days after inoculation. No. 34 was autopsied 196 days after inoculation; so it must have been the same animal.

Cover-up of No. 34 began in a paper by Kirchheimer & Sanchez (1976a) containing a table of bacterial counts on its tissues copied from Yoshizumi et. al. (1974) to illustrate the severity of armadillo infections. However, the Kirchheimer & Sanchez paper dealt primarily with the longevity of armadillos after inoculation, the range being 13 to 35 months. No mention whatsoever was made of the short life span (6.5 months) of No. 34. Why did they include a table on this animal without mentioning the fact that its longevity was inconsistent with those of all other animals discussed? They must have known that leprosy afflicted wild armadillos by 1975 but would not admit it. Two years later, they published an update of the 1976 paper under an identical title but omitted No. 34 altogether (Kirchheimer & Sanchez, 1977).

Debasement of lepromin test

Manipulation and improper reporting of data by Carville was not confined to sylvan leprosy. Carville made a strategic mistake by assuming that most armadillos, like humans, would be resistant to infection by M. leprae. Unfounded though it was, this opinion was not, by itself, a violation of professional ethics. Their fall from grace came

through adjusting data to support it. A paper in Microbios by Kirchheimer & Sanchez (1973a) and a letter from Kirchheimer (1972a) to Milton Puziss of National Institute of Allergy and Infectious Diseases (NIAID} spell out their thoughts. The latter source is more succinct, and also gives an insight into Kirchheimer's attitude toward GSRI. He wrote:

Most armadillos are not susceptible. Of the two armadillos that have so far have developed the spreading form of this disease this became noticeable in one of them 469 days after infection and in the second one after 625 days [3]. This is not only a rather long waiting time; but in addition, the limits of the incubation time of leprosy are unknown. Therefore, it might be hazardous to conclude after an arbitrarily chosen length off time that an inoculated armadillo will not develop a spreading disease in the future. It is therefore risky to classify the animal as leprosy resistant. What is needed then to distinguish susceptible from resistant armadillos is a test which gives reliable results in a relatively short period of time. . . . To find such a test is one of the two objectives of my research grant application. . . . My work at Carville so far in finding a test to distinguish between susceptible and non-susceptible armadillos has been very rewarding. In fact so much so, that I am preparing at this time a manuscript entitled: Leprosy-Susceptibility Testing of Armadillos. 1. Cellular Responses to Intradermally Inoculated Heat-Killed and Viable Leprosy Bacilli. . . . Since the work has been done on armadillos stationed at Carville, and, since Gulf South Research Institute has not contributed to this project in either theory or practice, Gulf South Research Institute is in no way involved, and at this time probably even unaware of the work which is being done at Carville.

The paper referred to above was accepted for publication in September of 1972. In it, the authors claimed to have injected heat-killed leprosy bacilli (lepromin) at 2 abdominal sites of 12 armadillos. Thirty days later, ten of the armadillos had developed epithelioid cell granulomas in the dermis. Acid-fast bacilli were seen at the sites of inoculation but were not numerous. The other two armadillos formed lepra cells containing numerous acid-fast bacilli. The authors concluded that ten of the animals were resistant to leprosy and two susceptible. They wrote:

All 12 armadillos were subsequently infected with 1 x 10^8 leprosy bacilli freshly prepared from biopsies of untreated patients with lepromatous leprosy. . . . Additional armadillos have been inoculated with leprosy bacilli at multiple sites on their abdomens. This will enable us to study in addition to the cell response, survival and multiplication of the leprosy bacilli as a function of time.

In an abstract of a paper given at a leprosy congress, Kirchheimer & Sanchez (1973c) amplified their comments on the additional armadillos. They wrote that:

Additional animals were inoculated in seven skin sites with viable leprosy bacilli. The cell responses, which corresponded quantitatively and qualitatively to the ones evoked by lepromin, are being correlated with survival data of leprosy bacilli and spread to remote sites.

The second paper on this study (Kirchheimer & Sanchez 1973b) was accepted for publication in June of 1973. Its primary purpose was to discuss results of biopsies made 14 months after inoculations. The authors gave a drastically different version of the inoculation of these animals. In the "Introduction " they wrote:

At this time 17 out of 20 armadillos tested with heat-killed leprosy bacilli as described by Kirchheimer & Sanchez (1973a) tested 'resistant.' None of these so far (16 months after infection) developed signs of disseminated disease. One of these 'susceptible'-testing

armadillos has developed lepromatous leprosy. This animal was sacrificed 196 days after infection.

In the "Materials and Methods" section they wrote:

Seventeen-'resistant' testing armadillos, including the ten 'resistant' animals reported before (Kirchheimer & Sanchez, 1973a) were inoculated into one site of the abdominal skin with 1 x 10^8 viable leprosy bacilli of human origin. . . . Fourteen months later, the inoculation sites were biopsied.

They imply that only 'resistant' animals were inoculated but this is contradicted by development of leprosy in a 'susceptible' animal. It is also contradicted by the account of the inoculation given in the first paper. Most significant, the number of animals inoculated increased from 12 in the first to 20 in the second account of the same experiment. Nothing whatsoever is said about lepromin-testing of eight additional animals, or where the eight additional animals came from.

It seems probable that the authors combined the results of two separate experiments. Thus, Group II in Table 2 is a composite of two subgroups. Subgroup IIA could comprise 12 animals that were inoculated with 1 x 10^8 M. leprae of human origin. Subgroup IIB could consist of eight animals that were inoculated at seven abdominal sites at a later date with M. leprae of unspecified numbers and origin. The sole justification for combining these groups was that live leprosy bacilli appeared to elicit the sane quantitative and qualitative tissue responses in the additional animals as those induced by lepromin. To reinforce their incorrect assumption that most armadillos are resistant to leprosy infection, differences in experimental protocols between the two subgroups seem to have been ignored. The pathology report by Job et. al. (1978) failed to confirm that 17 of the 20 animals in Group II were resistant as predicted. Including No. 34, overall infection rate was 40% which is in good agreement with results obtained by GSRI at that time (Storrs et. al. 1974a).

Carville manipulated data to make their results conform to a false paradigm, and in so doing obscured the truth about this key immunological test for nine years. Then, Job et. al. (1982) published a retrospective study comparing lepromin tests with infectivity on 14 armadillos. Eleven of the animals yielded lepromatous lepromin reactions similar to those seen in advanced cases of human leprosy. One animal was borderline, and two tested for resistance; diametrically opposite to the earlier claims of Kirchheimer & Sanchez (1973a, 1973b). As would be expected, 11 of these animals developed leprosy following inoculation with M. leprae.

The Job et. al. paper was received for publication in August of 1981. It contained observations made on an armadillo 104 months after inoculation. Thus, these animals, at the very latest, must have been inoculated by January of 1973 and probably several months earlier. Because of the delay in publishing, most leprologists were not aware of the significance of lepromin tests on armadillos for nine years. Of paramount significance is the fact that Job et. al. made no attempt whatsoever to correct the misleading information in the earlier reports of Kirchheimer & Sanchez.

The value of this immunologic test was not made fully clear until subsequent publications by Job et. al. (1985b, 1987). In the latter year, they described results on 102 wild-caught armadillos. Only nine of them (8.8%) gave positive lepromin reactions indicating resistance to disease. The authors concluded that armadillos exhibit a spectrum of immune responses representing all gradations observed in humans, making them valuable models for study of protective vaccines. Thus, leprologists worldwide

were kept in ignorance during critical years of vaccine development of the true value of a test that could have been used to pinpoint vaccine efficacy.

The IMMLEP protocol

The WHO Immunology of Leprosy Program (IMMLEP) required enormous numbers of bacilli for immunologic reagents and candidate vaccines. GSRI developed procedures for obtaining high bacterial yields in one to two years by intravenous inoculation with 10^8 armadillo-derived M. leprae coupled with harvest of livers and spleens. These procedures were incorporated into a WHO protocol in 1974. Meanwhile, Carville had embarked on an opposite course that involved injection with low doses of M. leprae to determine the number of bacilli required to infect only 10% of the animals (Kirchheimer & Sanchez, 1977). They were striving for minimum infection incidence whereas GSRI was seeking the maximum. In the words of the authors (Kirchheimer et. al. 1978):

We give arbitrarily 'resistance' a quantitative connotation hoping that at a dose of Mycobacterium leprae infectious for only 10% of armadillos the assumed cell differences in susceptibles and resistants becomes measurable. We have determined that the desired bacterial dose falls below 10^5 intracutaneously inoculated M. leprae A.

In the summer of 1975, National Institute of Allergy and Infectious Diseases (NIAID) awarded them a contract to supply other laboratories with armadillo-derived bacilli, making it necessary for them to use the IMMLEP protocol. Kirchheimer & Sanchez (1977) wrote:

For achieving maximal percentages of leprous armadillos the IMMLEP group had agreed to resort to intravenous inoculation of hundreds of millions of leprosy bacilli. Accordingly, ten mature armadillos were simultaneously infected intravenously with 2 x 10^8 M. leprae . . . . Five of these armadillos were sacrificed from 10 to 13 months after infection. All had disseminated leprosy.

Although tepid about this procedure to begin with, the results awoke them to the needs of IMMLEP and leprosy researchers throughout the world for large numbers of bacilli. They claimed major credit for the protocol in a paper given on the status of these animals 20 to 21 months after inoculation (Kirchheimer et. al, 1978).

In our experience, the most suitable way to accomplish the desired objective is by intravenous inoculation of several hundred million of M. leprae. . . . The rate of infection (disseminated leprosy) approaches under these conditions 100% in less than two years. . . . As an example. . . . eight armadillos were challenged. Only one showed no signs of infection after 612 days (infection rate 88%).

Claiming major credit for the IMMLEP protocol is a minor transgression. Tampering with data to support this claim is not. In the first paper the authors claimed ten animals were inoculated of which five developed leprosy, giving an interim success rate of 50%. In the second paper they claimed that eight animals were inoculated of which seven developed leprosy giving a success rate of 88%. Although seven positive animals were claimed, only six were included in the tabulation of results. These data are impossible to interpret quantitatively, but it appears that success rate was purposely inflated by decreasing the number of animals inoculated and increasing the number developing disease. There is no doubt that during the seven to eight month interlude between the two sets of observations, Carville's attitude toward the IMMLEP protocol had changed from passive acceptance to possessiveness.

The tables in the two publications are combined in Table 5. Four numerical errors were made by the authors (underlined) in copying data from the first to the second paper. These range from minor to an order of magnitude. Additionally, AFB content of the liver of animal No. III was an order of magnitude higher than reported for the spleen. By contrast, the AFB content of the liver of No. IV was an order of magnitude lower than found for the other tissues. These discrepancies were not explained. Most conspicuous, no data at all were given on the two animals which presumably developed disease between the interim and final reports. No. VI was the longest lived (390 days) armadillo in both tables. No. V (384 days) was missing from the first table but was inserted in the second. The data given in these two papers are wildly inconsistent. They support in no way the thesis that Carville played any part in development of the IMMLEP protocol.

Evasion of responsibility

Following the publications of the University of Texas group (Smith et. al., 1978a, 1978b, 1983) no one outside of USPHS denied the existence of leprosy in wild armadillos. Carville remained silent until 1985. Thus, for 11 years the most prestigious leprosy laboratory in the world ignored a major leprosy zoonosis on their doorstep. Even the positive animal brought to them in 1978 did not spur them to action.

In 1985, R.W. Truman of Carville broke this impasse (Stallknecht et. al, 1987). While still a graduate student at Louisiana State University (LSU) he began a study of leprosy in wild armadillos using a serological test. The test was based on a specific antigen isolated from armadillo-derived bacilli called phenolic glycolipid-1 (PGL-1). An enzyme-linked immunosorbent (ELISA) assay using this antigen was developed to detect IgM antibodies to leprosy bacilli in armadillo sera. He found antibodies to leprosy in the sera of 9 of 55 (16%) armadillos captured in 1984. Two of them had clinical evidence of leprosy.

Truman, working with associates from LSU and Carville, then applied this test to the assay of sera of 182 armadillos that had been collected during 1960-1964 and had been in deep-freeze ever since (Truman et. al., 1986). Leprosy antigens were present in 17 of the 182 specimens. This meant that armadillos had been exposed to leprosy by 1960, and perhaps earlier. The first armadillo to develop leprosy at GSRI was autopsied in 1971. Therefore, the contention that GSRI caused leprosy in wild armadillos was untenable.

Truman et. al. failed to make this clear in their paper, making no reference to GSRI or GSRI staff members, although referencing papers published by them. They claimed to have evaluated a "1968 environmental contamination hypothesis" for the origin of M leprae infections in wild armadillos. They concluded that since M. leprae was enzootic in armadillos as early as 1961, original infection of armadillos could not have occurred in 1968.

Of course it couldn't. GSRI was awarded the first armadillo-leprosy grant in October of 1969. The first animal to develop leprosy was not inoculated until February 1970, and was not autopsied until July of 1971. These dates should have been engraved indelibly on the collective Carville mind, since they claimed credit for originating the program. This 1968 date was not a misprint. It is mentioned ten times in the paper. Moreover, Truman et. al. attributed the 1968 hypothesis to an editorial published by Skinsnes (1976) in IJL. Nowhere did Skinsnes refer to a 1968 environmental contamination hypothesis. He stated that the question of possible initiation of a leprosy zoonosis by escaped experimentally infected armadillos had been raised. As an alternative, he suggested wild armadillos might have become infected by eating the carcasses of experimental animals discarded without complete incineration.

The first suggestion that infected animals escaped from GSRI was made by R. R. Jacobson of Carville at a meeting held in New Orleans on 17 November, 1975. This meeting was held less than a month after a meeting in Bethesda during which a former GSRI pathologist, S. L. Issar, showed slides of a GSRI animal with sylvan leprosy to Skinsnes in the presence of Kirchheimer (Issar, 1976). These actions by Carville caused rumors about escapes from GSRI to spread like wildfire. The furor this caused is attested to in editorials by Rees (1976b) and Convit (1978). USPHS started this rumor, and when it became embarrassing, blamed it on a modification of their 1975 hypothesis by Skinsnes.

A vague hint on the origin of this hypothesis appears in a paper praising Carville for 100 years of excellence in leprosy research (Moschella. 1997). He wrote:

From 1968 (sic), through 1971, Dr. Waldemar Kirchheimer of Carville in collaboration with Dr. Eleanor Storrs of Gulf South Research Institute demonstrated that M. leprae would grow in the nine-banded armadillo, Dasypus novemcinctus. Dr. Storrs was first to note that M. leprae infected armadillos occur in nature, but the epidemiology was worked out at Carville in the 1960s.

This statement doesn't make sense. It is not possible to work out the epidemiology of a zoonosis before its discovery. Yet, Carville claimed credit for laying the groundwork for the discovery. This indicates that the nebulous 1968 hypothesis could have been their handiwork. This quotation is not the work of a freelance writer seeking to embellish a story. When this article was published, Moschella was a staff member of the Department of Allergy and Dermatology, Lahey Clinic Medical Center, Burlington MA who had contacts with Carville dating back to 1958. As references, he cited personal communications with R. R. Jacobson and R. C. Hastings in 1995, and an article by Elwood (1994). This was clearly an authorized account of Carville research written by a professional associate knowledgeable in the field.

The paper by Truman et. al was useful in that it pushed back the date of leprosy in armadillos to 1960, or earlier and described a useful diagnostic procedure. However, it carefully sidestepped the issue of explicitly clearing GSRI staff members of causing a leprosy epidemic in armadillos.

Discussion

During comparative analysis of the Carville publications, other instances of suspected fabrication and falsification were found. They were not included above either because they were not important or the evidence was not sufficiently strong. Most important in the latter category was production of armadillo tissues containing very large numbers of bacilli by using low titer inocula (Kirchheimer & Sanchez, 1981). Bacterial counts as high as $l0^{10}$ to 10^{11} AFB per gram were reported following inoculation with fewer than 107 bacilli. We cannot prove that this did not occur. However, if it did occur and could be reproduced, there should have been no shortfall in bacterial supply for the IMMLEP program. At the time these data were published we accepted them at face value, and assumed that the dramatic decline in yields obtained on transferring from GSRI to FIT was an individual problem not experienced by other laboratories. Now, we must consider the possibility that these high yields were fabricated.

Altogether, the misdeeds committed by Carville and collaborators exceed in number and impact anything comparable in American science. Thus, the celebrated Baltimore case (Lang, 1993) involved fabrications in one table of a single paper published in Cell (Weaver et. al., 1986). The evidence consisted of 17 pages Xeroxed from a laboratory notebook. After a decade of hearings, the question of guilt is still beclouded by partisan

arguments. It is still not clear to many people if the alleged fabrications seriously hindered progress in science.

The Carville case is of an entirely different order of magnitude. It involved a series of publications in a dozen scientific journals and news media over a period of two decades. Fallout included neglect of a major zoonosis, debasement of an immunologic test, contamination of a skin-test reagent, and failure of an international vaccine program. Most astounding is the fact that these fabrications can be verified by comparative analysis of data in the open literature. No calligraphic experts or legal theorists are needed to interpret the evidence. It is an open book to any literate person with an open mind.

The main thrust of this paper is to expose misconduct in science and concomitantly assess the costs of misconduct to science and humanity. Nowhere were these higher than in the WHO immunology of leprosy program. Between 1980 and 1985, IMMLEP allocated U.S. $2.5 million for support of armadillo colonies, almost one half of their budget (WHO, 1985-1986). These colonies produced animals containing only 10^{11} to 10^{12} M. leprae each. This caused WHO (1989-1990) to complain about the low productivity of the armadillo. For some unknown reason, they did not remember that GSRI had produced animals containing 10^{13} to 10^{14} AFB per animal at a fraction of the cost. Moreover, tissues from GSRI animals could have yielded more potent vaccines.

As matters stand now, all of the vaccine used in a trial on 29,000 people in Venezuela was worthless. Some of this worthless vaccine was used in a failed trial on 112,000 people in Malawi. All of the vaccine used in these trials was without doubt inferior to what could have been made from high yielding armadillos. In summarizing the results of the Venezuelan trial, Fine (1996) concluded:

The available results indicate that, although the addition of killed M. leprae may enhance slightly the effectiveness of BCG alone, the enhancement is not sufficient to warrant production of such vaccines. production on a scale to supply the needs of a major program of immunoprophylaxis would be difficult indeed, because the supply of M. leprae is limited and there are no current plans to expand armadillo programs.

The supply of M. leprae was reduced by two to three orders of magnitude during this program as a direct result of misconduct in science. Our personal concern is that the potential of the armadillo in medical research may never be given another trial because of the ignominious collapse of the vaccine program. We fear that the armadillo will be metamorphosed into a scapegoat to protect those who caused this disaster.

Footnotes

[1] In some publications these animals are referred to as 16C and 34C. The letter "C" has no chronological significance in the numbering of Carville animals. No. 34C in the Yoshizumi paper is the same animal as No. 34 in the Kirchheimer & Sanchez paper (1976a) as shown by the fact that the bacterial counts are identical.

[2] In the 1977 paper, final observations were made 1676 days after inoculation. In the 1972 memo, the inoculation date was 3 December, 1971, giving a termination date of July 7, 1976. The manuscript was received by the editor of Leprosy in India on July 15, 1976; so there is no doubt the two groups were the same.

[3] These were GSRI animals L-5 and L-8. The Carville armadillo biopsied 143 days after inoculation and 8 days before the date of this letter was not mentioned.

References

Table 1. Distribution of leprosy in Louisiana armadillos: results of a 1977 GSRI study

Site Number	No. animals	Number positive	Percent positive
1	79	15	19.0
2	213	12	5.6
3	14	2	14.3
4	11	1	9.1
5	9	1	11.1
6	50	2	4.0
7	9	2	22.2
8	7	1	14.3
9	20	1	5.0
10	27	8	29.6
11	20	2	10.0
*Total	459	47	10.2

Table 2. Inoculation schedule of first 4 groups of Carville armadillos deduced from paper by Job et. al. (1978) and 6 other publications

Group & Serial No.	Sex	Date	Inoculum	Months to

		Inoculated		**death**
1 (16 animals)		**3 Dec 1971**	**1 x 10^7 human ID**	
5	**M**	**"**	**"**	**55**
15	**M**	**"**	**"**	**27**
16	**F**	**"**	**"**	**26 or 6**
_____				
II (20 animals)				
A (12 animals)		**Jan - Mar 1972**	**1 x 10^8 human ID**	
18	**F**	**"**	**"**	**37**
25	**F**	**"**	**"**	**37**
27	**M**	**"**	**"**	**36**
28	**M**	**"**	**"**	**55**
B (8 animals)		**16 Mar 1972**	**7 abdominal sites, U**	
29	**M**	**"**	**"**	**36**
30	**M**	**"**	**"**	**39**
31	**F**	**"**	**"**	**33**
34*	**F**	**"**	**(2 x 10^8 armadillo?)**	**6.5**
_____				
III (5 animals)		**Mar - Apr 1972**	**2 x 10^8 human ID**	
38	**F**	**"**	**'**	**17**
39	**F**	**"**	**"**	**13**
40**	**U**	**"**	**"**	**>84**
_____				
IV (7 animals)		**10 Apr 1972**	**7 x 10^7 U**	
43	**M**	**"**	**"**	**40 (dubious)**

U = unknown
ID = intradermal
***infected animal not included in the Job et. al. paper**
****resistant animal not included in Job paper.**

Table 3. Data on the first group of armadillos inoculated by Carville as given in 2 different reports. The original group of 16 animals was inoculated on 3 December, 1971 with 1 x 10^7 AFB each by Kirchheimer and Sanchez (1972)

Authors	Kirchheimer & Sanchez (1977)	Job et al. (1978)
Report date*	July 1976	Dec. 1977
Inoculation date	Dec. 1971	Dec. 1971
Inoculation dose	1 x 10^7 AFB	1 x 10^7 AFB
No. of animals	15	16
No. dead with LL	10	13
No alive with LL	2	1
No. negative	3	2
No. missing**	1	0
% dead from LL	67 (10/15)	81 (13/16)

*** Date ms. received. ** No. 16.**

Table 4. Production of lepromin by USPHS[55] (18.5 liters) from 1974 to June 1981 compared to potential production by GSRI from one armadillo[88] (3000 liters)

Milliliters Shipped in Year (total/number of animals)									
Animal No.	1974	1975	1976	1977	1978	1979	1980	1981	Total
16*	17 *	0	0	0	0	0	0	0	17

16-F-3*	0	12*	95*	347*	0	0	0	0	454
43**	17**	0	0	0	0	0	0	0	17
60	0	0	95	0	0	0	0	0	95
135	0	0	0	0	0	1730	1835	711	4276
142	0	0	0	0	0	0	1835	711	2546
211	0	0	95	347	1775	1730	0	0	3947
215	0	0	0	0	0	1730	1836	711	4277
226	0	0	95	347	0	0	0	0	492
228	0	0	0	0	0	1730	0	0	1730
257	0	0	0	0	0	0	0	711	711
Total	34	12	379	1040	1775	6920	5505	2845	18510

*** Wild strain of M. leprae**
**** This animal found dead in 1975, actual source unknown**

Table 5. Comparisons of times to deaths and AFB counts made on the same group of armadillos. A = 13 months post-inoculation: B = 20 months post-inoculation. Discordant number pairs underlined. Combined tables from papers by Kirchheimer and Sanchez(1977) and Kirchheimer et. al. (1978).

Animal no.	Days until death		Liver AFB x 10^{10}		Spleen AFB x 10^{10}		Lymph nodes AFB x10^{10}		Lepromas AFB x 10^{10}	
	A	B	A	B	A	B	A	B	A	B
I	306	308	N	1.5	N	3.7	N	4.4	--	__
II	362	363	0.25	0.25	0.72	0.72	0.24	0.024	3.5	3.5
III	369	369	6.1	6.1	0.55	0.55	0.040	0.040	0.90	0.091
IV	383	383	0.63	0.63	4.8	4.8	4.0	4.0	6.0	6.1

V	**-_**	**384**	**---**	**4.1**	**--**	**7.3**	**--**	**0.87**	**--**	**--**
VI	**390**	**390**	**N**	**0.90**	**N**	**1.8**	**N**	**4.7**	**--**	**--**

N = very numerous