

## Chapter 4 Part II

*There is no reason to doubt, of course, the ability of the scientific method to solve each of the specific problems of disease by discovering causes and remedial procedures. Whether concerned with particular dangers to be overcome or with specific requirements to be satisfied, all the separate problems of human health can and will eventually find their solution. But solving problems of disease is not the same thing as creating health and happiness.*

— René Dubos, 1959<sup>265</sup>

At 7:55 A.M. on December 7, 1941 the Japanese air force attacked the U.S. naval fleet based in Hawaii, thus compelling American involvement in World War II.

On the eve of the war there were 132,164,569 people living the United States. Over the next forty-six months, nearly 12 percent of that population served in U.S. military forces, and three tenths of one percent of them, 407,316 people, died in World War II.

On both the battle fields and the home front, World War II necessitated sacrifice. While the military economy created jobs and brought the Great Depression to an end, it also skewed government spending toward the war front. For many parts of the country, the sudden shift of federal funds away from domestic spending proved painful — local governments had grown accustomed to New Deal dollars.

The Minnesota Department of Health, for example, had planned on a 1942 budget of \$764,134, of which 60 percent (\$453,496) was to come from federal funds. Most of that federal contribution, however, was diverted by Washington to the war effort. Similarly, LaGuardia's New York City was deeply reliant upon New Deal monies for nearly all of its public health

efforts.

In addition, tens of thousands of public health professionals — doctors and nurses — were recruited to the war effort, thus depleting domestic services of vital personnel.

Noting that the nation had been “catapulted into World War II” in 1941 the New York City Department of Health issued a summary in 1949 of the war’s impact.<sup>266</sup> “No government agency, no private enterprise, no man, woman or child,” it stressed, “did remain entirely unaffected by the events that followed December 7, 1941, and the Health Department of the City of New York was no exception.

“First to feel the impact was the male staff. Selective Service had already drafted many of the younger men. At the beginning there were replacements, mostly inexperienced young women. Soon after the declaration of war, those WPA employees still on the payroll found more attractive positions in industry. As the war went on the personnel situation worsened.”

On the other hand, the war propelled vital public health research, resulting in bold new programs for control of insect-borne diseases (notably typhus, yellow fever, and malaria), bacterial infections, and venereal diseases. And by the end of the 1940s, Americans would be shifting their concern from microbes to two chronic killers: cardiovascular diseases and cancer. Commensurate with that shift would come a slow change in how people in the United States viewed their physical milieu: once considered a constantly threatening miasma of germs, it began to seem controllable, even subservient to human exigencies.

By 1941 FDR’s New Deal had vastly improved the nation’s health. Per capita health spending, having plummeted in the middle of the Great Depression by 120 percent, surpassed pre-crash levels in 1941, reaching nearly \$4,000. Life expectancies for whites rose from the

despairing 1934 low of 61.1 years to 64.8 years for babies born in 1941 — a net gain of 3.7 years of life. Nonwhite Americans gained two years of life during those years, rising from a 1934 level of 51.8 years to, in 1941, 53.8 years.<sup>267</sup> One clear reason was food: Americans in 1941 were finally able to afford to eat as much as they had in 1929, before the stock market crash. In 1933 to '35, Americans had consumed 10 percent less protein than before the crash in 1929, and it wasn't until 1941 that they could again afford to eat protein-rich food at pre-depression levels.

Tuberculosis death rates had also markedly improved. At the start of the depression, 71.1 of every 100,000 Americans died annually of TB. By 1941 that rate had fallen to 45.9 deaths per 100,000. Scarlet fever rates had fallen from a 1935 high of 211 per 100,000 to 104, offering further cause for public health optimism in 1941. Typhoid fever rates had halved. So had those for malaria.<sup>268</sup>

After Pearl Harbor, the challenge for local authorities was to maintain 1941's rosy health picture amid war time staff reductions and scarcities and in the face of new, war-related health crises — all at a time of enormous social movement and upset.

Roles were shifting in America as women filled employment slots vacated by drafted men, and blacks, migrating en masse from the South to military production centers of the far West and Midwest, entered the industrial workforce on an enormous scale. Economic wealth followed the war industry, with California, in particular, transforming into one of the nation's powerhouses. And as the wealth of war time America rose and national demographics shifted, the health needs of her citizens changed.

The number one beneficiary of World War II government spending and financial growth was Los Angeles County. Because much of the war was being fought in the Pacific and the U.S.

Pacific fleet was both severely damaged in Pearl Harbor and outdated, California became the nation's key center of ship building and a staging ground for the army and navy. In addition, between 1940 and 1945, California garnered \$19 billion worth of military contracts, most of which were for manufacture of airplanes, heavy combat equipment, and military electronics.<sup>269</sup> Most of those contracts went to Los Angeles, which by the war's end was the nation's second largest industrial center — just behind tank and automotive giant Detroit. Nearly a quarter million Los Angelenos were newly employed to work on the wartime assembly lines of such companies as McDonnell-Douglas and Lockheed.

To support the transport of all of that war materiel and the electricity and water needed for its production, the Roosevelt administration spent billions building highways, dams, shipping ports, railways, bridges, concrete plants, and steel mills in California. At war's end the state — and, predominantly, Los Angeles County — would have the most vast and modern industrial infrastructure in the entire world.<sup>270</sup> To ensure that the United States maintained a technological edge over its adversaries throughout the war, Washington also funded California's scientific infrastructure. As a result, by the war's end the University of California in Berkeley and Los Angeles's Jet Propulsion Laboratory and California Institute of Technology would be world class research centers; in some fields of science they would rank in the global top five.

Between 1940 and 1945 the population of California grew 135 percent from 6,982,000 to 9,491,000, and most of that increase occurred in Los Angeles county. The war boom attracted millions of would-be workers from all over the United States and Mexico to Southern California. To ensure food production, the Roosevelt administration created the bracero program which granted about a quarter million Mexicanos temporary residence in Los Angeles to toil as farm

workers.<sup>271</sup>

On July 26, 1943 the burgeoning, industrious and unsettled metropolis of Los Angeles experienced Black Monday. It was the fourth day of horrible air pollution in the region and the worst Los Angeles had ever endured. As the Los Angeles Times described it: “With the entire downtown area engulfed by a low-hanging cloud of acrid smoke, yesterday morning city health and police authorities began investigations to determine the source of the ‘gas attack’ that left thousands of Angelenos with irritated eyes, noses and throats....Visibility was cut to less than three blocks in some sections of the business district. Office workers found the noxious fumes almost unbearable.”

A word was invented to describe the haze that thereafter routinely hung over the Los Angeles Basin like a putrefying, gaseous blanket: smog. On “good days” the nauseating mass was blown eastward by winds from the Pacific, eventually jamming up against the San Gabriel mountains. But when, as happened on Black Monday, the cleansing winds didn’t blow for days on end, the smog formed brown layers of carbon monoxide, ozone, and industrial effluent sufficiently thick to increase the area’s heat index and block out the sun’s healthy rays. The gasses were a filter mechanism that let through the sun’s ultraviolet and infrared radiation, but blocked all else. When Los Angelenos looked at the sunset on Black Monday they witnessed something truly bizarre: a piercing vermilion dot cast horizontal streaks of neon pink light against a chocolaty, blue sky.

Three years later, when smog had become a nearly permanent feature of Los Angeles, Ed Ainsworth wrote in the Los Angeles Times:<sup>272</sup> “The recent rain washed the once-celebrated air of Los Angeles and gave Southern California an unaccustomed view of an object known as the

sun. For years now the sun has become something of a mystery here. Presumably it was rising and setting as the almanac indicated it should. But through the pall of ‘smog’ which settled over Los Angeles in 1943 and has persisted with exasperating firmness ever since, it hardly ever was visible to the naked eye.”

Near the oil fields of Long Beach the peculiar haze was redolent with sulfur and methane, prompting local residents to talk of “rotten egg days.” Eastward towards Fontana around the steel mills, smog tasted vaguely metallic in the back of residents’ throats. In the posh San Gabriel Valley towns of Pasadena and San Marino, the eyes first sensed smog’s arrival, tearing uncontrollably in response to a mysterious, painful stinging sensation. Children who ran and romped outdoors were soon overcome by aching lungs and powerful headaches.

In its mad haste to grow, grow, grow, Los Angeles had given little thought to the fact that it was nestled in a basin and subject to periodic, prolonged air inversions that even in the days of Junipero Serra had produced occasional blankets of dust. But unlike smog, dust wasn’t a great cause of health concerns. At the beginning of the century, Los Angelenos had been well served by the Big Red rail system which, for a nickel, would carry a passenger all the way from Pasadena to Long Beach. But during the Great Depression ownership of the Big Red system changed, its routes were gradually reduced, and by 1940 it was merely a memory in most of the county.<sup>273</sup>

By 1941, its war time industrial and population boom in full swing, Los Angeles County was criss-crossed with freeways, boulevards, and interstate highways that hundreds of thousands of motorists traversed daily. Long before the automobile would truly take hold in the rest of America, Los Angeles was a car commuter culture.

Black Monday and the subsequent war time smog were the result of combined industrial and auto emissions. And, for the always-understaffed and beleaguered County Department of Health, smog was a nightmare.

After three decades of service, Dr. J.L. Pomeroy died in office in 1941. By then, the department he had created was responsible for the health of citizens living in 170 communities — up from just forty-four towns in 1928. The geographic boundaries of the county had expanded as well, and during Pomeroy’s reign the population of Los Angeles County had increased from about 200,000 people in 1915 to well over 2 million. In 1917 his department employed a dozen people and had a total budget of \$29,711; in 1934 it had 477 employees working with a budget of \$706,915.<sup>274</sup>

By the time the war ended, Los Angeles County would have more than 4 million residents, cover 4,000 square miles, be governed by more than 400 taxing agencies, have 45 fully incorporated cities and 170 “communities” and be divided into 100 different school districts. Forty of the forty-five incorporated cities contracted with the County Department of Health not only for public health but also for medical services.

The department was expected to meet the county’s health needs with a budget of \$2,119,105 and a staff of 600 people. The task would have proven daunting even without smog, and the addition of the air pollution crisis stretched the department to its limits.

Dr. H.O. Swartout took charge after Pomeroy’s death. Exhausted after just three years, Swartout resigned in early 1945. Dr. Roy O. Gilbert took over as Los Angeles County Health Officer, and made it clear that the primary task of public health remained communicable diseases control. Unable to obtain special funding with which to address the smog problem and lacking

solid scientific evidence that the clearly irritating gasses constituted a public health crisis, Gilbert simply added “air pollution” to the long list of duties for the department’s Sanitation Section.

The first recorded smog attack had besieged Liège, Belgium — an industrial center — in 1930. Though by the 1950s smog would envelope cities from Rio to New York, Los Angeles was the first to suffer its ongoing assault. County health officials had little scientific guidance on which to base policies. Still, none but the most avid real estate developers, industrial promoters, and auto dealers could deny the intuitively obvious conclusion that smog was hazardous to the community’s health.

In 1947, four years after Black Monday, California enacted its first of many pieces of legislation aimed at reducing the presumed health risk of air pollution. The law gave health authorities the right to declare smog alert days. On heavily polluted days, the Los Angeles County Department of Health would issue warnings requesting that residents avoid driving, stay indoors, and keep children from running and playing. In some Los Angeles school districts, smog alerts prompted principals to ban all forms of student exercise; during recesses youngsters were told to lie down indoors.<sup>275</sup> Powerless to control the sources of smog and lacking funding for research on air pollution measurement, the health department could do little more.

Over the next decade researchers worldwide would analyze smog and conclude that it contained a host of chemicals considered dangerous to human health: cyclic hydrocarbons, carbon monoxides, nitrous oxides, sulfur dioxide, benzpyrene, ozone, lead. Public anxiety about smog would increase when some of its contents would prove to cause cancer in laboratory animals. But it would be decades before the sources of smog were effectively reduced. In the meantime, public health leaders stood by helplessly, convinced, as Columbia University’s



George Rosen wrote in 1958, that “the atmosphere of the modern industrial community is a carcinogenic sea, polluted and made murky by many sorts of individual waste. In such an environment it is hardly possible to avoid daily contact with cancer-producing agents.... However, inherent difficulties have so far prevented a full epidemiological and technical solution of the problem.”<sup>276</sup>

Air pollution standards would not be set in California until 1956, and the automobile would not formally be named the primary source of smog until so designated by the Air Pollution control Board of Southern California in 1959. For the remainder of the decade pollution control officials, gasoline distributors, and automobile manufacturers would spar over standards for car engine design, fuel, and emissions.<sup>277</sup> Particularly striking was the comparatively minor role public health leaders eventually played in the struggle against smog — a battle largely waged through political and regulatory action at the federal level.

During the war years Minnesota remained a comparatively clean, if freezing cold, state. National fuel shortages necessitated diversion of oil, coal, and natural gasses to military use, leaving most Minnesotans’ teeth chattering during the long winters of ‘41 to ‘45. Among the hardy northerners, however, a bit of winter chill wasn’t considered a public health matter.<sup>278</sup>

During the war the incidences of nearly all diseases continued to fall in Minnesota, with only three deaths due to typhoid fever, thirteen diphtheria deaths, and one from smallpox diagnosed statewide over the period. All diarrheal disease deaths and infant mortality also fell, following curves of decline initiated in 1915. Polio, however, crept up steadily during the war.

The most dramatic mortality shift for wartime Minnesotans was due to heart disease. When the Japanese struck Pearl Harbor, Minnesotans were dying of heart disease at a rate of

about 270 per 100,000. By the time the war ended and the troops had returned home, in 1947, the cardiovascular death rate had skyrocketed, reaching 309.7 per 100,000. It was the largest increase in heart disease Minnesotans had ever seen.<sup>279</sup> In 1947, when Minnesota's population reached 2.8 million, the state suffered nearly 9,000 deaths due to heart disease: one out of every 311 Minnesotans died that year of cardiovascular disease.

The state's department of health had long accepted that heart disease was its populace's number one killer, yet did little to try to control it. In part the inaction was because, like its counterparts all over the United States, the Minnesota State Department of Health was constructed around a communicable diseases model and had little idea how to tackle chronic ailments. In addition, at the time, most physicians thought of heart attacks and strokes as inevitable components of old age.

They were wrong, as the sharp increase in deaths among younger men, aged 45-54 years, indicated. A University of Minnesota survey in 1948 of men in that age group residing in Minneapolis and St. Paul found that an astounding one out of ten was suffering some stage of arterial or heart disease.<sup>280</sup> Public health leaders in the state had little knowledge at the time of the relative roles smoking, poor diet, and lack of exercise played in causation of heart disease.

Minnesota was at the front end of a radical change in America lifestyles in which a host of factors were interacting to increase the risks of cardiovascular diseases. The state's farmers had previously lived rugged lives characterized by daily, often exhausting, exercise. With rising prosperity and new technological innovations, more farmers had machines that performed the toughest tasks — ploughing, weeding, reaping, and watering. In urban areas, Minnesotans drove cars instead of walking, and a host of now affordable labor-saving home tools and appliances

further decreased their burden of manual labor.

Diets, too, changed. Supermarkets appeared, their shelves filled with canned, processed, and frozen food treats that had been infrequently consumed previously because of the labor involved in preparing them at home. Manufacturers swiftly realized that foods rich in salt, sugar, and butter were most popular with the American palate: the Jolly Green Giant's string beans sold faster if drenched in salt and butter before packaging.

And tens of thousands of men acquired a taste for chain smoking while on the World War II battlefields. Cigarette sales soared in the 1940s and 1950s, and smoking was suddenly socially acceptable in virtually every setting from offices to churches, schools to movie theaters, hospital waiting rooms to doctors offices. The Journal of the American Medical Association and many other leading medical publications ran cigarette ads, as did nearly every newspaper, magazine, and radio station in the country. Indeed, cigarettes were more than socially acceptable: they were chic. Humphrey Bogart had one drooping from the corner of his mouth when Lauren Bacall cast her siren's call on the silver screen. Veronica Lake's sultry face peered out of dancing wisps of tobacco smoke. Politicians jockeyed for power in proverbial "smoke-filled rooms."

But it would be years before those glamorous and powerful smokers would succumb to one tumor or another, heart attack or stroke. In the 1940s, those who voiced public health concerns about tobacco smoking were isolated and considered radicals.

In New York City public health officials had their hands full during the war due to acute personnel shortages coupled with the expectation that the department take on a host of new responsibilities.

The War Department was convinced that German U-boats prowled the western Atlantic and the Third Reich planned to attack New York City. Whether true or a far-fetched bit of Washington paranoia, the alleged German scheme involved use of submarine-launched chemical and biological weapons. And the War Department presented sufficient evidence of this elaborate alleged plan to convince Mayor LaGuardia that defensive measures were warranted. So in 1942 the health department recruited and trained 1,500 female volunteers who formed the Civilian Defense Nurse Corps. The women “were given a course of instruction in chemical warfare, particularly in the use of gas masks and methods of caring for persons suffering from gas attacks,” the department explained.<sup>281</sup>

Fear of German chemical or biological attack consumed enormous amounts of the department’s energies and resources. All top personnel underwent U.S. Army training in CBW (chemical/biological warfare), and food inspectors fanned out across the region to show farmers and meat and produce dealers how to protect their products from Nazi sabotage. Milk, in particular, was thought to be a likely German target, and every dairy producer in New York was repeatedly visited by the vigilant Civilian Defense Nurses.

The real food problem, however, was shortages, as enormous quantities were diverted to feed U.S. troops. Barely recovered from the nutritional crisis of the depression, New York City’s populace clamored for protein, and the health department took on the tasks of rationing and assuring equitable distribution of available foodstuffs.

But the biggest public health crisis faced by New York, and all cities that served as staging and leave sites for military personnel, was escalating venereal diseases rates. In New York’s case, the battle against gonorrhoea and syphilis consumed the city’s communicable

diseases control resources, leaving few dollars or health personnel to fight the old scourges of tuberculosis and childhood diseases.

Nationally, syphilis and gonorrhea rates had been rising steadily since the turn of the century, and no public health agency had developed an effective strategy for venereal diseases control.<sup>282</sup> At the end of World War I national syphilis rates averaged 113 per 100,000. On the eve of World War II syphilis rates had more than tripled to 368 per 100,000. Midway in the war, average syphilis rates would reach 450 per 100,000, with the highest incidence among military men.

Gonorrhea had shown an overall rising trend since 1900, though national rates had fluctuated. During the middle of the depression, gonorrhea averaged 121 cases per 100,000 Americans. In 1941 the rate rose to 146.7 per 100,000, and in 1944 it reached 236.5 per 100,000.<sup>283</sup>

From the earliest days of organized public health, Americans had exhibited a peculiar inability to cope with the conjunction of three fearsome factors: sex, disease, and death. In colonial America and later in the United States, even nonsexual diseases were traditionally framed in moralistic terms. Sexual diseases were, according to Harvard medical historian Allan Brandt, defined as “a uniquely sinful disease...of moral decay. Behavior — bad behavior at that — is seen as the cause of venereal disease. These assumptions may be powerful psychologically, and in some cases they may influence behavior, but so long as they are dominant — so long as disease is equated with sin — there can be no magic bullet.”<sup>284</sup>

Even during the free-wheeling days of the Roaring Twenties, venereal diseases were shrouded in shame and secrecy in the United States. Women who contracted gonorrhea or

syphilis were assumed to be prostitutes or, failing actual professional commitment, to have exhibited whorish behavior. Men were also disgraced if their venereal diseases were discovered, particularly if they were married. Reflecting the general American predilection for Christian moralism, social condemnation of individuals who suffered from venereal diseases was far more extreme in the United States than in Europe. And, as a direct result, individuals with syphilis and gonorrhea were more likely to hide their ailments until the diseases reached physically obvious, and completely incurable, tertiary stages. Secrecy, of course, required that there be no change in one's behavior lest a spouse question why a mate no longer desired sexual intercourse. So shame supported the spread of gonorrhea and syphilis.<sup>285</sup>

In the 1930s hospitals all across America had a policy of refusing to treat venereal diseases on the grounds that the patients were immoral. It was as if the alleged lack of morality was, itself, contagious.<sup>286</sup> Even the AMA — usually a staunch opponent of government-provided health services — offered no resistance to the creation of public health VD clinics, isolated from the hospitals and staffed by government doctors and nurses.

Congress passed the Venereal Disease Act in 1935, giving the USPHS authority to conduct research on syphilis and gonorrhea. A year earlier, New York state's health commissioner, Dr. Thomas Parran, was kicked off CBS Radio for uttering the word "syphilis" on the air. Shortly thereafter, Roosevelt appointed Parran his surgeon general, and the New Yorker made VD one of his primary causes. In 1937 he condemned the secrecy surrounding sexual diseases in his book Shadow on the Land, and in 1938 he pushed for congressional passage of the Lafayette-Bulwinkle Act, giving USPHS federal money with which to support expansion of local VD control programs.

For many years the highest rates of syphilis and gonorrhea had been seen among African American men — a fact that reinforced the white racist view of profligate, rampant sexual activity among blacks. Because of the racial stereotyping and moralism surrounding sexual diseases, African Americans resented all discussion of syphilis and gonorrhea in their communities. Noted black leader W.E.B. DuBois expressed this concern succinctly in 1933.<sup>287</sup>

Venereal diseases take a great toll from Negroes through sickness and death. This is not because of any greater amount of sexual immorality but because of the false shame which prevents infected persons from seeking or receiving the proper treatment. Among the better class whites, the facts are studiously concealed, which makes Negro rates appear higher.

Syphilis is a large factor in the Negro death rate, not only in itself, but for the degenerative diseases which it superinduces. Here again there are ridiculous exaggerations of the amount of syphilis among Negroes, ranging from 3.2 % to 75%. As a matter of fact, it is probably about 1½ times the rate for the whites, which is quite bad enough, even when we remember that the white rate is artificially lowered.

In some parts of the United States at the time, astonishing numbers of African Americans were suffering active, untreated syphilis. One of the highest rates in the entire world could be found in Macon County, Alabama, where in 1932 Dr. Taliaferro Clark discovered that 35 percent of the black population had syphilis and 90 percent of the cases had gone untreated.

With its new congressional mandate and money the USPHS funded Tuskegee University, working under USPHS employee Clark, to conduct a study of syphilis in Macon County, Alabama.<sup>288</sup> Under the original study design, Tuskegee was to recruit 400 black men who already had syphilis and 200 who did not for tests and observation. No treatment was to be provided, as it would interfere with the study's two goals: to determine the long-term course of the disease in the absence of treatment, and to note the peculiarities of the disease in black men.

(There was widespread, mistaken, belief among physicians that blacks responded differently to the disease than did whites.) Though white physicians initiated the study, it was executed over its four decades by African American nurses and doctors as well.

In order to lure men into the study, none of the patients was told he had syphilis — rather, they learned from the Tuskegee staff that they suffered from “bad blood.” And for years their continued participation was guaranteed by the provision of free transportation, hot meals, medical care for nonsyphilitic minor ailments, and burial insurance. Initially imagined as a six-month study, the Tuskegee experiment would last until 1972. In all that time, the Macon County men and their families would never be told that they had syphilis. Nor were they provided with penicillin in 1943 when USPHS researchers discovered that it could cure syphilis. For decades the USPHS would continue the study, and outside reviewers would approve it, until an Associated Press journalist stumbled upon its existence in 1972. A storm of publicity followed, as a result of which study participant Charlie Pollard learned that he had been duped and was dying of syphilis. He retained the famous civil rights attorney Fred D. Gray, who in 1974 brought a class action suit on behalf of all the Macon men against the USPHS. In an out-of-court settlement, each of the surviving men got a paltry \$37,000 in compensation.

By then, all but seventy-two of the participants were dead, most having suffered the extremes of tertiary syphilis: infection and destruction of the brain and heart and lesions all over the skin, mouth, and genitals. Thirty had died directly from syphilis and at least seventy more of complications associated with their venereally-acquired infection. Never realizing that they carried an infectious disease, by 1974 the men had passed syphilis on to twenty-two of their wives, who transmitted the diseases to seventeen children, and they to two grandchildren.



For twenty more years, the travesty of Tuskegee would fester in both the public health and African American communities, widening a credibility gap that was already vast. Eventually, the divide would become so great that in the 1990s all U.S. government public health pronouncements and programs would be viewed with hostility, even outright contempt, by African Americans of all social classes.

On May 16, 1997 President William Jefferson Clinton would publically apologize to the nation for the USPHS syphilis experiment. Seated before him that day at Tuskegee University would be five elderly survivors of the heinous experiment.<sup>289</sup>

The legacy of the Tuskegee experiment would prove to be merely an extreme example of a larger failure for American public health. Throughout the twentieth century there would continue to be glaring differences in the life expectancies, health statuses, infant mortalities, and access to medical care for white versus nonwhite U.S. citizens. Public health leaders would, variously, prove ineffectual, apologist, blatantly racist or simply determinedly ignorant in these matters. When the nation entered a post-war period of civil rights struggle, the divide between public health (both government and academic) and the nation's minority communities would widen. And by the 1960s it would be explosive.

The men of Macon County were perfect research subjects not only because they were African Americans who had syphilis but also because they were functionally illiterate. The latter is why they never realized that they were suffering the very symptoms that, beginning in 1936, were emblazoned on flyers and notices distributed nationwide by the U.S. Surgeon General's office. That is also why they never learned, as did most Americans, about two landmark discoveries that could have cured their "bad blood."

In 1937 USPHS physician John Mahoney, while toiling in the government's Staten Island laboratory, discovered that sulfa drugs could kill gonorrheal bacteria. Five years earlier, Scottish scientist Alexander Fleming had discovered that some fungi exude a powerful poison that kills off rival bacteria. The "poison" was a sulfa compound Fleming called penicillin. And it proved powerfully effective in laboratory tests against a broad range of bacteria.

In 1943 Mahoney showed that penicillin and other sulfa antibiotics could also kill tough spirochetes like syphilis. And that discovery opened a new door for public health. Immediately both civilian and military physicians realized that if they could flush all the ashamed gonorrhea and syphilis carriers out of hiding and encourage them to name their sexual partners, it would be possible to treat all of the cases and thus halt the spread of venereal diseases.

During World War II military doctors initiated began aggressive antibiotic treatment programs for VD, finding and treating all infected soldiers, fliers, and sailors. Some military officers also thought it expedient to provide penicillin gratis to brothels across the European and Pacific theaters of operation.

And by all accounts, penicillin seemed the long-awaited magic bullet promised sixty years previously by Erlich. In minute doses the drug miraculously healed even fairly advanced cases of syphilis and gonorrhea. And when supplies ran short, army doctors discovered that even the unmeasurable quantities of the drug that had passed into the urine of a treated patient could be used to cure another.<sup>290</sup>

Domestically, the discovery of penicillin completely changed public health approaches to venereal diseases. Where once officials could offer patients little more than a feeling of shame and disgrace, and private physicians wanted nothing to do with them, now the lure of a cure

brought gonorrhea and syphilitic patients out of disgraced obscurity. They flocked to doctors' offices and public health clinics for treatment.

In the first years of World War II, New York City, among others, came under attack from the War Department for allowing prostitutes to roam its streets, allegedly infecting the nation's soldiers and sailors. Mayor LaGuardia ordered vigorous education campaigns, and the health department distributed frightening VD pamphlets all over the city. Within months of Mahoney's discovery of the utility of penicillin in syphilis treatment, the department opened a special VD ward at Bellevue Hospital and distributed free penicillin to doctors and hospitals citywide. The city also instituted contact tracing policies under which all syphilitic and gonorrhea patients were pressured to name their recent sexual contacts, who were subsequently tracked down, interrogated, and treated. When necessary, either because the contact's full name wasn't known or the individual refused treatment, officers of the New York Police Department were deployed. Biggs's old typhoid tactics of five decades earlier were resurrected for venereal disease.

Similar procedures were followed all over the United States after 1943, and U.S. average rates of syphilis fell from an all time high of 447 per 100,000 in 1943 to 154 per 100,000 in 1950. By 1970 the U.S. syphilis rate would be 43 per 100,000.<sup>291</sup>

Gonorrhea rates, however, proved more mercurial. Unlike syphilis, gonorrhea could respond to a single dose of penicillin, and patients desirous of privacy who could afford to see a private physician could remain outside the net of public health scrutiny. Amid widespread over use of the new antibiotic by private physicians, penicillin-resistant strains of gonorrhea would soon emerge, further limiting successful control.<sup>292</sup> Accordingly, gonorrhea rates in the United States hit 236.5 per 100,000 in 1944, fell the following year to 225.8, then rose to 284 by 1947.

During the 1950s rates would fall as low as 129 per 100,000, but by 1970 they would have surpassed the 1947 all-time high of 284.<sup>293</sup>

Antibiotics allowed a similar transformation in public health approaches to tuberculosis. In 1944 the Mayo Clinic in Minnesota successfully used streptomycin to cure TB in a group of hospitalized patients, and public health leaders immediately recognized that the contact tracing model could be applied to control of tuberculosis.<sup>294</sup> Before 1944 all authorities could offer the tubercular individuals that they tracked down was social isolation and, in the best cases, fresh air and a calorie-rich diet. Now, however, they could attract tuberculosis carriers with bonafide hope of complete cure. Between 1944 and 1954 national tuberculosis rates would fall from 95 to 10.5 per 100,000, or by 16 percent. That wasn't terribly impressive, however, given that between 1941 and 1944 the TB rate had risen by 17 percent. Still, by 1970 the national tuberculosis rate would have been cut by 91 percent, compared to its 1944 level.

The primary impact of the antibiotic revolution on other bacterial diseases, such as streptococcal pneumonia and typhoid fever, was an immediate reduction in death rates. In some cases the rates approached zero. Between 1936 and 1945 pneumonia death rates nationwide fell to less than one percent of all cases — a 40 percent drop. Though health departments continued to keep track of the bacterial diseases and distribute available vaccines, antibiotics medicalized their control. Physicians, antibiotics in hand, wrested authority over the bacterial domain from public health and would never again relinquish their power except during epidemics. This would prove in coming decades to be a serious problem, as antibiotic-resistant strains of the old killers emerged.

In 1943, even before Mahoney proved penicillin could cure syphilis, there were already

more than 3,600 antibiotic products in some stage of development. That figure would increase ten-fold over the next decade. So great was public excitement over the magic bullets that most of these products were ushered into clinical use after only a modicum of testing. As a result, side effects were often severe and dosages uncertain. The use of antibiotics therefore actually increased national hospitalization rates, as doctors generally urged their patients to take the miracle drugs only under close supervision. Civilian hospital admissions skyrocketed during the war, from about 10.5 million in 1941 to 14 million in 1946, and the bulk of all hospitalizations were voluntary. Thus, the antibiotic revolution increased the power of hospitals, transplanting entire fields of public health from the home or community level into the entirely physician-controlled environs of institutional medicine. And though the miracle drugs were themselves inexpensive, their use in hospital settings was quite costly.<sup>295</sup>

Another World War II U.S. military innovation was the use of chloroquine for treatment of malaria, coupled with DDT and 2,4-D pesticides for eradication of disease-carrying mosquitos and lice. Both technologies initially proved as miraculously successful as had penicillin and were immediately put to vigorous civilian use. In the malarial southern states the double wallop of pesticides and chloroquine was phenomenally successful. By 1952 the USPHS would declare the disease eradicated from North America.<sup>296</sup>

With miracles seemingly popping up all around them during the war, a trio of U.S. Senators — Robert Wagner (D-NY), James Murray (D-MT), and John Dingell (D-MI) — crafted a bill that bore their names. It was designed to transform FDR's Social Security Act of 1934 into the cradle-to-grave compulsory health insurance law Roosevelt had originally envisioned, allowing all Americans to share in the new discoveries. American trade unions had ignored the

health insurance issue when Roosevelt raised it a decade earlier. But now they were fighting mad. During the first two years of World War II, organized labor made many salary concessions and desisted from work stoppages out of a sense of patriotism. But by 1944 most industrial plants were hot beds of union activity, and the United States broke all its previous strike records that year, experiencing 4,956 work stoppages involving nearly 5 percent of the national civilian work force. When word got out that corporate executives were making record sums — approaching half a million dollars for some, at a time when the average industrial worker earned only \$2,190 a year — the unions said patriotism be damned, let's strike. And in 1945 there were another 4,750 work stoppages, affecting everything from professional baseball to tank production. When the war ended still more strikes broke out: almost 5,000 of them in 1946.<sup>297</sup>

In the mid 1940s, the average working family spent \$150 a year on medical care, representing 15 percent of 1945 per capita disposable income. Only 19 percent of the U.S. population had any form of health insurance in 1943 — less than a third of the insured were covered for surgery. For most families that suffered a catastrophic illness, that crippled its chief breadwinner, medical care usually caused bankruptcy or long term indebtedness.

Labor was, therefore, in the mood to back the Wagner-Murray-Dingell Bill. But, as always, neither the AMA nor the Republican Party liked the idea.

Before the bill came up for a vote, President Franklin Delano Roosevelt, the measure's major supporter, died in office on April 12, 1945. That left the issue in the hands of his successor, Harry S. Truman. The stern Missourian insisted, "We can afford to spend more on health," and just months after taking over the White House introduced his own health insurance bill, a modified version of the Wagner-Murray-Dingell Act.

The Truman plan called not only for compulsory health insurance — subsidized fully by the federal government for indigent Americans and means-tested for payment by the rest of the society — but also proposed dramatic increases in support for public health programs, medical research, and hospital construction. Truman told the nation that under his plan the government would spend about 4 percent of the country's tax income on public health and medical care.<sup>298</sup>

And that was just fine with most Americans, according to polls conducted in late 1945.

Senator Robert Taft, son of the former president and the most powerful Republican in Congress at the time, called upon all GOP members to oppose the Truman health plan and asked fellow Senators to boycott all formal debates and discussions of the bill. “I consider it socialism,” Taft averred. “It is to my mind the most socialistic measure this Congress has ever had before it.”<sup>299</sup>

The White House, overwhelmed by the war effort, didn't have time to offer a rejoinder. Germany surrendered in May and the Pacific effort escalated that spring. Shortly before his death, Roosevelt had reached agreement in Yalta with the Soviet Union's Joseph Stalin, who promised to join the United States on the Pacific front. The crafty Georgian was now reneging on his Yalta vow. And on July 16th a team of physicists successfully tested the world's first atomic bomb in Alamogordo, New Mexico. For three weeks the Truman administration internally debated use of the novel weapon, then on August 6th the Enola Gay dropped its payload on the Japanese city of Hiroshima. Three days later a second atom bomb fell on Nagasaki.

Japan surrendered on August 15, 1945, bringing World War II to an end.

Over the next two years, U.S. troops would dribble home from Europe and the Pacific in

what were, for them, frustratingly small numbers. Couples would marry — and married couples would have babies. Of all the major participants in World War II, only the United States was in better shape at the end of the war than at its outset. Though it suffered a terrible human toll, the United States itself escaped physical damage (except in its territories), and in 1945 the nation was embarking on a period of phenomenal prosperity.

There were 139.9 million people living in the United States by Christmas of 1945, two-thirds of whom were urbanites. About a third of them owned a car, half had a telephone in their home, and Americans — who constituted 7 percent of the world's population — owned 42 percent of the global income and half of the world's manufacturing output.<sup>300</sup> Per capita income in the United States was double that in the allied nations (Britain, France, Canada, etc.). Almost no one was unemployed, and average caloric intake was 3,000 calories a day.

And within nine months of Victory in Japan Day, the first children of what would prove the largest baby boom in U.S. history were born.<sup>301</sup> By the time the Baby Boom would end in 1964 the nation's women would have birthed 76.4 million babies, bringing the U.S. population up to more than 105 million.

The economy boomed, too. The U.S. gross national product increased from \$100 billion in 1939 to 1945's \$212 billion.<sup>302</sup> Though Americans might quibble about President Truman's performance, they were passionately patriotic at the war's end and proud of the government of the United States. Federalism had served them well, ushering the country out of the Great Depression, guiding the nation to victory in battlefields all over the world, and rewarding the citizenry with phenomenal post war prosperity.

It seemed an auspicious time to reconsider Truman's health plan.



In 1946, however, the Republican Party gained control of Congress in national elections and Senator Robert Taft took over the Labor and Welfare Committee, where Truman's bill had languished for two years. Taft made it clear that the only thing he liked about Truman's plan was the word "compulsory." Public health ought to be meted out to the poor as each state saw fit, he said, and it ought to be "compulsory" for the poor to accept whatever they got, on whatever terms were dictated. Period.

Some Republicans went further, charging that "socialized medicine" was all part of a Moscow-dictated communist plan. The Cold War was getting underway both internationally and domestically, and public health was caught in the crossfire.

In the end, Truman's plan would die, marking the third time a U.S. president had tried and failed to institute compulsory health insurance in the United States.

Instead, Congress passed the Hill-Burton Act of 1946, a bill designed by the AMA.

Under Hill-Burton the federal government would over the next three decades spend more than \$4 billion modernizing and building hospitals. At the time of their construction, most of the new hospitals under Hill-Burton were located in communities that had fewer than 10,000 people. That these towns would often later transform into sprawling suburbs did not seem to bother Congress, though the stated intent of Hill-Burton was to support rural, under-served areas. By 1966 some 4,700 hospitals were either built or improved using Hill-Burton funds.<sup>303</sup> And in keeping with another aspect of AMA intent in the law, the new facilities emphasized high technological approaches to medicine.

Though the Truman and Eisenhower administration eliminated or outlawed most forms of overt racially discriminatory uses of federal dollars, and FDR had banned all War Department

purchases from manufacturers that practiced racially-biased hiring, Hill-Burton money was used to build eighty-nine segregated hospitals in the South — medical facilities that barred African Americans from entry. And some Hill-Burton-funded northern hospitals had policies that amounted to segregation, as less than one percent of their patients were black, though they were located in communities heavily populated by African Americans.<sup>304</sup>

Increasingly, public health responsibilities and curative medicine shifted from small city clinics and private doctors' offices to the new hospitals. And, not surprisingly, expenses rose. In 1946 total hospital costs (excluding in federal facilities) to patients or their insurers nationwide were \$1.2 billion. By 1955 that had more than doubled to \$3.4 billion. And in 1965 those costs would top \$9 billion.<sup>305</sup>

Hill-Burton brought a critical change in the power structure of American health and presaged tensions that would prove critical forty years later. Prior to 1950 most physicians prospered in small, private practices, often comprised of nothing more than a couple of offices, a nurse, and a part-time secretary. As the power of hospitals rose, and medical technology improved, hospital affiliation became essential for all but country doctors. Having formal relations with a prestigious teaching hospital offered a critical edge for physicians working in highly competitive urban markets such as New York City, Boston, Minneapolis, and Chicago. In time such affiliations became harder to obtain; and the hospitals manipulated physician competition — in addition to increasingly competing against one another. The goal posts for acquiring both prestige and dollars were highest for those medical specialties that by definition required hospital services: surgery, trauma, and intensive care.

By 1960 the medical areas most intimately connected to public health — family practice,

pediatrics, infectious diseases, internal medicine, medical social work — had dropped considerably in status, garnering lower pay and less prestige. Conversely, those medical pursuits most closely associated with concepts of hospital-based curative care rose to the top: surgery, oncology, cardiology. And within those higher-prestige fields, physicians and nurses became increasingly specialized over the post-war years. Two post-war expressions of the day used to describe intelligence were, “He’s no rocket scientist, but...,” and, “You don’t have to be a brain surgeon to know....”

Commensurate with the growth of hospital power would be the rise of private health insurance, which was chiefly obtained by Americans as a result of collective bargaining between unions and large employers.<sup>306</sup> Less than 20 percent of the U.S. population was covered by any form of health insurance in 1945, and most of that offered limited protection that failed to cover key costs accrued in hospitalization. By 1960, however, about 25 percent of hospital costs would be covered by insurance, and national health expenditures would have skyrocketed from about \$5 billion in 1946 to \$26 billion — a more than five-fold increase.<sup>307</sup> After passage of the Hill-Burton Act hospital spending drove overall health costs upwards at an accelerated pace. In 1948 total health spending hit \$10.6 billion, of which a third was hospital care. (In 1929 hospital care had constituted only one sixth of the \$3.6 billion the nation spent on health.)

By 1955 Americans were spending \$17.7 billion on health, a third of which, \$5.9 billion, was for hospital costs. In 1960 they again spent about a third of their health dollars on hospitals, or almost \$9.1 billion. In 1970 health spending would top \$71.5 billion and nearly 40 percent of that would be spent in hospitals.<sup>308</sup> (These hospitalization figures do not include nursing homes, long-term care or physicians services and pharmaceuticals.)

The primary driver of private health insurance was corporate America. As the country's largest companies made concessions to labor that provided health coverage, the numbers of insured Americans rose. The 1947 passage of the Taft-Hartley Act accelerated the pace of employer offerings of health insurance because the Republican-inspired law forbade labor's most effective means of obtaining more global reforms and concessions from management. The law prohibited closed shops, secondary boycotts, and consecutive strikes, and it mandated eighty-day "cooling off periods." Though President Truman vetoed the Act, he was out-voted by Congress and Taft-Hartley, dubbed "the slave labor law" by organized labor, went into effect in 1948.

Unable to obtain the salary concessions they felt could best be won through now-illegal actions, unions shifted their focus to benefits packages which, in the 1950s, were far cheaper for employers. Insurance coverage swiftly spread through the work force.

But inherent in this haphazard approach to U.S. health care<sup>309</sup> was a bias towards social power. Those elements of labor that were best organized, or worked in the most pivotal industries, were in position to exact superior health plans from their employers.

As a result, less skilled, lower paid jobs — restaurant workers, secretaries, janitors, farm workers, and the like — had no coverage, and the most highly-paid, university-educated employees tended not only to have employer-provided insurance but also to garner the most generous coverage plans. In consequence, by the 1970s health insurance would be provided to those workers who were in the best financial position to buy their own, if necessary. And the poorest workers would have no coverage.<sup>310</sup>

And private insurance would have a positive influence on the finances and power of hospitals, as it readily reimbursed hospital costs but played virtually no role in public health or

the care of indigent patients.<sup>311</sup>

“Third-party coverage offered a direct incentive for care to be given inside rather than outside the hospital,” observed University of Pennsylvania historian Rosemary Stevens.<sup>312</sup>

This trend didn't immediately render public health irrelevant in the United States, of course. There was little, if any, profit to be made in epidemic prevention and control, venereal disease surveillance, tuberculosis-related efforts, prenatal screening of poor women, and the like. These services would remain in the hands of government and charitable services. But the administrators of public health programs would, over time, see their prestige plummet, comparative salaries fall, facilities age and become technologically inferior to local hospitals, and their clientele base shift away from society as a whole, towards the most indigent and socially alienated segments of the population. Public health personnel had never been highly paid, and top physicians in the field had always earned less than their wealthy private sector colleagues. But as the post-war years wore on, the field of public health would become so wretchedly remunerated compared to curative medicine that its professionals were likely to be drawn from one of two pools: highly motivated altruists or mediocre scientists, doctors, and nurses.

Exacerbating this tension between public and private health care was a cardinal change in American lifestyles — as characterized by where much of the nation's populace now aspired to live. Prior to World War II there were basically two types of Americans: urbanites and those who lived in rural areas. After the war a new type of community was created, culturally and physically designed to exist in a kind of limbo between urban and rural life: the suburb. With a baby boom underway and with war veterans' subsidies in hand, millions of young families were seeking a way out of the cramped, polluted cities. They dreamed of homes, surrounded by yards

and trees, where children could safely frolic and mom could create a more refined and serene life than could be found either on farms or in urban apartment buildings. The value system was staunchly middle class, and though Americans of all races may have aspired to it, suburbanization was a white phenomenon.

In the booming post-war economy 11 million suburban homes were built between 1948 and 1958; and 83 percent of national population movement and growth during those years flowed to those newly-created communities, most of them generally inhabited by fewer than 50,000 people.<sup>313</sup> Much of the Hill-Burton hospital construction money went to building suburban hospitals.

Suburbanization of America would continue well into the 1980s, and its impact upon public health would be multi-faceted. The suburban communities initially tended to be comprised of highly homogeneous populations because specific housing developments targeted certain buyers: Jewish or WASP buyers, lower or upper middle income, urban commuters or those whose jobs did not require daily travel to the central city. As the middle class tax base allowed better government services such as public schools and top hospitals, and these served as magnets for still more highly-paid suburbanites.

The suburbs were originally populated by young families, particularly World War II and Korean War veterans, and suburbanites soon acquired their own unique, youthful glamor. With images of martinis, cigarettes, frozen TV dinners, aerosolized whipped cream, supermarkets, and fancy new kitchen appliances the advertising world gave the suburbs an aura of convenience and adult fun. A sort of genteel suburban alcoholism, coupled with heavy smoking by both men and women, was the norm. Suburban characters played by Gig Young, Dean Martin, and Doris Day

moaned their ways through day-after hangovers on the silver screen; real life housewives greeted their commuting husbands with cocktails and Cheese Whiz.

Suburbs were automobile cultures; air pollution created by millions of commuting cars was the immediate companion of suburbanization. With car culture came a lack of community cohesiveness. Suburban Americans nationwide began to experience what Los Angeles had long known: social isolation and anonymity. While there might be pressure to keep up with the Jones in a suburban commodities competition, drawn shades, fences, and yards allowed those Jones more privacy than they had had in the city.

The combination of heightened privacy, lack of community cohesiveness, and antipathy towards the cities they had abandoned would make suburbanites uniquely difficult for public health authorities to reach. Indeed, some of the weakest departments of health in the country were in suburbanized counties, reflecting residents' preference for strictly private health care and preventive health advice.

Abandoned by the White middle class the cities rapidly deteriorated. Without their middle and professional class tax bases, New York, Chicago, Pittsburgh, Detroit, and other large urban centers could no longer maintain their public infrastructures. Within fifteen years of the end of World War II things were visibly, often drastically, falling apart in American cities. The victims included schools, public hospitals, trains, buses, roadways, parks, museums, cultural centers, and government services. The erosion pushed more flight from the cities, expanding and perpetuating suburbanization.

As early as 1949 the impact was shockingly obvious; many American cities suddenly had slums in their downtown cores. Congress saw this and approved funds for construction of

810,000 public housing units to be built in place of the recent urban squalor. But by 1955 less than a quarter of those units had been constructed and many so-called urban renewal projects were turning into eyesores and centers of crime. By the 1960s “the Projects,” as they were called, and degenerated neighborhoods of most U.S. cities would be racially stratified centers of explosive anti-government sentiment, all but impenetrable to public health officials.

But before all of that occurred, urban public health was still to face, and often meet, some of its classic challenges.

In the late winter of 1947 Mr. and Mrs. Eugene Le Bar left their Mexico City home of six years and took a vacation bus trip around the United States, ending up on March 1st in New York City.

“He could not know that his visit would affect the affairs and interest of almost every New Yorker,” the Department of Health officials later wrote, “and that it would create headlines across the country.”<sup>314</sup>

By the time Eugene Le Bar reached Gotham he was not feeling well. The couple checked into a midtown hotel and then commenced sight-seeing.<sup>315</sup> Within four days Le Bar’s condition had deteriorated and he had an unusual skin rash, high fever, disorientation, muscle aches, and severe fatigue. He first checked into Bellevue Hospital and then into Willard Parker Hospital, where baffled physicians, having never previously seen such an illness, tentatively diagnosed bronchitis and dermatitis. Eugene Le Bar died on March 10th, and his wife left New York to seek consolation with friends in Maine, traveling up the east coast by bus.

A few days later an African American toddler in the Bronx and a twenty-five-year-old Puerto Rican immigrant living in Harlem developed similar symptoms, and Willard Parker’s



medical superintendent, Dr. Dorothea Tolle, realized that both of them had been in the hospital at the same time as Le Bar. Though there was no evidence that the three patients had ever been in contact with one another, Tolle suspected that they all had smallpox. She immediately notified Commissioner of Health Dr. Israel Weinstein.

New York City hadn't had a smallpox outbreak since 1902 when 310 people died of the disease. There were few doctors or nurses who had ever seen a smallpox case and the Department of Health's laboratory no longer had reagents that could be used to diagnose the disease. Weinstein ordered the patients' blood samples sent to the U.S. Army Medical School Laboratory in Washington, D.C. for analysis. Six days later he got the word: yes, it was smallpox.

Weinstein immediately released the information to the press, and New Yorkers read the frightening news on the fifth of April. That brought forth word of more cases. By mid-April there would be a total of eleven cases, all directly or secondarily connected to Willard Parker Hospital. Nine would be inside New York City, but two would involve travelers, one to the upstate town of Millbrook and the other to Bremerhaven, Germany.

Weinstein took swift action the same day he informed the press. He ordered the department's lab onto a twenty-four-hour-a-day vaccine production schedule, with the goal of making enough to immunize the entire population of New York City — a decision warranted by uncertainty about how long prior vaccinations might continue to afford protection. And he commanded a vigorous surveillance search for additional smallpox cases. Their task was awesome, as Le Bar had walked all over the city for days, then checked into two hospitals. (Fortunately, Mrs. Le Bar had been immunized as a child and wasn't a smallpox carrier.)

Newly elected Mayor William O'Dwyer, a Democrat, worked behind the scenes, threatening, coaxing, and begging local pharmaceutical companies to also go into emergency vaccine production. Most were reluctant, seeing little profit in such an effort, but O'Dwyer virtually blackmailed the manufacturers, warning that he wouldn't hesitate to tell the public which companies stood on the sidelines amid a terrifying epidemic.

By April 10th the city was blanketed with signs and leaflets carrying the motto, "Be Safe. Be Sure. Get vaccinated." Nearly every police station, public hospital, child health clinic, labor union hall, large company, and school in the city became a vaccination center. To dramatize the urgency, both Mayor O'Dwyer and President Truman publicly had their arms scratched with smallpox inoculum. Newspapers and radio stations spread the word every day. At the pulpit preachers urged their congregations to get vaccinated. Public health nurse volunteers knocked on doors in every neighborhood in the city, spreading the word. And 3,000 volunteers from the Red Cross and a variety of other organizations were corralled into service either to help drum up public concern or aid in vaccination.

By mid-April, from Coney Island to Riverdale in the Bronx New Yorkers were lined up to get scratched. Photographs show lines stretching completely around large Manhattan blocks, in which, bundled up against the April chill, hundreds of anxious looking New Yorkers quietly awaited their turns.

By April 20th the health department could justifiably boast of having executed the world's largest rapid vaccination campaign and limited a potentially devastating epidemic to just eleven cases with only two deaths — Eugene Le Bar and a pregnant woman named Carmen Acosta. By any measure it was a genuine public health triumph. In remarkable understatement

in its annual report, the department summarized, “Perhaps the most dramatic incident in communicable disease control in the period [1941-47]... was the outbreak of smallpox in 1947. For more than a generation not a single case of smallpox had developed as a result of an exposure in New York City.... Practically every physician in the city was overwhelmed with patients requesting vaccinations. There was tremendous pressure on medical facilities, but a minimum of confusion and lost motion, and in less than a month more than six million people were vaccinated in the city. More than five million of these were vaccinated in the two-week period following the initial appeal for universal vaccinations made by the Mayor. Never before had so many people in any one area been vaccinated in such a short time, on such a short notice.”<sup>316</sup>

New York City had always been the primary microbial connecting point between the United States and the rest of the world. In the Le Bar case, with smallpox acquired in Mexico, the City experienced a taste of the globalization of disease that would prove increasingly problematic in coming years. A century earlier, European immigrants had brought cholera, measles and typhoid fever to the metropolis. In the 1940s immigration ceased drawing heavily from Europe, and shifted to tropical sites that offered a different set of microbial hitchhikers. By 1948 Gotham was the number one immigration destination for Caribbean people, particularly those from Puerto Rico.<sup>317</sup> Between 1940 and 1950 the city’s Puerto Rican population swelled from less than 1 percent of all New Yorkers to nearly 3 percent; by 1970 that figure grew to 10 percent.

As the Puerto Ricans made their exodus to New York they brought microbial hitchhikers: schistosomiasis and *Entamoeba histolytica*, chiefly. The Department of Health responded by

building a network of tropical diseases clinics in Puerto Rican neighborhoods, and by enhancing its parasite diagnostic capacities, including training sixty-five laboratory personnel in tropical diseases recognition and analysis.<sup>318</sup>

Throughout the United States 1948 brought a new polio epidemic, the worst the nation had experienced since the first one in 1916. New York City's outbreak, with 703 cases and just 26 deaths, was minor. The same year Minnesota, with a statewide population far smaller than that of New York City, suffered 1,236 polio cases and 81 deaths.

In the 1916 epidemic the national polio case rate had reached a high of 41.1 per 100,000 and thereafter generally stayed below 12 per 100,000. In 1948 the polio rate climbed to 18.3 per 100,000 and in 1949 it hit 28.3. By 1950, when about 32,000 people contracted the disease, acute poliomyelitis was the most feared communicable disease in the United States. And in 1952, when the national rate topped 37 per 100,000, more than 58,000 Americans contracted poliomyelitis, which killed 1,400 of them. That most of the paralysis and death occurred among children made polio particularly frightening.<sup>319</sup>

The National Foundation for Infant Paralysis (NFIP), begun by FDR's friend Basil O'Connor in 1938, waged a March of Dimes campaign in the 1950s to raise funds for polio research.<sup>320</sup> Nearly two-thirds of all people in the country made donations.

The foundation had a public health, not a curative medical, goal. Rather than fund the search for a treatment, O'Connor and his colleagues hoped to eliminate, via development of a vaccine, the threat polio posed to society as a whole.

Prior to 1947 several laboratories had discovered that polio was caused by a virus that existed in three different sub-types, two of which were responsible for most human disease.

Other than laboratory-inoculated monkeys, rabbits, and mice, no other species suffered from polio, which offered optimism that, were an effective vaccine discovered and widely used, the disease might disappear.

But the virus was extremely difficult to study. In his University of Pittsburgh laboratory Dr. Jonas Salk had a technique for isolating viruses that required growing the microbes in monkeys. The NFIP estimated in 1948 that it would take 50,000 monkeys to grow enough viruses to make the basis for vaccines sufficient for inoculating all Americans. Bad as polio was, no one relished the idea — or cost — of raising, inoculating, and then killing 50,000 monkeys.

However, during the war microbiologist Albert Sabin had discovered how to grow polio viruses on human nerve cells in his Rockefeller University laboratory in Manhattan. And in 1949 the Harvard Medical School's Dr. John Enders and two of his former graduate students, Drs. Thomas Weller and Frederick C. Robbins, made a pivotal discovery — by accident. Weller was the first person to figure out how to grow viruses on human fetal tissue cultures — in the primary case, he used mumps viruses. Then he set to work trying to duplicate that effort with chicken pox viruses. He wasn't having much luck, so Weller pulled some polio samples out of the freezer and put them in his tissue culture tubes.

And the viruses grew and reproduced like crazy. Over subsequent months the Harvard trio perfected the technique, creating a simple way to mass produce polio viruses without having to kill any monkeys. For their efforts the trio was awarded the 1954 Nobel Prize in Medicine and Physiology.<sup>321</sup>

In Pittsburgh Jonas Salk seized on the tissue culture discovery and, supported by charitable funds from local philanthropists and the NFIP, set to work making a polio vaccine.

Enders readily shared his work and his advice with Salk. By 1953 Salk had figured out how to use monkey kidneys, rather than human fetal cells, as a tissue culture basis for large-scale production of polio viruses.

The next step was to kill the viruses and make of them an effective vaccine.

And a coincident discovery made in New York City's Public Health Research Institute<sup>322</sup> turned the then marginal possibility of polio vaccine production into a striking reality. Having obtained samples of Salk's killed virus vaccine, Dr. Jules Freund added a cocktail he invented, comprised of fats and water. He called the mixture an adjuvant and reasoned that it would stimulate a stronger response in the immune system and up the efficacy of the polio vaccine. In lab animals the effect of Freund's adjuvant was obvious — so much so that New York City Health Commissioner Dr. Leona Baumgartner announced the discovery to proud New Yorkers in 1953, declaring the City's intention to be the first test site of large-scale human use of the Salk vaccine. Months earlier Salk had already tried his vaccine — without the critical adjuvant — on children in Pittsburgh's Watson Home for Crippled Children, a rehabilitation facility for victims of poliomyelitis.<sup>323</sup> And by the end of 1952 Salk had safety data on 161 children who had, with parental approval, taken the experimental vaccine.<sup>324</sup>

In the fall of 1953 more than 80,000 six- to eight-year-old New York City school children rolled up their sleeves for shots of either Salk's vaccine, or a placebo made of Freund's adjuvant and a diluent. As word of the New York experiment got out, Salk and the NFIP were deluged with requests: the whole nation wanted the still-experimental vaccine. In 1954 and '55 tens of thousands of children nationwide enlisted as Polio Pioneers to serve as willing guinea pigs for the vaccine.<sup>325</sup> And though every aspect of the Salk vaccine effort was mired in politics, ethical

debates, and production and distribution snafus, there were never shortages of school children lining up for polio shots. The fear of polio was far greater than any parental concerns about the experimental nature of the vaccine.<sup>326</sup>

In New York City Baumgartner's enthusiasm knew no bounds. The health commissioner, whose popular weekly radio broadcasts on health had made her a local household name, urged New Yorkers to enlist their children in the vaccine trials. And Baumgartner approved use of her nursing staff to conduct the immunizations at public schools. Thousands of elementary students in schools in Brooklyn, the Bronx, Queens, Manhattan, and Staten Island lined up during recess for their three rounds of polio shots, and by January, 1955 nearly every child in New York City between the ages of six to ten years was immunized against polio. Under Baumgartner's leadership New York City was the willing — even eager — site of the largest experiment ever conducted on children.

And on April 12, 1955 — a date deliberately selected because it marked the tenth anniversary of the death of polio victim Franklin Delano Roosevelt — Jonas Salk announced that the polio vaccine was safe and effective. The reaction nationwide was jubilant — nearly as celebratory as on the announcement of V-J Day ten years earlier. Church bells rang from coast to coast. When commuters in Los Angeles heard the news on their car radio, thousands spontaneously began honking their horns, stopping their cars, and shouting with joy on gridlocked freeways. Schools all over the country held celebration assemblies. And every news organization worldwide spread the news in elated tones.

Vaccine production could hardly keep pace with demand after that. Baumgartner's beloved New York City, having so willingly volunteered for experimental vaccines, received

large supplies and by mid-1956 had vaccinated nearly half the population of the city, or more than four million people. On his hit CBS television show, “See It Now,” Edward R. Murrow looked straight into the camera that spring and declared, “The sun was warm, the earth coming alive; there was hope and promise in the air. The occasion called for banners in the breeze and trumpets in the distance...At a time when the media of modern communications are overly inclined to persuade, astonish, frighten or amuse, and are tempted to exaggeration and prematurity in each of these gainful activities, there can be a lasting advantage in sobriety of statement.”<sup>327</sup>

At that moment, few doubted that Salk’s vaccine was one of the great triumphs of public health. It was an achievement for the war not only against poliomyelitis but against all disease, as it offered hope that similar techniques could be deployed for development of vaccines against other killer diseases. President Dwight David Eisenhower’s Secretary of Health, Education and Welfare (HEW), Oveta Culp Hobby, announced immediate approval of nationwide vaccination.

But Salk’s key scientific rival, Albert Sabin, warned prophetically, “Everybody in the public health field knows that when you reach the point where you begin to inoculate an agent into millions of children, your problems have only just begun.”<sup>328</sup>

Less than a month after HEW<sup>329</sup> Secretary Hobby announced the national immunization campaign it became obvious that some children were contracting polio from the vaccination. In May of 1955 the Eisenhower administration stopped all vaccine distribution pending further examination. And the stunned nation learned that seventy-nine children had acquired the disease as a result of vaccination and passed the virus on to 141 other individuals. Eleven children died. Further tracking revealed that all of the seventy-nine children had been immunized with a batch



of polio vaccine made by Cutter Laboratories of Berkeley, California. The company had, it seemed, failed to kill all the polio viruses before making them into vaccine doses.

The Cutter incident was incendiary on Capital Hill, but it barely slowed public enthusiasm for polio immunization. Congress attacked HEW Secretary Hobby, accusing him of granting widespread use of the polio vaccine without adequate tests.

The moment the Salk vaccine went into widespread use in the Spring of '55, however, polio began to disappear from North America. In 1954 the U.S. national polio rate was 23.9 cases per 100,000 people. The incidence fell 27 percent in 1955 and by 1957 was down to just 3.2 cases per 100,000 people.

What would eventually push polio down to zero in the United States was an oral vaccine developed by Sabin and put into widespread use in 1961. From the beginning of the March of Dimes-funded pursuit of a vaccine two decades previously, Sabin had argued that an injected vaccine might protect the individual against the disease but would not lower the background level of polio in the community. Therefore, he said, the risk of polio would remain, and it would reemerge as a public health threat the moment collective immunity waned. Since no one knew how long Salk's vaccine could keep someone immune to the virus, Sabin's point was worrisome.

And he had solid scientific reasons for insisting upon an oral vaccine. In the course of natural infection, polio viruses typically entered the body via ingestion of contaminated water and then passed into the intestines. There the virus gained entry to the bloodstream, and eventually to the central nervous system, by attaching itself to special gastrointestinal tract cells called M cells. These sticky, mucous-covered cells have cilia that protrude into the intestinal tract and bowel lining and grab items mingled in with food. The polio virus had evolved to

deliberately allow itself to be snagged by M cells and then use them as portals of entry into the bloodstream.

Vaccination via an intramuscular injection of Salk's whole killed viruses protected an individual to the degree that polio viruses that entered his bloodstream would be attacked by antibodies and destroyed by the immune system. But as long as polio viruses remained in his GI tract they were free to multiply and be passed back out into the environment in his stools. As a result, the amount of polio present in a given community might not be diminished by that population's use of the Salk vaccine.

Sabin believed that the only way to truly eliminate polio's threat to public health was to stimulate immunity along the GI tract, making every person's intestines a lethal environment for the virus. To achieve that goal the New York City researcher invented ways to keep polio viruses alive in crippled, nonlethal form. These attenuated viruses, mixed with Freund's adjuvant and a harmless liquid, could be swallowed. And, because they were alive, the attenuated polio viruses could make their way into the intestines and stimulate profound local immunity.

The new vaccine droplets began to be dripped into the mouths of school children nationwide in 1961, prompting an immediate 62 percent plummet in national polio rates. By 1963 the U.S. incidence of polio was a mere 0.1 cases per 100,000 people, and by 1967 the only reported cases of the disease were exceedingly rare ones caused by use of vaccine that contained inadequately attenuated viruses.<sup>330</sup>

Despite the marginal risk of acquiring poliomyelitis from Sabin's vaccine, the oral formulation had two distinct advantages over Salk's injectable one: it eliminated polio viruses

from the environment, and it erased all risk of needle-born disease.

Needles and syringes, though mainstays of medical and public health practices since the turn of the century, were well known to be capable of carrying and transmitting diseases. As early as 1933, Omaha physician Oliver Nickum had reported identification of cases of malaria spread among Nebraskans who shared syringes for purposes of injecting narcotics.<sup>331</sup> And during the depression New York City had an outbreak of forty-one malaria cases, including eighteen deaths, due to needle sharing among narcotics injectors.<sup>332</sup> By the mid-1940s the medical literature was full of reports of hepatitis and jaundice cases in hospitals where needles were reused on several patients.<sup>333</sup> Horribly, many hepatitis outbreaks had appeared among venereal diseases patients who received penicillin injections at public health clinics worldwide and among diabetics whose clinical inoculations of insulin involved recycled syringes. Other diseases, such as bacterial meningitis and tuberculosis, were also known to be spread through medicinal and public health use — and reuse — of syringes.<sup>334</sup>

Extensive debate among physicians about various methods for sterilizing syringes between patients clearly showed that nothing short of high heat autoclaving could do the trick.<sup>335</sup> Nevertheless, in the 1950s and 60s the exigencies of epidemic prevention took precedence and well-intended physicians, nurses, and public health officers routinely filled syringes with several vaccine doses at once, and then used the same device sequentially on several people. And in hospitals reuse of syringes, particularly for anesthesia drips and routine injections, was common practice.

In 1950 two British scientists who suspected that syringes might transmit disease acknowledged<sup>336</sup> that: “A common mass-inoculation technique employs a separate sterile needle

for each injection, but does not sterilize the syringe, which contains several doses of inoculum between injections. Accidental infections attributable to this practice do not seem to have been described, and experience generally suggests that the technique is, so far as any injection technique can be, a safe one.”

However, just to be sure, this team from the London School of Hygiene and Tropical Medicine did some experiments. They put some *Streptococcus pneumoniae* bacteria in a syringe and then serially injected it into some mice: about half the animals came down with the disease. Then they boiled those syringes, removed the needles, and gave a group of mice injections of distilled saline using the recycled syringes: those animals, too, died of pneumonia. In six more experiments the London team established, “that contaminants on the needle point, even when no injection is made and when the contamination is derived from fluid under negligible hydrostatic pressure, may travel back along the needle and contaminate the syringe....”<sup>337</sup>

The following year Australian physicians reported that eight cases of polio had resulted from reuse of a syringe on fifty-three people in a 1949 diphtheria immunization campaign near Melbourne.<sup>338</sup> And German and Dutch physicians published word of other small outbreaks of diseases, resulting from vaccine campaigns employing reused syringes.<sup>339</sup>

Nevertheless, amid the euphoria elicited by discovery of the vaccine for polio (and one for measles in 1963, for rubella and mumps in 1969), few public health crusaders, physicians or members of the public gave the syringe issue much thought. Years later this omission would come back to haunt U.S. and global public health leaders amid accusations that reused syringes deployed in mass vaccination campaigns, particularly in developing countries, had spread everything from poliomyelitis<sup>340</sup> and Ebola virus<sup>341</sup> to monkeypox<sup>342</sup> and the human

immunodeficiency virus.<sup>343</sup>

In the 1950s and '60s, however, the world eagerly embraced vaccinology, and it certainly saved remarkable numbers of lives. In 1985 the U.S. Centers for Disease Control would estimate that, for example, the combined measles, mumps, and rubella (MMR) vaccine introduced in 1968 had spared the lives of 24,600 children in the United States and saved the nation \$1,385,500,000 in direct and indirect medical and productivity costs per year (in figures value adjusted to 1983 dollars).<sup>344</sup> By 1990 vaccine-preventable childhood infections would be responsible for less than 0.1 percent of all deaths in North America, Japan, and Western Europe.<sup>345</sup>

But immediately following World War II, well before the achievements were realized, American political and public health leaders came not only to recognize the tremendous improvements made in the health of the American people, but to feel a need to share the benefit of increased life expectancy. When the United Nations was formed in 1946, and with it a health committee that two years later would be called the World Health Organization, it was with the strong blessing of the Truman Administration. In his 1949 inaugural address President Truman announced that a key feature of U.S. foreign policy would be to “embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas.” And by 1953 the United States, chiefly represented by scientists from the Centers for Communicable Diseases (CDC), was involved in public health efforts in thirty-eight nations.

To be sure there had long been American health crusaders working overseas. The Rockefeller Foundation, in particular, had been funding ambitious programs in Latin America and Asia for decades. But by the 1950s the United States was, for two reasons, quite eager to

export public health. First, leaders in the field were proud of their achievements in vaccines development, antibiotics, water sanitation, sewer design, hospital construction, mosquito control, and tuberculosis eradication. And second, politicians who focused on the Cold War saw saving children's lives as a powerful way to win allies in the nonaligned Third World. In 1955, with Cold War anti-communism in full swing, conservatives took delight in underscoring that it was capitalist America, not the Soviet Union, that had first triumphed against polio.

From its inception the World Health Organization had to walk a precarious path, careful not to tip too far towards any one of three interest groups: the capitalist West, the Communist East or the impoverished South. Its charter sought common ground asserting that health was "one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition." In 1950, however, WHO's World Health Assembly signaled the agency's intention to tip its balance, when need be, away from the Superpowers and towards the poorest nations on earth: "Public health officers have for long affirmed that economic development and health are inseparable and complimentary and that the social, cultural, and economic development of a community, and its state of health, are interdependent."

These principles were endorsed by the United States government and vigorously pursued in bilateral programs in Latin America. Fearing Communist influence in its back yard, the United States supported creation of the Institute of Inter-American Affairs to provide scientific and technical assistance to Central and Latin American countries. With the formation of the Organization of American States in 1948, the United States also set up what would come to be called the Pan American Health Organization, or PAHO.

The driving incentive for most American scientists, physicians, and nurses who worked with PAHO, WHO, and other international health organizations in poor countries was not unlike the zeal that drove Hermann Biggs in turn-of-the-century New York City: they believed deeply in the mission of public health and in the reliability of the scientific tools at their disposal. Some who left their comfortable 1950s American homes for the impoverished tropics were zealots, some were adventurers eager to see the world, some were altruistic healers, and most were a combination of all of the above.<sup>346</sup>

It was a mission that public health leaders like Columbia University's Rosen preached to their students: "Today, we are all members of one another; and so each in our own community, we must strive toward a goal of freedom from disease, want, and fear. We must strive to enhance and hand on the noble legacy that has come down to us. And may the outcome be a happy one!"<sup>347</sup>

Such a happy vision was not shared by U.S. politicians. For the Truman, Eisenhower, and Kennedy administrations, as well as their opponents in Congress, it was a time of grave global tension in which science and health were small pawns to be carefully played against Stalin, the Soviet Union, Mao Tse Tung, and the expanding red tide of Communism. It was clear even before World War II ended that FDR's and British Prime Minister Winston Churchill's advisors at the 1945 Yalta Conference did not trust Joseph Stalin. Once the war was over, the Truman administration embarked on a foreign policy of "containment," aimed at eliminating Stalin's global influence and what Churchill dubbed an "Iron Curtain" descended upon Europe, dividing the capitalist west from the communist east.

The Cold War escalated in 1949 when the United States created the North Atlantic Treaty

Organization (NATO),<sup>348</sup> which openly functioned as a security alignment for Western Europe's defense against the Soviet Union. The Soviets successfully tested an atomic bomb that year, making them America's military match. And both the United States and USSR began development of an even more lethal weapon — the hydrogen bomb.<sup>349</sup>

The Cold War turned hot in Korea, where communist North Korean forces and the United States fought between 1950 and 1953. It was a terribly costly conflict, claiming 33,629 U.S. soldiers, two million Korean combatants, and an additional two million Korean civilians.<sup>350</sup> During the Korean conflict annual U.S. military spending jumped from \$13.1 billion in 1950 to \$50 billion. And when it was all over, Korea was divided into two separate nations, abutting along the 38th Parallel.

America's government and many of its citizens became deeply paranoid — as, unbeknownst to most people in the United States at the time, did their counterparts in the USSR. A terrible so-called Red Scare affected every aspect of life in the United States during the later 1940s and the 1950s, whipped up by such noted anticommunists as Senator Joseph McCarthy, Congressman Richard Nixon, the House Un-American Activities Committee, and columnists Drew Pearson and Walter Winchell. By the time World War II hero General Dwight David Eisenhower moved into the White House in 1953, the nation was being purged, and Communists, alleged Communists, pseudo-Communists, and many falsely charged liberals and others were kicked out of jobs and service in government at every tier, from school teachers in Hoboken to officers in the U.S. Army.

In such an atmosphere most overseas programs run by the U.S. government were, by necessity, caught up in Cold War politics. At WHO gatherings U.S. and USSR representatives



sparred over whose populations exhibited healthier lives. Each accused the other of having CIA or KGB plants within their WHO delegations. Meetings might bog down over such things as whether the polio vaccine ought to be referred to as the invention of Jonas Salk or of Mikhail Chumakov, who had produced a vaccine at the Ivanovsky Institute in Moscow shortly after Salk's 1953 announcement. In the field, public health workers would often find themselves caught up in local imbroglios that, for strategists in Moscow and Washington, had Cold War significance. Debriefings by the CIA and KGB followed their returns to the United States or USSR. And the American scientists, nurses, and physicians who worked overseas during the 1950s and '60s soon learned that their words, if not their deeds, could get them in a lot of trouble.

Even public health comments made domestically concerning international issues could land the speaker in hot water. A classic case in point: the Linus Pauling/Edward Teller debates over the public health impacts of radioactive fallout from the hundreds of surface nuclear bomb tests conducted by weapons designers in the USSR, United States, France, and China.

In the decade after Hiroshima, Americans had varied and generally confused impressions about atomic weapons. Most frankly didn't understand either the physics or the terrible power of the weapons, and few appreciated the risks of radiation: fantasies of nuclear-powered cars and airplanes weren't uncommon, for example, and as a gimmick to lure shoppers, shoe salesmen routinely x-rayed children's feet to check for proper fit. When and if most Americans thought about A-bombs, they imagined the weapons as — well, just really, really, really BIG bombs.<sup>351</sup>

For three decades Linus Pauling had been one of the world's top protein chemists, working out of his California Institute of Technology (Caltech) laboratory on problems of protein

structure. In the 1940s few intellectual problems were as intriguing to chemical engineers in the United States as the mysterious relationship between proteins and genetics. They knew that there was a missing link somewhere, though Lysenko's fantasies in the Soviet Union insisted otherwise.

In 1951 Pauling realized that vital human proteins such as hemoglobin had specific amino acid repetitions in their chemistry that, when envisioned in three dimensions, could be understood to interact chemically in a way that would form bends and twists with a very specific pattern. When he made such models in his laboratory, Pauling saw the genius of these structures, which he called alpha helices; they were remarkably stable and yet flexible and spring-like. He realized that any chemical information or energy held inside an alpha helix would be well protected as well as stable.

Separately, many laboratories worldwide had been studying a chemical found inside chromosomes called deoxyribonucleic acid, or DNA. It, too, seemed to have intriguing repetitions in its chemistry. In 1928 Frederick Griffith, a British microbiologist, had shown in a clever experiment that DNA carried information. He heated a tube of lethal viruses to the point where they were dead (if, indeed, it can be said that viruses "die" or "live"). Then he mixed those killed viruses with living, nonpathogenic viruses. The result: the usually benign viruses absorbed DNA from the dead, lethal ones and became, themselves, deadly. Other experiments conducted in Europe and the United States during the 1930s and '40s similarly hinted that DNA just might be the missing link between the then vague concept of evolution and the rather specific, empirically understood realm of protein chemistry.

In the 1940s a chemist at Columbia University in New York City made a startling

discovery. Edwin Chargoff found that DNA was essentially a simple sugar and phosphate backbone that held together — in the case of human cells — four types of compounds called nucleotides. The four nucleotides, adenine, guanine, cytosine, and thymine, were of two types: pyrimidines and purines. And the number of purines in any given piece of DNA always equaled the number of pyrimidines. How many of any specific one of the four nucleotides were in a given DNA molecule would vary, Chargoff found, but not this ratio. Further, he discovered that the equality was very specific: the number of adenines always equaled the number of thymines; and the number of guanines always equaled the number of cytosines.

Chargoff's numbers, published in 1949,<sup>352</sup> instantly created a sensation among Pauling and his many competitors in pursuit of the Holy Grail of genetics. But it would be two junior scientists at Oxford University in Cambridge, England, who would figure it out in 1953. American James Watson and Britain's Francis Crick deciphered the relationship between Pauling's alpha helices and Chargoff's numbers, discovering the structure of DNA. They showed that DNA was a double alpha helix, and the sequence of nucleotides along the sugar and phosphate backbone of that elegant helical structure constituted a quaternary code far more complex than the binary Morse Code. The DNA code had "start" and "stop" signals and could be read in trios of nucleotides, each of which spelled the identity of a given amino acid. And proteins were little more than chains of amino acids, beaded in specific sequences.

In 1956 Crick published what he dubbed the "central dogma," the basis of all life on Earth, delineating the precise relationship between DNA and proteins. DNA, he said, is self-replicating. It is also a template. When the double alpha helix opens up, or unzips, ribonucleic acids (RNA) (chemicals that are inside cells) line up along the DNA template, forming mirror

images of the DNA. That RNA — called messenger, or mRNA — is, in turn, a template that is translated back into the mirrored original DNA form by transfer RNA — tRNA. This tRNA serves as the blueprint for construction of proteins. Crick's central dogma turned on light bulbs in the brains of thousands of scientists worldwide (except in the Soviet Union, where the information was banned), prompting a flurry of discovery that would lead to the Biology Revolution of the later twentieth and early twenty-first centuries.

Long before the structure of DNA was elucidated, researchers had shown that human chromosomes could be irreversibly damaged by exposure to various types of radiation. Once the structure of DNA was determined, it was clear to Pauling that the weak hydrogen bonds that formed the vital pairings of adenines and thymines, guanines and cytosines could easily be disrupted by ionizing radiation, resulting in mutations.<sup>353</sup>

In 1948, when the nationwide red scare took over the United States, Pauling was a research chemist who dabbled on the side in a few political ventures that he felt were relevant to his professorship and would befit a member of the Federation of American Scientists. But that group, which opposed the use of atomic weapons, was fearful of speaking out during the red-baiting and disbanded in 1949. At the urging of his liberal wife, Ava Helen, Pauling began speaking out against the anticommunist purges then underway in Los Angeles schools and colleges and all repression of scientists in the United States.<sup>354</sup> He paid a high price for his outspokenness, losing all of his federal research grants, coming under harsh attack from the Los Angeles Times and dozens of other news organizations, and in 1951 nearly losing his job at Caltech.

Many of the men who had participated in the Manhattan Project to design the original

atomic bomb — among them Albert Einstein, Niels Bohr, and Robert Oppenheimer — felt, despite the red-baiting, that they absolutely had to speak out.

“We are in a completely new situation that cannot be resolved by war,” Bohr exclaimed after the bombing of Nagasaki.<sup>355</sup>

To the physicists who opposed the bomb during the 1950s, the risks posed by Senator Joseph McCarthy and the House UnAmerican Activities Committee (HUAC) seemed just penance for having helped in its design and construction. There was a certain pathos, mixed with guilt, in their message. They had seen the photographs, not shown to the American public, of bodies hit with such power that they disappeared, leaving only their shadows permanently etched on the ground.

For Pauling and other biologists who spoke against the bomb, however, it was reports of post-blast illnesses that served as motivation. Gamma radiation emitted by the blast disrupted cell division, and every human body function deteriorated for months after exposure. Hair fell out, blood thinned, the immune system collapsed, skin peeled and flaked off, surface wounds festered into gaping, incurable sores.<sup>356</sup>

Physicist Edward Teller, a Hungarian Jewish immigrant who had played a key role in designing Fat Man, the bomb dropped on Hiroshima, was deeply affected emotionally by the Soviet take-over of Hungary in 1948. Like most of the Manhattan Project participants, he had initially favored creation of an A-bomb in order to stop Hitler and save Europe’s Jews. After World War II, it was Stalin whom Teller despised, and the Hungarian believed that defeat of the Soviet Union would require a far more powerful weapon. By 1954 Teller was thoroughly convinced that without what he called a Superbomb the United States would be overrun by

communism and he, an outspoken anti-Stalinist, would be thrown into a Soviet gulag somewhere in Wyoming or Montana.<sup>357</sup> He therefore led a team that designed the thermonuclear hydrogen bomb — the H-bomb.

On March 1, 1954 Teller's first Superbomb was dropped in the middle of the Pacific Ocean on the coral atoll Bikini. It was 750 times more powerful than Fat Man, and it spread radioactive bits of Bikini over a radius of 7,000 square miles.

Ninety miles away from the blast, Aikichi Kuboyama and his fellow fishermen were trawling the Pacific on board the *Lucky Dragon*. They were showered with radioactive ashes that fell like snow from the sky. And when the crew reached their Japanese home port, every one of them had radiation sickness. Kuboyama died shortly thereafter.<sup>358</sup>

The *Lucky Dragon* episode received wide publicity and was the basis of sharp diplomatic tension between post-war Japan and the United States. Six months later, the Soviet Union tested its first H-bomb, dropping it — incredibly— on a Russian-inhabited Siberian village called Totskoye located just 600 miles from Moscow.<sup>359</sup>

Following the Soviet detonation, several U.S. administrations perpetuated a public fantasy of survivable thermonuclear war. School children of the 1950s and '60s were taught to “duck and cover.” In this drill, they would get under their desks as soon as teachers gave the signal that a “Soviet hydrogen bomb” had fallen and carefully cover their eyes lest they be blinded. They would sit there with their heads between their knees until someone gave the all-clear signal. Parents were instructed to build bomb shelters similar to those many English families carved out of their basements during the German bombing of London. Inside those shelters, the Atomic Energy Commission (AEC) instructed, should be sufficient provisions for the family for a year.

Pauling and hundreds of other scientists were incredulous. They argued that the radiation in nuclear fallout would make any bomb site unliveable for decades, possibly centuries. And Pauling insisted that the fallout produced by nuclear weapons was, in itself, a risk to public health.

The bomb-makers, of course, knew this to be so, though it would be decades before their views would be made public. In a 1940 internal memo circulated at the Manhattan Project, scientists informed the Roosevelt administration: “Owing to the spreading of radioactive substances with the wind, the bomb could probably not be used without killing large numbers of civilians, and this may make it unsuitable as a weapon for use by this country....”<sup>360</sup>

Seven months after the United States dropped its first H-bomb on Bikini, every scientist’s dream came true for Linus Pauling — he got the proverbial phone call from Stockholm. Awarded the Nobel Prize in chemistry for his pioneering research on protein structure, Pauling suddenly went from three years as a silent social and political pariah to being one of the world’s most celebrated scientists.

Pauling’s wife, Ava Helen, urged him to use the Nobel cachet as a bully pulpit, and at the end of 1954 Pauling set out on a world speaking tour to warn of the effects of low level radiation on human cells. The AEC’s position was that whatever radiation was produced by nuclear bomb blasts — and the agency consistently low-balled those estimates — would simply add incrementally to natural background radiation. That humanity had survived millennia of exposure to background radiation was ample proof, the AEC insisted, that incremental fallout was virtually harmless. At most, the AEC said, all its bomb tests would only add enough radiation to the earth’s atmosphere to increase the burden one percent above natural background

levels.

Few scientists familiar with nuclear fallout believed the AEC's numbers. But rather than debate that point, Pauling simply said, okay, let's suppose it is just one percent. Well, there are an estimated 1.5 million babies now born annually with genetic birth defects caused by background radiation. A one percent increase in radiation would produce 15,000 more babies each year who suffered such mutations.

Nuclear fallout, Pauling declared, was a public health catastrophe, and the American government was betraying its citizens by claiming to the contrary. The bomb emitted strontium-90, which would concentrate in the bones of growing children, and iodine-131, which would collect in people's thyroids, causing thyroid cancer and dysfunction, Pauling insisted. J. Edgar Hoover, director of the Federal Bureau of Investigation (FBI) felt strongly that so called "fellow travelers" were every bit as dangerous to America as were confirmed Communists; and Hoover officially classified Pauling as a "fellow traveler."<sup>361</sup> Whenever the Paulings picked up their phones, they heard the telltale click of primitive FBI wire taps. Though he was under close FBI scrutiny for the rest of his life, Pauling persisted with his anti-nuclear campaign, in 1958 debating on national television the fallout issue with Teller and traveling to the Soviet Union to demand that they, too, cease surface bomb tests.

Caltech reacted to Pauling's controversial activities by forcing the Nobel laureate to resign his position as head of the institute's chemistry department.

In 1961, newly inaugurated President John F. Kennedy invited Pauling to the White House and pledged support for a test ban.<sup>362</sup> The surface nuclear test ban would be formally signed by the United States and USSR on August 5, 1963. And two months later Linus Pauling



would again receive a call from Stockholm — this time awarding him the Nobel Peace Prize. There was no Nobel Prize for public health, though in truth it was the vitality of humanity's hydrogen bonds in its collective DNA for which Pauling had struggled.

President Eisenhower had confided to advisors much earlier, in 1955, that he was sympathetic to the view that a thermonuclear war wasn't survivable; his own secretary of defense conducted a study that showed that 65 percent of Americans who "survived" an H-bomb exchange with the USSR would require medical attention that would not be available.<sup>363</sup> It is clear from public records that are now available that the AEC knew all along that any use of nuclear weapons would create a public health catastrophe.<sup>364</sup> Nevertheless, in the name of national security the Eisenhower administration veiled all radiation research conducted by the AEC and the Defense Department in secrecy and misinformation. And in 1955, with creation of the first nuclear power plant, it extended that veil to cover the civilian sector.

For nearly four more decades, all information regarding the public health impacts of radiation would be rife with critical flaws. The AEC and its descendant, the Nuclear Regulatory Commission (NRC), would hide — literally — mountains of data and obfuscate or distort the information that was released. Employees of both government and civilian nuclear industries and plants would be compelled to sign secrecy agreements, violation of which would constitute grounds for prosecution on charges of treason or espionage. Scientists who independently studied the human health impacts of low level ionizing radiation would be vilified, their reputations smeared. And, to be honest, their research did often prove unreliable because their access to the critical data entombed in the AEC archives was so limited. By the late 1950s, public opinion about nuclear radiation and thermonuclear war would swing towards Pauling's

position, and Kennedy's decision to sign a test ban treaty would not prove highly controversial. The red-baiters would be in retreat and liberalism on the upswing in America.

But a change in those political winds would do little to improve the quality of research on the public health impacts of ionizing radiation. For the rest of the twentieth century, the American public would exhibit simultaneously both abject fear of all things radioactive and adoring acceptance of microwave ovens and the concept of nuclear deterrence. Public health sciences would largely fail to find a rational position, or even agree, on such basic concepts as safe doses of exposure, cumulative dosage effects, the threshold theory of radiation dosing, the relative safety of nuclear power plants, the differential damage produced by various types and wave lengths of radiation or appropriate methods of disposing of and storing spent nuclear waste.

In the 1990s the Clinton administration would finally declassify many of the old AEC and NRC documents, opening a window on ghastly human experiments, most of which were conducted by well-meaning civilian physicians, working in major U.S. teaching hospitals, who were largely oblivious to both the risks and ethical questionability of their actions.<sup>365</sup> But some of the experiments and cover-ups of public health problems would prove to have been unquestionably unethical and immoral.<sup>366</sup> These horrors would only see the light of day after the collapse of America's chief adversary, the Soviet Union. The public health radiation field would, at the close of the century, still be highly polarized and conflicted.<sup>367</sup>

Public health radiation research and government credibility and policy were, then, chief casualties of the Cold War.<sup>368</sup>

The Cold War also had an impact on public health at the local level.

In New York City, for example, Health Commissioner John Mahoney took office in 1950 only to find the Department of Health grossly underfunded, its staff demoralized, and its buildings deteriorating. The primary cause of such financial distress was suburbanization: New York City's middle class tax base was moving to Long Island and Westchester County. And Mahoney was expected to do still more, with less. Fear of Soviet use of nuclear weapons prompted Mayor Vincent Impellitteri to assign radiation and civil defense duties to the health department, and the Medical Emergency Division was created. Its missions were to plan a response in the event New York City was hit by a nuclear bomb, and drum up popular support for civil defense. Hundreds of subway stations and other underground areas were designated as bomb shelters, upon the entrances to which volunteers affixed yellow and black civil defense symbols.

New Yorkers, who in the best of times are an unusually skeptical lot, openly scoffed at the effort. When the health department team instructed children in "duck and cover" techniques, youngsters could be heard to wise-crack, "Kiss your ass good-bye!" Mahoney wrote editorials decrying the apathy he felt New Yorkers were exhibiting, but by 1952 it was obvious that few of them believed that they could, or even wanted to, survive an H-bomb attack by living in subway tunnels.<sup>369</sup> Mahoney's own staff rebelled: they didn't believe in the "duck and cover" message themselves, and they were sick of taking on more responsibilities for paltry pay.

The salaries of Gotham's Department of Health employees had been frozen for a decade — a period when their private sector medical colleagues' incomes were swelling way beyond the rates of inflation or average U.S. salary increases. In 1952 the American Public Health Association (APHA) assessed the performance of the New York City department:<sup>370</sup> "The

Department of Health of New York City was once an outstanding leader in municipal affairs. It was one of the best health departments in the country. It no longer is.” The APHA report went on to speak of “staff frustration” and abominably low salaries. And it called the department’s record keeping “grossly inadequate.”

It was a terrible blow. The widespread play the critique got in New York’s media drummed up public concern, and swept Robert Wagner, Jr., a strong supporter of public health, into the Mayor’s office in the 1953 elections. He named Dr. Leona Baumgartner his health commissioner, and the flamboyant physician went directly to the public for support. She gave weekly health reports over the radio, speaking with a zeal New York hadn’t heard from a health leader since Hermann Biggs.

Baumgartner understood the new concept of public relations. She realized that health programs could no longer simply demand or expect popular support — particularly given the competition they were getting from hospitals and private medicine. With remarkable prescience, Baumgartner decided in 1954 that the best way to reach Americans in the future was going to be via a new technology called television.<sup>371</sup>

Overnight the United States had become TV Nation.<sup>372</sup> From the beginning, television was sponsored by advertisers, most of whose offices clustered along a midtown strip of Madison Avenue in New York City. The ad business came to be called Madison Avenue, and it was a powerful promoter of everything from soft drinks to cars. Food and tobacco companies were among the major beneficiaries of the TV advertising bonanza. Suburban housewives, in particular, proved remarkably vulnerable to pitches for frozen foods, cereals, cooking oils, and canned products. And youths were open to the ad pitches for cigarettes.<sup>373</sup> Over time, people in

the United States would spend more and more of their life glued to what disparagers called “the boob tube,” and their collective consumer behavior would reflect the barrage of TV advertising to which they were subjected. Their overall caloric intake would rise — television depicted juicy hamburgers and scrumptious looking cakes — and their level of exercise would drop.

By 1955, a year after it went on the air, Baumgartner’s weekly TV spot was being watched by 5 million viewers nationwide.<sup>374</sup> She proved a very adept public health propagandist. In 1954 her department’s budget was \$18.4 million. Six years later it was \$30.7 million. Baumgartner turned her entire department into public health proselytizers. Collectively they gave about 2,500 lectures and speeches per year, made dozens of films, and addressed radio audiences every week. An entire health education department, staffed by fifty people, was needed to coordinate the enormous public relations campaign.<sup>375</sup>

Baumgartner’s overall pitch and her style were no-frills and straightforward. She would ask a rhetorical question and then in simple, declarative language, answer it. What health problem costs the family budget the most? she asked. Tooth decay, she answered. (And then the pitch: The City Fathers are still trying to make up their minds about fluoridation.) What kills most New Yorkers? she asked. Heart disease, which kills 40,000 of them a year and costs us \$15 million a year in public hospital care. (The pitch: We don’t know why there suddenly seems to be an epidemic of heart disease. We need research. Research costs money. Support heart disease research.) The number two cause of death was cancer. (The same pitch for research applied.)

The health of Americans was undergoing a great transition in the 1950s as the mortality impact of infectious diseases receded, to be replaced by cancer, heart disease, and accidents.

Baumgartner's department recognized that in 1957: "Public health and the work of the Health Department is ever-changing, for the nature of health problems change. As one is solved, another emerges."<sup>376</sup>

Among the least popular of the "new" problems Baumgartner and her counterparts in cities all over the United States faced was heroin. Invented in 1898 by the German company Bayer Pharmaceuticals, Inc., heroin was a derivative of morphine, created by heating the parent chemical and mixing it with acetic acid. Though the drug had been in use — legally and illegally — for decades in the United States, it didn't become a major problem until 1948, when traffickers flooded the streets of New York with it. Between 1948 and 1960 the city, and most of the country's other urban centers, suffered wave after wave of what public health, the police, and the media termed "drug epidemics."<sup>377</sup> With the rise in heroin use — almost exclusively by people aged fifteen to twenty-nine years, most of them males — came hepatitis B, which spread among the users through shared needles and syringes.

New York City had little idea what to do with people who had grown addicted to heroin. Though criminalization of the problem had been the longstanding approach, the health department tried its best to offer heroin users an alternative way to get off drugs short of going cold turkey in jail. In her report to the city for 1960 Baumgartner expressed her exasperation over the city's rising heroin crisis:

If the problems of heart disease and cancer seem difficult, one is even more bewildered by the question of narcotic addiction, alcoholism or mental illness. The mental health field is moving rapidly into control programs for mental illness.... Gains have also been made in organizing medical and social care

for the narcotic addict. There is a growing awareness that the narcotic addict should be looked upon primarily as a sick person, not solely as a criminal. But inasmuch as the physiological basis and curative treatment of the narcotic addict are still both unknown, programs for the addict are obviously palliative and relatively ineffective.<sup>378</sup>

At the time, no one had a reliable method for counting the number of heroin users in New York, or any other city in the United States. The police and FBI had their estimates, health officials had theirs. The numbers rarely agreed, and they reflected a good deal of guesswork. In general, however, surveys from the mid-1950s to the end of the century put the number of heroin addicts in the United States at between 300,000 and 1.5 million.<sup>379</sup>

Some law enforcement and political leaders painted a picture of heroin use that, terrifyingly, focused not upon the very real nightmare of the lives of the addicts themselves but on their alleged antisocial, even demonic, behavior. Heroin users were said to actively recruit other users, drawing especially from the ranks of adolescents. They were characterized as violent and deranged, capable of forcing all manner of grotesque sexual and otherwise evil acts upon other human beings. They were thieves and murderers.<sup>380</sup> The specter of such heroin addicts roaming urban streets further nudged the middle class toward the suburbs. And though in absolute numbers whites always dominated the ranks of American heroin users, the middle class envisioned the dangerous narcotics user with a black face.

Indeed, heroin use did concentrate and appear more obvious, in the nation's increasingly rundown African American ghettos.

Following World War II the pace of black migration northward and westward quickened,

but when southern African Americans reached Boston, New York, Chicago, Los Angeles, Detroit, and other destinations, they found the cost of housing beyond their limited means. In addition, real estate segregation was an obvious urban reality in most U.S. cities during the Fifties. Black families simply could not rent apartments or houses, even if they were affordable, in most white neighborhoods. So the incoming southerners found themselves crammed into dense, squalid neighborhoods where price-gouging absentee landlords exacted outrageous fees for rooms that were typically occupied by 1.8 persons, several rats, and a nest of cockroaches.<sup>381</sup>

The administrations of Eisenhower, Kennedy, and Johnson, spanning the years 1953 to '68, marked a time of remarkable prosperity and economic growth for the nation as a whole. The gross national product of the United States expanded 24 percent between 1950 and 1957, another 10 percent by 1960, and an additional 35 percent by 1966. This 69 percent total growth far outpaced anything seen in the rest of the world.<sup>382</sup> Yet more than half of the nation's black population lived in poverty throughout the 1950s and well into the 1960s. A key reason was job discrimination. African Americans were excluded from most trades unions, thus cutting them out of well-paid blue collar and factory employment — even in industries such as auto manufacturing, where they had proven their skills during World War II. And rigid segregation in schools forced most blacks to settle for second rate educations in rundown public schools.<sup>383</sup>

African Americans during the 1950s instigated legal actions and staged a series of both spontaneous and well-planned protests that would come to be known as the Civil Rights Movement. By 1956 Reverend Martin Luther King, Jr. of Montgomery, Alabama had emerged as its clear leader.<sup>384</sup> The old gospel song that urged people “Hold on just a little while longer / Everything will be all right” captured the spirit of determined strength that marked the Civil



Rights Movement in the 1950s. But by the 1960s, the nation's African American populations, particularly the young urbanites had become much more defiant and rebellious. One hundred years after southern whites seceded from the United States to form a confederacy dedicated to perpetuation of slavery, some African American leaders in the North were calling for black revolution.<sup>385</sup>

“To be a Negro in this country and to be relatively conscious is to be in a rage all the time,” writer James Baldwin said in 1961.<sup>386</sup>

With the election to the presidency in 1960 of charismatic Boston Democrat John Fitzgerald Kennedy came hope for reconciliation, civil rights, and, at last, an end to segregation. By the time Kennedy took his oath of office in 1961, more than 60 percent of all Americans owned their own homes, nearly 80 percent of all homes contained a television set, and the majority of all U.S. households also had the “modern conveniences” — dishwashers, air conditioners, refrigerators, clothes washers and dryers, and two cars. Not so for black Americans, few of whom owned their homes, had TVs, possessed a decent automobile or had any of the appliances typically found in white households. In much of the country, average white weekly incomes were double those of blacks.

The deep racial divide reverberated in the medical and public health systems. Dozens of blacks — perhaps hundreds, though nobody was keeping count — died because emergency rooms at white hospitals refused them treatment.<sup>387</sup> (Among the most famous of such tragedies was the death of blues singer Bessie Smith.) When a fourteen-year-old black Chicago youth named Emmett Till was kidnaped and killed while visiting relatives in Mound Bayou, Mississippi, a local white physician, T.R. Howard, hid the white perpetrators from the police. When prodded

by the National Medical Association (an all-black physicians group), the AMA declined to condemn Dr. Howard's actions, and many AMA members indicated that they felt the doctor from the South had behaved in a manner they could support.

In order to obtain the right for qualified black nurses and physicians to practice medicine in Newark City Hospital, Thurgood Marshall had to sue the state of New Jersey. Though the rapid expansion of hospitals under the Hill-Burton Act had left the nation desperately short of nurses, most hospitals — including public health facilities — refused to hire fully trained African American RNs and LPNs. Until 1940 the American Medical Association listed all African American members with the abbreviation “Col.” next to their names, indicating that they were “colored” doctors.

By the late 1950s the Eisenhower administration had made it clear to most of the states that no federally funded hospitals could deny medical care on the basis of the color of the patient's skin. Nevertheless, a new form of segregation emerged — black patients were turned away from prestigious facilities and directed to city and county-run public hospitals, which all but the poorest whites typically shunned. By 1953 in Chicago, for example, 42 percent of all black babies but only 8 percent of white babies were born in the city's largest public facility, Cook County Hospital.<sup>388</sup>

Public health departments in the '50s were typically all white, or had black employees working only at bottom-level jobs. The most well-meaning of white leaders, such as New York's Baumgartner, were bewildered by the hostility that greeted their efforts in black ghettos like Harlem, East New York, and the South Bronx — even though for a decade the American Public Health Association had backed up the all-black National Medical Association's call for an end to

discrimination in health and medical practices.

The stakes were high for Kennedy in 1961. He had campaigned on a civil rights platform, but he also knew that he could never have won the election — and he did so by the narrowest margin in U.S. history — without support from the so-called Dixiecrats. Those southern leaders expected Kennedy to usher in a host of liberal reforms, but only mandate their availability for whites, leaving the states the “right” to continue some forms of segregation. To preclude the possibility that Kennedy might cave in to the Dixiecrats on public health issues, liberal New York Republican Senator Jacob Javits pulled an end run. He wrote a bill that would revoke all possibility of segregation or discrimination in the hiring practices or the provision of medical services at Hill-Burton-funded hospitals. The language of the bill was staunchly federalist, leaving no “states rights” flexibility on racial issues.

Meanwhile, Kennedy’s Department of Health, Education and Welfare was deluged with claims of racial discrimination practices by federally-funded hospitals.<sup>389</sup> But the legislation proposed by Senator Javits that would have empowered HEW to cut off funding to discriminatory medical facilities was languishing in a Senate subcommittee. So HEW did little more than catalog the complaints and mail query letters to the offending hospitals. The Civil Rights Leadership Conference denounced HEW’s inaction: “We cannot fail to observe that the sum total of these actions is dwarfed, and in fact nullified, by the massive involvement of the federal government in programs and activities that make it a silent but nonetheless full partner in the perpetuation of discriminatory practices.”<sup>390</sup>

A crucial test case that allowed U.S. Attorney General Robert F. Kennedy, brother of the President, to flex some legal muscle on behalf of civil rights involved the Moses H. Cone

Memorial Hospital in Greensboro, North Carolina. Over ten years that hospital had received \$1.27 million in Hill-Burton funds, yet it clearly practiced racial segregation, refusing black patients. Dr. George Simkins and the NAACP filed a lawsuit against the hospital when it refused to admit an African American patient who was running a high fever and had a life threatening bacterial infection. The “black” hospital — public L. Richardson Hospital — was so full that Simkins was told his patient would have to wait two weeks for a bed. Fearing the patient would die before that time, Simkins sent him to Moses H. Cone Memorial, which had plenty of empty beds: he was refused because of his race.

By 1962 the case had made its way to the U.S. Supreme Court.<sup>391</sup> Attorney General Kennedy intervened on behalf of the plaintiffs, arguing that no federal funds, spent for any purpose, should be dispensed to an organization that practiced racial discrimination.

In June 1963 President Kennedy finally introduced his version of a civil rights act, Title VI of which reflected brother Bobby’s intervention in *Simkins*. Title VI stipulated that acceptance of federal funds would carry a *quid pro quo* of nondiscriminatory practices. The president’s speech introducing the legislation followed by just eight days the assassination of NAACP civil rights leader Medgar Evers in Jackson, Mississippi. National outrage over the disgraceful actions of southern whites — particularly their political leaders — swung the political pendulum to support for Kennedy’s civil rights legislation. And when Reverend King led 200,000 people on a march on Washington, nearly all of America watched the SCLC leader’s eloquent “I Have A Dream” speech. The time seemed ripe, at last, for change.

But on November 22, 1963, President Kennedy was assassinated on a campaign swing through Dallas.

Five days after the tragic assassination, President Johnson told a joint session of Congress that “no memorial oration or eulogy could more eloquently honor President Kennedy’s memory than the earliest possible passage of the civil rights bill for which he fought so long. We have talked enough in this country about equal rights. We have talked for one hundred years or more. It is time now to write the next chapter and to write it in the books of law.”<sup>392</sup>

On February 1, 1964, LBJ gave a speech to Congress announcing the names of his new cabinet secretaries. Literally en route to Capitol Hill, Johnson was cornered by a clique of powerful Democratic Party leaders who pressured him to name Anthony Celebreeze to be HEW secretary — a position Johnson, just moments before, had promised to Kennedy family member Sargent Shriver. LBJ knew next to nothing about Celebreeze, and couldn’t even recall the man’s name when he later apologized to a clearly dispirited Shriver.<sup>393</sup>

Celebreeze was immediately saddled with the hot issue of segregated hospitals. And he stalled — took no action — hoping that the Supreme Court would favorably resolve the matter. But on March 2, 1964, the Court formally refused to hear the *Simkins* case, letting stand a lower court decision in favor of Moses H. Cone Memorial Hospital. The next day on the Senate floor Republican Javits went into a lather, denouncing the Court, Secretary Celebreeze, and years of stalling on the Hill-Burton “separate but equal” segregation issue.

Johnson pulled Vice President Hubert H. Humphrey into his office and castigated the Minnesotan for failing to whip up civil rights support among his fellow liberals. Like most Minnesotans in the 1960s, Humphrey had no personal trouble supporting generous civil rights legislation. As the “problem” wasn’t in Minnesota, because less than one percent of Minnesota’s population was African American, it was an abstraction easily settled on moral grounds. When

the good citizens of Minneapolis watched Alabama Governor George Wallace's followers wave Confederate flags and hurl racist invectives on TV, they could abhor — on principle — such racism. The real social challenges for Minnesotans were yet to come.

Humphrey, nicknamed “The Happy Warrior,” was duly chagrined by LBJ's upbraiding and whipped up support for Johnson's Civil Rights Act.<sup>394</sup> In his speech to Congress, Humphrey specifically cited the Supreme Court's refusal to hear *Simkins v. Cone* as cause for immediate passage: “Racial discrimination in medical facilities is at least partly responsible for the fact that in North Carolina the rate of infant mortality (for Negroes) is twice the rate for whites and maternal deaths are five times greater.”

On June 10, 1964, with bipartisan support, Johnson's Civil Rights Act of 1964 was passed by both houses. Title VI of the Act eliminated all legal forms of racial discrimination in the practices of medicine and public health.

In a harbinger of the way the battlefield would shift, Arizona Senator Barry Goldwater expressed disgust with the Act, saying it “will require the creation of a federal police force of mammoth proportions....These, the Federal Police force and an ‘informer’ psychology, are the hallmarks of the Police State and the landmarks in the destruction of a free society.”<sup>395</sup>

Goldwater was signaling a new spin on civil rights, adopted in a political atmosphere that had made overt supporters of racial segregation political pariahs. The new tack for the extreme conservative wing of the Republican Party, then led by Goldwater, was to attack federal authority to impose socially liberalizing laws. In a similar vein, Ronald Reagan, who was just building his political base in California in 1964, wrote in his book Where's the Rest of Me?: “The liberal wants a well-heeled government in a Big Brother image to buy for us the things ‘Big Brother’

thinks we should have. The conservatives believe the collective responsibility of the qualified men in a community should decide its course. The liberals believe in remote and massive strong-arming from afar, usually Washington, D.C. The conservatives believe in the unique powers of the individual and his personal opinions.”<sup>396</sup>

In 1964 President Johnson pushed passage of two other massive initiatives that would profoundly affect public health: his War on Poverty program, and Medicare. LBJ’s overall goal was to create what he called the Great Society through a federal effort akin to Roosevelt’s New Deal. A key difference, however, was that while Roosevelt pushed large-scale federal spending during a time of tremendous economic deprivation in America, LBJ wanted a similar level of spending for social programs at a time when most Americans were enjoying tremendous prosperity. That was a hard sell.

The Johnson administration decided that the 1964 poverty line was \$3,130 a year for a family of four and \$1,500 for individual adults. And when Johnson declared his War on Poverty, twenty-one million people in the United States were living below the administration’s poverty line. At the bottom of the heap were three social groups targeted by Great Society programs: people over sixty-five years of age who, having been cleaned out by the Depression, had little in savings upon which to live out their final years; blacks; and women who were single parents. Among the remedial programs Johnson pushed as part of his Great Society effort were the Office of Economic Opportunity (OEO), Volunteers in Service to America (VISTA), Head Start, Neighborhood Legal Services, Community Action Programs (CAPS), the Equal Employment Opportunity Commission (EEOC), expanded Social Security, Medicare, Medicaid, and Aid to Families with Dependent Children (AFDC), and immigration reform.

The net effect of Great Society initiatives was the creation of a federal system aimed at offering the nation's poor, elderly, children, and immigrants an opportunity to join the American mainstream. Johnson's intention was for the programs to act as a sort of step ladder that would put individuals within reach of prosperity. But it would be up the individual, on his or her own, to make the final ascent. It was never LBJ's intent to create a no-load handout system or turn the federal government into a welfare state. And his programs would no doubt have unfolded more successfully had Johnson not been irreparably involved in the Vietnam War.<sup>397</sup>

In the summer of 1964, when all of his Great Society programs seemed to be on track and he felt confident that they would shortly breeze through Congress, Johnson told Senator Richard Russell.<sup>398</sup>

We're just doing fine, except for this damned Vietnam thing. We're just doing wonderful. Every index. The businessmen are going wonderful. They're up 12, 14 percent investment over last year. The tax bill has just worked out wonderfully. There're only 2.6 percent of the young people unemployed...and I'll have them all employed.... It's kids that are dropping out of school and then they go on a roll. But I'll take care of that with my poverty [program] just by organizing it all. We've got the money in these various departments — Labor and HEW and Justice — I'm gonna put all of them in one and put one top administrator and really get some results. Go in and clear up these damn rolls. And I'll do it with only \$300 million more than was in the budget anyway last year.... I was down in Kentucky the other day. We've got kids there teaching beauty culture — how to fix Lynda's<sup>399</sup> hair. And they're all going out and get jobs, \$50, \$60 a week in another three months.... That's what we ought to do instead of paying out four billion a year on relief, for nothing, where you don't have work. To hell with this unemployment compensation. It's relief. But I've got to find a man for Vietnam.

Johnson's optimism, along with his ability to mold the Great Society into the sort of national effort he described to Russell, were subordinated to the war in Vietnam. Spending on the war created enormous budget deficits, draining resources LBJ had hoped to use on domestic



programs. Military spending rose from an already all-time high of \$49.6 billion in 1965 to \$80.5 billion in 1968. It was money the U.S. Treasury couldn't spare, and it started America on a downward spiral into debt.

“I knew from the start,” Johnson later told author Doris Kearnes Goodwin,<sup>400</sup> “that I was bound to be crucified either way I moved. If I left the woman I really loved — the Great Society — in order to get involved with that bitch of a war on the other side of the world, then I would lose everything at home. All my programs. All my hopes to feed the hungry and feed the homeless. All my dreams.”

Except for the Civil Rights Act of 1964, Johnson did, indeed, lose most of his dreams to the war bitch. Every one of the Great Society programs he had envisioned was eventually enacted by Congress in a form unrecognizable to its designer. The programs as enacted were seriously flawed — and the mistakes would have profound public health implications. Medicare and Medicaid, in particular, would completely reshape American health care and public health. And the end result would not be as LBJ had envisioned.

While Congress and the administration debated details of these social programs, the nation was ripping itself apart. Riots, demonstrations, generational polarization, racial conflict, and labor struggles were exploding in every nook and cranny of the society. The California rock band Country Joe and the Fish had a 1965 hit called “Superbird”<sup>401</sup> that characterized the new, bitter irreverence many people felt toward the presidency:

He's flyin' high,  
    up in the sky,  
Just like Superman.  
Well, I've got a little  
    jar of kryptonite,

And I'll bring him  
    down again.  
Come out Lyndon,  
    with your hands held high!  
Put down your guns  
    and reach for the sky.  
We got you surrounded,  
    you ain't got a chance.  
Send you back to Texas,  
    make you work on your ranch.  
Oh, yeah!

Johnson was the chief victim of the so-called “Credibility Gap” between Washington and the people of the United States, but every member of Congress felt the sting of public mistrust and attack from many sides: the war in Vietnam necessitated a draft, which fueled an already active student movement and turned millions of college students into angry protestors. Despite passage of the Civil Rights Act, life in African American urban ghettos only worsened, prompting explosive riots. And many white working class Americans fought militant battles to protect the jobs and lifestyles they felt were threatened by hippies and blacks. Torn asunder, the nation was not in a thoughtful mood, and the Sixties proved to be a reactive, rather than a contemplative, era.

As a result, Congress passed legislation aimed at massive U.S. crises, such as lack of health care and entrenched poverty, but did so in a piecemeal fashion that reflected the push and pull of powerful lobbying constituencies and interest groups. The goals were to eliminate poverty and increase access to health care. But few political leaders stood back and asked: How? Why? An overarching vision was lacking.

Between 1900 and 1940 average U.S. life expectancies at birth for females had risen from 48.3 years to 65.2 years, 16.9 additional years of life. Male life expectancy in that time frame

increased from 46.3 years to 60.8 years, a total gain of 14.5 years. These fantastic gains were made after the Germ Theory Revolution but before development of modern vaccines or antibiotics. They preceded most forms of treatment for cardiac disease and for cancer — short of surgical tumor removal. And the gains occurred in the absence of a vast nationwide network of hospitals.

The great gains were made as a result of large-scale public health efforts that had sought to prevent infectious diseases through community intervention. The basic philosophy had focused on the collective: the health of individuals would be protected by raising the level of health of the community as a whole. Some of the gains were the result of economic improvements and rising standards of living. Others reflected enhanced nutritional norms.<sup>402</sup>

In contrast, between 1940 and 1965 (when Congress was debating Medicare) female life expectancy rose from 65.2 to 73.7 years, for a gain of just 8.5 years. Male life expectancy increased from 60.8 to 66.8 years, a net gain of just six years.<sup>403</sup> Perhaps more significant was the trend in average remaining life expectancies after Americans reached the age of sixty years. In 1900 the average woman in the United States who had managed to reach that ripe age could expect to live an additional 24.4 years and reach age eighty-four. The average sixty-year-old male faced 23.1 more years of life and would live to be eighty-three years of age.

By 1940 average additional life expectancy for sixty-year-old Americans was 33.3 years for women and 30 years for men. Serious gains had been made, adding 8.9 years of elderly life for women and 6.9 years for men. By 1965, elderly women had gained another 4.2 years; elderly men just 1.7 years.<sup>404</sup>

A shift was obviously occurring, and the question to be asked as infectious disease crises

receded in significance was, what population-based strategies might appropriately address the new era? What was to be the goal of Medicare? Was it to increase these average American life expectancies? To improve the quality of those years of added life? To equalize availability to modern medicine for all elderly Americans? To increase the size of the paying medical consumer populations? To enhance the role and size of hospitals in America? To compensate physicians for services, as few might have practiced gratis for elderly patients?

The questions were never really asked, or answered. Instead, political leaders simply reflected cultural trends of the day and assumed that what everyone wanted — and needed — was more medical care.

Average Americans knew in 1965 that they were healthier than their parents or grandparents had been. They were taller, stronger, gave infectious diseases little thought, could have sex without fear of dying of syphilis, could swim in a public pool without pausing to consider polio, and had vast and varied quantities of food at their disposal. They felt that they were living in an age of great miracles. The National Aeronautics and Space Administration was racing with the USSR to be first to reach the moon. Newly discovered drugs or vaccines were announced almost daily. On television, doctors were portrayed as omnipresent geniuses who could save and heal the world. They came in many guises: kindly family physicians (*Marcus Welby, M.D.*), young idealists (*Young Dr. Kildare*), and somber, deep-thinking, brilliant men (*Ben Casey*).

Overall, people living in the United States in 1965 had a remarkably optimistic, even adoring, belief in new technology. Diseases had been conquered, homes were full of desirable gizmos and gadgets, Detroit produced marvels for automobiles, TV could go live to the White

House, and the very essences of the universe — atomic subparticles, the physical principles of the universe, and DNA — had been discovered.

Social problems — poverty, racism, communist threats, the war in Vietnam, student unrest — seemed complex and controversial to Americans and there was little societal consensus on any of them. Science and technology, however, offered solutions, strategies, and miracles — especially in medicine. Americans had an almost unquestioning faith that money spent on Big Medicine was money well spent. The human body was, metaphorically, a machine that occasionally broke or, with age, deteriorated. Enough medicine could fix it.

In popular opinion, then, the goals of Medicare, Medicaid, and any other health programs the government supported ought to be two-fold: speed up the pace of medical discovery and make the fruits of that research available to all Americans as quickly as possible. Let the toolbox for broken human machines expand, and build more and better body repair shops.

This perspective served physicians and hospitals well, so long as they were left to implement it with as little regulatory oversight and “meddling” from government as possible. The doctors wanted to set the standards of care, and hospitals insisted their institutions should control costs. It was a *de facto* policy of self-regulation by the medical industry.

“Such policy is... acutely sensitive to even the possibility that some new drug, piece of equipment, or diagnostic or therapeutic manoeuvre may contribute to health,” wrote economists Robert Evans and Gregory Stoddart.<sup>405</sup> “That someone’s health may perhaps be at risk for lack of such intervention is *prima facie* grounds for close policy attention, and at least a strong argument for provision. Meanwhile the egregious fact that people are suffering, and in some cases dying, as a consequence of processes not directly connected to health care, elicits neither

rebuttal nor response.”

Comparatively weak voices (in contrast to those of organized medicine) rose from the public health community, arguing for a less simplistic, more global approach to the nation’s health. They could not have foreseen how the medicalized model would eventually drive costs to the point where, thirty years later, few Americans could readily afford medical care, but they were tabulating the changing demographic face of health problems in the United States. As New York’s Baumgartner put it, they recognized that, “...technological, ideological and social changes create new threats, new problems for man. It seems clear that the majority of man’s future ills will be of his own making.

“So it is that man’s goals for good health are ever changing. With the ever increasing tempo of technological change and the extension of human aspirations it seems likely that changes in the health field will now come more rapidly than they have in the past.”<sup>406</sup>

Like many of his public health contemporaries, Harvard Medical School infectious diseases expert René Dubos was struggling to develop an intellectual framework of health that was less mechanistic than the body-repair-shop medical view. In his 1961 classic, Mirage of Health,<sup>407</sup> Dubos warned that, “in reality, complete freedom from disease and from struggle is almost incompatible with the process of living.

“Life is an adventure in a world where nothing is static; where unpredictable and ill-understood events constitute dangers that must be overcome, often blindly and at great cost; where man himself, like the sorcerer’s apprentice, has set in motion forces that are potentially destructive and may someday escape his control.... The very process of living is a continual interplay between the individual and his environment, often taking the form of a struggle

resulting in injury or disease.”

A health transition was, assuredly, underway, but from what, and to what? And why? Many of the gains and victories made on behalf of the nation’s health during the first half of the century were still inexplicable in the 1960s. Why, for example, had tuberculosis continued to decline between 1920 and 1945? That is, during a period after the social reforms responsible for the disease’s primary decrease had long since had their impact, but before introduction of antibiotics.<sup>408</sup> Where did the devastating 1918 swine influenza come from, and how likely would be the future emergence of a similarly devastating pandemic?<sup>409</sup> What precisely was the relationship between poverty and disease?

Though he was employed by Harvard Medical School, the bastion of American medicalization of health, Dubos scoffed at the notion that a massive medical system could address the fundamental roots of the population’s health — or lack thereof. He argued<sup>410</sup> that, “while the modern American boasts...the highest standard of living in the world,...ten percent of his income must go for medical care and he cannot build hospitals fast enough to accommodate the sick. He is encouraged to believe that money can create drugs for the cure of heart disease, cancer, and mental disease, but he makes no worth-while effort to recognize, let alone correct, the mismanagements of his everyday life that contribute to the high incidence of those conditions.”<sup>411</sup>

So, by the mid-1960s the United States still had no developed health policy, though it certainly had health care. The net effects of Medicare and Medicaid would be to push more and more people into health care, always in the absence of any clear policy that placed such care in a larger context. As a result, public health’s power and influence would continue to diminish,

while that of the individual's health care would rise.

For decades — indeed, since the days of William Petty Graunt's 1662 Bills of Mortality for London — public health advocates had noted an intimate relationship between socioeconomic status and health. The Health Transition in post-World War II America somewhat blurred the demographic picture, as cancer and heart disease initially appeared to strike equally across social classes, perhaps even tilting a bit towards wealthier Americans. By the mid-Sixties, however, most of the chronic diseases were also displaying a social gradient that brought the greatest grief to the poorest Americans.

It might have been wise to combine the War on Poverty programs with Medicare and Medicaid, creating a single strategic approach to upgrading the health and well-being of Americans. Some such linkages would, indeed, emerge, because their overlapping interests so clearly put Medicaid, Medicare, AFDC, and other poverty programs in logical conjunction at the local level. But they would be a matter of happenstance, not of high level planning.

The 1965 Medicare Act was a two-part law that placed authority for the health care program under the Social Security Administration — not under HEW. Under Part A, hospitals were allowed to designate a third agency or non-governmental organization to oversee their budgets and negotiate with the Social Security Administration. Nearly all hospitals in the country named the private non-profit “Blues” — the Blue Cross and Blue Shield insurance companies. Part B spelled out physicians' rights to decide appropriate care and, also through the Blues, to bill social security for payment.

The federal government relinquished most of its own power to exert price controls, allowing the hospitals and the Blues to work out their own schedules of costs and prices. It also



allowed hospitals to build capital costs into patient cost evaluations. Such capital costs might include, for example, the depreciation of hospital buildings which, in many cases, the federal government had paid for under Hill-Burton. This arrangement was like handing every hospital in America a huge chunk of collateral with which to build more wards, buy more equipment, and hire more doctors. And overnight the mega-hospitals shoved smaller community and neighborhood centers into obscurity or oblivion.

For its first year, FY 1966, Medicare was expected to cover nineteen million Americans over sixty-five years of age with a budget of just \$6.5 billion. It did not, however, cover even all of the health needs of those seniors. Indeed, there were so many deductibles under Medicare — and the list grew steadily — that by 1974 elderly Americans would be paying as much out-of-pocket with Medicare as they had in 1964 before the creation of Medicare.<sup>412</sup>

Medicaid offered medical coverage under a similar scheme for indigent single-parent households. Administered by states, the original intent was that federal funds would be matched locally to offer generous coverage. In practice, from the very beginning poorer and less generously inclined states put up little or no matching funds, and the quality of care afforded under Medicaid varied radically across the country. In many states, Medicaid was administered out of AFDC and welfare offices, putting provision of health in the hands of social welfare agencies. And that would presage a critical danger for the future of American public health programs, which would come under attack as part of an overall rejection of welfare and “federal handouts.”

The most immediate impact of Medicare and Medicaid was on patient visits to doctors and hospitals. Before these measures kicked into effect in 1966, the poor and African Americans

rarely saw doctors, individuals living above the poverty line visited physicians 20 percent more frequently than did poorer Americans, and whites saw their doctors just 2 percent more often than did African Americans. After 1966 all that changed radically, and by the early '70s the poor and African Americans were actually visiting doctors more frequently than better off whites.<sup>413</sup>

If, then, the true measure of health was access to doctors and utilization of medical services, the Johnson era Medicare/Medicaid programs panned out nicely.

But as early as 1967, just a year after the programs began, physicians working in inner city areas realized that Medicaid was little more than a financing system for second rate medicine, doled out in run-downs public hospitals. Because it required often scarce state matching funds, Medicaid failed to deliver sufficient remuneration to providers to make the patients desirable to private and elite hospitals.<sup>414</sup>

Medicare, in contrast, was extremely attractive to both hospitals and physicians because the Medicare Act put them, along with the Blues, in the driver's seat of cost control. In 1960 the assets of U.S. hospitals totaled \$10.8 billion. Four years after Medicare was implemented, hospital assets had more than doubled, reaching \$26.7 billion. And by 1977 they would reach \$61.1 billion. A six-fold increase in assets achieved in just seventeen years would be admirable for any industry: that hospitals had largely accomplished this by spending U.S. government money, rather than their own dollars, was awesome.<sup>415</sup> Not surprisingly, the hospitals and the Blues consistently found funds provided by the Social Security Administration inadequate, and between 1966 and 1976 doubled the amount, per person, of their billings for the average patient's daily hospitalization. Hospital incomes also doubled, but in a shorter time span: just four years, from 1965-69. The costs of all basic procedures also rose.<sup>416</sup>

Medicare drove medical cost inflation because the Blues and the Social Security Administration accepted ever-inflating bills, and paid them. Since the elderly are the medically neediest members of society and require the most invasive procedures, Medicare clients immediately constituted more than 75 percent of all hospitalized patients. That raised the goal posts, allowing the hospitals to similarly bill insured non-Medicare clients at the same prices. When questioned, the hospitals would often claim that over-billing Medicare and the privately insured covered the costs of taking in the uninsured and poorly reimbursed Medicaid patients.

The weakness in that argument was apparent to anyone who visited urban public hospitals, which by 1970 had become run-down almshouses packed to the point of housing patients on gurneys in the hallways. These were clearly the health care providers for America's poor and, not coincidentally, of African American and Mexican American patients. What two decades previously had been the result of segregation now was the unintended outcome of Medicaid and Medicare: striking racial stratification of health and medical services.<sup>417</sup> And the de facto segregation seen in the health system mirrored that which was worsening in the society generally.

A case in point was South-Central Los Angeles County, where surveys in 1965 indicated that 45 percent of its African American residents lived in housing deemed substandard or unsafe for human occupation.<sup>418</sup> And in nearby East Los Angeles, one out of three Spanish surnamed individuals lived in similarly horrible housing. The 1960 county census designated some 200,000 housing units substandard or uninhabitable: most of them were located in black South-Central Los Angeles or Hispanic East Los Angeles.<sup>419</sup> County-wide, despite phenomenal local economic growth, there were an estimated 230,000 families living at or below the poverty line —

3.3 percent of the county's seven million residents.<sup>420</sup> About 13 percent of the county's 1965 population was Hispanic, and between 650,000 and 1.5 million (estimates varied) were African American: one in four Los Angelenos was either black, Mexican American or, in a new parlance of the time, Chicano — a person born in the United States of Mexican ancestry.

In the South-Central and East Los Angeles slums, every single indicator of public health was far, far worse than was seen in the rest of the county. The county infant mortality rate was 19.6 per 1,000 live births — in Watts it was 33.3 per 1,000. The county-wide maternal death rate was 4.5 for 10,000 pregnancies — in East LA it was 7.3 per 10,000.<sup>421</sup>

In the mid-1960s Hispanic Los Angelenos were suffering tuberculosis at a rate five times that of whites. Blacks had TB at a rate seven times that seen among whites. The risk of premature death (before age thirty-five) in these groups was four times the national average. And an American Public Health Association assessment found that, "some 50 percent of poor children are incompletely immunized against smallpox and measles; 64 percent have never seen a dentist. Three-fourths of the mentally retarded are to be found in poor areas; a child in a low income family is diagnosed as retarded five times more frequently than a child from a high income family. Premature births with high risks to the infant are three times as great among low income women. Nutritional deficiencies among the poor, as well as simple hunger, are common with demonstrated effects on infant mental and physical health."<sup>422</sup>

Rat infestation was a serious problem in the poor neighborhoods of East and South-Central Los Angeles. The palm trees that lined the streets provided the vermin with safe, high nests during the daytime, from which they alighted at night to overrun local homes.

In 1964 one out of every four Los Angeles babies was born into these impoverished

circumstances; 26 percent of their mothers had had no prenatal care, and 80 percent of them delivered in one of two hospitals run by the county.

Though there were no Jim Crow laws in Los Angeles, the county was ranked as the second most segregated metropolitan area in the nation, just behind Chicago.<sup>423</sup> In 1964 Californians passed Proposition 14 by a margin of two to one, essentially making segregation legal. The proposition gave property owners the right to refuse to sell to any potential buyer, for any reason. It was, of course, white sellers who refused black and Hispanic buyers, “protecting” their neighbors against the possibility that the “wrong sorts of people” would take over the community.<sup>424</sup>

The LAPD, which had jurisdiction over most of the central core of the county, was an overwhelmingly white police force. Because of both the high population densities and an unemployment rate approaching 30 percent for black men, white police officers responded to a fair amount of crimes against both persons and property in South-Central neighborhoods. Young black men came to view the police as an occupation force, and between 1963 and 1965 more than sixty blacks were killed in Watts by police officers.<sup>425</sup>

On the very hot, smoggy day of August 11, 1965, an altercation broke out between a group of white police officers and a black man accused of drunk driving. As the officers swung their billy clubs, supporters of the driver poured out onto the street. Within minutes, a melee was underway: in an hour it escalated to a neighborhood-wide riot.<sup>426</sup> For five days, Watts burned, both with violence and from arson.

It was not, said LA Police Chief William Parker, “a race riot, since the rioters were all Negroes.”<sup>427</sup>

On August 16th the California State National Guard moved into Watts, and for days armed soldiers and tanks patrolled the streets, finally bringing the riot to an end. Thirty-four people lay in the morgue, most of them former Watts residents. Another 1,032 had to be treated in local hospitals. Nearly 4,000 were under arrest. Some \$40 million worth of property lay in ruins. It was, officially, the worst riot in U.S. history,<sup>428</sup> and a terrible harbinger of what was to come not only in other cities during the 1960s but also in Los Angeles three decades later following a similar altercation between a black driver and white LAPD officers.<sup>429</sup>

In Los Angeles political leaders underwent a period of self-examination and scrutiny of government services. And from 1966 to 1972 most large county operations — including the Los Angeles County Health Department — were subjected to outside scrutiny.

The governance of Los Angeles County had taken on a flavor and style unlike anything found elsewhere in the country — at least, found legally. All power rested in the hands of five men who constituted the County Board of Supervisors, each representing a constituency of about 1.4 million people. Most Los Angelenos had no idea what function the board served, nor were they even likely to know their supervisor's name. Yet the five supervisors controlled nearly every aspect of life in the county. They answered to no legislative body, and the county had no internal system of government checks and balances.

The board oversaw an annual budget that exceeded that of 42 of the states, including Massachusetts, New Jersey, and Pennsylvania.<sup>430</sup> It was derived primarily from property taxes and federal subsidies of various kinds. The supervisors met publically, but few citizens or journalists ever attended their hearings or followed the men's activities.<sup>431</sup> So trivial was the scrutiny given their activities, that supervisors were rarely compelled to step down for any reason

other than ill health or death.<sup>432</sup>

After the Watts riots, the county budget (for FY 1967) was \$1.2 billion. In less than five years it would more than double due to increases in property tax assessments. In 1967 the county had 54,000 employees, a number that would swell to 72,000 in 1971-72.

As a result of Johnson's Great Society programs and analogous social welfare services created by the California State Legislature, Los Angeles County had the nation's second-largest population receiving welfare, just behind New York City. And it had Medi-Cal, the state version of Medicaid, with more people on the rolls of publicly-financed health care than anywhere else — except, again, New York City. It had the largest air pollution control program in the world — and the greatest numbers of automobiles and miles of highways.

The five supervisors oversaw the most vast public health care system in the United States — a legacy of decisions made decades previously to put health care responsibility in the hands of the county's public health agency. And the county's health systems were, according to the American Public Health Association,<sup>433</sup> “inelastic... fragmented and cumbersome, the orientation too rooted in past practices to permit the Health Department to meet current or future health needs...” The department was rife with “inaccessibility” and “complexity [with a] multiplicity of geographic areas and political jurisdictions.” There was a tremendous shortage of staff, and “some needs [were]...totally unmet.” The department exhibited “impersonality” with a “remoteness from the public served.”

But the APHA inspectors were also sympathetic. They realized that the 2,000 county health employees faced formidable challenges: air pollution, vast physical distances coupled with poor transportation, concentration of most health care into just two hospitals, terrible staff morale

and high turnover, lack of Spanish language skills, a cumbersome governance structure, and rising costs.

As was the case nationwide, Los Angeles witnessed a surge in hospital use and costs following federal enactment of Medicare and Medicaid. From 1961 to 1965 Los Angeles hospital prices rose about six percent annually. After 1966 when Medicare kicked in, hospital rates inflated sixteen percent each year for the rest of the decade. And physicians' fees doubled during the two years between 1966 and '68. Most of the increase in costs was due to a rise in prices rather than to enhanced services provided.<sup>434</sup>

There were plenty of doctors — 12,500 of them — but few chose to practice in the southern, central or eastern sections of the county. Understandably, they went where the money was — along the coast and in the county's northern valleys. There were 745 hospitals and clinics in the county, but they, too, were concentrated in the richer, whiter sections of Los Angeles. That left just a handful of Christian charity hospitals and the two mammoth health department facilities to handle all of the needs of the blacks of Watts, Hispanics of East LA barrios, and the poor whites of downtown's skid row.

Following the riots and the 1968 assassination of Reverend Martin Luther King, Jr., the county decided to construct a new hospital named after the civil rights leader and locate it near Watts. It would open in the mid-1970s. In the meantime, Los Angeles had to make do with just the two existing county hospitals — both of them overly large and aging. The LAC-USC Medical Center<sup>435</sup> located east of downtown, and Harbor General Hospital in Long Beach. In 1967 LAC-USC saw 900,000 patients; Harbor treated 236,000. This was a combined 11.7 percent increase over 1966, spurred by Medi-Cal and Medicare.



Two trends surfaced in Los Angeles that would soon appear in every U.S. community with a sizeable population of indigent people: most poor patients came to emergency rooms for non-emergency care, and the bulk of all pediatric ailments seen in the ER were minor enough to have been handled easily by a private physician. Like general use of the two already swamped hospitals, ER visits there also skyrocketed after creation of Medicare and Medi-Cal — up 16 percent in the first year. More than half that increase was for non-emergency treatments. Similarly, pediatric clinics were overwhelmed by Medi-Cal patients, most of whom suffered common, non-acute childhood infections. This trend reflected the poor community's lack of access to private doctors or smaller medical clinics.<sup>436</sup>

Though the county budget exceeded \$1 billion in 1967, it contributed only about 1.6 percent of it to the health department's public health programs — just \$16.39 million.<sup>437</sup> The department muddled through with another \$2.775 million in federal grants and \$2.2 million from the state. With a full quarter of its funds coming from outside the county, however, the department was vulnerable politically and financially to any changes in public health and medical policies that might occur in far-off Washington or Sacramento.

In the future, Los Angeles would pay a very high price for the arrogant behavior of its Board of Supervisors, and for its increasing dependence on federal and state dollars. Dental services provided by the department were especially heavy, in part because Los Angeles County was the last major metropolitan center in the country to fluoridate its water in order to stave off oral hygiene problems in children. Fully two decades after the National Institutes of Health had certified fluoridation safe and effective, Los Angelenos would still lack its benefits. In 1968 the California Department of Public Health estimated that the state would save \$12 billion in dental

expenses over the next twenty years if it spend \$3 million a year on fluoridation — “a cost-benefit ratio of \$141 saved for every \$1 spent.”<sup>438</sup> However, health authorities faced tough opposition from anti-fluoridation forces such as Southern California’s John Birch Society, which held that adding the chemical to public water supplies was both deleterious to health and part of a larger Communist conspiracy for control of the United States.

And Los Angeles was also trying to cope with a sudden surge in the numbers of mentally ill individuals who were seeking help from county facilities. Prior to 1969, individuals suffering from schizophrenia, psychosis, acute depression, and nervous breakdowns — indeed, all acutely mentally ill people — were usually institutionalized, often in large, notoriously abusive, publicly-funded facilities. In the 1960s, however, medications were developed that could dramatically decrease patients’ danger to themselves and others. In 1969 HEW issued guidelines calling for closure of mental asylums, medication and release of the patients, and supervision of the nation’s mentally ill through small, community-based outpatient centers. Only in extreme cases should the patients live in a treatment facility. Most states followed the federal lead and swiftly closed their institutions. In July, 1969 the California Mental Health Act went into effect, shifting all financial and social responsibility for the care of the mentally ill from the state to the counties.

Los Angeles County was overwhelmed. It tripled its spending on mental health efforts, putting 1970 expenditures at about \$48 million.<sup>439</sup> Despite financial support from the state in 1970 to ease the transition, the county soon saw an increase in violent incidents and hospitalizations related to mentally ill individuals.

And in years to come the cities of Los Angeles County, like those throughout America, would see their streets fill with homeless mentally ill individuals who were abandoned by

families unable to obtain support from government, and unable to cope with their relatives' abuse or violence.

And as it struggled to handle such new challenges, Los Angeles was also in the midst of a huge gonorrhea epidemic. Between 1962 and 1968 the incidence of gonorrhea rose 35 percent each year, reaching an estimated 1968 total of 101,670 active cases. The incidence that year in LA was estimated at 1,290 cases per 100,000 Los Angelenos — markedly higher than the also terrible national rate of 765 per 100,000.<sup>440</sup> Nationally, the gonorrhea epidemic started in 1958, and by 1968 incidence of the sexually transmitted disease had risen 70 percent.

The task of VD control had become far more complicated for public health than anyone had imagined when invention of penicillin had offered the longed-for magic bullet. By 1975 gonorrhea would be the nation's most common and expensive infectious disease, and by 1980 there would be 2.5 million active cases of the disease reported annually in the United States.<sup>441</sup> Several coincident factors were responsible: public health authorities had long underestimated the amount of sexual activity among Americans and therefore grossly mis-targeted their programs, ignoring most white and middle class adults and teens. In 1948 psychologist Alfred Kinsey released his first of several controversial reports on sexual behavior in the United States.<sup>442</sup> Kinsey found that nearly half of all college-aged men he interviewed that year had had premarital sex. In 1953 Kinsey released a similar report on college women, 20 percent of whom had had premarital sexual intercourse. By 1968 those numbers were up to 55 percent for men and 44 percent for women.

Two reasons for increased sexual activity in post-adolescents were the birth control pill, which was introduced into widespread use in the mid-1960s, greatly reducing the concern that

sexual intercourse would result in pregnancy. Similarly, the antibiotic revolution brought young Americans to the realization that venereal diseases no longer need be viewed as potentially fatal.

Radical changes were underway culturally, as well. Few eighteen-year-old women in 1968 dreamed of living the same sorts of lives as their mothers. The desire for careers, romance, travel, and education was strong for the female baby boomers, as was a spirit of feminism. While few were ready to join the ranks of women's liberation activists, they were also disinclined to simply spend their lives in suburban kitchens.<sup>443</sup>

In addition a Rights Revolution was underway that began with passage of the Civil Rights Act in 1964. During the rest of the Sixties, the U.S. Supreme Court decided a long list of legal cases on the side of individual and group rights, giving heavier weight to the Bill of Rights and to key rights clauses of the Constitution than had any other Court. Influential intellectual leaders expanded on the rights concept, embracing it for racial, sexual, labor, and student subgroups within the larger society.<sup>444</sup>

The right to be sexual, indeed, openly so, was also advocated by the so-called Counter Culture, the hippies of the late Sixties. And by gay men, who were coming out of their closets of shame, and by the late 1970s. Between 1960 and 1971 venereal diseases rates in San Francisco would jump from 3,869 total reported cases to 17,928, with nearly all of that increase being among gay men.<sup>445</sup>

Even in comparatively staid states like Minnesota, rates of sexually transmitted diseases (STDs) rose in the Sixties and kept increasing into the next decade. In 1965 Minnesota had a total of 1,200 STDs reported in young adults aged 15 to 24 years, and an overall adult rate of 237 cases per 100,000 residents. Ten years later the STD caseload in that age group would have more

than doubled, reaching 2,300 reported, for an adult rate of 305 per 100,000. Given that most gonorrhea cases weren't reported to the state because physicians sought to protect their clients' privacy, and that several key STDs (herpes simplex and chlamydia, for example) weren't recorded at all, these were remarkable numbers.<sup>446</sup>

Despite apparently high rates of sexual activity among teens and young adults in the United States, the country certainly wasn't ready for an open discussion of sex, and public health officials generally had to confine themselves to merely making VD documentaries for school viewing and tallying the grim numbers. There was no clear national strategy for attacking the problem.<sup>447</sup>

The youth culture of the sixties found political as well as cultural expression, and the 1968 Democratic Party Convention in Chicago constituted perhaps the ultimate confluence of the protestors' many interests. With LBJ's decision not to seek renomination, Democrats were left to choose between two Minnesotans, former vice president Hubert H. Humphrey and Senator Eugene McCarthy, and the heir to the Kennedy legacy, former attorney general Robert F. Kennedy. America's choice also included the GOP's candidate, Richard Milhouse Nixon, and former governor of Alabama George Wallace, campaigning under the flag of the American Independent Party. Health was never really an issue in the campaign, as the Vietnam War and America's racial strife clearly dominated national attention.

In November Nixon beat Humphrey by just 500,000 votes, or 0.7 percent of the votes cast. When Nixon was sworn in as President in January 1969, the nation was more deeply polarized than at any time in the twentieth century. The war was the main focus of youth rage, but every manner of liberal and radical cause received their attention, from women's liberation to

support for the United Farm Workers' Union. For their part, blue collar Americans often directed their rage at "Niggers" and hippies. The nation's intellectuals swung to the left.

Nixon called upon the "Great Silent Majority" of Americans to stand behind his policies.

The war continued. National tensions rose. And new public health issues came to dominate national debate. With the problems of the microbial miasma seemingly solved, people in the United States were now concerned about the chemical miasma around them. When the terms "safe water," "healthy air," and "natural food" were used in the 1970s, they didn't refer to the absence of germs but of pollutants.

A quiet, unassuming marine biologist from New York's Long Island had first focused the nation's attention on the environment in 1962 with publication of her landmark book Silent Spring.<sup>448</sup> In poetic prose Rachel Carson described the terrible tolls pesticides — particularly organochlorides such as DDT — were taking on human health and the environment. Her principle concern was for the insect populations of the planet, which she feared would be obliterated by widespread use of the chemicals. But the public was most moved by her evidence of the pesticides' impact on human health, their potential as carcinogens, and their effect of thinning birds' egg shells, leading to marked diminutions in some bird populations. Carson's concerns proved highly contagious, becoming sources of great angst for an entire generation of Americans.

The current vogue for poisons has failed utterly to take into account these most fundamental considerations [of ecologies]. As crude a weapon as the cave man's club, the chemical barrage has been hurled against the fabric of life — a fabric on the one hand delicate and destructible, on the other miraculously tough and resilient, and capable of striking back in unexpected ways. These extraordinary capabilities of life have been ignored by the practitioners of chemical control who have brought to their task no "high-minded orientation," no humility before the

vast forces with which they tamper.

The “control of nature” is a phrase conceived in arrogance, born of the Neanderthal Age of biology and philosophy, when it was supposed that nature exists for the convenience of man.<sup>449</sup>

Humans, in the newly emerging environmental perspective, were creatures living within — and, sadly, damaging — a highly evolved and interlacing network of plants, animals, and “organic chemicals.” *Homo sapiens* was seen as a particularly malevolent force that despoiled any ecology it entered, was overpopulating to the point of sapping the earth’s resources,<sup>450</sup> and created industrial wastes that would damage the ambient ecology, the miasma, for generations to come.

The late 1960s and early ‘70s saw health and environmental concerns blend in U.S. public opinion, spawning new realms of government regulation, academic pursuit, commerce, and political activism. By the end of the Nixon administration, on August 8, 1974, the environmental movement in the United States would be enormous. Its impact on government could be felt by at least six federal agencies.<sup>451</sup> It influenced numerous fields of public health and, to a lesser degree, medicine, including toxicology, epidemiology, health statistics, oncology, and occupational health. Environmentalist thinking would have both polarizing and radicalizing effects on public health, eventually pushing many leaders in the field into confrontation with corporate interests. While public health had always been a voice for society’s poor, it would now also join a large U.S. chorus protesting — largely on behalf of a middle class constituency — corporate polluters.

And in the end, it would leave public health vulnerable to a large, and often effective, assault on its credibility.

In 1969, when Nixon took office, young people celebrated their idealism at an enormous rock festival in Woodstock, New York. They yearned for personal growth, “oneness,” and, as pop icons of the day expressed it, a more “natural” world.

We are stardust  
We are golden  
And we've got to get  
    ourselves back to the garden  
Well, can I walk beside you  
I have come here to lose  
    the smog  
And I feel I am a cog  
    in something turning  
    'round and 'round  
We are stardust  
We are golden  
And we've got to get ourselves back to the garden.<sup>452</sup>

The so-called Woodstock Generation was characterized by, among other things, homemade granola and what were dubbed “organic foods.”<sup>453</sup> Even middle class Americans outside the counter culture were on a fitness craze. The number one non-fiction best seller was Aerobics, Dr. Kenneth Cooper's exercise book that kicked off the national passion for jogging (and for wearing expensive running shoes). In the suburbs the personal growth movement sought “self-actualization” through pseudo-scientific pop psychology, psychedelic drugs, Eastern religious ideas, meditation, and sexual experimentation.

Hippie and non-hippie alike, where their parents had feared germs in their environment, baby boomers were frightened by unseen chemicals, radiation, and eye-stinging, visually assaulting pollution. Both generations detested the sight and smell of garbage dumps: those who had come through the Great Depression saw them as full of germs; the baby boomers, however, saw chemicals. Where their parents feared pestilence, boomers trembled before the



specter of cancer.

While most of the public had been paying attention to other matters, the nation's cancer death rates had been steadily climbing. In 1900 deaths due to cancer claimed 64 of every 100,000 Americans. By 1940 that rate had nearly doubled to 120.3 per 100,000. In 1950 it hit 140 per 100,000. And in 1969 the U.S. annual cancer death rate was 160 per 100,000.<sup>454</sup> Though far more people died of heart diseases (500 per 100,000 people annually in 1969), cancer created a unique level of concern. Only about one out of every twenty-five Americans in 1900 died of cancer. By 1969 the figure was about one out of every seven.

Of course, with average life expectancy at birth for men and women in 1900 having been only forty-seven years, few Americans then lived long enough to develop cancer. By 1969, U.S. life expectancy was seventy years, meaning far more people survived the diseases of youth and lived long enough to develop malignancies. Even after adjusting for such age differences, however, both cancer and heart disease morbidity and mortality rates had steadily climbed since World War II.

The major cause of those rising death rates was not, however, some mysterious environmental pollution. It had been recognized and named long before the 1970s: tobacco smoking. In 1956 Deputy Director of the National Institutes of Health Dr. Luther Terry, impressed by then-mountainous evidence, called upon the nation to "Stamp Out Smoking." He pushed U.S. Surgeon General Leroy Burney to support the American Cancer Society's call for a national anti-smoking campaign, and in 1959 Burney issued a strong statement: "The weight of evidence at present implicates smoking as the principal etiological factor in the increased incidence of lung cancer."<sup>455</sup>

Terry succeeded Burney as surgeon general in 1961 and launched an aggressive effort to confront the role of cigarettes in disease. By then, millions of Americans were chain-smoking cigarettes, which were pushed on TV, radio, billboards, and in magazines by skillful Madison Avenue admen. To offset some customers' concerns about health, manufacturers offered filtered and low-tar options. But the industry knew full well in 1961 that such minor changes in cigarette design did little to lower the risks of cancer or heart disease in pack-a-day (or more) smokers.<sup>456</sup>

Terry appointed a blue-ribbon panel of scientists that for a year pored over every available study on tobacco and human health. And in January 1964 Terry addressed a televised, standing-room-only press conference with the committee's conclusions: "Cigarettes smoking is causally related to lung cancer in men. The magnitude of the effect of cigarette smoking far outweighs all other factors. The data for women, though less extensive, points in the same direction."<sup>457</sup>

The report caused an immediate sensation both within the medical profession and on Capitol Hill.<sup>458</sup> It put the Office of the Surgeon General in the spotlight, and Terry, like his successors for the next three decades, was constantly called before Congress to testify regarding tobacco. At his urging, the Johnson administration's Federal Trade Commission ordered that all cigarette packages carry labels warning consumers that the products could cause cancer. As evidence mounted of additional potential dangers from cigarette smoking, they, too, were mentioned on the labels.

The tobacco industry waged a vigorous "public health campaign" of its own, supporting members of Congress whose constituencies included tobacco growers. "What about the health of those farmers," the tobacco states' representatives said. "If you put them out of business you'll find that starvation is mighty unhealthy."

The industry acted as a single colluding force, rather than as competitors, and clandestinely funded the Tobacco Institute, a quasi-independent center that for decades published studies finding few or no ill effects associated with cigarette smoking. Remaining unpublished were the institute's revelations not only of the ill effects from cigarettes, but of a powerful addictive response to the tobacco stimulant, nicotine.<sup>459</sup> It would be nearly thirty years before the institute's documents would see the light of day.

In the 1970s many public health advocates and their attorneys tended to downplay tobacco's contribution to cancer and heart disease.<sup>460</sup> They did so not because they disbelieved evidence of tobacco carcinogenesis, but in reaction to the chemical industry, which consistently explained away cancer cases found among people exposed to their products by referring to the victim's cigarette smoking. Both sides were being less than candid.<sup>461</sup> It overstated the case, he admitted, because, for exposed employees, some workplace hazards posed risks on a par with, or perhaps in excess of, smoking.

Throughout the 1970s and '80s, tobacco's strongest supporter in Washington was North Carolina Senator Jesse Helms, a Republican. And the most ardent opponent of the tobacco industry was a California Democrat, Congressman Henry Waxman. Helms represented one of the top tobacco-growing regions in the world, while Waxman's Southern California constituents were disinclined to support anything that added to the stench of their already polluted air. Though tobacco use and its public health consequences became increasingly partisan issues, there never was a good reason why. Surgeon generals ranging from left-liberal to ultra-conservative consistently followed Luther Terry's precedent in striking out against the tobacco industry. Indeed, the loudest voice would prove to be that of Dr. C. Everett Koop, a notorious

social conservative who was considered the darling of the 1980s American far right. Ideology aside, however, with respect to tobacco he would turn out to be an honest man with a powerful public health conscience, and the cigarette industry's arch-nemesis:

How could the tobacco industry dare to dismiss as unfounded and unproven the absolutely clear connection between smoking and heart disease: between smoking and death from stroke; between smoking and cancer of the lung, the mouth, the esophagus, and the stomach; and between smoking and a dozen or more serious, debilitating, exhausting, expensive, and humiliating diseases?

How could it do that? The answer was — it just did. The tobacco industry is accountable to no one. It flaunts its ability to buy its way into the marketplace of ideas and pollute it with its false and deadly information....

Despite sinister associations, first with slavery, later with cancer and heart disease, American tobacco has always enjoyed government protection. The tobacco lobby is overwhelmingly powerful.<sup>462</sup>

Most of tobacco's protectors on Capitol Hill were Republicans who justified their opposition to smoking-related public health measures on two grounds: job protection for tobacco farmers and industry employees, and philosophical opposition to any regulations that fettered free enterprise — including health laws aimed at saving tens of thousands of lives every year. The politicians were less open about reason number three for their staunch support of tobacco: Money. The industry spent between \$500 million and \$1 billion every year from 1969 to 1999 on advertising, drumming up public support not just for individual brands of cigarettes but also for the industry's "right" to sell freely and the smokers' "right" to smoke anywhere, anytime. In contrast, public health had paltry advertising resources during the 1960s and 1970s, and few of its leaders appreciated — as New York's Baumgartner did — the power of Madison Avenue. Even in the mid-1980s, federal anti-smoking advertising spending would amount to a mere \$70 million a year compared to the more than \$900 million annual pro-tobacco ad dollars.<sup>463</sup>

In 1964 Surgeon General Terry could cite more than 7,000 studies demonstrating a link between tobacco and human morbidity and mortality. By 1988 Surgeon General Koop would be able to point to ceiling-high stacks of documents, more than 60,000 studies, proving links between tobacco and dozens of diseases in both smokers and so-called passive smokers — people who shared airplanes, offices and homes with smokers and breathed their exhaled tar, nicotine, carbon monoxide, and other insidious chemicals. These studies demonstrated clearly why and how tobacco exerted its lethal effects.

The carbon monoxides produced by burning tobacco were the same as those emitted by automobiles causing smog. When inhaled carbon monoxides compete with oxygen for binding sites on cells of the lungs. As a result, when the smoker (whether passive or active) inhales, less oxygen is taken in. This affects the entire body, as every living cell's survival requires a steady oxygen supply. Over time this leads to a diminished capacity to absorb oxygen even when it is present. This is one reason smokers gasp for air when they exercise.

Burned tobacco also contains a complex mix of tars, many of which are directly cancer-causing. Research sponsored by the National Institutes of Health would reveal in the 1980s and '90s that chemicals found in these tars could deregulate crucial control switches in DNA. This would cause sections of DNA that were supposed to go unread in adults' cells to open up and undergo accelerated translation, making the cells grow wildly without any regard for their normal genetic control mechanisms. Other chemicals in tobacco tar turned out to be directly mutagenic, causing the critical sequence of nucleotides along the DNA genetic code to be altered. The mutations usually killed the cells, but when they did not, they transformed them into rapidly-reproducing seeds for tumor growth.

Other chemicals found in cigarette smoke increased clotting activity in the blood, creating tiny islets of solid material in the cardiovascular system to which cholesterol fats could attach. In this way, smoking directly accelerated the cholesterol process of thickening the walls of blood capillaries, veins, and arteries, leading to atherosclerosis. And that, in turn, contributed to strokes, thrombosis, phlebitis, varicose veins, and heart attacks.

Many of these chemicals could cross the placenta and exert such dangerous effects on a growing fetus. So smoking during pregnancy promoted miscarriages and birth defects.

Bad as these biochemical effects were, they would surely have had only minimal public health impact had it not been for nicotine. Without nicotine's addictive qualities, far fewer beginning smokers would have gotten hooked. Even if they got past the nausea and dizziness accompanying those first few cigarettes, foul residual odor of smoke, the tar-yellowed teeth, the reddened eyes, and the nasty aesthetics of butts and ashes would probably have caused them to quit. But they couldn't. They were addicted.

Throughout the body a variety of cell types, including nerves and hormone-releasing cells, have nicotinic receptors on their surfaces. Normally, nicotinic cycles are critical components of the body's metabolism, involved in everything from the processing of vitamins to cardiovascular function. The immediate pleasurable stimulation the smoker feels is the result of nicotine's attachment to such receptors located on the synapses of the brain's nerve cells. Normally, these synaptic receptors are used by the most critical neurotransmitter, acetylcholine, to send the messages that are the essence of how the mind thinks. Nicotine competes with acetylcholine to saturate these receptors. The sensation for the smoker is pleasure.

Nicotine also binds hormone receptors that control release of adrenaline, one of the most

powerful chemicals in the body. When adrenaline surges into the blood stream it offers further stimulation to the brain in the form of a powerful sensation of awareness. It also pumps up all of the activities of the cardiovascular system, making the blood vessels contract and the heart pound harder and faster. This stimulation can be extremely dangerous to smokers' already taxed hearts. But the smoker, paradoxically, feels more pleasure. While many smokers claim that smoking is psychologically calming, physiologically it has an "upper" effect, and chain smoking enhances nervousness, anxiety, and paranoia.

Neurostimulation is a greedy mistress. The brain wants more and more of it. And the longer a smoker uses cigarettes, the more the brain actually changes physically, adapting to nicotine stimulation so thoroughly that it can not readily function without it.<sup>464</sup>

"That is what we are really talking about: not smoking, not tobacco, but nicotine addiction. Most smokers are drug addicts," Koop would conclude. And tobacco companies he would add, were pushers.<sup>465</sup>

In the early days of the Nixon Administration, few physicians or public health advocates appreciated how hard it would be for America to kick the tobacco habit. Pioneering efforts to counter the industry's massive ad campaigns simply stated the then-known facts: smoking causes cancer and heart disease. In surveys, most Americans said they wanted to quit, but just couldn't.

Tobacco smoking was estimated to have caused, during the later quarter of the century, 400,000 deaths each year in the United States, resulting in the loss of 5 million years of potential life.<sup>466</sup> After the Surgeon General's 1964 report was released, researchers established that a long list of ailments was associated either with cigarette smoking or with sharing a home for years

with a smoker. These included: “Cancers of the lung, larynx, esophagus, pharynx, mouth, and bladder; and chronic lung disease,...cancer of the pancreas, kidney and cervix. Consequences of smoking during pregnancy include spontaneous abortions, low birth weight, and sudden infant death syndrome.”<sup>467</sup> The USPHS estimated that smoking was responsible for almost a third of all cancer deaths in the United States (nearly nine out of ten lung cancer deaths), and for one out of every five deaths due to cardiovascular diseases. The federal agency computed that “the risk of dying from lung cancer is 22 times higher for men and 12 times higher for women who smoke as for lifetime nonsmokers.”<sup>468</sup>

Despite their comparatively minuscule budget for raising public awareness, public health leaders tried to combat Madison Avenue’s pitch for cigarettes through education campaigns — primarily in schools. The most health-conscious smokers heeded the educational warnings and quit. But several legal measures would ultimately play critical roles in thinning the ranks of U.S. smokers. The Federal Communications Commission banned broadcast advertising of tobacco products, and most local and state governments eventually abolished smoking in public places such as airports, restaurants, theaters, and government buildings. Taxes were levied on cigarettes, raising the purchase price many times over the three decades following release of Luther Terry’s report. And in the final years of the century, lawsuits filed by the families of lifelong smokers who died of cancer won phenomenal multimillion dollar cases against tobacco giants, and, through legal discovery, opened doors on long-covert data gathered by the Tobacco Institute.

Which of these, and other, factors proved most persuasive in breaking millions of Americans of their nicotine addictions would prove impossible to say. But between 1964 and



1989 the numbers of American smokers would fall from more than 40 percent to 29 percent of the population. Most of the quitters would be white, middle class adults. Still smoking in numbers exceeding a third of their populations would be African Americans and American Indians.<sup>469</sup>

Tobacco offered unique challenges to both public health and medicine during the 1970s. Public health had yet to find effective ways to alter human behavior when the dire outcomes of their actions were both well in the future and less than certain. It was one thing to mobilize five million people to take a specific action in the face of an immediate threat, e.g., getting vaccinated against smallpox. It was quite another to get the same five million people to alter a behavior that most of them found quite pleasurable, particularly when the odds were relatively low that a given individual would face ill consequences. The new public health era called for just such interventions, however. Heroin injection, addictive use of prescription drugs, behavior that spread sexually transmitted diseases, routine consumption of distilled alcohol, and smoking were all features of American lifestyles in the 1970s that, for health reasons, needed to change. And few public health leaders had any idea why these behaviors were so prevalent in society or how they could be altered.

It was in this cultural and political miasma that the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the National Institute of Occupational Safety and Health (NIOSH) were born. In 1970 Congress passed laws creating each of these agencies. The EPA's crucial guiding law, the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), also gave the agency national chemical regulatory powers. With passage of the 1970 Clean Air Act, EPA was granted powers to also set national ambient

pollution standards.

The EPA was organized by Congress as both a public health and environmental protection agency — a sometimes contradictory mandate, as standards for one might not be ideal for the other. It was designed to function as both a research and a regulatory agency, which would put the EPA in the uncomfortable position of using its own research to decide and then enforce regulations that might cost an industry millions of dollars.

OSHA, in contrast, was just in the business of setting and enforcing workplace safety regulations. NIOSH was a separate research agency which supplied data intended to inform OSHA's policy decisions.

Like the much older Food and Drug Administration (FDA), OSHA and EPA were regulatory agencies that could essentially take one of four positions on any drug, chemical or hazard that came up for their review: order more research; ban the compound or hazard; restrict the use of the compound or hazardous material/machine/tool to specific situations or doses; or take no action at all.

Public health advocates had reason to focus on all of these agencies, as there were clear health implications involved in the use of pesticides, air and water pollutants, pharmaceuticals, petrochemicals, and most of the other items that came under the agencies' jurisdictions. But many other interests also had cause to pay close attention to OSHA, EPA, and the FDA, including organized labor, the affected industries, farmers, environmentalists, organized medicine, research scientists, and disease interest groups such as the American Cancer Society. Their needs and interests were often on collision courses, alliances and compromises proved elusive, and eventually all three agencies would be overwhelmed by interest groups' lawyers.

Further aggravating matters, most states created counterpart agencies which set their own standards of regulation and enforcement. While these standards could not legally be weaker than those set at the federal level, they could be stricter than national criteria for things such as, for example, allowable pesticide residue on oranges or carbon monoxide emissions from automobiles.

Though there were many facets of pesticides, pollutants, and pharmaceuticals about which the public could be concerned, the phobia of the day was cancer. And it was exceedingly difficult to demonstrate irrefutably whether or not any given drug or chemical could, when used in a designated manner or dose, cause cancer.

Of the agencies that turned their attention to this problem, the FDA was guided by the toughest, and ultimately most unworkable, principle: the 1958 Delaney Clause. The House Select Committee Investigating the Use of Chemicals in Food and Cosmetics, led by New York Democrat James Delaney, had held hearings during the 1950s that were heavily influenced by the testimony of Dr. William C. Hueper of the National Cancer Institute. Since the 1930s, at the request of the wealthy du Pont family of Delaware, Hueper had been investigating causes of cancers occurring among workers in the family's chemical and dye plants. In particular, many du Pont workers were suffering from a usually rare form of bladder cancer. Hueper discovered that two chemicals used by dye workers were causing the terminal malignancies: beta-naphthylamine and benzidine.<sup>470</sup>

The du Pont company management and Hueper shared harsh words over appropriate actions to mitigate against further cancers at the chemical plants. Hueper favored stopping all use of the chemicals, while du Pont wanted to study the matter further, hoping to find other

options. Hueper grew incensed and acquired a strong distrust not only of the du Pont company but of all U.S. industries involved in food, drug, and chemical production. When the Atomic Energy Commission later rejected a report Hueper had compiled based on studies of workers' exposure on the job to varying doses of radiation, the NCI scientist's anger and level of suspicion rose even further.

Hueper pioneered the use of laboratory mice and rats to test the cancer-causing effects of various compounds. In the 1950s he established that various chemicals similar to beta-Naphthylamine could also cause tumors in rodents. One of those chemicals was in widespread use in the U.S. food industry: Red Dye #2. HEW denied Hueper permission to publish his initial Red Dye #2 paper. The federal scientist claimed that HEW's refusal — which he termed censorship — was the result of phone calls between his own superiors at NIH and the du Pont company.

“My work led to political difficulties,” Hueper recalled.<sup>471</sup> “It was easy to work on genetics or viruses or on biochemistry. There are no implications whatever. And there are no political difficulties....My work directly confronted [Congress] with the problems of what substances cause cancer. It was highly controversial....”

Hueper extrapolated beyond his data, however, concluding that Americans were awash in chemical and radiation carcinogens that were producing a massive cancer epidemic. He incorrectly concluded that 90 percent of all human cancer was caused by environmental and occupational carcinogens. When he came before the Delaney Committee Hueper insisted, persuasively, that there was no safe limit of exposure to a carcinogen.

In legislation passed by the Delaney Committee in 1958, the FDA was ordered to ban or

forbid licensing of any food additive or compound used on foods that caused cancer in human beings or laboratory animals. The language of the Delaney Clause stipulated that there could be no safe limit for carcinogens in foods.

By 1970, saddled with the Delaney Clause, the FDA had three problems. First, many foods that have no additives were found to contain powerful carcinogens, such as the tars formed by barbequing meats and aflatoxins in peanut butter. Second, many industry people were attacking the relevance of laboratory rodent studies to human exposure to potential carcinogens. And third — the legally most difficult point — nobody knew how to interpret the Delaney Clause in light of new technology. When it was enacted in 1958, scientists measured the presence of potential carcinogens at parts per million levels, meaning that they could detect one molecule of, say, Red Dye #2 in the midst of a million water molecules. But by 1970 the equipment used for such tests was far more sophisticated, and scientists were routinely detecting chemicals at parts per billion level; in some cases, parts per trillion. Were such levels dangerous to human health? Given that such tests hadn't existed in 1958, should the Delaney Clause's insistence on no level of carcinogens be interpreted to include quantities so minute? If technology could measure parts per quadrillion, should that be the standard?

Complicating matters further, there was no equivalent of the Delaney Clause for the EPA or OSHA. Those agencies handled carcinogen's risks in a manner that completely contradicted the FDA's mandate because they assumed that there were, indeed, tolerable or safe levels of exposure for most compounds. They set legal limits (called tolerances at EPA), and those became the enforceable standards for exposure. A worker might be legally exposed to this much airborne asbestos, that much skin-contacted benzene or so much ingested vinyl chloride.

Consumers could be sold fruit with X amount of malathion on its surface. Public water supplies could contain Y level of toluene.

Throughout the 1970s, the various interest groups would fight over these tolerances and standards, both at the federal and state levels. With so many constituencies to please, EPA, OSHA, and FDA would grow increasingly bureaucratic, alternately functioning like castles under siege or angry cops out to get industry. Rarely would any of the interest groups be happy with either the quality of the science upon which decisions were made or the outcomes of all the wrangling.<sup>472</sup> And nobody could say to what degree the public's health benefited from the regulatory triad.

And the biggest winners, critics agreed, were lawyers, as most EPA and OSHA issues ended up being settled in litigation.

Organochlorides, however, were a special case, and this class of compounds, the chlorinated hydrocarbons, would be the focus of more decisive actions. Chlorine is an element in the halogen family. As such, it is highly reactively charged and readily bonds with positively-charged compounds such as carbon and oxygen. Chlorine-carbon bonds are powerful ones, and compounds held together with such atomic glue rarely fall apart unless subjected to substantial amounts of energy, such as is produced in a hot fire. Because of this, chlorinated hydrocarbons are rarely biodegradable.

Rachel Carson had pointed this out in 1962 in Silent Spring, noting that it was this biological imperviousness that made DDT a particularly worrisome compound.

Another reason for focusing on chlorinated hydrocarbons was their lipid solubility. Animals exposed to the compounds stored them in their body fat; the chemicals never degraded

unless the animal starved to the point of metabolized the stored fat. Female mammals could pass the chemicals on to their offspring in breast milk. Even when not directly exposed to DDT in its pesticide form, humans could absorb it through cows milk, from their mothers via breast-feeding or through ingestion of contaminated animal fats. And with each mammalian generation, DDT levels would concentrate and if the environmental levels of the pesticide remained high.<sup>473</sup>

The list of commonly used chlorinated hydrocarbons was long in the 1970s, and it included pesticides like DDT, chlordane, and dieldrin; herbicides such as Agent Orange and its components TCDD and 2,4,5-T; and electronics insulators such as PCBs (polychlorinated biphenyls). Many aspects of the environmental and human health impacts of these compounds could be debated, but their persistence over time could not. And that would prove sufficiently worrisome to prompt their strict regulation and bans on most of their applications.<sup>474</sup>

The links between a host of other compounds and lethal diseases in exposed workers would also prove strong enough to lead to decisive bans or limitations that held up to legal challenge.<sup>475</sup>

And legal challenge there would be, because the entire environmental and occupational regulatory apparatus in the United States rested on the concepts of risk and probability. Try as scientists might to assign empirical values to those terms, risk would remain a highly emotional and politically charged term, and probability was no better understood by worried families in the suburbs than by compulsive gamblers in Las Vegas. One man's sense of apprehensive risk was another man's yawner.

The concept of victimization clearly played a role in the perception of risk. Individuals were willing to ride motorcycles without a helmet or pilot a boat in a hurricane if such obviously

dangerous activities were entirely based on personal choice. The risk of death might exceed 30 percent and still be acceptable in an individual's eyes. In the rebellious, fractured 1970s, however, even a one-in-a-billion risk was unacceptable to millions of Americans if it was imposed by an outside force. With the Rights Revolution in full-swing many citizens held that they had rights to risk-free work places, risk-free air, risk-free water, and risk-free foods.<sup>476</sup>

Public health got bogged down in risk analysis. Entire divisions of schools of public health were ripped asunder by internal debates that inevitably degenerated into political clashes reflecting tendencies found in the larger society. A Marxist, for example, would argue that true advocates of public health had to support radical social change — all else was a mere public health band-aid that would placate workers but sustain the exploitative conditions of their employment. Conversely, a toxicologist working under contract to, for example, a large chemical manufacturing firm, would say that the risk of cancer from worker exposure to Compound X was minuscule — on the order of less than a tenth of a percent risk per person per year of exposure. But meeting clean-up standards sufficient to eliminate that small risk, the toxicologist would continue, could prove so costly that the company would be forced to shut down operations in the Compound X plant, throwing all of those workers out of a job. Between those two extremes were dozens of political and scientific opinions that swayed one way or the other on the basis of statistical methodologies, approaches to data collection, and interpretation of that data.<sup>477</sup>

Was the public well served by the rancor?

In the 1970s, during the Nixon, Ford, and Carter administrations, entire suburbs, such as Love Canal, were shut down and the people relocated because of chemical pollution. Dozens of



sites that were sources of horrendous industrial pollution were designated Superfund sites.<sup>478</sup>

Hundreds of chemicals that had once been used with little or no discretion by industries, farmers, and individuals were banned or severely regulated, fear of litigation prompted widespread improvements in the practices of companies of all sizes.

Nonetheless, in the late 1980s the U.S. Department of Health and Human Services and the National Academy of Science would conclude that the United States remained one of the world's chief polluters, creating risks for both human and environmental health.<sup>479</sup> A vast regulatory apparatus had been created, setting standards and tolerances for chemical exposures in air, water, soil, and food, but there were few reliable tests available that could be used to enforce those standards. For example, the California Department of Food and Agriculture was mandated by the state legislature in the 1970s to monitor the use of 33,000 different pesticide products and formulations; but it only had laboratory tests that could detect about a dozen different chemicals present in liquids or foods, and even fewer in the air.<sup>480</sup>

In 1990 the U.S. Department of Health and Human Services would look back on twenty years of environmental health efforts and conclude: "We are just beginning to understand the full range of health effects resulting from exposure to environmental agents.... Only a small percentage of thousands of commonly-used chemicals has been adequately tested for the ability to cause or promote cancer. Even fewer have been evaluated for effects on critical organs, such as the neurologic, immunologic, and reproductive systems. New sensitive toxicologic methods must be developed and validated for use in screening this huge backlog and the hundreds of new substances introduced each year. The skills of molecular biologists, immunologists, toxicologists, and geneticists must be used to create new tests to identify people with significant

exposure to environmental hazards and to help physicians and epidemiologists recognize and respond to subtle, early effects before they progress to irreversible, debilitating, chronic conditions. At present, little is known about chemical mixtures, which is how most chemicals present themselves to humans.”<sup>481</sup>

By the time that DHHS assessment would be made, the national mood, as well as the thrust of U.S. public health, would have shifted 180 degrees: by 1990, the country would see the world in much more individualized terms, and public health would have turned its priorities from things external to questions of personal lifestyles and choices.

During the 1960s and ‘70s the Food and Drug Administration responded to four tests of its mettle, with mixed results. The first actually began in the 1950s, with a positive outcome for the agency in 1962. A drug in common use in England, Canada and Australia was awaiting licensing for sale in the United States. It was said to be very effective, but some researchers within the FDA had reservations about okaying an agent for use by pregnant women without further clinical scrutiny. Senator Estes Kefauver was holding hearings in Congress concerning pharmaceutical fraud, and the FDA leadership realized that for the first time since their agency’s creation, legislators were giving their activities serious scrutiny. It seemed prudent, therefore, to go slowly.

And that proved a wise policy. The British drug under investigation was thalidomide. It was intended to prevent miscarriages and was recommended for all pregnant women who were over thirty-five years of age or had previously suffered a spontaneous abortion. In congressional hearings, FDA leaders announced that their investigations had led them to deny the drug company a license to sell thalidomide because it was causing terrible birth defects. These

included the formation of seal-like flippers rather than arms, severely stunted stature, some completely missing limbs, and a variety of malformations of vital organs. The FDA didn't yet have a full tally of the numbers of thalidomide babies in the United Kingdom, Canada, and Australia, but it could justifiably say that its caution had spared thousands of babies in the United States the horrors of such birth defects. The Kefauver Committee was deeply moved, and in 1962 amended the old 1938 Food and Drug Act to expand the public's trust invested in the FDA, giving the agency powers to dictate the terms of clinical trials on experimental drugs and to determine, as a condition of drug licensing, whether the product actually did what the manufacturers claimed.

Squeaking in under the wire for drug approval just before the new law took effect was Enovid, an oral contraceptive manufactured by G.D. Searle: The Pill. When John F. Kennedy signed the new FDA powers into law in early 1962, that agency had already received reports of more than 132 cases of severe health problems among women who took The Pill. And that number kept mounting. It seemed that The Pill had deleterious effects upon the cardiovascular system, causing thrombosis and life-threatening thromboembolisms. The FDA organized the Wright Committee of 1963 to investigate the claims, and the group concluded that The Pill was clearly dangerous to women over the age of thirty-five. Under severe industry pressure, the committee withdrew that claim six weeks later.

In the mid-1960s the World Health Organization also investigated the then-global allegations of deaths and cardiac injuries caused by The Pill. Under pressure from other United Nations agencies involved in limiting the growth of human populations, WHO demurred and issued no condemnation of The Pill. In 1968, however, Britain's Dunlop Committee on the

Safety of Drugs released a landmark report demonstrating that The Pill caused formation of blood clots which clogged the circulatory system, producing a long list of damages to the cardiovascular system.

Investigative journalist Barbara Seaman, a New York City freelancer, took interest in health outcomes associated with The Pill and in the FDA's apparent foot-dragging. Her 1969 book, The Doctor's Case Against The Pill,<sup>482</sup> proved a powerful indictment of the product, its manufacturer, and the FDA. And it became a rallying cry for feminists in the 1970s who believed that women's trust was uniquely betrayed by government: their gender's health needs weren't given the same level of scrutiny and deliberation as were those of men.

When Seaman's book was published, some eight million women in the United States were on The Pill. It had supplanted in popularity all other forms of birth control. By then, some European countries had already revoked licenses for The Pill, based on deaths reported among oral contraceptive users in England. And FDA-reported cases of blood clot-associated deaths among healthy young women on The Pill had mounted.<sup>483</sup> In addition to phlebitis, strokes, hypertension, varicose veins, painful circulatory disorders, and heart attacks, women on The Pill appeared to be at risk for cancers of the cervix and breasts, though the products hadn't yet been in widespread use long enough to cause a statistically observable increase in national cancer rates. And a 1966 congressional investigation disclosed that the FDA had known since 1959 that The Pill caused cancer in laboratory animals.

As evidence mounted implicating The Pill's principle hormones, progestin and estrogen, in the wide array of disorders, manufacturers lowered the hormonal dosages incrementally throughout the 1970s and 1980s. The early, dangerous, 1960s Pills contained, typically, 0.05 mg

of estradiol and 2.5 mg of progestin. They were to be taken daily for twenty-one days of each month. By the 1980s, most formulations of The Pill contained only 0.02 mg of estradiol and less than half a milligram of progestin.<sup>484</sup> That constituted a 40 percent reduction in estrogen doses and a 200 percent decrease in progestin.

Women would find more cause to question the FDA during the 1970s as revelations mounted about the U.S. alternative to thalidomide, diethyl-stilbesterol, or DES. It, too, was intended to prevent miscarriages in high risk pregnancies, and had been on the market since the early 1950s. By 1958 it had become wildly popular among Ob-Gyns. Between 1958 and 1965 fully half of all pregnant women in the United States were given DES prescriptions.<sup>485</sup>

Following the 1962 thalidomide episode, the FDA decided to use its then-new powers to review the safety and efficacy of more than 4,000 drugs it had already approved, including DES. The task was so massive that the FDA asked the National Academy of Sciences for help. The academy rated drugs according to their demonstrated levels of efficacy, finding DES only “possibly effective” and “not harmful.” Because the academy’s task was so massive, and DES already controversial, the academy’s finding still had not been published by FDA three years later, in 1970.

Then in 1971 physicians from Massachusetts General Hospital in Boston saw eight women under twenty-two years of age who all suffered from extremely rare clear-cell adenocarcinomas of the vagina. All of these young women turned out to be “DES babies,” meaning their mothers had taken the drug while pregnant seventeen to twenty years previously.<sup>486</sup> Publication of their findings triggered a flood of reports nationwide of Baby Boom women who suffered from the previously extremely rare form of cancer and had in common that their

pregnant mothers had taken DES. New York State Department of Health officials, in particular, batted onto the DES issue, establishing a statewide registry of cases of the rare adenocarcinoma and tracing evidence of DES use by the case's mothers.

The issue was explosive. In the fall of 1971 a congressional subcommittee held hearings on DES, each day bringing forth a new revelation. DES was used by farmers to plump up their livestock and increase offspring numbers and could be detected in chickens and beef. Like DDT, DES was fat-soluble and stayed in the animal and human body, causing ill effects, for years. High doses of DES had been used experimentally on Michigan co-eds as a "morning-after" pill to prevent pregnancies.

And throughout it all, the FDA took no action. It needed more data, FDA Commissioner Charles Edwards told the incredulous subcommittee. Under rebuke from Congress, the FDA sent a warning letter to all physicians in 1971. And DES prescription rates actually increased the following year. DES stayed on the market throughout the Nixon administration — despite President Nixon's 1971 call for a "War on Cancer." It stayed on the market throughout the brief Ford administration. It would stay on the market, despite huge consumer action group protests and evidence of cancer in men born to DES mothers, throughout the liberal Carter administration. And it would still be on the market, with FDA approval, during the Reagan administration, despite the now clear evidence that the estrogenic drug was causing breast and testicular cancers in the offspring of DES moms.

The FDA took incremental actions against DES throughout the 1970s and '80s, issuing warnings, changing labeling, mailing updated alerts to physicians. But the agency did not really sound an alarm, or come right out and say, "Don't use this drug." So doctors would continue

prescribing DES “morning-after” pills well into the 1980s.

“One cannot look back at the history of DES without being struck by the consistent and often flagrant failure of regulatory agencies — notably the FDA and USDA — to carry out their mandated responsibilities,” concluded Stanford University medical policy analyst Diana Dutton.<sup>487</sup>

The FDA banned use of DES in chicken feed in 1972, but permitted use of the drug in human beings, albeit under ever more limited circumstances, for the rest of the century. The manufacturer, Eli Lilly and Company, itself changed the recommended uses and admitted the dangers of DES.<sup>488</sup>

By 1990 it would be estimated that some two million Baby Boomers had been exposed *in utero* to DES. The females among them had 1 in 1,000 risks of developing the rare vaginal cancer and were 50 percent more likely than non-DES daughters to suffer breast cancer at some point in their lives. And both DES males and DES females commonly had abnormal developments of their genitals. These were most acute in the males, who had smaller than normal penises and testes, low sperm counts, and abnormal sperm, usually promoting infertility.

By any measure, DES was a public health disaster, fueled by FDA inaction.<sup>489</sup>

In responding to the rising public anxiety about cancer, President Richard Nixon was more inclined towards solutions that were curative rather than regulatory. He was convinced that a well financed, all-out “War on Cancer” would yield scientific breakthroughs that would diminish, even eliminate, cancer mortality in America. During his administration, the National Cancer Institute enjoyed handsome increases in its research budget.

Nixon pursued a very aggressive military policy in Vietnam, widening the war and

declining in peace talks to make concessions to the government of North Vietnam. But his positions on domestic policy reflected an odd jumble of progressive and traditional policy initiatives. He supported, for example, substantial increases in the Social Security budget and backed implementation of Johnson's Great Society programs, bringing the size of the nation's impoverished population down from 12.8 percent in 1968 to 11.1 percent in 1973. He increased the rolls of AFDC families from 7.4 million in 1970 to 11 million in 1975. Poverty program spending rose under Nixon from \$27.3 billion when he first took office to \$64.7 billion in 1975.<sup>490</sup>

But the Nixon administration seemed to fail when it came to the national economy. Unemployment climbed steadily from 3.6 percent when Nixon was elected in 1968 to 4.9 percent in 1970. In 1971 the United States had an unfavorable trade balance for the first time since 1893. Wall Street coined a term for the administration's fiscal policies: "Stagflation." Between 1971 and 1973 the dollar fell steadily in value compared to the Japanese yen and German Mark. Nixon responded with price controls. They were useless. In 1973 the economy went into a tailspin amid falling productivity, rapidly rising inflation, and ever increasing unemployment. Nixon had been reelected in 1972 on the campaign promise of a New Economic Policy, but Wall Street, unable to discern any coherent plan in the administration's 1973 economic actions, lost investment confidence and ran for the shelter of bonds. By 1974, unemployment hit a fourteen-year high, topping 7 percent.

And then came a crushing blow from the Middle East. During the 1973 Yom Kippur War between Israel and its Arab neighbors, Secretary of State Henry Kissinger put on alert all U.S. forces, including the nuclear weapons-carrying Strategic Air Command. This was taken by



Arab leaders as a signal that the Nixon administration was willing to drop hydrogen bombs in support of Israel.

Retaliation followed. Arab states with the Organization of Petroleum Exporting Countries (OPEC) organized an international embargo on oil shipments to the United States. The U.S. economy proved extremely vulnerable. Frantic Americans queued for hours to buy gas and watched its price increase by 30 percent by the time OPEC called off its boycott in March, 1974. The Arab states had made their point: the U.S. giant could be brought to its knees. For the remainder of the Nixon administration, and on through the Ford and Carter years, the U.S. economy suffered double-digit inflation, and had negative productivity growth and high unemployment.

And there were very worrying signs on the public health fronts. In 1964 New York City had suffered an enormous German measles (rubella) epidemic that sickened 200,000 children. When a rubella vaccine became widely available in 1969, public health officials hoped that memory of the New York epidemic would spur mass child immunizations.

But in 1970 national incidence of measles (rubeola) rose, indicating that child vaccination rates had fallen. In 1970 more than 47,000 children contracted measles, double the number in 1963 when the rubeola vaccine was first put into large-scale use. And 1971 saw 75,000 more measles cases. While these numbers were well below the half million cases per year the U.S. had experienced in the 1950s, they bore sad evidence of a breakdown in access to routine pediatric care for many Americans.

In the winter of 1971, with his reelection campaign already underway, Richard Nixon gave a speech to Congress that caught every politician, health planner, and medical organization

in the country off guard. The last person anyone expected to hear call for national health insurance was a man as conservative as Richard Milhouse Nixon.

Nixon introduced a set of bills that were designed to completely overhaul access to health care for all U.S. citizens. He told Congress that a radical change was needed because:

In the last 12 months alone, America's medical bill went up 11% from \$63 billion to \$70 billion. In the last 10 years, it has climbed 170%, from the \$26 billion level in 1960. Then, we were spending 5.3% of our Gross National Product on health; today we devote almost 7%....

One of the biggest problems is that fully 60% of the growth in medical expenditures in the last 10 years has gone, not for additional services, but merely to meet price inflation. Since 1960, medical costs have gone up twice as fast as the cost of living. Hospital costs have risen five times as fast as other prices. For growing numbers of Americans, the cost of care is becoming prohibitive. And even those who can afford most care may find themselves impoverished by a catastrophic medical expenditure.<sup>491</sup>

Within hours everybody on Capitol Hill was forming interest groups and alliances with various health-related camps and formulating alternative health planning proposals. With the first presidential primary just eleven months away, Nixon's health care plan — a fluid proposal the details of which would metamorphose over the next three years — was a catalyst for vigorous debate and power struggle. Public health would, sadly, once again prove to be a very minor player in the first serious revisiting of national health care issues since the Truman administration. And, as always, the AMA and American Hospital Association would try to block all congressional and presidential efforts to create a national health care financing system. They particularly opposed any clauses obliging them to provide care to poor Americans. But this time their voices would be drowned out by a chorus of other constituencies with different agendas, including organized labor, corporate employers, and insurance companies.

“Much sooner than anyone would have predicted two years ago, leaders in government

and medicine, as well as large segments of the public, have come to believe that national health insurance is desirable, feasible, and inevitable,” Harvard health economist Rashi Fein wrote in 1970.<sup>492</sup> “Now they are debating what form it should take.”

The reasons health had reached center stage again, after a twenty-five year hiatus, were three-fold, Fein argued. First, cost. In 1965 the nation had spend a total of \$39 billion on health; by 1969 that spending topped \$60 billion.

The second reason was Medicaid. Costs for government financing of health care for the poor were skyrocketing even faster than the already outrageous inflation rate for medicine as a whole. Total public spending on health had jumped from \$3.1 billion in 1950 when two thirds of all health dollars came from non-government coffers (private insurance, patients’ own pocket books) to \$22.6 billion in 1969. And by 1969 some 60 percent of all health spending was based on government dollars — either federal or state. If that trend continued, Fein said, the country would end up with a government-financed national health care system, whether or not it intended to have what the AMA labeled “socialized medicine.”

The third reason the country was ripe for national health debate was that many governors and state legislatures, feeling the fiscal pinch, were already entertaining once-radical ideas for solutions to their health financing crisis. Nixon and Congress were merely reflecting at the national level debates that had already been going on at local levels for a couple of years.

The battlefield and players had changed since the Truman era, as had the relative strength of the players. The American Public Health Association and its constituencies at local levels found themselves singing a sad chorus to which almost nobody listened. Public health interests came closest to being met by Senator Edward Kennedy’s Health Security proposal, which had

strong support from the AFL-CIO and organized labor. Health Security offered coverage for all Americans through a system of payroll deductions, inflation caps, employer contributions, and federal allocations to local governments for administration of funding pools from which to finance physician group practices, dentists, and other providers. Kennedy said his plan would absorb the then thirty million uninsured Americans who were not included in the Medicare or Medicaid safety nets. Both those LBJ-era programs would be eliminated as they would no longer be needed, and Health Security would be handled by the Social Security Administration, which would assess all of the nation's employers at 3.5 percent of payroll; leverage employees at 1 percent of salary earnings up to \$15,000 per year; and assess self-employed individuals at 2.5 percent of taxable income.<sup>493</sup>

Nixon's plan also intended to move the United States towards universal coverage, but through a radically different mechanism. It was modeled on systems already in place in Minnesota and California that Dr. Paul Ellwood had dubbed "health maintenance organizations" — HMOs. Ellwood, executive director of the American Rehabilitation Institute, was the number one HMO booster in the nation and, as a die-hard Republican, had the Nixon administration's ear. Ellwood argued that traditional fee-for-service medicine and standard health insurance "perversely" rewarded doctors and nurses for ignoring all preventive care and over-utilizing procedures that were costly and might not prolong patients' lives. HMOs, Ellwood said, did just the opposite.

Though they weren't called HMOs, the first such health organizations had surfaced in Washington state around 1906 to service the lumber industry. Two doctors dreamed up a scheme for lumber workers to prepay fifty cents each month and in exchange get whatever medical care

they needed. By 1920 there were a couple of dozen such prepaid health groups scattered across Oregon and Washington, generally organized around particular pools of workers. During the Great Depression desperate doctors and patients naturally gravitated to the idea, and prepaid systems emerged for teachers in Dallas, water and power department workers in Los Angeles, city employees in New York, and the general populace in Elk City, Oklahoma.

Wherever such plans arose, they were staunchly opposed by the AMA, which booted the physicians involved out of the association and put pressure on the states to revoke those doctors' licenses. In the AMA's view, any system of pre-set patient payments for health care would constitute unfair competition for private practitioners and would drive down prices.<sup>494</sup>

AMA opposition came to a head over creation of the Group Health Association, a prepaid plan set up in 1937 for Washington, D.C. homeowners. The U.S. Supreme Court heard a case that pitted the AMA against Group Health, coming down squarely against the AMA, accusing it of unfair trade practices and antitrust violations.

By 1971 the two most successful — certainly the largest — HMOs were Kaiser-Permanente and Group Health Mutual Insurance. The Kaiser plan was started by two Los Angeles doctors who were providing medical care for crews constructing the California aqueduct and hydroelectric systems during the 1930s. One of the biggest contractors in these Roosevelt-era government projects was the Henry J. Kaiser Company, which took strong interest in the doctors' efforts. Eventually, Kaiser absorbed the prepaid care plan and offered it to the general public in Los Angeles County and Northern California. By 1971 Kaiser-Permanente was the nation's largest HMO, with 4.6 million members.<sup>495</sup>

The second largest HMO was Group Health Mutual Insurance Company of Minneapolis.

Group Health Mutual was created from the top down by an already-existing insurance company to provide prepaid health services to all Minnesota and Wisconsin residents who wished to join. By 1955 it had enrolled the majority of all residents of the Minneapolis-St. Paul area and was taking steps towards constructing its own hospitals.

There were about thirty HMOs operating in the United States in 1970. Nobody had data that could prove such systems were superior, either in terms of cost or quality of care, to fee-for-service medicine. But Ellwood was a thoroughly convinced crusader. And he successfully bent Nixon's ear.

The original Nixon plan, as outlined by HEW Secretary Elliot Richardson, was a complex one under which the federal government would reimburse most health care costs using funds drawn from employer and employee levies. Patients would have considerable deductibles to pick up, but health care would be quite affordable for anyone who opted to enter an HMO. The president wanted Congress to spend \$23 million in seed money and another \$300 million in loan guarantees to promote creation of more HMOs. And he envisioned that within five years — by 1976 — some 1,600 HMOs would have blossomed across the nation to meet the health needs of 90 percent of the population.

Both the Nixon plan and Kennedy's Health Security proposal ultimately failed in Congress. In 1971 and '72 they were caught up in presidential election campaigning and no less than four alternative plans were offered by legislators working with the insurance industry,<sup>496</sup> the AMA,<sup>497</sup> the American Hospital Association,<sup>498</sup> and a host of others.

Conspicuously absent from the debate were the patients.

Electioneering stalled everything until 1973. And then the Watergate scandal<sup>499</sup> so

paralyzed the Nixon White House in 1973-74 that it was unable to defend the president's health care proposal. Congress eventually passed a bill containing some of Nixon's ideas: it lent modest support to HMOs, spurring some development in that area. But by 1985 the nation would have just 323 HMOs — a far cry from the 1,600 Nixon had envisioned.<sup>500</sup> Finally, the economic tailspin of 1973-74 killed all hope — once again — that Congress would create a comprehensive plan to provide health care for Americans. There simply was no money to spend.

Worse yet, Caspar Weinberger, who succeeded Richardson as secretary of HEW when the former was shifted to Watergate-related duties, told Congress in 1973 that in order to slow health care inflation caps had to be put on all federal reimbursements for hospital and physician's costs. The administration started a phase-out of Hill-Burton (which would cease in 1976) and allowed recipient hospitals to lower their mandatory charity work from 5 percent of total patient clientele to just 3 percent. All general medical and infectious diseases research funds to the NIH were slashed by millions of dollars, though cancer and heart disease research budgets rose. Community health centers — which had been hallmarks of public health, offering preventive care to underserved areas — were closed. Most subsidies for science and medical education and for advanced training were cut to the bone. Some Medicare costs were shifted away from the federal government; the patients expected to pick up more of their tabs.<sup>501</sup>

The United States ended up taking a trajectory on health care that was almost the exact opposite of the one Nixon had initiated in 1971. Instead of emphasizing collective health and disease prevention, the path now would lead to further medicalization and individualization. Sadly, the data would later show that America was thereby exiting the period of her greatest health improvement since the Biggs era. Between 1968, when LBJ's programs were in full

swing, and 1975, when budget cuts had whittled such programs to the bone, the overall U.S. annual death rate had dropped 14 percent.<sup>502</sup> Every health indicator had shown remarkable improvement. Cardiovascular deaths: down by 23 percent. Infant mortality: dropped 38 percent. Maternal mortality: plummeted an astounding 71 percent.

That was the legacy of an aggressive war on poverty and expansion of health services for the poor. It occurred in a period that was denounced by the AMA and American Hospital Association as “regulated” — a code word meaning “very bad” or even “socialistic” in the New Right circles of rising political superstar California Governor Ronald Reagan.

The nation’s new mood was characterized by strong regional differences in both the structure and financing of health care. And many parts of the country would see tremendous diminutions in care for the poor, the uninsured, rural residents, and those living in inner city slums.

President Nixon’s general health plans may have gone awry, but he had a striking impact on one critical area of public health: use of illegal drugs. During his 1968 campaign, Richard Nixon had delivered at Disneyland a key speech on drug abuse.<sup>503</sup> “As I look over the problems in this country,” he said, “I see one that stands out in particular: the problem of narcotics.” Drugs, he averred, “are among the modern curse of the youth, just like the plagues and epidemics of former years.”

The solution, the Republican candidate insisted, was more cops, more FBI, more special military forces, more customs agents. The drugs Nixon feared — marijuana, psychedelics, heroin, amphetamines — were, in his rhetoric, characterized as problems among hippies, radicals, and blacks. But from the outset it was African American drug use that most disturbed



Nixon.

“I believe in civil rights, but the first civil right of every American is to be free from violence, and we are going to have an administration that restores that right in the United States of America.”<sup>504</sup>

In his published diary of 1969, Nixon aide H.R. Haldeman noted that the president “emphasized that you have to face the fact that the whole problem is really the blacks. The key is to devise a system that recognizes this while not appearing to.”<sup>505</sup>

Nixon appointed law and order rhetorician John Mitchell to be his attorney general, and, together with aide John C. Ehrlichman, they drafted a series of law enforcement bills that constituted the basis of the administration’s War on Drugs. The key elements were an eight-fold jump in the budget of the Law Enforcement Assistance Administration, which trained and supplied local police departments; new authority to shut U.S. borders if necessary to close off drug traffic; and greater powers for the Federal Bureau of Narcotics and Dangerous Drugs.

At the time, 1971, the U.S. total illegal drug trade was estimated to be worth \$2 billion, with marijuana, thanks to some 40 million pot smokers, constituting the bulk of the market. In contrast, the numbers of heroin users were thought to be quite small, amounting to fewer than three out of every 1,000 people.<sup>506</sup> And over the years the relative use rates of most drugs, and deaths associated with them, would remain fairly stable.<sup>507</sup>

On a per capita basis, there was more narcotics use in inner city areas than in white suburbs — though even well-manicured suburbia had its share of heavy drug use and heroin overdoses.<sup>508</sup> This was no coincidence. Mafia narcotraffickers who brought processed heroin into the United States during the 1950s, ‘60s, and ‘70s deliberately targeted African American and

Hispanic urban communities. Further, by 1969 the cheapest high-grade heroin in the world was sold on the streets of Saigon. Black and Hispanic men disproportionately served in the military in Vietnam, and it is estimated that up to 20 percent of the war's veterans came home addicted to heroin.<sup>509</sup>

The Nixon administration's War on Drugs was not, however, limited to law enforcement. The perspective guiding the administration was an adaptation of contagion models of disease. Nixon's staff thought that heroin users committed crimes in order to obtain drugs and that neighborhoods that festered with crime became drug-permissive environments. The heroin user, then, had to be broken of his habit in order to prevent the contagious spread of drug abuse.<sup>510</sup> So in 1971 the administration allotted funds for creation of methadone and counseling treatment centers nationwide, directed by a Special Action Office located inside the White House.<sup>511</sup> It was a public health approach, taken in tandem with classic law enforcement tactics. Given the austere conditions dictated by the economy at the time, however, the administration phased out federal support of methadone and treatment centers beginning in 1973, intending that the states would pick up the burden. As it turned out, few states would be able or willing to carry the onus, and by 1980 treatment programs would have seriously deteriorated, even disappeared. Nationwide there was far more popular support for incarceration, versus treatment, of drug addicts.

First in the world to offer free methadone to heroin addicts had been New York City. The program was pioneered in 1963 by City Health Department physician Vincent P. Dole. He had developed the model of storefront clinics out of which liquid methadone was dispensed daily as a safe alternative to heroin injection. Four decades later that basic model would still form the basis

of chemical treatment of heroin addiction.

The non-methadone treatment model, based on group support and heavy counseling, rose out of Los Angeles County, from the privately-funded Synanon Center in Santa Monica. Though the Synanon approach would undergo many refinements over coming years, it, too, would essentially still be the basis of the non-chemical mode of treatment four decades later.

Much of the funding and energy behind the treatment efforts dissipated with Nixon's resignation in August of 1974. Never again would the federal government play as aggressive a role in the public health aspects of addiction.<sup>512</sup>

Vice President Gerald Ford, a Michigan Republican, took over the White House and served as president until January, 1977. His brief tenure was marked by emergence of startling new infectious diseases issues.<sup>513</sup>

Though most people in the United States who thought about health trends in 1975 had their eyes on chronic diseases, it was the Golden Age for the Centers for Disease Control in Atlanta. All over the world the CDC was leaving its imprint, notably in battles against malaria, smallpox, yellow fever, and newly-recognized hemorrhagic fever diseases in Latin America. Key to the CDC's success was the Epidemic Intelligence Service (EIS) — the brainchild of the agency's Dr. Alexander Langmuir. It attracted the world's top infectious diseases specialists for scientific and advanced crisis intervention training. The CDC then deployed the young recruits to handle microbial outbreaks from California to Calcutta. Langmuir mentored a whole generation of EIS officers who, by the mid-1970s, were stamping out epidemics all over the world.

In 1976 America celebrated its Bicentennial in what would prove to be the busiest, and

politically hottest, year the CDC would ever face: a mysterious killer virus emerged in extremely remote parts of northern Zaire and southern Sudan. The Zairois government — a critical U.S. Cold War ally — requested CDC assistance. The CDC's Dr. Karl Johnson headed up an international team that intervened in what was the first recorded epidemic of the Ebola virus.<sup>514</sup> A group of American Legion members celebrating the Bicentennial in Philadelphia suffered, and many died, from a previously unknown disease that commanded the laboratory resources of the CDC for much of 1976 and '77. And the agency came to fear that the 1918 killer flu, Swine Flu, had returned and might claim millions of lives.

Sadly, Legionnaires' Disease, as it came to be known, and the fiasco triggered by the Swine Flu scare would so dominate public concern and attention in 1976 and '77 that few people in the United States would even realize that the CDC and WHO had achieved the greatest public health victory of the twentieth century: they had wiped out smallpox.<sup>515</sup>

That victory wasn't, however, what made the CDC a household acronym in America. Rather, it was the scandals — and America was quite fixated on scandal in 1976, having just weathered the Watergate debacle and a rather sorry end to the Vietnam war.

In the case of Swine Flu, the CDC and the U.S. Army appear in hindsight to have overreacted to a single death and a handful of secondary cases attributed to a new strain of influenza that struck a military base in New Jersey in the winter of 1976. And the White House, for its part, leapt way beyond the evidence, sending the country into a real public health fiasco.<sup>516</sup>

The three most important outcomes of the Swine Flu affair were demonstration of the inadequacies in the U.S. vaccine system; loss of public faith in the CDC and, more generally, in public health leaders; and an insurance legacy that would impede vaccine efforts for the rest of

the century.

Consider this, the CDC told HEW Secretary Forrest Matthews, if, just if, this strain of Swine Flu is as lethal as the swine-type flu that killed more than twenty-five million people worldwide in 1918-1919, wouldn't an epidemic be far worse today? After all, we have airplanes now, and millions of people moving about the planet in cars and by railroad. And there are four billion people on Earth today, compared to one billion when Swine Flu last struck. So, if this is an equally dangerous virus, is it not reasonable to assume that the death toll it would exact could be in the hundreds of millions?

The CDC had no way of knowing whether the 1976 virus was, indeed, anything like the 1918 one because there was no sample of the old killer to which they could compare the new influenza. But because both flus induced antibody reactions against pig antigens in infected people, there was a worrisome swine link between the two. Flu strains that had arisen from pigs were thought by experts to be the most dangerous to people. President Ford had to make a command decision based on a "what if." He opted for rapid production of a vaccine and mass immunization of the U.S. population.

And that's when the limitations of the U.S. vaccine production system were revealed. Once, to meet such crises, Hermann Biggs and Leona Baumgartner could order mass production of vaccines out of their New York City laboratory. Once, Truman and Eisenhower had been able to rally manufacturers to mass produce vaccines for U.S. soldiers. Once, Jonas Salk had made a discovery and a few months later millions of kids were getting polio shots.

But by 1976 the vaccine industry was shriveling as drug companies found pills and medicines to be far more profitable markets. A few lawsuits, particularly those related to the

Cutter Laboratory polio incident, had sent chills through the pharmaceutical industry. Companies that still had vaccine production facilities were loath to get involved in a rush job without protection from litigation. And private insurance companies balked at the prospect of insuring them.

President Ford asked Congress to pass a bill making the federal government liable for the vaccine. This essentially put HEW in the position of indemnifying the drug companies.

The drug companies had a hard time meeting the CDC's goal of having 100 million doses of vaccine ready in time to vaccinate Americans in September, before the typical October flu season commenced. One company misinterpreted its instructions and made the wrong vaccine.

And as the vaccine became available, skeptics drew sizeable media attention, arguing variously that there was no Swine Flu, that the vaccine was dangerous or that the entire effort was a fiscal boondoggle. Then some vaccinees fell ill with Guillan-Barré Syndrome, a neurological disorder that might have been linked to the vaccine,<sup>517</sup> and the public turned its back on the immunization campaign.

By the time the dust settled, former Georgia Governor Jimmy Carter was president, HEW was flooded with lawsuits alleging all sorts of vaccine-associated problems, and no epidemic had materialized.

The Swine Flu fiasco would still resonate in the vaccine industry and in public health three decades later. It would render Congress unwilling in the future to consider carrying any liability for life-saving vaccines, and generally skittish about having the federal government involved in the business of making vaccines.<sup>518</sup>

The three most devastating flu epidemics of the twentieth century had caught public

health officials by surprise. The best guess on the costs to the United States of the 1918-19 was at least 600,000 lives and \$100 billion in medical care and lost productivity. A 1957 Asian flu claimed 70,000 U.S. lives and cost \$4 billion. And the 1968 Hong Kong Flu killed nearly 35,000 people in the United States and cost \$3 billion.<sup>519</sup> By 1976 an international flu surveillance network was in place, run by the World Health Organization. Its goal was to spot new influenza strains as early as possible giving vaccine makers plenty of time to generate new, safe products.

The Swine Flu fiasco heightened industry concerns about safety and litigation,<sup>520</sup> and put additional pressure on the WHO surveillance network. But the WHO network had many limitations, and would continue to be vulnerable to surprises throughout the century. There were major gaps in surveillance in Asia, especially China, where nearly all influenza strains seemed to originate.<sup>521</sup> Further, even at the end of the twentieth century much about influenza would remain elusive, including an understanding of how to predict which particular strain of the virus might prove to have epidemic potential.<sup>522</sup>

“It is obvious now that there is no predictable cycle to influenza pandemics,” flu expert Edwin Kilbourne said.<sup>523</sup> “Planning for annual epidemics is equivalent to forecasting hurricanes in the Southeast: we know it will come, details to follow. Our weather watch is a pandemic alert when a major antigenic shift occurs. But defining a pandemic is a little like defining pornography: we all know it when we see it, but the epidemic edges are a bit blurred.”

For example, between 1978 and 1994 three swine flus would cause human outbreaks in Japan. The government’s entire public health apparatus would go on alert each time, but no epidemics would occur. And nobody would understand why.<sup>524</sup> One possible explanation: perhaps those three swine strains were so similar antigenically to past influenzas that the

Japanese people were immune. Yet in Norway in 1993 a new influenza strain would take a high toll among the elderly population, even though the virus in question was antigenically similar to one the Norwegians had previously survived and to which most of the elderly were immune.<sup>525</sup>

As there was no obvious way to make flu prediction more certain and thus increase the lead time between first recognition and a full fledged epidemic, the public health focus would remain for the rest of the century entirely on the side of vaccine development.<sup>526</sup> Only three countries in the world, however, had mass flu vaccine production capacities: Russia, France, and the United States. (Minor vaccine production capacities existed in a few additional countries.) And by 1990 the Russian system would have deteriorated to the point where few outsiders trusted the reliability and safety of the product. If there were an emergency, even France and the United States — both of whose vaccine production capacity was privatized — would fail to meet the immunization needs of even their own populations. The United States would be in the position of denying vaccine to neighboring Canada and Mexico. France would have to decline vaccine to fellow European Community members.

Even if, in the face of an emerging pandemic, unlimited resources were thrown at vaccine production, little could be done to boost its scale because the viruses used for vaccines had to be grown on chicken embryos, and there simply are only so many hens laying so many eggs worldwide at any given time.

The 1976 Swine Flu fiasco did serve to awaken U.S. public health leaders, give them a dose of humility, and allow them to recognize the weaknesses in their public health safety net. Despite surveillance and vaccine efforts every year after 1976, influenza would remain a major killer for the rest of the century, and the number of deaths would always be a function of the



number of people infected. (That is, the infection and death rates moved in tandem, regardless of the flu strain — except in true killer years such as 1918.) In any given year about 100,000 Americans, mostly elderly, would die of influenza or the bacterial pneumonia that was flu’s opportunistic companion. Each year, between eighteen and forty-two million people in the United States would seek outpatient care for their flu, and another twenty-one to fifty million would suffer at home and never seek medical treatment.<sup>527</sup> But those numbers would have been far worse were it not for annual vaccination efforts. Studies by the CDC showed that mass vaccination each year reduced flu rates among elderly Americans by 31 to 45 percent, even in years when the strain of flu that ultimately hit the United States only weakly resembled the one to which the vaccine was directed.

In a true global catastrophe, however, one involving a devastatingly virulent influenza strain, the United States would be able, at best, to rapidly produce 100 million vaccine doses.

“Think of the political reality,” Kilbourne would exclaim at a 1995 WHO meeting. “Would you really dare withhold vaccine from any group?”<sup>528</sup>

In 1995, after years of review and planning, Dr. Peter Patriarca of the FDA would conclude that there was little that could be done to enhance public health preparedness for a truly devastating flu pandemic. “And we’re not talking about an Andromeda Strain that’s coming down from outer space,” the FDA planner would warn. “We’re actually talking about a reasonably probable event.”<sup>529</sup>

Reflecting on the Swine Flu fiasco, Dr. Walter Dowdle, who was a key player at the CDC at the time and one of those who advised mass vaccination, said, “1976 was a vaccine in search of a pandemic....Nineteen seventy-six will probably go down as one more influenza vaccine

failure. And 1976 was really a dry run for the next great pandemic. To me, the big lesson...was the desirability of more clearly separating the process of scientific decision-making from the political process....All of the big programmatic decisions were political.”<sup>530</sup>

At least equally political was the response to emergence of Legionnaires’ Disease in 1976.<sup>531</sup> For four days during the July ‘76 U.S. Bicentennial, members of the American Legion frolicked in a cluster of Philadelphia hotels. Within days some of the Legionnaires and their wives would be fall ill: by summer’s end, 182 of them would have had symptoms of the same mysterious disease, and twenty-nine would have died of it.

Because the cause of these deaths wasn’t immediately explicable by the CDC, all manner of theories arose — some reasonable, but many outrageous. As the months wore on without an answer to the Legionnaires’ puzzle, members of Congress became agitated and called hearings to denounce the CDC. Claims of cover-ups arose from members of the public inclined to think in terms of conspiracies. And with the public health agency already under attack over its handling of Swine Flu, the Legionnaires’ mystery further fueled the fire of popular suspicion that, at best, the CDC was inept, at worst, there was something sinister going on.

Such accusations were grossly unfair, of course. The CDC was faced with an unknown microbe that was of a class of germs not previously considered particularly pathogenic. And it was spread by a means that hadn’t previously been a source of disease. Such novelty is rarely subject to swift analysis. In January, 1977 the CDC announced that the culprit was a bacterium they dubbed *Legionella*, and it was spread through air conditioning systems. *Legionella*, it turned out, was a scum bacterium that grew in the biofilms that formed at the interfaces of air and non-salty water. Air conditioners, showers, misters, humidifiers, and similar devices that sprayed

moist air were rife with biofilms, and if the device was not cleaned regularly and filtered, those scum layers would grow and become *Legionella* breeding grounds.

Once the organism was discovered, the CDC and the state public health agencies set to work testing human samples saved from past, mysterious pneumonia outbreaks. It turned out that 235 people in the United States had suffered Legionnaires' Disease at two different locations in 1976. And for years thereafter the numbers of newly identified cases would rise — there would be 1,615 cases in 1994.<sup>532</sup>

Two days after the CDC announced discovery of *Legionella*, Jimmy Carter was inaugurated as thirty-ninth president of the United States. He inherited a nation still suffering from stagflation and reeling with disappointment in its political leaders. The national debt was the largest in U.S. history: \$66 billion.

In some localities — notably New York City — the economic situation was far more serious than mere Nixonian “stagflation.” New York in 1977 was pennies shy of having to declare bankruptcy, Mayor Abraham Beame was fighting for political survival and virtually all municipal services were in disrepair or chaos. Beame's predecessor, the flamboyant John Lindsay, had implemented unusual fiscal policies, borrowing against uncollected revenues. These deficit financing practices, spread over the Lindsay mayoralty (1966-73), left the city deeply in debt. In addition, Lindsay had merged many divisions and departments into a handful of agencies, the directors of which had immense power but little time to provide adequate attention to any single department. The Department of Health was placed within one such superagency.<sup>533</sup>

Beame, a Polish immigrant educated at City College of New York, inherited Lindsay's

headaches and faced an impossible challenge during his brief tenure (1974-77). Lindsay's loans came due, but city coffers were empty, and New York City's credit rating plummeted, municipal employees went on strike and crime rates soared. Pay rates for city professional employees, such as health department physicians and nurses, were so far below scale as to be unpalatable to even the most altruistic and zealous guardians of public health.

Everything deteriorated. The city streets were full of uncollected garbage, plows were slow to clear the impassable streets after snowstorms, entire neighborhoods were ruled by gangsters, and city buildings went without maintenance for days on end. The social erosion fed upon itself: as New York City became less liveable, more of the middle and professional class tax base fled in search of decent public schools and safe, clean streets. Gotham's troubles fed upon one another: each year tax revenues declined, making debt repayment more difficult.

The public health laboratories fell apart. Aging equipment went unrepaired and, when truly broken, unreplaced. Basic biological and chemical supplies were under-purchased. Personnel hemorrhaged out of the system as their long-stagnant pay rates were rendered ridiculous by rising national inflation. The caliber of replacement personnel was so poor that many dedicated top-level professionals in the department quit in disgust. Public health clinics became so seedy that only the most desperately poor New Yorkers crossed their thresholds.

In the same 1976 elections that swept Jimmy Carter into the White House, Ed Koch was elected mayor of New York City. A native New Yorker, Koch had studied law at New York University and gained a reputation for having an acerbic, yet effective style. "How'm I doing?" he would ask voters, using his trademark phrase. Despite his often remarkably dismissive handling of criticisms and complaints — particularly from the city's African American

community — Koch would be twice reelected, serving as mayor until 1989. Koch's top first term priority was city finances, which he set to order by initially executing more painful cuts.

Often in opposition to Koch was investment banker Felix Rohatyn who, in 1975, was appointed by New York Governor Hugh Carey to head up the Municipal Assistance Corporation, or MAC. The MAC acted as a para-governmental operation, bringing in investors, struggling to boost New York's bond rating, and rescheduling the city's loans. Years later, politicians and historians would debate where credit for salvaging New York's desperate economy ought to be placed: with Mayor Koch, Rohatyn's MAC, the end of national stagflation and the resulting rise of Wall Street, or a combination of those factors. But by 1980 New York City was beginning to see a light at the end of its long, dark, tunnel of fiscal gloom.

The Carter administration had nothing but disdain for Koch and his handling of Gotham's affairs. The White House worked directly with Governor Carey and Felix Rohatyn, offering whatever assistance they thought might pull New York City out of its all-but-official state of bankruptcy. Koch and Carter, though both Democrats, were personal enemies. Carter was convinced that the mayor was sabotaging White House efforts in New York and fomenting discontent with his leadership within the Democratic Party.

“I went to New York....Koch rode in the car with me,” Carter wrote in his diary, “and I gave him hell for his daily stabbing me in the back.... I told him that with friends like him, I didn't need any enemies — and with supporters like him, I didn't need any Republican opponents.”<sup>534</sup>

Ever since the LaGuardia days, New York City had enjoyed being a favorite testing ground for new federal programs executed by Democratic presidential administrations. Not so

during the Koch/Carter years. As a result of their feud, the executive branch encouraged HEW, EPA, and other federal agencies to look to other cities as recipients of such things as new public health and environmental campaigns.

On March 28, 1979 a nuclear power plant outside Harrisburg, Pennsylvania — just over 100 miles from New York City — suffered a near-meltdown. An accident in the reactor caused the plant to shut down and its nuclear core to overheat.<sup>535</sup> Radioactive fallout was released. It was the worst nuclear accident in U.S. history, though it would pale compared to the 1986 Chernobyl catastrophe in the Soviet Union.

New York City's beleaguered Department of Health, like its counterparts throughout the Northeast, was deluged with inquiries from anxious residents who were convinced they had suffered dangerous radiation exposure. In the days following the Three Mile Island accident, Americans heard claims from every manner of supposed public health expert that ranged from certainty that the incident would cause a massive future increase in the U.S. cancer and birth defect rates to "there was no real accident." Because the debate begun decades earlier by Pauling and Teller had never been scientifically or politically resolved, the American people were left to panic or yawn according to their own inclinations. The Nuclear Regulatory Commission (formerly the AEC), EPA, White House, HEW, and public health departments all over the country sought to calm the public. But distrust was high, credibility low. Many Americans disbelieved the NRC's most basic information, such as details of the amounts and types of radiation released in the accident. And if that data could not be trusted, all subsequent assumptions regarding human exposure and health effects were suspect.<sup>536</sup>

Years later most health-related details regarding Three Mile Island would remain murky.

Pennsylvania Governor Richard Thornburgh complained from day one that he couldn't get any straight answers out of the Met Ed Company, which ran the reactor. Later that year, Met Ed officials were found to be lying about key details in congressional testimony. Crucial radiation detectors that should have been in place on and around the power plant either had never been installed or were missing by the time independent investigators reached the site. At NRC hearings, some of the plant's engineers admitted to a series of pre-accident failures and prior radiation leaks at Three Mile Island.

When the accident first occurred, Met Ed officials told the media that a cloud of fallout radiating at 40 rads an hour had been released and was heading toward local towns. We will never know how accurate that statement may have been, and almost nobody who heard that news even knew what it meant. Even a physicist would have had a hard time calculating how 40 rads of radioactive energy, rems of human exposure, the dose received by an individual, and relative risk all interrelated. What could be said — and was said by Governor Thornburgh: it was a lot of radiation and it was dangerous. Thornburgh ordered evacuation of 3,500 children and pregnant women living around the plant; what followed was a stampede of 200,000 panicked Pennsylvania citizens.

When, years later, Three Mile Island's disaster was long-forgotten by most Americans, scientists would still be debating how many people may, or may not, have suffered cancer as a result. Ten years after the accident the clean-up bill topped \$1.2 billion and it wasn't over. The contaminated plant and its nuclear waste aren't scheduled for final burial and clean-up until 2020.<sup>537</sup>

Like the Swine Flu fiasco of 1976, the mixed messages Americans received regarding the

health impact of Three Mile Island profoundly undermined the credibility they granted to government health officials. Though they certainly had not been responsible for the incident, and, in light of the Cold War cover-ups at AEC and NRC, could hardly be blamed for their lack of clarity on radiation risks, public health leaders suffered nevertheless.

Meanwhile, the energy crisis that had begun during the Nixon administration continued into Carter's presidency, exacerbating economic woes and pushing development of alternative sources of energy, such as nuclear power. Rising Middle East tensions would only worsen the situation and ultimately doom Jimmy Carter to a single term of office.<sup>538</sup>

Such periods of economic strain are, historically, perilous times in which to initiate controversial policy maneuvers. Nevertheless, President Carter, like Nixon before him, was convinced that the American health system was out of control. Like his predecessors who had visited the issue, Carter never questioned the basic premise that good health was synonymous with good health care. The underlying principles of public health versus those of medicine weren't debated. Rather, as had Truman, LBJ, and Nixon, Carter set out to broaden access to all medical treatment while, at the same time, controlling costs:<sup>539</sup>

Although American medical skill is among the best in the world, we have an abominable system in this country for the delivery of health care, with gross inequalities towards the poor — particularly the working poor — and profiteering by many hospitals and some medical doctors, who prey on the vulnerability of the ill. From the enormous profits, unnecessary hospital facilities can be built; the cost of the empty beds and under-utilized equipment is financed by the public through higher taxes to pay for Medicaid and Medicare, plus bigger hospital bills and insurance premiums for private care. Normal competitive restraints on excessive costs are almost nonexistent.

Few Americans realize how much we are paying each year for this inefficiency. Major studies conducted in 1978 revealed that pre-capita cost of health care was almost \$1,000 per year, and these costs were doubling every six years!... Every



year, the average working American spends more than a full month's wages on health care; the total amounts to almost 10 percent of our gross national product.

In 1977 and '78 Carter, Secretary of HEW Joseph Califano (an attorney), and the President's health staff had a series of meetings in the White House aimed at setting goals for the nation's health and mapping out a comprehensive medical care scheme for all Americans. By the end of 1978, the administration had a plan that they hoped to introduce as a bill in Congress during the first months of 1979. It called for creation of federal standards of care that would constitute the legal minimum package employers could offer their employees. Federal subsidies would assist small businesses in meeting these costs for their employees. Employers would shop around to insurance providers, all of whom would have to offer at least the federal standard of minimal care. Carter assumed that competition would force providers to spice up their packages with additional benefits for the same rock bottom price.

From the outset, of course, the administration knew that Senator Kennedy still held to his dream of Health Security, which was much closer to a Canadian-style universal health care system. Kennedy had never given Nixon, Ford or Carter reason to believe he was prepared to compromise. Nevertheless, Carter pushed his plan, and tried to form a deal with Kennedy that would ensure his support in the Senate. The effort backfired: shortly before Carter's bills were introduced in 1979, Kennedy held a press conference denouncing the White House scheme. Kennedy's opposition came from Carter's left, and represented the outcry of constituencies of the poor and labor unions.

But when the Carter plan died days later on Capitol Hill, it was the victim not of Kennedy's opposition, but of a well-organized assault from Carter's right. Carter insisted that

his plan “would have saved the American people more than \$50 billion (!) in the first five years — after leaving the hospitals free to raise their prices 50 percent faster than the prevailing inflation rate.”<sup>540</sup>

Carter’s plan — and Kennedy’s — were running headlong into a new trend in U.S. health: the moral center of the debate on health had shifted. When the decade had opened, few political or medical leaders dared publicly challenge the basic principles of access and physician independence that had guided health reform arguments since the Roosevelt era. By the end of the Carter administration, however, “the prevailing assumptions about the need to expand medical care were reversed: the need now was to curb its apparently insatiable appetite for resources. In a short time, American medicine seemed to pass from stubborn shortages to irrepressible excess, without ever having passed through happy sufficiency,” wrote medical historian Paul Starr.<sup>541</sup> “Rising costs brought medical care under more critical scrutiny, and the federal government, as a major buyer of health services, intervened in unprecedented ways.”

Enter corporate medicine.

It lurked all around the edges of congressional debate. It rendered both the Carter and Kennedy plans irrelevant. When Fortune magazine, the leading platform of conservative capitalism, started an editorial rampage against medicine in 1970, anyone reading corporate tea leaves should have seen it coming. Medicine in the United States was a mess, Fortune opined, “inferior in quality, wastefully dispensed, and inequitably financed.”

It was, Fortune asserted, merely a “helter-skelter” system.<sup>542</sup>

For years physicians had been able to dictate not only their fees but also consumer demand. It wasn’t the patient or the insurance company that said, “let’s run another test on that

gall bladder.” It was the doctor. And the doctor decided how much to charge for the time he or she spent studying the test results and treating the patient. From the point of view of economists, this was insane. It meant consumers could not behave as consumers, shop around, choose not to buy or to buy elsewhere. And doctors induced demand. In other words, the supplier manipulated demand.<sup>543</sup> After creation of Part B of Medicare, the trend spiraled completely out of control.<sup>544</sup>

This constituted a market failure because there was no genuine competition, and consumers could not “vote with their feet and paychecks,” opting out of treatment.

In the 1960s and ‘70s the U.S. government tried to create more physician competition by easing immigration procedures for foreign doctors. And the doctor-to-patient ratio jumped: from 136 doctors per 100,000 Americans in 1960 to 197 per 100,000 in 1980 to 245 per 100,000 by 1990. The increase in doctors did improve the quality of medical care, especially for public hospital users, by shortening waiting times in ERs and clinics. But it completely failed to bring down costs. The immigrant physicians quickly learned how native doctors worked the system and set their prices accordingly.

In 1970 New York State’s health department tried to control doctor-induced inflation by saying, “Okay, we’ll reimburse \$8 per Medicaid visit. That’s it. End of story.” There was great confidence that this would hold costs to a reasonable level. But six months later, physician fees had exploded, costing the state 20 percent more. Why? Compelled to hold the line at \$8 per visit, physicians shortened their average time per patient to five minutes, crammed more cases in each workday, and billed for larger net sums.

Physicians, of course, were only one piece of what economists saw as an irrational system. A 1976 study by the National Center for Health Statistics<sup>545</sup> found that total physician

costs in the U.S. for 1972 were \$16.9 billion. Hospitals charged a total of \$34.2 billion. And pharmaceuticals added \$5.6 billion. The total tally was about \$133 billion, or 8.6 percent of the U.S. GNP. During the time Congress was debating the Carter and Kennedy plans, costs soared further and by 1980 the tally was \$249 billion — 9.5 percent of GNP. By 1981 it was \$286.6 billion — 9.8 percent of GNP.<sup>546</sup> In terms of per capita expenses, Americans were putting out \$358 a year for medical care (and just pennies for public health) during the Nixon Administration, \$604 a year during Ford's presidency, and by the time Carter yielded the White House to Ronald Reagan per capita health care spending would be \$1,225 a year.<sup>547</sup>

Dorothy Rice of the National Center for Health Statistics in Washington, D.C., discerned other key trends in U.S. health spending. She noticed, for example, that in 1950 just shy of two thirds of all medical costs were paid out-of-pocket by patients — only 9 percent was covered by insurance and 22 percent subsidized by federal and local governments. By the end of the Carter administration, just under a third of health care costs were out-of-pocket. Private insurance picked up 26.2 percent of the tab. And, crucially, government paid out the lion's share — 40.4 percent.<sup>548</sup>

Rice's data verified that the increase in health care expenditures was almost entirely a matter of rising prices, which, in turn, were the result of physician billings, wage increases for hospital personnel, and rising costs for high technology tests. The latter, Rice thought, had received too much blame and attention. Physicians and hospitals were the key to pricing.<sup>549</sup>

And by 1980 it was obvious that Medicare had shifted American health resources in the direction least likely to affect the public health: towards increased expenditures in the final days of life. The most dramatic gains in life expectancy in the United States were made between 1800

and 1930 when infant and child death rates plummeted steadily — at one time half of all annual deaths in New York City, for example, had been among children under fifteen years of age. By 1980 public health interventions and improved standards of living had brought child deaths down to less than 5 percent of all annual mortality.

But by 1980 Medicare was paying out most of its dollars for treatments directed at the opposite end of life, pushing to extend by days, maybe months, usually inevitable deaths. Rice saw, for example, that the average female (aged six months to sixty-four years) spent \$431 a year on health care, about half of that on intestinal, digestive, and ob-gyn problems. In contrast, the average woman aged 65 or more years spend \$1,707 a year on health care, with half those dollars going for cardiovascular treatments, strokes, heart attacks, hypertension, and the like. For males, the pattern was quite similar.

As hospitals filled with elderly, dying patients, death, itself, became a less dignified and private process.<sup>550</sup> Thus, Medicare was driving cost inflation for U.S. health care in general,<sup>551</sup> and undignified treatment of dying elderly patients was pushing Medicare's upward spiral.

The ethical implications of this observation were too overwhelming for Congress, Carter or the nation to face: who could possibly deny their mother or grandfather every conceivable chance to live a longer, pain-free life? Even if the odds that modern medicine could fulfill such a hope were less than 10 percent, on an individual basis the need for treatment seemed undeniable, even morally mandated. So if, on a population basis, this appeared to be little more than an irrational waste of resources, no politician dared whisper, "Pull the plug."

But by the end of the 1970s corporations saw the profit potential in this irrational system and began buying and consolidating hospital chains — and by 1990 more than 40 percent of the

nation's most prestigious hospitals would be investor-owned. At the same time, large employers were panicking over mounting medical expenses. The Fortune 500 companies gravitated towards health care plans that offered cost controls management styles similar to those used in the corporate world. Efficient health management was the target; the goal was to stop runaway costs — but without denying grandma a heart transplant.

It would prove to be both an impossible task and a mandate that had little if anything to do with public health. Indeed, time would reveal that such approaches to medical care management often ran contrary to the essential exigencies of public health.

It was in this shifting climate of health costs and concerns that Carter's plan failed in Congress, leaving Carter bitter and disheartened. The defeat exacerbated tensions and mutual disrespect between the White House and Congress. "In the final showdown," Carter charged,<sup>552</sup> Congress "was flooded with money, in the form of campaign contributions from the health industry....[T]he American Medical Association alone...contributed an average of more than \$8,000 to each of the 202 members of the House of Representatives who voted against the bill! Of the 50 members who accepted more than twice this average amount, 48 voted with the health industry. They prevailed, and the American people lost. The fight for equitable health care was one of my major efforts and one of my great disappointments."<sup>553</sup>

For their part, Democrats on Capitol Hill felt bombarded by a clumsy, inept Carter administration. Carter had never served on the Hill and came to Washington from the comparatively tame political environment of Georgia. With the nation's economy sinking further, an energy crisis in full swing, and the U.S. Embassy held hostage in Iran, Carter's own party leaders publicly expressed doubts about his ability to lead. Convinced that the source of

the problem was his own staff, Carter fired several of his cabinet members in July 1979 — including HEW Secretary Califano.

And he eliminated the Department of Health, Education and Welfare itself, creating two new departments: Education and, separately, Health and Human Services, of which Patricia Roberts Harris was named Secretary. The shuffle was intended to strengthen administration efforts to salvage the sagging U.S. public education system. But Carter was also convinced that Califano, more than any other member of his administration, had to go: the man was disloyal, ineffective on Capitol Hill, and responsible for the death of his health reform plan. Or so Carter believed.<sup>554</sup> The cabinet firings and reshuffling created the impression that the Carter administration was in a state of utter chaos, and little that the White House subsequently did alleviated public anxiety about his leadership.

But before Califano, and, a year later, Carter, left Washington, HEW took two important steps on behalf of public health. The first targeted refugees, the second, all Americans.

Between 1975 and 1980 the United States absorbed 900,000 refugees from Southeast Asia. The so-called “Boat People” poured out of Vietnam, Laos, and Cambodia, fleeing communism, defeat, or retribution for their perceived or real past collaboration with U.S. troops. Many were held for months in squalid, disease-ridden camps in Thailand and neighboring Asian nations before reaching the United States. In addition, as part of Carter’s call for global human rights, some 125,000 Cubans and 15,000 Haitians were granted legal residence in the United States during his tenure.

The Carter administration created the Office of Refugee Health, placed within HEW. Its purpose was to screen incoming immigrants for a host of communicable diseases and serve as a

cultural bridge for their entry into the mainstream medical system. Many of the Southeast Asian immigrants had never previously seen a hospital or undergone an allopathic medical exam. The main public health purpose of the refugee effort was to prevent introduction of tuberculosis into the communities in which the immigrants settled. Refugees found to have tuberculosis were put on antibiotics to clear their lungs and render them noncommunicable.

The second initiative, Healthy People, was published in 1979 and 1980. The two volume report was the brainchild of Surgeon General Julius Richmond, who believed it was time to inaugurate a “Second Public Health Revolution.” (The first had been the bacteriological revolution at the opening of the twentieth century.) In Richmond’s vision, the new public health targets were related to personal behavior: diet, smoking, drug abuse, exercise, accidents, and safety. Under Califano’s leadership, HEW’s Healthy People laid out precise 1990 goals for the United States.<sup>555</sup> They included: reducing infant mortality by 35 percent; an overall mortality decrease of 25 percent; and a 20 percent reduction in the numbers of days people over age sixty-five spent bed-bound by illness. If strategies for achieving those ambitious goals appeared weak or vague in the reports, few objections were raised.

After all, at long last U.S. public health actually had some goals.



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265. Dubos, R. Mirage of Health. Garden City, New York: Doubleday Anchor, 1961.
266. New York City Department of Health. Annual Report for the Years 1941-1948. New York, 1949.
267. U.S. Bureau of the Census, 1976, op. cit.
268. Some public health leaders believed that they had pushed TB rates down as low as possible. They argued that tuberculosis would always be in the environment and could not be further limited through then-standard control measures. Some openly doubted that patient identification and isolation procedures were even responsible for the TB decline witnessed since 1900. See, for example, Frost, W.H. "How much control of tuberculosis?" American Journal of Public Health 27 (1937): 759-766.
269. U.S. Bureau of the Census. County Data Book. Washington, D.C.: Government Printing Office, 1947.
270. The major company responsible for infrastructure contracts was the Henry J. Kaiser Corporation and its subsidiary, Permanente Metals. Over the war years Kaiser won about a quarter billion dollars worth of contracts. And the same company would later build California's healthcare HMO infrastructure, the massive Kaiser/Permanente system.
271. Another 200,000 Mexicanos entered California illegally during that time, most also ending up working the agricultural fields of Orange County and the San Joaquin, Salinas, and Imperial Valleys.
- African Americans also benefitted from Southern California's war wealth — they found employment in the defense industry. Some 340,000 blacks moved to Los Angeles between 1940 and 1945, and most of them settled in a neighborhood of central Los Angeles called Watts. These migration estimates are garnered from the previously cited 1976 Bureau of the Census publication and from White, R., 1991, op. cit.
- As racial tensions rose in Los Angeles, Japanese and Mexican Americans were the primary targets. The Los Angeles Police Department warned white citizens to watch out for zoot-suited Mexican gangs that the cops claimed were ruthlessly violent. In 1943 white soldiers on duty in Southern California roamed Chavez Ravine beating up the neighborhood's zoot suit-wearing young Hispanics.
- Japanese Americans, falsely accused of planning espionage or posing a threat to national security, were rounded up en masse just two months after Pearl Harbor. Most lost all of their property and businesses in the process. Some 120,000 Japanese Americans from California, Oregon, Washington, and other western states were interned in military-run camps throughout the war. At war's end most of these Japanese Americans returned to their homes to find both poverty and prejudice awaited them. In 1988 the U.S. Congress voted to apologize to the former

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internees and offered financial reparations for their suffering.

272. Ainsworth, A., 1946. As quoted in Gottlieb, R. and Wolt, I., 1977, op. cit.

273. The saga of the demise of Big Red is a sorry and a complicated one. In 1947 the U.S. Department of Justice brought charges against General Motors alleging that the company conspired with a variety of Los Angeles real estate and rail interests to destroy Big Red, committing the region to exclusive automobile use. GM executives were found guilty, but suffered no significant penalties.

274. These and other figures in this section come from Morden, M.G. and Bigger R. Cooperative Health Administration in Metropolitan Los Angeles. Los Angeles: Bureau of Governmental Research, University of California, Los Angeles, 1949.

275. When I grew up in Los Angeles County two decades later, these terribly boring recesses were routine. Promising young athletes were preferentially assigned to early morning physical education classes so that they would exercise during times of lower smog levels. Often, afternoon football practices, tennis lessons, and other physical activities were canceled due to smog. I can well recall the amazing sight of the San Gabriel mountains which, though located less than two miles from my childhood home, were rarely visible. During the winter, when Pacific winds usually blew the smog away, Los Angelenos of the 1960s often climbed up the San Gabriel and Santa Monica mountains to take in the rarely seen panorama.

276. Rosen, G., 1993, op. cit.

277. Ultimately air pollution levels in Southern California would come down as a result of several factors, all of which were largely outside the influence of public health authorities. The nature of heavy industry changed in the region as steel production moved overseas and cleaner aerospace production replaced war time aircraft and weapons manufacture. The petroleum industry, under pressure from the Environmental Protection Agency and the U.S. Congress, lowered the lead and sulfur contents of gasoline. Auto manufacturers were forced by the EPA to design more fuel efficient vehicles — an effort that got strong public/consumer backing during the oil crisis of the Carter administration. Under the 1970 Clean Air Act, Congress granted the EPA strong regulatory powers with which to watchdog and pressure the auto and petrochemical industries. And in the 1990s Los Angeles County set in motion laws requiring twenty-first century phase-out of all fossil fuel-powered automobiles.

278. In contrast, fuel shortages caused severe difficulties and numerous deaths in New York City during the war, amid the harsh winter of 1945. The city's department of health ordered fuel conservation and no home or office could raise its heat above sixty-eight degrees Fahrenheit. After the war ended, a coal miners' strike in 1946 forced New York to deplete its emergency reserves. And when Christmas of '47 brought record snowfall and sub-zero chill, thousands of New Yorkers were left without any heat.

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279. Jordan, P.D., 1953, op. cit.

280. Ibid.

281. New York City Department of Health, 1949, op. cit.

282. The term “venereal” disappeared from public health terminology in the 1970s and was replaced by the phrase “sexually transmitted disease” or STD. The word venereal was derived from the Latin word *venereus*, or “of Venus,” and referred specifically to heterosexual intercourse. By the 1970s the highest incidence rates of gonorrhea, syphilis, hepatitis B, and nearly every other sexually transmitted infection in the United States were seen not among heterosexuals, however, but among gay men. Thus, public health leaders stopped using the limiting expressions VD and venereal, replacing them with the broader term.

283. U.S. Bureau of the Census, 1976, op. cit.

284. Brandt, A.M. No Magic Bullet: A Social History of Venereal Disease in the United States Since 1890. New York: Oxford University Press, 1985.

285. This sorry state of affairs persisted throughout the twentieth century, and limited STD control programs for decades. By the 1990s the moralistic American society would, for example, have a gonorrhea rate of 150 cases per 100,000. In contrast, the sexually far freer and less moralistic Swedish society would at the same time have a rate of only 3 per 100,000 — fifty times lower. See Institutes of Medicine. The Hidden Epidemic: Confronting Sexually Transmitted Diseases. Washington, D.C.: National Academy Press, 1996.

286. Brandt, A.M., 1985, op. cit.

287. DuBois, W.E.B. “The health of black folk.” The Crisis 40 (1933): 31.

288. For further information on the Tuskegee syphilis experiment and its ramifications, see: Annas, G.J. and Grodin, M.A. “Apology is not enough.” Boston Globe (May 18, 1997): Focus C-1; Bowman, J.E., Corbie-Smith, G., Lurie, P., Wolfe, S.M., Caplan, A.L., Annas G.J., Fairchild, A.L., and Bayer, R. Letters in response to “Tuskegee as metaphor.” Science 285 (1999): 47-50; Brandt, A.M. “Racism and research: The case of the Tuskegee syphilis study.” In Leavitt, J.W. and Numbers, R.L., 1985, op. cit.; Clinton, W.J. “Apology.” Delivered May 16, 1997 at Tuskegee University, Alabama; U.S. Department of Health Education and Welfare. Final Report of the Tuskegee Syphilis Study Ad Hoc Advisory Panel. Washington, D.C.: Government Printing Office, 1973; Fairchild, A.L. and Bayer, R. “Uses and abuses of Tuskegee.” Science 284 (1999): 919-921; Glenn, J. “Remarks on S. 193.” U.S. Congressional Record, January 22, 1997; Heller, J. “Tuskegee syphilis experiment.” Associated Press, July 24, 1972; Jones, J.H. Bad Blood: The Tuskegee Syphilis Experiment. New York: Free Press, 1981; Kampmeir, R.H. “Final report on the Tuskgee syphilis study.” Southern Medical Journal 67 (1974): 1349-1353; Kampmeier, R.H.

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“The Tuskegee study of untreated syphilis.” Southern Medical Journal 65 (1972): 1247-1251; Smith, D.B., 1999, op. cit.; and Stolberg, S.G. “‘Unchecked’ experiments on people raise concern.” New York Times (May 14, 1997): A1.

289. In his apology, President Clinton said: “The eight men who are survivors of the study are a living link to a time not so very long ago that many Americans would prefer not to remember but we dare not forget. It was a time when our nation failed to live up to its ideals, when our nation broke the trust with our people that is the very foundation of our democracy. It is not only in remembering that shameful past that we can make amends and repair our nation, but it is in remembering that past that we can build a better present and a better future. And without remembering it, we cannot make amends and we cannot go forward....An apology is the first step....We need to do more to ensure that medical research practices are sound and ethical, and that researchers work more closely with communities.”

290. Garrett, L., 1994, op. cit.

291. U.S. Bureau of the Census, 1976, op. cit.

292. Garrett, L., 1994, op. cit.

293. U.S. Bureau of the Census, 1976, op. cit.

294. Ryan, F., 1993, op. cit.

295. Stevens, R., 1989, op. cit.

296. For a detailed history of U.S. malaria control efforts, see: Garrett, L., 1994, op. cit.; Institute of Medicine. Malaria: Obstacles and Opportunities. Washington, D.C.: National Academy Press, 1991; and Wernsdorfer, W.H. and McGregor, I. Malaria: Principles and Practice of Malariology. Edinburgh: Churchill Livingstone, 1988.

297. Patterson, J.T. Great Expectations: The United States, 1945-1974. New York: Oxford University Press, 1996.

298. Starr, P., 1982, op. cit.

299. U.S. Senate. National Health Program. Hearings before the Committee on Education and Labor, 77<sup>th</sup> Cong., 2<sup>nd</sup> sess., pt. 1, April 2-16, 1946.

300. Patterson recounts that by 1946, “American workers produced 57 percent of the planet’s steel, 43 percent of the electricity, 62 percent of oil, 80 percent of automobiles. Dominating the international economy like a colossus, it had three-quarters of the world’s gold supplies.” See Patterson, J.T., 1996, op. cit.

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301. In 1946 American women gave birth to 3.4 million babies; 1947, '48, '49, '50, and '51 each welcomed another 3.8 million babies; in 1952 some 3.9 million Americans were born; and every year from 1954-64 another 4 million American babies arrived.

302. Ibid.

303. Stevens, R., 1989, op. cit.

304. Weiss, L.D., 1997, op. cit.

305. Stevens, R., 1989, op. cit.

306. The union militancy of the 1930s was consolidated during the post-war 1940s into a handful of extremely powerful unions that absorbed or virtually eliminated smaller labor organizations. By 1945 such groups as the IWW were little more than romantic shadows of their former selves. Instead, American workers gravitated to the AFL-CIO, Teamsters, ILO, and other enormous unions whose chief demands were not worker control of the machinery of capitalism (the goal of the 1930s), but higher wages, longer paid vacations, job safety, forty-hour work weeks, and benefits packages that included pensions and medical insurance. Labor unrest over these issues peaked in 1946, when nearly two million Americans were involved in work stoppages and protests. Thereafter, throughout the remainder of the century, labor was more likely to march to the collective bargaining table to achieve its goals than to the picket line. By 1950, fifteen million American workers were union members; by 1960 the number topped seventeen million. See: Lichtenstein, N. "Labor in the Truman Era: Origins of the 'private welfare state.'" In Lacey, M., editor. The Truman Presidency. Woodrow Wilson International Center for Scholars. New York: Cambridge University Press, 1989.

307. These numbers come from the previously-cited U.S. Census tracts, published in 1976. The data reveal that total health spending in the United States, both public and private, rose by only \$300 between 1928 and 1940, and by about \$1.5 million between 1940 and 1945.

308. One of the most intriguing debates in contemporary medical economics is the "A Built Bed Is a Filled Bed" hypothesis. In both the United States and USSR following World War II, there was a phenomenal spurt of hospital construction, increasing the numbers of facilities and the quantity of beds within hospitals. And though in both societies populations were healthier than ever, doctors seemed to find cause to fill every bed that appeared. In the USSR it was clear this resulted in changes in clinical practice that prompted hospitalization for such trivial ailments as colds, back aches, and the flu. And workers came to use feigned ailments as ways to get long-needed rests. In the United States the picture was more complex. Physicians tended to lengthen hospital stays for such things as postpartum recovery, surgery, and pre-surgical tests. In rural areas patients were hospitalized as a matter of expediency, due to the distance they had to travel. A host of other issues played into the U.S. picture as well.

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Why did hospital beds fill in the United States? In the end there is no consensus among economists. And the lack of understanding in this matter fueled considerable controversial in the 1990s when managed care and HMO companies began cutting back on days of hospitalization, shifting patients to drop-in clinics, and closing units hospital units and beds. See Feldstein, P.J. Health Care Economics. Fourth Edition. Albany: Delmar Publishing, 1993.

309. What Michael Reagan calls “The Accidental System.” See his previously cited book by that title, 1999.

310. See: U.S. Congressional Budget Office. Containing Medical Care Costs Through Market Forces. Washington, D.C.: Government Printing Office, 1982.

311. In 1940 nearly all of the \$2.9 billion in personal health expenditures in the United States was paid out of pocket by individual patients or their families. In 1948 about 10 percent of the \$6.8 billion in personal health payments was covered by private insurance. By 1950 insurance would be picking up 14 percent of the tab; in 1960 it would cover 38 percent. And by 1970 fully two-thirds of all personal health dollars would be covered by private insurance.

312. Stevens, R., 1989, op. cit.

313. Jones, L. Great Expectations: America and the Baby Boom Generation. New York: Coward, McCann & Geoghegan, 1980.

314. New York Department of Health, 1949, op. cit.

315. Leavitt, J.W. “Be safe. Be sure. New York City’s experience with epidemic smallpox.” In Rosner, D., 1995, op. cit; and Duffy, J., 1968, op. cit.

316. New York Department of Health, 1949, op. cit.

317. Under the Jones Act of 1917 Puerto Ricans had the right to U.S. citizenship and could freely reside in America. After it became law, most Puerto Ricans who moved to the United States ended up in “el barrio” in New York City’s East Harlem or around the Brooklyn waterfront in smaller sites referred to as “las colonias.” The pace of Puerto Rican relocation to those New York neighborhoods accelerated after World War II, partly because the many Puerto Rican men who fought in the war received veterans benefits that could cover their costs of moving and starting new lives in El Norte.

318. Tuberculosis case rates rose in the city during the 1940s, partly because of this influx of immigrants. Thanks to the department’s dissemination of free antibiotics to indigent TB sufferers, however, death rates in New York fell from 44.8 per 10,000 in 1941 to 35.7 in 1948. With Manhattan case rates topping 200 per 100,000 in 1948, however, the decline in deaths was not, alone, sufficient cause for celebration. The highest case rates — approaching 400 per 100,000 — were among immigrants from Puerto Rico and other Caribbean countries. The

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lowest 1948 ratios — 176 per 100,000 — were among native-born African Americans.

319. See: U.S. Census Bureau, 1976, *op. cit.*; and Smith, J.S., 1990, *op. cit.*

320. The term “March of Dimes” was coined in 1938 by movie star Eddie Cantor who produced a fundraising newsreel shown in movie theaters that depicted high-kicking women dressed as dimes. Thereafter the campaign appealed to children, asking them to collect dimes. Every year gala March of Dimes events, packed with celebrities, broadcast pleas for the nation’s dimes over the radio. The search for a polio vaccine was funded directly by the people of the United States. Little funding for polio research came from the NIH, and Dr. Jonas Salk never got a dime — excuse the pun — from the federal government for research grants for his vaccine efforts. When asked why he hadn’t sought a lucrative patent for his product, Salk responded, “Why not patent the Sun?”

321. See Robin Marantz Henig’s account of the Nobel-winning and subsequent research by Weller, Enders, and Robbins in her previously cited 1997 book.

322. Established in 1941, the Public Health Research Institute, or PHRI, was jointly funded by a variety of charities and the New York City Department of Health. Its original director, Dr. Thomas Rivers, was one of the most famous virologists of the day. Originally the City contributed \$100,000 a year to PHRI, a not inconsiderable sum in 1941. Mayor La Guardia doubled that sum, and by 1945 PHRI was the most important center of its kind in the United States, possibly worldwide.

323. A hallmark of bioethics is that first safety — net efficacy — trials of new vaccines or drugs are, when possible, tried on volunteers who are least likely to suffer if the product failed. Since Salk could not be 100 percent sure that his vaccine was safe, and that he had not left any living viruses in his inoculum, he tried it first on children who already had polio. This was entirely in keeping with ethical standards.

324. He presented his findings to an NFIP meeting held in Hershey, Pennsylvania, in January 1953, attended by Public Health Research Institute director Tom Rivers. To River’s mind Salk had hit a home run, and though other scientists at the gathering were skeptical, and Salk would be embroiled in politics and bickering for months, Rivers rushed home to spread the news. And to support further research — which led to Freund’s adjuvant discovery.

325. The children who were Polio Pioneers were accorded hero status and received considerable media coverage. Many of them still today proudly display their Polio Pioneer buttons.

326. For details about the travails of the polio clinical trials, see: Smith, J.S., 1990, *op. cit.*

327. As quoted in Smith, J.S., *ibid.*

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328. Ibid.

329. HEW was formed in 1953 by President Eisenhower, merging three enormous agencies responsible for health, education, and welfare. In the merger the National Board of Health was eliminated — a move many critics at the time claimed weakened the clout of public health.

330. In a comprehensive analysis by the Institute of Medicine it was found that the risk of contracting paralytic polio from Sabin's oral vaccine was 1:520,000 for the first dose, and 1:12,300,000 for each subsequent booster. See Institute of Medicine. Stratton, K.R., Howe, C.J., and Johnston, R.B., editors. Adverse Events Associated With Childhood Vaccines: Evidence Bearing on Causality. Washington, D.C.: National Academy Press, 1993.

331. Nickum, C. "Malaria transmitted by hypodermic syringe." Journal of the American Medical Association 100 (1933): 1401-1402.

332. Halpern, M. "Malaria among drug addicts in New York City; epidemic of aestivo-autumnal and quartan malaria by use of contaminated hypodermic syringes." Public Health Reports 49 (1934): 421-423.

333. Capps, R.B., Sborov, V., and Scheifly, C.H. "Syringe-transmitted epidemic of infectious hepatitis, with observations regarding incidence and nature of infectious donors." Journal of the American Medical Association 136 (1948): 819-824; Darmady, E.M. and Hardwick, C. "Syringe-transmitted hepatitis." Lancet 2 (1945): 106; Findlay, G.M. "Infective hepatitis in West Africa; syringe-transmitted hepatitis." Monthly Bulletin Min. Health and Public Health Lab Service 7 (1948): 32-39; Hughes, R.R. "Post-penicillin jaundice." British Medical Journal 2 (1946): 685-688; Laird, S.M. "Prevention of syringe-transmitted hepatitis." British Journal of Venereal Diseases 22 (1946): 29-40; Laird, S.M. "Syringe-transmitted hepatitis." Glasgow Medical Journal 28 (1947): 199-219; Marcussen, P.V. "Syringe-transmitted hepatitis in venereologic clinic." Nordic Medicine 40 (1948): 1760-1763; Martini, G.A. "The homologous serum-hepatitis." Deutsche Med. Wchnschr. 74 (1949): 568-572; Memo of medical officers, Ministry of Health. "Role of syringes in the transmission of jaundice." Lancet 2 (1945): 116-119; Morton, R.S. "Syringe-transmitted jaundice." British Journal of Medicine 2 (1948): 938-939; Paul, J.R. and Havens, W.P. "Recent advances in study of infectious hepatitis and serum." Tr. A. Amer. Physicians 59 (1946): 133-141; Sherwood, P.M. "Outbreak of syringe-transmitted hepatitis with jaundice in hospitalized diabetic patients." Annals of Internal Medicine 33 (1950): 380-396; and Willcox, R.R. "Effects of syringe transmitted jaundice on outcome of treatment of yearly syphilis." British Journal of Venereal Diseases 23 (1947): 121-123.

334. Garrod, L.P. "Nature of meningitis following spinal anesthesia and its prevention." British Medical Bulletin 4 (1946): 106-108; Harris, R.C., Buxbaum, L., and Appelbaum, E. "Secondary *Bacillus pscocyaneus* infection in meningitis following intra-theal penicillin therapy." Journal of Laboratory and Clinical Medicine 3 (1946): 1113-1120; Harturg, K. "Meningitic reactions caused by syringe transmitted tuberculin during therapy of tuberculosis



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meningitis.” Deutsche Med. Wchnschr. 80 (1955): 195-196; and Pestel, M. “Tuberculosis transmitted by syringe.” Presse Méd. 61 (1953): 551.

335. Baer, M.H., Fancher, J., et al. “Are organisms introduced into vials containing medication when air is injected?” Nursing Research 2 (1953): 23-32; Christol, D. “Transmission of infections by contaminated syringes.” Presse Méd. 57 (1949): 1109-1112; and Taylor, E.M. and Maloney, P.J. “Sterilization of plastic syringes by formalin vapor.” Canadian Medical Association Journal 61 (1949): 621-622.

336. Evans, R.J. and Spooner, E.T.C. “A possible mode of transfer of infection by syringes used for mass inoculation.” British Medical Journal 2 (1950): 185-188.

337. Ibid.

338. McCloskey, B.P. “Report of an investigation into an outbreak of poliomyelitis in a small town remote from Melbourne.” Medical Journal of Australia 1 (1951): 612-613.

339. Hertzberger, E. “Mass vaccination and mobile syringe service in relation to problem of serum hepatitis.” Nederl. Tijdschr. Genseek. 97 (1953): 1906-1909; and Gross, W.O. “Pure vaccine dose in spite of using one common syringe; new construction for prevention of inoculation hepatitis and poliomyelitis.” Deutsche Med. Wchnschr. 79 (1954): 829-831.

340. Guyer, B., Bisong, A., et al. “Injections and paralytic poliomyelitis in tropical Africa.” Bulletin of the World Health Organization 58 (1980): 285-291; Wyatt, H. “Provocation poliomyelitis; neglected clinical observations from 1914 to 1950.” Bulletin Hist. Med. 55 (1981): 543-557; and Wyatt, H.V. “The popularity of injecting in the Third World: Origins and consequences for poliomyelitis.” Social Science and Medicine 19 (1984): 911-915.

341. Garrett, L., 1994, op. cit.

342. Jezek, Z., Arita, I., et al. “Four generations of probable person-to-person transmission of human monkeypox.” Journal of Epidemiology 123 (1986): 1004-1012.

343. Mann, J.M., Francis, H., et al. “HIV seroprevalence in pediatric patients 2-14 years of age.” Pediatrics 78 (1986): 673-677; and Mann, J.M., Francis, H., et al. “HIV seroprevalence among hospital workers in Kinshasa, Zaire.” Journal of the American Medical Association 256 (1986): 3099-3102.

344. Institute of Medicine. The Children’s Vaccine Initiative: Achieving the Vision. Washington, D.C.: National Academy Press, 1993; and Institute of Medicine. Adverse Events Associated With Childhood Vaccines, 1993, op. cit.

345. World Bank. World Development Report 1993: Investing in Health. New York: Oxford

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University Press, 1993.

346. See references to “disease cowboys” in Garrett, L., 1994, op. cit.

347. Rosen, G., 1993, op. cit.

348. In 1947 Truman pushed through passage of the National Security Act to create two key agencies: the National Security Council (NSC) and the Central Intelligence Agency (CIA).

349. The United States successfully detonated its first hydrogen bomb on the Pacific atoll of Bikini in 1952; the Soviets followed suit in Siberia nine months later.

350. Patterson, J.T., 1996, op. cit.

351. Halberstam, D. The Fifties. New York: Villard Books, 1993.

352. The best source of information regarding Chargoff’s numbers, DNA and the basis of modern biology is Watson, J.D, Hopkins, N.H., Roberts, J.W., et al. Molecular Biology of the Gene. Fourth edition. Menlo Park: Benjamin/Cummings, 1987.

353. Upton, A.C. “Radiation Carcinogenesis.” In Holland, J.F. and Frei, E. Cancer Medicine. Second edition. Philadelphia: Lea and Freiberger, 1982.

354. The author interviewed Linus and Ava Helen Pauling on three occasions during the late 1970s and 1980s and attended several speeches he gave three decades after these events, reflecting on the nuclear fallout struggle. The author also interviewed Edward Teller three times between 1981 and 1988, while a reporter for National Public Radio. See also: Pauling, L. No More War! New York: Dodd, Mead, 1958; Pauling, L. Linus Pauling on Science and Peace. New York: Fund for the Republic, 1964; and Goertzel, T and Goertzel, B. Linus Pauling: A Life in Science and Politics. New York: Basic Books, 1995.

355. As quoted in Rhodes, R. The Making of the Atomic Bomb. New York: Simon and Schuster, 1986.

356. Of Hiroshima historian Richard Rhodes wrote “More recent estimates place the number of deaths up to the end of 1945 at 140,000. The dying continued; five-year deaths related to the bombing reached 100,000. The death rate for deaths up to the end of 1945 was 54 percent, an extraordinary density of killing.” Ibid.

357. Teller often said this in interviews at the time. See Rhodes, R., 1986, op. cit.

358. Kuboyama was not grieved in the United States. On the contrary, the chairman of the U.S. Atomic Energy Commission claimed that the poor fisherman was “a red spy.” See Winkler,

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A. Life Under a Cloud: American Anxiety about the Atom. New York: Oxford University Press, 1993.

359. The soldiers and civilians around Totskoye were killed either by the blast or, more slowly, by radiation sickness and cancer. Swiftly covered up by the KGB, none of this was revealed until after the fall of the Soviet Union.

360. In Rhodes, R., 1986, op. cit. Between 1946 and 1962 the United States conducted surface tests of 299 nuclear weapons. More than 200,000 civilians and U.S. military personnel were exposed directly to radiation in those tests. A roughly equal number of surface tests were conducted during those years by the Soviet Union, and fewer by France, England, and China. None of those governments allowed independent medical assessments of the hundreds of thousands of people who were exposed to radiation from the bombs. And details of studies done by the Atomic Energy Commission in the United States and by its counterparts in the other nuclear nations were classified, cloaked in national security secrecy.

361. Here's how Hoover himself defined this enemy: "The fellow traveler, while not a [Communist Party] member, actively supports (travels with) the Party's program for a period of time. The sympathizer is more passive, sympathizing with the Party or individual members on specific issues, and may or may not give active aid. Those individuals are not Party members, but, in some degree, have come under Party control," Hoover insisted. "Others, the so-called 'intellectuals,' may never have attended a communist meeting and may know nothing about Party organization. Yet, because of the spell of communist thought control, they knowingly do the Party's work." Hoover, J.E. Masters of Deceit. New York: Henry Holt, 1958.

362. In 1962 the New England Journal of Medicine published a landmark piece that had a profound impact on physicians and nurses in the United States. The journal used a Joint Congressional Committee on Atomic Energy study on the effects of nuclear war as the basis for a blow-by-blow hypothetical account of a nuclear attack upon Boston. Few physicians who read the article could imagine how medical services in any city could handle such a catastrophe. See Hiatt, H.H. "The clinical picture." In Adams, R. and Cullen, S., editors. The Final Epidemic. Chicago: Education Foundation for Nuclear Science, 1981.

363. Patterson, J.T., 1996, op. cit.

364. See: U.S. Arms Control and Disarmament Agency. Effects of Nuclear War. Washington, D.C.: Government Printing Office, 1979; Goen, R.L., Brown, S.L., Clark, E.D., et al. Stanford Research Institute. Analysis of National Entity Survival. Sponsored by the Office of Civil Defense (SRI 7979-007), November, 1967; Mitchell, H.H. The Rand Corporation. Guidelines for the Control of Communicable Disease in the Postattack Environment. Sponsored by the Atomic Energy Commission (RM-5090-TAB), August, 1966; Mitchell, H.H. The Rand Corporation. Plague in the United States: An Assessment of Its Significance as a Problem Following a

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Thermonuclear War. Sponsored by the Atomic Energy Commission (RM-4868-TAB), June, 1966; Mitchell, H.H. The Rand Corporation. The Problem of Tuberculosis in the Postattack Environment. Sponsored by the U.S. Air Force (RM-5362-PRB), June 1967; Pogrund R.S. The Rand Corporation. Nutrition in the Postattack Environment. Sponsored by the Atomic Energy Commission (RM-5052-TAB), December, 1966; Johnson, T. and Johnston, D.R. Research Triangle Institute. Vector-borne Disease and Control. Sponsored by the Office of Civil Defense (R-OU-303), June 1968; and Voors, A.W. Research Triangle Institute. Epidemiological Considerations for the Prevention of Post Nuclear Attack Epidemics. Sponsored by the Office of Civil Defense (RM-OU-332-4), October, 1967.

For a non-governmental perspective, see: Adams, R. and Cullen, S. Editors, 1981, op. cit.

365. Garrett, L. "Facilities in city did tests in 1950s." Newsday (December 19, 1993): A1.

366. National Research Council. A Review of the Department of Energy Classification Policy and Practice. Washington, D.C.: National Academy of Sciences, 1995; and National Academy of Sciences. Finding the Balance: National Security and Scientific Openness. Washington, D.C.: National Academy of Sciences, 1999.

367. It must be noted that organizations of America and Soviet physicians formed in the 1970s and 80s to express mutual concern about the public health horrors of nuclear war. Chief among them was the International Physicians for the Prevention of Nuclear War, which won the Nobel Peace Prize in 1985. Sharing in that honor were in the Soviet Union Dr. George Kistiakowsky and Evgeni Chazov and in the United States Dr. Bernard Lown and others.

368. In 1982, based on the meager and flawed information at its disposal, the World Health Organization estimated that a thermonuclear exchange between the United States and USSR would directly and indirectly — via radiation, epidemics and starvation — kill two billion people. That estimate was adjusted upward in the later 1980s when a group of astronomers, physicists, atmospheric researchers, and vulcanologists set forth the nuclear winter hypothesis. In their scenario, blasts involving bombs in excess of 100 kilotons would be the equivalent of simultaneous eruption of hundreds of volcanoes of magnitudes greater than the 1981 Mount St. Helens eruption in Washington. The expelled ash and fallout would create an atmospheric blanket that would eliminate Earth's protective ozone layer and block out the sun. The result, the scientists said, would be an Ice Age would kill off most plant and animal sources of human food. The nuclear winter vision was of a world on which few, if any, Homo sapiens could survive.

369. In 1961 Mahoney's successor, Leona Baumgartner, stated her position on the nuclear fallout question and how it affected New Yorkers: "Widespread realization of the potential hazards of ionizing radiation grew out of atomic bomb development. While some persons and groups tried to arouse public interest and concern in problems of fallout, there were those persons and groups who tried to minimize such dangers. Their attitude was represented by those who feel it is now quite clear that the problem of fallout radiation in its various forms is one with

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which we must learn to live; we have no choice.

“Public discussion of fallout radiation did have the effect of calling some people’s attention to the fact that there are other forms of radiation which constitute a public health problem....These people felt that when the total amount of radiation to which people are exposed increases, it is both common sense and sound public health practice to take measures to reduce the amount of radiation which can be controlled.”

See the commissioner’s remarks in New York City Department of Health. Report of the Department of Health, the City of New York for the Years 1959-60. New York, 1961.

370. American Public Health Association. Study of the Department of Health, City of New York, for the Mayor’s Committee on Management Survey. Washington, D.C., 1952.

371. Hardly anyone had a television set in 1949 in the United States. But by 1952 some 15.2 million Americans had a TV; and by 1955 that number had grown to some 32 million. Such TV pioneers as Lucille Ball, Milton Berle, Jack Benny, Edward R. Murrow, and Jackie Gleason were household names better known to most Americans in 1954 than any member of the U.S. Congress. Families watched television together while eating TV dinners. Water departments and electricity companies reported that toilets were flushed and kitchen appliances switched on en masse during commercials.

372. This had a profound impact upon news, opinion and information. See, for example, Curtin M., Redeeming the Wasteland, Rutgers University Press, New Brunswick, 1995.

373. By the 1990s the average American was watching four hours of television a day and rated TV as the number one vehicle responsible for shopping and voting decisions. See Kuttner, R. Everything for Sale. New York: Alfred A. Knopf, 1998. A Twentieth Century Fund book.

374. Duffy, J., 1968, op. cit.

375. New York City Department of Health. Report of the Department of Health, the City of New York, for the Years 1955-56. New York, 1957.

376. Ibid.

377. Institute of Medicine. Treating Drug Problems. Washington, D.C.: National Academy of Sciences, 1990.

378. Baumgartner, L. in New York City Department of Health, 1961, op. cit.

379. Duke, S.B. and Gross, A.C. America’s Longest War: Rethinking Our Tragic Crusade Against Drugs. New York: G.P. Putnam’s Sons, 1993.

380. Gray, M., 1998, op. cit.

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381. Patterson, J.T., 1996, op. cit.

382. GNP numbers were as follows:  
(in billions of 1958-adjusted dollars)

1950	\$355.3
1957	\$452.5
1960	\$487.7
1966	\$658.1
1970	\$722.5

Per capita GNP also rose radically:  
(in 1958-adjusted dollar values)

1940	\$1,720
1950	\$2,342
1960	\$2,699
1970	\$3,555

Source: Patterson, J.T. *ibid.*

383. In the early 1950s the National Association for the Advancement of Colored People (NAACP) went to the courts, suing for equal rights to education, jobs and housing. The most dramatic case, *Brown v. Board of Education*, was argued by NAACP attorney Thurgood Marshall before the U.S. Supreme Court. On May 17, 1954, Supreme Court Chief Justice Earl Warren announced the Court's historic decision: "In the field of public education the doctrine of 'separate but equal' has no place. Separate educational facilities are inherently unequal." Segregation, the decision continued, "generates a feeling of inferiority as to the status in the community that may affect their hearts and minds in a way unlikely ever to be undone."

A succession of landmark legal decisions followed, knocking down most of the old "Jim Crow" laws that had segregated everything from water fountains to cemeteries in the United States since the Civil War. A century of legal segregation was being overturned.

384. In 1955 seamstress Rosa Parks sat in the front of a Montgomery, Alabama bus in violation of local practice that reserved the front of a city bus for whites. In 1953 in Baton Rouge, Louisiana, blacks had boycotted all busses en masse to protest such laws, and Parks's action two years later sparked more such protests all across the Deep South.

By 1956, Reverend Martin Luther King, Jr. and his Southern Christian Leadership Council had begun organizing a series of clever, nonviolent protest actions that would draw international media attention and awaken white liberalism.

In the summer of 1957 Arkansas governor Orval Faubus openly defied the Supreme Court's *Brown v. Board of Education* decision, ordering 250 National Guard troops to surround Little Rock's Central High School and prevent black students from gaining entry. So transparently did the Faubus action violate federal law that President Eisenhower was reluctantly forced to send in federal troops. They placed the National Guard under their command and

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formed a protective human corridor through which the nine African American youths could safely enter the school.

385. Williams, J. Eyes On The Prize: America's Civil Rights Years, 1954-1965. New York: Viking, 1987.

386. Cited in Dickstein, M. Gates of Eden. Cambridge, MA: Harvard University Press, 1997.

387. Smith, D.B., 1999, op. cit.

388. Ibid.

389. For a very good, detailed history of the legal claims and racist policies of hospitals and medical societies during this period, see Smith, D.B., 1999, op. cit.

390. Ibid. Black physicians realized, however, that, limited as it was, HEW represented their only court of appeal. The AMA consistently defended the white privileges of its southern members, and only begrudgingly admitted African Americans into its fraternity. Nor did it revoke the charters of state chapters that refused admission to black doctors. That action would not be taken until 1966. And the AMA would not recognize the courage of black physicians who fought to desegregate the health system — and the American Medical Association — until 1989, more than 120 years after Abraham Lincoln signed the Emancipation Proclamation.

391. *Simkins v. Moses H. Cone Memorial Hospital*. 323 F 2d. 959, 970 n. 23 (1963).

392. Johnson, L.B. "Address Before a Joint Session of Congress." November 27, 1963.

393. Beschloss, M.R. Taking Charge: The Johnson White House Tapes 1963-64. New York: Simon and Schuster, 1996.

394. Ibid.

395. Walen, C. and Walen, B. The Longest Debate: A Legislative History of the 1964 Civil Rights Act. Washington, D.C.: Seven Locks Press, 1985.

396. Reagan, R., and Hubler R.G. Where's the Rest of Me? New York: Best Books, 1965.

397. U.S. involvement in Vietnam dated to the Truman administration, which, beginning in 1947, provided funds and military advisors to aid French anti-Communist activities in colonial Vietnam. The Eisenhower administration, whose "Domino Theory" notion posited that if one Southeast Asian nation fell to communism, the entire region would be lost, increased that support by 75 percent between 1953 and '54. When the French suffered a decisive military defeat in the 1954 battle of Dien Bien Phu, Vice President Richard Nixon argued that the United States had to maintain a military commitment to defend the still pro-Western southern half of Vietnam.

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By 1961, with U.S. advisors having played discreet roles in the Vietnam conflict for seven years, Kennedy ordered a clandestine escalation involving U.S. Marines Special Forces and the CIA. Their primary target in 1961-62 was Laos, where they conducted bombing campaigns and recruited Meo tribesmen to fight the Vietnamese National Liberation Front (NLF) and the Laotian Pathet Lao.

In 1963 South Vietnamese president Ngo Dinh Diem was assassinated, prompting Kennedy to order some 8,000 troops into Vietnam. Still labeled “advisors,” these special forces were not, technically, at war.

During Johnson’s administration, the war escalated steadily. By December 1963 he had ordered 17,000 more so-called advisors to South Vietnam. Another 23,000 went in during early 1964. And following a bomb blast at a U.S. base in Vietnam in early 1965, Johnson ordered carpet bombing of North Vietnam and a massive escalation in U.S. troop strength. By December ‘65 there were 184,000 U.S. troops in Vietnam. The sum reached 450,000 by the end of 1966 and half a million in 1967.

By early 1968 an estimated 130,000 U.S. military personnel were dead, wounded or missing in action. On January 30th — the Vietnamese Tet holiday — the NLF forces launched a full scale assault on Saigon and key U.S. troop positions, nearly winning the war. Johnson ordered more escalation, both in troop strength and sorties.

By November 1967, LBJ’s approval rating was below 26 percent in national polls, and few Americans believed that the administration or the Pentagon had a winnable strategy in place. American faith in the war fell further after the Tet Offensive: whether or not an individual favored, on principle, U.S. engagement in Vietnam, few believed that the strategies then being waged could possibly prove victorious.

On March 3, 1968, a thoroughly exhausted and defeated Lyndon Baines Johnson announced that he would step down at the end of his term, not seeking reelection. By then, more than 525,000 Americans were fighting in Vietnam, along with 850,000 members of the Army of South Vietnam (ARVN).

The war would continue under the Nixon Administration, ending on May 1, 1975 as defeated South Vietnamese leaders and U.S. personnel scrambled to the roof of the U.S. Embassy in Saigon to board helicopters offering their only means to escape advancing NLF troops.

398. Senator Russell was chairman of the Senate Armed Services Committee and a Georgia Democrat. The conversation took place in the Oval Office on June 11, 1964. See Beschloss, M.R., 1997, op. cit.

399. Johnson’s daughter.

400. Goodwin, D.K. Lyndon Johnson and the American Dream. New York: Harper and Row, 1976.

401. McDonald, J. “Superbird.” San Francisco: Tradition Music, BMI, 1965.



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402. McKeown, T., 1979, op. cit.
403. All these life expectancy data come from U.S. Bureau of the Census, 1976, op. cit.
404. By 1970 average life expectancies at birth would be 59.9 years for men and 63.9 for women. Remaining years for sixty-year-old Americans would average 31.9 for men and 38.3 for women.  
In 1995 average life expectancies at birth were 72.5 years for men and 78.9 years for women. Men would have gained 11.7 years since 1970; women, 13.7 years.
405. Evans, R.G. and Stoddart, G.L. "Producing health, consuming health care." In Evans, R.G., Barer, M.L., and Marmor, T.R. Why Are Some People Healthy and Others Not? New York: Aldine de Gruyter, 1994.
406. Dr. Leona Baumgartner, New York City Commissioner of Health, 1961, in Baumgartner, L., 1961, op. cit.
407. Dubos, R., 1961, op. cit.
408. That question remains highly debatable today. As the world faces a resurgent tuberculosis epidemic — particularly in Russia — it is critical to understand to what degree antibiotics versus environmental factors (housing, nutrition, etc.) can play a role in control of TB. Many explanations have been forwarded, including sanitariums, nutrition and housing, but there remains today no consensus as to what factor(s) pushed TB incidence down during the first half of the twentieth century.  
See: McKeown T., 1979, op. cit.; and Evans, R.G. and Stoddart, G.L., 1994, op. cit.
409. See: Garrett, L., 1994, op. cit.; and Webster, R.G. "Influenza." In Morse, S.S. Emerging Viruses. New York: Oxford University Press, 1993.
410. Dubos, R., 1961, op. cit.
411. One way to picture the dilemma is to ask, "Did the massive medicalization of society after 1965 push the population's health significantly beyond the trajectory it had already been on since 1900?" The following is the plot, based on data from the U.S. Bureau of the Census.

#### SEE FIGURE: U.S. LIFE EXPECTANCY TRAJECTORIES

This chart, which, of course, is speculative, indicates that if one looks solely at improvements made in life expectancies after 1960, the era of modern medical intervention appears to have had the effect of adding perhaps one year of life.

But if trajectory is mapped beginning in 1900, it appears that the modern medical era has lagged well behind the pace of the first half of the century, and is nine years behind the achievements it ought to have made by now.

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Mapping the trajectory based on the mean slope from 1900 to 1995 finds the modern medical era on or near target, implying it has rendered neither much benefit nor deficit to the life expectancy race.

412. Gornick, M. "Ten Years of Medicare: Impact on the Covered Population." Social Security Bulletin 39 (July 1976): 19.

413. Starr, P., 1982, op. cit.

414. Matusow, A. The Unraveling of America: A History of Liberalism in the 1960s. New York: Harper & Row, 1964.

415. Stevens, R., 1989, op. cit.

416. Between 1964 and 1981 the average costs of treating some procedures rose as follows:

<u>Procedure/Illness</u>	<u>Percent of Cost Increase</u>
Breast cancer	324
Childbirth	313
MI (heart attack)	420
Appendicitis	350

See: Scitovsky, A.A. and McCall, N. "Changes in the Cost of Treatment of Selected Illnesses, 1951-1964-1971." Health Policy Program, Palo Alto Medical Research Program, 10 (August 1975): 17.

417. Smith, D.B., 1999, op. cit.

418. U.S. Census of Housing, 1966; Los Angeles Times. Marketing Research Department. Market Data: Los Angeles Marketing Area, 1969; U.S. Bureau of the Census. "Characteristics of the South and East Los Angeles Areas, November 1965." Current Population Reports. Series P-23. No. 18. Washington, D.C., 1966.

419. Since World War II the densities of both neighborhoods had steadily increased as blacks migrated from the Deep South to Los Angeles and Hispanics flowed in from Mexico. The most densely populated neighborhood, Watts, had 14,000 residents per square mile, compared to the county average of 1,744.

420. The county's population had continued to swell at a pace eclipsing any other in the nation. By the end of the Sixties, Los Angeles County contained 40 percent of the population of the state of California and ranked as the third most populous metropolitan area in the United States. Between 1945 and '65 the county population grew at a rate of 3 percent annually: double the national growth rate. The land mass of the county remained 4,083 square miles, making it

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the physically largest one in the United States.

421. These and subsequent Los Angeles health statistics come from Merrill, M.H. Future Directions for Health Services: County of Los Angeles / 1970. Los Angeles: Los Angeles County Board of Supervisors, 1970.

422. Ibid.

423. White, R., 1991, op. cit.

424. Some neighborhoods, using Proposition 14, also kept Jewish and Asian buyers out.

425. Gottlieb, R. and Wolt, I., 1977, op. cit.

426. The driver was twenty-one-year-old Marquette Frye. He was pulled over by LAPD officers in front of his home, and Frye's family got into a shouting match with the officers. The officers placed the entire family under arrest, which sparked the riotous response of their neighbors.

427. Berman, A. and McCurdy, J. Several articles. Los Angeles Times (August 12, 1965): A1.

428. Ibid.

429. This is a reference to the arrest and beating of Rodney King and two subsequent riots in Los Angeles.

An estimated 30,000 citizens had participated in the riots, and another 60,000 had stood watch, often egging the rioters on with cries of "Burn, baby, burn!" Patterson, J.T., 1996, op. cit. No one, from the reporters on the scene for the Los Angeles Times to President Johnson, could view that outpouring of rage without realizing that something in America was terribly, terribly wrong. Governor's Commission on the Los Angeles Riots. Violence in the City — An End or a Beginning? Sacramento, 1965. At all tiers of government, the Watts riots forced a period of soul-searching and reappraisal. For white California voters, the riots, coupled with widespread unrest on the state's university campuses, seemed to cry out for a tough response. In 1966 the electorate rejected liberal incumbent Governor Pat Brown in favor of ultra-conservative ex-movie star Ronald Reagan.

430. For more details on Los Angeles County government, see Abernathy, B. and White, A. "The Invisible Growth Machine." Los Angeles Times West (May 28, 1972): 7-15.

431. According to Abernathy and White, the supervisors oversaw a 1972 budget of \$2.7 billion. At their disposal were 72,000 county employees, 768 buildings (with 300 more in the planning stages), 11 miles of beachfront property, and the largest county jail in the world

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(housing 200,000 inmates annually) staffed by the world's biggest county police force (4,553 officers).

432. Between 1913 and 1972 only twenty men (and no women) served as Los Angeles County supervisors.

433. Merrill, M.H., 1972, op. cit.

434. Ibid.

435. Los Angeles County General had merged with the University of Southern California's medical school and the name was changed to the acronyms of the two institutions.

436. Though first seen acutely in Los Angeles, the ER crisis became a national phenomenon that by the end of the 1980s constituted a life-threatening fiscal drain on many urban public hospitals. By 1995 there would be 5,700 ER units in the United States, treating 90 million people a year. By far the majority were publicly-funded facilities. According to Lawrence Weiss: "In 1990 an average of 43 percent of all ER visits were nonurgent; in other words, 38 million ER patients theoretically could have been treated in a clinic or health provider's office....Fifteen million of those nonurgent patients did not have a regular primary health care provider for nonurgent care...and 6 million were unable to find a primary care provider willing to see them because they were uninsured or because they had Medicaid....Nearly 14 million of these nonurgent ER patients went to the ER because their regular source of health care was closed..." See Weiss, L.D., 1997, op. cit.

437. In 1968 the county spent \$215 million on hospital care and upkeep, \$23 million on public health programs, and \$16 million on mental health programs.

438. California State Department of Public Health. Division of Dental Health. Estimated Cost Avoidance Statewide Fluoridation in California. Sacramento, 1968.

439. Even before the closure of state institutions, the ranks of LA's needy mentally ill had been growing. They represented 79,133 patient visits to county facilities in 1963 and 566,013 in 1968.

440. Merrill, M.H., 1972, op. cit. I'm not sure where Merrill got that national number. The U.S. Bureau of the Census shows a steady national increase in gonorrhea between 1958 and 1970, with the 1968 rate being 219.2 per 100,000. In either case the increasing trend was key and was very obvious.

441. Brandt, A.M., 1987, op. cit.

442. Kinsey, A. Sexual Behavior in the Human Female and Sexual Behavior in the Human Male. Philadelphia: W.B. Saunders, 1948. The Kinsey reports were later followed by the far

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more controversial studies by William Masters and Virginia Johnson, Sexual Response in 1966 and Human Sexual Inadequacy in 1970.

443. Indeed, the numbers of women entering the work force had been rising steadily for more than a generation, belying the kitchen-bound stereotype. In 1940 about a third of all women in the United States were part of the nation's paid work force. That figure rose to half by 1950. By 1970 two thirds of all American women were employed or were attending college. Patterson, J.T., 1996, op. cit.

444. For examples, see: Friedan, B. The Feminine Mystique. New York: Norton, 1963; Gitlin, T. The Sixties: Years of Hope, Days of Rage. New York: Bantam Books, 1987; Millet, K. Sexual Politics. New York: Simon & Schuster, 1990; Greer, G. The Female Eunuch. New York: McGraw-Hill, 1971.

445. Garrett, L., 1994, op. cit.

446. Minnesota Department of Health. Healthy People: the Minnesota Experience. Minneapolis: Minnesota Center for Health Statistics, 1982.

447. I have written extensively elsewhere about the STD trends that preceded emergence of AIDS. I refer readers to Garrett, L., 1994, op. cit.; and Brandt, A.M., 1987, op. cit.

448. Carson, R. Silent Spring. Boston: Houghton Mifflin, 1962.

449. Ibid.

450. Another crucially influential book at the time was Paul Ehrlich's The Population Bomb. New York: Ballentine Books, 1968. Readers interested in the human population growth issue are encouraged to see Cohen, J.E. How Many People Can the Earth Support? New York: Norton, 1995. Appendices #2 and #6 are particularly interesting.

451. The Environmental Protection Agency (EPA, created in 1970), the Food and Drug Administration (FDA), the Occupational Safety and Health Administration (OSHA), the National Institute of Occupational Safety and Health (NIOSH), the Centers for Disease Control and Prevention (CDC), and the National Cancer Institute (NCI).

452. Mitchell, J. "Woodstock." Crazy Crow Music, BMI, 1969.

453. This phrase has always seemed puzzling because of its imprecision, even meaninglessness, as used. "Organic" to a chemist connotes molecules based on carbon. As such, "organic foods" could be drenched in petroleum and meet the descriptive term. Biologists use the word "organic" to refer to carbon-based life forms. Here, too, it's hard to see why "organic foods" would equal safe foods, as they could fulfill the biologists' definition and be filled with pathogenic parasites. Though this may seem mere quibbling, the phrase "organic foods" would

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be hotly debated well into the 1990s when the FDA would decide to allow food manufacturers to use the expression in labeling products certified free of artificial hormones, pesticide residues, and man-made chemical fertilizers.

454. U.S. Bureau of the Census, 1976, op. cit.

455. Burney, L. "Smoking and lung cancer: A statement of the Public Health Service." Journal of the American Medical Association 171 (1959): 1829-1837.

456. Hilts, P. Smokescreen: The Truth Behind the Tobacco Industry Cover-Up. Reading, MA: Addison-Wesley, 1996; Kluger, R. Ashes to Ashes: America's Hundred-Year Cigarette War, The Public Health and the Unabashed Triumph of Philip Morris. New York: Alfred A. Knopf, 1996; and Orey, M. Assuming the Risk: The Mavericks, the Lawyers and the Whistle-Blowers Who Beat Big Tobacco. Boston: Little Brown, 1999.

By the mid-Sixties more than half of all men and a third of all women in the United States were cigarette smokers.

457. Mullan, F., 1989, op. cit.

458. U.S. Surgeon General's Advisory Committee on Smoking and Health. Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service. PHS No. 1103. Washington, D.C.: Government Printing Office, 1964.

459. Hilts, P., 1996, op. cit.

460. For example, Larry Agran's 1977 best seller The Cancer Connection (New York: Houghton Mifflin) makes no references to tobacco or smoking, attributing 90 percent of all U.S. cancer incidence to environmental and occupational pollutants.

The cigarette versus pollution dilemma was better stated in 1973 by chemist Jeanne Stellman and physician Susan Daum: "The chronic lung disease that can arise from chlorine exposure is the same disease than can result from long-term exposure to things like nitrogen dioxide, cigarette smoke, or cotton dust. It all looks the same to the doctor, no matter what the cause. This development of similar symptoms from many different causes makes chronic disease especially hard to diagnose, and even harder to win compensation for, because cause-effect relationships are difficult to establish."

See Stellman, J.M. and Daum, S.M. Work Is Dangerous to Your Health. New York: Vintage, 1973.

461. The nation's most aggressively anti-tobacco surgeon general was Dr. C. Everett Koop, a Ronald Reagan appointee. In 1985 he would release a report on workplace smoking that would underscore the smoking versus occupational chemical exposure debate and arouse the ire of organized labor.

"For the majority of American workers," Koop would say, "cigarette smoking represents

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a greater cause of death and disability than their workplace environment.... In those work sites where well-established disease outcomes occur, smoking control and reduction of exposure to hazardous agents are effective, compatible, and occasionally synergistic approaches to the reduction of disease risk for the individual worker.”

Koop would later describe this statement as one of the few he made as surgeon general about which he had “some misgivings and uneasiness.” Koop, C.E. Koop: The Memoirs of America’s Family Doctor. New York: Random House, 1991. It overstated the case, he admitted, because, for exposed employees, some workplace hazards posed risks on a par with, or perhaps in excess of, smoking.

462. Ibid.

463. In the 1980s California and Massachusetts pioneered the most successful anti-smoking campaigns, deploying Madison Avenue techniques. Both states levied heavy taxes on tobacco sales and used the revenue to purchase prime television time and billboard space for highly sophisticated, often ironic, ads. “Smoking is glamorous,” a billboard said, the lettering over the ugly, wrinkled face of a cigarette-sucking woman. Marlboro’s cowboys were shown telling one another that they were dying of cancer. And the over-riding effect was to portray the industry as evil drug pushers out to capture youngsters and hook them on killer tobacco. The ad campaigns proved effective in reducing smoking levels in the two states below those in the rest of the United States, and in reducing the numbers of new smokers emerging annually among teenagers. See Centers for Disease Control and Prevention. “Cigarette smoking before and after an excise tax increase and anti-smoking campaign.” Morbidity and Mortality Weekly Report 45 (1996): 966-970.

464. For a very accessible delineation of the biology of tobacco addiction, see Goldstein, A. Addiction: From Biology to Drug Policy. New York: W.H. Freeman, 1994.

465. Koop, C.E., 1991, op. cit.

466. Centers for Disease Control and Prevention. “Cigarette smoking — attributable mortality and years of potential life lost — United States, 1990.” Morbidity and Mortality Weekly Report 42 (1993): 645-649. The CDC also estimated that if 1990 smoking levels continued, the generation born between 1978 and 1995 would eventually suffer 5 million deaths due to smoking, costing \$50 billion a year in medical treatment and \$1.4 billion annually in lost productivity and other indirect costs.

467. U.S. Department of Health and Human Services. Healthy People 2010 Objectives: Draft for Public Comment. Washington, D.C.: Office of Public Health and Science, 1998.

468. Office of Smoking and Health. Reducing the Health Consequences of Smoking: 25 Years of Progress. A Report to the Surgeon General. DHHS Pub. No. 89-8411. Washington, D.C.: U.S. Department of Health and Human Services, 1989.

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469. U.S. Public Health Service. Healthy People 2000. Washington, D.C.: U.S. Department of Health and Human Services, 1990.

470. Hueper, W.C. Occupational and Environmental Cancers of the Urinary System. New Haven: Yale University Press, 1969. The du Pont company acknowledged in 1976 that 339 — 17 percent — of the 2,000 dye workers who had used these two chemicals between 1919 and 1955 developed bladder cancer. By any measure, that was a phenomenal and tragic cancer rate.

471. As quoted in Agran, L., 1977, op. cit.

472. For examples of various positions, see: Agran L., 1977, op. cit.; Arrow, K.J., Cropper, M.L., Eado, G.C., et al. “Is there a role for benefit-cost analysis in environmental, health and safety regulation?” Science 272 (1996): 221-222; Burke, T.A., Shalauta, N.M. and Tran, N.L. “Strengthening the role of public health in environmental policy.” Policy Studies Journal 23 (1995): 76-85; Centers for Disease Control and Prevention. “Public health focus: Effectiveness of disease and injury prevention.” Morbidity and Mortality Weekly Report 46 (1997): 73-76; Committee on the Institutional Means for Assessment of Risks to Public Health. Commission on Life Sciences. National Research Council. Risk Assessment in the Federal Government: Managing the Process. Washington, D.C.: National Academy Press, 1983; Lare, L.B. “Fixing the system.” In Burke, T.A., Tran, N.L., et al, editors. Regulating Risk: The Science and Politics of Risk. Washington, D.C.: International Life Sciences Institute Press, 1993; Mott, L. and Snyder, K. Pesticide Alert: A Guide to Pesticides in Fruits and Vegetables. San Francisco: Sierra Club Books, 1987; *National Resources Defense Council v. Environmental Protection Agency*. 824F .2d 1211 (D.C. Cir., 1987); Oakley, G.P. and Heath C.W. “Cancer, environmental health, and birth defects — examples of new directions in public health practice.” American Journal of Epidemiology 144 (1996): S58-S64; Pershagen, G. “Environmental epidemiology in public health.” Lancet 352 (1998): 417; Rabe, B.G. Fragmentation and Integration in State Environmental Management. Washington, D.C.: The Conservative Foundation, 1986; Silbergeld, E.K. “A proposal for overcoming paralysis in improving risk regulation.” In Burke, T.A. et al, editors, 1993, op. cit.; Stellman, J.M. and Daum, S.M., 1973, op. cit.; Thacker, S.B., Stroup, D.F., and Parrish, G., et al. “Surveillance in environmental public health: Issues, systems, and sources.” American Journal of Public Health 86 (1996): 633-638; Van Den Bosch, R. The Pesticide Conspiracy. New York: Doubleday, 1978; Weir, D. and Schapiro, M. Circle of Poison. San Francisco: Institute for Food and Development Policy, 1981.

473. Researchers all over the world have found DDT, PCBs, and other chlorinated hydrocarbons stored in the body fats of animals located far from any pesticide use. For example, penguins in Antarctica and polar bears above the Arctic Circle have such compounds in their body fat. These findings, made by numerous research teams, prove that the pollutants spread globally in the air and water, and that migratory fish are a source of chlorinated hydrocarbons for carnivores residing on the two poles.



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474. DDT use was banned by the EPA in 1978 for all purposes except public health control of mosquitos — for which it had been effectively used in the United States and Europe in the 1950s. (See: Garrett, L., 1994, op. cit.) But in 1998-99 hot debate opened up within the United Nations over proposals to ban even the use of DDT for control of malarial mosquitos. The debate pitted public health malaria control experts against environmentalists. And against cancer prevention experts. The argument would then have an additional level of urgency as it would turn out that the very chemistry that made chlorine such a persistent chemical bonder on earth also made it a fabulous ozone scavenger when it got up into the atmosphere. So, it seemed, spraying DDT and other chlorinated pesticides could contribute to the weakening of the ozone layer and further speed global climate change. See Stolberg, S.G. “Effort to ban DDT faces a fight over its use in reducing malaria.” New York Times (August 29, 1999): A1.

475. Among these were asbestos (cause of asbestosis of the lungs); silicone (cause of silicosis); benzene (liver and other cancers); cotton dust (brown lung); coal dust (black lung); a lost list of organic solvents shown to cause cancer, including toluene, xylene, benzol, carbon disulfide; and radium. Another long list of compounds were heavily and successfully regulated (meaning the regulations stood up to court challenge) because of their neurotoxicity. Chief among these were compounds containing phosphates, which could break down in the human body into acetylcholine competitors so powerful that exposure would lead to seizures and, in sufficient dose, death. Such compounds included the pesticides parathion and phosdrin. Another neuroactive compound group was the carbamates, such as carbaryl. Use of these compounds was also restricted.

For an excellent summary of these and other occupational risks, see “Confronting the physical environment” in Henig, R.M., 1997, op. cit.

476. For analysis, see: Dutton, D.B. Worse Than the Disease: Pitfalls of Medical Progress. New York: Cambridge University Press, 1988; Evans, R.G. and Stoddart, G.L. “Producing health, consuming health care.” In Evans, R.G. et al, 1994, op. cit.; Freedman, L.P. “Reflections on emerging frameworks of health and human rights.” Health and Human Rights. Mann, J., Gruskin, S., Grodin, M.A., et al. Editors. New York: Routledge, 1999.

477. Even in the 1990s, the American Public Health Association would be internally factionalized around issues of environmental and occupations health, as well as other political concerns with roots in the early 1970s. A 1990 APHA convention was, for example, picketed by members who supported the Communist Labor Party’s opinion that HIV was a man-made virus. Another faction, the Nicaraguan Caucus, denounced imperialist public health. Trade union representatives stormed occupational health sessions. Liberal members used the gathering to attack George Bush’s Republican administration. Government representatives, in turn, lashed out at the Democrat-controlled Congress.

In short, public health was far more politically-charged, and its members more divided, than any other field of science or medicine at the time.

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478. Congress created the superfund for clean up of toxic dump sites nationwide in 1983. The Superfund program, at billions of dollars in annual costs, continued into the twenty-first century.

479. National Research Council. Toxicity Testing: Strategies to Determine Needs and Priorities. Washington, D.C.: National Academy Press, 1984; U.S. Department of Health and Human Services, Healthy People 2000, 1990, op. cit.

480. Without cheap and reliable ways to measure levels of not only pollutants but their often more lethal chemical break-down products, the state and federal regulatory agencies were chewing at the problem with toothless gums. According to the U.S. Toxic Chemical Release Inventory, some eighteen years after creation of the EPA, 2.6 billion pounds of toxic chemicals would still be released in the environment annually, including 0.24 billion pounds of compounds that were classified as human carcinogens. National air pollution standards would go unmet at 101 sites (including Los Angeles County and metropolitan New York), routinely exceeding permissible levels of carbon monoxides and ozone. And the American Lung Association would conclude that in the United States air pollution was annually responsible for up to 120,000 premature deaths and medical costs of \$50 billion a year. Air pollution would be named the chief cause of a U.S. asthma epidemic throughout the later twentieth century, with asthma hospitalization rates among children rising from about 180 per 100,000 youngsters in 1970 to 284 per 100,000 in 1987. American Lung Association. Health Care Costs of Air Pollution. Third Edition. New York: American Lung Association, 1990; National Heart, Lung and Blood Institute, Infomemo (December 1989; U.S. Department of Health and Human Services, Healthy People 2000, 1990, op. cit.

481. U.S. Department of Health and Human Services, Healthy People 2000, 1990, op. cit.

482. The landmark history of The Pill by Barbara Seaman was recently re-released in a twenty-fifth anniversary edition: Seaman, B. The Doctors' Case Against the Pill. Twenty-fifth Anniversary Edition. New York: Hunter House, 1995.

483. By 1964 there were reports of thirty-seven deaths on file at the FDA. By 1968 the FDA had been receiving twenty to forty death reports per year. In 1968 the FDA ordered Searle and other birth control manufacturers to put warnings inside packages of The Pill: "Be alert to earliest manifestations of thrombotic disorders," the warning began, detailing the apparent risks.

484. Murad, F. and Kuret, J.A. "Estrogens and progestins." In Gilman, A.G., Rall, T.W., Nies, A.S., et al. The Pharmacological Basis of Therapeutics. Eighth edition. New York: Pergamon Press, 1990.

485. Physicians appreciated DES partly for reasons of so-called "defensive medicine" — the practice of prescribing drugs to protect doctors against future lawsuits. During the 1950s malpractice suits were becoming increasingly common, and juries gave highest awards in cases

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involving babies and miscarriages. In addition, more women were waiting before having babies, delaying pregnancies until they were in their late twenties. That upped their miscarriage risks. And drug companies had developed astounding marketing campaigns that reached out directly to individual physicians, convincing them to prescribe such drugs as DES.

For details on the DES saga see: Dutton, D.B., 1988, op. cit.; Institute of Medicine. Drug Efficacy Study. Washington, D.C.: National Academy Press, 1967; Henig, R.M., 1997, op. cit.; Meyers R. DES: The Bitter Pill. New York: Putnam, 1983; and Subcommittee of the Committee on Government Operations. House of Representatives. 92<sup>nd</sup> Cong., 1<sup>st</sup> Sess. November 11, 1971.

486. Herbst, A.L., Ulfelder, H. and Poskanzer, D.C. “Adenocarcinoma of the vagina.” New England Journal of Medicine 284 (1971): 878-881.

487. Dutton, D.B., 1988, op. cit.

488. By 1988 the company would only recommend use of DES for two purposes: treatments of breast and prostate carcinomas. And it would specifically warn, in bold type: “USE OF ESTROGENS HAS BEEN REPORTED TO INCREASE THE RISK OF ENDOMETRIAL CARCINOMA.... ESTROGENS SHOULD NOT BE USED DURING PREGNANCY....THIS DRUG SHOULD NOT BE USED AS A POSTCOITAL CONTRACEPTIVE.... DIETHYLSTIBESTEROL SHOULD NOT BE USED FOR ANY PURPOSE DURING PREGNANCY. ITS USE MAY CAUSE SEVERE HARM TO THE FETUS.” Physicians Desk Reference. Forty-Third Edition. Oradell, NJ: Medical Economics Company, 1989.

489. Diana Dutton, in her previously-cited book, notes: “The DES story raises a number of larger issues about medicine’s role in society and the limits of regulatory safeguards. It reveals a pattern of deeply ingrained optimism about the benefits of medical science in solving perceived social needs, a cultural outlook shared by groups as diverse as doctors, farmers, scientists, and college coeds. So great was the optimism enveloping DES that it allowed an almost willful disregard of the abundant evidence of risk.” The FDA also appeared to come up short in its regulation of artificial sweeteners. In 1969, based only on laboratory animal studies, it found cyclamates to be carcinogenic and banned their sale in the United States. But in 1977, when faced with even stronger evidence of laboratory-tested carcinogenicity for the next big sweetener, saccharin, the FDA responded to public support of the non-caloric sweetener and allowed it to remain on the market. Henig, R.M., 1997, op. cit.

490. Patterson, J.T., 1996, op. cit.

491. “Nixon proposals vs. ‘Health Security’: The issues shape up.” Hospital Practice (April 1971): 22-38.

492. Fein, R. “What direction for national health insurance?” Hospital Practice (August 1970): 67-72.

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493. “Nixon proposals vs. ‘Health Security’: The issues shape up,” 1971, op. cit.
494. Starr, P., 1982, op. cit.
495. For a thumbnail history of HMOs, see: Mayer, T.R. and Mayer, G.G. “HMOs: Origins and development.” New England Journal of Medicine 312 (1985): 590-594.
496. Senators Abe Ribikoff, a Connecticut Democrat, and Russell Long, a conservative Louisiana Democrat, offered the Catastrophic Health Insurance and Medical Assistance Reform Act of 1973. It was backed by Nixon’s presidential opponent, South Dakota Democrat Senator George McGovern.
497. The Medigap plan, which offered vouchers for health care that consumers could shop around to private doctors.
498. The AHA wanted the Hill-Burton Act extended and provisions lifted that LBJ had amended to the act. Those provisions required recipient medical facilities to offer free care to indigent patients, comprising a minimum of 5 percent of their clientele.
499. The Democrat’s McGovern campaign had several offices inside the Watergate Hotel in Washington, D.C. A team of burglars, calling themselves “The Plumbers,” broke into those offices with the intent to steal campaign information and place electronic eavesdropping devices. They were arrested for simple thievery, but a trail of disclosures over subsequent months, largely in the pages of the Washington Post, revealed that The Plumbers were in the employ of the Campaign to Reelect the President, and orders for their activities, as well as other subterfuges against the Democrats, had come directly from the White House. In 1973 these revelations unfolded almost daily, all but paralyzing the administration as it scrambled to destroy evidence, cover its tracks, and concoct false defenses to deliver to Congress. By 1974 many members of Nixon’s own party leadership were calling for his resignation or impeachment, and members of his administration faced indictment. It was under this cloud that Nixon resigned in August, 1974.
500. Mayer, T.R. and Mayer, G.G., 1985, op. cit.
501. For a sense of the changes then underway see: “Administration seeks to shift Medicare cuts to elderly.” Hospital Practice (March 1973): 182-187; “Auditing ambulatory care.” Hospital Practice (June 1974): 155-160; Gold, M.R. and Rosenberg, R.G. “Use of emergency room services by the population of a neighborhood health center.” Health Services Reports 89 (1974): 65-70; “Kennedy-Mills: A new pairing on the health insurance front.” Hospital Practice (June 1974): 176-184; “The kidney care issue: A test for national health insurance?” Hospital Practice (April 1973): 49-59; “The Nixon budget crisis — one medical school’s ‘share.’” Editorial. Hospital Practice (August 1973): 4-5; “Two senators offer ‘middle way’ national health insurance package.” Hospital Practice (January 1974): 209-210; Weil, M.H. and Carlson, R.W. “Priorities governing the care of the critically ill.” Hospital Practice (September 1976): 67-76; and “Will health care price freeze warm or chill the voters?” Hospital Practice (September 1972):

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167-171.

502. Rogers, D.E. and Blendon, R.J. "The changing American health scene: Sometimes things get better." Journal of the American Medical Association 237 (1977): 1710-1714.

503. As quoted in Baum, D. Smoke and Mirrors: The War on Drugs and the Politics of Failure. Boston: Little, Brown and Company, 1996.

504. Ibid.

505. Ibid.

506. National Commission on Marijuana and Drug Abuse. Evaluating the Social Impact of Drug Dependence. Washington, D.C., 1972.

507. In 1989 James Ostrowski of the Cato Institute estimated the following had been true every year since 1969:

DRUG	NUMBER OF USERS	DEATHS ANNUALLY	DEATH RATE PER 100,000
Tobacco	60 million	390,000	650
Alcohol	100 million	150,000	150
Heroin	500 thousand	400	80
Cocaine	5 million	200	4

See Duke, S.B. and Gross, A.C., 1993, op. cit.

A differing estimate of drug use rates put the number of heroin users in 1955 at about fifty-five thousand and the total in 1987 at 1.5 million. Those figures would indicate that Nixon's War on Drugs policy had utterly failed. See Institute of Medicine. Treating Drug Problems. Vol. I. Washington, D.C.: National Academy Press, 1990.

508. Payne, L., Royce, K., Greene, B., et al. The Heroin Trail. New York: Holt, Rinehart and Winston, 1974.

509. Duke, S.B. and Gross, A.C., 1994, op. cit.

510. There was little data to support this idea. Heroin users were not, in reality, significantly more crime-prone than the rest of society and often less prone to commit felony crimes than was the adult norm in the community in which they resided. See Institute of Medicine, 1990, op. cit.

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511. Eventually the Special Action Office was dovetailed into the National Institute on Drug Abuse (NIDA), created in 1973.

512. Massing, M. The Fix: Under the Nixon Administration America Had an Effective Drug Policy. WE SHOULD RESTORE IT. (Nixon Was Right). New York: Simon and Schuster, 1998.

513. Because the author and others have detailed these emerging diseases issues elsewhere, the presentation here is deliberately superficial. For more information on infectious diseases issues during the 1960-1990 time frame, see: Biddle, W. A Field Guide to Germs. New York: Henry Holt, 1995; Centers for Disease Control. CDC and the Smallpox Crusade. Washington, D.C.: U.S. Department of Health and Human Services, 1987; Fenner, F., Hendersen, D.A., Arita, I., et al. Smallpox and Its Eradication. Geneva, World Health Organization, 1988; Foege, W.H. "Alexander D. Langmuir — his impact on public health." American Journal of Epidemiology 144 (1996): S11-S15; Garrett, L., 1994, op. cit.; Henig, R.M. A Dancing Matrix. New York: Alfred Knopf, 1993; Institute of Medicine. Emerging Infection: Microbial Threats to Health in the United States. Washington, D.C.: National Academy Press, 1992; Karlen, A. Man and Microbes. New York: Putnam, 1995; McCormick, J.B. and Fisher-Hoch, S. Level 4: Virus Hunters of the CDC. Atlanta: Turner, 1996; Morse, S.S., editor, 1993, op. cit.; Preston, R. The Hot Zone. New York: Random House, 1994; Regis, E. Virus Ground Zero. New York: Pocket Books, 1996; and Wilson, M.E., Levins, R., Spielman, A. "Disease in Evolution." Annals of the New York Academy of Sciences 740 (1994).

514. This is, of course, described in greater detail in Chapter 2 of this book and in the chapter entitled "Yambuku" in Garrett, L., 1994, op. cit.

515. For more about smallpox eradication, see Chapter 5 of this book and the smallpox selections cited above.

516. Neustadt, R.E. and Fineberg, H.V. The Swine Flu Affair: Decision-Making on a Slippery Slope. Washington, D.C.: U.S. Department of Health, Education and Welfare, 1978.

517. Guillan-Barré Syndrome was a poorly understood nerve disorder that led to inflammation of major nerves, paralysis, pain and other neurological symptoms. Nobody knew the cause of Guillan-Barré Syndrome, but a certain number of people came down with it all the time. In Wisconsin and Minnesota public health officials noticed, however, that the number of Guillan-Barré cases suddenly soared during the Swine Flu vaccine campaign. Minnesota's young state epidemiologist, Dr. Michael Osterholm, worked with colleagues in Michigan and at the CDC to figure out whether this increase was a coincidence or might be caused by the vaccines. All told, the two states saw 1,098 syndrome cases in 1976-77. By examining thousands of medical records, Osterholm determined that there had been a slight increase in the number of Guillan-Barré cases among vaccine recipients in Minnesota compared to those who declined to get the flu immunization. The difference was 9.7 additional syndrome cases per one million vaccinated

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Minnesotans.

Safranek, T.J., Lawrence, D.N., Kurland, L.T., et al. "Reassessment of the association between Guillan-Barré Syndrome and receipt of Swine Influenza vaccine in 1976-1977: Results of a two-state study." American Journal of Epidemiology 133 (1991): 940-951.

518. See: Bloom, B.R. "The United States needs a national vaccine authority." Science. 265 (1994): 1377-1380; Citizens Against Government Waste. An Ounce of Prevention: Why Congress Should Repeal the Vaccines for Children Program. Washington, D.C.: Citizens Against Government Waste, 1994; Cohen, J. "Bumps on the vaccine road." Science 265 (1994): 1371-1375; Douglas, G.R. "The Children's Vaccine Initiative: Will it work?" Journal of Infectious Diseases 168 (1993): 269-274; Gibbons, A. "Children's Vaccine Initiative stumbles." Science 265 (1994): 1376-1377; Institute of Medicine. The Children's Vaccine Initiative: Achieving the Vision. Washington, D.C.: National Academy Press, 1993; Katz, S. and Gellin, B.G. "Measles vaccine: Do we need new vaccines or new programs?" Science 265 (1994): 1391-1392; Nowak, R. "U.S. national program is going nowhere fast." Science 265 (1994): 1374-1376; Pear, R. "Serious troubles are found in federal vaccine program." New York Times (July 17, 1994): A16; Sternberg, S. "Bottleneck keeps existing vaccine off market." Science 266 (1994): 22-23; U.S. Department of Health and Human Services. Disease Prevention through Vaccine Development and Immunization: The U.S. National Vaccination Plan — 1974. Washington, D.C.: National Vaccine Program Office, 1994; U.S. General Accounting Office. Vaccines for Children. GAO/PEMD-95-22. Washington, D.C.: Government Printing Office, 1995; "Vaccines: Big shots." The Economist (May 9, 1998): 63; Vagelos, P.R. "A shot in the (wrong) arm." New York Times, (April 20, 1993): editorial; and World Health Organization. State of the World's Vaccines and Immunization. Geneva: World Health Organization, 1996.

519. Hilleman, M. Presentation to the Institute of Medicine, October 6, 1995.

520. In 1987 the National Academy of Sciences convened a high-powered meeting to discuss strategies for developing a vaccine against HIV. The shadow of the Swine Flu fiasco eleven years previously hung over the meeting as scientists argued how to perform the seemingly impossible task of generating a safe, 100 percent effective vaccine against a retrovirus.

Influenza expert Robert Webster gave a speech outlining the many obstacles to developing good flu vaccines, noting that rarely was any influenza vaccine that was put into use more than 80 percent protective. Well, responded polio pioneer Dr. Jonas Salk, that might be all right for flu, but never for HIV. Like polio, he said, HIV is too dangerous and an acceptable vaccine must be 100 percent effective.

"And so, perhaps it's useful, with AIDS, to look at successes of the past for inspiration," Salk said, noting that his polio vaccine was developed without any sophisticated understanding of the virus itself — far less knowledge than scientists had of HIV in 1987.

Vaccine industry leader Maurice Hilleman of Merck Company threw up his hands, exclaiming, "The big problem is we don't know a damned thing about how vaccines work. Now we need to understand!"

"That's the point," Salk retorted. "You did it by the seat of your pants before. But you

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succeeded.”

Scientists interjected comments regarding the far greater genetics and molecular biology capabilities of 1987, versus those that were at Salk’s disposal for polio in 1950.

“I’m sure you could genetically engineer anything,” Hilleman said. “But who would take liability? Who could guarantee a [virus] vaccine wouldn’t recombine in a patient? It comes down to law. The science is good, but the possibility of providing safety insurmountable.”

521. Influenza is an avian virus normally found in migratory aquatic birds. In its avian-adapted form, the virus is rarely infectious to human beings and never, so far as is known, can spread from person-to-person. Human epidemics involve an intermediary species, typically pigs, in which the avian influenza reproduces and mutates into a form adapted to mammals.

China offers ideal circumstances for such viral events because most rural and even urban households raise ducks and pigs, usually housed beside one another in crowded pens.

See: Webster, R.G. “Influenza.” In Morse S., 1993, op. cit.

522. Cox, N. Comments to the World Health Organization/National Institutes of Allergy and Infectious Diseases (WHO/NIAID) meeting, “Pandemic Influenza: Confronting a Re-emergent Threat,” Bethesda, Maryland, December 11-13, 1995.

523. Edwin Kilbourne. Comments to the WHO/NIAID meeting, 1995, op. cit.

524. Herome, K. Comments to the WHO/NIAID meeting, 1995, op. cit.

525. Haaheim, L. Comments to the WHO/NIAID meeting, 1995, op. cit.

526. Prior to 1991 the U.S. military had a vast flu surveillance network of its own that took advantage of troop placement in far flung places to sample emerging flu strains. This served as a strong compliment to the civilian WHO system. But following the collapse of the Soviet Union, Congress ordered several rounds of budget reductions for the Department of Defense. One of the casualties of this was the military influenza network which, by 1999 had been gradually phased out to a point where it was meager-to-nonexistent, according to the U.S. Army.

527. Meltzer, M. and Cox, N. Data presented at the First International Conference on Emerging Diseases, Atlanta, Georgia, March 8, 1998. Kolata, G. Flu. New York: Farrar, Straus Giroux, 1999.

528. This was said at the previously cited WHO/NIAID influenza meeting (1995). Some U.S. industry representatives argued that production capacity could be increased in a crisis, given a three month lead time before flu reached the United States. That might result in adequate supplies for the United States. But there would not be overseas production or distribution.

529. Patriarca, P. Comments to the WHO/NIAID meeting, 1995, op. cit.

530. Dowdle, W. Comments to the WHO/NIAID meeting, 1995, op. cit.



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531. This is described in greater detail in Garrett, L., 1994, op. cit. Because it is dealt with at length in The Coming Plague, treatment here will be superficial.

532. Centers for Disease Control and Prevention. Summary of Notifiable Diseases, United States, 1997. Atlanta: U.S. Department of Health and Human Services, CDC, 1997.

533. John Lindsay was a dapper, Yale-educated man who changed his party affiliation even more frequently than had Fiorello LaGuardia. In 1965 he was elected mayor as a Republican. In 1969 he was reelected as a Liberal Party candidate. And in 1971 he switched to the Democratic Party.

534. Carter, J. Keeping Faith: Memories of a President. New York: Bantam, 1982.

535. The details were as follows: at four o'clock in the morning a water pump for the reactor cooling system shut down. The reactor continued to run at full power. This allowed super-hot water to build up in the system, creating explosive pressure. An automatic pressure release gauge vented the radioactive steam and shut down the reactor. The pressure gauge failed to close, as it was supposed to in such incidents. Radioactive steam and water continued gushing out of the system. Back-up cooling switches failed to automatically switch on to counter the steam pressure, but control panel readings mistakenly indicated that cooling was underway. With the core still super-hot, another emergency system poured coolant into the core, but power plant engineers misunderstood what was going on and shut off that back-up cooler pump. Steam spewed out and a primary fuel rod cracked. Meltdown started, and radioactive gases were emitted into the air outside the power plant.

To understand how such power plants work see Nero, A.V. A Guidebook to Nuclear Reactors. Berkeley: University of California Press, 1979.

536. Further fueling suspicions were Jimmy Carter's background and the energy crisis. Carter had served as an engineer on a nuclear submarine while in the U.S. Navy and was supportive of the nuclear power industry. And the ongoing energy crisis had prompted special considerations from Congress for the nuclear industry.

537. Booth, W. "Postmortem on Three Mile Island." Science 238 (December 4, 1987); Del Tredici, R. The People of Three Mile Island. San Francisco: Sierra Club Books, 1980; Gray, M. "What really happened at Three Mile Island." Rolling Stone (May 17, 1979); May, J. Nuclear Age. New York: Pantheon Books, 1989; Stephens, M. Three Mile Island. New York: Junction Books, 1980; and Torrey, L. "The week they almost lost Pennsylvania." New Scientist (April 4, 1979).

538. In 1978 Carter leveraged a breakthrough in Israel's relations with Egypt, resulting in the Camp David Accords. For their efforts, Israel's Menachim Begin and Egypt's Anwar Sadat shared a Nobel Peace Prize. But Sadat was assassinated by insurgents within his own military.

The Shah of Iran, a long-standing U.S. ally, originally placed on the throne in the 1950s by the CIA, took mortally ill. In 1979 Carter allowed the Shah and the Pahlevi family to come to the United States, where the Shah underwent fruitless medical treatment. Days after his arrival at his American refuge, his rule was overthrown in Iran, and student militants seized the U.S. Embassy, taking the entire staff hostage.

The new Iranian government of Ayatollah Khomeini gave the students its full support and the hostages remained in captivity inside the embassy throughout the rest of 1979 and all of 1980. On September 22, 1980 the Iraqi government of Saddam Hussein invaded Iran, sparking the bloodiest Middle East conflict of the twentieth century. Possibly because it had its hands full with that war, Iran agreed to release the U.S. hostages.

It did so on the day of Ronald Reagan’s inauguration, snatching, in a final gesture of humiliation, the credit from Carter.

As a result of the Iran and Iraq tensions, the crisis of oil pricing and availability worsened during the Carter years. And that fed inflation.

539. Carter, J., 1982, op. cit.

540. Ibid.

541. Starr, P., 1982, op. cit.

542. “It’s time to operate.” Fortune 81 (1970): 79.

543. Folland, S., Goodman, A.C., and Stano, M. The Economics of Health and Health Care. New York: Macmillan, 1993.

544. Feldman, R. “Competition among physicians, revisited.” Journal of Health, Politics, Policy and Law 13 (1988): 239-261; McMenamin, P. “A crime storm from Medicare Part B.” Health Affairs (Winter 1988): 94-101; and Rice, T.H. “The impact of changing Medicare reimbursement rates on physician-induced demand.” Medical Care 21 (1983): 803-815.

545. Cooper, B. and Rice, D. The Economic Cost of Illness Revisited. Washington, D.C.: National Center for Health Statistics, U.S. Public Health Service, HEW, 1976.

546. Source: Health Care Financing Administration.

547. Ibid.

548. Dorothy Rice kindly provided me with her data on June 10, 1983 during an interview. Her numbers were as follows:

COVERED PERCENTAGES	1950	1960	1970	1980
From philanthropy and industry	2.9	2.3	1.6	1.4

From government	22.4	21.8	34.4	40.4
From private health insurance	9.1	21.1	24.1	26.2
Direct out-of-pocket payment	65.5	54.9	40.0	32.0

549. As early as 1970 some hospitals were getting away with billing Medicare and private insurance companies \$500 a day for hospital rooms. While these were intensive care rooms, in 1970 that sum could have rented out an entire floor of the poshest hotel in Manhattan, complete with servants, room service and a panoramic view of Central Park. See “Intensive care units and the \$500-a-day hospital.” Hospital Practice (August 1971): 22-31.

550. Krant, M.J. “The organized care of the dying patient.” Hospital Practice (January 1972): 101-108. By 1965 nearly half of all deaths were occurring in hospitals, compared to a third in 1937. Scitovsky, A.A. “‘The high cost of dying’: What do the data show?” Milbank Quarterly 62 (1984): 591-608. Within just two years of its enactment, the 5 percent of Medicare recipients who died were absorbing 22 percent of all the program’s expenditures. Piro, P.A. and Lutins, T. “Utilization and reimbursement under Medicare for persons who died in 1967 and 1968.” Health Insurance Statistics. Pub. No. SSA-74-11702. Washington, D.C.: U.S. Department of Health, Education and Welfare, October 17, 1969. A 1978 study got similar results: 5.9 percent of the Medicare population, mostly terminally ill patients, that year absorbed 27.9 percent of the agency’s health expenditures. Lubitz, J. and Prihoda, R. “The use and costs of Medicare services in the last two years of life.” Health Care Financing Review 5 (1984): 117-131.

551. “Can ‘health maintenance’ plan brake runaway Medi-costs?” Hospital Practice (May 1970): 19-28.

552. Carter, J., 1982, op. cit.

553. According to economist William Hsiao of the Harvard School of Public Health, total spending to sway public opinion and Congress on health policy ran at about \$16 million a year. The money came from large employers who had huge numbers of employees on health insurance (e.g. IBM, GM, GE, etc.), organizations of small businesses, organized labor, the insurance industry, the AMA, the American Hospital Association, and the pharmaceutical industry.

554. Carter, J., 1982, op. cit.

555. These were published by HEW as Objectives for the Nation (1979), The Surgeon General’s Report on Health Promotion and Disease Prevention (1979), and Objectives for the Nation (1980).