

## THE WHITE PLAGUE

In Berlin on March 24, 1882, a virtually unknown microbiologist by the name of Robert Koch, spoke at a major medical meeting to Europe's leading scientists (people like Paul Ehrlich and Rudolph Virchow) and he made sensational news - he had developed a stain which for the first time demonstrated the bacillus that caused tuberculosis. When Koch inoculated ten rabbits with the bacteria they died in four to six weeks and their organs showed the characteristic lesions.

Before Koch's discovery the disease was called *phthisis* or *consumption* and sometimes was referred to as "the white plague." Evidence for it has been detected in the bones of Egyptian mummies (from 2400 BCE) and Hippocrates used the word *phthisis* (around 460 BCE) to describe wasting of the flesh. The later term *consumption* also referred to the fact that in the terminal stages victims often were emaciated. I always thought that the phrase "White Plague" referred to the fact that patients appeared pale - presumably due to anemia - but a medical historian friend of mine (Allan Weisse) wrote an erudite paper in which he tried to find the source of that description. After years of study, he concluded that it was a misnomer - TB never was a galloping epidemic like the Black Plague of the Middle Ages nor were most patients anemic or pale. After exhausting every possible source, my friend couldn't detect who was the first to use the term White Plague - he suspected that Oliver Wendell Holmes may have been the one, but not definitely. But after Koch's work, the symptom of consumption or wasting no longer defined the disease, it was demonstration of the organism that did and thus the name tuberculosis.

Fairly recently it's been suggested that TB originated in Africa about 6,000 years ago and was carried across the Atlantic to South America by infected seals where it crossed over into humans. Seals! Who knew? Between the 13<sup>th</sup> and 18<sup>th</sup> centuries it was believed that for a form of TB that involved swollen lymph nodes in the neck called scrofula, when standard treatments, such as the blood of a weasel or a dove's dung failed, the condition could be cured by the king's "Royal Touch". French kings were enthusiastic touchers - of various parts - but during the 17<sup>th</sup> century Charles II of England was the champion - he was said to have touched more than 90,000 sufferers during his long reign. Of course, they didn't keep accurate records of outcomes back then - and no one had yet heard of double-blind studies.

Tuberculosis was the leading cause of death in the 18<sup>th</sup> and 19<sup>th</sup> centuries and during the last two centuries it has killed a thousand million people. It usually was a chronic disorder which could last for years, even decades, but, unlike epidemic plague - such as

the Black Plague of the 14th century or Ebola in this century - it usually seemed to attack just one person at a time. The symptoms could be subtle or entirely absent -- perhaps only a pale complexion or flushed face, night sweats, a persistent cough with specks of blood on the pillowcase or handkerchief. Conventional wisdom held that there was a hereditary predisposition that was provoked by such things as bad air (miasma), early marriage, strong liquor, tight lacing, too much or too little exercise, lack of sleep, failed love, self-abuse, winter winds, living in cellars, vampires. But these factors aside, unlike other contagious diseases, TB wasn't transmitted by fleas, bugs - or vampires - but through droplets spread human to human by coughing or sneezing.

In his book *So Has a Daisy Vanished* George Mamunes made the case that Emily Dickinson probably was infected and fearing that her time was limited, described herself as a "wounded deer." This may have influenced her solitary life choice and also her poetry which had frequent obscure references to death. Mamunes described how early in life and just as she was embarking on her solitary poetic life, Dickinson suffered from repeated episodes of sickness that were suggestive to observers at the time of tuberculosis - she was pale, thin and subject to fits of coughing. Several family members, including her invalid mother, as well as the only man with whom she seems to have had an intimate relationship, all had died of consumption. When Dickinson died at age 55 in 1886, the death certificate said the cause was Bright's Disease (kidney failure) but modern scholars have suspected that wasn't all. (Indeed TB sometimes effects the kidneys.) Mamunes pointed out that although TB was never directly mentioned in her poems, Dickinson chose to write "on a slant" - obliquely, indirectly, only providing hints - and that's what makes reading her poetry so challenging.

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In his book George Mamunes told a story about when Frederic Chopin was diagnosed with the disease in 1838 he was sent to Majorca for the mild climate. The French didn't believe that TB was contagious but the locals thought differently and when they discovered that he was consumptive, they wanted nothing to do with him. Chopin tried to hire a carriage to Palma where he could board a ship home, but no one would carry him so he had to travel by wheel barrow. As his companion George Sand wrote, "We boarded the only steamship that comes to the island and which is used to transfer pigs to Barcelona. There was no other way to move out of this wretched country. At the time of leaving the inn in Barcelona, the innkeeper wanted us to pay for Chopin's bed under the pretext that it was infected and that the police had ordered burning it." This story differed from the usual narrative of Chopin's life and latter day historians have questioned whether Chopin actually died of TB. Several years ago his body was

exhumed and examined but wasn't dissected so the final diagnosis remains in doubt. But even George Sand's account of the Majorca illness is inaccurate, it's true that differences of opinion about cause and susceptibility to TB persisted. Some fifty years later, when Koch's animal experiments confirmed that the disease was contagious, even he believed that what he called "the seed" wouldn't cause disease *unless* the "soil" was receptive – in other words that certain people – perhaps like Emily Dickinson -- are predisposed, and perhaps they are - only now we call it "immune deficiency."

Novels and operas were filled with gaunt, coughing, slowly dying consumptives. There were all the characters on Thomas Mann's *Magic Mountain*, Little Eva in *Uncle Tom's Cabin* and perhaps Jane Eyre. TB wasn't perceived as repulsive or immoral; in fact, somehow it seemed ennobling or romantic; its victims were long suffering – such as Violetta in *La Traviata* and Mimi in *La Boheme*. Some believed that consumption heightened the senses and spurred creativity and among the literati thought to have TB was John Keats (who died in 1821 at age 26) and Shelley, Browning, Thoreau, Whittier, Moliere, Balzac, Kafka, Jane Austen, Elizabeth Barret Browning, the Bronte sisters, D.H. Lawrence, Robert Louis Stevenson, Edgar Allen Poe, Stephen Crane - and those were just the writers!

Many victims had no faith in doctors or treatment. The British short story writer Katherine Mansfield wrote in her diary (1919) "Saw the doctor - a fool." The next day: "Saw two doctors - an ass and an ass." Three years later: "It's all sham. It amounts to nothing." Fed up with conventional doctors, Mansfield submitted to X-ray irradiation of the spleen from a Russian emigre for an exorbitant fee, but she felt sicker from the treatment than from the disease. Next she turned to a mystic from the Institute for the Harmonious Improvement of Man and lived there during the last months of her life before dying of a massive hemoptysis at age 34.

Anton Chekhov, himself a doctor, wrote to a friend in 1891, "The idea of having to undergo treatment and fuss over my physical condition produces in me something akin to revulsion. I'm not going to be treated." Chekhov, tried to hide his TB from others because it was a social stigma. But Chekhov said to his wife (1899), "I feel as though I'm in prison and full of rage, terrible rage." Franz Kafka wrote "Above all the fatigue is increased. I lie for hours in the reclining chair in a twilight state. I am not doing well, even though the doctor maintains that the trouble in the lung has remitted by half. But I would say that is far more than twice as bad. I never had such coughing, such shortness of breath, never such weakness."

## **THE SANATORIUM MOVEMENT**

Lacking any effective treatment, during the 1830s consumptives went to sea as sailors or whalers or voyagers. Some went west to farm or pan for gold, or to live a strenuous outdoor life. During the 1870s the emphasis shifted – especially for those with advanced disease. The sanatorium movement which began in Europe was based on the principle that consumption could be treated by rest, fresh air, plenty of sunshine and for those who were able, an active outdoor life style. (There were fears that as a sickly child Theodore Roosevelt may have been coming down with TB and he this led to his strenuous life.)The terms sanitarium and sanitorium are often used interchangeably, but there is a difference; the former is more a health resort, the latter a medical facility primarily for tubercular patients. Both words are derived from Latin - sanitarium comes from the word *sanitas* which means health; sanitorium comes from the word *sanare* meaning to cure or to heal. So in the context of this discussion, the more appropriate word is sanitorium but you see both spellings used.

During the late 19th and early 20th century, health resorts flourished in the mountains of Switzerland and the pine forests of Finland and there probably were at least a thousand facilities in the world. Not all were idyllic - many were crude shacks or cottages - but all were self-contained communities where infected patients were isolated from society. Sometimes they were referred to as “waiting rooms for death.” Switzerland was among the most popular locations for those who could afford it. Starting in 1868 several sanatoria opened near Davos and in 1912 when the wife of the German novelist Thomas Mann developed chest symptoms she was admitted to a luxurious facility there. After Mann visited her there for several weeks, he wrote the dense 700+ page novel *The Magic Mountain* (1924) in which sanitorium life was depicted as a microcosm of European society in the years just before the outbreak of World War I.

Thomas Mann didn't anticipate that the book would amount to much but it is considered to be his finest work and one of the great novels of the 20th century. It tells the story of a young engineer Hans Castorp who traveled to Davos to visit his sick friend at the chic Berghof sanatorium which was a fictitious composite of several places. Shortly after Castorp arrived he developed a mild fever and the doctors convinced him to stay for “the cure” and instead of staying three weeks he remains for seven years. In fact, TB is never specifically mentioned in the book. Life at the Berghof seemed to stand still and revolved around heavy meals with lots of butter and milk, hours of rest, love affairs and walks in the woods.

On the other hand life in American sanatoria was more spartan than in the chic European spas. Here's a contemporary description of what it was like in one place:

*The majority of patients were in the age group 20-35 years. The basic remedy was bed rest in its most stringent form: 24 hours flat. Meals were spooned to each patient by registered nurses, bed baths and the universal bedpans were imposed on these youngsters who looked and felt normal but who had shadows - even small shadows - on their chest X-ray films. All this in an effort to halt the persistent and almost inevitable trend for such small lesions to advance and destroy the patient. The average patient spent more than a full year in bed, many others much more. Careers were abandoned, marriage was discouraged and pregnancy virtually forbidden. Stress in any form and to any degree must be avoided. (Ryan, p. 27)*

Every aspect of life was tightly regulated by the medical and nursing staff. The chief physician was called the Superintendent which was an apt term because he literally commanded every aspect of life within his domain. The matron usually was a disciplinarian and patients were virtual prisoners. They were there to follow orders. Although death was omnipresent, it couldn't be discussed. Patients would sit for hours at a time on sleeping porches - and in all weather. The regimen emphasized developing a patient's character and determination in fighting the disease and encouraged to think positively. Nevertheless there was an illicit underground culture of death -- breaking rules and covert sexual liaisons were commonplace.

### **DRS. LOOMIS AND TRUDEAU**

During the late 19th century many Easterners with chest symptoms fled west. By 1900 they accounted for a quarter of all the newcomers to California. Some sought the warm, dry climate of the Southwest or the mountain air of Colorado, but two physicians, Alfred Lebbeus Loomis and Edward L. Trudeau, advised consumptives to go north - for them the cold, damp winters were no deterrent; it was the *pure* air and the opportunity to camp or tent, or hike and hunt, that was therapeutic.

**Alfred Loomis** was born in Bennington, Vermont in 1831. He was a seventh generation descendant of an English woolen draper who arrived in Boston in 1638 and settled in Windsor, Connecticut. There were many cases of consumption in his family - including his father, mother, brothers and sisters - and as a child he was convinced that he wouldn't live to be over thirty. As a young doctor in New York City Loomis was exposed

to plenty of coughing and spitting in tenements and hospitals on Wards and Blackwell's islands. He first contracted symptoms of consumption in 1867 when he was 35 years old and had just been appointed to the faculty of Columbia P&S. However, after a six month sojourn tenting in the dense forests of upstate New York, he wrote, "I overcame my [hereditary] tendency." He felt better than he had for years, gained twenty pounds, resumed medical work at Columbia and, afterward, spent at least two months every year in the barely inhabited Adirondacks which he extolled as a "natural sanitarium."

Alfred Loomis went on to become a successful chest specialist with an upscale practice of wealthy New Yorkers, including J.P. Morgan, but he continued to visit tenements in the city to care for some of his "old time patients" for little or no pay. He once said, "These people helped me when I needed help and I shall continue to serve them as long as I live." He also helped himself by charging high fees to those who could afford it - a medical Robin Hood. He published six books and dozens of articles and served as president of a half dozen organizations. He was so well respected that he was called to consult in 1881 when President James Garfield was fatally wounded and again five years later when President Chester Arthur was terminally ill (cancer.)

Dr. Loomis was gregarious with a contagious laugh and as an active member of the New York Academy of Medicine he headed their Entertainment Committee. He put a premium on the group enjoying a good supper at their monthly meetings - It was said that, "he was an authority on canvas back duck, knew all the best vintages and could tell from what region of Cuba a cigar came from by watching the smoke." Before he died he left a \$10,000 bequest to establish the Loomis entertainment fund to pay for future meetings in the tradition he had established. He lectured often on the need for clean streets and the need for the medical profession to perform more experimentation, especially on animals. At a time when anti-vivisectionists were especially vocal, he said, "A half million human beings perish in an epidemic, and there are sentimentalists who would say, 'Let them all die,' rather than kill a hundred guinea pigs in order to discover what was the epidemic."

In 1879 Loomis published a well-received book *The Adirondack Region as a Therapeutic Agent in the Treatment of Pulmonary Phthisis* and that same year he delivered a paper encouraging colleagues to send their consumptives to the region. He maintained that the disease could be prevented, that it was not *directly* inherited, and although contagious, "a healthy person may face consumption without flinching." At the time of his death at age 64 in 1895, Dr. Loomis was working on establishing a sanatorium in Liberty New York. The railroad had recently made Sullivan County easily

accessible to New York City and Loomis had plenty of TB patients in the city. At first, he would send them alternately to the Catskills or the Adirondacks, and when the results favored the Catskills, he raised money to buy 190 acres of land. However, he didn't live to see the project completed. Before construction began he developed lobar pneumonia and died at home within a few days (January 23, 1895.) His friends finished the job - J.P. Morgan donated \$85,000 - and the Loomis Memorial Sanatorium opened its doors about eighteen months after its founder's death.

Like Alfred Loomis, **Edward Trudeau** developed tuberculosis at a young age. He was born in New York City in 1848. After his brother died of TB (just as with Alfred Loomis) he decided to become a doctor and graduated from P&S in 1871. But two years later he began suffering from fevers and weakness and was given less than six months to live. Trudeau was an avid hunter and fisherman and was told to live outdoors and ride horses. He believed that he'd inherited a passion for outdoor living from his father who had abandoned both his medical practice and his family to join the western expeditions of John James Audubon and John Fremont. The father he hardly knew seemed to be a dashing woodsman so he left his wife and two children and with a friend headed north to the virgin forests of the Adirondacks. As he later recalled, "If I had but a short time to live, I yearned for surroundings that appealed to me, and it seemed to meet a longing I had for rest and the peace of the great wilderness."

When he arrived at the small Paul Smith hotel in Franklin County, Trudeau had to be carried up to his room, but the food was wholesome and the guides would prop him up in a canoe, hand him a rifle and they'd go hunting - when he shot a buck he was convinced that he was on the road to recovery. And indeed, within three months his health returned and he gained weight, but every time he returned to New York City he would relapse - seven times in all. In June 1873 Trudeau returned again to the Paul Smith hotel, this time taking his family, and it was then that he first met Alfred Loomis. As Loomis recalled, young Trudeau was emaciated, feverish and had a productive cough. He advised him to stay for the winter which was considered risky because conventional wisdom was that the damp, cold might be fatal. But Loomis believed that the pure air and resins from evergreen trees was therapeutic - and anyway, he felt that the young man was so far gone that he might as well die in his favorite locale. But once again his condition improved.

By 1880 Trudeau had recovered enough for him to buy a home and set up a practice in Saranac Lake where two years later he founded the Adirondack Cottage Sanitorium to care for early cases of TB, especially for the working poor. His first two patients were

referred by Dr. Loomis who agreed to lend his “great name” and expertise, as well as to examine free of charge, prospective patients in New York City. Loomis also served on the three member Board of Trustees.

Trudeau wrote, “It is not so much where the consumptive lives as how he lives...the pulmonary invalid cannot be left to his own devices as to his mode of life in any climate. A life spent entirely out of doors, in any kind of weather, good and abundant food and rest and discipline, are the all-important factors to utilize in bringing about a cure.”

Adopting the established German approach, Trudeau persuaded his first patients “to sit most of the day” - as he later recalled, “This was, as far as I know, the first attempt in America at applying the sanitarium rest and open-air method....and the principles of treatment have gained acceptance over the entire land.”

In 1887, on one of his trips to America, the Scottish writer Robert Louis Stevenson was feared to be coming down with TB and spent a winter in Saranac Lake under Dr. Trudeau’s care. He wrote several stories there and here’s a little of what he had to say in a letter he sent to the *New York Evening Post* about his time there:

*I was struck to observe the other day, in more papers than one, great praise of the new system of treatment in phthisis, and great lamentation that no establishment on this principle should yet exist in the United States. These complaints read to me very strangely in this place, where I am almost within sight of the ‘Adirondack Cottages for the Treatment of Pulmonary Disease’. In that establishment patients enjoy the advantages of this harsh but pure and antiseptic air, of pleasant lodging in fine scenery, of a generous diet, continual open air and carriage exercise, and in case of necessity, treatment in the pneumatic cabinet, all at the remarkable figure of \$5 a week. It is plain these cottages are run at a loss, and the deficiency must be supplied among the rich and generous. And how shall this continue to be accomplished if even the newspapers are ignorant of their existence?*

Later Stevenson spent two winters in Davos before traveling to Samoa where he died from TB at the age of forty-four. Maybe he should have returned to Saranac Lake.

When Robert Koch first published his findings in 1882, Trudeau obtained a translation, read it over and over, taught himself to perform Koch’s staining methods and repeated his experiments in a tiny laboratory which was the first of its kind in the United States exclusively for TB research. He studied the disease in rabbits that he’d trapped in the forest, but when Trudeau tried to interest Loomis in Koch’s exciting work, the older man



said that “he didn’t believe much in germs.” Nevertheless, in 1887 when Loomis arranged for Trudeau to present a paper at a major medical meeting in Baltimore, the inexperienced young doctor got stage fright and fainted - so his mentor delivered the paper in his stead to loud applause - afterward he told Trudeau “That was a good paper.” In 1910 Trudeau wrote, “Thanks to animal experimentation, we know today that tuberculosis is not inherited; that it is communicable and, therefore, preventable; and that in its earlier stage it is curable.” Alas not for him. After years of holding himself up as a model of recovery, Trudeau died of tuberculosis in 1916, more than four decades after he first contracted the disease.

Another alumnus of Trudeau’s facility was a Canadian thoracic surgeon Norman Bethune. He was a brilliant maverick - moody, and obsessed with work. After hours he led a sybaritic life and drank excessively, until in 1924 at age 34 he developed severe pulmonary tuberculosis. When he signed in to Trudeau’s sanitarium he was prepared to die - but he didn’t - and after about two years of convalescing he read in a medical journal about a new technique of lung compression that offered a second chance. After several pneumothorax procedures he made a miraculous recovery and went on to become one of Canada’s leading thoracic surgeons. Dr. Bethune was a passionate advocate of thoracoplasty, which was surgical crushing of the rib cage in order to compress the underlying infected lung. Once recovered he resumed his unorthodox lifestyle, but during the Depression he became disenchanted with organized medicine’s failure to address inequalities in health care. After an extended visit to Russia in 1935, he joined the Communist Party and then sailed for Spain to fight in the Civil War - and after that - he travelled to rural China where he led Chairman Mao’s medical corps as they were holed up in a mountain enclave. He had many adventures but died of sepsis after nicking his finger while operating under filthy battlefield conditions. Norman Bethune became a great hero to the Chinese although his name is barely known in the West.

## **PUBLIC HEALTH**

Historian Sheila Rothman has written that Koch’s identification of the tubercle bacillus revolutionized both the medical and social history of the disease. Doctors, public health officials and administrators all were eager to establish their authority and imposed an unprecedented degree of regulation on the lives of Americans who’d contracted TB. A massive educational campaign began to teach everyone the new lessons of hygiene and Alfred Loomis and Edward Trudeau were leaders in this historic development.

In this country during the 19<sup>th</sup> and early 20<sup>th</sup> centuries, TB was responsible for about one in five of all deaths - rich and poor, city or farm, young and old. Nearly half died, more than 100,000 every year – not all at once but one at a time. And when it finally was proven to be contagious, the government became actively involved in prevention – there were mandatory chest X-rays, child-labor laws and pasteurization of milk. It was necessary for all people, not only patients, to take responsibility for their general behavior – no spitting in public places, being frugal, temperate and disciplined in all things. When Lawrence Flick organized the first antituberculosis society in the United States in 1892, he warned against “consumptive tailors, cooks and waiters, candy-makers” - people in all walks of life were potential spreaders of germs. There were multiple rules: beware of licking stamps, handling money, putting baby’s on the floor. Blankets on beds in hotels and Pullman cars should be covered by clean sheets turned down two feet from the top.

Entrepreneurs built sanatoria in the Catskills and in California, Colorado and in the southwest. By 1900 there were 34 private and public facilities in the United States and by 1925 there were 536 with nearly 700,000 beds. There was no single approach to treatment. Superintendents at some sanatoria preferred total rest but couldn’t agree about how much or what to feed their patients. At Saranac Lake residents had to spend hours reclining in chairs on the broad porches that encircled each of twenty so-called “rest cottages.” They ate three large meals a day and had to maintain a strict moral code - no drinking, smoking, spitting or cursing. Emphasis was directed more on their behavior than on the tubercle bacillus. At the Loomis Sanitorium patients weren’t coddled either. They were told that “If you expect to get well you must work for it.” Many were put to forestry work, mowing lawns and road-building.

The National Tuberculosis Association was founded in 1904 and before long there were more than 1,300 local and state groups - all of them conducting aggressive hygienic campaigns to discourage spitting and covering your mouth when coughing, using individual drinking cups and dishes and breathing fresh, clean air; many moved west. In 1907 the Association began selling Christmas Seals which were the first direct mail fundraisers. The movement had a religious-like fervor, but was based on growing respect for science; through education the public would be shown the “light.” Now everyone could join the fight. Scientists were seen as modern-day saints and an exhibition in 1909 proclaimed “The two emancipators: Lincoln wiped out slavery. Science can wipe out consumption.” Public health measures had transformed personal habits and made it a moral imperative to feel responsible for preventing the spread of infection. And in truth, the slow decline of TB probably owed more to such measures as

improved nutrition, housing reform and slum clearance than to medical interventions at least until the discovery and availability of effective antibiotics in the 1940s.

## **BERGEN PINES**

In 1906 The New Jersey Association for the Relief and Prevention of Tuberculosis initiated legislation which permitted counties to establish their own isolation hospitals and sanatoria for underprivileged people. In 1916 the Bergen Isolation Hospital, soon to be renamed Bergen Pines, opened in Paramus. A promotional brochure described the location as being “on a high level plateau in the midst of a rich farming district [that] affords those four essentials, rest, fresh air, sunshine and good food.” During the 1920s and 1930s about 80% of the patients had TB. They were exhorted to be cheerful and optimistic even though the average length of stay for tuberculosis in 1937 was 405 days; some stayed for several years.

I worked at Bergen Pines for many years in various capacities and became interested in its past history. I found old records that described what life was like in the early years when most patients were tubercular. They were isolated both physically and emotionally and made to feel like pariahs or social lepers. One recalled, that no visitors were allowed - or, “If you did come to visit, you had to approach the patients from the outside porches and talk through a closed window that did not open. The hospital staff did everything that they could to discourage visitors.” They were told that if they wanted to win the fight against tuberculosis they had to obey the rules of the game - “not because they are rules, but because there’s a reason behind these rules, and if he doesn’t actually like it, he has to obey cheerfully and pleasantly and without too much kicking against the thorns.” Although chest specialists advised three or four years for best results, many patients couldn’t tolerate the program and signed out before they were considered “cured.” Many of those who remained joined a subculture that defied the strict rules; one form of defiance involved sexual relationships between patients for which the euphemism “cousining” was used. If nothing else, it relieved the monotony.

The healing properties of sunlight had been proclaimed for thousands of years, but with the advent of electricity it seemed that nature could be improved upon by using high power ultraviolet lamps. At Bergen Pines dozens of patients lay on parallel litters, their bare bodies exposed to the bright light while wearing goggles to protect their eyes. Starting in 1930, so-called “sun-starved” children from inner cities who had positive skin tests but no symptoms yet were admitted to a special unit called the “Preventorium.” Every day between 20 and 30 malnourished youngsters at a time received “sun baths,” also known as “heliotherapy.” Under the stern eye of a nurse, they would lay under

Alpine sun lamps in order to boost their resistance - at least afterward they no longer looked pale, but I wonder how many later developed skin cancer? There was no follow-up.

## **DRUG TREATMENT**

Selman Waksman was born in a tiny Ukrainian shtetl in 1888, fled anti-Semitism as a young man and immigrated to America. He was offered a job at the Rutgers College of Agriculture where he obtained his doctoral degree and went on to have a brilliant career as a soil bacteriologist. In 1939, anticipating World War II and the need to combat disease, he changed the focus of his research which led him to isolating streptomycin. In 1941 he was almost fired by Rutgers in a budget move because he was getting \$4,600 a year and he was said to be just “playing around with microbes in the soil.” Streptomycin was the first effective drug against tuberculosis. It became widely available in 1947 and for his work Waksman won the Nobel Prize in 1952. But there was a nasty postscript to this.

Although Waksman was the undisputed head of the project, it was a young doctoral student working under him by the name of Albert Schatz who did the fundamental research that led to the discovery. He worked in a tiny basement laboratory but was the one who showed that the drug killed the bugs growing on petri dishes. Not only did Schatz not get a share of the Nobel Prize or public recognition, he didn't get a penny of the royalties. So he sued and was awarded 3% of the profits which amounted to \$125,000. It was a pyrrhic victory though because Schatz was blackballed and never held an important academic position in his subsequent career. There was a principal involved - to what extent do those working under the department chair get credited and other department chairmen sided with Waksman - not the junior man.

Whoever deserved the credit for its discovery the trouble with streptomycin was that it had to be injected and also that the disease wasn't permanently cured, but just temporarily controlled. The maximal dramatic effect was limited to the first one or two months but by four months 90% of treated patients were coughing up active germs again that now were resistant to streptomycin. In 1951 three doctors at the Sea View Tuberculosis Hospital on Staten Island set out to find an oral treatment. The hospital had opened in 1913 when the disease was the city's leading killer. By the 1920s more than 1,000 patients were housed in eight four-story pavilions; they “took the cure” exposed to the elements even in winter. During the 1930s more than 30,000 patients had several liters of air injected into their chests twice a week in order to collapse their lungs - so-called pneumothorax.

The doctors at Sea View began by treating 175 tubercular patients who were close to death with two related drugs - isoniazid and iproniazid. Their published results appeared in 1952 and three years later the three researchers shared the Lasker Award - sometimes called America's Nobel Prize. Eventually, the optimum treatment was a combination of three drugs - and sometimes more. One of the three researchers on Staten Island was young Irving Selikoff who went on to discover asbestosis and introduced the specialty of environmental medicine. Isoniazid became the primary drug treatment for TB but iproniazid was toxic to the liver.

However, the investigators at Sea View noted an interesting side effect: many of those who received iproniazid reported increased energy and a sense of well-being. A few years later Dr. Nathan Kline working near here at Rockland State Hospital studied this effect on depressed patients and as a result of his work won the Lasker Award for discovering antidepressants. In fact, Dr. Kline won the Lasker Award twice - the other time for discovering tranquilizers -and again, the research was done right here in Orangeburg. Although the success of drug therapy for TB was dramatic, it spelled the demise of the sanatoria. Bergen Pines became a general hospital after the end of World War II, Trudeau's sanitarium in Saranac Lake closed in 1954 and the last patient was discharged from Sea View in 1961.

### **WHAT ABOUT ROCKLAND COUNTY?**

In 1898, Dr. Paul Gibier, who had been a disciple of Louis Pasteur in Paris, opened a farm in Suffern where, in addition to producing serum from horses to treat various diseases, he treated tubercular patients. In 1918 the Summit Park Sanitorium was erected in Pomona. There was a state law which provided that counties with a population of 35,000 or more must establish and maintain a hospital for persons suffering from tuberculosis and Summit Park was the first such mandated facility. The original two story frame structure accommodated 46 patients who lay bundled up on open, unheated porches for hours in all weather. It grew and grew and by the 1930s was said to be one of the finest institutions of its type in the country. In 1942 Dr. Robert L. Yeager was made Superintendent and led the hospital through both good and bad days for 42 years. But with the advent of drug therapy, its role changed and in 1977 the former sanitarium changed its name to the Summit Park Hospital and Nursing Care Center. After decades of decline and mismanagement, it finally closed at the end of 2015 after 96 years.

### **CONCLUSION**

In her book *Living in the Shadow of Death. Tuberculosis and the Social Experience of Illness in American History*, Sheila Rothman noted that although new ideas about healthful occupations, climate, exercise, rest and cleanliness profoundly altered social habits, that predictions about the eradication of TB and other deadly infectious diseases were all wrong. Antibiotics and vaccines were not enough.

Currently, roughly one third of the world population are infected with about nine million new cases every year. Only about one tenth develop clinical disease but about two million a year die from it; that's more than 200 deaths every hour. Epidemics continue in third-world countries, like Nepal and rural Russia, and in this country there still are about 15,000 new cases of TB each year. Although it's almost always treatable, multi-drug resistant strains have emerged that effect immune deficient patients, especially those with AIDS. In recent years there've also been outbreaks of Ebola and other scary diseases and yet, as if we've learned nothing, our government is slashing funding for the CDC which helps protect us from the next super-bugs that lurk only air-hours away from our shores.

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As I said at the beginning my interest in this subject was piqued by Jenny Conant's reference to Dr. Loomis. That's often how I get started on research projects and sometimes it's just serendipity or dumb luck. Such was the case one day about two years ago when I was driving north on Rt. 9W and just as I crossed over into Rockland County at Columbia's Lamont campus, I spied a rusted historic marker. All I could read as I passed by was "Skunk Hollow." But that chance observation led me to discover a long forgotten epidemic of cholera that killed many people in my new hometown of Piermont during the mid-19th century.