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Review Article

Scalding Syphilis; Paul De Kruif Against "The Old Rover"

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Abstract

Bacteriologist and science writer Paul de Kruif initiated and promoted the treatment of syphilis patients with artificial fever. It was an alternative to both the long-term treatment with arsenic an bismuth, and the bouts of fever induced by malaria parasites. The idea was developed at the hospital of Dayton Ohio and eventually was as simple as blowing warm air over the body. G.M. industrialist George Kettering was the driving force, supplier of technical ideas and financial support. Initially, patients in the advanced stage (dementia paralytica) were treated with reasonable success, but gradually the experimenters also included infected and infective carriers at earlier stages of the disease. All the way, the opposition of the medical profession was fierce, not the least because De Kruif was not an MD, yet publishing regularly in the popular press about the achievements and progress (treatment in one day, plus light arsenic and bismuth). Eventually, the technique and the assisting medical staff were moved from Dayton to the Chicago Quarantine Hospital, after the US had joined the war. In order to protect healthy recruits, mainly women were treated (infected men were sent home!). After having treated hundreds of people, in 1943, penicillin turned out to be effective against syphilis and the machine fever had had its days.

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INTRODUCTION

Paul de Kruif (1890-1972) was a bacteriologist from Michigan, who switched to popularization of medical history and topical issues at the medico-political front. His drive was to show people their right to health and access to care. His plain language and speedy way of writing articles for lay magazines, did not appeal to many medical doctors.

On a trip through Europe in 1930, De Kruif visited Vienna and had interviews with Dr. Julius Wagner-Jauregg. This psychiatrist had developed an additional treatment of syphilitics in their last phase, with paresis and insanity (general paralysis of the insane or dementia paralytica, DP). He infected them with Plasmodium parasites in the blood from malaria patients. Most of the time, this malarial fever resulted in improvement and patients could lead a more or less normal life. After as many bouts of high fever as a patient could stand, the malaria was effectively stopped with quinine. For that discovery Wagner-Jauregg had received the Nobel Prize in 1927. Up until then, the standard was the long and drastic arsenic (Neosalvarsan) and bismuth treatment: "that grueling once-or-twice-a-week treatment that takes nearly two years to finish." But gradually, the malaria treatment became standard approach for DP patients in Europe and America. During the interview, De Kruif confided to the old psychiatrist that there were scattered attempts in America to replace the malaria fever with artificially induced fever, and the doctor was very curious to hear more about it (1932). He wrote about this encounter in his book *Men against Death* (1932).

The sources of this article are the articles and books of Paul de Kruif, and his correspondences with several friends.

Research in Dayton

In May 1929, De Kruif had met Dr. Walter Simpson, a pathologist at the Miami Valley Hospital in Dayton, Ohio. And in 1930, he told Simpson about the encounter with the old alienist in Vienna. De Kruif suggested starting to do experiments with ways to increase the body temperature by some artificial source, to replace the cumbersome and complicated method of malaria fever. Simpson was enthusiastic and introduced De Kruif to the industrialist Charles Kettering of General Motors [1]. De Kruif told him the story about the malaria therapy and the idea about artificial fever as an alternative. It so happened that Dr. Willis Whitney and his engineers at General Electric, while tinkering with a short-wave broadcasting gadget, felt very hot. Kettering asked if they could make another prototype of this oscillator, called "radiotherm," and sell it to him to try out on syphilis patients.

Plans were made to find out whether this artificially induced fever would be more comfortable and less dangerous than the malaria treatment. The first experiments with volunteers and early patients, lying in the energy field between electrodes caused unexpected side effects: the abundant drops of sweat heated so much that the bodies got skin burns. On Kettering's suggestion, warm air was blown with a fan over the body evaporating the sweat. De Kruif's correspondence with friends shows the subsequent events in the research at Dayton.

Early 1931 De Kruif informed his friend H.L. Mencken, the famous journalist: "I am by way of going back into experimental work to some extent, to Dayton O. [I am not] going to have any remuneration for the work, nor is it likely that my name will appear in the publication of results should there be any, which we never know. But just the same, it's big league stuff and practical as hell, which is what I like best of all."[1] It was De Kruif's idea to combine the heat treatment with low doses of arsenic and bismuth. He called this "his personal baby."

When the project had developed to maturity a decade later, he wrote to another close friend Tom Parran, the Surgeon General of Public Health, that he remembered well the beginning of the project in 1931:

When I was the first guinea pig, having the hell burned out of myself in the first crude air-conditioned GE radio-therm. We fevered our first tabetic [with wasting disease] on Armistice Day 1931—a man who had thrice attempted suicide, had lost his job as insurance salesman, had a cord bladder, and had unbearable girdle pains that had made him a morphinist. He was impotent. My God how we burned that poor devil. But we cured him. (He is now back on his job and has two kids since he recovered.)[2]

This patient and all others who underwent this experiment were in advanced states of dementia or desperation. Most physicians kept such patients at a distance because of their moral failings. Dr. Fred K. Kislig, chief of staff at the same Dayton hospital, had acquired a background of experience in the malarial treatment of syphilis. He knew his broken patients and treated them with respect; for his patients, he was the kind of doctor they could talk to. Kislig had nurse Florence Storck to assist him. "[She] cajoled them with gaiety and kindness [while inside the hypertherm]. Have you ever seen cheerfulness walking? That was Storky." But Kislig knew he would not live to see the success of the hypertherm. De Kruif called them the new kind of doctor and nurse.

Interestingly, this observation reflected a trend in the attitude of doctors toward psychiatric patients at the time: psychiatrist and historian Joel Braslow, studying the procedure and effect of bygone malaria therapy for syphilitics, concluded that, along with the new tool of malaria-induced fevers, doctors had become more open and friendly to these shattered people. Braslow was less sure about the scientific proof of the effectiveness of malaria therapy, and he hardly touched the subject of machine fever [2,3].

Early 1933 De Kruif informed Mencken again: "The first paper on the fever treatment of syphilis giving the results of the first fifteen months of our work—which you would agree are really extraordinary and beyond those obtained by malaria—will be read by Simpson at Montreal on February eight [at the congress of the American College of Physicians]."[3]Meanwhile, Kettering brought in another engineer, Edwin Sittler, from General Motors at the Frigidaire Division, and he redesigned the utterly impractical machine into a model by which the temperature and humidity could be better regulated.

Shortly afterward, Fred Kisligdied. Walter Simpson, also a skilled syphilis doctor, hardboiled and rough-talking, a martinet with a human heart, had to take over. Heand Sittler published their promising results in 1933 (including the deceased colleague as co-author). With a note, they acknowledged: "This investigation had its inception in ideas expressed in a book by Paul de Kruif, PhD, entitled *Men Against Death*, Harcourt, Brace and Co., NY, ch. 9, pp. 267-79." It fully compensated De Kruif's modesty, apparent from his next letter to Mencken:

We are now heating -104° to 105° [F] for five hours- six patients a day, and our capacity will be increased to ten a day within the next two weeks. The Frigidaire Corporation is going to produce the air-conditioned radiotherms, and we are going to licence [sic] them, at cost, with no profit whatever, to those qualified to practice this new, dangerous, and difficult art. It is no joke to have a fever of 105°, even if it is only an electrostatic field and not microbic poisons that gives it to you. But so far, though we have given over six thousand hours of 105° fever now, we have had no deaths, nor any serious consequences. (Please knock wood three times!) What is most important is this: that the air conditioning as devised by Boss Kettering and his engineers has made the process *comfortable* enough for us to use not only in late neurolues but even in primary and secondary lues—where the patients aren't sick to speak of. But they all have so far come back for the full course of ten fevers. "Radio deathfighters" published in the *Country Gentleman* for April, will give you a summary of what has so far been accomplished.[4]

But the fevers induced with the radiotherm were unpredictable and difficult to regulate and thus could be fatal. One of the problems was dehydration, caused by the blasting of hot air to evaporate the drops of sweat; the solution was to let the patient drink saltwater flavored with peppermint. Then, one day, the gadget stopped working in the middle of a fever treatment. But to everybody's surprise, the patient's fever kept going up without the shortwaves, just from the hot air blowing over him. It appeared that the radio shortwaves were not necessary; it was just the moist warm air that rose the temperature to 105°F! This accidental finding blew away the worries of skin burns, and the Kettering air-conditioned "hypertherm" was born.

Boss Ket

By that time, De Kruif was utterly excited about the way car-maker Kettering, "relaxed and salty, "involved himself in medical experiments, and De Kruif would show his admiration. In the middle of the Great Depression, "Boss" Kettering was steadfast in showing his faith in science, and he had the courage to finance the development of the fever machine. By then, De Kruif wrote a biography about him.[5] It was a difficult job because of all the physics and electricity he had to comprehend. "That however is education." He kept Mencken informed:

We are settled here in Dayton for the winter, having broken

[1] De Kruif to Mencken, 29 Jan. 1931; Henry Mencken Papers, New York Public Library.

[2] De Kruif to Parran, 17 May 1942; Thomas Parran Papers, Archives Service Center, University of Pittsburgh.

[3]De Kruif to Mencken, 31 Jan. 1933.

4 De Kruif to Mencken, 5 April 1933.

5 *The Saturday Evening Post*, 15 and 29 July, 12 and 26 Aug. 9 and 23 Sept. 1933.

camp in Michigan last Monday. I am working on the Kettering stuff for the *Post*. It has grown and grown and is going to be a book, *The Monkey Wrench Scientist*. It has outgrown the bounds of the *Post*, but they are going to use a lot of it.[6]

Kettering was now preparing to manufacture a hundred fever machines at Frigidaire and lease them to other hospitals such as Mayo Clinic and Johns Hopkins University. And in an interview, De Kruif argued: "Best part of it is General Motors is giving the cabinets out at cost price, no profit. That's dangerously near a Bolshevik 'production for use' philosophy for a big concern."[7]

De Kruif had moved to the political Far Left from 1935 onward. But capitalist Kettering was and remained De Kruif's very intimate friend, who often visited the hospital. He not only furnished ideas for improving the apparatus and techniques but also took an active interest in the progress of the patients: "Ket is a will-o-the-wisp flitting around at a thousand different pieces of work incessantly."

Progress

Meanwhile, many inconveniences of the artificial fever system were studied and solved. With the moist air, the temperature could now be kept with precision, and the whole procedure was shortened to thirty hours, with six hours of fever from 105° to 106°F. De Kruif had lots of good news to report. By then, more than six hundred people were subjected, all of them without further hope and doomed to death, but with only one actual casualty. The fever was always combined with mild, harmless doses of arsenic and bismuth. And, the newest development, twenty-seven patients with early symptoms of general paralysis were healed and back to work. Seven patients not yet insane, but the Wassermann test being unmistakably positive, turned negative after the fever treatment. Also gonorrhea patients were successfully subjected to the heat air (until 1941, when Mahoney discovered that sulfathiazole did the job).

To his friend, the biologist Raymond Pearl, De Kruif confided:

The fever work both on syphilis and gon[orrhea], is certainly going great guns. Given adequate organization of fever clinics and fever teams, which can now give fever in most marvellously adjusted exact doses, with a high degree of safety, the disastrous late consequences of lues can now pretty well be prevented. Or could, is a better word. Because, are the facilities going to be furnished? Chemotherapy is given simultaneously with the fever but in doses normously below those necessary when fever is not given. The amiable, sloppy old medical hit or miss and maybe has been kicked out by an exactness unique in medical practice."[8]

This again reflects De Kruif's preference for laboratory science and distrust for the medical establishment. He explained that the machine fever treatment was short, in comparison with the malaria treatment, and that it was consistent, and the fever could last longer that the malaria bouts. In addition, it was a good alternative to the standard eighteen continuous months of shots with big doses of arsenic and bismuth, poisonous and uncomfortable, which many patients could not continue with until the end.

But sometimes there were obstacles in the road. De Kruif, as always, committed to public awareness about new treatments, had produced an article on machine fever for treatment of early syphilis in the *Country Gentleman*.[9] It was condensed in *Reader's Digest* (RD), to the detriment of precise wording. To hedge himself against the criticism of medical colleagues, Simpson had a protest published in the *JAMA* in which he distanced himself from De Kruif's optimism.[10] Nevertheless, a few years later they published a scientific article together (1940).

In 1940, with the full focus now on early syphilis, De Kruif informed Parran about a promising one-day treatment with fever, always with mild doses of arsenic (drip) and bismuth (shot). The two chemicals worked synergistically against "the old rover."[11] The test always turned from positive to negative, indicating that there were no active spirochetes left.

Q-Hospital

In 1937, De Kruif was a motor behind a large rally against syphilis in Chicago[12] (Poirier, 1995)[4].The hypertherm did not play a role yet in the treatment. But a few years later, facing the threat of war, there was urgency for quarantine and detention hospitals to further remove the sources of syphilis infection from the population. Dr. Herman Bundesen, the health commissioner and syphilis fighter in Chicago used to say about the military recruits: "It's up to the church and home to keep them good; it's up to the police to keep them straight; it's up to us to keep them clean." In other words, doctors no longer bothered to preach to their patients but tried to prevent the spread of venereal diseases (VD). With war about to become reality, Bundesen and De Kruif jumped at the chance for a Quarantine Hospital (also called detention hospital), because the number of new infections was dramatically on the rise again ("not because syphilis was increasing but because the harder you looked, the more of the sinister sickness you uncovered"). Mencken ironically wrote: "I hear that there is a great deal of fornication among the soldiers."[13] Indeed, with nearly six thousand selectees for the army in Chicago rejected due to syphilis infection, there was urgency. Moreover, there was some hurry, because the war would deplete the hospitals of nurses and doctors.

The general opinion, including that of the Chicago syphilis hunters was: "We must make this city safe for sailors and soldiers," as De Kruif opined. With the one-day heat treatment, the vast majority of these men could be brought back to A-1 status, which would rid the community of a menace. And thus, the

6 De Kruif to Mencken, 18 Nov. 1932.

7 *Washington Post*, 29 Dec. 1936; adapted by Mark Foote, *The Holland Evening Sentinel*, 3 Jan. 1937.

8 De Kruif to Pearl, 5 Feb. 1937.Raymond Pearl Papers, American Philosophical Society, Philadelphia

9 De Kruif, "Machine Fever," *Country Gentleman*, April 1937; *Reader's Digest*, May 1937.

10 Walter M. Simpson, "'Machine Fever' in syphilis," *JAMA* (5 June 1937): 1988.

11 De Kruif used this nickname regularly in his correspondence and in his autobiography.

12 De Kruif, "Chicago against Syphilis," *Reader's Digest* (March 1941), 23-33.

13 Mencken to De Kruif, 24 July 1942

women as well had to be made clean! The warmth treatment was intended for contagious patients, thus, those who had contracted the infection less than two years before. In spite of their sores and ulcers, they mostly did not feel sick enough to go to a hospital for the long treatment. No longer were the chronic and often insane DP patients the target group, but "healthy" carriers, despite the low number of only fifty-four syphilitics at that time treated and cured, including one dead. When the short treatment had been proved to be successful for many more patients in 1942, De Kruif triumphantly wrote: "Found: A One-Day Cure for Syphilis."[14] The dramatic improvement toward a rapid treatment with fever, arsenic, and bismuth in one day that people had to know about, did not impress outside professionals, and the article refueled the battle with the hierarchy of the American Medical Association (AMA). High medical authorities on venereal diseases made a vicious attack on that story: "utterly premature, ridiculous, criminal, the most damaging attack upon our present system of treating syphilis to be given to the public!" And one syphilologist lamented:

Some [patients] think the physician does not know his business. They say "Here you promised to cure me, and it is to take a year or more while Paul De Kruif writes I will be well after one day's treatment." Others query, "What about this deadly arsenical treatment that you are giving me, while I might better be in a fever cabinet for a few hours, dozing away, smoking and listening to radio music?" The publishers of the *Reader's Digest* are doing a great disservice when they accept such unscientific, unsubstantial articles as that of Mr. De Kruif's.[15]

Indeed, thousands of letters came from people wanting to be cured. De Kruif wrote that the "medical big boys were out to get me on the one-day syphilis cure, and they'd cut down my writing production because of the necessity of having to answer them.[16] But as an unpaid supercharger, he hung on. Everybody counted on De Kruif for the final go ahead: "They are waiting now, *on my word only*."[17]After much negotiation with the city board, generals and admirals, and politicians, the idea for a Q hospital, the "Chicago Intensive Treatment Center," was funded in 1942 as a wartime project, with $1 million from the Federal Works Agency, the US Public Health Service (PHS), the state of Illinois, and the city of Chicago (De Kruif, 1949). He even put the mind of his friend, Vice President Henry Wallace to it and pleaded with him for a good word to have alternative current installed for the center's modern medical equipment. Dr. H. Worley Kendall of the Kettering Institute for Medical Research, together with an experienced staff of nurse-technicians, left Dayton to take charge of fever therapy at the new hospital. The treatment center would be run by a gang of young doctors, not one of them more than thirty-five years old!

De Kruif persuaded Vice President Wallace to give the opening speech, which he subsequently wrote for him. The speech was important: "It is, while simple, just the same, a package of pure TNT . . . the first statement by a principal political leader in which public health is placed before, placed first, and placed fundamental to all of the five democracies for which we now are fighting"[18] [5]. During the opening ceremony on that windy December day, the De Kruifs, surrounded by their friends and listening to the speech of the vice president, felt warm, happy, and proud. It was a major step forward for Chicago's public health and an example for the nation. *Time Magazine* reported on December 14, 1942: The world's first public hospital solely for intensive treatment of social diseases [sic!] was dedicated in Chicago's rain and cold last week by Vice President Henry Agard Wallace. The new Chicago Venereal Disease Hospital is the old, reconditioned Wesley Memorial Hospital on South Dearborn Street. Those who wondered how such an institution could get a clientele were told that most of the patients will be prostitutes (who may come voluntarily or by commitment by the Women's Court). But the hospital's services (specialty: quick treatment for early syphilis and gonorrhea) will be free to all, with a full capacity of 2,500 patients a year. Support for the first year is a Federal Works Agency grant of $425,000.

Among the speakers at the dedication were US Surgeon General Thomas Parran, venereal disease enemy No. 1, and Chicago's health commissioner, Herman N. Bundesen, who will head the hospital until a permanent director is chosen. Rear Admiral John Downes, commandant of the Ninth Naval District and Major General Henry S. Aurand, commanding officer of the Sixth Service Command, were on hand to congratulate the city on its "positive stand" on venereal disease—the center is expected to reduce the dangers of infection among servicemen in the Chicago district.

Ten hypertherm fever cabinets were installed in the treatment center, one to a room. Visitors, VD experts, scientists, and public health men who expected to see patients writhing and moaning in torture chambers were astounded at the prevailing quiet and calm. Beyond the capacity of the fever cabinets, many syphilitics were treated with a massive arsenic cure.

De Kruif kept a finger on the pulse and updated Parran, his ally in the fight against venereal diseases:

Artificial fever is now so safe and so marvelously controllable, not in a *hot* box as you call it, but in a *warm* box. The humid air now used for induction of fever is not above 112°[F], usually 110°. The fever, once induced, is maintained at 108°—only 2° above the temperature of the patient, so perfect is the insulation. Over twelve hundred patients have been fevered in Dayton during the past eleven years, and in only one can fever be said to have been contributory to death. This means that far over twenty thousand hours of fever have been given with this remarkable safety. And now we don't burn them at all anymore. And now we have hundreds of neuroluetics cured. And now we have forty-five successive cases of early syphilis one day treatment: fever plus mapharsen [arsenic], and all have reversed clinically and to

14 De Kruif, "Found: A One-Day Cure for Syphilis," *Reader's Digest*,Sept. 1942; *Life among the Doctors*, 140-68.

15 *JAMA*120(1942), no. 3: 226.

16 De Kruif to Parran, 15 Oct. 1943.

17 De Kruif to Wallace, 20 June 1942. Henry A. Wallace Papers, Iowa State University Library.

18 De Kruif to Tom and Carroll Parran, 20 Nov. 1942; De Kruif to Wallace, 17 and 25 Oct., 6 and 12 Nov. 1942.

complete negative by quantitative Kahn [test], with no relapse so far.[19]

De Kruif also kept the vice president informed about the progress in Chicago: "Just back from two stirring days at our Intensive Treatment Center: 220 cases already completed on what may be termed our pilot plant run. Now ready to double our production. . . . Ten cases a day from now on!" And half a year later: "Chicago battle is going marvelously. Almost eight hundred cases in succession without untoward result. We have definitely proved that fever 106° does not increase toxicity of arsenic. Raising the dose of arsenic, our treatment results are more and more striking."[20]About his next article De Kruif proudly wrote to Wallace: "This little story which you did so much to make possible has been more fun and gives me more satisfaction than any other I've ever written."[21][6]

To Mencken he confessed: "The treatment has been savagely criticized because of its alleged danger: 507 cases have been treated in succession without any untoward result whatever. The opposition, which was bitter at the time of my story published last August, is now dissolving and the pooh-bahs of syphilology are now beginning to hop on the bandwagon."[22]

A similar number was submitted to the ten-day arsenic treatment, according to scientific rules. Some control, or rather comparison with the standard treatment, was necessary to prove the point. Interestingly, De Kruif was involved in a Tuskegee revalidation project for African American polio patients in 1939, but he was not aware of the simultaneous experiment with syphilis patients nearby, where only untreated controls were used [7]. He knew some of the medical doctors involved, but apparently, they had their mouths sealed, particularly facing a blab like De Kruif.

By the end of 1943, almost a thousand infectious people, mostly women, had gone through the one-day (30 hours) hypertherm-chemical treatment, voluntarily that was. (It was to protect the clean men, selected by the army; those rejected, because of syphilis, returned home, untreated, and remained sources of infection). And De Kruif made this prediction to the psychiatrist Lorenz: "Within another year, we will be able to say that fever, 106°F for eight hours, with bismuth the day before the mapharsen during the fever, will take care of 95 percent of all primary and secondary syphilis."[23]

The patients were greeted with a kindness rare in the experience of many of them and treated like sick people, not sinners, as Parran found out while on inspection.[24] After the Kahn/Wassermann test gave proof that the spirochetes were dead, people were released, but kept under active surveillance for a year. Initially, De Kruif proudly mentioned few relapses, but later he had to admit that, in from 15 to 30 percent of them, the spirochetes were found to relapse during that period (whether it could have been reinfection, he did not mention).A funny detail was that some young men came to the center to ask for the names of those women who were made clean. Apparently their intentions were not so clean. Of course the request was turned down, if only for the fact that the women remained under medical surveillance [8].

A new magic bullet

Then came the antibiotic, penicillin, and in 1943, it sent the medical world into a furor. Dr. John Mahoney (the one of sulfathiazolefor gonorrhea) gave proof that penicillin was also a cure for early syphilis. De Kruif was quick to write to Parran:

O. C. [Wenger, another syphilis fighter], God bless him, told Herman [Bundesen] and me that Mahoney is working with penicillin treatment of rabbit syphilis and is having success. We are eager to try a human series with penicillin-fever, if Mahoney's preliminary results justify it. We know the extremely low toxicity of penicillin, and we have now proved the extremely high safety of artificial fever, when it is in competent hands. We have now passed the 700th case in our one-day series. The patients are now maintained comfortably and safely at 106° [F]–with a cabinet maintenance temperature of only 103°! In short, when once their fever is up, they make their own fever. It has turned out to be a question of the patient's water balance and the high degree of humidity of the surrounding cabinet atmosphere.

Indeed, penicillin was immediately tried out on a few patients in the Intensive Treatment Center and found useful. But with the scarcity of the new miracle drug, the armed forces had priority, and the center had to wait until mass production of penicillin-aluminum-monostearate (PAM) took effect. Initially PAM was combined with the standard of heat, arsenic, and bismuth, the four-barreled "canon blast," and that without relapses! The combination of 1.2 million units of penicillin with artificial fever therapy was delegated to the Chicago center by the National Research Council. By 1944 Chicago was the safest large city in America for the military, and Bundesen and the staff were honored as a model for the nation. But at the end of the war, a budgetary slash threatened the Intensive Treatment Center to be closed, upon which De Kruif made it public to the authorities that he would give the scuttling by the PHS the widest possible publicity. In a letter of Vice President Wallace to De Kruif of October 2, 1945, Wallace's secretary added in handwriting: "You might possibly consider using the Wallace Foundation funds for your Intensive Treatment Center. It is not my say, but I was impressed by your problem."Fortunately, the center was able to continue with its work.

Afterthoughts

De Kruif was not the sort of character to boast about success, but the publication of his ally Herman Bundesen and other Chicago colleagues about penicillin against syphilis in a prestigious medical journal [9] was proof that his foremost activities and unshakable belief in the possibility of syphilis control had paid off

19 De Kruif to Parran, 5 and 17 May, 28 July, 3 Aug. 1942. The syphilis test developed by Reuben Kahn was a simple and cheap alternative for the ponderous Wassermann reaction.

20 De Kruif to Wallace, 31 Jan. and 20 Aug. 1943.

21 De Kruif, "Stamping out Syphilis with the One-Day Treatment," *Reader's Digest*, Dec. 1943.De Kruif to Wallace, 30 Oct. 1943.

22 De Kruif to Mencken, 18 June 1943.

23 De Kruif to Lorenz, 7 Sept. 1943.

24 *Life among the Doctors*, 155-58.

in improving public health. Later it appeared that penicillin alone could wipe out the spirochetes [10], and the warmth treatment in the cabinets, as well as the malaria treatment became obsolete as remedies for syphilis. They had done their job, and a decade of heat treatment became just a blip on the screen of medical history. But it was one of the medical events on which health activist Paul de Kruif has left his mark.

Historian John Parascandola, expert on syphilis in America, wrote a chapter and an article on VD rapid treatment facilities throughout the nation; most of them used only the week-long intravenous drip method with arsenic and bismuth or multiple injections over twenty-five days and sulfa treatment for women with gonorrhea [11,12]. Surprisingly, he did not mention the Chicago Q Hospital or De Kruif for that matter.

According to the present requirements for scientific proof, the machine fever treatment cannot be said for sure to have cured syphilis. Historians now tend to doubt, whether both the malaria therapy and the machine fever treatment would have stood the test as dependable (significant) cures for syphilis. Aronoff gave as results for complete remission with the malaria therapy in the United States from 25 to 50 percent and pointed to the risk of mortality of up to 10 percent [13]. Contemporary requirements for scientific proof (randomized clinical trial with informed consent of the patients and statistical evaluation of the results) were not performed in those days and thus, we will never know [14]. But with the standard of that time, what more proof did they need?

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