

Jack London's “Chronic interstitial

A historical differential diagnosis

Andrew S. Bomback, MD, and Philip J. Klemmer, MD

Dr. Bomback (AQA, Columbia University, 2003) is the Doc J. Thurson III Fellow in the Department of Medicine, Division of Nephrology and Hypertension, at the University of North Carolina School of Medicine in Chapel Hill, North Carolina. Dr. Klemmer (AQA, Temple University, 1972) is professor of Medicine in the Division of Nephrology and Hypertension at the University of North Carolina School of Medicine.

Jack London, once America's most famous author thanks to *The Call of the Wild*, *White Fang*, and over fifty other books, died at the age of forty on November 22, 1916. His death certificate, signed by Dr. William S. Porter, London's personal physician, pronounced “1+ days” of “uraemia following renal colic” as the cause of death. “Chronic interstitial nephritis” of three years' duration was listed as a “contributor.”¹ A physicians' bulletin, signed by Porter and three other physicians, described a day-long battle with

“a gastro-intestinal type of uraemia” that began after dinner on November 21, 1916, and led to “coma” and then eventual death at 7:45 PM the following evening.²

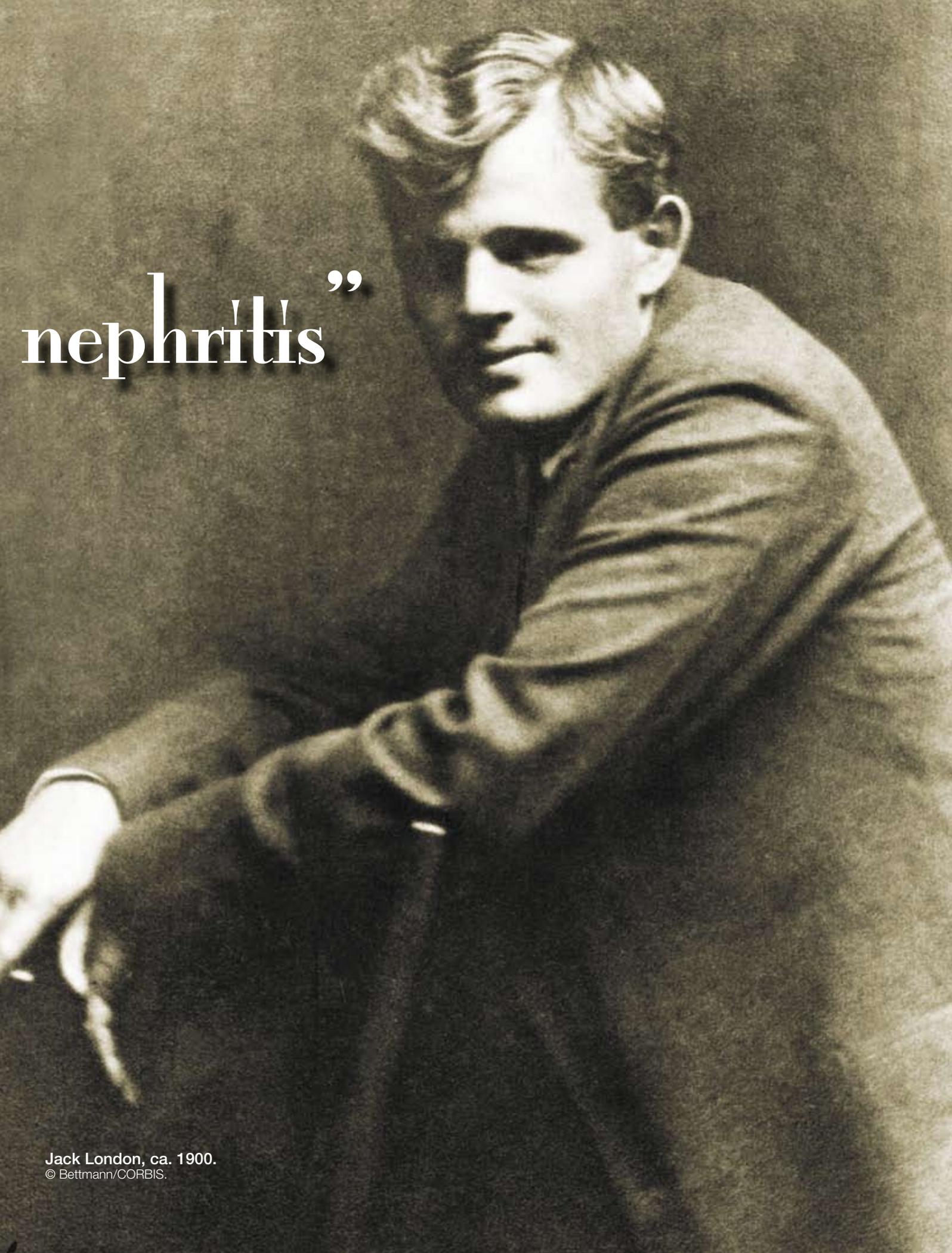
The renal failure documented on London's death certificate has never been fully explained.³ Speculation that recurrent nephrolithiasis was the source of his kidney disease is rooted in London's persistent renal colic, but the most severe scarring from kidney stones only rarely leads to end-stage renal disease in patients with two functional kidneys.

London's writing was intensely autobiographical and has helped scholars unearth a detailed and fascinating history of a writer, husband, father, sailor, rancher, gold prospector, and social activist (to name a few of the hats he wore to varying degrees of success). We believe that London's words also hold the key to understanding the pathophysiology behind his fatal kidney disease.



1911—Onset of
symptomatic uremia

In 1911, Jack London was turned down as a bad health risk by an insurance company. No reason was given for his failure to pass the insurance company's evaluation, but two years later, following an appendectomy, London was told by his surgeon—the same Dr. Porter who eventually took on London as a private patient—that his kidneys were failing. Porter's assessment of London's failing kidneys was probably based on the combination of a normocytic anemia, acidemia, and heavy albuminuria, diagnostic tests readily available for a physician in 1913.⁴ London's letters and his second wife's diary relate Porter's warning that he would die of kidney failure if he did not stop drinking, give up raw fish and meat, and start exercising and losing weight. By most reports, the writer wasn't a particularly compliant patient.^{5,6} Photographs from London's final years show him bloated with edema. His behavior became more erratic, and his writing, too, showed signs of deterioration.⁷ His body and mind were shutting down as uremia took its toll.



nephritis”

Jack London, ca. 1900.
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Jack and Charmian London charting a course.

The Bancroft Library, University of California, Berkeley. The Regents of the University of California.

London's life story provides the basis for a broad differential diagnosis of a chronic kidney disease that progressed to end-stage renal disease. The author was almost as famous for his drinking exploits as for his adventure stories of the Klondike and the South Seas, thanks to the thinly-veiled, alcohol-soaked autobiographical protagonists of novels such as *Martin Eden* and *John Barleycorn*. Although glomerular morphologic abnormalities with IgA deposition are found in more than fifty percent of cirrhotic patients at either necropsy or biopsy^{8,9} (presumably due to defective hepatic processing or portacaval shunting of circulating immune complexes¹⁰), these abnormalities do not cause proteinuria or renal scarring. End-stage liver disease and its associated hemodynamic compromise can lead to renal dysfunction and, in some, hepatorenal syndrome. London, however, never displayed classic signs of

liver failure such as encephalopathy, jaundice, pruritus, or asterixis, and the same physicians who detected his kidney disease should have been able to diagnose cirrhosis.

London's celebrated nickname, "Wolf," was rooted in the love for these animals he revealed in classics such as *The Call of the Wild* and *White Fang*. A recent report argues that this literary "Wolf" might have suffered from systemic lupus erythematosus (SLE),¹¹ a disease named for the facial rash of untreated victims suggesting the ravages of a wolf bite. The argument focuses on four criteria for the diagnosis of SLE that London supposedly displayed during his lifetime: oral ulcerations, arthritis, photosensitivity, and renal disease. However, a bout of scurvy that London endured in the Klondike provides an equally strong etiology for his oral ulcerations, and the distribution of his "arthritis" is more reflective of a case of

gout likely exacerbated by the author's steady diet of raw meat and alcohol. The author's assertion that "All my life my skin ha[s] been famous for its healing powers"^{12p196} is not consistent with the photosensitive cutaneous lupus. And while there are a number of different types of renal disease in SLE, with immune complex-mediated glomerular diseases being most common, there is another, more compelling, unifying diagnosis for both London's kidney failure and transitory dermatitis.



Sick while cruising on
the *Snark*

In 1907, accompanied by his second wife, Charmian, and two crew members, Jack London set out from San Francisco aboard the *Snark*, a custom-made schooner built to sail around the world. Their one-and-a-half-year voyage (chronicled in *The Cruise of the Snark*) instead became an intense exploration of the South Pacific that ended in an Australian hospital where London was treated for a "mysterious malady that . . . extended from my hands to my feet so that at times I was as helpless as a child."^{12p208} Prior to contracting this illness, London had correctly self-diagnosed himself with a severe case of yaws, an infectious, nonvenereal disease caused by *Treponema pallidum pertenuis*, a subspecies of the spirochete responsible for syphilis. London believed he had caught the "vile skin disease"^{12p194} from a French sailor he picked up in Tahiti. Whether true or not, the *Snark's* voyage certainly put him and his crew (all of whom contracted the disease) in an area where yaws was endemic. Before the World Health Organization's mass treatment campaigns began in the 1950s, the worldwide prevalence of yaws was between fifty and one hundred million, with the warm and humid tropical regions of Southeast Asia and the Pacific Islands two of the rifest areas.¹³

While there are no reports of renal



The *Snark* in the South Seas, with a visitor known as “The Nature Man.”

Photographer unknown. Public domain.

complications from yaws, London’s choice of treatment for the skin condition in the pre-antibiotic era clearly put his kidneys at risk.

Here were malignant and excessively active ulcers that were eating me up. There was an organic and corroding poison at work. . . . I decided to fight the poison with corrosive sublimate. The very name of it struck me as vicious. Talk of fighting fire with fire! I was being consumed by a corrosive poison, and it appealed to my fancy to fight it with another corrosive poison.^{12p196}

Corrosive sublimate (mercuric chloride) was then considered one of the few existing therapies for yaws, along with arsenic and potassium iodide. However, the correct dosing and duration of use for these substances were not adequately established, and their potential toxicities were often unrecognized. Unfortunately, “poison” was an apt word for London to choose in describing corrosive sublimate. Mercury in any form is toxic; poisoning can result from vapor

inhalation, ingestion, injection, or absorption through the skin. Neurological, gastrointestinal, and renal systems are the most commonly affected organ systems in mercury exposure.



Heavy metal treatment—and toxicity for yaws

Inorganic mercury salts such as mercuric chloride are highly noxious. Their poor lipid solubility results in a nonuniform distribution, with accumulation primarily in the proximal renal tubules, where it predisposes to proteinuria, granular casts in the urinary sediment, nephrotic syndrome, and pyuria from tubular damage. In some cases, renal failure with severe oliguria and anuria may occur.¹⁴ London, who had treated himself with mercury for gonorrhoea as early as 1902,⁵ wholeheartedly embraced mercuric chloride and, touting himself as an “amateur M.D.,”^{12p191} offered to “mix up some corrosive sublimate”^{12p196} for all aboard the *Snark*. Charmian London’s diary of the voyage

suggests that her husband used corrosive sublimate for five months, from June through November 1908, until he returned to California with his yaws lesions healed.¹⁵ The heavy load of mercury London self-administered at the end of his *Snark* voyage likely caused an acute proximal tubular necrosis that was not entirely reversible. Over the next eight years, his gradually declining kidney function, which today might be attenuated by ACE-inhibitors and dietary protein restriction, led to his end-stage renal disease.

Mercury toxicity also explains the “mysterious malady” that London claims baffled a team of expert physicians in Australia.

The mysterious malady that afflicted my hands was too much for the Australian specialists. It was unknown in the literature of medicine. No case like it had ever been reported. . . . On occasion my hands were twice their natural size, with seven dead and dying skins peeling off at the same time. There were times when my toe-nails, in twenty-

four hours, grew as thick as they were long.^{12p209}

Dermal contact with mercuric chloride can cause hair loss, irritability, insomnia, diaphoresis, acrodynia (painful extremities, most often seen in children chronically exposed to heavy metals), and severe dermatitis with swelling and irritation of the hands, feet, cheeks, and nose. When the Australian physicians told London "that the malady was non-parasitic, and that, therefore, it must be nervous,"^{12p209} they may have been diagnosing the mercury-associated neurological effects—tremors, sensory and motor deficits, emotional lability—that were famously documented in mercury poisoning cases in the hatting and furring industries, whose primary route of exposure was inhalation of mercuric nitrate.¹⁶ Although corrosive sublimate's poor lipid solubility limits penetration beyond the blood-brain barrier, slow elimination and chronic exposure could have allowed for significant central nervous system accumulation of inorganic mercury and subsequent neurotoxicity.¹⁷



Case solved?

The official biography of Jack London at the Huntington Library, which houses the author's personal archive, concludes that "his death has still not been satisfactorily explained."¹⁸ This is in part due to a controversy begun in 1938 when Irving Stone published *Jack London, Sailor on Horseback*.¹⁹ Stone's book, subtitled *A Biographical Novel*, posited that London deliberately took a lethal dose of morphine, and that his death was from a narcotics overdose rather than from renal failure. Stone claimed that London's personal physician and his wife, Charmian, insisted on listing uremia as the cause of death to avoid an inquest and autopsy.

If Jack London did, in fact, cause his own death with a self-administered

toxin, the fatal medication was almost certainly not morphine, which he had been using for at least three years for renal colic. His tolerance for this narcotic would have made a calculated overdose nearly impossible and undoubtedly would have required more than the amount found in his bedroom at the time of his death.²⁰ The poison in London's case may have been the agent causing the "uraemia" from "chronic interstitial nephritis" listed on his death certificate, the agent that London presciently called a "corrosive poison" upon his first use: mercury.

Acknowledgment

We thank the Huntington Library in San Marino, California, for assistance with this project.

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Address correspondence to:

Andrew S. Bomback, MD
University of North Carolina Kidney
Center
7024 Burnett-Womack Building
Campus Box 7155
Chapel Hill, North Carolina 27599-
7155
E-mail: abomback@unch.unc.edu