

# **The Medical Detectives Study Guide**

**The Medical Detectives by Berton Roueché**

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# Plot Summary

Author Berton Roueche is still recognized as one of the premier medical journalists in modern U.S. history. As a member of the staff of The New Yorker Magazine, Roueche began a lengthy project of researching diseases and ailments which at first stumped the medical profession but which were ultimately diagnosed and treated, most of them successfully. Each "mystery" was recorded and chronicled as a feature article for the magazine, and, eventually, the pieces were compiled into his work, *The Medical Detectives*.

Roueche has captured, by way of comprehensive interviews with physicians, public health officials, and members of the Atlanta Center for Disease Control staff, a supremely thorough recording of each mystery, beginning with the onset of symptoms in a victim, through the diagnostic hypotheses, the laboratory testing, the interviews with patients and their friends and family, the investigation of home and neighborhood environments, to the ultimate correct diagnosis and method(s) of treatment. The reader is struck by the detail and recording of even the most minute potential clues that become a part of each of these cases, and, as well, the critical inclusion of the empathetic reporting of each situation through the patient's eyes. The depiction of true human suffering, moreover, results in a work that is more than a mere clinical approach to illness and disease.

Three impressions are left with the reader. First, disease is no "respector of persons." The cases included involve individuals from every socio-economic group within America, and individuals with high levels of education and wonderful resources fall victim as do individuals from the lowliest of circumstances. Second, one is impressed with the investigative techniques utilized by the medical profession, as it attempts to locate sources, causes, and conditions which have resulted in mysterious ailments and epidemics. In the use of these techniques, moreover, the methods of pure scientific investigation are utilized along with universally-accepted criminal investigative techniques, to bring about an interesting but highly effective blend of science, technology, and traditional "gum shoe" detective work. Third, the reader is certainly struck by the fact that dangerous germs, drugs, metals, and chemicals abound in our environment, many of which are the causes of diseases about which we already have understanding but, as well, may be the causes of future illness and disease which have not yet presented themselves.

Without doubt, *The Medical Detectives* should remain a classic work for many years to come. It is probably the best work to date depicting the process of medical investigation, diagnosis and treatment, and these processes will remain intact, even as medical science and technology continue to progress. There will continue to be medical mysteries to solve, and the established methodologies of finding solutions, demonstrated so thoroughly in this book, will continue to serve the medical profession well.

# Eleven Blue Men

## Eleven Blue Men Summary and Analysis

In the fall of 1944, elderly men in a poverty area of Manhattan were stricken with a mysterious illness. They turned blue, rigid and cyanotic, and were in shock. Physicians at first believed the culprit to be carbon monoxide poisoning and prescribed treatment which did, in fact, save ten of the eleven total who were hospitalized. Because the incident involved eleven people with the same illness, the public health department had a legal requirement to investigate. It was subsequently discovered that all eleven had eaten at the Eclipse Cafeteria the morning of the onset of the illness. Doctors Greenberg and Pellitteri of the health department, however, had some suspicions that carbon monoxide was a misdiagnosis and began to look further, when two things were learned: Neither employees or other customers had become ill, and all eleven men had eaten oatmeal.

The doctors directed that blood samples be taken from each victim in order to determine presence of drugs and then visited the cafeteria themselves. While unsanitary conditions were quite evident, they were particularly interested in two side-by-side canisters on a counter in the kitchen. One was salt and one was saltpeter, or sodium nitrite, a compound which looks exactly like salt but which is wholly different. Salt is sodium nitrate. Sodium nitrite is a poison, if sufficient quantities enter the body. Sodium nitrite had mistakenly been used in the making of the oatmeal and, as well, had been used to fill the table salt containers which the men had used to put more salt on their morning oatmeal. Because all abused alcohol, moreover, they were heavy "salters," attempting to replenish what such heavy drinking used up.



# A Pig From Jersey

## A Pig From Jersey Summary and Analysis

Herman Sauer was an average fellow with an uneventful life as a dishwasher. In April, 1942, he experienced symptoms of a high fever and itching and proceeded to a New York hospital for treatment. Because his vital signs all appeared normal, the attending physician was not alarmed, but took a sample of his blood for testing. The test revealed trichinosis. Trichinosis is caused by a parasitic worm that lodges in muscle fibers, and, in man, the infection is difficult to treat. The method of human infection is most often through pork which is not thoroughly cooked. It now fell to the New York Health Department to determine the source, in order to both identify other cases and to prevent further outbreaks. Herman Sauer was not fully conscious but did manage to utter one term - Schlachtfest - a pork fest, recently held at a German-American banquet hall. At the hall, Dr. Levy, the Health Department official, learned that Sauer was a temporary dishwasher, employed as occasion warranted and was working the evening of the Schlachtfest. The pig for the occasion was supplied by the Hindenburg Pleasure Society and was cooked by employed help. An investigation of all attendees and employees eventually revealed that all were healthy but the two who had purchased the pig from a local farm and three of Sauer's fellow kitchen workers. All had trichinosis because they had sampled the prepared raw sausage before it had been cooked.

# A Game of Wild Indians

## A Game of Wild Indians Summary and Analysis

In August, 1946, three people in Manhattan were diagnosed with typhoid fever. This disease is bacterial and is transmitted by food or drink contaminated by excrement of an infected individual. Some people, who may experience a mild form of the disease and who go undiagnosed, become carriers and, if known, are legally barred from any employment that involves preparation or handling of food. When two additional cases turned up, it became clear that all the victims lived in the same neighborhood but had not participated in any picnics, festivals or other gatherings at which food had been served. The possible culprits were drinking water, unpasteurized milk, delivered ice, or food which all had eaten in common. As health department officials began the tedious task of checking every market, fruit and vegetable stand, and restaurant in the area, more cases continued to come in - twenty in all.

One carrier lived in the neighborhood, an elderly woman, on the fifth floor of an apartment building. She was known as a carrier to the health department and rarely left her home, much less worked. Her building took up both sides of an entire corner, however, and on the street level of one side was a fruit market called Tony's. During a return visit to further interview the female carrier, the health department inspector met up with the building superintendent, who complained about the children in the building. Recently, they had played on the roof and stuffed sticks down a plumbing vent pipe, blocking the soil pipe, eventually causing a leak in the bathroom of the carrier's apartment, directly over Tony's Market. Even though the pipe had been repaired, the sawdust insulation surrounding Tony's wood refrigerator had remained wet and soaked through, contaminating some of the fruit, which had been purchased by all of the victims.

# The Incurable Wound

## The Incurable Wound Summary and Analysis

In 1951, a Texas woman was admitted to a hospital in Dallas, with possible diagnoses of flu, polio or encephalitis. Her symptoms were severe - some paralysis, extremely high fever, delirium, and inability to swallow. Within a few days, she was dead, an autopsy was ordered, and the disease was determined to be rabies. The doctor was surprised to learn from the husband that the only bite she had received was from a bat. At the time, scientists were very clear that the only bat carrying rabies, the Vampire, was in tropical Latin America. It was surmised that she had been bitten by a cat or dog as well, but had failed to inform her husband. There were subsequent incidents, in Florida and Pennsylvania, however, which changed researchers' minds. Clearly, rabies had come to North American bats.

Rabies is a neurotropic viral disease, involving an invasion of the cells of the nervous system of any warm-blooded animal. It enters the body through the saliva of an infected animal's bite. For man, it is fatal without antidote injections. Progression of the disease is dramatic. While its onset usually involves fever and headache, with possible nausea, it culminates in a complete attack on muscles and nerves. Death usually occurs by heart or respiratory failure. Historically, the dog has been the most common of animals afflicted with rabies, although it is commonly found as well in cats, fox, bats, wolves, and skunks. It was Pasteur, in the 1880's, who developed a rabies vaccine, as well as the use of the vaccine as an antidote for exposure. Many countries have since enforced strict rabies control practices with good success. In the United States, however, while laws provide for immunization of pets, enforcement is not universal, and the number of stray cats and dogs hampers the effort. Rabid bats remain a strong concern, moreover, as there is no method of immunization, and, often, the animal is not caught and held for testing.



# Aspirin

## Aspirin Summary and Analysis

The active ingredient in aspirin is salicylic acid and is found in a variety of plant life. Ancient civilizations found many uses for this acid, primarily to reduce pain and inflammation. In 1874, a German scientist discovered a method by which synthetic salicylic acid could be produced. Once used, however, patients often experienced severe stomach problems, and eventually a buffering agent was developed. The new product was then sold to the Bayer Company, which changed the name to "aspirin." Aspirin has continued to be a hugely consumed drug, becoming the most popular of all medicines available the world over. In addition to relief from pain and fever, it is now used to prevent calculus buildup in kidneys.

Aspirin has its dangerous side as well. There are individuals who are allergic to it, and, as well, those who suffer severe, though not fatal, side effects, most predominantly nausea, diarrhea, and heartburn. Aspirin poisoning is not uncommon in children, moreover, especially those under the age of five. Such was the case with Richard Poole, a three-year old who consumed an entire bottle of children's aspirin, believing it to be candy. Ultimately, he died.

Authors Note: by the early 1970's, the physiology of aspirin had been more clearly identified. Aspirin inhibits certain hormone-like substances which cause aches, pain and fever. Further, it appears to block blood clots that can cause strokes and heart attacks.

# The Liberace Room

## The Liberace Room Summary and Analysis

School children in Mountain Home, Arkansas were ill, suffering from "high fever, headache, cough and prostration." A group from the U.S. Public Health Service arrived to investigate. There were numerous possibilities, both bacterial and viral. One option was psittacosis, a disease passed by birds, as several classrooms in the school had parakeets. By the time the team arrived, there were thirty-six cases, and the local public health official, Dr. Saltzman, had determined nothing other than some cloudiness in the lungs of each victim. A veterinarian team member examined the parakeets at the school and found that one, named Liberace, was sick. Other team members visited all afflicted children, testing for several diseases by subcutaneous injection and sending blood off for testing as well.

Several classrooms had parakeets, but testing proved that the one ill bird carried no disease. Test results on the children returned positive for histoplasmosis, a fungal disease common in the Mississippi Valley states. Finding the source became a major investigation. Finally, a janitor remembered a large delivery of coal for the boiler, which had been piled outside of Liberace's classroom, on a windy day, allowing the dust to be spread profusely. This coal had come from a strip mine, and, although it had experienced a cave-in and could not be tested, investigators remain convinced that it was the source.

# Impression: Essentially Normal

## Impression: Essentially Normal Summary and Analysis

A professional female New Yorker, in her mid-fifties, began to experience short sensations of the floor beneath her dropping. A side symptom appeared to be greater sensitivity of touch, particularly in her feet. Soon, an entire room would shift. Her family doctor sent her to specialists, each of whom concluded that she was "essentially normal." The episodes, however, became more frequent, more terrifying, and more severe. Focusing difficulties emerged as well, and spatial relationships among objects were almost impossible to judge correctly. At its height, the condition involved stairs dropping out from beneath her feet, entire buildings and sidewalks swaying and moving around her, and, eventually, the feeling of actually being thrown off the earth itself. Somehow, the woman managed to continue to work, to involve herself in as many outside activities as possible, and to generally maintain some semblance of normalcy. Within herself, however, she was terrified and certain that she was dying.

All testing revealed completely normal functions and no disease. The doctor's eventual diagnosis was labyrinthitis, an affliction of the inner ear area, the cause of which could be bacterial, viral, or nonspecific. Armed with this knowledge, the woman felt somewhat more at ease, and recovery was gradual, just as the onset. Eventually, her condition returned to simple and occasional sensation of the floor dropping or shaking, and, finally, the elimination of that as well. The entire episode occurred over a six-month period, but complete normalcy did return.

# A Swim In The Nile

## A Swim In The Nile Summary and Analysis

Twenty-eight year old Vernon Berry had received a small inheritance and decided to spend six months traveling the world before settling down to permanent employment. He became ill while in Hong Kong, with symptoms of headache, sore throat, and shivers and was treated with antibiotics by a local doctor. His illnesses continued, on and off, throughout his entire trip through Asia, North Africa, the Middle East and, finally, Europe. He was treated by doctors in several places, such treatments including more antibiotics, anti-diarrheal medications, aspirin for fever, and vitamins. He returned home to New Jersey with sporadic symptoms of itching, diarrhea, joint pain, stomach cramps and swelling around his eyes and settled into a job as a draftsman.

Puffiness around the eyes and occasional itches and swollen areas came and went. When these symptoms were accompanied by nausea, Vernon consulted his family doctor, and, after that, an internist. The diagnosis was tenuous until he passed a ten-inch worm, identified as a type of round worm, causing a disease known as ascariasis. Treatment was successful, although his white blood cell count remained elevated. Within two months, when he began to have difficulty with urination, an additional new diagnosis of prostatitis was presented. Normal treatment failed, the symptoms worsened, and bladder cancer was suspected. Finally, exhaustive tests revealed schistosomiasis, the presence of yet another worm (schistosoma) in Vernon's blood and bladder. This worm actually lives in fresh-water snails until it grows into a wriggler, seeking a new host, preferably human. It enters the human through the skin and there thrives within the bloodstream, matures, and reproduces. There are several sub-species, but Vernon's settled in his bladder. He was treated successfully and was finally clear of all worm or eggs by March, 1963 - five years after his swim in the Nile River, where he was probably infected.

# the Orange Man

## the Orange Man Summary and Analysis

In December, 1960, Elmo Turner and his wife returned to Tennessee from Alaska for a visit. During this time, Turner visited his old physician, Dr. Wooten, because of stomach pain which had become increasingly severe over the past year. What struck Dr. Wooten, however, was the color of Turner's skin - a "pumpkin orange." Never had he seen such color, nor could he remember any illness or disease which could cause such pigmentation. Turner did not realize how strange he looked, as the pigmentation had probably come so gradually; he simply called it a "ruddy complexion." The first order of business, however, was the stomach issue. Upon examination, Dr. Wooten felt a large mass by the pancreas and immediately admitted Turner for barium X-rays and other tests.

Hospital tests revealed a pseudocyst, an empty sac which had developed for no apparent reason. Fortunately, these usually recede without surgery, and the relief, of course, was that there was no malignancy. The orange skin color, however, remained unexplained. When Mrs. Turner informed Dr. Wooten that her husband ate large amounts of carrots, he was intrigued and ordered blood tests for the presence of beta carotene, a substance that can turn skin yellow. Research at the library provided additional clues. Orange pigment had been observed in patients who ate large amounts of vegetables with betacarotene, along with tomatoes, which contain lycopene. Turner admitted that he drank large amounts of tomato juice as well. He was instructed to cease consumption of both carrots and tomato juice and, a year later, he returned to Tennessee with no stomach pain and normal skin color. Case closed.

# The Dead Mosquitoes

## The Dead Mosquitoes Summary and Analysis

Eight-year-old Billy Cordoba was referred to pediatrician Dr. Conrad in Fresno, California, for an unknown but serious illness. Upon admission to the hospital, numerous tests were run to isolate the cause of his severe symptoms - rapid heartbeat and breathing, diarrhea, nausea, and muscle twitches. As well, he appeared delirious and dangerously close to lapsing into a coma. Everything was eliminated except some form of insecticide poisoning, and the race was on to find the culprit. Though the specific organic-phosphate insecticide was not found, Billy improved with atropine injections and returned home healthy. One week later, Billy's symptoms re-appeared, and he was again admitted to the hospital in a more severe condition than before. At this point, Dr. Conrad wanted the family car and Billy's clothing tested by the Health Department. The test involved placing Billy's jeans in a cage of mosquitoes, all of whom died within minutes. Billy's jeans, which his mother had purchased at a salvage store, contained the pesticide, and he had worn a new pair each of the days he became ill. At the same time, another local boy was stricken in the same manner, and his jeans were contaminated as well. Immediately, the alarm was publicized by local media, and parents returned the jeans purchased at the salvage store to the Health Department. Several state agencies became involved, and the history of the jeans unfolded. They were originally destined for J.C. Penney and were loaded into a truck containing several drums of insecticides. One sprung a leak, dampening a box of sixteen pair of jeans. J.C. Penney refused receipt of the damaged box, and the jeans ended up at the trucking line salvage store for sale. Several families purchased the jeans, and many of their children became ill, with various diagnoses. Two children never experienced illness, because their jeans had been washed before being worn. Further investigation resulted in a verdict of carelessness on the part of two shipping companies, both of which were fined.

# Something a Little Unusual

## Something a Little Unusual Summary and Analysis

On a tobacco farm in Tennessee lived the owners, Mr. and Mrs. Mason and their relatives and co-workers, Mr and Mrs. Smart and their son. In October, 1963, they sat down to a noon meal as usual. Shortly thereafter, Mr. Mason and Mrs. Smart became quite ill, an episode characterized by impaired vision, dizziness, nausea, and hallucinations. By the time all five reached the hospital, Mrs. Mason, Mr. Smart, and the Smarts' son were also exhibiting symptoms, but at a far less severe level. Botulism, the initial diagnosis, was ruled out, when one of the men mentioned something about eating Jimson weed. Originating in Asia, this plant is a distant cousin to the tomato, but all parts of it contain a poisonous alkaloid called hycosamine. It is believed to have been introduced to America by European settlers and, in the 17th century was referred to by the Indians as the "white man's weed" or "Jamestown weed." The plant was boiled and, when consumed, caused aberrant behaviors and hallucinations.

Tracking down the method of ingestion in the case of the Masons and Smarts was relatively easy. It seems that Mr. Mason, having been instructed by a neighbor farmer, had grafted a tomato plant to a Jimson weed plant, in order to grow larger tomatoes that continued to develop well into the fall. He grew these tomatoes only for home consumption, and this was the first year he had done so. Lunch on the day of affliction had included the first tomato from the plant, sliced, enough hycosamine to poison everyone. The variance in degree of illness resulted from amount consumed.



# A Man Named Hoffman

## A Man Named Hoffman Summary and Analysis

Donald Hoffman was an insulation installer in Ohio in 1964 when he consulted a doctor for an itchy sore on his neck. Because he worked with fiberglass, his physician diagnosed a fiberglass intrusion with concurrent infection. The sore became worse, and Hoffman was experiencing lack of appetite, exhaustion and fever as well. A second doctor suspected cellulitis and sent him to the hospital. By this time, swelling had extended on his neck and downward onto his chest, and he was placed on aggressive antibiotic treatment. The following day, Hoffman went into shock twice, had difficulty breathing and was dead by the next morning. Blood samples taken during the autopsy confirmed the presence of anthrax.

Anthrax is a microorganism that affects primarily farm animals, but man can contract it through contact with either an infected animal or its products, including hide, skin, hair and bones. The spores enter human through the nose or an open wound. Once inside the human body, they excrete a toxic substance as they grow and multiply. Because the toxic substance cannot be neutralized, it is important to diagnose anthrax early and kill the organisms to minimize the production of the toxin. Louis Pasteur developed a vaccine against anthrax in the 1880's, and it is widely used on livestock. Occurrence of the disease in the United States has all but been eradicated; however, this is not the case in foreign countries, and the spores can exist on hides, bones and hair if not sterilized when an infected animal dies. The task of medical professionals in Ohio became locating the source of anthrax that killed Mr. Hoffman. It turned out that Hoffman had worked with insulation that included imported goat hair, infected with anthrax.





# Three Sick Babies

## Three Sick Babies Summary and Analysis

Premature babies are highly at risk for any number of complications. In July, 1965, one such infant at Magee-Womens Hospital in Pittsburgh was severely ill, showing signs of septicemia and being treated with antibiotics. Blood, mucous and stool samples had been sent to the lab for analysis. By nightfall, the baby was dead. The following day, a second baby was ill in a similar manner. Lab results on the dead baby indicated, as suspected, septicemia, a general term for some twenty-five specific bacterial infections. Further testing would ultimately identify the specific germ - pseudomonas, a virulent, antibiotic-resistant bacteria. A third baby then became ill and died as well.

Dr. Taylor, assistant professor at the University of Pittsburgh School of Medicine, was the doctor in charge of the nursery and began to suspect no coincidence in these illnesses. His suspicions were confirmed when all three babies' tests were positive for the same nasty germ. Clearly, an epidemic was in the making. He called a team of medical and health department professional, in order to develop a plan for investigation and eradication. Because pseudomonas is a water-dwelling organism, all water sources in the nursery were checked first. This included sinks, humidifiers, and faucet aerators. As well, all nursery staff and babies were tested. Lab results eliminated all staff, but six of the current twenty-two babies, although showing no symptoms, tested positive. Five sink drains and the bassinet humidifiers were also infected. The problem for the investigators, however, was that the contaminated equipment and the sick babies were not connected. Contaminated sinks, humidifiers, and babies were not in the same rooms. Without a clear source, eradication began.

The first step was to clean and disinfect the entire nursery, and that was accomplished within twelve hours. Infected babies were given the only two antibiotics known to impact the bacteria. Dr. Taylor visited the delivery rooms. Aspirators were all of the disposable variety, and resuscitators were bags and masks attached to a supply line of oxygen in the wall. Meanwhile, another ill baby surfaced, and the clues began to gel. The infant had required resuscitation and, according to the new policy, a throat swab had been sent to the lab upon his arrival in the nursery. The test was positive for pseudomonas, obviously contracted prior to arrival in the nursery.

A check of the resuscitators revealed a drop of water in the cups. These were washed with strong detergents after each use, and a small amount of water was usually left in the base of the cups. A test on the faucet aerators in the delivery rooms revealed the pseudomonas bacteria. Present in tiny amounts in regular drinking water, there was no medical problem. When they congregated in the aerator and reproduced, however, they were in sufficient quantity to be dangerous.

Complete eradication of the disease took two months and points to the danger of hospital infections, the sources of which are often difficult to identify.

# The West Branch Study

## The West Branch Study Summary and Analysis

Dr. Stephen C. Schoenbaum, of the Atlanta Center for Disease Control arrived in West Branch, Michigan, in May of 1968, to assist with an outbreak of infectious hepatitis, an inflammation of the liver, assumed to of viral nature. Infectious hepatitis is contagious and usually transmitted by direct contact with an infected individual, food, or water contaminated with the excrement of an infected person. Unresponsive to most treatment, this disease runs its course but may be fatal in some individuals. Those exposed to the disease can obtain an injection of gamma globulin, a protein taken from the blood of previously infected individuals, containing antibodies. The standard course of action, once a case is verified, is to find the source and thus prevent further infection. The course of investigation resulted in the establishment of a curve of infection, beginning on April 28 and ending with a final case on May 20. As well, two individuals who worked in the food industry had had hepatitis approximately a month prior to the first case. One worked at the local dairy queen and one at a local bakery. From interviews with all infected victims, it was determined that the bakery was the common denominator, and it then fell to the investigators to determine exactly what food product had caused the infections. The employee who had contracted hepatitis, and who had subsequently taken sick leave and returned healthy, was a part of the team which made pastries. Two investigators spent a night at the bakery observing this individual. He hand-kneaded the dough, but, because the dough was then baked, killing any of the virus present, this source was eliminated quickly. Frosting the pastries was quite another phenomenon, however. The employee used his hands, cupping a large amount of frosting and then squeezing it out to frost the baked items. Clearly, this was the source.



# The Huckleby Hogs

## The Huckleby Hogs Summary and Analysis

Three children in Alamogordo, New Mexico, members of a family of nine, were seriously ill. The Director of the Public Health Department called upon the Center for Disease Control in Atlanta for assistance. Symptoms presented included vision and walking difficulties, strange behavior, and, eventually, coma, all of which could be the result of some type of encephalitis. The season was winter, however, and the ticks and mosquitoes which would normally carry this disease were dormant. Still, the characteristics indicated some type of brain inflammation. Another important piece of information was that the family raised hogs and, several months prior to the illness, a number of the hogs had become ill and died. If the disease had come from an infected hog which had been consumed, however, the issue of why other family members were not also ill was certainly a factor.

The investigation took an interesting turn when it was learned that Mr. Huckleby had been feeding his hogs a mixture of garbage, collected from neighbors, and discarded seed grain from a local seed and feed supplier. Seed grain is an unusual feed for animals, but Huckleby was able to get it reasonably, as were a few of his hog-raising friends. The investigators looked at the remaining seed grain in Huckleby's storage bin and found it to be a strange pink color. Clearly, the grain had been treated with something, and, as it turns out, the treatment was an fungicide, called Panogen, an organic form of mercury. Mercury poisoning was known to cause encephalopathy - a disease of the gray matter of the brain. Research from a contacted neurologist showed cases in other countries, in which victims of mercury poisoning from ingested fish and grain treated with Panogen suffered encephalopathy with the same symptoms as the Huckleby children. Blood and urine tests of the Huckleby family confirmed the suspicion. The Huckleby parents, two other children, and the pork samples taken from the freezer all showed levels of mercury. Two children, too young to eat the pork, were free of mercury. It was determined that the healthy Hucklebys were simply not as susceptible as were the three who were so ill they were now in the hospital. All three will have permanent disabilities, and one may never regain consciousness. The case did not end at this point, however. Armed with their evidence, medical professionals pressed the U.S. Department of Agriculture to force the cessation of the use of mercury-laced fungicides in the treatment of agricultural products. After three court battles, the USDA won its case.



# All I Could Do Was Stand in the Woods

## All I Could Do Was Stand in the Woods Summary and Analysis

Rudy Coniglio was the owner of a pizza restaurant in Closter, New Jersey. In 1969, he began to experience a strange phenomenon. Everything began to smell and taste foul for no apparent reason. Both Coniglio and his doctor thought it was the result of some cold or flu, and he began a treatment of antibiotics. The affliction continued, and the only relief was found by standing in the woods behind his home, where the smell was at least tolerable. He stopped eating everything but small amounts of dairy products. Following an array of visits to specialists, one doctor refers Rudy to Dr. Robert Henkin, from the National Institutes of Health, specializing in sensory disorders. He diagnosed the problem as idiopathic hypogeusia. His research and treatment of similar cases indicated that the sense of taste and smell was tied, in some manner, to the level of copper and zinc in one's system, specifically, a level that is too low. Rudy came to the Bethesda Hospital for treatment. Tests revealed that levels of both minerals were low, and the tongue biopsy showed taste buds that were frayed and worn. Dr. Henkin immediately began a treatment of zinc sulphate, and the results were remarkable. Dr. Henkin's work has been definitive in the area of hypogeusia. It is known that individuals who are pregnant or who suffer from head injury or cancer can develop this affliction. And zinc appears to bring about at least some relief, because it is in reduced levels in saliva, which assists in the maintenance of taste buds. From his research, Dr. Henkin believes that analysis of saliva may be of assistance in the determination of other medical conditions.

# As Empty as Eve

## As Empty as Eve Summary and Analysis

In 1972, Natalie Parker, an economist, enjoyed a comfortable life. She worked for the Department of Commerce and lived with her husband, an artist and illustrator, in Washington, D.C. During the course of dental treatment for a gum disease, it was recommended that she see an orthodontist for "the realignment of several teeth affected by the condition of her gums" (p.271). The orthodontic work was a disaster and resulted in a cosmetic nightmare. As a result of her failed dental work, she dropped into a depression which was not relieved by medication, rest, or temporary leave from her position. She continued to lose sleep, lose weight, and experience a generalized listlessness until, finally, she was admitted to a psychiatric hospital for treatment. During her time at the hospital, she maintained a diary as best she could, to chronicle her experiences.

In March, 1973, Mrs. Parker awoke not knowing where she was. She was informed by the staff that she had received eight electro-shock treatments in an attempt to improve her condition. The problem was she could not remember anything or her past, although she was told that, gradually, her memory would return. Though her depression certainly dissipated, some of Mrs. Parker's memory loss has been pervasive and long-lasting. Unable to continue to work effectively, she has retired.

Forms of electro-shock therapy have been in use for quite some time; today, however, other medications have been developed which make shock therapy not as useful.

# Two Blue Hands

## Two Blue Hands Summary and Analysis

A paint chemist, Dean Berger, loved to play bridge, so much so, that he was involved in a number of tournaments, often with his daughter. On January 10, 1974, he and his daughter, Cheryl, attended a tournament held at a local restaurant. The room was unusually cold, as many players commented, and Dean began to put his hands in his armpits to keep them warm, during times when he was the "dummy" for a hand. At the end of the evening, Cheryl was shocked to see that her father's hands had turned blue. They immediately proceeded to Hershey Medical Center to see a doctor. There he was diagnosed as having cyanosis, a bluish coloration of a body part that is not receiving sufficient oxygen. Cyanosis is a serious warning, and Dean was admitted immediately for tests, in order to determine which of several diseases he had. The chief suspicion was ergotism, a disease brought on by ingesting a fungus-infected grain, and Berger had eaten some rye bread off of which he had brushed some mold. Testing included both blood and urine, and the results showed only blood-oxygen levels were somewhat low. He was put on oxygen, and it was surmised that his daily exposure to paint and solvent fumes might be responsible. The supplementary oxygen brought his blood chemistry up the small amount necessary for them to be normal, but the hands were still blue. Everyone was stumped. Finally, a doctor had a brainstorm. Finding an acetone swab, he wiped one of Berger's hand, and the stripe revealed a normal skin tone. The swab was blue - the same blue as the shirt Berger had been wearing the previous night. He had warmed his hands in his armpits, and they dye had come off onto his hands.

# Antipathies

## Antipathies Summary and Analysis

Sara Strong arrived at the Tulsa Dermatology Clinic with a classic case of an allergic rash, identified as an "eczematous allergic contact dermatitis." It was treated with cortisone cream. Despite treatment, the rash continued to spread and worsen. Upon her return to the clinic, and her revelation of the allergic ailments of her relatives, the diagnosis remained the same. At this point, the sites of the rashes were injected with cortisone. The rash grew. Despite antihistamines and injections of extremely strong corticosteroids, the condition remained severe. The dermatologist dug deeper into Sara's medical history and discovered that she had been fitted for an IUD in April of that year, and that it was shortly after that the allergic reaction occurred. He immediately contacted her gynecologist and learned that there was a small amount of copper in the IUD. Copper, he knew, was a known allergen, although not common. The IUD was removed, and the results were amazing. The rashes began to clear immediately. The Strong's moved to Dallas, and she remained under the care of a dermatologist there for a short time. Her former and current doctor began to write a paper for publication, based upon the copper allergy, and they began to wonder what had been the initial exposure to copper prior to the IUD. They concluded that it was perhaps some form of copper in jewelry Sara had worn. At this point, they involved other dermatologists who had seen allergic reactions to metal, specifically in jewelry. Pierced earrings appeared to be a primary cause of sensitization to metal, because many of them have a variety of metals, to include nickel and copper. Other cases of metal allergies were studied, including a female patient who had stainless steel screws implanted during a surgery.

# Sandy

## Sandy Summary and Analysis

Sandy was a popular student at her school in Miami. When she became ill and fainted during a choral rehearsal in the cafeteria, she was immediately taken to the hospital. Other children soon became ill as well, and authorities began to suspect some type of poisonous gas, perhaps a leak in a pipe. Amid a wide variety of symptoms, hyperventilation appeared to be universal. A thorough search of the building revealed no potential cause, and students who were not in the cafeteria were not ill. Dr. Joel Nitzkin of the public health department began to suspect a psychosomatic cause, namely mass hysteria, a condition now known in scientific circles as "collective obsessional behavior." These episodes are quite common among animals (e.g., cattle stampedes) and among human beings as well. In fact, this was the case at the Miami school as well.



# A Rainy Day on the Vineyard

## A Rainy Day on the Vineyard Summary and Analysis

Guests at a house party in Martha's Vineyard all became ill with what appeared to be an antibiotic-resistant pneumonia. Some recovered, but others remained seriously ill. Immediately, health officials suspected the possibility of babesiosis, a bacterial disease transmitted by ticks, and one which had shown up on the Eastern coast before. Other options were a variety of viral diseases, all with pulmonary symptoms. The Center for Disease Control in Atlanta was called in for assistance, and the investigation centered first on a complete study of the cottage and grounds where all patients had stayed. Samples were taken of water, wood, earth, the septic tank, dust, etc., all of which would be tested. Blood analyses of all victims were conducted also.

Results of the blood tests showed antibodies for tularemia, a bacteria generally found in rodents and transferred to human beings primarily through direct contact with an infected animal. The next obvious step was to isolate the source. More samples were obtained, some from rabbits, which proved to be positive for tularemia. The question then became this: if the source of infection was the rabbits, and the cottage guests did not handle rabbits, how were they infected? Further inquiries netted the answer. On one rainy day, everyone remained inside, except for the owner's dogs, who chased rabbits often. When the wet dogs came into the cottage, they obviously shook themselves off, probably mixing saliva with the moisture, saliva infected with the bacteria from the rabbits.

# Live and Let Live

## Live and Let Live Summary and Analysis

Carol Terry began to exhibit minor symptoms of shakiness and faintness. The symptoms increased in severity, and soon she was exhibiting strange and even self-destructive behaviors. She began psychiatric treatment, ultimately spending a month in a Los Angeles hospital and then leaving her husband to convalesce at her parents' home in Salt Lake City. Drugs prescribed included Thorazine and Tofranil. Physical symptoms, which had always been present, became more severe, including loss of concentration and fine motor control as well as drooling. The current psychiatrist admitted Carol once again and administered electro-shock therapy. Nothing improved. At this point, Carol had run out of insurance, was divorced by her husband, and had to enter another psychiatric facility as a welfare patient. The diagnosis was hysterical neurosis. At her new hospital, she was assigned to Dr. David Reiser, who immediately noticed something about her appearance and immediately ordered a variety of medical testing. The results were astounding. Carol Terry had Wilson's disease, an inherited malfunction in the metabolism of copper. With treatment, she realized almost a complete recovery, having only a slight limp and slightly crooked smile. Wilson's disease allows copper to accumulate in the liver. When that organ is filled, it is released and accumulates in the brain, causing the physical and behavioral symptoms Carol experienced. Treatment is a derivative of penicillin that binds to metal and allows it to be excreted.



# The Fumigation Chamber

## The Fumigation Chamber Summary and Analysis

Betty Page had an idyllic life. Both she and her husband were physicians with a daughter's wedding to plan. Betty began to have symptoms of nausea, cramps and diarrhea which did not subside. Further, she began to sweat, experienced a metallic taste in her mouth, and lost her appetite. All tests were negative. When she took a leave of absence from her job and began to spend more time at their lake home, additional symptoms appeared, specifically double vision, muscle weakness and involuntary leg twitching. She began to suspect Lou Gehrig's disease. Late one night, as she was sitting at the kitchen table feeling horrible, she happened to glance at the exterminator's invoice, and a light dawned. Hers was a textbook case of organophosphate poisoning from the insecticide used at the cottage. Her husband was not so afflicted, and the reason was clear. Betty always went up to the cottage on Friday evening and opened it up for the weekend. The insecticide was aired out before he arrived on Saturday mornings.

# A Lean Cuisine

## A Lean Cuisine Summary and Analysis

Patient Richard Jacobson presented a condition which stymied two prominent physicians at the University of South Dakota school of Medicine. Specifically, he exhibited symptoms of hyperthyroidism, or the over-production of hormones by the thyroid. His blood levels showed an excess of the hormones, but his thyroid tests showed that the gland was performing normally. When Jacobson mentioned that four other people in his small town had the same illness, the Atlanta CDC was called in to assist with the investigation. Through interviews and medical histories of all afflicted individuals, the common factor was found to be that they all purchased a special lean ground beef from the L & M Clover Farm Store, which was purchased from a special beef supplier. Further investigation determined that the beef came from a part of the cow very close to its thyroid, and samples of the beef indicated that thyroid tissue was included in the processed meat. All meat was recalled, and new federal regulations now prohibit using beef from that part of the cow.

# The Foulest and Nastiest Creatures That Be

## The Foulest and Nastiest Creatures That Be Summary and Analysis

The tick is a common nuisance found throughout the United States. At times, it can contain bacteria that, transferred to humans from a bite, can cause a number of illnesses, to include Rocky Mountain spotted fever, babesiosis, and Lyme Disease. Lyme Disease, specifically, can result in later complications, such as arthritis, meningitis, or Bells' Palsy, if not treated quickly and appropriately. In many cases, the disease is diagnosed when a characteristic rash appears, but this rash is not always present. Such was the case with Priscilla Bowden, resident of Long Island, who developed Bells' Palsy following a rather mild case of Lyme Disease. Quick response and treatment resulted in a gradual but complete recovery. Medical researchers continue to work on some type of immunization to be used in those areas where Lyme Disease is prevalent.



# Characters

## Berton Roueche

Berton Roueche, author of the series of articles included in his book, *The Medical Detectives*, grew up in the Midwest and received a degree in journalism from the University of Missouri. He then held a series of positions with major newspapers in a variety of capacities, until, in 1944, he joined the staff of *The New Yorker* magazine, as chief of the "Annals of Medicine" department. In this position, he began to research and document unusual medical cases, which required physicians and health department officials to use both the tools of their science and standard investigatory techniques to determine diagnoses and treatments.

As a medical journalist, Roueche received a number of awards, and he later used his understanding of investigative techniques in the writing of several mystery novels, published throughout his adult life. He continued to write for *The New Yorker*, living in Long Island, New York, until his death in 1999. He has been recognized as a premier medical journalist, and his book has been used as a research source for medical students, public health departments throughout the country, and other journalists who continue his work of reporting on the process of medical investigations. Most recently, the mysteries and diagnostic procedures he codified have been the foundation for the television series, "House."

## Vincent P. Bananco

One of four dermatologists at the Tulsa Dermatology Clinic, Dr. Bananco treated another physician's wife for an eczema-type rash which continued to increase in severity, despite increasingly stronger treatment. Completely stymied, he could only return to "square one," by reviewing the woman's entire medical history from birth. What he learned was that she had suffered from some forms of allergies throughout her life, but none of them had resulted in skin eruptions of any kind. When he eventually asked her method of birth control, he learned that she had recently changed to an IUD, and this change related chronologically to the onset of the rash. Acting upon a hunch, he contacted the woman's gynecologist and manufacturer of the IUD device and learned that this specific one contained a tiny amount of copper. When he convinced the gynecologist to remove the IUD, the improvement was remarkable, and, within a few weeks, the patient was eczema-free. This experience led Dr. Bananco to further research, and he was unable to find any instances in which an allergic reaction to copper was from an internal source. He wrote a small paper on the phenomenon, and other physicians began to successfully diagnose presentations of dermatitis in patients who had some metallic substances in their bodies, such as stainless steel screws. As a result of the work of Bananco and subsequent colleagues, the incidence of metallic allergies from internal sources is now effectively diagnosed and treated.



## **Anthony (Rudy) Coniglio**

Owner of Rudy's Pizza, a small restaurant in Closter, New Jersey, Mr. Coniglio began to experience a strange phenomenon. Everything tasted and smelled foul, so much so in fact, that he eventually could find some respite only by sitting in the woods behind his house. A variety of physicians diagnosed a variety of causes - a lengthy flu, a tumor, and, eventually, emotional disturbance. The ailment became so severe that Coniglio was forced to sell his business and retreat to a diet of a few dairy products. Eventually, a local physician read the work of another physician and pointed Rudy in that direction. Ultimately, he was diagnosed with idiopathic hypogeusia, a condition caused by a zinc or copper deficiency. Coniglio now has the distinction of being the first victim of this ailment to be reported in the annals of medicine.

## **The Huckleby family**

The Huckleby's, a nuclear family of parents and seven children, lived in Alamogordo, New Mexico, in a modest home. Mr. Huckleby was a janitor at a local school and raised hogs on the side, along with several neighbors and friends. Three of the Huckleby children became seriously ill, with no apparent cause. It was learned, however, that some of the family's hogs had earlier become ill and had died. The family, moreover, had recently slaughtered a seemingly healthy hog and was eating the meat on a regular basis. The connection between the hogs and the illness was not at first considered because only three members of the family had become ill. Eventually, however, the source was determined to be contaminated seed grain which had induced a toxic encephalitis. Of the three children afflicted, all will have permanent disabilities. One may never regain consciousness and the other two may or may not be able to perform simple daily tasks.

## **Herman Sauer**

A man of very modest means and a dishwasher by employment, Herman Sauer occasionally worked at a German social hall in New York, when large social functions required meal-serving and cleanup. After one such function in April, 1942, Sauer became ill, progressively becoming worse. Because he admitted to being a heavy drinker, the initial diagnoses related in some way to alcoholism. Finally, exhaustive tests revealed trichinosis, an infestation of parasitic worms, generally caused by ingestion of infected meat, primarily pork. In tracking down the source, investigators were led to the German social hall, and it was discovered that Sauer had eaten raw pork sausage while working in the kitchen.

## **Vernon Berry**

Vernon Berry inherited a bit of money and decided to spend six months traveling the world before settling down to a life or work back in America. Prior to leaving, he received



all of the recommended immunizations but became ill anyway. A variety of doctors in a variety of countries diagnosed a variety of ailments and all prescribed specific medications, with some measure of efficacy. Berry never felt completely well, however, but continued his travels as planned. In all, he saw the Far East, the Middle East, North Africa, Greece and Turkey, and Western Europe before returning home to New Jersey. His symptoms never subsided completely, and, in fact, became worse. The first correct diagnosis of a parasitic worm resulted in successful treatment but not the end of his problems. Finally, a diagnosis of a second worm, probably contracted during a swim in the Nile River, resulted in additional treatment and health.

## **Billy Cordoba**

Eight-year old Billy Cordoba became mysteriously ill in October, 1961, and confused physicians began to suspect some type of organic phosphate poisoning. When Billy responded to treatment for this type of poisoning, it became the task of medical investigators to find the source. Billy relapsed, causing additional confusion but the suspicion was that the source was either in his mother's car or at his home. It was eventually discovered that Billy's new blue jeans, purchased from a surplus store, were contaminated with an insecticide that had spilled on them during transport.

## **Carol Terry**

Carol Terry is an example of medical diagnosis gone awry, in which a truly physical ailment was not discovered and resulted in her treatment for emotional disturbance in a mental health facility. The unfortunate experience began in the summer, 1971, when Carol developed the first symptoms, shakiness, fatigue, and fainting spells, followed by slicing her wrists. She was immediately put under the care of a psychiatrist, admitted to a psychiatric hospital, and, ultimately treated as a welfare patient, after her husband divorced her and she had no health insurance. A creative-thinking psychiatrist suspected a physical cause, it was found, and Carol Terry resumed her once lost life.

## **Donald Hoffman**

Donald Hoffman was an insulation installer in Oxford, Ohio and was sent to the medical clinic at Miami University because of an itchy sore on his neck. He thought it was probably caused by a piece of fiberglass insulation and was treated accordingly. When his condition worsened, he was hospitalized, experienced brief improvements under a variety of treatments, but eventually died. It was discovered that he had contracted anthrax from infected goat hair that had been used as some filler in insulation.

## **Dr. Paul Taylor**

As assistant professor of pediatrics at the University of Pittsburgh School of Medicine, Paul Taylor was the attending physician of the premature nursery at the school's



affiliated women's hospital. When a number of infants became ill and one died, he took charge of the investigation that led to the discovery of pseudomonas, a particularly deadly bacteria.



## Objects/Places

### Eclipse Cafeteria

Small eating establishment near the Hudson Tunnel in New York which was the site of sodium nitrite poisoning of eleven men.

### New York Labor Temple

A German-American club in New York and the site of a Schlachtfest (pork feast) at which a dishwasher consumed raw pork, contracting trichinosis in so doing.

### Washington Heights

A section of New York City and the site of an investigation of an outbreak of typhoid fever.

### Spiraea

A group of plants containing natural sources of salicylic, the active ingredient of aspirin.

### Mountain Home, Arkansas

Site of an epidemic of histoplasmosis, a fungal disease, brought to a group of school children through coal from a strip mine

### Labyrinthitis

An inflammation of the inner ear which can cause dizziness, loss of balance, and disorientation with respect to one's physical environment

### Carotenemia-lycopenemia

A non-threatening condition in which one's skin turns orange by the consumption of huge amounts of carrots and tomatoes.

### Jimson Weed

A hardy plant, originating in Asia, which is highly toxic. Every part of the plant includes a poisonous alkaloid called hyoscyamine.



## **Pseudomonas**

A water-dwelling protist, which in concentrations can cause serious illness and death in humans.

## **West Branch Bakery**

Small town bakery in Michigan and site of the source of a hepatitis epidemic caused by an employee who did not practice common sanitary procedures.

## **Minamata**

Port city in Japan and the site of mercury poisoning from contaminated fish and shrimp

## **Hershey Medical Center**

Hospital in Hershey, Pennsylvania where a team of doctors misdiagnosed blue dye on a patient's hands as cyanosis.

## **Tularemia**

A bacterial disease, commonly found in rodents but transferable to man by contact with an infected animal. Often called "meat cutters" disease.

## **Lyme Disease**

Named for the town in England where the first recorded illness occurred, this disease is transferred to humans by a bite from a tick that houses a specific bacterium.



# Themes

## Medical Investigation

Readers of this compilation of medical stories will be struck by an overriding concept. When medical "mysteries" arise, methods of investigation clearly mirror those of criminal investigations. The first step is a thorough study of the symptoms and the environment in which these symptoms have arisen, much like the study conducted of a crime scene. Data is collected and is often scientifically studied and tested, in order to glean as much information as possible. Theories are then posited, often more than one, and these must be proved or discarded as further information is collected and additional tests are made. More often than not, however, medical investigators must engage in the type of work which most police detectives find to be the supremely effective - the involved and lengthy process of interviewing everyone either directly or indirectly involved in the case. The process of interviewing often raises additional questions or concerns, and the backtracking must then occur until the complete picture is obtained. As in good police work, moreover, medical investigations often involve finding the experts in a variety of diseases and medical conditions, if only to eliminate theoretical suppositions. Finally, successful diagnoses and treatment often involve a bit of creative thought, an "aha" moment, in which a heretofore ignored cause or symptom points the investigator in the right direction. Consider, for example, the completely baffling situation of Dean Berger and his blue hands. Every possible cause of cyanosis was considered, until one doctor, hit with a moment of creative thought, considered that the blue was actually a completely harmless dye.

## The World is a Dangerous Place

Once the reader has completed the entire work, it becomes clear that there are an abundance of dangerous bacteria, viruses, metals and chemical agents which have the ability to cause serious illness and death. While most individuals have certainly heard about hepatitis, botulism, streptococcus, staphylococcus, and other bacterial and viral infections which cause a wide variety of ailments, most do not think of many others covered in this book. Copper and mercury are toxic elements which appear to be quite dangerous, and yet few consider them so. Anthrax connotes terrorist activities of sending white powder in envelopes to unsuspecting recipients, and yet it is prevalent among beef and pork which are slaughtered for human consumption. While the dangers to the environment of pesticides and insecticides are well documented, their direct impact on human health is often overlooked. The growth of nasty bugs such as *Pseudomonas* in tiny amounts of water or in faucet aerators can kill; microscopic worms can invade the body and create havoc for years. While medical science has developed a fair amount of antibiotics, antidotes and vaccines to treat a wealth of infections and diseases, it still falls to the individual to take the standard, rather universal precautions - cooking meat thoroughly, washing hands, avoiding environments which could be dangerous, and seeking medical attention quickly when symptoms of illness persist.



## Medicine is Both a Science and an Art

The Medical Detective is replete with examples of illnesses which initially leave medical professionals stymied. Part of the reason for this phenomenon is that a significant number of symptoms suggest a significant variety of illnesses and diseases. The physician is thus faced with a procedure which can best be termed "guess and test," that is, positing a possible diagnosis and then running countless medical and laboratory tests, as well as conducting research and investigation, to confirm or rule out the diagnosis. This continues until, ideally, the diagnosis is correctly made and treatment begun in a timely manner. Medicine, then, can be seen as a rather imperfect science, despite use of the most modern technologies. Medicine must also be considered an art, therefore, and the truly excellent physician often engages his/her creative thought processes to see possibilities, to think "outside the box," and to pose diagnoses and treatments which veer from the standard or normal. Were it not for these creative thinkers, moreover, many of the treatments, therapies, pharmaceuticals, and cures we currently enjoy would not exist. Fortunately, there is a large body of physicians and medical researchers who continue to combine the science and art of medicine, because, as evolution and man's activities continue to alter our environment, new medical challenges will present themselves.

# Style

## Perspective

Author Berton Roueche was not a physician; rather, he was a journalist who had an abiding interest in medical mysteries and the process by which doctors and researchers diagnosed and treated illness and disease in America. As a staff writer for The New Yorker magazine, Roueche created articles which were later compiled in the book, *The Medical Detectives*. While the work is largely written from the perspective of an investigative journalist, including detailed interviews with a vast array of medical professionals and intricate story-telling, Roueche's perspective clearly leans toward investigative techniques, in a successful attempt to demonstrate the comparison between medical and criminal investigation. He clearly and successfully demonstrates that, even in the field of medicine, solutions to mysteries eventually involve the traditional legwork often associated with that of police detectives. These include exhaustive interviews with a wide variety of individuals, investigation of homes, businesses and environments, as well as the use of the most current "forensic" testing that medical science has developed, specifically laboratory analysis of blood, urine, tissue, etc., as well as analysis of samples taken from soil, water, and plants. In the end, perhaps Roueche sees, as well, a strong comparison between investigative journalism and the processes by which medical professionals find solutions to complex and mystifying medical conditions.

## Tone

The very nature of this work requires almost complete objectivity on the part of the author. He is relating actual conversations with physicians and medical researchers, as well as complete texts from reports written by medical professionals regarding each medical case study. Often, the words and journals of the victims are also included, so as to lend complete credibility and authenticity to each case. It is difficult, however, even for such a manner of coverage to be completely objective, and, as is often the case with journalists, comments reflecting the errors made in diagnoses, and the sometimes serious consequences of such error, are found throughout the text. Clearly, Roueche has high regard for those involved in medical investigations, however, especially those professionals within state departments of health and the federal agencies which oversee many of the investigations covered in this book. He is impressed by the thorough and relentless work of these individuals, as they strive to "solve" the mysteries and to promote their missions of improving health and curbing the spread of infectious diseases. It is thus professed that the American public should be thankful that, in America, the structures and professionals are in place to achieve maximum effectiveness when health conditions pose serious threats.



## Structure

Because this work is actually a compilation of feature articles written for the New Yorker Magazine, the book is divided into chapters, each of which chronicles a medical "mystery" with which a wide variety of medical professionals became involved, in attempts to find answers. As well, the format is somewhat chronological in nature and demonstrates the improvements and refinements of medical diagnosis, testing, and investigation over time. Each "mystery" begins with the affliction of one or more individuals, delineates the symptoms, and then chronicles the activity of investigation, largely through hypothesis and testing methods, but as well through traditional techniques of interviews and "footwork." The single variance from this format is the chapter on aspirin. Although it begins with a child's overdose of aspirin, the affliction is not really a mystery, even though the child dies. Rather, the chapter is an historical picture of the development and refinement of this "miracle" drug from its plant origins to its current synthetic variety with added buffers and other refinements. Upon reflection, however, one sees that this segment is true to the intended format, as it focuses on medical research, specifically the discovery of a drug, the analysis of its benefits and drawbacks, and, ultimately, its refinement to ultimate efficacy for the public good. The structure of this work itself, then, can be seen as an accolade to medical professionals who doggedly pursue answers to improve human health. Clearly, had author Roueche continued his series into more contemporary times, he would have continued to reveal newer and more complex medical "mysteries" and the advances of medical science and research as they attempt to find answers.



## Quotes

"In recent years, and particularly during the war, sodium nitrite has been used as a substitute for sodium nitrate in preserving meat. The government permits it but stipulates that the finished meat must not contain more than one part of sodium nitrite per five thousand parts of meat. Cooking will safely destroy enough of that small quantity of the drug....we didn't have to think twice to realize that the proportion of nitrite in that batch of cereal was considerably higher than one to five thousand." (pp.11-12)

"...the Bureau of Animal Industry of the U.S. Department of Agriculture, although it assumes all port to be trichinous until proved otherwise, requires packing houses to administer a prophylactic freeze to only those varieties of the meat - frankfurters, salami, prosciutto, and the like - that are often eaten raw. Moreover, not all processed pork comes under the jurisdiction of the Department. At least a third of it is processed under local ordinances in small, neighborhood abattoirs beyond the reach of the Bureau, or on farms. Nearly two per cent of the hogs slaughtered in the United States are trichinous." (p. 18)

"Typhoid is invariably conveyed by food or drink contaminated with the excreta of its victims. Ordinarily, it is spread by someone who is ignorant, at least momentarily, of his morbid condition. One reasons for such unawareness is that for the first several days typhoid fever tends to be disarmingly mild and indistinguishable from the countless fleeting malaises that dog the human race. Another is that nearly five per cent of the cases become typhoid carriers, continuing indefinitely to harbor a lively colony of typhoid bacilli in their systems.....About seventy per cent, by some unexplained physiological fortuity, are women." (p. 27)

"Rabies is one of around sixty human diseases now known, or confidently supposed, to be of viral origin. Its causative agent is thus a member of the most mysterious form of life on earth. About all that can be said of the viruses is that they are supremely small (some are only just within the reach of an electron microscope), infinitely numerous (not even the bacteria are more ubiquitous), and almost incomparably specialized. All viruses are obligate intracellular parasites. they share with the rickettsiae the otherwise unique distinction of being unable to grow or reproduce outside the protoplasmic tissue of a living host. In general, the severity of a viral invasion reflects the functional importance of the particular cells to which the invaders are drawn. The virus of rabies is a neurotropic virus. Like the viruses of poliomyelitis and the several encephalitides, it has a special affinity for the cells of te central nervous system....Unlike the great majority of viruses (including agents of smallpox, measles, yellow fever, poliomyelitis, infectious hepatitis, and the common cold), which can find in nature fewer than half a dozen satisfactory habitats, it is able to exist comfortably and abundantly proliferate in any warm-blooded animal." (p. 48-49)

"The physiology of aspirin is somewhat clearer now...It is now believed, on the basis of the investigations of several researchers...that aspirin achieves its incongruous collection of efficacies - the reduction of fever, the reduction of inflammation, the easing





of aches and pains - by inhibiting the body's production of the hormonelike substances known as prostaglandins. Prostaglandin production is also linked to the natural formation of blood clots. It is the ability of aspirin to interfere with clotting that causes aspirin's chief drawback - its tendency to cause internal bleeding. But this very flaw has been recently turned to an advantage, and aspirin is now widely used to protect against heart attacks and strokes, by blocking clot formation." (p. 80)

"Histoplasmosis is one of about a dozen systemic diseases now known to be caused by the venerable fungus family. It is thus, unlike the overwhelming majority of infections that afflict the human race, of vegetable rather than animal origin. All the deep mycoses, as these fungus invasions have come to be called, are relatively new to medicine (none was recognized much before the turn of the century), all are serious disorders - some are invariably fatal - and all are rapidly growing in stature. Histoplasmosis is the newest member of this upstart group, and although it most often appears in a tractable form, it can be as deadly as any of the others. It is also by far the most increasingly common." (p. 91-92)

"...for all their several differences, the schistosomes are essentially much alike. So are the varieties of schistosomiasis they produce. A schistosome is not a toxic organism in the usual sense. Except for certain allergic reactions, its impact is largely mechanical. The eggs of a schistosome are equipped with clawlike spines to hold them in their venous incubator against the constant pull of the circulating blood, and it is from this constant tugging and tearing that the chief discomfort of schistosomiasis stems. For reasons not entirely clear, schistosomiasis japonica tends to be the most destructive of the three forms, but all are serious diseases - always unpleasant, often debilitating, and not infrequently fatal - and the symptoms of their presence are fundamentally the same. They typically include, as in the case of Vernon Berry, an outbreak of hives, an elevated eosinophile count, and internal bleeding." (p. 132-133)

"Jimson weed is a big, hardy, cosmopolitan annual of Asian origin. It is known to science as *Datura Stramonium* and is a member of the large and generally noxious Solanaceae, or nightshade family of plants. Other members of this family include tobacco, horse nettle, henbane, belladonna, the petunia, the tomato, and the Irish Potato. All these plants, including the tomato and the potato, are at least in some respects pernicious. Jimson weed is entirely so. Its leaves, its seeds, its flowers, and its roots all contain a toxic alkaloid called hyoscyamine. Hyoscyamine is closely related to atropine and is, if anything, more toxic. Jimson weed is distributed throughout most of the United States. It made its first appearance here in the early seventeenth century, possibly as early as 1607. Some authorities think it may have been introduced in ballast and other rubbish discharged from the ships that landed Captain John Smith and his fellow Virginia colonists at Jamestown in that year....Early records indicate that the Powhatan Indians of coastal Virginia called it the 'white man's weed.'" (p. 171)

"The hosts preferred by the anthrax organism are horses, goats, cattle, sheep, and swine. Its human visitations are merely accidental. Man acquires the disease by contact with an ailing animal or from a contaminated animal product - skin, hide, hair, wool, bristle, bones. Anthrax enters the body in the form of a spore excreted by an animal



host. The nose or an open cut or abrasion are its usual portals of entry in man....Once settled in an acceptable habitat, however, the spores discard their protective casing and rapidly proliferate. They generally make their presence felt within a couple of days. The signs and symptoms of anthrax reflect the initial focus of infection." (p. 185)

"Serious illness in a premature nursery is not an unusual occurrence, and a blood infection is only one of the many diseases that may afflict a premature baby during its first days of life. Trouble is inherent in the phenomenon of prematurity. For the truth of the matter is that premature birth is itself a serious affliction. A premature baby is born in the seventh or eighth month of pregnancy. Its birth weight is largely determined by its relative prematurity, ranging from around two to five and a half pounds...Many of them are too meagerly developed to maintain normal body temperature. One in three requires immediate, and often prolonged, resuscitation, and about the same number are unable to nurse, or even to swallow. Some of them are even unable to cry. All of them are exquisitely susceptible to infection." (p. 201)

"Infectious hepatitis has a natural history as long as that of any of the many epidemic diseases. There is no reason to doubt that its origins go back at least five thousand years, to the first coming together of men in city, or community, life. It is thought to have been glimpsed as an entity as early as the Hippocratic era, and it has certainly long been known as a major military scourge. It has been recorded as a serious source of misery in every war since the Napoleonic Wars. Serum hepatitis very seldom occurs in epidemic form. Its rigid epidemiology inhibits its rapid spread. The few large outbreaks of serum hepatitis on record have chiefly stemmed from either blood-bank blood contaminated by infected donors or from slipshod immunization programs, and most of these have involved military or institutional personnel. Serum hepatitis most commonly occurs in occasional cases of insidious origin, and its typical appearances are almost always the result of a disregard of elementary hygiene." (pp. 220-221)

"The states of mind of most patients emerging from the post-convulsion sleep (of electroconvulsive therapy) are similar. There is a harrowing sense of confusion, and then a full awakening in the midnight dark of total amnesia. The patient has no idea who he is or where he is or what has happened to him. He is often also weak, unsteady, and dizzy. Nausea, sometimes with vomiting, and headache are not uncommon. Some sense of identity soon and spontaneously returns, and from the attending doctors and nurses the patient learns his whereabouts and the nature of his situation. At that point, reorientation slows, and the deepest amnesia remains. The distant past - the past of childhood and adolescence - is the first to gradually reappear. The middle past is more difficult to recover, and the immediate past - the weeks or months just preceding treatment - is almost always irretrievable." (p. 278)

"The psychiatrist should not assume that every patient in the six-to-thirty-two age group who seems to be in need of psychiatric help is actually a psychiatric patient. He should stop and consider the possibility of somatic illness. And in a referral, he shouldn't simply accept the previous diagnosis. He should see for himself. I'll go further. I would suggest that all individuals admitted to psychiatric wards between the ages of six and thirty-two

to be screened for Wilson's disease with a cerulo-plasmin test. It's a simple test - all you need is a blood sample. That would save a lot of misery, even lives." (p. 357)



## Topics for Discussion

What has changed and what remains the same in infectious disease investigation and control?

In what ways does medical detection mirror the methods used by criminal investigators?

What have been the positive and negative features of electric-shock therapy? Why is it not common today?

Aspirin is often touted as a "miracle" drug. Briefly trace its historical development. What are potential side effects of aspirin?

Two stories relate to women who were admitted to mental health facilities. Compare and contrast their afflictions, treatments and outcomes.

Discuss the differences between infectious and serum hepatitis, including causes, symptoms, and treatments.

Several stories in this compilation deal with metallic poisoning or allergy, specifically copper and mercury. Based upon the cases covered, what are the harmful effects of too much and too little of these metals in the human body?