

The Fog

by Berton Roueche. First published in *The New Yorker* (1950). Read more true stories of medical detection in *The Medical Detectives*, 2 vols., *The Orange Man*, *Eleven Blue Men*, and *Annals of Epidemiology*.

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The Monongahela River rises in the middle Alleghenies and seeps for a hundred and twenty-eight miles through the iron and bituminous-coal fields of northeastern West Virginia and southwestern Pennsylvania to Pittsburgh. There, joining the Allegheny River, it becomes the wild Ohio. It is the only river of any consequence in the United States that flows due north, and it is also the shortest. Its course is cramped and crooked, and flanked by bluffs and precipitous hills. Within living memory, its waters were quick and green, but they are murky now with pollution, and a series of locks and dams steady its once tumultuous descent, rendering it navigable from source to mouth. Traffic on the Monongahela is heavy. Its shipping, which consists almost wholly of coal barges pushed by wheezy, coal-burning stern-wheelers, exceeds in tonnage that of the Panama Canal. The river is densely industrialized. There are trucking highways along its narrow banks and interurban lines and branches of the Pennsylvania Railroad and the New York Central and smelters and steel plants and chemical works and glass factories and foundries and coke plants and machine shops and zinc mills, and its hills and bluffs are scaled by numerous blackened mill towns. The blackest of them is the borough of Donora, in Washington County, Pennsylvania.

Donora is twenty-eight miles south of Pittsburgh and covers the tip of a lumpy point formed by the most convulsive of the Monogahela's many horseshoe bends. Though accessible by road, rail, and river, it is an extraordinarily secluded place. The river and the bluffs that lift abruptly from the water's edge to a height of four hundred and fifty feet enclose it on the north and east and south, and just above it to the west is a range of rolling but even higher hills. On its outskirts are acres of sidings and rusting gondolas, abandoned mines, smoldering slag piles, and gulches filled with rubbish. Its limits are marked by sooty signs that read, "Donora, Next to Yours the Best Town in the U.S.A." It is a harsh, gritty town, founded in 1901 and old for its age, with a gaudy main street and a thousand identical gaunt gray houses. Some of its streets are paved with concrete and some are cobbles, but many are of dirt and crushed coal. At least half of them are as steep as roofs, and several have steps instead of sidewalks. It is treeless and all but grassless, and much of it is slowly sliding downhill. After a rain, it is a smear of mud. Its vacant lots and many of its yards are mortally gullied, and one of its three cemeteries is an eroded ruin of gravelly clay and toppled tombstones. Its population is 12,300. Two-thirds of its men, and a substantial number of its women, work in its mills. There are three of them—a steel plant, a wire plant, and a zinc-and-sulphuric-acid plant—all of which are operated by the American Steel & Wire Co., a subsidiary of the United States Steel Corporation, and they line its river front for three miles. They are huge mills. Some of the buildings are two blocks long, many are five or six stories high, and all of them bristle with hundred-foot stacks perpetually plumed with black or red or sulphurous yellow smoke.

Donora is abnormally smoky. Its mills are no bigger or smokier than many, but their smoke, and the smoke from the passing boats and trains, tends to linger there. Because of the crowding bluffs and sheltering hills, there is seldom a wind, and only occasionally a breeze, to dispel it. On still days, unless the skies are high and buoyantly clear, the lower streets are always dim and there is frequently a haze on the heights. Autumn is the smokiest season. The weather is close and dull

then, and there are persistent fogs as well. The densest ones generally come in October. They are greasy, gaggy fogs, often intact even at high noon, and they sometimes last for two or three days. A few have lasted as long as four. One, toward the end of October, 1948, hung on for six. Unlike its predecessors, it turned out to be of considerably more than local interest. It was the second smoke-contaminated fog in history to reach a toxic density. The first such fog occurred in Belgium, in an industrialized stretch of the Meuse Valley, in 1930. During it several hundred people were prostrated, sixth of them fatally. The Donora fog struck down nearly six thousand. Twenty of them—five women and fifteen men—died. Nobody knows exactly what killed them, or why the others survived. At the time, not many of the stricken expected to.

The fog closed over Donora on the morning of Tuesday, October 26th. The weather was raw, cloudy, and dead calm, and it stayed that way as the fog piled up all that day and the next. By Thursday, it had stiffened adhesively into a motionless clot of smoke. That afternoon, it was just possible to see across the street, and, except for the stacks, the mills had vanished. The air began to have a sickening smell, almost a taste. It was the bittersweet reek of sulphur dioxide. Everyone who was out that day remarked on it, but no one was much concerned. The smell of sulphur dioxide, a scratchy gas given off by burning coal and melting ore, is a normal concomitant of any durable fog in Donora. This time, it merely seemed more penetrating than usual.

At about eight-thirty on Friday Morning, one of Donora's eight physicians, Dr. Ralph W. Koehler, a tense, stocky man of forty-eight, stepped to his bathroom window for a look at the weather. It was, at best, unchanged. He could see nothing but a watery waste of rooftops, islanded in fog. As he was turning away, a shimmer of movement in the distance caught his eye. It was a freight train creeping along the riverbank just south of town, and the sight of it shook him. He had never seen anything quite like it before. "It was the smoke," he says. "They were firing up for the grade and the smoke was belching out, but it didn't rise. I mean it didn't go up at all. It just spilled out over the lip of the stack, like ink or oil, and rolled down to the ground and lay there. My God, it just lay there! I thought, Well, God damn—and they talk about needing smoke control up in Pittsburgh! I've got a heart condition, and I was so disgusted my heart began to act up a little. I had to sit down on the edge of the tub and rest a minute."

Dr. Koehler and an associate, Dr. Edward Roth, who is big, heavysset, and in his middle forties, share an office on the second floor of a brownstone building one block up from the mills, on McKean Avenue, the town's main street. They have one employee, a young woman named Helen Stack, in which are combined an attractive receptionist, an efficient secretary, and a capable nurse. Miss Stack was the first to reach the office that morning. Like Dr. Koehler and many other Donorans, she was in uncertain spirits. The fog was beginning to get on her nerves, and she had awakened with a sore throat and a cough and supposed that she was coming down with a cold. The appearance of the office deepened her depressions. everything in it was smeared with a kind of dust. "It wasn't just ordinary soot and grit," she says. "There was something white and scummy mixed up in it. It was just wet ash from the mills, but I didn't know that then. I almost hated to touch it, it was so nasty looking. But it had to be cleaned up, so I got out a cloth and went to work." When Miss Stack had finished, she lighted a cigarette and sat down at her desk to go through the mail. It struck her that the cigarette had a very peculiar taste. She held it up and sniffed at the smoke. then she raised it to her lips, took another puff, and doubled up in a paroxysm of coughing. For an instant, she thought she was going to be sick. "I'll never forget that taste," she says. "Oh, it was awful! It was sweet and horrible, like something rotten. It tasted the way the fog smelled, only ten times worse. I got rid of the cigarette as fast as I could and drank a glass of water, and then I felt better. What puzzled me was I'd smoked a cigarette at home after breakfast and it had tasted all right. I didn't know what to think, except that maybe it was because the fog wasn't quite as bad up the hill as here downstreet. I guess I thought my cold was probably partly to blame. I wasn't really uneasy. The big Halloween parade the Chamber of Commerce puts on every year was to be held that night, and I could hear the workmen down in the street putting up the decorations. I know the

committee wouldn't be going ahead with the parade if they thought anything was wrong. So I went on with my work, and pretty soon the Doctors came in from their early calls and it was just like any other morning."

The office hours of Dr. Koehler and Dr. Roth are the same, from one to three in the afternoon and from seven to nine at night. Whenever possible in the afternoon, Dr. Koehler leaves promptly at three. Because of his unsteady heart, he finds it desirable to rest for a time before dinner. That Friday afternoon, he was just getting into his coat when Miss Stack announced a patient. "He was wheezing and gasping for air," Dr. Koehler says, "but there wasn't anything very surprising about that. He was one of our regular asthmatics, and the fog gets them every time. The only surprising thing was that he hadn't come in sooner. The fact is, none of our asthmatics had been in all week. Well, I did what I could for him. I gave him a shot of adrenaline or aminophyllin—some anti-spasmodic—to dilate the bronchia, so he could breathe more easily, and sent him home. I followed him out. I didn't feel so good myself."

Half an hour after Dr. Koehler left, another gasping asthmatic, an elderly steelworker, tottered into the office. "He was pretty wobbly," Miss Stack says. "Dr. Roth was still in his office, and saw him right away. I guess he wasn't much better when he came out, because I remember thinking, Poor fellow. There's nothing sadder than an asthmatic when the fog is bad. Well, he had hardly gone out the door when I heard a terrible commotion. I thought, Oh my gosh, he's fallen down the stairs! Then there was an awful yell. I jumped up and dashed out into the hall. There was a man I'd never seen before sort of draped over the banister. He was kicking at the wall and pulling at the banister and moaning and choking and yelling at the top of his voice. 'Help! Help me! I'm dying!' I just stood there. I was petrified. Then Dr. Brown, across the hall, came running out, and he and somebody else helped the man on up the stairs and into his office. Just then, my phone began to ring. I almost bumped into Dr. Roth. He was coming out to see what was going on. When I picked up the phone, it was just like hearing that man in the hall again. It was somebody saying somebody was dying. I said Dr. Roth would be right over, but before I could even tell him, the phone started ringing again. and the minute I hung up the receiver, it rang again. That was the beginning of a terrible night. From that minute on, the phone never stopped ringing. That's the honest truth. And they were all alike. Everybody who called up said the same thing. Pain in the abdomen. Splitting headache. Nausea and vomiting. Choking and couldn't get their breath. Coughing up blood. But as soon as I got over my surprise, I calmed down. Hysterical people always end up by making me feel calm. Anyway, I managed to make a list of the first few calls and gave it to Dr. Roth. He was standing there with his hat and coat on and his bag in his hand and chewing on his cigar, and he took the list and shook his head and went out. Then I called Dr. Koehler, but his line was busy. I don't remember much about the next hour. All I know is I kept trying to reach Dr. Koehler and my phone kept ringing and my list of calls kept getting longer and longer."

One of the calls that lengthened Miss Stack's list was a summons to the home of August Z. Chambon, the burgess, or mayor, of Donora. The patient was the Burgess's mother, a widow of seventy-four, who lives with her son and his wife. "Mother Chambon was home alone that afternoon," her daughter-in-law says. "August was in Pittsburgh on business and I'd gone downstreet to do some shopping. It took me forever, the fog was so bad. Even the inside of the stores was smoky. So I didn't get home until around five-thirty. Well, I opened the door and stepped into the hall, and there was Mother Chambon. She was lying on the floor, with her coat on and a bag of cookies spilled over beside her. Her face was blue, and she was just gasping for breath and in terrible pain. She told me she'd gone around the corner to the bakery a few minutes before, and on the way back the fog had got her. She said she barely made it to the house. Mother Chambon has bronchial trouble, but I'd never seen her so bad before. Oh, I was frightened! I helped her up—I don't know how I ever did it—and got her into bed. Then I called the doctor. It took me a long time to reach his office, and then he wasn't in. He was out making calls. I was afraid to wait until he could get here—Mother Chambon was so bad, and at her age and all—so I called another doc-

tor. He was out, too. Finally, I got hold of Dr. Levin and he said he'd come right over, and he finally did. He gave her an injection that made her breathe easier and something to put her to sleep. She slept for sixteen solid hours. But before Dr. Levin left, I told him that there seemed to be an awful lot of sickness going on all of a sudden. I was coughing a little myself. I asked him what was happening. 'I don't know,' he said. 'Something's coming off, but I don't know what.'"

Dr. Roth returned to his office at a little past six to replenish his supply of drugs. By then, he, like Dr. Levin, was aware that something was coming off. "I knew that whatever it was we were up against was serious," he says. "I'd seen some very pitiful cases, and they weren't all asthmatics or chronics of any kind. Some were people who had never been bothered by fog before. I was worried, but I wasn't bewildered. It was no mystery. It was obvious—all the symptoms pointed to it—that the fog and smoke were to blame. I didn't think any further than that. As a matter of fact, I didn't have time to think or wonder. I was too damn busy. My biggest problem was just getting around. It was almost impossible to drive. I even had trouble finding the office. McKean Avenue was solid coal smoke. I could taste the soot when I got out of the car, and my chest felt tight. On the way up the stairs, I started coughing and I couldn't stop. I kept coughing and choking until my stomach turned over. Fortunately, Helen was out getting something to eat—I just made it to the office and into the lavatory in time. My God, I was sick! After a while, I dragged myself into my office and gave myself an injection of adrenaline and lay back in a chair. I began to feel better. I felt so much better I got out a cigar and lighted up. That practically finished me. I took one pull, and went into another paroxysm of coughing. I probably should have known better—cigars had tasted terrible all day—but I hadn't had that reaction before. Then I heard the phone ringing. I guess it must have been ringing off and on all along. I thought about answering it, but I didn't have the strength to move. I just lay there in my chair and let it ring.

When Miss Stack came into the office a few minutes later, the telephone was still ringing. she had answered it and added the call to her list before she realized that she was not alone. "I heard someone groaning," she says. Dr. Roth's door was open and I looked in. I almost jumped, I was so startled. He was slumped down in his chair, and his face was brick red and dripping with perspiration. I wanted to help him, but he said there wasn't anything to do. He told me what had happened. 'I'm all right now,' he said. 'I'll get going again in a minute. You go ahead and answer the phone.' It was ringing again. The next thing I knew, the office was full of patients, all of them coughing and groaning. I was about ready to break down and cry. I had talked to Dr. Koehler by that time and he knew what was happened. He had been out on calls from home. 'I'm coughing and sick myself,' he said, 'I'll go out again as soon as I can.' I tried to keep calm, but with both Doctors sick and the office full of patients and the phone ringing, I just didn't know which way to turn. Dr. Roth saw two or three of the worst patients. Oh, he looked ghastly! He really looked worse than some of the patients. Finally, he said he couldn't see any more, that the emergency house calls had to come first, and grabbed up his stuff and went out. The office was still full of patients and I went around explaining things to them. It was awful. There wasn't anything to do but close up, but I've never felt so heartless. Some of them were so sick and miserable. And right in the middle of everything the parade came marching down the street. People were cheering and yelling, and the bands were playing. I could hardly believe my ears. It just didn't seem possible."

The sounds of revelry that reached Miss Stack were deceptive. The parade, through well attended, was not an unqualified success. "I went out for a few minutes and watched it," the younger Mrs. Chambon says. "It went right by our house. August wasn't home yet, and after what had happened to Mother Chambon, I thought it might cheer me up a little. It did and it didn't. Everybody was talking about the fog and wondering when it would end, and some of them had heard there was sickness, but nobody seemed at all worried. As far as I could tell, all the sick people were old. That made things look not too bad. The fog always affects the old people. But as far as the parade was concerned, it was a waste of time. You really couldn't see a thing. They were just like shadows marching by. It was kind of uncanny. Especially since most of the people in the

crowd had handkerchiefs tied over their nose and mouth to keep out the smoke. All the children did. But, even so, everybody was coughing. I was glad to get back in the house. I guess everybody was. The minute it was over, everybody scattered. They just vanished. In two minutes there wasn't a soul left on the street. It was as quiet as midnight.

Among the several organizations that participated in the parade with the Donora fire Department. The force consists of about thirty volunteers and two full-time men. The latter, who live at the firehouse, are the chief, John Volk, a wiry man in his fifties, and his assistant and driver, a hard, round-faced young man named Russell Davis. Immediately after the parade, they returned to the firehouse. "As a rule," Chief Volk says, "I like a parade. We've got some nice equipment here, and I don't mind showing it off. But I didn't get much pleasure out of that one. Nobody could see us, hardly, and we couldn't see them. The fog was black as a derby hat. It had us all coughing. It was relief to head for home. We hadn't much more than got back to the station, though, and got the trucks put away and said good night to the fellows than the phone rang. Russ and I were just sitting down to drink some coffee. I dreaded to answer it. On a night like that, a fire could have been real mean. But it wasn't any fire. It was fellow up the street, couldn't get a doctor, and what he wanted was our inhalator. He needed air. Russ says I just stood there with my mouth hanging open. I don't remember what I thought. I guess I was trying to think what to do as much as anything else. I didn't disbelieve him—he sounded half dead already—but, naturally, we're not supposed to go running around treating the sick. But what the hell, you can't let a man die! So I told him O.K. I told Russ to take the car and go. The way it turned out, I figure we did the right thing. I've never heard anybody say different."

"That guy was only the first," Davis says. "From then on, it was one emergency call after another. I didn't get to bed until Sunday. Neither did John. I don't know how many calls we had, but I do know this: We had around eight hundred cubic feet of oxygen on hand when I started out Friday night, and we ended up by borrowing from McKeesport and Monsoon and Monongahela and Charleroi and everywhere around here. I never want to go through a thing like that again. I was laid up for a week after. There never was such a fog. You couldn't see your hand in front of your face, day or night. Hell, even outside the station the air was blue. I drove on the left side of the street with my head out the window, steering by scraping the curb. We've had bad fogs here before. A guy lost his car in one. He'd come to a fork in the road and didn't know where he was, and got out to try and tell which way to go. When he turned back to his car, he couldn't find it. He had no idea where it was until, finally, he stopped and listened and heard the engine. That guided him back. Well, by God, this fog was so bad you couldn't even get a car to idle. I'd take my foot off the accelerator and —bango!—the engine would stall. There just wasn't any oxygen in the air. I don't know how I kept breathing. I don't know how anybody did. I found people laying in bed and laying on the floor. Some of them were laying there and they didn't give a damn whether they died or not. I found some down in the basement with the furnace draft open and their head stuck inside, trying to get air that way. What I did when I got to a place was throw a sheet or blanket over the patient and stick a cylinder of oxygen underneath and crack the valves for fifteen minutes or so. By God, that rallied them! I didn't take any myself. What I did every time I came back to the station was have a little shot of whiskey. That seemed to help. It eased my throat. There was one funny thing about the whole thing. Nobody seemed to realize what was going on. Everybody seemed to think he was the only sick man in town. I don't know what they figured was keeping the doctors so busy. I guess everybody was so miserable they just didn't think."

Toward midnight, Dr. Roth abandoned his car and continued his rounds on foot. He found not only that walking was less of a strain but that he made better time. He walked the street all night, but he was seldom lonely. Often, as he entered or left a house, he encountered a colleague. "We all had practically the same calls," Dr. M. J. Hannigan, the president of the Donora Medical Association, says. "Some people called every doctor in town. It was pretty discouraging to finally get someplace and drag yourself up the steps and then be told that Dr. So-and-

So had just been there. Not that I blame them, though. Far from it. There were a couple of times when I was about ready to call for help myself. Frankly, I don't know how any of us doctors managed to hold out and keep going that night.

Not all of them did. Dr. Koehler made his last call that night at one o'clock. "I had to go home," he says. "God knows I didn't want to. I'd hardly made a dent in my list. Every time I called home or the Physicians' Exchange, it doubled. But my heart gave out. I couldn't go on any longer without some rest. The last think I heard as I got into bed was my wife answering the phone. And the phone was the first thing I heard in the morning. It was as though I hadn't been to sleep at all." While Dr. Koehler was bolting a cup of coffee, the telephone rang again. This time, it was Miss Stack. They conferred briefly about the patients he had seen during the night and those he planned to see that morning. Among the latter was a sixty-four-year-old steelworker named Ignatz Hollowitti. "One of the Hollowitti girls, Dorothy, is a good friend of mine," Miss Stack says. "So as soon as I finished talking to Dr. Koehler, I called her to tell her that Doctor would be right over. I wanted to relieve her mind. Dorothy was crying when she answered the phone. I'll never forget what she said. She said, 'Oh, Helen—my dad just died! He's dead!' I don't remember what I said. I was simply stunned. I suppose I said what people say. I must have. But all I could think was, My gosh, if people are dying—why, this is tragic! Nothing like this has ever happened before!"

Mr. Hollowitti was not the first victim of the fog. He was the sixth. The first was a retired steelworker of seventy named Ivan Ceh. According to the records of the undertaker who was called in—Rudolph Schwerha, whose establishment is the largest in Donora—Mr. Ceh died at one-thirty Saturday morning. "I was notified at two," Mr. Schwerha says. "There is a note to such effect in my book. I thought nothing, of course. The call awakened me from sleep, but in my profession anything is to be expected. I reassured the bereaved and called my driver and sent him for the body. He was gone forever. The fog that night was impossible. It was a neighborhood case—only two blocks to go, and my driver works quick—but it was thirty minutes by the clock before I heard the service car in the drive. At that moment, again the phone rang. Another case. Now I was surprised. Two different cases so soon together in this size town doesn't happen every day. But there was no time then for thinking. There was work to do. I must go with my driver for the second body. It was in the Sunnyside section, north of town, too far in such weather for one man alone. The fog, when we got down by the mills, was unbelievable. Nothing could be seen. It was like a blanket. Our fog lights were useless, and even with the fog spotlight on, the white line in the street was invisible. I began to worry. What if we should bump a parked car? What if we should fall off the road? Finally, I told my driver, 'Stop! I'll take the wheel. You walk in front and show the way.' So we did that for two miles. Then we were in the country. I know that section like my hand, but we had missed the house. So we had to turn around and go back. That was an awful time. We were on the side of a hill, with a terrible drop on one side and no fence. I was afraid every minute. But we made it, moving by inches, and pretty soon I found the house. The case was an old man and he had died all of a sudden. Acute cardiac dilation. When we were ready, we started back. Then I began to feel sick. The fog was getting me. There was an awful tickle in my throat. I was coughing and ready to vomit. I called to my driver that I had to stop and get out. He was ready to stop, I guess. Already he had walked four or five miles. But I envied him. He was well and I was awful sick. I leaned against the car, coughing and gagging, and at last I riffled a few times. Then I was much better. I could drive. So we went on, and finally we were home. My wife was standing at the door. Before she spoke, I knew what she would say. I thought, Oh, my God—another! I knew it by her face. And after that came another. Then another. There seemed to be no end. By ten o'clock in the morning. I had nine bodies waiting here. Then I heard that DeRienzo and Lawson, the other morticians, each had one. Eleven people dead! My driver and I kept looking at each other. What was happening? We didn't know. I thought probably the fog was the reason. It had the smell of poison. But we didn't know."

Mr. Schwerha's bewilderment was not widely shared. Most Donorans were still unaware Saturday morning that anything was happening. They had no way of knowing, Donora has no radio station, and its one newspaper the *Herald-American*, is published only five days a week, Monday through Friday. It was past noon before a rumor of widespread illness began to drift through the town. The news reached August Chambon at about two o'clock. In addition to being burgess, an office that is more an honor than a livelihood, Mr. Chambon operates a moving-and-storage business, and he had been out of town on a job all morning. "There was a message waiting for me when I got home," he says. "John Elco, of the Legion, had called and wanted me at the Borough Building right away. I wondered what the hell, but I went right over. It isn't like John to get excited over nothing. The fog didn't even enter my mind. Of course, I'd heard there were some people sick from it. My wife had told me that. But I hadn't paid it any special significance. I just thought they were like Mother—old people that were always bothered by fog. Jesus, in a town like this you've got to expect fog. It's natural. At least, that's what I thought then. So I was astonished when John told me that the fog was causing sickness all over town. I was just about floored. That's a fact. Because I felt fine myself. I was hardly even coughing much. Well, as soon as I'd talked to John and the other fellows he had rounded up, I started in to do what I could. Something had already been done. John and Cora Vernon, the Red Cross director, were setting up an emergency-aid station in the Community Center. We don't have a hospital here. The nearest one is at Charleroi. Mrs. Vernon was getting a doctor she knew there to come over and take charge of the station, and the Legion was arranging for cars and volunteer nurses. The idea was to get a little organization in things—everything was confused as hell—and also to give our doctors a rest. They'd been working steady for thirty-six hours or more. Mrs. Vernon was fixing it so when somebody called a doctor's number, they would be switched to the Center and everything would be handled from there. I've worked in the mills and I've dug coal, but I never worked any harder than I worked that day. Or was so worried. Mostly I was on the phone. I called every town around here to send supplies for the station and oxygen for the firemen. I even called Pittsburgh. maybe I overdid it. There was stuff pouring in here for a week. But what I wanted to be was prepared for anything. The way that fog looked that day, it wasn't ever going to lift. And then the rumors started going around that now people were dying. Oh, Jesus! Then I was scared. I heard all kinds of reports. Four dead. Ten dead. Thirteen dead. I did the only thing I could think of. I notified the State Health Department, and I called a special meeting of the Council and our Board of Health and the mill officials for the first thing Sunday morning. I wanted to have it right then, but I couldn't get hold of everybody—it was Saturday night. Every time I looked up from the phone, I'd hear a new rumor. Usually a bigger one. I guess I heard everything but the truth. What I was really afraid of was that they might set off a panic. That's what I kept dreading. I needn't have worried, though. The way it turned out, half the town had hardly heard that there was anybody even sick until Sunday night, when Walter Winchell opened his big mouth on the radio. By then, thank God, it was over."

The emergency-aid station, generously staffed and abundantly supplied with drugs and oxygen inhalators, opened at eight o'clock Saturday night. "We were ready for anything and prepared for the worst," Mrs. Vernon says. "We even had an ambulance at our disposal. Phillip DeRienzo, the undertaker, loaned it to us. But almost nothing happened. Altogether, we brought in just eight patients. Seven, to be exact. One was dead when the car arrived. Three were very bad and we sent them to the hospital in Charleroi. The others were just treated and sent home. It was really very queer. The fog was as black and nasty as ever that night, or worse, but all of a sudden the calls for a doctor just seemed to trickle to a stop. It was as though everybody was sick who was going to be sick. I don't believe we had a call after midnight. I knew then that we'd seen the worst of it.

Dr. Roth had reached that conclusion, though on more slender evidence, several hours before. "I'd had a call about noon from a woman who said two men roomers in her house were in bad shape," he says. "It was nine or nine-thirty by the time I finally got around to seeing them. Only, I never saw them. The landlady yelled up to them that I was there, and they yelled right back, 'Tell him

never mind. We're O.K. now.' Well, that was good enough for me. I decided things must be letting up. I picked up my grip and walked home and fell into bed. I was dead-beat."

There was no visible indication that the fog was beginning to relax its smothering grip when the group summoned by Burgess Chambon assembled at the Borough Building the next morning to discuss the calamity. It was another soggy, silent, midnight day. "That morning was the worst," the Burgess says. "It wasn't just that the fog was still hanging on. We'd begun to get some true facts. We didn't have any real idea how many people were sick. That didn't come out for months. We thought a few hundred. But we did have the number of deaths. It took the heart out of you. The rumors hadn't come close to it. It was eighteen. I guess we talked about that first. Then the question of the mills came up. The smoke, L. J. Westhaver, who was general superintendent of the steel and wire works then, was there, and so was the head of the zinc plant, M. M. Neale. I asked them to shut down for the duration. They said they already had. They had started banking the fires at six that morning. They went on to say, thought, that they were sure the mills had nothing to do with the trouble. We didn't know what to think. Everybody was at a loss to point the finger at anything in particular. There just didn't seem to be any explanation. We had another meeting that afternoon. It was the same thing all over again. We talked and we wondered and we worried. We couldn't think of anything to do that hadn't already been done. We thought for a week that was the last. Then one more finally died. I don't remember exactly what all we did or said that afternoon. What I remember is after we broke up. When we came out of the building, it was raining. Maybe it was only drizzling then—I guess the real rain didn't set in until evening—but, even so, there was a hell of a difference. The air was different. It didn't get you any more. You could breathe."

The investigation of the disaster lasted almost a year. it was not only the world's first full-blooded examination of the general problem of air pollution but one of the most exhaustive inquiries of any kind ever made in the field of public health. Its course was directed jointly by Dr. Joseph Shilen, director of the Bureau of Industrial Hygiene of the Pennsylvania Department of Health, and Dr. J. G. Townsend, chief of the Division of Industrial Hygiene of the United States Public Health Service, and at times it involved the entire technical personnel of both agencies. The Public Health Service assigned to the case nine engineers, seven physicians, six nurses, five chemists, three statisticians, two meteorologists, two dentists, and a veterinarian. The force under the immediate direction of Dr. Shilen, though necessarily somewhat smaller, was similarly composed.

The investigation followed three main lines, embracing the clinical, the environmental, and the meteorological aspects of the occurrence. Of these, the meteorological inquiry was the most nearly conclusive. it was also the most reassuring. It indicated that while the situation of Donora is unwholesomely conducive to the accumulation of smoke and fog, the immediate cause of the October, 1948, visitation was a freak of nature known to meteorologists as a **temperature inversion**. This phenomenon is, as its name suggests, characterized by a temporary, and usually brief, reversal of the normal atmospheric conditions, in which the air near the earth is warmer than the air higher up. Its result is a more or less complete immobilization of the convection currents in the lower air by which gases and fumes are ordinarily carried upward, away from the earth.

The clinical findings, with one or two exceptions, were more confirmatory than illuminating. One of the revelations, which was gleaned from several months of tireless interviewing, was that thousands, rather than just hundreds, had been ill during the fog. For the most part, the findings demonstrated, to the surprise of neither the investigators nor the Donora physicians, that the affection was essentially an irritation of the respiratory tract, that its severity increased in proportion to the age of the victim and his predisposition to cardio-respiratory ailments, and that the ultimate cause of death was suffocation.

The environmental study, the major phase of which was an analysis of the multiplicity of gases emitted by the mills, boats, and trains, was, in a positive sense, almost wholly unrewarding. It failed to determine the direct causative agent. Still, its results, though negative, were not without value. They show, contrary to expectation, that none of the several stack gases known to be irritant—among them fluoride, chloride, hydrogen sulphide, cadmium oxide, and sulphur dioxide—could have been present in the air in sufficient concentration to produce serious illness. “It seems reasonable to state,” Dr. Helmuth H. Schrenk, chief of the Environmental Investigations Branch of the Public Health Service’s Division of Industrial Hygiene, has written of this phase of the inquiry, “that while no single substance was responsible for the...episode, the syndrome could have been produced by a combination, or summation of the action, of two or more of the contaminants. Sulphur dioxide and its oxidation products, together with particular matter [soot and fly ash], are considered significant contaminants. However, the significance of the other irritants as important adjuvants to the biological effects cannot be finally estimated on the basis of present knowledge. It is important to emphasize that information available on the toxicological effects of mixed irritant gases is meagre and data on possible enhanced action due to adsorption of gases on particular matter is limited.” To this, Dr. Leonard A. Scheele, Surgeon General of the Service, has added, “One of the most important results of the study is to show us what we do not know.”

Funeral services for most of the victims of the fog were held on Tuesday, November 2nd. Monday had been a day of battering rain, but the weather cleared in the night, and Tuesday was fine. “It was like a day in spring,” Mr. Schwerha says. “I think I have never seen such a beautiful blue sky or such a shining sun or such pretty white clouds. Even the trees in the cemetery seemed to have color. I kept looking up all day.”



After reading the entire story, you should be able to answer the following questions:

1. Was the diagnosis verified? How many cases were reported? How was the diagnosis verified?
2. Was the outbreak considered an epidemic? Why?
3. Describe the outbreak by Time, Place, and Person Factors. Describe the population at risk by age, sex, occupation, exposure to specific foods, ethnicity, and where the outbreak occurred.
4. How many possible sources were considered (hypotheses tested)? Who was at highest risk of acquiring the disease?
5. What was special about the fog in Donora this time? Why hadn't this happened before?
6. Did you find the investigation interesting? Were you surprised by the findings?

