

Bulletin

of the Atomic Scientists



**Japan's Secret
Poison Gas Complex:**



**The Story Japan
Would Like to Forget**



POISON GAS the story Japan would like to forget

Japanese citizens who still bear the scars of their work during World War II testify in harrowing detail to an operation denied by their government and ignored by the rest of the world.

by Yuki Tanaka

NOT FAR FROM HIROSHIMA lies a tiny island named Okunoshima, one of dozens that dot the Inland Sea which divides Japan's mainland, Honshu, from the large island of Shikoku. Okunoshima is too small to appear in a standard atlas, but during World War II it was erased from even the most detailed Japanese maps after it was transformed into an extraordinary, top-secret island factory for chemical weapons.

The weapons from this arsenal were to take a gruesome toll not only on armed forces and civilians in China and perhaps elsewhere, but also on the Japanese workers who produced them. According to records kept by the Chinese army, at least 2,000 Chinese were killed, and 35,000 injured, by Japanese chemical weapons during World War II. As for the Japanese workers, nearly 6,000 have been recognized by the Ministry of Health as suffering from their war-time work.

Still, the Japanese government has maintained a stubborn silence on its use of chemical weapons during the war. As recently as 1984, for example, the Ministry of Education ordered the publisher of a high school history textbook to remove a passage referring to the use of chemical and bacteriological weapons in China, claiming that there is no concrete evidence to prove such activities by the Japanese Imperial Army.

None of the people involved in chemical warfare were ever tried for war crimes. An American colonel amassed clear evidence immediately after the war that Japan had conducted chemical warfare against China. When the war crimes trials were in their early stages, however, the colonel was summoned home abruptly and the issue was dropped, possibly because the U.S. government was interested in keeping information relating to biological and chemical warfare for its own use. Another entity that profited from this bleak episode in wartime history is a Japanese company that received leftover chemicals in return for putting its employees' lives at risk to help with cleanup operations after the war.

Only parts of this story have been told before. In September 1985 the Japanese journal *Sekai* described the actual use

of chemical weapons by the Imperial Army against China. But until now, only the people living in the immediate area where the weapons were once produced have been aware of the details of the production and its effects on workers.

Several politicians and organizations representing the workers originally obtained documents relating to production in order to prove that people who were suffering ill effects had actually worked on the island, and that their illnesses resulted directly from the work. These documents were later printed by the Historical Records Office of the Repatriation Relief Bureau in the Ministry of Health. Photocopies of them are now kept by Takehara City Council, which has administrative responsibility for the citizens in Tadanoumi, the town closest to the island factory. It was there that I obtained copies of the documents. In 1986 and 1987, I conducted interviews with former workers, with people who as school children had been mobilized to work on the premises, and with medical doctors working for these people.

IN MAY 1918, AS GAS warfare was being waged in Europe, the Japanese military set up a provisional committee of some 30 specialists under the authority of the Imperial Army to examine various poison gas weapons and their methods of production. The immediate reason for such action was the fear that the Russian Revolutionary Army might use poison gas weapons against Japanese troops in Siberia.¹

One of the committee members was Chikahiko Koizumi (1884-1945), who was then a first class medical officer at the Army Medical College. The year before, he had experimented with the production and use of chlorine in his own laboratory, in probably the first experimental production of poison gas as a weapon in Japan. By July 1918, the committee had produced liquid chlorine and benzylbromide, using the facilities of the Hodogaya Chemical Industry Corporation in Tokyo and conducting experiments on animals.² In 1919 Koizumi was sent to Europe and the United States to study gas warfare as well as other medical issues related to war operations.³

Another key figure in the development of poison gas weapons in Japan was Lt. Col. Taneki Hisamura, who closely studied German and French gas weapons in Europe during 1918 and 1919. In 1919 he went to Berlin as a representative of the Japanese Ministry of Foreign Affairs and

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Bystander Takato Fukumidori worked as a security officer at the Okunoshima arsenal for two years. He was never engaged in the actual production of poison gases. However, he recently died after suffering from chronic bronchitis and liver cancer. Photos courtesy Masao Kajimura, chairman, Friendship Society of Okunoshima Poison Gas Sufferers.

a member of the Allied Committee on the Enforcement of the Peace Treaty. There he investigated the German production facilities for gas weapons and explosives and helped dismantle them. Naturally, he reported his vital firsthand observations on the manufacture of gas weapons to his colleagues in Japan.⁴

In the same year the Army Headquarters of Technology was established, along with its subordinate organization, the Army Institute of Science and Technology. Initially there were two sections in this institute: one specialized in basic physics and the other was responsible for research into chemical weapons and other types of explosives. Hisamura became deputy head of the latter section and invited Koizumi as a key researcher.

Hisamura again visited France, Germany, and the United States in 1921 and on his return reported that research and production of gas weapons in the West were considerably advanced. He urged top army leaders to quickly strengthen research in this area so that Japanese technology would not fall far behind. The Army promptly granted Hisamura's group a research fund of ¥50,000 (\$24,000 1922). That same year ¥25,000 was provided for the construction of a new laboratory building in Tokyo. During the next few years extraordinarily large sums were poured into the development of toxic gas weapons. For example, in 1925 the research grant was ¥300,000, and ¥1,200,000 was provided for expanding research facilities.⁵

In April 1924 Hisamura took yet another research trip

to the United States with one of his engineers. Surprisingly, they were allowed to visit and study closely the Edgewood Arsenal in Maryland, the toxic agent research and production plant which had been operating since 1918.⁶

The gas weapon research group was upgraded into a single department in June 1925 and officially became the third section of the Army Institute of Science and Technology. The staff was divided into five groups: production of poison gases and development of new toxic chemicals; development of special weapons using poison gases and research on their effects; research into methods of protecting against gas attacks; research into suitable climatic conditions for their use; and animal experiments and research into the treatment of victims.

In April 1926 a German scientist and gas specialist named Mezner was invited to the institute for two years to conduct lectures on poison gas weapons. By the end of 1928 the gas weapon section had more than 100 staff members, 40 laboratories, and 20 workshops, all housed in two large buildings and an annex.

Because of the danger associated with their research, the staff received certain benefits. They were paid an extra allowance, they were covered by a special injury and death grant, and they qualified for an additional pension. Thus the initial salary of a new university graduate in this section was 20 percent higher than that of his colleagues in other departments of the institute. These people were envied



Arsenal The Okunoshima factory in 1946, during the cleanup operation. Situated at the foot of a large hill that shielded it from view, the factory was well hidden from the mainland.

Poison gases

Phosgene CoCl_2 —Simple lung irritant. Caused 80 percent of gas fatalities in World War I. Ten times more toxic than chlorine. Severe symptoms and death may not occur for several hours after exposure. Damages alveoli, causes pulmonary edema, then death. Victims may cough bloody sputum for months. 0.02–0.05 percent concentration lethal in a few minutes.

Mustard (dichloroethyl sulfide) $(\text{ClCH}_2\text{CH}_2)_2\text{S}$ —Vesicant. Attacks skin, eyes, lungs. Unless there is direct exposure to the liquid, symptoms are delayed for 2–4 hours. Burning eyes, conjunctivitis, blistering of skin, hoarse coughing, bleeding from nose. 0.13 mg/liter at 10 minutes is fatal.

Hydrocyanic acid (hydrogen cyanide) HCN —Systemic toxin. Also called prussic acid. Acts on nervous system. Can be absorbed through skin. Symptoms appear rapidly, in order: giddiness, headache, unconsciousness, convulsions, paralysis of brain's respiratory center. 2.5 mg/liter is fatal.

Chlorine Cl_2 —Simple lung irritant. Irritates nose, throat, and lungs. Causes coughing, smarting of the eyes, nausea, vomiting. 0.1 percent concentration is lethal within a few minutes.

Lewisite (chlorovinylchloroarsine) $\text{ClCH}:\text{CHAsCl}_2$ —Vesicant. Also systemic poison because it contains arsenic. Absorbed through skin and lungs. Effects like mustard but more severe and burns appear more rapidly. 0.12 mg/liter at 10 minutes is fatal.

Sneeze and nausea gas (diphenylcyanoarsine) $(\text{C}_6\text{H}_5)_2\text{AsCN}$ —Respiratory irritant. Sneezing, choking, headache, pains in chest, nausea, vomiting. High concentrations create twitching, unsteady gait. 1.5 mg/liter at 10 minutes is fatal.

Adamsite (diphenylaminechloroarsine or phenarsazine chloride) $\text{NH}:(\text{C}_6\text{H}_4)_2:\text{AsCl}$ —Respiratory irritant. Irritates nose and throat mucous membranes at low concentrations. Higher concentrations affect lower respiratory tract. 3 mg/liter at 10 minutes is fatal.

Source: Edward M. Spiers, *Chemical Warfare* (Urbana, Ill.: University of Illinois Press, 1986).

by their colleagues, who were probably unaware of the nature of toxic chemicals.

BY THIS STAGE, IN 1927 or 1928, the scientists had completed experiments in small-scale production of lewisite, mustard gas, diphenylcyanarsin (sneeze and nausea gas), adamsite, and many other toxic chemicals.⁷ Top army officers started searching for an appropriate place to build a special arsenal where massive amounts of toxic gases could be produced.

The site had to fulfill certain basic conditions. It had to be isolated from inhabited areas because of military secrecy as well as contamination problems. At the same time, it could not be too isolated because it would require transportation links and a large number of workers. Okunoshima, a small island only four kilometers in circumference in the Inland Sea of Hiroshima prefecture, seemed to be the ideal location. The northeastern part of the island is a hilly area, the top of which is 100 meters above sea level. The southwestern part of the island has a flat area right under the steep hill which faces a tiny uninhabited island called Shokunoshima. Therefore, an arsenal complex built on the flat area would be well hidden between the hill and Shokunoshima. The nearest town, situated three kilometers away, is Tadanoumi on the mainland. A railway connects this small town with two major industrial cities, Mihara and Kure.

But there were political considerations as well in selecting the site. At the time, Japan was in the midst of financial panic and the economy was suffering a severe depression. Many local councils in various parts of Japan were competing to invite the military forces to build arsenals in their regions in order to stimulate their economies. One person who influenced the selection of Okunoshima was Keisuke Mochizuki, who was then the minister of telecommunications. Mochizuki's son was head of the Tadanoumi local council at the time. Mochizuki was also a close friend of another cabinet member, Yoshinori Shirakawa, the minister of the army. Mochizuki and his son thus recommended Okunoshima to Shirakawa.⁸

Although the town of Tadanoumi profited from these powerful political connections, there is no doubt that the island was ideally suited. Thus the army decided to change Okunoshima into an island factory, to which workers recruited from neighboring areas could commute by boat. On August 5, 1927, the Tadanoumi branch of the Army Arsenal Bureau was set up in the army's Tadanoumi warehouse. Three households were forced to move off of Okunoshima and the Military Secrets Act was applied to the island.

One of the very few people who know the entire history of the arsenal firsthand is Tadashi Hattori, who worked for the arsenal as a chemical engineer from the very beginning of its operation in 1929 until the end of World War II. His book, *A Secret Memoir: The Record of Okunoshima*, is thus a valuable document.⁹ According to Hattori, who lives today in Okayama prefecture, military secrecy dictated that ordinary civilians could not set foot on Okunoshima.

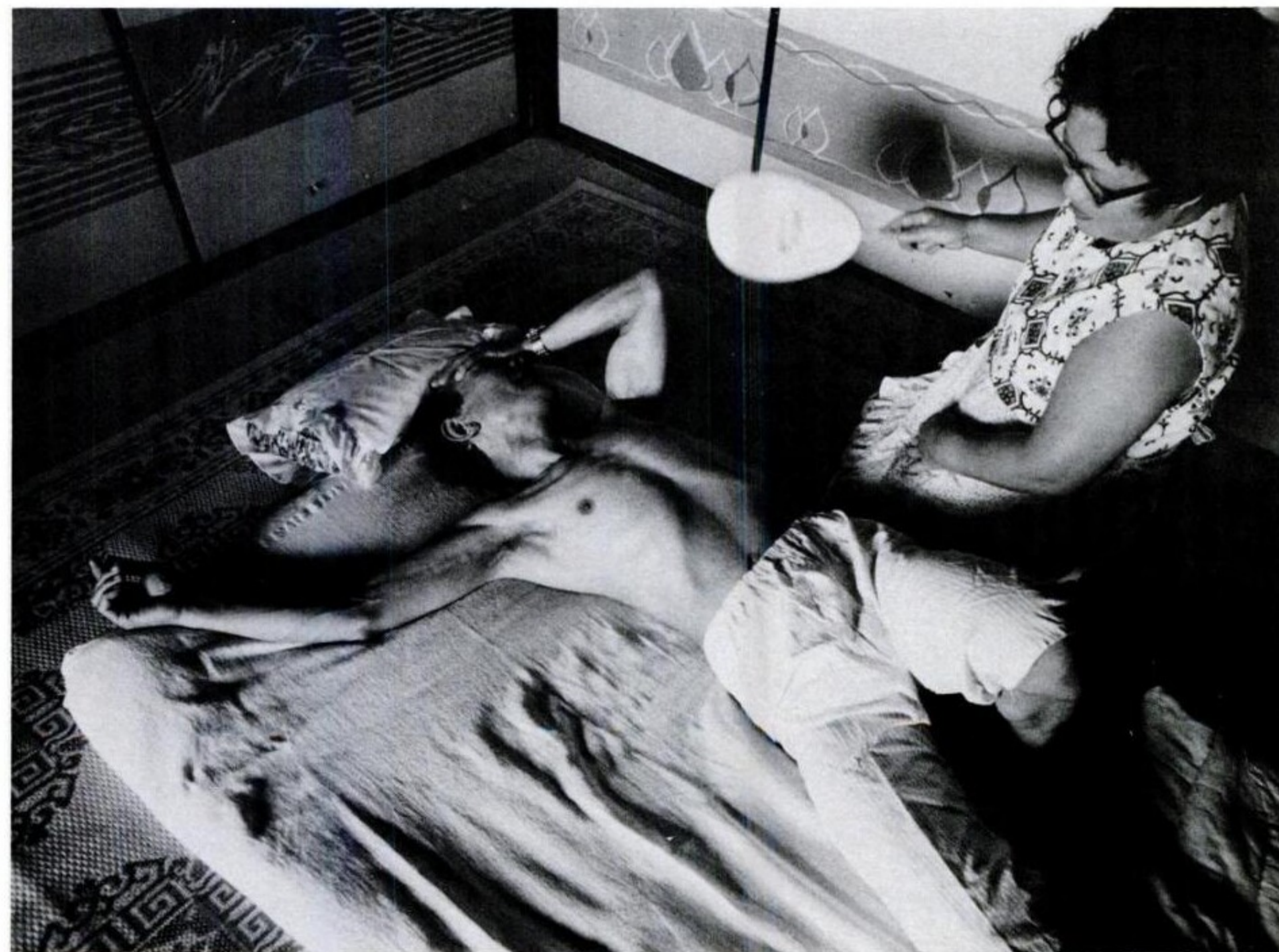
Ten years later the island and its surrounding area were erased from Japanese maps. As soon as the construction of the arsenal started, many boats fully loaded with all sorts of building materials shuttled between Tadanoumi and Okunoshima day after day. It was the beginning of what local people called the "Okuno Boom." Hattori recalls those days: "At the bottom of the depression, the sudden onset of the factory construction on Okunoshima pleased the local people tremendously; it was like long-awaited rain."

It took two years to complete the complex, which consisted of several large factory buildings made of reinforced concrete, a power house, warehouses, office buildings, a harbor, a hospital, and so forth. Hattori describes the opening ceremony, conducted on May 19, 1929. Eighty-one people including the governor of Hiroshima prefecture and other local politicians were invited to this ceremony, but they were not allowed to enter the factory buildings. It is not certain whether these guests knew what sort of arms would be produced there. In the evening, people in Tadanoumi also celebrated the opening of the arsenal by holding

a lantern parade through the town. But most of them neither saw the actual buildings—they were well hidden—nor knew what sort of factory it was.

Hattori was one of seven engineers on the initial staff of 80. All seven were elite young graduates from either industrial or pharmaceutical colleges and were carefully selected from 6,000 applicants. When they applied for the jobs, they knew nothing about the nature of the work except that it was related to chemicals. The army's intention was to train these young men as supervisors, which is what Hattori became.

In the beginning, the arsenal concentrated on the production of two types of gases: mustard gas and tear gas (chloracetophenone). Despite the previous success with experimental small-scale production of mustard gas, and despite Colonel Hisamura's personal assistance on the island, the process of transforming to large-scale production at the Okunoshima factory encountered certain technical difficulties. Hattori writes that it took three months to solve the problems and to successfully produce this deadly gas in massive quantities.



Suffering Sadao Okamoto was 18 years old when he went to work in 1937 as an electrical technician at the Okunoshima arsenal. But he was forced to work in the mustard gas production section and experienced lung damage after just two years. He is still suffering from chronic bronchitis and pleurisy.

AS SOON AS SUCCESSFUL manufacturing began in August 1929, so too did the succession of casualties among the workers. Although workers' bodies were completely protected with masks, clothes, gloves, and boots, all made from rubber, the mustard gas penetrated the rubber and burned their skin, eyes, and throats. It caused conjunctivitis, pleural pneumonia, and bronchitis. The hot, humid August weather made the gas fume easily, contributing to the injuries. There seemed to be no effective medical treatment. The standard treatment for skin inflammation was to neutralize the effects of the poison with potassium permanganate and vinegar, and then to treat it as a burn. But there was virtually no treatment for respiratory diseases except to eat as much nutritious food as possible.

Because of the many casualties in the mustard gas production section, some affected workers were shifted to tear gas production, but there, too, problems occurred. Tear gas was produced as a solid from benzol, monochloroacetic acid, and phosphorus trichloride. It set easily and often locked the exit pipe of the transformation cauldron, and workers wearing protective masks had to scrape it out from time to time. The chlorine gas always permeated the masks and affected workers' eyes and throats. In the restroom, Hattori writes, eye ointment was always available, but workers could not clean their own eyes because their entire bodies were so polluted. They needed the help of others not engaged in poison gas production.

These problems were only the beginning of the tragedy. The arsenal was expanded considerably in 1933 and again in 1935. By 1935 the major gases produced were mustard gas, lewisite, sneeze and nausea gas, hydrocyanic acid gas, and tear gas. Accordingly, the total number of workers, including office workers, sharply increased to 225 in 1935 and to 2,645 in 1937, the year that the Japanese army went to war with China. Until 1935, the actual production of each poison gas was only carried out once or twice a year over a period of two or three months, because of the relatively small number of workers and the limited demand for such weapons. For short, intense periods, all the workers were engaged in the production of one particular gas, and only one section of the factory was used at a time. But former workers say that between 1937 and 1944 the arsenal operated at full capacity, often 24 hours a day. At the busiest time, between 5,000 and 6,000 people were working on this small island. Toward the end of the war, many of these were women and school children mobilized to help with the war effort.

Because of the danger involved, workers' wages were much higher than average. In 1935, for example, the minimum daily wage on Okunoshima was ¥1, 10 sen, while a trained carpenter on the mainland earned less than ¥1 per day. Special danger benefits added 60 percent to the basic wage, and there were overtime allowances and a December bonus. Thus the monthly salary of even a new trainee was about ¥35 and for a veteran worker was more than ¥100.¹⁰ The latter was equivalent to the salary received at the time by

a junior high school principal, a prestigious, highly paid position. People in the Tadanoumi area envied the affluent lifestyle of the Okunoshima workers and one after another sought employment at the arsenal. When the Pacific War started, some people applied for jobs there in order to avoid being drafted into the armed forces, even though they were more or less aware that the work was dangerous.

New employees were sworn to secrecy about the nature of the work they were about to begin. They were not to discuss their work even with their families, and military

Ghastly experiments

Three experiments of firing mustard gas shells, using a total of 16 Chinese prisoners, were conducted by the Japanese between September 7 and 10, 1940. These prisoners were dressed in different types of clothes. Some were made to wear gas masks and others were without masks or shoes. They were then positioned in various places such as in shelters, under a machine-gun cover, or inside a building. In these four days a total of 9,800 shells were fired. Every few hours after the firings the physical condition of these prisoners was examined. The following is an excerpt from this report, which describes Prisoner 513 who had been placed under a light cover, without a mask, in a position from which he could be observed. This was his condition on September 12:

"10 a.m.: headache; fatigue; heart acceleration; body temperature 38°; skin, particularly facial skin becomes pitch black in color, and all blisters are covered with thin scabs; the shoulders are inflamed and many small and big blisters are scattered over them; on the abdomen there are many tiny white scabs; misty eyes and eye irritation; trouble with eyesight, constant tears, and eyelids are droopy with edema; congested and swollen conjunctivae; turbid corneas; eye mucus; running nose; hoarse voice; croup; phlegm; dysphagic; pain and oppressive sensation in the chest; dyspnea and stridor; wheezy chest and cardiac dullness."

In another experiment, five prisoners were made to drink "crude water"—liquid-form mustard gas or lewisite. Four of the five had already been exposed to mustard gas in the above experiment. The symptoms of all five over the following three to five days were briefly recorded in the report. One excerpt, describing Prisoner 479, is as follows:

"September 7: Made the prisoner drink 'crude water.'
September 8: (12 hours later) emesis, diarrhea, tentesmus, bloody excrement.
September 9: Anorexia as a result of diarrhea, emesis, tentesmus, bloody excrement. Searched for dysentery bacilli (Mr. Endo tried agar culture), but no sign.
September 10: At 10 p.m. dropped 'crude water' in the right eye.
September 11: The conjunctiva of the right eye became red and turgid with blood; that was the only recognizable symptom."

The report does not describe what eventually happened to these prisoners.

—Yuki Tanaka

Source: Takao Matsumura, "731 butai no jikken hokokusho," (A report of experiments conducted by Unit 731), *Rekishu Hyōron* no. 538 (1985), pp. 58–61.

police officers often visited workers' homes to check on this. In addition, military police disguised as workers constantly kept watch and monitored workers' conversations. Masao Kajimura, a former worker, recalled in an interview that any worker caught discussing anything related to factory secrets, even with a co-worker, was beaten and thrown into a cell. In August 1935, the director of the arsenal issued a special order prohibiting any group activities among workers, and even a small friendship club was dissolved.

In accordance with these strict regulations, resignation was not accepted under any circumstance. For example, when Tsunekichi Banya submitted his resignation because he was suffering from acute pneumonia, bronchitis, and pleurisy, the director refused to accept it and ordered Banya to return to work as soon as he recovered. Six months later he returned.¹¹ In another case cited by Kajimura, a worker resigned without informing the arsenal office and disappeared from Tadanoumi, only to be brought back to the factory by the military police a few months later.

AS POISON GAS production reached its peak between 1937 and 1944, so too did deaths and casualties among the workers. Although workers engaged in actual gas production worked either 30-minute or one-hour shifts, the average working day was 11–13 hours long. Kazuo Yamasaki, a worker, recalled in an interview that the factory was so contaminated that workers had to keep an eye on caged parakeets, which dropped dead when gas leakage rose. At this point workers would leave the contaminated area for a time.

Everyone was at risk. A carpenter who injured his finger with a nail while fixing a shelf in the factory died three days later.¹² According to Kikumatsu Inaba, who worked at the arsenal for twelve and one-half years, two-thirds of the workers were affected by poison gases: "Some were affected in the eyes and lost their sight," he writes in his memoir. "Some were affected in the throat and lost their voice." He describes other injuries. The most common was inflammation of the armpits, genitals, and hips. These parts became sweaty as a result of hard physical labor and the rubber garments, which did not keep out the poison.

Many workers had difficulty walking because of their injuries. Despite protective masks, their faces were also affected, turning black or purple. Medical treatment at the island hospital was basic: typically, workers had their eyes washed, their throats cleaned with inhalators, and poultices applied around the neck. Or they were instructed to take a bath several times a day and to apply powder to the inflamed area after each bath.

At first only men were used in the actual gas production and filling of the tubes and shells, but at some stage, because of the shortage of men, women were also used for these tasks. But the protective masks were too big for the women, so that they inhaled the gases and very soon began to vomit blood and faint. Consequently the management stopped using women for the actual production and assigned them mainly to the finishing process: fixing ignition plates



Burned The back of one of the workers who was affected by poison gas, probably mustard gas or lewisite, which are blistering agents. The photo was taken during the war by a member of the medical staff of the island hospital.

on the gas-filled tubes, putting the lids on, and fixing gum tape around the lids. Male workers were expected to wipe the surface of the tubes with a cloth after filling them with the chemicals. Often, however, residues were not removed completely and female workers, who handled the tubes with only cloth gloves, had their hands and garments contaminated. Similarly, if they did not clean their hands sufficiently with antiseptic before using the toilet, the poison viciously attacked their sexual organs. And because the entire factory complex and the air on the island was so polluted, the toilet paper also contained some poison. Consequently, many workers attest to the fact that the poison had a more serious effect on women than on men.

Workers were mainly concerned with their external injuries and believed that the problem of coughing and phlegm would stop when their work ended. But, as will be explained later, the gases affected workers' internal organs as well. Indeed, the polluted atmosphere of the factory and the island as a whole also caused problems for the large number of women and school children who were sent there toward the end of the war. Although they were not directly connected with the poison gases and were instead engaged in such duties as burning rubbish, piling up boxes, cutting grass, digging bomb shelters, and making balloons for balloon bombs, these people also inhaled the gases. Two mobilized students of the Tadanoumi Girls High School recalled in an interview that all the trees on the island were withered and one could not avoid the foul smell wherever one went on the island.

THE POISON GASES produced on Okunoshima, at great cost to a large number of Japanese people, were transported to China as soon as the war between Japan and China started in July 1937. The emperor issued an order on July 27 to send to China the Number One Chemical Experimental Battalion, along with various types of army units. The next day the chief of the General Staff gave Seiji Kogetsu, commander of the Stationary Forces in China, permission to use gas weapons.¹³ Poison gas battalions were dispatched

to various places in China on August 15 and 31 and on October 20 and 30.

According to the September 1985 *Sekai* article, by Kentaro Awaya and Yoshiaki Yoshimi, gas weapons were used only sporadically in the beginning, and tear gas, called "green number one," was the weapon predominantly used against the Chinese soldiers. In the spring of 1938, however, the Japanese army began full-scale use of "red number one," or sneeze and nausea gas, and from the summer of 1939 mustard gas, called "yellow," was used against both the Guomindang (nationalist) and communist forces.

Awaya uncovered ample evidence to indicate that massive amounts of gas were used on many battlefields. One example is a report compiled in 1942 by the Narashino Military College, which Awaya found in the U.S. archives. Entitled (in Japanese) "Collected examples of chemical warfare during the China Incident," the 70-page report documents 56 cases of war operations. Each instance details the poison

Morrow's evidence

On April 16, 1946, U.S. prosecutor Thomas H. Morrow listed the following evidence that the Japanese Imperial Army had used toxic gas in China and Burma:

- "1. Statement of Japanese prisoners that toxic gas was used.
- "2. Statements of Chinese surgeons that they diagnosed and treated cases of Chinese soldiers who became battle casualties from poison gas.
- "3. Identification of Japanese gas weapons by curator of Museum of Fire Arms at Tung Kai Chow (near Chungking) where the weapons are on exhibition.
- "4. Records of Gas Preventative Section Ministry of War, indicating 36,968 casualties (2,086 fatal) from Japanese poison gas, and containing photographs of victims of Japanese poison gas, showing mustard burns.
- "5. Statement of intelligence officer, Gas Defense Administration, Chinese Army, that he analyzed the contents of a shell collected on a Japanese battlefield, saw casualties occasioned by gas at that battle, and witnessed a gas bombardment of Chinese troops by Japanese artillery in China.
- "6. Statement of American Liaison Officer (Colonel John H. Stodter) with Chinese troops that he received training as a Gas Defense Officer in the American Army, and recognized a pocket of tear gas in Burma, during the fighting there. He states a number of gas casualties were reported at the time to the surgical units."

Although Morrow concluded that poison gas was employed as "a weapon of last resort," he noted that it was "directed against civilians lacking any gas defense material and Chinese soldiers of whom a small proportion only were equipped with masks."

"The story of gas warfare by the Japanese becomes another instance of flagrant violation of a solemn international agreement," Morrow wrote in the memo to his superior in the Tokyo war crimes trials, Chief Counsel Joseph B. Keenan. "Gas warfare could not be waged without the knowledge and approval of the Japanese Ministry and High Command in Tokyo."

No charges were brought against the Japanese for using poison gas. □

gas weapons used and the weather conditions at the time and includes an operations map. Here are some examples, all cited in the *Sekai* article:

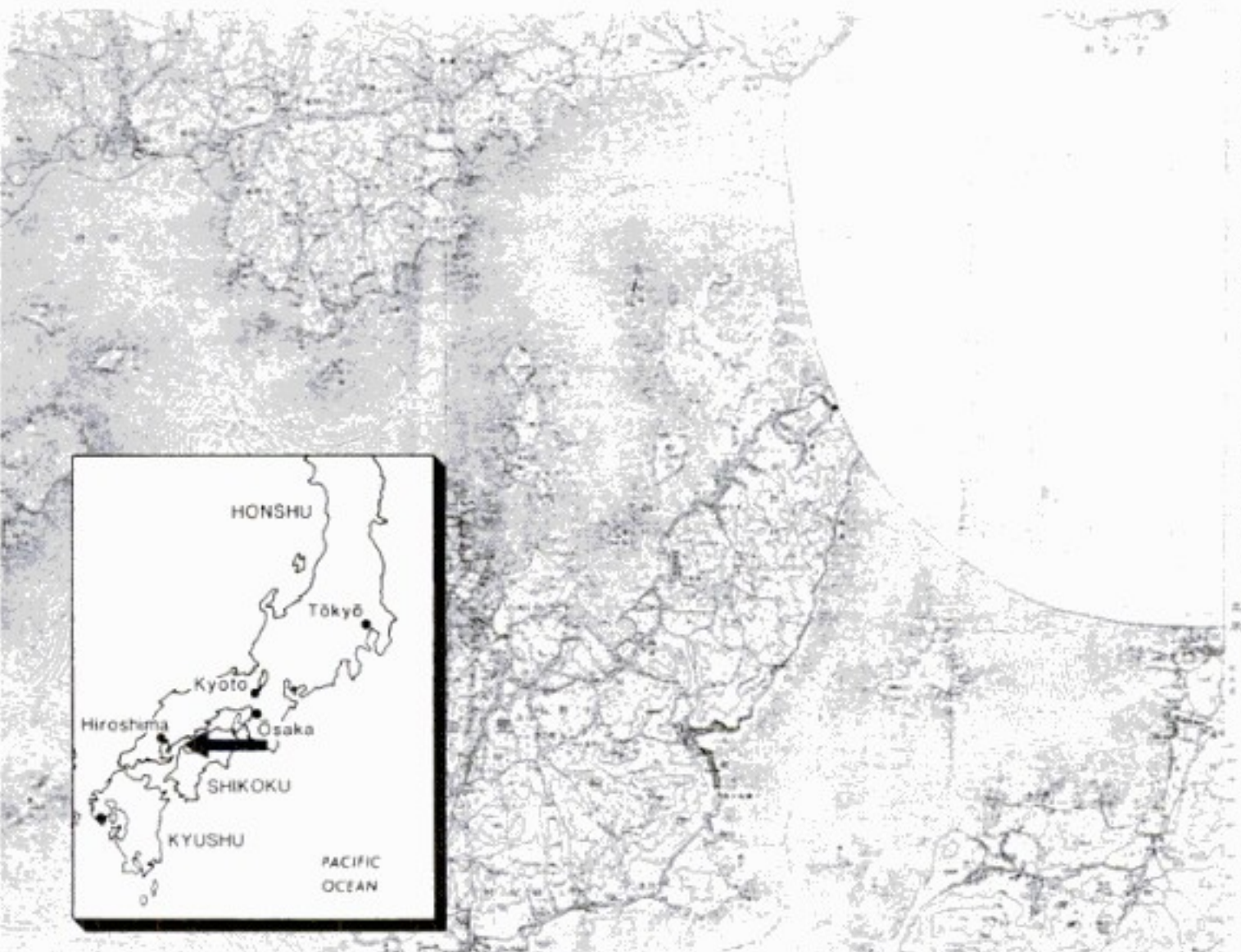
- *Example 11 (during the Jinnan cleanup operation between May and July, 1938):* At dawn on July 6, along the Fen He River near Quwo City in Shanxi Province, the Japanese army launched a large-scale poison gas attack against Chinese forces. The army prepared 18,000 red (sneeze and nausea) gas grenades and used 7,000 of them in this attack. As a result the Chinese army was crushed, and the Japanese forces easily broke through the enemy's front line and immediately advanced three kilometers. On the following day, 3,000 of the same gas grenades were again used in this area. Following these poison gas attacks, the Twentieth Division of the Japanese Army occupied Liancheng and completed the so-called Jinnan Clean-up Operation.

- *Example 52 (during the Wuhan Operation between the end of August and the end of November in 1938):* It is said that during this three-month operation the Japanese forces used 9,667 red gas artillery shells and 32,162 red gas grenades, over 375 times in total. One of these cases was illustrated as Example 52 in this report. According to this, on September 17, the Number Two Gas Unit of the Second Brigade used 835 red gas grenades during the attack over Guangzhou Castle. As soon as these grenades were launched into the South Castle, the Chinese forces stopped firing. Then the Japanese soldiers "dashed into the castle through the east gate, and stabbed and killed about two hundred Chinese soldiers who were suffocating in cover trenches" and "completely defeated the enemy."

- *Example 50 (during the Xiushi River Crossing Operation in March 1939):* The 101st and 106th Brigades suffered from a heavy loss of soldiers during the Wuhan Operation in 1938. Therefore, they decided to consolidate artillery, tanks, planes, and poison gases in order to make marked military achievements when invading Nanji in March 1939. In 10 minutes, from 7:20 p.m. on March 20, 1939, the 101st Brigade launched 2,000 gas artillery shells and 10,000 gas grenades into the Chinese positions over the Xiushi River. Simultaneously, the 106th Brigade launched 1,000 gas artillery shells and 5,000 gas grenades. The poison gas used in this operation was all sneeze and nausea gas. The result was that the Japanese forces "crossed the river and immediately seized the enemy's front position."

The above three cases are all examples of the use of "red" (sneeze and nausea) gas. However, this report also contains several mentions of the use of "yellow," or mustard, gas:

- *Example 40 (during the Yichang Battle in October 1941):* During the battle in Yichang, the 13th Brigade of the Eleventh Army was completely surrounded by Chinese forces and was nearly at the point of extinction. In order to assist during this critical situation, the 19th Artillery Regiment launched 1,000 yellow gas shells and 1,500 red gas shells at the Chinese forces. The report says that "the effect of gas seems to be considerable." The use of mustard gas in Yichang can again be verified by the document entitled *Japanese Gas Warfare in China*, which was presented by



Censored This detail from a 1938 map shows how Okunoshima was erased, leaving a blank space in the upper right corner. The inset shows the location of the detail in southern Japan. (Tokyo: Kokudo Chiri-in, 1938)

Wellington Koo, then the Chinese ambassador to England, to the Pacific War Council in London in 1942. This is how it describes the Yichang battle:

The most intensive Japanese gas attack so far occurred at Ichang last October when strong Chinese forces stormed that city. On October 8th the Chinese advancing towards two strategic heights outside Ichang were subjected to a bombardment of Japanese guns firing 30 gas shells. On October 9th when the Chinese retook another point closer still to Ichang, Japanese guns fired more than ten gas shells. On October 10th Japanese guns fired gas shells for four hours on a Chinese storming unit which penetrated part of Ichang city. Meanwhile Japanese planes in relays of threes and fives also participated in a gas attack, dropping more than 300 gas bombs. The area thus gassed was crowded with Chinese civilians, prohibited by the Japanese from evacuating when the Chinese began to counter-attack. The types of gas used then were tear, sneezing and mustard gases, which caused many fatal cases. Some 3,000 Chinese troops were in the affected area, occupying a sector 1,500 metres deep and 2,000 metres wide; of these, 1,600 soldiers were affected, of whom about 600 died. The majority of the fatal cases occurred in low-lying areas or in the plain.

The Chinese newspaper *Dà Góng Bào*, October 15, also reported this mustard gas attack by the Japanese Army in Yichang.

- *Examples 44 and 21:* Mustard gas was used to attack the Chinese communist forces, too. For example, on October 31, 1941, 330 tons of mustard gas were released over a period of an hour near Zengzhou in Henan Province, and “the enemy received tremendous damage.” Another example

occurred in Taihang in Shanxi Province. Over eight days, from February 8 to 15 in 1942, the 36th Brigade of the First Army released 300 tons of mustard gas over military barracks, arsenals, and caves of the Chinese Red Army. As a result, “a few thousand people who returned to this place after the Japanese forces withdrew were poisoned, and half of them died.”

I interviewed a few people who actually used poison gas weapons against Chinese soldiers, and I obtained a former Japanese soldier’s memo which also testifies to the use of gas weapons in the Yichang battle. Hideo Fujii’s undated private memo, “A Testimony to Poison Gas Operations,” tells that each Japanese soldier was given a gas mask, gas tubes, and four or five condoms just before the operation. They were told that they should not rape Chinese women, but it was understood that they could if they wished.

There are also many historical documents that verify the fact that large quantities of poison gas were sent to Manchuria, to Unit 516 in Qiqihar, and to Unit 731, or the “Ishii Unit,” near Harbin. For example, Tadashi Hattori, who was mentioned earlier, writes in his memoir that he went to Qiqihar in August 1939 and to Darien in August 1942 to deliver toxic chemicals produced at the Okunoshima arsenal.

There is also evidence that these special military groups conducted experiments with poison gases and bacteria on Chinese, Russian, American, and Polish prisoners. In 1983 a research group from Keio University obtained a two-volume report on the human experiments with bacteriological and chemical weapons conducted by Unit 731 in 1940 and 1943. The first volume of this report is full of details of horrible experiments with mustard gas carried out on Chinese prisoners.¹⁴ [See page 14.]

IMMEDIATELY AFTER THE war, the U.S. Occupation Forces collected substantial evidence of the use of chemical weapons by the Japanese Imperial Army. Col. Thomas Morrow, a law officer of the U.S. forces, arrived in Tokyo in December 1945 as a member of the War Criminal Investigation Team, led by Joseph Keenan, and was put in charge of investigating crimes committed in the Sino-Japanese War. On March 2, 1946, Morrow submitted a 12-page memorandum to Keenan regarding major war crimes committed by the Japanese army in China. Along with the “Rape of Nanking,” the “Marco Polo Bridge Incident,” and the “Shanghai Incident,” Morrow referred to the use of chemical and bacteriological weapons. He alluded to Wellington Koo’s report, mentioned above, as well as to a *China Handbook, 1917–1943*, which made several references to the use of poison gas by the Japanese army. Morrow recommended that Koo be brought to Japan in order to obtain more information on this matter.

Later that month, Morrow visited China together with a Chinese prosecutor, Judge Xiang Zhesun; his secretary, Henry Chin Lui; and an American law officer, David Sutton. They were joined by Joseph Keenan and his party in Shanghai and spent about a month traveling around China, gathering substantial evidence on the various war crimes. Upon his return to Tokyo, Morrow submitted a report to Keenan. [See page 16.]

Morrow prepared another, more detailed report entitled *A General Account of Japanese Poison Warfare in China, 1937–1945* in preparation for the coming trial. This report not only described actual cases of the use of poison gases, some of which correspond to the examples cited in the Narashino Military College report, but included statistical data on the issue as well. He cited the Chinese army report claiming that between 1937 and 1945 the Japanese army used poison warfare 1,312 times. These statistics probably do not include Red Army casualties. For instance, “Example 21,” cited above, refers to a few thousand people poisoned in an attack on the Chinese Red Army in 1942, half of whom died. The Guomindang documents, however, list only 44 deaths for 1942.

Morrow’s report was translated into Japanese to be presented at the Tokyo war crimes trial, which had begun on March 3, 1946. On August 6, Morrow began proceedings to indict Japanese military personnel for crimes committed in China. His arraignments continued until August 8. On August 12, however, Morrow suddenly returned to the United States.¹⁵ As a result of his departure, the Tokyo tribunal never dealt with the Japanese army’s use of chemical or bacteriological weapons.

It is not clear why Morrow suddenly left Tokyo, or why poison gas was never brought up at the Tokyo trial despite the evidence gathered by the U.S. Occupation Forces. The answer may lie in the fact that the ban on using chemical weapons was combined, in a single clause of the 1925 Geneva Protocol, with a ban on bacteriological weapons. The U.S. government, wishing to monopolize vital information on biological warfare, had decided not to prosecute Gen. Shiro Ishii and his staff of Unit 731 for the lethal experiments they had conducted on prisoners.¹⁶ The government may have felt that it would be difficult to bring up chemical weapons while covering up the use of bacteriological warfare.

Morrow’s sudden departure may also have been connected to a letter sent by the Joint Chiefs of Staff to Gen. Douglas MacArthur, head of the occupation, dated July 24, just 20 days before Morrow left. The letter, discovered in the U.S. archives by Keichi Tsuneishi of Nagasaki University, included this order: “Under recent circumstances, intelligence relating to research and development in the field of science and war material should not be disclosed to nations other than the British Commonwealth (omitting Eire) without specific reference to and authorization of the Joint Chiefs of Staff.”

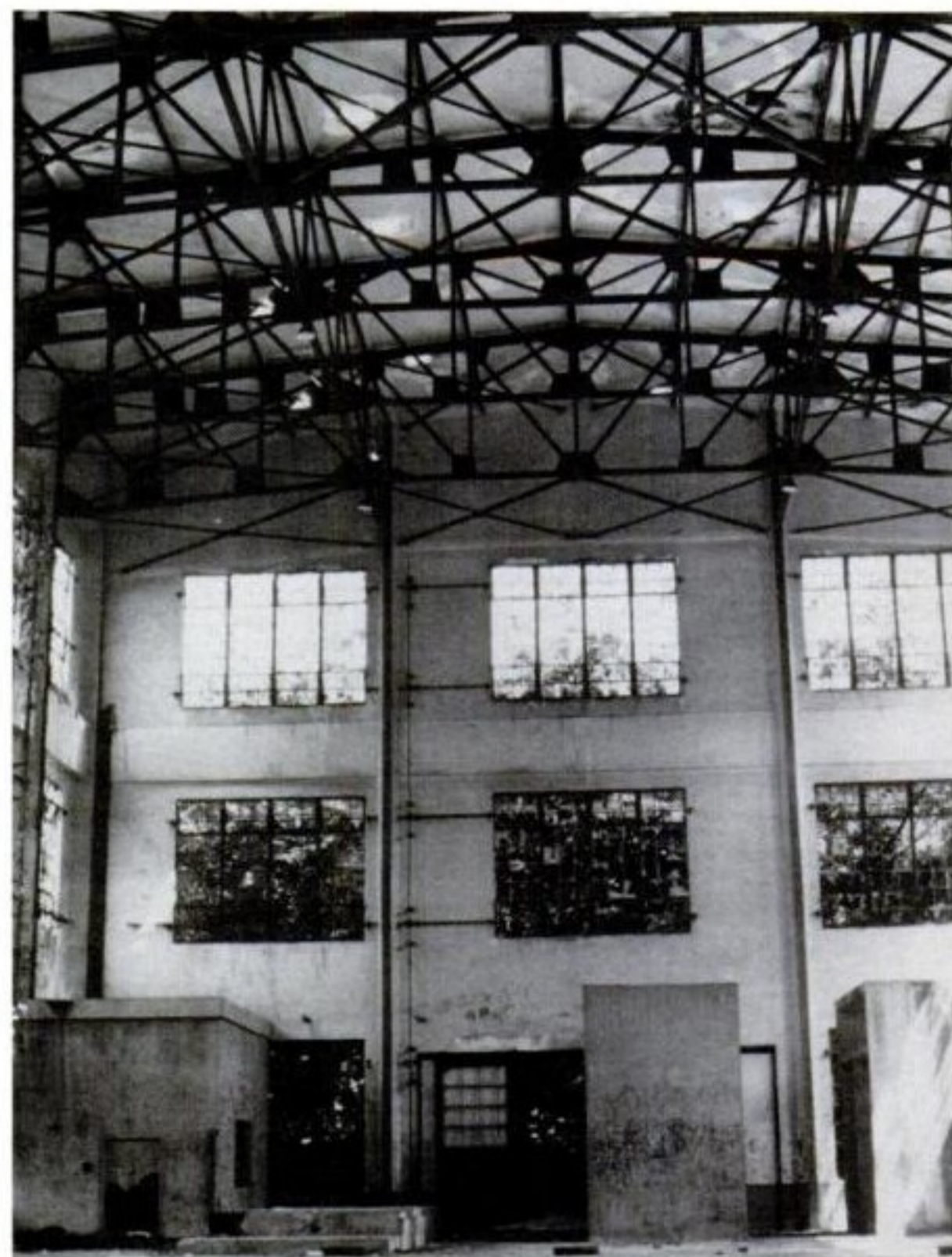
What is clear is that no one, including a number of top chemical scientists from Tokyo, Kyoto, and Osaka universi-

ties who collaborated with the Army Institute of Science and Technology, was ever prosecuted for the use of chemical weapons.¹⁷

SOON AFTER THE WAR ended, about 50 officers of the occupation forces arrived in Tadanoumi and began investigating the facilities on Okunoshima. In May 1946, destruction of the arsenal and a cleanup operation started under the supervision of a U.S. military chemical specialist, a Major Williamson.¹⁸ It took a year to complete the task, which involved dumping massive amounts of poison gases into the Pacific Ocean.

Knowing the dangers involved, few former arsenal workers wanted to participate in this operation. Instead, workers were recruited from a large textile company, Teijin, in the city of Mihara. Altogether about 300 people participated, including Teijin employees, former workers, and students. Many people were seriously affected by the poison gases and some died as a result, among them the deputy director of Teijin’s Mihara plant.¹⁹

In exchange for making available its employees, Teijin received, free of charge, tons of unused chemicals that remained on the island. Following the cleanup operation, Teijin set up a subsidiary company, Kunoshima Industry Corporation, which produced various kinds of insecticides from the chemicals.²⁰ In the devastating postwar economic conditions, the large profits Teijin made in this way helped



Abandoned Interior of the island factory today. Photo by Yuki Tanaka

tide the company over financial difficulties.

THE END OF THE WAR was only the beginning of long agony and slow death for many former full-time workers, drafted temporary workers, and mobilized women and school children who had worked on Okunoshima. According to Dr. Masato Yukutake, director of Tadanoumi Hospital, many of these people soon began suffering from lung cancer, cancer of the larynx, stomach cancer, chronic bronchitis, and other ailments. People in Tadanoumi say that many died within a short time.

Exact numbers are difficult to establish, however, because the medical investigation did not start until 1952. That year some of the former full-time workers set up an organization called "The Friendship Society of Okunoshima Poison Gas Sufferers," in order to petition the Japanese government for financial support for medical treatment and the everyday needs of its members. The postwar government was reluctant to acknowledge even the production of poison gas and to legislate a relief policy for those affected. But in 1954 it implemented special measures for the relief of gas sufferers, not as official legislation but as a special grant through the Ministry of Finance. The government omitted the word "poison" from the title of the grant, which was limited to three years' free medical care for former full-time workers. The workers' applications were carefully examined and required approval by two public committees. Only in 1961, after long negotiations, did sufferers gain a small, ongoing monthly medical allowance; in 1965, the government agreed to award a lump sum to the family upon the death of a sufferer.²¹

No form of compensation existed for former part-time or temporary workers, school children, or participants in the postwar cleanup until 1975, when these people became eligible for free medical services and a small monthly medical allowance granted through the Ministry of Health. These grantees, too, must undergo rigorous examination by a medical approval committee in order to be officially recognized as poison gas sufferers.²² For some who suddenly develop cancer, the classification as a poison gas victim comes too late. Moreover, the compensation granted to the part-time and temporary workers is much less than that given full-time workers, despite the fact that the former, who are generally younger, are often chief family wage earners whose sudden sickness or death brings considerable financial hardship.

Medical specialists from Hiroshima University have tracked 5,793 recognized sufferers for the last 35 years. Thirty-five percent of the 1,342 deaths that have occurred have been caused by cancer; this is more than 12 percent higher than the cancer death rate in the general population. Cancer of the respiratory organs is particularly high, suggesting a direct link with the inhalation of poison gas.²³

The production of poison gas weapons by the Japanese Imperial Army which ended more than 40 years ago is still tormenting a large number of men and women. Yet the world seems oblivious to this appalling abuse of science,

and new and more lethal chemical weapons are produced year after year. Okunoshima's case deserves wider recognition, especially by the Japanese government. Perhaps Hiroshima should not only be a center for world nuclear disarmament but should also stand as a warning of the dangers of chemical weapons. □

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2. Masao Koyanazu, "Kagakusen kenkyu shi" (The history of chemical warfare research), unpublished document (1956), reproduced by the Historical Records Office, the Repatriation Relief Bureau, the Japanese Ministry of Health and Welfare (hereafter HRO of MHW), p. 2; "Honpo kagaku heki gijutsu-shi, nempyo" (The people involved in Japanese chemical weapons research), unpublished document (1957), reproduced by HRO of MHW, p. 1 (hereafter HKHGN).

3. Keichi Tsuneishi, "C. Koizumi: As a Promoter of the Ministry of Health and Welfare and an Organizer of the BCW Research Program," *Historical Scientarium*, no. 26 (1984), pp. 100-03.

4. Koyanazu, op. cit., pp. 6-7.

5. HKHGN, pp. 1-4; Maj. Gen. Kanemasu Akiyama, "Rikugun kagaku kenkyujo oyobi dai-roku rikugun gijutsu kenkyuio ni okeru kagaku-heiki kenkyu kekka no gaiyo" (An outline of the history of chemical weapon research at the Army Institute of Science and Technology and the Sixth Army Institute of Technology), unpublished document (1955), reproduced by HRO of MHW, pp. 4-5, hereafter RKKDR.

6. HKHGN, p. 3.

7. HKHGN, pp. 4-9; RKKDR, pp. 6-8; K. Awaya, "Shiryō shokai: senzen nihon ni okeru kagakuheki no kenkyu kaihatsu ni tsuite" (An introduction to the documents on research and development of chemical weapons in prewar Japan), *Kindai*, no. 61 (1985), pp. 176-79.

8. Shizuo Tanisuga, "Okunoshima to watashi" (Okunoshima and I), *Dokugasu: soritsu san jusshunen kinen kaishi* (Poison gas: a book commemorating the thirtieth anniversary of the foundation of the Friendship Society of Poison Gas Sufferers), hereafter PGBC (Tadanoumi, Japan: Friendship Society of Okunoshima Poison Gas Sufferers, 1980), p. 200.

9. Tadashi Hattori, *Hiroku: Okunoshima no ki* (A secret memoir: the record of Okunoshima) (Tokyo: Nihon Bunkyo Shuppan, 1963), p. 3.

10. Kikumatsu Inaba, *Hiroku: Okunoshima no jisso* (A secret memoir: the facts of Okunoshima) (private publication, 1971), p. 4; "Dokugasu no shima: 35 nenme no higaishatachi: I" (The island of poison gas: the victims in their 36th year: part I), *Asahi shimbun* (Hiroshima edition, Aug. 21, 1981).

11. Tsunekichi Banya, "Omoi dasumama" (As I recollect), PGBC, pp. 102-03.

12. "Dokugasu no shima: 36 nenme no higaishatachi: II" (The island of poison gas: the victims in their 36th year: part II), *Asahi shimbun* (Hiroshima edition) Aug. 28, 1981.

13. *Gendai-shi shiryō* (Modern history documents), vol. 9 (Tokyo: Mirai-sha, 1964), pp. 20-22.

14. Takao Matsumura, "731 butai no jikken hokokusho" (A report of experiments conducted by Unit 731), *Rekisho Hyoron*, no. 538 (1985), pp. 56-64; see also Go Miyatake, *Shogun no yuigon; Endo Saburo nikki* (The last words of a general: diary of Saburo Endo) (Tokyo: Mainichi shinbun-sha, 1986).

15. Kentaro Awaya, "Tokyo saiban eno michi" (The road to the Tokyo Tribunal), *Asahi shimbun*, Nov. 2, 1984, p. 35.

16. John W. Powell, "Japan's Biological Weapons: 1930-1945," *Bulletin* (Oct. 1981), pp. 44-52.

17. The names of 36 prominent scientists from top national universities appear in HKHGN, pp. 38-40.

18. Hattori, op. cit., p. 74.

19. Hisao Mukai, "Okunoshima no rekishi" (History of Okunoshima), PGBC, p. 59.

20. Eriko Takeda, *Chizukara kesareta shima* (The island erased from the map) (Tokyo: Domesu shuppan, 1987), pp. 174-79.

21. M. Kajimura, "Watashi no hokoku" (My report), PGBC, pp. 1-5.

22. See Ministry of Health and Welfare, *Dokugasu shogaisha ni taisuru kyusai sochi yoko* (An outline of the measures for the relief of gas sufferers).

23. Yukio Nishimoto, for the Second Department of Internal Medicine, *Kenkyu hokokusho: dokugasu no koisho to sono yogo ni kansuru kenkyu* (Research report: research on the sequel of poison gases and recuperation) (Hiroshima: School of Medicine, Hiroshima University, 1985).