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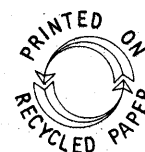
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**THE NEGATIVE EFFECTS OF TECHNOLOGY  
IN JAPAN'S MODERNIZATION PROCESS:  
THE ASHIO COPPER MINE INCIDENT**

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This publication is being circulated in a pre-publication form to elicit comments from readers and generate dialogue on the subject at this stage of the research.

## I. RESEARCH ORIENTATION

From the end of the sixteenth century and for the ensuing 300 years, Japan closed its doors to foreign intercourse while retaining a strict feudal order under the tutelage of the Tokugawa family. Toward the end of the nineteenth century when its doors finally opened to foreign influence, Japan saw the beginning of a century that was to ultimately make it the second most advanced industrial nation in the world. This rapid industrialization process has come to be seen as a miracle of modern history. The world's developing nations have seen this process unfold and have attempted to emulate this model in their own experiences. There are many who believe that the most important reasons for this intense economic development lie in the introduction and rapid application of Western technology.

However, the introduction of Western technology and the accompanying economic growth, while bringing positive benefits, has also jarred Japanese society with a continuing series of negative shocks. Compared with the already well known positive aspects, the negative results of industrialization are not universally understood. Certain of the more acute forms of these negative effects, as seen in various severe pollution problems, became well known during the 1970s. But the fact is that environmental destruction of varying magnitudes has always accompanied Japan's introduction and use of technology, from the very beginning. Toward the end of the nineteenth century certain significant pollution problems were not at all ignored in local districts. Of these problems, the most significant was related to mining operations at the Ashio Copper Mine, which became one of the two most pressing social issues of the Meiji era along with the high treason incident, a frame-up against socialist groups by the government in 1910.\*

Of such magnitude was the problem that more than one hundred thousand farmers were directly attacked and negatively affected by the copper mining. Even so, the Meiji Government retained a national policy that encouraged industrial development and military expansion while moving oppressively against movements made up of victims of the Ashio mine poisons. Not only were the cries of the victims ignored, but the solution to this problem as devised by the Government was composed of the elimination of farmers who suffered from mine-related flooding and the turning of their lands into marshes covered with water. This method of coping with a very significant pollution problem was instituted at the cost of many lives, while any attempts on the part of the resisting groups to retain written records of the carnage were prohibited.

In this context, the miseries related to the Ashio Copper Mine became well known to the people. This fact led to a desire not to repeat the same mistakes, with this motivating certain technological progress between 1910 and 1920. Some of the technologies that are used today for the prevention of pollution problems saw their origin in an earlier time when the victims of degraded environments prevailed upon industrial management to improve control technology. One example of this is the move toward a reduction in air pollution through extended chimney heights.

During the 1930s, policies that encouraged militarization had the ascendancy, and environmental protection efforts were rendered meaningless. Almost all industries were related to military production programs and as such ignored environmental protection policies because they were not cost effective. Criticisms of military-related industries were completely suppressed because they were thought not to be beneficial to the Japanese nation's interest and as such were interpreted as aiding and abetting the enemy. Because of such suppression, citizens' movements vanished completely. Along with the destruction brought on by the war, the negative effects of industrial production processes with their attendant unabated environmental pollution brought great damage to the Japanese archipelago.

After Japan saw defeat at the end of World War II, the interests of the people turned in 1945 toward the production of daily necessities and food

for a starving population. Because of the destruction brought on by the war, mining as such was rendered unproductive. As a result the air and water systems of Japan were returned to more naturally pure conditions. At the same time the sight of smoke from a chimney became a symbol of hope that eventually the country might after all recover from the complete destruction and deprivation it had suffered. During the 1950s as industrial production once again began to climb, water pollution became a problem, and fishermen faced many serious difficulties because of the destruction of aquatic environments. Certain intractable pollution-related sicknesses, such as the infamous "Ouch-ouch" and "Minamata" diseases, which were to seriously threaten human life in later years, had their surreptitious beginnings during this time. This same period saw the introduction of certain new technologies which had been interrupted during World War II, and this factor contributed great strength to Japan's continuing economic development. Also during this time pollution problems were ignored in favor of enhancing the accumulation of industrial capital. Such factors prepared the way for the accelerated economic development that was to take place after the 1960s.

If there had been greater awareness of the serious problems that environmental destruction would bring as deteriorating conditions became more apparent, and had there been more attention paid to the common problems attendant upon rampant industrialization, Japan may not have been as developed economically as she is today, but there may have been a higher and more balanced quality of life. And the repeated sufferings during the 1960s experienced by the victims of a seriously compromised environment may have been prevented. In actuality, during the 1950s, absolutely no efforts were made to prevent widespread environmental degradation, and a difficult period was passed by the simple expedient of covering things over. Post-World War II democratic politics were encouraged in the party political phase, but movements created by the victims of a degraded environment were weak and seen only spasmodically with no real positive results at a grass-root level. People had completely forgotten the high standards in the pollution control policies instituted before World War II, and no thought was ever given to regaining the positive results of efforts made in the past. It was only during the latter part of the 1960s

that movements of pollution victims reached prewar levels to become a countervailing force strong enough to deter further environmental destruction.

During this same decade of the 1960s the world began to take note of Japan's economic growth. At that time problems of environmental destruction were pervasive. The same mistakes were made repeatedly, and the number of pollution victims rose at a phenomenal rate. Industrial pollutants and poisons were dumped indiscriminately outside manufacturing plant compounds causing all manner of pollution problems, while inside the factories working people faced all kinds of occupational diseases and industrial hazards. The fundamental relationship between the problems that were encountered within the factory and the destruction of the external human environment was not understood. As far as management was concerned, worker-related health issues were quite secondary to increased profit especially in a milieu of high-pitched economic development. Further, problems and conditions that developed within the human population outside a manufacturing facility were of no concern whatsoever.

During the latter part of the 1960s, however, the realization began to dawn that politically motivated and administratively guided antipollution policies were basically ineffectual, and out of this realization through trial and error there gradually grew a countervailing force that was able to contain environmental destruction through various concerted movement activities and legal confrontations in the courts. During this period environmental destruction issues centred on problems being encountered by local farmers and fishermen, but with the coming of the 1970s, air quality had deteriorated rather drastically in Tokyo and other cities creating conditions for nation-wide mass media attention. As a result of increased public opinion pressure, these issues were driven into the political arena, ultimately requiring the Government to create an independent environment agency charged with preparing pollution countermeasures.

The United Nations Conference on the Human Environment, held in the summer of 1972, provided an arena in which the issues of environmental destruction in Japan became more universally known. There was voluntary partici-



pation by Minamata and "Kanemi" (PCB) disease victims, which focused world attention on the hidden miseries in Japan's prosperity. This conference also provided an opportunity for developing nations emulating Japan's modernization and industrialization orientations to further evaluate their development patterns. As a result, concern for the fearful aspects of environmental destruction became more universal on the one hand, and on the other there was greater understanding generated vis-à-vis the relationship between increasingly strict environmental regulations laid upon polluting corporations in the industrial nations and the exodus of those same corporations from their home countries into developing nations where environmental regulations are lax or nonexistent. In a word, the export of industrial pollution became more fully understood.

Public opinion against environmental destruction was especially strong early in the 1970s, but later in that decade the energy crisis, which ushered in an end to the high economic growth period, also brought a slump in the movements against environmental destruction. However, needed legislation relative to environmental pollution still needs to be enacted, and pollution problems have by no means been completely solved. Quite a few of the more acute symptomatic problems related to mercury and sulphur oxides have been partially solved through technological adjustments, but chronic symptomatic dysfunctions resulting from complex air and water pollution are being exacerbated. Indirect expenditures have been made for the measurement of pollution levels while further efforts have been expended in ameliorating pollution problems, but all this frenzied activity has probably been basically ineffective in actually preventing continued environmental destruction. There is very little real understanding of the progressive effects of environmental pollution on human societies. Minamata disease, being the largest single pollution issue ever to confront the nation, has been researched more than any other pollution-related disease, and to this day we still do not have a satisfactory grasp of the number of victims. When there is great difficulty in discovering such fundamental facts as the number of victims, how will it be possible to enact effective policy or even bring aid to the problem? Within this context, it will probably be impossible to gain any meaningful understanding of the genetic effects of endemic poisonings.

Looking back over the history of environmental pollution in Japan, it will have to be admitted that meaningful solutions are not forthcoming from the political and administrative sectors of society. The only real deterrent is to be found in concerted movements of the victims with the really important element for policy effectiveness to be found only in the degree to which there is pollution-victim participation in the policy-making process. The present policy relative to pollution problems in Japan as well as other industrialized nations the world over is a simple expedient of counteracting the negative effects of the production process out of profits derived from said production. Further, the preparation of specific policies as well as related decision-making is provided by collective groups of professionals congregated from a variety of disciplines. Past experience has shown over and over again that these methods are intertwined with numerous faults. They may work in the short run but long-term employment ends in failure. In the first place these methods fail when the costs of rectifying the negative effects of production are greater than the profits derived from production. Such informed observers as Miyamoto Ken-ichi\*<sup>1)</sup> have determined that production-induced damage to human life and health is beyond compensation because such is absolute in nature and therefore nonrecoverable. When compensation is limited with respect to a relative production-related loss, a maximum amount of compensation for the loss is set vis-à-vis the polluting company's ability to pay, but this amount almost never fully compensates for the loss incurred.

In the second place, a collective group of professionals does not really have the ability to deal with problems related to the negative effects of production, for the simple reason that these problems are completely new and therefore beyond their collective experience. Many groups of professionals are organized in or around the administrative bodies that are charged with policy determination in regard to certain pollution issues and related technical orientations. In such situations historical understanding with respect to the problem at hand is missing, resulting in a repetition of fragmented administrative and technical policies based on very surface observations. The victims and local inhabitants, the persons who are truly knowledgeable about the issue, are at best ignored and at

worst even despised by these same professionals. As a result understanding of the problem at hand is only partial at best, and this ineffectual behaviour pattern serves primarily to increase the indirect expenses. Thus cost effectiveness relative to the expenses involved is very poor.

In most industrialized nations pollution-control regulations are written so as to express numerical values based on certain definite environmental standards, but the effectiveness of these regulations varies from nation to nation due to differences in the historical conditions which affect levels of citizen participation and levels of political will as human societies confront and deal with indigenous forms of social injustice. Therefore a system devised for pollution control is without any real meaning or effectiveness if it is divorced from a particular historical and social context. Thus the best methods for dealing with the negative effects of production processes, such as hazardous working conditions or environmental degradation amenable to relatively simple solutions, will be forthcoming from the labourers and pollution victims most directly involved. The most effective technical policies will be forthcoming from problem-solving methods that guarantee the participation of the people most directly affected by the original problem. This is a most fundamental conclusion which has been derived from a long history of trial and error within the context of significant environmental destruction and at the cost of many human lives. If this most basic conclusion can be taken into account as the development process is instituted, then those whose lives were sacrificed in the industrialization process will not have died in vain. In witness to this experience and the lessons learned, the history of environmental destruction in Japan will be discussed in two parts.

Part one, this paper, will centre on the Ashio Copper Mine as an example of environmental destruction resulting from Japan's economic development up to World War II. This problem did not end with the coming of the war, as many serious problems continued even after the war with compensation yet to be completed even as of this writing.

Part two, in the final report of the sub-project, will deal with several cases of environmental destruction seen after World War II including the

Morinaga arsenic milk poisoning as an example of misuse of food additives for mass-production, the Kochi Pulp Company incident as a typical case of serious pollution being encouraged by administrative protection policies and the entrance of foreign capital, the Miike Coal Mine explosion which resulted in enormous loss of life and injury because of an irresponsible energy policy, and Minamata disease as an infamous mercury poisoning incident occurring primarily in postwar Japan.

Through long-term experience it has been learned that the progress of pollution-related social issues can be divided into four differentiated time periods which can be designated initiation, continuation, change, and conclusion. In the first stage environmental destruction is initiated, the problem is recognized by the human victims, and an antipollution movement is created. This first stage could be likened to the "Allegro" or first movement in a Western Symphony. Then a long period ensues when the intuitively recognized source of the problem is finally proved scientifically and objectively to be the actual source. This may be likened to the second movement or the "Adagio," in which the problem seeks a solution. However, the process does not end at this point. The professionals and scholars employed by the offending economic organization in a cacophony with the related bureaucrats debate the issue back and forth. This is the noisy third movement or the "Scherzo." Through this developing debate the actual cause and the locus of responsibility is obscured. As time goes on the problem is gradually forgotten and this gradual winding down may be likened to the quiet "Coda." Like a Chinese poem made up of four parts, the last part concludes with a definite finale, but with issues of environmental destruction the finale becomes increasingly ambiguous and diminishes to no conclusion whatsoever.

Not only with the Ashio Copper Mine case but also with all of Japan's experiences with environmental pollution, these four periods can be designated over and over again, incident after incident. It is therefore important to have a grasp of these four basic periods as problems are analysed in the search for solutions. This particular sequence of events is not only to be seen in Japan but can be delineated in the experiences of many other countries the world over.

## II. BACKGROUND TO THE ASHIO COPPER MINE POISONING

For about 300 years Japan sustained its national security and continuing political system through a policy of isolation instituted by the Tokugawa Government. However, this structure was to be shaken to the core by powerful vibrations felt from outside Japan as Western colonial policies made very significant waves across the world in the form of the Opium War (1841), the Fall of India (1857), and the Taiping Rebellions which ushered in the Great Peaceful Heavenly Kingdom (1850-1864). During this same period Japan was being pressured by American military power to open the country to foreign intercourse, and the consequent opening of Japan's doors was followed by the fall of the Tokugawa Government (Bakufu). The new ruling classes that emerged were deeply impressed by the supremacy of Western technology. This deep impression became the basic mortar out of which a policy was shaped which encouraged the importation and imitation of Western technologies, with this orientation being continued for more than a century. Throughout this period Japan created its own brand of imperialism.<sup>2</sup>

Mining was of particular importance even to the Tokugawa Government, but under its tutelage production remained in a continuous slump because of technological stagnation and limitations inherent in the feudalistic labour system since the seventeenth century. With the fall of the Tokugawa Government and the subsequent institution of the Meiji Restoration, mining continued to enjoy high recognition as an essential industry with foreign technologists being hired to improve the operations at government-owned mines and to introduce the latest technology. The old labour organizations were changed, and the mines were sold to private organizations.<sup>3</sup> Coming into this new period out of a long history of stagnation, the reformation of management and operations came with great difficulty. But

when these changes were finally instituted, the effects were dramatic. Very soon mining of all types and especially copper mining began a period of rapid and outstanding development. With this increase in effort Japan became one of the main copper-producing nations of the world. The Ashio Copper Mine is one outstanding example of this revolution brought about by the implementation of new technology and mine reorganization.

The Ashio Copper Mine is located near Nikko in the valley of the Watarase River which is a branch of the Tone River system that intersects the Kanto Plain. The mine was started in 1610 with traditional mining technology reaching its limitations in 1700. After that, production was on the decline until the beginning of the Meiji period when mining operations had come to almost a complete standstill. In 1877, Furukawa Ichibee instituted new operations at the mine and with the coming of the 1880s instituted positive investment policies, modernized the labour organization, and introduced new technologies into the refining process. All of this effort was for the purpose of discovering new ore veins, and with the development of new ore sources the Ashio Mine was to become the most important copper mine in Japan.

### III. THE BEGINNINGS OF COPPER POISONING — INITIATION

The Watarase River, which runs through deep valleys between steep-walled mountains for ten kilometers near the Ashio Copper Mine, flows on to the northern sector of the Kanto Plain and combines with the Tone River to the south of the town of Koga. The mercantile and industrial settlements in the area made use of the river system for transportation and other purposes bringing about rich agricultural development and a significant degree of prosperity. During the beginning of the fourteenth century when the manor system of social organization was being replaced by the feudal system, there were two powerful clans that fought for political ascendancy, the Ashikaga and the Nitta. These two clans came out of these settlements and had their economic base grounded in the areas around the Watarase River basin. In the ensuing national struggle for political hegemony the Ashikaga Clan gained ascendancy and established the Muromachi Government in Kyogo, from where they ruled the nation until the beginning of the sixteenth century. A Westerner coming to Japan in the beginning of the sixteenth century made note of the "Ashikaga Gakko" (Ashikaga College) as the first college in the orient and a scholastic flower which had blossomed from the soil of the rich agricultural and silk industry located in the Watarase River basin. In the latter part of the nineteenth century the poet Ooshika Takashi wrote:

If there is a river then the coming of flood waters is not an exceptional occurrence. Every three to five years the Watarase River floods, but it is thought to be a blessing as this occurrence brings rich soil and distributes it over the land. The headwaters of the river originate in the deepest mountain forests where neither human being nor axe has ever been. With the coming of heavy rains in these deeply forested mountain areas, the rushing waters carry dead leaves, branches, rotten nuts, decaying fruit, and rich top soil to the areas along the lower reaches of the river system. After such a flood from three to nine inches of new top soil cover the affected areas. This is natural fertilizer,

and, while the flood brings damage to agricultural projects in progress, it also brings the necessary fertilizer for the ensuing years. The farmers in the area tend to welcome the flood for they can compensate for damage to their agricultural projects with fishing since the aquatic life in the small rivers and ponds increases greatly with the coming of the flood waters.

The floods come from the middle of summer to fall. Farmers plant soybeans, millet, rice, and potatoes of the early harvesting type in order that flood damage can be avoided. Barley, wheat, rapeseed, and mustard plants grow during the winter producing large harvests without fertilizer. The barley usually grows as high as five feet and bends down from its own weight. When harvested and placed on a horse the grain clusters touch the ground. Rapeseed grows to over six feet, and mustard plants grow to eight or nine feet. The rapeseed flowers are so glorious that they brighten the air with a yellow shimmering. The bamboo grows to great heights, and in August and September it is freshly cut down, bound together to form a raft which is used to transport a large bamboo harvest down the river. Since bamboo grows so thickly along the river, boats on the water cannot be seen from the banks, their presence being perceived only from the sound of their oars. The bamboo roots act to protect the river banks from erosion.

In areas where bamboo, willow trees, and reeds grow, scaffolding is built out over the water so that fishing nets can be placed. The crisscrossed bamboo nets are then placed in the water and fish are caught with the greatest ease. Dace, various kinds of carp, and many other varieties of fish are caught, with an overnight haul netting from 80 to 160 pounds. From late summer to early fall the morning mist brings fishermen in their boats throwing their nets into the water. Five to six sea bass or mullets are caught in each haul. Some set wooden stakes in the branching streams in order to catch salmon in their nets. After heavy rains from 40 to 80 pounds of eels are caught in the bag-shaped nets.

Over the years, life has both good and bad to offer but the farmers living in this paradise enjoy the many blessings of nature.<sup>4</sup>

Such descriptions of river conditions were recorded relative to all the streams in Japan before industrialization took place. However, toward the end of the twentieth century such boundless life in the rivers was to be seen no more. Clean rivers and abundant fish resources were to be seen for a few years after World War II as a kind of remaining glimmer of the once great prosperity of nature. But through rapid industrialization this abundance has been permanently lost.



From the beginning of the 1880s, when Furukawa Ichibee began full-scale copper-mining operations, villages along the upper reaches of the river system close to the mine began noticing damage to crops and forests due to smoke from the refinery chimneys, with this situation leading to some protests and complaints against the mine operators. In 1882, the first record of smoke-related crop damage in the Karafuro area on the southwest edge of Ashio-cho was made. This record came into being in an area that had only a tangential relationship with the mine when compared with the other villages of Ashio. Therefore, no matter how bad the environmental damage had been in villages around the mine, such destruction was very difficult to confront because of the overwhelming power of the mining company. On the upper reaches of the mine-related river system in 1884, the damage from chimney effluents in Matsuki Village was so apparent that it was reported in the newspaper. From 1885, villagers from the upper reaches of the mine river system confronted mine management by taking the case to court for arbitration in an attempt to reach a settlement with the company. But the production of copper had increased, as had the related environmental destruction, and the powerful mining company was not to be dissuaded. In a closed society, citizens' movements composed of mountain villagers were not to become well known, and as a result the protests were splintered and killed.

It was about 1890 when farmers living along the lower reaches of the mine river system began to notice significant changes in the blessings from nature brought by the Watarase and its tributaries. The flood that year was different from those seen in previous times. Fish were dying, sludge carried by the flood had killed all the crops, and nothing planted after the flood grew. People noticed that poisons were coming from the upper reaches of the river system. Farmers requested that the Government institute soil analysis, but the request was not acted upon. They then brought soil samples to Professor Kozai of the Agricultural University, who found that it contained copper and arsenic which came, without a doubt, from the Ashio Mine. Representatives of the farmers visited the upper reaches of the Watarase River system and to their surprise discovered a huge mining operation. When they made their appeals to the company for damages, they were completely ignored.

Toward the end of 1891, Tanaka Shozo, who had been elected to the Japanese Diet from an area located in the lower reaches of the Watarase River system, called national attention to the copper-mine poisonings in the Diet sessions as he sought a policy that would lend itself to rescuing the situation. This was the first time that this issue was presented to the central Government. In this instance, however, the administration in power responded to Tanaka's inquiries by indicating that the damage was recognized but the cause was unknown. In this context it was further indicated that relative to policy matters, the copper mine itself was changing its orientation by introducing the newest technology from abroad. The answers offered by the Government to Tanaka's inquiries were ambiguous and bureaucratic in nature, emphasizing a single solution to the problem that rested with the management of the mining company. Since the son of the then Minister of Agriculture and Business, Munemitsu Mutsu, had been given in adoption to the Furukawa family and since it was that same government ministry that retained power relative to the mining problems, this deep personal relationship between a government minister and copper mining capital made it almost impossible to bring any pressure for reform against the mining company.

After this response by the Government in the national Diet sessions, the mining company announced measures that would prevent the outflow of copper-related poisons through the use of an apparatus that would remove powdered copper from the effluents of the mine, and on the basis of this action drew up a settlement contract that among other things would pay a small solatium for damages done. Included in the contract were clauses that disallowed the bringing of any claims for damages against the company for the next five years, during which policies directed at environmental damage prevention were to be established, and clauses which disallowed any further demands for administrative control of the mining company. The purpose of these measures was to debilitate the mining poison victims' movement that had grown up against the company. The local bureaucrats, the village head, the mayor, and the governor were all mobilized to promote the contract offered by the copper mining company. In actuality this contract was being promoted by the Japanese Government. at that time the social milieu was building up to the Sino-Japanese War in 1894,

and government policy was addressed at protecting copper mining, since copper was an essential strategic material used in the production of war materials. As a result of administrative pressure being applied by the Government as well as pressure derived from the mounting nationalism of the times, the farmers' movement was disrupted and rendered ineffectual. Despite the warnings of Tanaka Shozo, the majority of farmers in the poisoned areas signed the settlement contract with the company and no longer took open collective action to protect their environments.

From 1882, when the first mine-related smoke damage was recognized at Karafuro in Ashio City, to 1895, when the Sino-Japanese War ended, the mining company had seen a very successful decade with the introduction of Western technology from which an immense increase in production was realized. The application of electrical power to ventilation and drainage, the introduction of a rail-car system to transport copper ore, the opening of new tunnels through the use of rock-shaving machines, the successful experiments in the use of electricity in copper refining — all of this introduction of new technology from mining to metallurgy was very successful. The primary mover was the introduction of the first hydroelectric power station in 1890. With the application of electricity to water drainage, ore lifting, and material transport came great increases in production. Through these revolutionary changes the Ashio Copper Mine became the largest copper producer in Japan. In 1885 the two Innai and Anii mines, which were well equipped by the Government, were sold to Furukawa Ichibee. With the addition of these two extra mines to his empire, Furukawa was called the undisputed king of copper mining.

However, the charges against the company relative to the smoke damage caused by the chimneys from 1882 on and the mine-related poisoning of the lower reaches of the Watarase River were never admitted or taken into account by the company, with the exception of the settlement contract which was aimed at disempowering the farmers' movement. In the settlement process between the farmers and the company, an apparatus to catch and retain powdered copper ore was repeatedly propagated by the company as the solution to the environmental poisoning problem, but in actuality

this device was only installed to increase the percentage of copper removed from the ore and had nothing whatsoever to do with the prevention of environmental pollution. During this same period the forests around the mine were cut down in order to provide charcoal for the refinery, and the severity of smoke-induced damage increased to the point where total environmental destruction created the bald mountains that are to be seen to this day.

The Government and its related administrators fully recognized the fact that this case could have been solved through a negotiated settlement, but their stance was one that dealt with the issue solely as a matter of maintaining the public security as can be seen in the following secret report written by the Tochigi Prefectural Governor and sent to the Police Director in the Department of Interior.

Top Secret No. 255 - The Ashio Copper Mine Case: Printed materials regarding the poisons created by the Ashio Copper Mine have been secretly sent to people in the mine-related villages. We have investigated this printed matter in terms of its origins and the manner in which people have reacted to it. In Ashikaga and Yanada counties, areas which are both directly effected by poison-related damage, Hayakawa Chugo as chairman (Prefectural Council Member) and four other committee members were recommended in March of this year by Cho Shingoro, Ashikaga Town Mayor, and another person. On March 6 a contract was drawn up with the mine president Furukawa Ichibee. The monetary sum for damages after 1896 was set at 20,000 yen to be paid by the president to the people in both of these villages. The contract provides for no further action against the mining company in the future. The money has already been paid, and there are no further complaints against the mining operation coming from either of the villages in two counties .... The investigation is still under way but there is little doubt that the printed material was produced by Tanaka Shozo, who wishes to derive the largest possible amount of compensation from the copper poisoning incidents. Therefore it is likely that he is printing this material with his own printing press and making his own distributions. Again, I presume that it is Tanaka's purpose to derive certain benefits from Furukawa, taking advantage of a middleman while the people are stirred up (27 June 1895)

Not only does this document vastly underestimate the extent of the copper poisonings but the administrators provided only the bare minimum in damages for destruction that continued into the future while demanding

in return that no complaints be lodged in the future. This unbelievably disadvantageous permanent settlement was positively concluded with the farmers. In 1895 a permanent settlement which was being promoted by administrators in the areas of the worst damage was finalized, and it included compensation for damage that would come about in the future. Tanaka Shozo, who had worked very hard for the sake of the farmers without compensation or sleep, was depicted by certain reports to be a politician of bad moral character who sought only his own benefit. It is from this type of interpretation of the motivations of dedicated people that the real attitude of the Government can be observed.

#### IV. THE DEVELOPMENT OF PEOPLE'S MOVEMENTS — CONTINUATION

There was another flood in 1896, and this time again the farmers were confronted by the fact that poisons from the mine were brought with the flood waters — revealing also that the installation of the new antipollution apparatus by the mining company was meaningless. The farmers, who were divided into small groups in the villages, counties, and prefectures, were again united into a peoples' movement that demanded the closing of the mine. Even under the absolutism of the Meiji Constitution, petitions against political injustices were recognized as a right of the people. Tanaka Shozo, whose political activity in the national Diet was interrupted during the Sino-Japanese War, began government service again. The solidarity of the farmers was strengthened through the creation of their own victims' organization with a membership from four prefectures: Gunma, Tochigi, Ibaragi, and Saitama. The central leadership of this organization came from middle-class land-owning farmers. Upper-class farmers who had adhered to the permanent settlement with the company before the Sino-Japanese War, continued to live by the letter of the contract, following the provisions of the permanent settlement as set forth by the company. Even in the small villages farmers were divided in this manner, and it was not easy to bring all parties to support a united petition. Under usual circumstances farmers' movements that grew past prefectural boundaries were difficult to maintain because of the competition for water resources, but this new movement was united to an unusual degree even beyond prefectural lines. This fact alone is an indication of the serious nature of the poisonings that had taken place.

The major protest method employed by the farmers' movement of the time was to set up marches to the central government offices in Tokyo in order

to lodge petitions that would provide compensation for the damages inflicted and require at the same time a withdrawal of the mining company's operating permits. From the experiences of the suppression of the Liberal People's Right Movement in confrontation with the military in the 1880s, it was understood that the actual use of physical force in resisting the central Government had no real effect, while any degree of provocation might bring about suppression by force of the movement itself. When a group of farmers would walk to Tokyo for the purpose of protest, the police were always present to stop the movement. Small confrontations would often ensue, and there were many farmers that dropped out of the movement. With the activities and speeches in the national Diet by Tanaka Shozo, the farmers actions and petitions before the central Government had the effect of imposing on the people of Tokyo the problems that were created by copper mining. Gradually public concern and interest was raised to a higher level, and some persons actually went to see the extent of the damage in the mine-polluted areas, which increased the reports circulating relative to the pitiful situation. The local Tochigi and Gunma prefectural governments could no longer ignore the farmers' movement, and as a result were forced to maintain reports on the situation even though the disturbances were seen to be merely threats to the national security, as indicated earlier. The central Government, which had ignored mine-related damage, began to try to settle the matter through negotiations, since it could no longer ignore the groundswell of public sentiment for the poisoning victims. As a result of this turn of events, government policy shifted in the direction of creating research committees composed of professionals charged with studying copper-related environmental degradation and suggesting possible policy orientations. This measure was finally taken by the Government a full six years after Tanaka Shozo had taken his case to the national Diet for the first time, and after many petitions and requests tendered by farmers groups, the Minister of Agriculture and Business, being the government agency responsible for such problems, finally was persuaded by Tanaka and others inside and outside the Diet to visit the mine-polluted areas.

The same debate has been repeated over and over again throughout the history of environmental destruction in Japan as professionals of the

copper-poisoning research committee remained locked in debate over whether national priorities should emphasize industrialization led by the mining interests or environmental protection led by agriculture. The professionals making up the committee were technocrats who represented the ruling classes of Japan. As a result the majority of the membership rejected the essential thrust of the original resolution which called for a halt to mining activities, and with this stance the resolution was amended. The conclusions reached by such a committee, composed in the majority of bureaucrats and in the minority of agricultural bureaucrats, farmers, were predictable with the majority supporting Japan's industrialization based on a policy which encouraged the growth and development of technology. The final conclusion reached determined that the mining company institute countermeasures that would prevent pollution at the source, and then if it were discovered that the company could not provide for the necessary countermeasures, its access rights to the mining operations would be suspended. The mining company accepted this order from the committee, and in compliance constructed settling ponds for discharged water, chimney towers to remove sulphur from smoke, and provided reinforcement construction to retain mine tailings and slag, all these requirements being met within the designated time period. For the mining company also, this was a matter of survival, and it is said that the construction which took place at the mine affected the consumer price structure in the entire Kanto area of Tokyo. Although the company did complete countermeasure requirements within the time frame of the agreement, it is said that the inspection which took place afterward was a mere formality. The inspector of mines, Minami Teizō, who was charged with examining the company's antipollution provisions, was hired later by the Ashio Copper Mining Company at a very high salary. This fact alone is an expression of the extent to which the inspection was a mere formality. The careless spread of copper-mining poisons continued to take place as a result of long-term discarding of mine tailings in the valleys, through the continued discharge of slag, because of the unceasing destruction of forests through cutting, and through long-term and extensive smoke damage. The simple expedients of merely changing the drainage outlets and the refinery chimney openings were only very cursory attempts to solve the pollution problems. Without really examining the



actual effectiveness of the company-provided pollution countermeasures, the completion of the required construction was accepted by constituted authority in a manner which gives vivid expression to the degree to which it was government policy to protect the mining company. Further, this kind of stance indicates the real extent to which technology had come to be overly trusted as well as the degree to which the rights of the people were despised.

The Copper Poisonings Research Committee recommended to the Government that pollution victims be exempted from land taxes as a method of helping them recover from the plight in which they found themselves. But the realization of this tax-exempt status for the victims was very difficult at a time when military expansion was the first priority. It actually took two years to institute this policy, but once the victims were exempted from taxes they also found that they could not vote since this right was accorded only to persons who paid land taxes. This policy provision was in no way helpful to the small landless or tenant farmers. However, the measures created by the work of the government committee did have the effect of indicating to the public that the rulers of the land had taken action and that the mining company did somehow seem intent on solving these problems. In this manner public opinion was assuaged and the power of the antipollution movement was curtailed.

The Government and the mining company took every opportunity to advertize that all the problems related to copper mining had been solved through the response to government orders laid down to prevent copper poisoning. But the farmers were not at all convinced as to the effectiveness of the measures that had been taken by the company. The very same year (1898) in which the company completed the required construction, there was again another flood. Immediately after this several thousand farmers marched spontaneously to Tokyo to present again their petitions. These same farmers really did not have the ability to organize for they had been so completely betrayed. The year 1898 marked also the first time that majority political parties in the Diet had been able to attempt a replacement of the Kagoshima and Yamaguchi powers which had animated the Meiji Restoration, with a more broadly based cabinet. Out of a confronta-

tional deadlock between the Diet and a government informed by the absolutism of the Emperor system, circumstances began to shape the beginnings of a majority-based political party, and from this came certain resolute emergings of a politically effective House-supported cabinet system. Tanaka Shozo had for a long time been a member of the House of Representatives from the farming areas and had very carefully supported this new political thrust by guarding the newly emerging political alternative. Thus when Tanaka was again confronted by the crowd of farmers in Tokyo, he persuaded them to write a meaningful petition and carry this into the political arena through chosen representatives. Since Tanaka had been leader to the farmers for a long time, it was decided to follow the advice offered and revise their tactics. However, as it turned out, the central Government was not able to bend to the proddings of the new political awakenings, and having to address all efforts toward negating the challenge, those in power were simply too busy to listen to the cries of the farmers. Against the will of Tanaka and the farmers and before their representatives could bring in an effective petition, the carefully nurtured new political system had collapsed from an internal power struggle and once again the more oppressive feudal powers had taken over with a cabinet of their own.

With this political furore as a backdrop, the poisoning victims began to realize that they needed a long-term organization that would be prepared to act when the need arose. Thus the Copper Poisons Congress was established by members of the farmers group who were on the average about thirty years old. With the family system entrenched in farming communities requiring that the elderly be the leaders, this youth organization was a very rare phenomenon. Through their own efforts this group made a statistical survey of the birth and death rates to be found in villages and towns. In all of Japan's long history of environmental destruction, this survey resulted in the first public hygiene report to be provided by the citizenry. Basing their claims on scientifically derived survey data, the farmers repeatedly brought petitions to local and regional governmental offices. With all these efforts in preparation, a final mass action was organized for February of 1900 that would bring a petition to central governmental offices in Tokyo.

At that time the Government was deeply concerned with the problems ensuing from the organized action of the farmers, and special reserve and secret police units were mobilized to severely suppress the farmers. About ten thousand farmers and policemen came into confrontation at Kawamata, a location on the river system where boats crossed back and forth. No matter how severely the police were out-numbered by the farmers, there was no way that the farmers could prevail against the armed police units. The farmers did not expect such brutal police action, and many farmers were injured as they ran away. This came to be known as the Kawamata Incident, and the Government arrested sixty-eight leaders charging them with the crime of rebellion. These criminal charges were applied with effect since the majority of the farmers had had no real experience with such legal manipulations, causing, therefore, a radical cooling down of the situation. The arrested farmers were threatened and intimidated day and night by the police, thereby effectively subverting the will to continue in the struggle.

In the Diet, Tanaka Shozo left the Kensei Political Party which he had founded in order to free himself from the party's concerns. He then made every attack on the Government crying out against the poisonings resulting from the mining activities and decrying the unjust oppression of the farmers. However, after the Sino-Japanese War the major issues for the Government were Japan's colonial policies for Taiwan, the establishment of an economic system based on the gold standard, the withdrawal of huge reparations from China, and the revision of unequal treaties with various Western countries since these had been volatile political issues from the beginning of the Meiji Restoration. Tanaka's voice in its constant appeal for the rights of the farmers and for the protection of agriculture was hardly heard as Japan was ardently determined to steer a course toward a capitalist economy.

Japan's victory in the Sino-Japanese War was the basic starting point for the rapid expansion of Japanese industrial capital along with the accelerated extension of imperialism. At this time also, Russia was moving its forces south, China's power was declining, and international tension was building up on the Korean peninsula. It was also at this time that

international imperialism was conspiring to further divide and conquer China as the North China Incident came to a humiliating close. Japan invaded China with superior forces, and the Ashio Copper Mine was essential to the Japanese war machine in this period of military expansion. Production was increased, and Matsuki Village near the bottom of the mountain was completely destroyed by the smoke so that people began to sell their homes and land to the mining company in order to leave the village.

Tanaka Shozo resigned his post in the House of Representatives in 1901. At the end of the year he determined that his final dying act should be a direct appeal to Emperor Meiji in order to awaken public opinion again relative to the copper-mining problem. He failed, however, in this attempt. This act on the part of Tanaka was interpreted by many as a spur of the moment impulsive act derived from his Emperor-centered self-understanding. But in actuality, this was a very well-planned act whose intent was to lodge a protest with the Emperor as the most highly placed personage in the Meiji Government who had not yet admitted to the causes of the very extensive copper-related poisonings. The Government released Tanaka from fear that to retain him would agitate public opinion against constituted authority. As Tanaka expected, public opinion which had been at a low ebb after the Kawamata incident, was once again inflamed over the mine poisonings after his attempt to make an appeal. Citizens were organized to rescue the victims and groups of students made visits to the area for research purposes. Christians in Japan, who had become firmly rooted in Japanese soil by that time, along with persons of socialist persuasion, participated in the rescue operations. The movement spread among the youth of the cities. Although Tanaka's attempt to communicate with the Emperor failed, he was very successful in rekindling public opinion. The court trials of the farmers who had been arrested in the Kawamata incident were, through the pressure of public opinion, brought to a conclusion favourable to the farmers, and criminal cases were brought to an unexpected close with the indictments being invalidated by the prosecutor. With this the detainees were released.

## V. RESURGING POWER OF GOVERNMENT AND INDUSTRY — CHANGES

In response to greatly heightened public opinion, the Government set up a second mining poisons research committee in order to institute technical countermeasures. This time more scholars who were prone to support the mining company were in this second committee. Reflecting the policies that infused the Government just before the Sino-Japanese War, there was no discussion whatsoever relative to the demands of the poison victims to stop the operation of the mine. Rather, the so-called solution worked out by the committee was to flood the Yanaka Village area where the mine damage was at its worst and ask the inhabitants to leave their homes and land. There were changes taking place in the flood control systems during this period, and the low-water-level orientation of the Tokugawa period was being replaced with a high-level system. Instead of diffusing the power of a flood by allowing the water to overflow into lower level rice fields, the river banks were maintained so as to retain the flood within the confines of the riverbed in order that the added volume of water move directly to the lower reaches of the river system. The committee could not deny that there had been significant poisoning of the area, but they indicated that the main cause of the problem lay not with the discharge of mining poisons but with a discharge of poisons from the fields and river bottoms that had accumulated from the operation of the mine before the enacting of the first government order to contain all mine poisons. The policy developed was one in which poisons discharged would be flushed through the Watarase River system by way of the entrances to the rice fields. This policy was one in which the victims of the poisonings were sacrificed instead of containing the poisons at their origin in the mine operations, since the mine was very important to military-related industries. This policy also reflected the heightened tensions of the political situation of the time with Russia becoming ever

more threatening in her bid to move south through the construction of the Siberian railroad.

The final conclusions reached by the second committee on mining poisons came as a complete shock to the victims in view of the fact that they had been demanding that the right to operate the mine be revoked. The same committee conclusions had the effect of cooling down the heightened pressure of public opinion. The mining company continued to publicize as much as possible the 1897 report of the research committee which stated that the reconstruction of the poisons containment area around the mine had been an effective countermeasure. In 1903 the settlement contract, which had been reached earlier between the Machiyaba Irrigation Union operating on the upper reaches of the Watarase River system in Gunma Prefecture and the company, expired. The union proposed that the settlement contract be renewed and the company responded as follows: "Not only is there a great difference in the present national and international situation, but also your position and the company's responsibilities have completely changed from the time that the first negotiation contract was signed in February of 1897."

As a reflection of the social and political conditions of the time just before the opening of the Russo-Japanese War, the mining company rejected a renegotiation of the settlement contract with a firm hand. The policy of the Government, which provided flood control by sacrificing poison victims on the lower reaches of the river system, brought division into the farmers' movement by pitting the farmers on the upper reaches against the farmers on the lower reaches of the waterway. The farmers' movement on the upper reaches, which had expected the Government to improve the land as promised, gave up all hope of having the company's mining rights revoked, and with the loss of hope they left the movement. The villagers in Toshima and Kawabe in Saitama Prefecture, being on the lower reaches of the river system, had a forewarning of what their lands were about to become and forcefully opposed the prefectural order to sell all lands, thus escaping the eventuality of having their lands flooded. The villagers in Yanaka, located at the confluence of the Watarase and Omoi rivers in Tochigi Prefecture in a rich low-level agricultural region, saw their land

and economy completely ruined as a result of repeated poisonings of the ecosystem. Further, this same village, being as it was in Tochigi Prefecture and close to the mine, was subjected to the radical pressure of benign neglect at the hands of the prefectural council and prefectural legislation, which allowed flood control banks on the river system to deteriorate to the point where ecosystem damage accumulated with each flood. In 1902, floods and landslides along the upper reaches brought poisoned sediments into the village just at a time when people were beginning to think there was some degree of temporary recovery to be seen in the lands. The damage that was inflicted by the flood that year forced Yanaka Village into isolation. Within the village itself, the nonresident landowners welcomed government policy which allowed them to sell all their lands. The Tochigi prefectural assembly rejected in 1903 a plan to purchase all land in Yanaka Village, but the following year in a secret session funds were approved under riverbank restoration categories to purchase all lands. In this manner a policy was forthcoming that ultimately resulted in the flooding of all village lands and continued resident evacuation under prefectural orders.

From 1904, Tanaka Shozo made his residence in Yanaka Village and from there continued to resist prefectural policy. He did everything in his power to prevent the evacuation of the villagers and to maintain the village as a self-supporting entity. The movement of resistance had died along the upper reaches of the river system making Yanaka Village the focal point of the continuing struggle. But the government's policy of applying further pressure on Yanaka Village was led by Hara Kei, Secretary of State, former Furukawa Mining Company vice president, and disciple of the same Mutsu Munemitsu who was the Minister of Agriculture and Business at the time Tanaka took the poisoning case to the Diet, and who had established family ties with the president of the mining company. At this time the Russo-Japanese War had just come to a conclusion and Japanese public opinion was critical of the outcome of the war, which had ended in a negotiated settlement with Russia which was rather in Japan's favour. There was a small group of exceptional persons who supported the Yanaka Village struggle out of antiwar sentiments, but militarism was very much in the ascendancy. As a result there were very few

who inclined their ears to the cries of Tanaka and others resisting the encroachment of the mining operations. In 1906 Yanaka Village was merged with the nearby town of Fujioka and the former name eliminated. To the sixteen families that had resisted to the end, there was applied a land expropriation law, which forced them to leave in 1907 and brought the final destruction of their property. The prefectural administration, acting as it was upon orders from the central Government, undermined the villagers by using all methods and tactics to isolate them. The riverbanks, which had been carefully built up by the farmers, were destroyed. When the village assembly was brought to a vote on whether or not to end the village and the farmers voted no, prefectural authority brought notice that the village would be ended as an entity by merging it with another town. The same authorities would tax the village farmers unilaterally, and when the residents could not pay, their lands would be seized. Through this process the prefectural authorities misused their power by ignoring fundamental laws and traditional customs. The young leaders within the farmers' movement were tempted to drop out. The treachery that was brought against their lives and livelihood was expressed in such things as stealing of fishing equipment and nailing shut irrigation gates. Whether the policies of the central Government were right or wrong, the local authorities used all power to accomplish government ends.

Tanaka Shozo and the Yanaka villagers fought back with every legal means at their disposal, but they were no match for the power of the nation. National power as represented by corporation capital was in close confluence with the Government as is seen in the personal history of Hara Kei, then Secretary of State. A few farmers along with Tanaka Shozo made every effort to tell the world about the devastating copper-mine poisons, but these cries were crushed by a powerful political force. Many of the ideas emphasized by Tanaka Shozo at the time dealt with certain ideas as to the province of nature and the proper respect for the local autonomy of agricultural communities. These ideas have been substantiated over and over again throughout the history of environmental destruction in Japan, as they have pointed the way toward universal solutions to pollution problems irrespective of time and place considerations.



Even after the forced destruction of Yanaka Village, the farmers persisted using tactics of nonviolent resistance and staying on the land in spite of their poverty-stricken existence. The only remaining legal tactic which the farmers opted for was a class action suit brought to court on the grounds that the application of the land expropriation law was instituted illegally and that the land was purchased at unjust prices. Tanaka Shozo supported the farmers and spent the rest of his energy surveying flood damage and researching the river system. He died of a sudden illness at the age of 73 while out on a survey trip.

Many of Tanaka's works produced in his later years are not really well understood even today. In order to investigate the ecosystems he would walk for long distances, and his energy, derived from his multifaceted experiences, was directed toward the protection of nature. He developed theories relative to flood control, applied these theories, and organized the Shimotsuke Flood Control Association in order to revive Yanaka Village. Because of his death the activities generated by this organization were interrupted, but the importance of the most progressive ecological methods developed by the organization have just begun recently to be appreciated. The ideas and understanding that came out of his later years were formed out of a meaningful dialogue between traditional culture and his insightful intelligence all of which came to be informed by a kaleidoscope of experiences. These works contain many very important orientations to which those of us living today should pay heed.

During this same period, Japan won the war with Imperial Russia, which was considered a first-class military power, and with this came the consolidation of Japanese industrial capital which was to form the basis for the expansion of a self-supporting industrial conglomerate. In the political arena, the railroad in Manchuria was built, and the annexation of Korea was a first step in an ambitious programme of predatory expansion into foreign lands. From the year 1900, socialism in theory came to quicken the minds of many Japanese intellectuals, but from its inception as a system of thought, socialist orientations were suppressed and prohibited. In 1910, the principal leaders were framed and then killed in what was to become known as the "Daigyaku Incident." In 1911 the

"Special Thought Police" system was organized for the purpose of limiting the free flow of ideas, and it was the national Diet that gave birth to this method of national control. The wintery period for socialism would continue until 1920. In his later years, Tanaka Shozo would read of the changing political situation, and through the development of practical flood control theories he would encourage ways of resisting the excessive rise of state power. During this same period Japan's participation in World War I resulted in a takeover of Germany's colony in China, offered the occasion for Japan's presentation to China of the "Twenty-One Demands," and ultimately led to the intrusion of Japan's military forces into Siberia at the time of the Russian Revolution. Japan's ambitious and predatory policy of expansion into other nations continued well into World War II. This long period of imperialism was interrupted for a brief period beginning in 1920 with the Taisho experiment in democracy in which Japan enjoyed a relative boom in the economic sphere as well as a certain degree of freedom in politics.

## VI. THE DYING BREATH OF THE MOVEMENT — CONCLUSION

Until 1917, the Yanaka villagers, who had lost the leadership of Tanaka Shozo, continued their silent demonstration of resistance by living in a shack for a period of ten years. During this period the flow pattern of the Watarase River was changed in the course of the Watarase River Improvement Plan, so that the Yanaka Village area would become the receptacle for disposal of poison-laden waters. In 1918, the main course of the Watarase River was diverted to flow directly into Yanaka Village, and with that the last of the farmers were driven out. With the final disposition of the last court case brought by the farmers in 1919 over the unjust land prices, the movement for the restoration of Yanaka Village came to an end. The present course of the Tone River is a direct result of riverbed reconstruction completed during this period. One of the aims of this diversion of the river was to guide the flood waters to Choshi so that the poisons therein contained would have less of a deleterious effect on Tokyo by keeping the tainted waters out of the Edo River.

In the early years of the twentieth century and after the death of Furukawa Ichibee, the management of the copper mining company put forth efforts to modernize management by changing first to an unlimited partnership and then to a joint stock company. The organization of labour was also changed from a premodern system, which provided workers with temporary quarters, to a contract system. In the process of making this change a labour riot occurred, but this was put down through the efforts Hara Kei, then Secretary of State and a member of the company-related family. In 1917 Furukawa Shoji (Commercial Company) and the Furukawa Bank were established. By establishing joint management ventures with the Imperial Life Insurance Company, Furukawa also went into finance ventures. The exploitation of hydroelectric power generation continued; in 1906 an electrolytic copper

production facility was built in Nikko; and in 1908 an electrolytic copper-wire production facility was built in Yokohama. From the exploitation of the copper deposits to the refining of copper, and from the production of electricity to the production of copper wire, Furukawa management was fully established on a large capital base. In 1912, the Ashio Line Railroad was completed, and with this system in place the ever-present transportation problem was solved. In 1916 a method of ferreting out copper through a colloidal suspension process was discovered and adopted. Then with the discovery of another rich ore vein, the Ashio Copper Mine entered its highest production period and enjoyed its most prosperous moments of the post-World War I period. In 1919 and 1921 there were major labour disputes at the Ashio mine, but the organization of labour at the mine contributed to the modernization of management and as such the labour disputes did not severely shake management to any significant degree. In 1924, in co-operation with the Siemens Company of Germany, management entered into the electrical equipment business, with this being followed by an entry of Furukawa Mining into the coal-mining business and the formation of the Furukawa Zaibatsu (giant family trust conglomerate or holding company). However, the Furukawa Conglomerate, which had as its base the largest copper-mining enterprise in Japan at the end of the nineteenth century, was late in development and of secondary importance when compared with the Sumitomo Conglomerate, started in the second largest producing copper mine. As a result, the Furukawa Conglomerate remained in second place because the company did not invest successfully and its financial management was weak. In 1931, the Furukawa Bank was closed and absorbed into the Daiichi Bank. However, one of the more remote reasons for the weakness of the Furukawa Conglomerate can be ascribed to the intervention of politicians in the management of the company, whenever it was necessary to moderate operations relative to the copper-poisoning incidents.<sup>5</sup> Such political figures as Mutsu Munemitsu, Hara Kei, Inoue Kaoru, and others entered into Furukawa management and divided the organization into sects. Because of the internecine struggles between the various management sects, the creation of a unified policy was not possible. As a result, from about 1910 on, Furukawa Enterprises functioned under the aegis of a multilayered management system that had no definite policy directions. At the Besshi Copper Mine, operated by the Sumitomo

Company, the commercial production of sulphuric acid and sulphurous anhydride, the main hazardous components in the environmental damage-inducing smoke created by copper smelting, was successfully started, and this placed the Sumitomo Company in the chemical production business. By 1913, Sumitomo was producing chemical fertilizers, but at the Ashio Copper Mine, where the Matsuki Village environment had been destroyed, there was no policy instituted for the production of sulphuric acid and other related chemical derivatives as a method of preventing smoke damage. The recovery of sulphuric acid was not instituted at the Ashio Copper Mine until 1956. Ignoring the extreme pollution problems and maintaining a symbiotic relationship with various politicians, the Furukawa Conglomerate made no attempt to solve these problems, maintaining all the while a very conservative attitude. Furukawa began ahead of Sumitomo and under much more favourable conditions, but because of the retarding effects of its multiple management system, Furukawa continued to fail in its planning policies to the extent of never becoming a formidable competitor to the Sumitomo group.

After the Watarase River was rerouted, the farmers' movements against environmental destruction came to an end, but continued pollution damage had become by then a chronic problem. There were no countermeasures that the farmers could institute except very passive procedures that would help rid the land of the poisons, such as precipitating particles suspended in irrigation water at the entrance to rice-field irrigation systems. The Furukawa Mining Company paid for some of the expenses of building such irrigation systems along the lower reaches of the Watarase River system. It has also been reported that some of the expenses involved in procuring calcium oxide to be used as a neutralizing agent in the irrigation water were provided by the mining company. In this case the exact amount provided for this purpose is not known.

After 1930, the militarization of Japan increased in intensity, and China was invaded. With these series of events the copper mine was brought under military control so as to insure a smooth supply of raw materials for munitions production. Not only were the very small requests of the farmers rejected, but attempts by the farmers to win concessions from the operators

of the mine relative to environmental problems were summarily crushed as acts in support of the enemy and detrimental to the war effort. The required increase in copper production resulted in extending the capacity of the mine beyond its normal limits. The old timers in the area indicated that the environmental destruction and desolation of the land and forests was worse than ever during this war period. In 1934 the mining company could not deny the fact that production wastes had inundated the environment through the precipitates that were bringing devastation to the lower reaches of the river system, and with this the managers decided to pay for part of the expenses required to repair the irrigation system input ports at Mikuriya in Tochigi Prefecture. This record was discovered, but it is an exception in that there are hardly any records left as to the environmental damage done by the mining poisons up until 1945 when World War II came to an end. The lack of records is no indication that there was no devastation done to nature, but that the control of information was very harsh and severe under the military leaders.

## VII. COLLAPSE AND REBUILDING AFTER WORLD WAR II

With Japan's defeat in 1945 the military control of the Ashio Copper Mine collapsed. Labour unions, which were prohibited during the war, came back into existence with demands that the company treat occupational diseases. The victims of copper poisoning along the lower reaches of the river system in Gunma Prefecture organized the Association for Halting Copper Poisons (Kodoku Konzetsu Domei) in Morita Village which was also the center of the Machiyaba Irrigation Union. However, the activities of this association centered around the land-owners, and the leaders of this group had strong ties with governmental administrators which led to the inevitable intervention of administrative power in the activities of the association. In 1946 the association began negotiations with the mining company, but these meetings were attended by the Business and Industry Department of the Japanese Government as well as the governor of Gunma Prefecture. These negotiations ended in failure. At this time there were great numbers out of work and so much starvation and destruction in the land in the wake of defeat after the war. In such a situation the revival of the mining operations was one of the first priorities of the national Government; and, due to this policy, the production of copper was begun again in an attempt to rebuild certain designated industries. This investment in industries for basic production was a high-priority feature of the government's recovery program. In such a situation, the power balance between the association and the company was tipped in favour of the company. What the association did derive from the negotiations was an admission on the part of the company that copper-mining poisons had indeed destroyed the natural environment and that as a countermeasure the company would provide calcium oxide to neutralize the poisons that had settled in the rice fields. Some of the leading farmers in the area of the river system were trying to make ends meet on their own, and the

company saw those persons also coming into the negotiations. The farmers in Tochigi Prefecture demanded calcium oxide from the company but this thrust did not mesh with the farmers' movement based in Gunma Prefecture. The attitude of the Tochigi farmers was one that leaned more heavily on the company for reparations while Gunma farmers were trying to deal with the mine poisons on their own as a problem confronting only the people in the affected areas.

As a result of typhoon Katheryn in 1947 and typhoon Kitty in 1948, the Watarase River System was flooded to the extent of bringing poisons all the way to the Tokyo area. Although the poisons containment construction which resulted in the inundation of Yanaka Village had been completely ineffectual, the Construction Ministry of the Japanese Government invested further funds in reinforcing the surrounding dikes and building extra embankments in the flood containment area. More dredging took place in accordance with a plan to make the area suitable as a reservoir that would fulfil ever-increasing demands for water in metropolitan Tokyo. The farmers' movement, as in prewar periods, came to exist under the aegis of the agricultural improvement and river reconstruction system, and as a result was neutralized without ever having extracted any meaningful commitments to environmental improvement. In 1952 the association for Halting Copper Poisons that had come into being in Gunma Prefecture was disbanded with the company paying part of the expenses for reparations to the Machiyaba Irrigation Union. These patterns of settlement are typical of those seen with respect to mine poisonings as the company would join forces with the Government in negotiations with the farmers. In the postwar period, the same kind of permanent settlement that was seen in the prewar period came into being, as the farmers' movement was neutralized through partial provision of funds by the company for land improvement with the Government functioning in the middleman role. In this manner the farmers' movement came to be completely disenfranchised and the presence of copper poisons in the lower reaches of the Watarase River system came to be accepted as the natural order of reality and life. In this way the strange phenomenon of having the victims of environmental pollution provide their own systems of prevention, came into being, through the closing of water-control gates during periods of floods, the neutralization of rice fields



with calcium oxide, and the sedimentation of copper poisons at entrances to rice-field irrigation systems.

Ten years after Japan's defeat in World War II, political configurations were being reshaped under the democratization process, the industrial conglomerates were being dismantled, war criminals were being purged, labour unions were being organized, and reformist political parties were coming into being. During this same period farmers' organizations lost their cutting edge and were finally driven into extinction, with this being a nation-wide trend. During the 1950s pollution victims' movements never really succeeded even with the early appearance of such serious pollution diseases as the "Minamata" and "Ouch Ouch" syndromes because the democratization process had not yet reached the level of farmer and fisherman victims of environmental destruction.

The growth of industrial capital increased very rapidly during the Korean War. In 1947, the league of mining company managers was created as the predecessor to the Federation of Economic Organizations (Keidanren), and this league became a center for co-operation and exchange of information in the mining industry. Yokkaichi City, which has had a long history of environmental duress, saw the establishment of Tokai Ryuan (Tokai Ammonium Sulfate) in 1948 and Ishihara Industries in 1949, and these organizations later grew into large petrochemical combines. In the 1960s, oxygen open-hearth steel production was introduced into Japan and became the basic thrust which ultimately led to rationalization of the iron and steel industry during the post-war period. Through the introduction of technologies from the United States, vinyl chloride resins were synthesized, followed by industrial production of other organic chemical compounds. Therefore, during the 1950s, under the aegis and support of the US occupation, industrial capital was generated on the basis of the iron and steel and chemical industries.

In 1955, the conservative political parties were combined to form a single entity of permanent power having its base in the Japan-United States Security Treaty. The economy went through cycles of boom and bust followed in turn by a basic trend toward unprecedented development under the in-

dustry-protecting hand of conservative political power. In the 1950s the fundamentally one-sided power relations between industrial capital on the one hand and pollution victims on the other were established in favour of power. Now and then, public opinion would flare up in support of those being oppressed as serious environmental disruption problems would gush to the surface of public consciousness.

In 1958, one of the slag piles at the Ashio Copper Mine suddenly collapsed, leading to a serious slag intrusion into the Watarase River system. The Machiyaba Irrigation Area and especially Morita Village were very severely damaged. With this turn of events, the once defunct Association against Copper Poisonings was reorganized, with active representation from the various irrigation areas on the Watarase River, such as Ota City, Kiryu City, Tatebayashi City, Nitta Gun, Yamada Gun, and Ōra Gun. The previous activities of this organization depended on local government administrators, village leaders, and influential individuals in local offices, providing little headway until the new threat brought about basic changes in the association. Under the leadership of Onda Shōichi, who followed in the footsteps of Tanaka Shōzo, a mass movement of victimized farmers was established which made repeated appeals and strong protests to the central Government.

In negotiations with the mining company, farmers were usually forced to deal with the company from a position of inferiority, but things had changed so that the farmers were on a more or less equal footing with the company as they mounted their protest. From the Meiji period onward the farmers had been controlled by the local administration and its officials. For the farmers participating in the Machiyaba Irrigation Union who had also concluded the first settlement contract, this was their first real mass action. The central Government and the Gunma Prefecture office, which had been able to suppress the farmers in earlier periods, were perplexed by the farmers strong actions. In 1958, a massive pollution problem was created in the Edo River of Tokyo because of the discharges from the Honshu Paper Mill of the SCP Pulp Company. This incident remains infamous in the annals of post-war pollution history. There were intense struggles between the police task force and the fishermen demonstrating

at the factory and several fishermen were injured as they demonstrated against the illegal discharge of polluted water into the river system. Since the incident became a national issue, the Government was pressed into a corner as a result of a national fishermen's convention, and in the Diet water-quality legislation was quickly passed in order to appease the aroused public opinion. This legislation had been in preparation for some period of time, but because of objections from industrial circles and the Ministry of International Trade and Industry it had never been presented to the Diet. The legislation in question provided for an inquiry commission to be composed of professionals and charged with the task of determining water-quality standards for local river systems. This arrangement was to succeed the Copper Poisoning Research Committee set up in the prewar period. The membership of the inquiry commission was composed of representatives of the mining company as well as industrial representatives who were involved as technical consultants, but representatives of the environmental poisoning victims were excluded from commission membership on the grounds that they had vested interests in the outcome of commission deliberations. Onda Shōichi strongly criticized this unjust method of determining commission membership and demanded that the Government administration make him a member of the commission that would determine water-quality standards for the Watarase River. Administrative officials wanted to bypass Onda and suggested other representatives for commission membership, but the Association Against Copper Poisonings rejected these suggestions on the ground that the suggested persons had no experience with copper-poisoning problems. It was normal procedure for the government administration to send representatives from each of the ministries as well as scholars to the inquiry commission who could be easily controlled. Thus there was confusion in administrative circles as to how to respond to the demands of the farmers led by Onda. The administration tactic to result from all of this was to request that Onda give up his position as leader of the Association Against Copper Poisonings in favour of another person, paving the way, therefore, for membership on the inquiry commission. The purpose of this tactic was to try to separate Onda from the mass organization he was leading. If Onda no longer had the title of association president then the alleged neutrality of the inquiry commission could be maintained. The members of

the association accepted this deal with the selection of Itabashi Akiharu, a moderate, as president, but it was understood among the association membership that Onda still retained the presidency of the association. This is the only case of poisoning victim representation being allowed on a water-quality inquiry commission.

The Watarase River Water Quality Inquiry Commission met in closed session, and therefore none of its deliberations were made public. What Onda actually experienced while serving on the commission was typical of Japanese consultation practices in which each bureaucratic office would prepare a plan which would be approved without question by the scholars representing the various ministries. The groundwork for plan acceptance would be prepared beforehand among those most directly related with such activities, rendering the actual commission meetings a rubber stamp formality. In such circumstances, every word spoken by Onda as a victims' representative would function to nullify all preplanned procedures so that the deliberations of the commission were greatly slowed. Technical discussions on water-quality standards for the Watarase River continued without end. The scholars hardly spoke out for no one had the ability to refute with either theory or fact what Onda knew with the most intimacy.

While Onda was ensconced in the closed inquiry commission sessions and consuming his energies on wasteful technical debates, the administrative arm of the Government was carrying out a plan to break up the farmers' organization. It was much easier for the farmers to understand and respond to a plan that would provide large amounts of money for public land improvement if administration proposals were to be followed than to understand the ongoing debates with all the complicated numbers and statistics. It was also being advertized that the government plans were being delayed by the stubborn resistance of Onda in the commission meetings. In fact, ten years had passed since the slag pile at the Ashio Copper Mine had collapsed to further poison the Watarase River system. The victims who were eagerly waiting for a specific plan, were being defeated in their will to resist with the farmers' organization breakup commencing first with Morita Village where Onda came from. This organizational breakup was completed between 1967 and 1968. With the appeal

of the victim farmers to the Government for investment of public funds in land reclamation, Onda was isolated, and he was forced to end his efforts.

Theoretically, if the Gunma farmers' movement had continued in force for another two years, the movement probably would have developed in very different directions. The breakup of the movement came just before an explosive rise in angered public opinion relative to unprecedented environmental pollution that came to light in the early 1970s. In 1964 the Mishima Numazu protest movement against the planned construction of a massive petrochemical complex was successful in its efforts, and in 1965 the Second Minamata Disease was discovered in Niigata, which caused other pollution problems to come to the surface of public knowledge as the Japanese nation came to terms with the endemic environmental pathology that accompanied the intense economic growth rates of the 1960s with seemingly isolated incidences becoming part of an overall national pattern of environmental suicide. Also, in the 1970s there was a reevaluation of the Ashio Copper Mine poisonings of the Meiji period and of the works of Tanaka Shōzō in which these much talked about realities that effected the people living along the lower reaches of the river system in Tochigi Prefecture came to be understood as the original touchstones for the snowballing pollution problems that Japan was experiencing. In the 1960s there was very little effort to combine the farmers' movements of Gunma Prefecture with the movements in Tochigi Prefecture just over the prefectural boundary lines. Without any communication with movements outside, the anti-copper poisoning movement of the Gunma Prefecture farmers was subsumed and depoliticized by the prefectural administrative system.

The poisoned land was polluted not only by copper and arsenic, materials known from the Meiji period, but also with cadmium, a poisonous heavy metal. It became clear that rice produced in the polluted areas was no longer suitable for food, and harvesting of this farm produce item was halted. With this new discovery, the Morita Copper Poisoning Association decided to press for damages with the Furukawa Mining Company. There were four avenues of approach. Demands could be made for restoration of

the land to its original state without any claims for damage, or restoration and damage claims could be demanded together, or the various demands could be taken to court, or the problems could be solved by resorting to out-of-court settlements. The farmers did not take the case to court out of concern for the extended waiting periods required in court cases but decided to ask for arbitration through the Pollution Adjustment Committee of the Prime Minister's Office. This committee was created in 1958 with the promulgation of the Water Quality Preservation Laws, and was to function as an organ of reconciliation relative to third-party concerns. This system was employed only to a very limited extent, being hardly the choice of pollution victims because its effectiveness was greatly doubted.

During the period of post-war economic growth, the Ashio Copper Mine went through a period of change because of the confusion after the war and the subsequent disbanding of the large business trusts (zaibatsu). Copper production was continued with a degree of smoothness. But the dissolution of the Furukawa Zaibatsu freed the various subgroupings from the conservative inept management practices of the Furukawa family and gave reciprocal independence to each of the operating divisions under a loose Furukawa umbrella. Generally speaking, the developing divisions such as Fuji Tsushiki (1935), Japan Keikinzoku (1939), and Japan Zeon (1952) were successful. Maintaining symbiotic relationships with bureaucrats and politicians, the company accepted these people into their management structure after retirement. This allowed management to maintain a favourable position through the transfer of information and unofficial acceptance on the part of Government of Furukawa management practices. This kind of management system became characteristic of Japan's economic structures in the post-war period and came to be adopted by many companies. The Furukawa Zaibatsu made full use of these management practices in the prewar period through relationships with persons like Munemitsu Mutsu, Teizō Minami, and Hara Kei, among others. This same management symbiosis with Government became the Furukawa business practice in the post-war period also, and placed Furukawa enterprises in favourable positions for new development vis-à-vis retention of government permission. Through this transition period the Furukawa mining interests became less significant for the company than other operating divisions

while within this context other copper mines of the Furukawa group overshadowed the Ashio Mine in importance. The main operations at the Ashio facility were related to refining, and in 1956 the company introduced powdered ore self-reduction hearth methods from Finland, while the pungent sulphurous anhydride resulting as a refinery by-product was used for the production of sulphuric acid. The company has always insisted that all the sulphurous anhydride produced in the refining operations was recovered through these processes. The amount of sulphuric acid that has been produced over the years has been more than five times the amount of copper production. This means that in years past large amounts of sulphuric acid have invaded the mountains of Ashio. In the 1960s total refinery production went over 30,000 tons of copper with ore from the Ashio mine covering only 20 per cent of the required amount. In 1973 mining for ore at Ashio was stopped because of decreased profitability. At this juncture, at last, the mine was closed.

One reason why the farmers were impatient for arbitration can be found in the fact that the Ashio mine was becoming of less significance to the company than its other operations. Faced with the closing of the mine, it was not advisable for the company to allow its name to be damaged any more than it already had been, by irresponsibly glossing over troublesome problems related to copper-mine poisonings and other systemic misfortunes. Nevertheless, in the 1970s the Ashio Copper Mine was still seen in the public mind as having endemic problems because of its role as initiator of Japan's 100 years of pollution and unresolved environmental destruction. In this situation it was better for the company to confront these many problems and litigations through closed-meeting third-party mediations, rather than going to court in an open confrontation that would consume more time and create greater adverse publicity.

Since these meetings were closed to the public, the farmers could not garner greater public support or citizen movement involvement. Further, it was difficult to retain lawyers who were familiar with this type of negotiation, and from the third party it was at best difficult to expect any special knowledge of the issues involved. But even under these unfavourable conditions the farmers of Morita Village were fortunate to

receive 1 billion 500 million yen of their 3 billion 900 million yen demands. The farmers indicated that as a result of these efforts at arbitration, the Furukawa Copper Mine interests, for the first time, finally admitted that environmental poisonings had taken place. However, the component in the entire litigation system that benefited most from the arbitration efforts was the Pollution Adjustment Committee itself, even though the existence of such an entity was questioned by a broad spectrum of Japanese society. Further, the Furukawa Company used this type of negotiation to smooth over other litigations stemming from other of its activities. At this time also the Pollution Adjustment Committee had another infamous pollution-related problem on its hands. It was disclosed that the seal for the power of attorney needed by Minamata fishermen pollution victims for the initiation of committee procedures had been falsified by an administrator. The committee also abandoned the Minamata Disease case. These facts came in stark contrast to government propaganda that recommended the Pollution Adjustment Committee as a faster and simpler process than the courts and that decisions were reached that were more favourable to the victims of environmental destruction. In reality, the committee's arbitration regarding the Minamata Disease case, being promulgated right after the courts handed down their decision, was no different in content from the decisions reached in the civil suits. A long hard look at the Pollution Adjustment Committee system brings one to the unavoidable conclusion that this system is just as meaningless and unresponsive to the victims of pollution as the former administrative committees.

The copper-poisoning problems experienced by Morita Village in no way came to an end. There are still remaining many points of issue such as expenses for land improvement, replacing the polluted soil in the rice fields, and reconstruction of the irrigation systems. In this regard, as time goes on, the company's responsibilities may even increase. Unless new approaches to negotiations are instituted through the civil courts, the Furukawa interests will press for the application of the arbitration method in other areas of contention. Noting the several cases that have transpired relative to the Ashio and Minamata poisonings, it is obvious that government officials desire to place all pollution



cases under their control, and in order to expand their range of activity there will be continued promotion of the arbitration system. Some of the decisions handed down by the courts relative to Minamata Disease include indications that a share of the responsibility for the problems at issue rests with the administrators involved. Of course this always brings vindictive reactions from government quarters as administrative organs seek to justify themselves. In order to maintain administrative infallibility, the administrators have tried to place all cases under their control, including cases related to the administrative process. This is indicated in cases of environmental pollution, and this trend will continue to be strengthened. However, each case of environmental degradation is predicated on different conditions, and there are no two exactly alike. These problems then can never be solved through the application of uniform procedural orientations. The movement of the victims of environmental distress will start from a realization of the great differences between reality and the predetermined system and will create new situations which the administrators will then try to systematize. This kind of pattern will come more and more into play as time goes on. However, as long as the basic direction of the Government in Japan's industrialized social system remains favourable to the protection of industrial profit, being in the ascendancy since the Meiji period, victims' movements and the administrative system will remain forever in tension.

If this trend continues, the possibilities for forming anti-copper-poisoning movements among the farmers living along the lower reaches of the Watarase River system will continue to fade. Since the poisoned land had been left alone for one hundred years, this reality has come to inform the general mental picture of what nature is all about. The results coming from the twenty-year struggle of the Morita Village farmers after World War II are such that no one can truly say that the negotiations ended in favour of the farmers. With such indefinite conclusions, farmers' movements in other areas came to be seen with suspicion, and viability was thereby lost. With the coming of industrialization to the farming areas and with continued urbanization of the Watarase River system from Kiriu City and below, the poisoned rice fields have greatly changed. Even the Morita area and the surrounding rice fields have

changed to accommodate the rapid urbanization attendant upon industrialization. Housing has sprung up, and people are taking more and more to part-time farming. With these given realities, the farmers' movements against copper poisoning will have to give up most of their viability. However, as discussed below, the situation still remains very precarious and dangerous since at any time the copper slag piles could collapse and flooding could bring another deluge of poisons to the lower reaches of the river system. The fundamental problem has not been solved.

On the lower reaches of the Watarase River system, the Ministry of Construction invested 20 billion yen between 1963 and 1979 on improving the functions of the flood control system in the area of the demolished Yanaka Village. Moreover, a 48-billion-yen construction project is underway to provide a water reservoir for the Tokyo metropolitan area. Because the demand for water in the metropolitan area will increase with time, this project also will have to be expanded. This plan will provide an expanded water supply from the Kusaki Dam, which was built on the lower reaches of the Watarase River system below the Ashio Copper Mine. However, the quality of the water from the Watarase River system is doubtful when it comes to the provision of drinking water because of the heavy burdens of industrial discharge, sewage from the cities of Kiriu and Ashikaga, and continued drainage of poisons from the Ashio Copper Mine. The average water quality provided by the Kusaki Dam will bring undesirable effects to the populations using the water because the seasonal rains will drastically increase the copper-related poisons in the dam and its water system.

The areas around the Ashio Copper Mine on the upper reaches of the Watarase River have been completely denuded of all life. The smoke and fumes from the mining and refining processes have left the land without a single tree or blade of grass. Certain efforts at reforestation and flood control have been made on the nude rocks of the lifeless mountainscape. Although the amount of sulphurous anhydride in the polluted air was decreased by the construction of a sulphuric acid production facility in 1957, there is still some air pollution around the refinery at the

origins of the river system. Trees and grass grow very slowly, and since the area has been subjected to heavy rains and flooding over many years, only rocks remain where there was once topsoil in which vegetation could grow. From 1948 on, patches of grass seed mixed with fertilizer were literally cemented to the denuded mountains through the expenditure of sheer human labour and with the advent of 1965 the application of high technology methods saw seed-fertilizer paste mixtures being spread over the area from helicopters in an attempt at reforestation. Only in certain very limited areas can meaningful results of these efforts be seen. The complete biological recovery of the area will take from several to a hundred years or more. It is very strange indeed that the Ashio Copper Mine interests paid only 3 million 200 thousand yen to the Agriculture and Forestry Ministry for damage to the national forests at the request of the minister in charge and with that pittance the negotiations were ended in 1960. In 1974 when the Morita Village farmers' movement came into direct negotiations with the company and extracted a confession of responsibility from management as to their culpability for the extreme damage created by the mines, the company accepted no responsibility for the pitiful state of the national forests. Therefore, the responsibility for reforestation that the company rightfully retained was nullified by the statute of limitations, and all of the costs incurred in the reforestation effort came out of public coffers. The copper slag and tailings which had been piled up on the steep mountain sides for so many years have become the main source of environmental pollution. The rearrangement of the slag piles and the efforts at reforestation are endless tasks that present unfathomable difficulties. Reforestation of areas that can be seen from main highways has been somewhat successful, but the areas nearer the mine where people do not normally travel have been hardly touched by biological regeneration efforts. With the coming of an unexpected storm, there is always the danger of storm-related destruction of the slag piles in the Ashio Mountains with the attendant and dramatic poisoning of the lower reaches of the Watarase River system, as was the case with the Gengorosawa Slag Pile which was storm- and flood-swept into the river system in 1958. If such slag pile destruction takes place under storm or flood conditions today, then the water-supply dams, the agricultural irrigation systems, and the drinking-water reservoirs will be seriously

poisoned. The negative effects of such an event would be much greater today than in the Meiji period because the water distribution systems along the lower reaches of the Watarase River are so much more complicated and intertwined than they were in previous periods. The massive copper poisonings created by the Ashio Copper Mine have not come to an end, and no one knows when tragedy will strike again. The Ashio Mine was closed, but in order to continue employment for people operating the refinery, ore was brought in from overseas sources. Since national sources of copper ore have declined, it is more profitable for the company to use refineries constructed on the seacoasts. Sooner or later the Furukawa interests will close this inconvenient refinery in the mountains, the air pollution caused by the continuing copper smelting will be ended, and the organization ultimately responsible for the copper poisonings will move away. Then there will be no guarantee that the integrity of the slag piles against storm and rain will be maintained. The prevention of future catastrophies is not at all insured. The future is not very bright.

## VIII. LESSONS LEARNED FROM THE ASHIO COPPER MINE POISONINGS

One full century has passed since Furukawa Ishibee bought the Ashio Copper Mine and started mining operations. Surely, during this long period, the copper mine provided great wealth which helped to enhance Japan's modernization. However, on the other side of the ledger, the copper poisons produced by the haphazard mode of production have robbed many farmers of their lives and done damage that simply is not ascertainable in monetary terms. The great damage caused is not justifiable, for the losses that can be measured in monetary terms simply do not compare to permanent loss of life and health, to destruction of family and community, and to absolute environmental collapse. The only monetary estimation of damages done is that announced by the farmers' movement in 1900. Further, the amount paid as a result of the settlement of the 1890s was only a very small amount which did not even begin to compensate for the damages. Huge amounts of effort and energy were spent by the farmers during the century of mine operation both in tangible and intangible forms. As a result of great increases in public expenditures for the restoration of nature in the form of flood control, irrigation construction, reforestation, and erosion control, both state and local government coffers have been seriously depleted. The exact amounts provided for these services of rebuilding and reconstruction have not been determined, but it is most likely that reparations expenditures have greatly exceeded all the profit made in copper production over the entire one-hundred-year mine-production period. It is probable that the environmental destruction caused by the haphazard copper production created more damage than could be rectified by the application of all the profits to the needs of reclamation.

Instead of realizing the seriousness of the problem from the beginning,

the Government treated the issue as one of public peace and order. This very factor became in turn the cause of expanded environmental destruction in the 1880s and 1890s. By placing responsibility for the problem on the shoulders of the victims of pollution instead of preventing further destruction at the point of origin, not only is social injustice perpetrated but technical irrationality becomes the mode of response. The government orders issued in an attempt to prevent copper poisonings became mandatory and as such tended only to exacerbate the problem, for focusing solutions on "chimney heights and drainage mouth placements" was simply a policy that provided too little too late. A worker who knew well the internal workings of the copper mine was very critical of the situation at the time in an article entitled "The Unresearched Locus of Copper Mine Poisonings."<sup>6</sup> These same poignant words can be applied to present-day pollution issues. The technical aspects of pollution-prevention policy even in these times deals more and more with the simple expedients of changing the heights and locations of chimneys and drainages. It is even more important today, after a century of development in policy and technology, that problems of environmental destruction be understood comprehensively. In this regard we will turn our attention to an evaluation of government policy as this is to be seen in the composition of the Copper Poisoning Research Committee, made up as it was of technocrats alone with no representation of pollution victims.

In 1897, the Copper Poisonings Research Committee was the first committee created by the Japanese Government and made up of scholars charged with solving the problems caused by foreign technicians and their technology as Japan raced toward modernization. It is worth noting at this juncture that the technologist scholars from foreign countries were not made members of the committee. This may be an expression of the confidence held by government technocrats in assuming that they had already mastered the new technologies. When pollution is considered on an international level, technocrats from abroad are also consulted. Such persons from overseas are usually hired with incomes as high as US\$50 thousand a year. These persons may be well suited for their work in terms of a significant knowledge of technical policy, but one cannot expect such persons to work out solutions to pollution problems since these are

caused by complicated combinations of natural and social conditions. It is very important to consider this aspect when professionals are to be exchanged internationally as part of foreign aid programs. Usually, professionals who are involved in government programs are limited to special fields of technical policy, and as such they also retain a very great trust in the efficacy of technology. A total trust in professionals from abroad has brought about only partial solutions as seen in an emphasis on chimney heights and drainage locations. The most important condition that must be met for the solution of pollution problems is to find appropriate personnel from among indigenous people.

The abilities of scientists related to pollution problems, as well as the direction of their research, have been deciding factors in the solution of pollution problems. These scientists must detect delicate changes in nature and social conditions and create meaningful insights based on this understanding. Also, scientists are required to retain an ability to make decisions relative to action alternatives. The Japanese scientists of the nineteenth century obviously did not have sufficient ability to meet these requirements, but they were certainly open handed when it came to absorbing the results of imported science and technology. The tragedy of Ashio is to be found in the fact that the Government and the capitalists of the time did not expect very much of their scientists. After realizing this tragedy, copper company executives employed comprehensive scientific research as a basis for effective action in 1910 at the Hitachi Copper Mine.<sup>7</sup> The scientists made responsible for the task went to the mine to learn from the local situation, from the victims of pollution, and from the natural environment. They built their own unique theories and in fact were able to create conditions that were more or less solutions to the problem. The basic progress achieved in solving pollution problems of the 1910s and 1920s is to be credited to the efforts of these scientists.

Today, in the twentieth century, it is much more difficult for scientists to understand pollution problems on a scholastic and comprehensive level since science is divided into smaller and smaller divisions and technological sophistication has greatly advanced. Excessive trust in technical

progress is not only endemic to scientists and technologists but also permeates all of society in general. The majority of scientists are far removed from the old image of scholarly pursuit of truth in the seclusion and solitude of a sequestered study. Scientists today are organization men, and as such they receive their funding from universities and research centers connected with the State or business. In many cases, the judgements of scientists may come into conflict with their own interests, their own lives, or the interests of the organization they are employed by. Further, the very science that forms the basis for judgement has been pressed into an analytical mode and as such is basically removed from adequate understanding of political issues and political forces. This has also permeated the educational system, denuding education of its original intent and encouraging professionals to look down on or even despise non-professionals. With these unfavourable conditions in mind we are cautioned to remain wary when so-called scientists and technologists make judgements relative to social issues. The great dangers that are inherent in depending too easily on professionals in relation to pollution issues are becoming greater. It is absolutely essential that scientists who are working with problems of environmental disruption be humble in their work and recognize the difficulties faced and the inadequacies of the scientific method.

Tanaka Shozo was an indigenous politician and leader of farmers. He did not create great success for himself, but he was a great man and a strategist. It cannot be denied that because of his greatness, it was difficult for his successors to follow in his footsteps. At the end of the Tokugawa Period, Tanaka Shozo had already retained a patriarchal model of leadership as a protector of the people and leader of the resistance in the farming community. He realized his mistakes as an organizer and even with his best efforts at organization was not able to actualize his desires. In his latter years he continued in efforts at research in search of a comprehensive understanding of nature and human beings, thereby creating overarching ecological understanding that is quite similar to such thoughts today. The self-government theory which he stressed later on in his life and his actual demonstrations of non-violent direct action have very valuable applications for today as they



provide models for political theory and actual examples for action. In later years he was able to overcome his patriarchal stance and lived among the people in actual situations, sharing in their suffering and seeking real solutions to actual problems. In this regard he was quite responsive to the teachings of Christianity. If he had lived another ten years and had seen some of the Taisho period with its 1920s affinity for democracy, his thought may have had greater impact on present understanding. Unfortunately, Tanaka Shōzō was a forgotten figure until the 1970s. To have glossed over his works was indeed a great loss to victims' movements in the post-World War II era.

It is symbolic that Tanaka Shōzō was born in a farming community and he was strongly opposed to the settlement method and to negotiations in disputes which was common in farming communities. It is necessary that some understanding of the meanings and effects of the settlement method be retained as we look at its use in the century-long history of Ashio Mine copper poisonings. This method has very special meanings for the farming community in Japan.

A researcher on the agricultural uses of water has very effectively indicated that modern Japanese society was built on rice as the basic measure of land production, power, and wealth. Thus from the 1700s onward, rice farming was developed to an excessive degree, moving past the normal capacity of the limited water supply to sustain it.<sup>8</sup> As a result, water for irrigation was constantly in short supply creating social tension because of the many disputes that arose. In order to make adjustments and ameliorate the disputes, irrigation routes were created, and on the basis of these determinations exclusive group loyalties and consciousness orientations came into being in traditional agricultural communities. This same orientation forms the basic ground for Japanese society today. On the other hand, the scarcity of water and land created conditions for the development of new technologies which made more effective use of land and water. Through this process of interaction between scarcity and the development of technologies, Japanese rationalism came into being. In relation to outsiders, the community maintained a stance of exclusive group consciousness but within the community the relations that developed

were characterized by customs that maintained harmony for the sake of securing water for equitable division among community members. While water became the cause of confrontation between villages, the primary value within the village was harmony and unity. Confrontations between groups in the same village were discouraged, and persons who sought particular individual rights were forced out of the community and condemned both by their own group and external village groups. On the other hand, there were often intense struggles between village groups and activities which were not allowed within a particular group were seen as permissible outside the group if such contributed to survival. Therefore a lone Japanese who visits a South-East Asian country is very quiet, but if he is with a group, he suddenly becomes so extroverted that he does not hesitate to purchase female affections. This is very likely an expression of the way in which Japanese attitudes change as the context changes from that within the group to that outside the group. The history of persecutions against Christians in Japan and the unreasonable extent to which brutality is taken in war as contrasted to the other image of the Japanese as gentle within the context of their own society — such conflicting images may be derived from the same roots. Throughout the history of the Ashio Copper Mine poisonings, inhumane treatment was meted out to the weak by the administrators in power and was seen as a necessary evil by those who felt that it was necessary for the farmers to be taught a lesson of obedience to community power.

Members of the community were not at all equal. There were fixed rules pertaining to self-government in which the upper classes retained the duties of protection over the lower classes, and in return the lower classes were required to obey the upper classes. In this manner the community retained its integrity and basic continuity. This same structure has been carried on in the business world, and in like manner Japan's agricultural policy is based on a duty to protect farmers, and the farmers have never given up their demands for the protection they are rightful heirs to as promulgated by the conventions of society. In this kind of situation modern human relations characterized by right and duties will never be allowed to grow. After the Meiji Restoration this same traditional concept and structure was maintained in the farming communities.

The false ideology that the nation is one community under the emperor was the core of national effort in Japan up until 1945. When the State or business corporations show a propensity toward incorporating the community system within their organizational structures, this natural ethical system that was derived out of the agricultural communities of the distant past is either completely abandoned or modified to meet different needs.

In all of this it can be seen that the community made use of settlements or arbitration under the aegis of community authority as a means of reconciliation of disputes. Within the group harmony is maintained and unity is enforced vis-à-vis outsiders through the application of the community-sanctioned will of the leadership. In such a situation the claiming of individual rights is not welcomed but rather viewed as a subversive act not in conformity with the needs of the community as a whole. Those who make demands for certain rights must be willing to forfeit their claim to community protection. In such a community, where one is tightly knit into an exclusive group consciousness within a small village entity, to forfeit claim to protection is tantamount to self-destruction. This mental attitude, in which threat of destruction dominates the universe of social cohesion, still remains very much at the root of Japanese society. This same kind of threat compelled the farmers to accept reconciliation and settlement agreements from those in power that were unreasonably unfair in the extreme. The outward manifestations of the Japanese sense of belonging within the business organization as well as in relation to other groups comes basically from these same roots wherein threat in modified forms constitutes the major coercive force. Further, subordination of local officials to the central political structures in Japanese power relationships, as hard as this is for outsiders to fathom, is the primary pillar upon which the unshaken conservative political party builds its power. In order to maintain this base of power, various systems of protection were manipulated into existence in order to create dependence out of which subordination was generated within a rather amorphous structure of interdependence. In Japan's modernization process the same mental constructs held sway where subordination to foreign cultures and technology shaped basic attitudes of dependence without any significant change in the

threat-oriented structures of human relationships. Certain literary giants of Japan such as Natsume Sōseki, Mori Ōgai, and Ishikawa Takuboku produced masterful writings in which there were eloquently expressed the struggle of the self torn between the independence seen in foreign cultures and the subordination infusing Japanese society. It should be noted that this same concept of "harmony" has been emphasized by Prime Minister Suzuki and as such comes from the same conceptual roots that inform all of Japanese society as well as all forms of foreign relations. In spite of the modernization process that took place during the period after the Second World War, the subordination of character and personality in Japanese society has not changed to any significant degree because these essential mental constructs are reinforced by the educational system. The nation as well as business organizations, as the basic relational structures of society, demand the creation and preservation of this essential character. Through the introduction of foreign technology in the post-war period, Japan has experienced a high economic growth rate period that has also served to reinforce this basic form of social cohesion. Under such circumstances, it required more than twenty years for a sense of rights to develop among victims of environmental destruction so that they could see their way clear to affirming such rights in court. State administrators made use of this contrived basis of social cohesion as a means of forcing reconciliation between disputants in environmental poisoning cases, with the victims accepting miniscule offers in many cases. This attitude of willing subordination to power can only be understood within a historical context. With this understanding some realization will be forthcoming as to the fundamental character of the pioneering work done by the victims' movements as they groped to retain objectivity vis-à-vis their situation and the strong resistances encountered in obtaining fundamental human rights in court. The farmers' movement of the Ashio Copper Mine poisonings period cannot be too deeply blamed for surrendering themselves to the arbitration and will of the administrators.

Within this context it must be understood that historical fact will support the contention that the demands made by the farmers and the movements generated through such leaders as Tanaka Shōzō and Onda Shōichi were for elimination of pollution sources and the restoration of nature to its

pristine state. These first victims of environmental destruction did not demand compensation for their losses as such. Their wish was for the preservation of society and nature or the peace which has been defined by Ivan Illich in some of his later works.<sup>9</sup> It was only when the damage to nature became irreversible that these early movements began to demand compensation. Persons involved in pollution-related issues, perpetrators of environmental damage, and professionals alike should keep this fact in mind. When problems of environmental destruction are simply understood as matters of community peace and order, this being the Meiji government's response, then the destruction of nature is assured, and endless years of public investment are required in reparations. If people in all walks of life had been required to live for a while in Matsuki Village in Ashio, the destruction of forests and mountains that can be seen there today probably would never have occurred. The Furukawa mining interests were required to remove people from the area in order to remove the problem from public view, but this short-sighted stopgap method created even more intractable problems that have remained unsolved for more than one hundred years.

In short, there may be some possibility that technology can be changed and made less destructive. But there are many arguments entering the debate over technology that would call this assertion into question. In any case, problems of environmental degradation cannot be removed from geographical locations and as such remain endemic to the areas in which they originate. When the damage becomes noticeable then awareness of the problem emerges, and some kind of policy response ensues. From this level of response to the problem and at every level thereafter, the issue of pollution victim involvement in the solutions sought is much more important to the generation of adequate responses than the application of even the most sophisticated technical policies.

Are there examples of successful coping with problems of environmental pollution in Japan? In this regard the history of the Ashio Copper Mine faults any response to that question. The development of the mine resulted only in transferring wealth from the public to the private sectors. The only redeeming factor lies in the fact that the misery caused by the Ashio

Copper Mine in the Meiji period prompted some evaluation of the problem in the ensuing Taisho period which forced certain improvements as to technical policy affecting the original pollution sources. The farmers' movement that came into being after World War II ended in defeat for the farmers. The settlement reached in the Morita Village case is another example of an agreement enforced by administrators in a repetition of prewar experiences. It is always possible that the outcome of this settlement may prove to be negative in its results as it affects the future of people who demand their rights. Much depends on the victims' movements of the future relative to whether or not the settlement enforced creates a wall of negative influences.

In this regard, even though the Furukawa Zaibatsu was a faster-growing economic organization than the Sumitomo Zaibatsu, owner of the Beshi Copper Mine, and although Furukawa had superior relations and connections with the political world of the time, it was far behind Sumitomo and remained a second-class economic power. This may be due to the conservative management of the company and to the fragile financial realities imposed. In any case, there is no denying that the Furukawa Company image was badly damaged as the Ashio Copper Mine poisonings came to light. The company was seriously rocked by the copper-poisoning incidents.

If the Furukawa Zaibatsu had been a multinational corporation rather than a second-class economic power, the extent poisoning that would probably have resulted sends chills of fear down the spine. The resulting suppression of victims' movements and the involvement of the political world in this suppression would have been even more severe, and the environmental destruction would have been even worse. The demands that are being voiced for compensation of damage done and for restoration of nature's broken frame to its original condition, come to a crescendo in today's world so powerfully that production capital simply moves out of the country to exploit the resources and natural environments of other lands and peoples, thereby providing no lasting solution to the ever-present problem of devastated environments. Only production capital which could not extend its tentacles overseas has been stopped

within Japan at the present levels of environmental damage.

It is often stated that Japan in the 1970s has been successful in solving its pollution problems. As a matter of fact the pollution-level indicators for sulphurous anhydride have been on the decrease in absolute numerical terms, but if success is to be measured in terms of finding a system that does not cause environmental distress in the first place, it is quite possible to point out many examples that prove that the road to success is yet very long and precarious. Japan's industrialization and urbanization cannot be understood as being a success story simply because there are huge economic powers which foster and make use of traditional community self-understanding and values for their own aggrandizement thereby making liberation of the modern technopolitan state from the grip of oppressive farming-community values a very difficult problem for all of Asia. The process of reaching a new social order which will supplant farming-community ethos-informed profit-oriented industrial society with new forms must of necessity be a very long and rocky road. Therefore, it is very dangerous to speak as if Japan's pollution problems have been solved. The history of the Ashio Copper Mine and its pollution problems has taught us that there is no satisfaction to be had in the simple fact of certain decreases in levels of particular environmental pollutants. What we are able to learn from the experience of Japan is that the conditions which exist today are, with all conditions in human history, derived not out of any formalized and preconditioned system, but derived from the accumulated sweat and tears of the people.

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