

Chapter 1

Toray's Founding and Rayon Business Development: 1926–1952

Management during the Founding Years (1926–1935)

In the inaugural general meeting of Toyo Rayon Co., Ltd. (hereinafter referred to as “Toray”) on January 12, 1926, Yunosuke Yasukawa, who had been nominated chairman, spoke with conviction as he reported the following in his explanation of the first proposal on the agenda dealing with “matters relating to the company’s founding.”

The development of the rayon industry in the West has been truly astonishing. In Japan, too, the value of rayon imports is climbing, which makes the establishment of rayon manufacturing operations, as we are doing here, enormously beneficial for not only the advancement of our nation’s textile industry, but also the national economy as a whole.

On February 9, Toray applied to the governor of Shiga Prefecture for a permit to establish a plant. It was granted on April 16. Toray observes

the day as its Founding Day. Construction of the plant ran into difficulties, leading to substantial delays in its full completion and start of operations. The ground at the site was soft and large quantities of earth and sand had to be carried in to prepare the foundations. It required the laying of additional railway sidings. But although the main administrative building and living quarters for foreigners were finished in November 1926, the plant buildings, dormitory and company housing were only partially completed by year-end, delaying the start of operations until the following year. The February 1927 suicide of Antonio Minelli, who was in charge of the plant's construction, was also a major shock to everyone involved.

In May 1927, Asahiko Karashima (later chairman) took up his post as plant manager. Trial operations began in July at the Shiga Plant's Mill No. 1 following its completion and the installation of machinery. On August 16, the first rayon filament yarn was spun under the direction of Starley, who had taken Minelli's place as chief engineer. At the Shiga Plant, emphasis was placed on the development of employees' skills and education of the whole person in line with Karashima's policy of making the plant "a place for the cultivation of human character."

In November 1927, Toray commenced sales of rayon to specified dealers across Japan with Mitsui & Co. acting as sole overall distributor. Dealers sold on to the users—weavers and wholesalers. Mitsui & Co. also put effort into export sales, expanding sales channels in mainland China—initially Shanghai—as well as places like Korea, Mexico, and India.

Toray recorded its first profit for a period in the first half of fiscal 1928 and subsequently booked profits in every term. For a time after the

company's founding, no dividends were paid out as priority was placed on strengthening internal reserves. Toray paid out its first dividend (six percent per annum) in the first half of fiscal 1932. At the general meeting of shareholders in July 1933, a resolution to take the company public was approved. As well as allocating new shares to existing shareholders to raise additional capital, 320,000 shares allotted to Mitsui & Co. were put on public offer, with the company listing on Tokyo and Osaka stock exchanges in July 1934.

Management under Wartime Controls (1936–1945)

Germany, transformed into a military-controlled state at the hands of the Nazi Party led by Adolf Hitler, used armed force to annex Austria in 1938 and Czechoslovakia in 1939 before then invading Poland. The United Kingdom and France responded with a war declaration that marked the start of a battle for Europe and lifted the curtains on World War II.

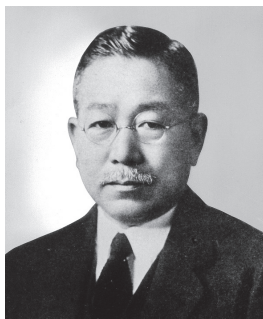
In Japan, young army officers assassinated Lord Keeper of the Privy Seal Makoto Saito and Finance Minister Korekiyo Takahashi in 1936 in the February 26 Incident, which destroyed the effectiveness of civilian control over the military. The following year, 1937, the Japanese military was involved in the Marco Polo Bridge Incident, leading to full-scale war between China and Japan. Then in December 1941, Japan launched surprise attacks on Pearl Harbor in Hawaii, a territory of the United States, and British-controlled territory on the Malay Peninsula, thrusting Japan into an all-out war with the U.S. and the U.K. The outbreak of the Pacific War turned World War II, which until then had been limited to the European theater, into a war of unprecedented scale that pitted the Axis

powers of Germany, Italy, and Japan against the Allied nations, including the U.S. and the U.K.

In December 1936, Toray's first chairman, Yasukawa, stepped down and senior managing director Karashima took over management. The company was without a chairman for roughly a year before Karashima was appointed to the position in December 1937. At the time, Toray's articles of incorporation made no provision for a president and the chairman was the chief executive.

Japan was under a wartime regime in October 1942 when Karashima was appointed chairman of the government-designated Silk and Artificial Silk Control Association and inevitably had to resign as Toray chairman. Succeeding him as chairman was Yosaburo Ito, general manager of Mitsui & Co.'s Osaka branch. Ito was in charge during the tough period up to the end of the war, including a year and a half as president from 1944. Thus, from 1944 onward, right up to the present day, it has been the president who has assumed chief responsibility for management of Toray.

After war broke out between Japan and China in 1937, industrial controls were strengthened. The production and sale of rayon filament yarn, a substitute for silk, were restricted as the product was viewed as



Asahiko Karashima



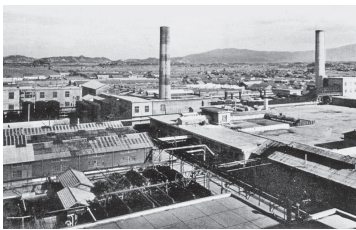
Yosaburo Ito

a luxury item. Toray management was forced to adapt to wartime controls. With the nation at war, imports of pulp, a raw material for rayon, continued to decline, halving between 1937 and 1941. The rayon industry had also relied heavily on exports. Overcapacity suddenly became all too apparent. Meanwhile, government-imposed restrictions on wool imports from Australia came into force in 1936. From a perspective of resource self-sufficiency, rayon staple fiber quickly attracted interest as a substitute for wool and the government encouraged its widespread use.

Rayon filament yarn had accounted for around 90 percent of Toray's sales at the time, but the controls put in place curbed its production. On the other hand, Toray started producing rayon staple fiber at the Shiga Plant's Mill No. 2 in July 1935 and the volume of production kept increasing. Then in July 1936, Toray established an affiliate, Toyo Kenshoku Company. Construction began on the new company's Ehime Plant (Masaki, Ehime Prefecture; integrated rayon staple fiber manufacturing, spinning, and weaving operations; absorbed by Toray in July 1941) and operations began as soon as the work was finished in April 1938. Toray also built a spinning and weaving mill on land in Seta, Shiga Prefecture, where Toyo Kenshoku had abandoned construction of a rayon staple fiber plant in part due to opposition from the Lake Biwa fisheries union.

The Seta Plant started operating in February 1938.

In July 1941, Toray absorbed Shonaigawa Rayon Company and K.K. Shonaigawa Dye Works, which were initially established as separate companies, and merged them as the



Ehime Plant of Toyo Kenshoku (1941)

Aichi Plant. But in December of that year, all machinery and equipment were requisitioned by the government. In the context of the Pacific War, Toray was not a supplier of munitions and was therefore forced to relinquish its equipment as a source of steel. To be able to maintain a certain amount of equipment, Toray inevitably had to produce items for military use.



Shiga Plant damaged by bombing
(July 1945)

As of the end of 1936, a decade on from the company's founding, the workforce numbered 7,832 employees (7,827 at the Shiga Plant, five at Tokyo Head Office), but by the end of 1941, the year the Pacific War began, there were 10,164 employees. The number subsequently declined, falling to 6,750 by the close of 1945, when the war was over. The United States had started bombing industrial centers on mainland Japan in June 1944 and by 1945 even private homes in urban areas were bombed indiscriminately. In May 1945, the Aichi Plant was partially destroyed by fire as a result of an air raid and the Shiga Plant was bombed in July. Casualties at the Shiga Plant came to 14 dead, 50 severely injured, and a little over 200 mildly injured.

Postwar Reconstruction and Management (1946–1952)

In Japan, the anniversary of the end of the war is a commemoration of August 15, 1945, but in many other countries, September 2 is recognized as the day that World War II came to an end and commemorated as an

anniversary of either the war's end or victory in the war. Japan conveyed its acceptance of the terms of the Potsdam Declaration to the Allies on August 14. The following day, August 15, a speech read out by Emperor Hirohito was broadcast over the radio. It was a declaration of Japan's defeat directed at the nation. September 2 was the day that representatives of the Japanese government and armed forces signed the instrument of surrender aboard the USS Missouri in Tokyo Bay.

At the direction of the General Headquarters of the Supreme Commander for the Allied Powers (SCAP), *zaibatsu* (industrial conglomerates) were dismantled; laws were enacted to prohibit monopolies and eliminate excessive centralization of economic power; bold agricultural land reform was implemented; three labor laws were enacted—the Labor Union Act, Labor Relations Adjustment Act, and Labor Standards Act; and educational reforms were implemented, extending compulsory education from six to nine years. In this way, social and economic infrastructure for postwar Japan was laid. In 1949, a single exchange rate of 360 yen to the U.S. dollar was introduced and tax system reforms were implemented in line with recommendations made by a mission on taxation headed by Carl Sumner Shoup.

Democratization of the Japanese economy began with a November 1945 SCAP directive ordering the dissolution of the “big four zaibatsu”—Mitsui, Mitsubishi, Sumitomo, and Yasuda. Mitsui & Co., Toray's parent company, was disbanded in July 1947 in line with the Enterprise Reorganization Act.

In November 1945, Shigeki Tashiro became president, succeeding Yosaburo Ito. The dissolution of parent company Mitsui & Co. had a number of implications. First of all, securities companies and other

financial institutions became major shareholders. Toray had also lost its sole distributor (Mitsui & Co.), unchanged since the company's founding, and thus faced the need to put in place its own independent distribution system.

Toray resumed production, concentrating rayon filament yarn operations at the Shiga Plant and rayon staple fiber operations at the Ehime Plant, but it would take a number of years before full-scale production could be achieved. In May 1947, the company set up the Commercial Department in Osaka as an organization for carrying out independent distribution activity.

Around this time, SCAP issued a directive purging several people from public office, who had served as executives during the war years, including Tashiro, Karashima, and Ito. Tashiro resigned from Toray at the end of June 1947. His replacement, in charge of management, was managing director Kikuo Sodeyama, who became president in July 1948. Sodeyama was among the initial group of university graduates hired in 1926 at the time of Toray's founding. Tashiro later had his purge lifted and he returned to the Toray Board at the extraordinary shareholders meeting in March 1950. He was appointed chairman.

Taking over from Tashiro, President Sodeyama advocated a fundamental management philosophy of "building up human resources at the



Shigeki Tashiro



Kikuo Sodeyama

same time as making products.” While adopting modern American-style management methods under SCAP guidance, Sodeyama attempted to integrate them with the style of human resources development Toray had followed since its founding. The number of employees steadily increased, reaching 15,220 by the end of 1950.

Immediately after the war, there was a need to expand business addressing private-sector demand to accommodate those returning from military service. On hearing a lecture by Dr. Jackson W. Foster, an authority on penicillin research, President Tashiro could sense the potential. At Tashiro’s invitation, Dr. Foster visited the Shiga Plant in December 1946 and recommended manufacturing penicillin using deep-tank fermentation. Toray commenced research in January 1947, at the same time installing a pilot plant consisting of two 300-liter tanks and launching the first culture.

However, the number of penicillin manufacturers subsequently increased and Toray, originally a fibers and textiles company, would have had to carve out new sales channels to engage in the business. Mutual benefits for other businesses were also meager. Unable to foresee any way to withstand the competition, Toray stopped production of penicillin in 1953. At that time, senior management had already made a decision to industrialize nylon fiber.

Industrialization of Nylon

In October 1938, the U.S. firm E. I. du Pont de Nemours and Co. (DuPont) announced that it had successfully developed a polyamide-based synthetic fiber, which it was calling *nylon*. The words DuPont used to draw attention

to nylon were sensational in themselves—made from “coal, water, and air,” the fiber was “as strong as steel, as fine as the spider’s web.” Marking the true dawn of the synthetic fiber age, nylon came as a shock to not only Toray’s leadership, who had envisaged rayon fiber at the forefront of a new age, but



Wallace H. Carothers, inventor of nylon

textile circles all over the world. The inventor of nylon, Wallace H. Carothers, had led the life of an academic as an instructor at Harvard University until he joined DuPont and invented the polyamide fiber (nylon 66) in 1935.

Shortly after DuPont’s nylon announcement, samples of the fiber arrived in Japan from the New York branch of Mitsui & Co. Researchers at Toray used the samples in their nylon 66 research and succeeded in melt spinning the fiber on December 27, 1939. They also embarked on research into a polyamide formed from caprolactam—nylon 6—and in May 1941 succeeded in melt spinning this fiber, too. In October 1942, Toray gave it the name “Amilan,” registering it as a trademark. Equipment was put in place to trial small-scale commercial production and, in December 1942, Amilan was made available on the open market with emphasis, from a food security point of view, on its application as fishing line for use by fisheries. In October 1945, soon after Japan’s defeat, Toray resumed production at the Shiga Plant using Amilan monofilament facilities. Production had stabilized by June 1947 when the company launched a fishing line trademarked as “Ginrin.”

In 1946, a textile mission to Japan by Allied powers visited the Shiga Plant and, on seeing Amilan, pointed out that the fiber might



Signing of the patent licensing agreement with DuPont
(June 1951)

infringe on patents owned by DuPont. Amilan was indeed nylon 6 and even though the manufacturing process and substances differed from the nylon 66 produced by DuPont, there was potential for infringement if peripheral patents relating

to processes from spinning onward were included. Toray management believed the wise thing to do would be to enter a technological alliance with DuPont and dispel fears of a patent war. Negotiations began, and in November 1950, DuPont notified Toray of its consent and terms for a technological tie-up.

The talks with DuPont progressed and in June the following year, 1951, a patent licensing agreement was signed by Shigeki Tashiro for Toray and Wendell R. Swint, head of the foreign relations department at DuPont, at the latter's headquarters in Wilmington, Delaware of the U.S. The terms of the agreement were payment to DuPont of a three percent royalty on sales, including a three million U.S.-dollar (1.08 billion yen) advance, and a duration of 15 years. The advance was nearly 1.5 times Toray's capitalization at the time, which was 750 million yen. Negotiations resulted in the amount being paid in five installments.

Amid the extreme shortage of materials after the war, the fibers and textiles industry experienced a rayon boom and successive chemical fiber producers moved to expand their rayon staple fiber capacity. Toray, however, channeled a disproportionate amount of management

resources into commercializing and expanding nylon production in anticipation of future growth. It was because of this that Toray managed to escape the industry slump that came later as a result of rayon staple fiber overcapacity and alone enjoyed high levels of profit generated by nylon business growth.

In May 1950, as a site for a caprolactam (nylon 6 raw material) and polymerization plant, Toray purchased part of the former premises of the Oye Plant of Mitsubishi Heavy Industries, Ltd., which was close to Toagosei Chemical Industry Co., Ltd., a supplier of raw materials such as cyclohexane, ammonia, and sulfuric acid. It was designated the Toray Nagoya Plant. In July, ground purification ceremonies were held for both Nagoya and Aichi plants and construction got underway. Aichi Plant spinning facilities were completed in February 1951 and the first nylon filament was produced. The Nagoya Plant followed suit, commencing nylon staple fiber production in December.



Nagoya Plant (1951)



A bird's-eye view of Aichi Plant (1952)