

# BRIDGING WORLD HISTORY

EPISODE #19

## Global Industrialization

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TIME CODE	AUDIO
00:00:00	<b>ANNENBERG/CPB LOGO</b>
00:00:15	<b>OPB LOGO</b>
00:00:23	<b>WEB TAG</b>
01:00:36	<b>NARRATOR: THE INDUSTRIAL AGE. IN ITS EARLIEST DAYS, POETS, ARTISTS AND WORKERS SANG ITS PRAISES – FROM YAWATA, JAPAN...THE WORDS OF THE CITY ANTHEM.</b>
01:00:47	<i>MIXED JAPANESE VOICES: Billows of smoke filling the sky Our steel plant, grandeur unmatched: Yawata, O Yawata, our city!<sup>1</sup></i>
01:00:59	<b>NARRATOR: WHAT WAS THE REAL IMPACT OF THE INDUSTRIAL REVOLUTION? WHY DID IT DEVELOP SO RAPIDLY IN SO MANY PLACES AROUND THE WORLD? AND WHAT IS ITS MESSAGE FOR THE FUTURE OF HUMANITY?</b>
01:01:37	<b>HOST: THE INDUSTRIAL REVOLUTION CHANGED MUCH MORE THAN JUST MACHINES AND COMMERCE. AND IT FLOWED WELL BEYOND THE BORDERS OF EUROPE AND AMERICA, TRANSFORMING SUGAR PLANTATIONS IN CUBA, THE SILK INDUSTRY IN JAPAN, AND BEEF PRODUCTION IN URUGUAY. IN FACT, IT WAS A REVOLUTION THAT LITERALLY TRANSFORMED THE PATTERNS OF HUMAN LIFE ON A GLOBAL SCALE.</b>
01:02:01	<b>HOST: THE INDUSTRIAL REVOLUTION SPAWNED A REORGANIZATION OF HUMAN LABOR LED THE MIGRATION OF PEOPLE TO CITIES.  THE RESULTING URBAN GROWTH CREATED A WIDENING DEMAND FOR</b>

	<p><b>MORE PRODUCTS WORLDWIDE;</b></p> <p><b>AND THE LARGE-SCALE DEMAND FOR SUCH GOODS STIMULATED INNOVATIONS IN MECHANIZED TRANSPORTATION AND COMMUNICATION. ALL OF WHICH QUICKENED THE MOVEMENT OF PEOPLE, PRODUCTS AND CAPITAL AROUND THE WORLD.</b></p>
01:02:25	<p><b>HOST:</b>  <b>BECAUSE OF ITS FAR REACHING IMPACT, SCHOLARS NOW VIEW THE INDUSTRIAL REVOLUTION FROM SEVERAL GLOBAL PERSPECTIVES, INCLUDING:</b></p> <p><b>HOW THE MIGRATION OF LABOR AND CAPITAL ACROSS BORDERS AND CONTINENTS RESULTED IN A REMARKABLE CROSS-POLLINATION AND DIVERSIFICATION OF PEOPLE, IDEAS AND TECHNOLOGIES, YET RESULTED IN A GLOBAL WEB OF INTERDEPENDENCY.</b></p> <p><b>HOW INDUSTRIALIZATION AND URBANIZATION LED TO SOCIAL AND DEMOGRAPHIC CHANGES ON A GLOBAL SCALE- WIDENING THE GAPS BETWEEN RICH AND POOR, ALTERING THE PATTERNS OF DISEASE AND HEALTH, AND CHANGING THE ROLES OF MEN AND WOMEN.</b></p> <p><b>AND HOW THE GLOBAL SEARCH FOR RESOURCES PERPETUATED OLD COLONIAL PATTERNS, FAVORED THE WEST, AND FOSTERED LOCAL AND GLOBAL INEQUALITIES.</b></p>
01:03:08	<p><b>HOST:</b>  <b>ALL AROUND THE WORLD, THESE ACCELERATING CHANGES TRANSFORMED THE PATTERNS OF HUMAN LIFE IN STRIKINGLY PARADOXICAL WAYS.</b></p>
01:03:14	<p>JERRY H. BENTLEY:  New agricultural techniques were producing increasing food for a world population that was growing quite rapidly, but at the same time in overcrowded cities there was a nutritional crisis brewing.</p>
01:03:27	<p>KEN RUOFF:  The steam powered factory allowed for a fantastic increase in production but still from today's perspective these are very labor intensive factories if you consider the textile industry for example you need large numbers of workers.</p>
01:03:37	<p>PETER WINN:  Innovations in communication and transportation – railroads, telegraphs, steamships – brought the world closer together, at the same time drawing millions of people out of their homelands in Europe and Asia and across the oceans– to work in the new industries and cities of the Americas.</p>
01:03:56	<p><b>HOST:</b>  <b>THE RAILROAD, AS MUCH AS ANYTHING ELSE, CAME TO SYMBOLIZE THE GLOBAL REACH OF THE INDUSTRIAL REVOLUTION.</b></p> <p><b>BUT DESPITE THE IMPACT RAILROADS HAD ON THE MOVEMENT OF PEOPLE AND GOODS WORLDWIDE, THEY REPRESENTED JUST ONE PART OF A COMPLEX PATTERN WHICH RECURRED IN MANY PLACES AROUND THE GLOBE.</b></p>
01:04:24	<p>PETER WINN:  For some, these new technologies meant displacement. For others, new opportunities. In Argentina, Italian gollendrinias, or swallows, became the world's first transatlantic migrant workers, taking advantage of the difference in the seasons and the empty</p>

	<p>steerage compartments of the new steamships to harvest the crops in both Italy and Argentina, where many stayed to build the railroads and the ports.</p>
01:04:53	<p><b>HOST:</b>  <b>IN THE MID 19<sup>TH</sup> CENTURY, THE NATIONS THAT WERE PRODUCING NEW PRODUCTS FASTER AND MORE ECONOMICALLY NEEDED TO ACQUIRE RAW MATERIALS FASTER AND MORE ECONOMICALLY – FROM WHEREVER THEY COULD BE FOUND.</b></p>
01:05:03	<p>PETER WINN:  The leaders of these governments opened their counties' treasuries and commerce to the transatlantic economy in the expectation that it would bring civilization, as well as prosperity and progress.</p> <p>But Latin America's need for foreign capital and technology created an unhealthy dependence on Europe and the United States, and a growing inequality in Latin America.</p>
01:05:25	<p><b>HOST:</b>  <b>SO, TO FULFILL THEIR OWN NEEDS, WESTERN NATIONS INVESTED HEAVILY IN THEIR LATIN AMERICAN, AFRICAN AND ASIAN COLONIES; PARTICULARLY IN THE CREATION OF LOCAL TRANSPORTATION INFRASTRUCTURES USED FOR THE EXTRACTION OF RAW MATERIALS.</b></p> <p><b>RAILROADS WOULD BECOME A CRITICAL FACET OF THIS EFFORT.</b></p>
01:05:43	<p><b>HOST:</b>  <b>IN THE FIRST HALF OF THE 19<sup>TH</sup> CENTURY, THE INDUSTRIAL NATIONS OF EUROPE AND NORTH AMERICA DEVELOPED EXTENSIVE RAILROAD SYSTEMS. THEY LINKED DIVERSE ECONOMIC MARKETS, TRANSPORTED PEOPLES AND GOODS ACROSS VAST DISTANCES, AND PROVIDED ACCESS TO MINING, TIMBER AND OTHER RESOURCES.</b></p> <p><b>IN THE <i>SECOND</i> HALF OF THE CENTURY – FED BY EUROPEAN AND NORTH AMERICAN DEMAND FOR GOODS – <i>THE NEWLY INDEPENDENT REPUBLICS OF LATIN AMERICA</i> BEGAN TO DEVELOP THEIR OWN RAILROAD AND PORT FACILITIES.</b></p> <p><b>THIS ENCOURAGED THE GROWTH OF LATIN AMERICAN CITIES, THE INFLUX OF IMMIGRANTS, AND THE MECHANIZATION OF SPECIFIC INDUSTRIES, FACILITATING ACCESS TO INTERNATIONAL COMMERCE.</b></p>
01:06:19	<p>PETER WINN:  In Latin America, the railway lines built by British and U.S. companies were tools of empire, which integrated the Latin American economy into that of the United States or the United Kingdom. In Mexico, for example, the major railway lines linked up with U.S. trunk lines at the border.</p> <p>But the new railroads were also tools of nation building, which opened up the interiors for farming, weakened provincial rebels, and strengthened central governments.</p>
01:06:52	<p><b>HOST:</b>  <b>THUS, RATHER THAN LIBERATING SOUTH AMERICA, INDUSTRIALIZATION OFTEN STRENGTHENED THESE COLONIAL SOCIAL PATTERNS BOTH WITHIN THE EXPLOITED COUNTRY, AND IN THE COUNTRY DOING THE EXPLOITING.</b></p>

	<b>THE HISTORY OF SUGAR PLANTATIONS IN CUBA OFFERS A STRIKING MICROCOSM IN WHICH TO VIEW SOME OF THESE PATTERNS.</b>
01:07:09	<p><b>HOST:</b>  <b>A COLONY OF SPAIN, CUBA HAD BECOME THE WORLD’S LEADING SUGAR PRODUCER BY THE MID 19<sup>TH</sup> CENTURY.</b></p> <p><b>BETWEEN 1850 AND 1870, THE ISLAND EXPERIENCED A SURGE OF GROWTH – AIDED BY FOREIGN INVESTMENT, NEW SUGAR PRODUCTION TECHNOLOGIES, AND THE DRAMATIC EXPANSION OF ITS RAILROADS.</b></p> <p><b>FOLLOWING THE WORLDWIDE PATTERN, CUBA LAID THOUSANDS OF MILES OF NEW RAILROAD TRACK TO FACILITATE THE CONNECTIONS BETWEEN ITS SUGAR PLANTATIONS AND PORTS.</b></p> <p><b>THIS PERIOD OF CUBAN HISTORY IS KNOWN AS THE “SUGAR REVOLUTION.”</b></p>
01:07:45	<p><b>HOST:</b>  <b>FACED WITH A DWINDLING LABOR FORCE, AND UNABLE TO INCREASE ITS SLAVE LABOR OR ATTRACT VOLUNTARY IMMIGRANTS FROM EUROPE, CUBA IMPORTED TENS OF THOUSANDS OF MOSTLY MALE CHINESE LABORERS. THESE SO-CALLED “COOLIES” ALL WORKED UNDER FIXED CONTRACTS.</b></p>
01:08:01	<i>VOICE OF ELIZA MCHATTON-RIPLEY: Each [coolie] ... is contracted with his own free will to do field-labor...to be granted one day in seven to rest, two full suits of clothing, one blanket and one overcoat annually, twelve ounces of meat and two quarter pounds of...yams or rice... per day; comfortable living quarters; and four dollars in gold monthly.”</i>
01:08:34	<p><b>HOST:</b>  <b>THOSE ARE THE WORDS OF ELIZA MCHATTON-RIPLEY, AN EXPATRIATE AMERICAN PLANTATION OWNER WHO MIGRATED TO CUBA AFTER THE AMERICAN CIVIL WAR.</b></p> <p><b>SHE DISCOVERED SOCIAL AND CULTURAL CONDITIONS IN CUBA THAT CHALLENGED HER ASSUMPTIONS ABOUT RACE.</b></p>
01:08:47	<p><i>STORYTELLER:</i>  <i>“The Chinese... were docile and industrious; they could not stand the same amount of exposure as an African, but they were intelligent and ingenious; within-doors, in the sugar factory, in the carpenter-shop, in the cooper-shop, in driving teams, they were superior to the Negro.”</i></p>
01:09:19	<p><b>HOST:</b>  <b>WHILE CHINESE LABOR LOWERED THE EXPENSE OF THE SUGAR HARVEST, CUBAN PLANTERS ALSO IMPORTED TECHNOLOGY FROM THE UNITED STATES—NEW SUGAR BOILERS AND OTHER MACHINES THAT MADE CULTIVATION MORE EFFICIENT</b></p> <p><b>LIKE IT’S LATIN AMERICAN NEIGHBORS, CUBA SOUGHT INVESTORS AND TECHNICAL EXPERTS FROM NORTH AMERICA AND EUROPE TO HELP MANAGE THE NEW TECHNOLOGIES. THESE EXPERTS OCCUPIED VERY SPECIALIZED POSITIONS. THEY WERE RESPONSIBLE FOR MAINTAINING AND SUPERVISING THE USE OF THE NEW MACHINES – AS WELL AS THE CONSTRUCTION OF RAILROADS BUILT BY CHINESE COOLIES AND FORMER AFRICAN SLAVES.</b></p>

01:09:53	<p><b>HOST:</b>  <b>IN EUROPE AND NORTH AMERICA, RAILROADS ENCOURAGED URBANIZATION AND WERE A SOURCE OF NATIONAL UNITY AND ECONOMIC CENTRALIZATION.</b></p> <p><b>TO CHICAGO, U.S.A. – AS WITH THE WORDS OF AMERICAN POET, CARL SANDBURG.</b></p>
01:10:06	<p>VOICE OF SANDBURG:  <i>HOG Butcher for the World, Tool Maker, Stacker of wheat, Player with Railroads and the Nation’s Freight Handler; Stormy, husky, brawling, City of the Big Shoulders.</i><sup>2</sup></p>
01:10:25	<p><b>HOST:</b>  <b>BEYOND THOSE CENTERS OF POWER, THE RAILROAD SERVED PRIMARILY AS A WAY TO EXTRACT RAW MATERIALS – TIMBER, COAL, RUBBER, COTTON, SUGAR, AND WHEAT – THAT WOULD BE PROCESSED AND ULTIMATELY CONSUMED ELSEWHERE.</b></p> <p><b>GIVEN THEIR ENORMOUS GEO-POLITICAL SIGNIFICANCE, IT’S NOT SURPRISING THAT RAILROADS BECAME A SYMBOL OF WESTERN TECHNOLOGICAL DOMINANCE—AND IN SOME PLACES, WERE VIEWED AS “TOOLS OF EMPIRE.”</b></p>
01:10:55	<p><i>JERRY BENTLEY:</i>  Globalization is by no means something that began in the late 20<sup>th</sup> or the 21<sup>st</sup> Century and multi-national corporations also are by no means a new development. There were corporations that linked...different parts of the world together back in the 17<sup>th</sup> Century with the rise of European trading companies such as the East India Company and the Dutch VOC.</p>
01:11:29	<p><b>HOST:</b>  <b>THROUGHOUT THE INDUSTRIAL REVOLUTION, THE MIGRATION OF LABOR AND CAPITAL RESULTED IN A GREAT CROSS-POLLINATION OF PEOPLES, IDEAS AND TECHNOLOGIES.</b></p> <p><b>THE WEALTH OF KNOWLEDGE CREATED AN AMAZING SYNERGY, AS ADVANCES IN ONE INDUSTRY OR PARTICULAR SOCIAL SPHERE IN ONE PART OF THE WORLD WOULD LEAD TO ADVANCES IN ANOTHER INDUSTRY OR SOCIETY THOUSANDS OF MILES AWAY.</b></p> <p><b>ONE EXAMPLE OF THIS EFFECT IS THE SURPRISING STORY OF BEEF EXTRACT – WHICH WAS FIRST INVENTED BY A GERMAN BIOCHEMIST, MANUFACTURED IN URUGUAY, FINANCED BY BELGIAN INVESTORS, AND MARKETED BY A BRITISH CORPORATION.</b></p>
01:12:04	<p><b>HOST:</b>  <b>THE POPULATION BOOM THAT FLOODED EUROPEAN CITIES DURING THE MID-NINETEENTH CENTURY LED TO A NEW FOCUS ON PUBLIC HEALTH. WHILE THIS CONCERN OFTEN TRULY DID HAVE THE WELFARE OF THE MASSES IN MIND, IT WAS ALSO PRAGMATIC. THE BIG FACTORIES NEEDED HEALTHY WORKERS IN ORDER TO MAINTAIN PRODUCTIVITY.</b></p> <p><b>BUT RAPID URBANIZATION HAD BROUGHT WITH IT MALNUTRITION. THE DIET OF MUCH OF THE WORKING CLASS WAS PROTEIN-DEFICIENT, DUE IN PART TO THE HIGH COST OF EUROPEAN BEEF.</b></p> <p><b>IN 1847 THE GERMAN BARON JUSTUS VON LIEBIG, DEVELOPED A PURE</b></p>

	<b>BEEF EXTRACT PURPORTEDLY RICH IN PROTEIN – AS THIS EXCERPT FROM LIEBIG’S CORRESPONDENCE SUGGESTS.</b>
01:12:42	<i>VOICE OF VON LIEBIG: ...gelatine, when taken in the dissolved state, is again converted, in the body, into cellular tissue, membrane and cartilage; that it may serve for the reproduction of such parts of these tissues as have been wasted, and for their growth...</i>
01:13:05	<b>HOST: SOMETIMES CALLED THE FATHER OF BIOCHEMISTRY, LIEBIG WAS A SCIENTIST WITH A SOCIAL CONSCIENCE AND A CONCERN FOR THE POOR OF EUROPE. BUT HIS PROCESS OF REDUCING BEEF INTO A CONCENTRATE REQUIRED A GOOD DEAL OF RAW MATERIAL, AND THE HIGH COST OF EUROPEAN CATTLE PREVENTED ITS COMMERCIALIZATION.</b>
01:13:22	<b>HOST: DETERMINED IN HIS SOCIAL CAUSE, LIEBIG PUBLISHED HIS FINDINGS IN NEWSPAPERS, PROMISING THAT HE WOULD SHARE HIS IDEA WITH ANYONE WHO COULD MASS-PRODUCE THE EXTRACT AT AN AFFORDABLE PRICE. HIS OFFER WAS TAKEN UP BY GEORG CHRISTIAN GIEBERT, A GERMAN SCIENTIST AND ENGINEER WHO FIRST READ OF IT WHILE IN URUGUAY.  WHILE WORKING ON RAILROAD CONSTRUCTION PROJECTS IN SOUTH AMERICA, GIEBERT HAD SEEN THOUSANDS OF CATTLE CARCASSES ABANDONED IN THE URUGUAYAN INTERIOR, HAVING BEEN SLAUGHTERED ONLY FOR THEIR HIDES. GIEBERT HAD STUMBLED ACROSS THE SOLUTION TO LIEBIG’S PROBLEM—AFFORDABLE BEEF.</b>
01:13:56	<b>HOST: IN 1861, THE ENTERPRISING ENGINEER TRAVELED TO EUROPE TO LEARN LIEBIG’S EXTRACTION PROCESS. GIEBERT THEN RETURNED TO URUGUAY AND ESTABLISHED A SMALL FACTORY. BY THE END OF 1862, HE HAD PROVEN HE COULD PRODUCE THE EXTRACT FOR LESS THAN ONE-THIRD THE COST THAT LIEBIG COULD. WHAT CAME NEXT WAS A STRIKING EXAMPLE OF THE CROSS-POLLINATION PROCESS CHARACTERISTIC OF THE INDUSTRIAL REVOLUTION.</b>
1:14:22	PETER WINN: Richard Hughes, a modernizing British rancher in Uruguay, offered his cattle and slaughterhouse on the Rio Uruguay where oceangoing ships could dock. There, Giebert demonstrated that Liebig’s process was commercially viable.
01:14:39	PETER WINN: But to produce the extract in commercial quantities, Giebert needed to find the financial backing to build larger factory. He found it in Antwerp, Belgium, the main port for continental Europe’s trade with the Rio de la Plata, through a group of Belgium merchants already importing produce from the region.  With Belgian money, German machinery, and cheap Uruguayan cattle, Giebert’s new Uruguayan factory turned a small profit by 1865.
01:15:08	<b>HOST: BUT BY THEN, DEMAND WAS ALREADY EXCEEDING THE SUPPLY. THE BELGIAN CAPITAL MARKET WAS TOO SMALL, AND THE BRITISH NAVY HAD BECOME A MAJOR CUSTOMER. GIEBERT AND HIS PARTNERS TURNED TO LONDON TO RAISE MORE CAPITAL FOR EXPANSION. THERE, A NEW LAW</b>

	<p><b>ENABLED THE ESTABLISHMENT OF LIMITED LIABILITY COMPANIES, WHICH ENCOURAGED INVESTMENT, AND ENGLISH INVESTORS HAD MORE SURPLUS CAPITAL THAN ANY OTHERS.<sup>i</sup></b></p> <p><b>THE FACTORY THAT GIEBERT ULTIMATELY BUILT IN FRAY BENTOS ON THE RIO URUGUAY WAS CONSIDERED AN INDUSTRIAL MARVEL, IN WHICH NO PART OF THE STEER WAS WASTED.<sup>ii</sup></b></p>
01:15:40	<p><b>HOST OC:</b>  <b>GIEBERT'S COMPANY ALSO RECEIVED A BIG BOOST FROM THE MILITARY, AS WAS NOTED BY THE LONDON TIMES IN OCTOBER OF 1865:</b></p>
01:57:47	<p><i>VOICE OF OLDER MALE:</i>  <i>"In the supplies of a body of troops, the extract furnished the wounded soldier with a restorative which, with a little wine, immediately renews his strength wasted by loss of blood."</i></p>
01:16:04	<p><b>HOST:</b>  <b>DURING THE FRANCO-PRUSSIAN WAR OF 1870, BOTH SIDES RELIED ON LIEBIG'S EXTRACT TO NOURISH THEIR SOLDIERS— A REMINDER THAT NATIONALISM WAS OFTEN A MOTIVATING FORCE BEHIND INNOVATION.</b></p> <p><b>BY 1875, BOTH LIEBIG AND GIEBERT WERE DEAD, BUT "LIEBIG'S EXTRACT OF MEAT COMPANY, LTD." WAS PROCESSING 150,000 CATTLE AND SHIPPING 700 TONS OF BEEF EXTRACT FROM URUGUAY TO EUROPE EACH YEAR.</b></p>
01:16:30	<p><b>HOST:</b>  <b>THE INDUSTRIAL REVOLUTION WAS A GLOBAL PROCESS OF LABOR, CAPITAL, IDEAS AND TECHNOLOGY.</b></p> <p><b>BUT WHAT WERE THE SOCIAL CONSEQUENCES? WHAT OF THE PEOPLE IN THE FACTORIES? HOW DID IT CHANGE THE EVERYDAY LIVES OF THE RICH...THE POOR...OF FAMILIES...OF MEN...AND OF WOMEN.</b></p>
01:17:00	<p>JERRY BENTLEY:  Not everyone was able to eat Argentinean beef in fancy Parisian restaurants. Industrialization not only made it possible to transport beef between continents it also caused a great deal of social and demographic upheaval and not only in Europe.</p>
01:17:19	<p><b>HOST:</b>  <b>BY THE 1850S, THE URBAN CENTERS OF EUROPE HAD ALREADY EXPERIENCED THE SOCIAL AND DEMOGRAPHIC DISRUPTION OF THE INDUSTRIAL AGE. THOSE CITIES HAD NOT ONLY GROWN INTO COMMERCIAL DYNAMOS—BUT ALSO UNHEALTHY AND UNRULY PLACES.</b></p>
01:17:34	<p><b>HOST:</b>  <b>POVERTY AND POOR HOUSING WENT HAND IN HAND. OVERCROWDING PRODUCED UNSANITARY CONDITIONS THAT LED TO INCREASED OUTBREAKS OF DISEASE. AND DECLINING PUBLIC HEALTH LED TO LOWER PRODUCTIVITY IN THE FACTORIES.</b></p> <p><b>ONE STRIKING DEVELOPMENT WAS THE PROFOUND IMPACT ON WOMEN IN SOCIETY. SINCE MEN WERE ROUTINELY AWARDED SUPERIOR JOBS, THOSE WOMEN WHO LEFT THEIR HOMES TO JOIN THE WORKFORCE WERE FACED WITH THE MOST MENIAL AND MONOTONOUS JOBS OF THE INDUSTRIAL AGE.</b></p>

01:18:10	<p><i>JERRY BENTLEY:</i> While certain industrial jobs were considered more appropriate for me and others more appropriate for women so you would be much more likely to find men working in an iron foundry, for example. You might expect to find women working as weavers in a textile factory.</p>
01:18:31	<p><b>HOST:</b> <b>IN JAPAN, THE INDUSTRIALIZATION OF THE SILK INDUSTRY HAD DISRUPTIVE CONSEQUENCES, ESPECIALLY IN TERMS OF GENDER.</b></p> <p><b>UNTIL THE EARLY NINETEENTH CENTURY—AS WAS TRUE IN MOST OF THE WORLD—FARMING WAS THE OCCUPATION OF MOST JAPANESE MEN AND WOMEN.</b></p> <p><b>HOWEVER, WITH THE COMING OF INDUSTRIALIZATION AND ITS INCREASING DEMAND FOR “CASH CROPS” – ESPECIALLY SILK – IT BECAME MORE COMMON FOR JAPANESE FARMERS TO BECOME WAGE EARNERS. MOST JOBS AVAILABLE TO THEM HAD DISTINCT DIVISIONS OF LABOR ALONG GENDER LINES.</b></p>
01:19:01	<p><b>HOST:</b> <b>AS HISTORIANS KAYE BROADBENT AND TESSA MORRIS-SUZUKI HAVE NOTED, “MEN WERE GENERALLY RESPONSIBLE FOR GROWING RICE AND TENDING THE MULBERRY TREES WHICH PROVIDED FOOD FOR THE SILKWORMS, WHILE WOMEN LOOKED AFTER MOST ASPECTS OF THE SILK-RAISING PROCESS ITSELF.”</b></p> <p><b>WITH THE ADVENT OF WATER-POWERED MACHINES, SILK PRODUCTION MOVED FROM RURAL HOUSEHOLDS TO LARGER “WORKSHOPS” IN SMALL TOWNS. THE NEW WORK ENVIRONMENT BROUGHT WOMEN AND MEN TOGETHER AS LABORERS, AND FORCED A CLEAR DESIGNATION OF GENDER-SPECIFIC ROLES FOR EACH.</b></p> <p><b>THIS GENDER DIVISION BECAME ENTRENCHED IN THE WAKE OF THE MEIJI RESTORATION OF 1868.</b></p>
01:19:36	<p><b>KEN RUOFF:</b> The Meiji Restoration itself is no more than a 'coup d'etat'. This is one group of Samurai over throwing another group of Samurai. But what makes the Meiji Restoration so interesting is what comes afterwards in the years immediately following the Meiji Restoration the new young leaders modernize their country in a way that no one would have imagined in 1868.</p> <p>The goal was to create a modern nation-state with all the trappings of modern civilization as defined by mid nineteenth century Europe, and of course this included industrialization. And clearly one of the most important turning points for the Meiji leaders was the so called Iwakura Embassy when a good part of the leadership of the time spends nearly two years abroad from 1871 to 1873 visiting the advanced countries and they come home utterly committed to modernizing their country and with the belief that they, the government in other words, are going to have to play a significant role in spurring industry on.</p>
1:20:42	<p><b>HOST:</b> <b>THE STRATEGIES OF THE MEIJI RESTORATION PAID OFF. THE PRODUCTION AND EXPORT OF SILK, COTTON AND TEA INCREASED RAPIDLY DURING THE RESTORATION. SILK, FOR EXAMPLE, WITNESSED A TEN-FOLD INCREASE IN PRODUCTION BY THE END OF THE 19<sup>TH</sup> CENTURY.</b></p>
1:21:09	<p><b>HOST:</b> <b>NEW FACTORIES SPRANG UP IN THE SILK-GROWING REGIONS OF JAPAN. THEY DREW LARGE NUMBERS OF WORKERS—MOSTLY WOMEN—TO CITIES</b></p>



	<p><b>LIKE OSAKA, WHERE ONE OF THE FIRST MASSIVE SPINNING MILLS OPENED IN 1883. THE BURGEONING SILK AND COTTON INDUSTRIES DRASTICALLY CHANGED THE LIVES OF COUNTLESS YOUNG JAPANESE WOMEN FROM THE POORER AGRICULTURAL REGIONS.</b></p>
1:21:30	<p>KEN RUOFF: The conditions in the factories from today's perspective were quite dismal. Workers typically labored for 14 hours a day, these were often young women and of course the pay was not so great, and their lives even after working hours were very strictly regulated. They were typically forced to live in dormitories and of course, when you bring a large number of people together in the mid to late nineteenth century the sanitary conditions are not really so great, and you have all sorts of outbreaks of contagious diseases.</p>
1:22:09	<p><i>YOUNG JAPANESE WOMAN'S VOICE: "The recruiter promised us that once we got to the factory we would be taught how to perform the tea ceremony, flower arranging, sewing, and arts that a girl should know, but in fact, they did not teach us anything."<sup>iii</sup></i></p>
1:22:35	<p>KEN ROUFF: It is true that the recruitment involved mis-advertising suggesting the working conditions were better than they were. You find this pattern over and over whether its to attract people to go abroad, uh, you find they advertising painting a much more edifying picture of the working conditions or of the land abroad then in fact turns out to be the case.</p>
1:23:01	<p><b>HOST:</b> <b>TO FEED THE WORLDWIDE DEMAND FOR EXPENSIVE, BEAUTIFUL JAPANESE SILK, GIRLS AS YOUNG AS TEN AND ELEVEN FOUND THEMSELVES UNDER CONTRACT FOR AT LEAST A YEAR AT A TIME. THEY WORKED LONG HOURS FOR SOMETIMES AS MANY AS 20 DAYS IN A ROW WITHOUT A BREAK, AND WERE LOCKED INSIDE FACTORY DORMITORIES AT NIGHT.</b></p> <p><b>IN YET ANOTHER PARADOX OF THE AGE, THESE YOUNG WOMEN WERE OFTEN BETTER FED AND CLOTHED THAN THEY WOULD HAVE BEEN LIVING IN THE IMPOVERISHED COUNTRYSIDE. BUT WHAT LITTLE MONEY THEY MADE WAS OFTEN SENT TO SUPPORT THEIR FAMILIES AT HOME.</b></p>
1:23:36	<p><i>YOUNG JAPANESE WOMAN'S VOICE: "In the old days, we were sent out to reduce the number of people who had to be fed at home, so we didn't complain about the pay. We could eat rice, and that alone was better than staying at home."<sup>iv</sup></i></p>
1:24:00	<p><b>HOST:</b> <b>BY THE END OF THE NINETEENTH CENTURY, WOMEN HAD COME TO DOMINATE JAPAN'S FACTORY WORK FORCE – BUT THIS DOMINANCE DID NOT TRANSLATE INTO EQUITY IN PAY OR WORK. BECAUSE MEN GENERALLY HAD MORE SPECIALIZED POSITIONS LIKE MULE SPINNERS, WHO PERFORMED THE PHYSICALLY DEMANDING JOB OF SPINNING YARN OR MACHINISTS, THEY WERE PAID FAR MORE THAN WOMEN WELL INTO THE TWENTIETH CENTURY.</b></p> <p><b>WHILE FACTORY WORK WAS NOT THE PRIMARY ENGINE OF THE JAPANESE ECONOMY—AS IT WAS IN ENGLAND FOR EXAMPLE—INDUSTRIALIZATION DID RESULT IN PROFOUND SOCIAL AND DEMOGRAPHIC CHANGES IN JAPAN. TRANSFORMATIONS SIMILAR TO THOSE WHICH WERE OCCURRING EVERYWHERE AROUND THE WORLD.</b></p> <p><b>BUT WAS IT ACTUALLY TECHNOLOGY THAT WAS CAUSING THIS DRAMATIC CHANGE?</b></p>
1:24:23	<p>JERRY BENTLEY: It might sometimes seem from the standard accounts that industrialization began in Europe or even more narrowly in Britain, and only much later spread to North America,</p>

	<p>Russia, Japan, and other lands. And it's true enough that steam engines and factories and really heavy industrial production first appeared in Britain and Europe. But if you were to take a slightly different angle on things, it would become clear that right from the very beginning industrialization was a global affair. I mean, um, where did the cotton come from, for example, that fed the early textile [stammer] factories? Where did the rubber come from that was essential for the production of tires and hoses in the early days of industrialization? You couldn't grow cotton and you couldn't produce rubber in Europe. If you wanted cotton, you had to go and get it from lands like India or Egypt. If you wanted rubber, you had to get it from Central Africa or Southeast Asia. So, it was not only lands like Cuba and Uruguay, mentioned earlier in this program, that got drawn into the industrialization process. Actually, even in the very earliest days of the process, industrialization was not exclusively a European or British affair. Rather it's a business that extended its tentacles to almost all parts of the world.</p>
1:26:14	<p><b>HOST:</b>  <b>IN ITS BEGINNINGS, THE INDUSTRIAL AGE HELD OUT A POWERFUL PROMISE OF WEALTH, PROSPERITY, EQUALITY AND PROGRESS.</b></p> <p><b>INDEED, THE GLOBAL MIGRATION OF LABOR AND CAPITAL RESULTED IN A REMARKABLE CROSS-POLLINATION OF PEOPLE, IDEAS AND TECHNOLOGIES – AND THIS VAST MOVEMENT LED TO DRAMATIC TECHNOLOGICAL AND SOCIAL ADVANCES SOCIAL ADVANCES AND DEMOGRAPHIC TRANSFORMATIONS.</b></p> <p><b>YET EVEN AS THE INDUSTRIAL AGE CONNECTED THE WORLD IN A GLOBAL WEB OF COMMERCE AND CULTURE, IT MAGNIFIED CERTAIN INEQUALITIES THAT STILL PERSIST TODAY.</b></p> <p><b>TODAY, IN RUNNING A RAILROAD, RUNNING FOR POLITICAL OFFICE, OR SIMPLY BUYING A PAIR OF RUNNING <i>SHOES</i>, THERE'S NO ESCAPING THE GLOBAL IMPACT OF AN INDUSTRIAL TRANSFORMATION BEGUN MORE THAN TWO CENTURIES AGO.</b></p>
1:26:57	<b>WEB TAG</b>
1:26:58	<b>PROGRAM CREDITS</b>
1:27:33	<b>SPECIAL THANKS</b>
1:27:48	<b>OPB LOGO</b>
1:27:55	<b>ANNENBERG LOGO</b>
1:28:10	<b>1-800 ORDER TAG</b>
1:28:25	<b>END</b>