

Revive the Industrialization of Argentina's Patagonia!

by Gonzalo Huertas and Cynthia Rush

EIR has repeatedly documented the dangerous state of disintegration in which Argentina finds itself today, as a result of the International Monetary Fund's (IMF) free market policies, applied so brutally over the past decade, and continuing under the Fernando de la Rúa administration which took office in December 1999.

In the early 1960s, Argentina's economic development was, in many respects, comparable to that of Japan, as *EIR* documented in its 1983 book *Industrial Argentina: Axis of Ibero-American Integration*. With its vanguard nuclear energy program and a developing capital goods and machine-tool capability, it had the potential for rapidly becoming an economic and industrial powerhouse. Had Argentina become industrialized, this would have had a profound and positive impact on Ibero-America's international strategic position. Yet today, it is an economic junkheap, begging for handouts and sacrificing its population on the altar of "globalization." The government is shutting down its Infrastructure Ministry next year, and preparing to impose yet another round of austerity in exchange for the IMF bailout package offered over the weekend of Nov. 11-12, to prevent it from defaulting on its foreign debt (see article in this section).

Under these conditions, it's not unthinkable that Argentina's federal union could shatter, with individual provinces breaking away to become part of neighboring countries, or trying to fend for themselves as mini-states, as many have effectively already been forced to do. The largely unpopulated Patagonia region, constituting almost half of the country, is particularly vulnerable, as it is bereft of the investment, population, and infrastructure needed for its economic development.

Following its 1993 privatization, Yacimientos Petrolíferos Fiscales (YPF), the state oil firm founded in 1922 by

nationalist Col. Enrique Mosconi, shut down operations in key locations in the Patagonia, leaving unemployment and misery, and in some cases, ghost towns in its wake. A victim of the vicious demilitarization policy imposed from Project Democracy headquarters in Washington, the Armed Forces have been forced to withdraw from the strategically important Argentine-Chilean border region. These are the conditions which encourage Osvaldo Bayer, an Argentine mouthpiece for Fidel Castro's São Paulo Forum, to call for separating the Patagonia off and creating an "independent," resource-rich "republic."

Against the backdrop of today's misery, the project proposed in the early 20th Century by Argentine Public Works Minister Ezequiel Ramos-Mexía, to industrialize northern Patagonia, stands out as a wonderful example of optimism, which bears careful examination. In 1910, Ramos-Mexía hired the American geologist Bailey Willis, of the U.S. Geological Survey, to survey the northern Patagonia, in preparation for implementing a plan of economic and industrial development that would transform this arid region into a thriving hub of industrial and manufacturing activity. Willis brought to Ramos-Mexía's vision an understanding of how infrastructure development, including railroad construction, had transformed the Great Plains region of the United States.

Nationalists have always understood that the Patagonia represented enormous potential for Argentina—but also that it was coveted by foreigners, especially the British, for their own geopolitical and financial designs, not the least of which concerned its rich mineral and natural resources. Patriots urged the building of infrastructure, railroads, cities, and related services as the means to protect Argentina's territorial integrity and serve its sovereign interests.

The centerpiece of Ramos-Mexía's plan was the building

of the great industrial city of Nahuel Huapí, on the shores of the lake of the same name, located in the then-territory of Río Negro, bordering the territory of Neuquén (**Figure 1**). This was to be a great center of industrial and manufacturing activity, as well as of cultural and educational excellence, which would be the seat of government for the entire region. A collaborator in the 1870s of Carlos Pellegrini and Vicente Fidel López, advocates of American System policies who sought to free Argentina from the stranglehold of British free trade, Ramos-Mexía had for many years served his country in a variety of posts, including as Agriculture and Public Works Ministers, from which he sought to build the sanitation, irrigation, and water management infrastructure Argentina so sorely needed.

For the discovery of Ramos-Mexía's and Willis's collaboration, the authors are indebted to the late President Dr. Arturo Frondizi, who was an outspoken advocate throughout his political career on behalf of Argentina's industrial development. In 1964, two years after he was overthrown in a military coup, Frondizi published his own work on Bailey Willis and Ramos-Mexía under the title *A Brief History of a Yankee who Proposed Industrializing the Patagonia (1911-1914)*, with a subhead, "Bailey Willis and the Second Conquest of the Desert."

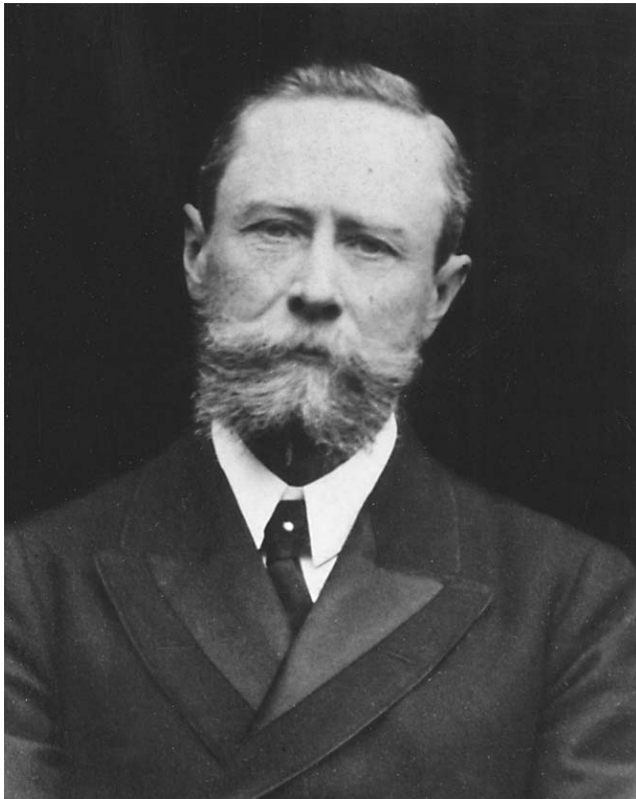
In the prologue to the book's second edition in 1984, Frondizi wrote: "The experience of Ezequiel Ramos-Mejía and Bailey Willis, is an important lesson for Argentines. . . . The inspiration of the Argentine Minister, and the activity of the American scientist, also have another significance. That the conditions in the Patagonia were the central motive and concern guiding them, provides another reason for the current edition. To define ourselves by the accelerated transformation of our South, assumes that we are opting for Argentina's condition as a nation, at a time when it is seriously questioned, due to our unprecedented crisis and powerful foreign factors, . . . I am persuaded that the example of these longstanding projects for the industrialization of Patagonia, will be useful to prove that there is no reasonable and just path for Argentina, other than peace, integration, and development."

FIGURE 1
A Plan To Industrialize Northern Patagonia



To 'Conquer the Desert'

By 1910, as Willis noted in his writings, Argentina was in deep economic crisis, and as Public Works Minister in the government of José Figueroa Alcorta, Ramos-Mexía was "facing grave difficulties in carrying out his patriotic proposals intended to promote the development of the territory still belonging to the national government." As he attempted to implement this project, he came up against British financial interests, some entrenched in government offices, for whom railroad and infrastructure building, as part of an Argentine industrialization plan, were unacceptable. Sounding much



American geologist Bailey Willis (1857-1949) shared the view of Argentine Public Works Minister Ezequiel Ramos-Mexía, that building the industrial city of Nahuel Huapi would be a crucial step toward industrializing northern Patagonia, and encouraging the country's economic independence.

like the IMF and World Bank today, Ramos-Mexía's opposition in Congress argued that the Patagonia didn't need "pharaonic projects," but rather "good judges and a lot of police." Willis was acutely aware of what Ramos-Mexía was up against, as he indicates in his reports.

In Willis's detailed report on the work that he and a team of Argentine and American experts performed between 1911 and 1914, *Northern Patagonia, Character and Resources*, he explained that the occasion for the surveys which his Commission conducted, "arose as a result of the national policy of railroad construction initiated by the Minister of Public Works, Don Ezequiel Ramos-Mexía. . . . In devising this policy, he looked to the United States of North America as an example, realizing in some measure how closely parallel is the present condition of the undeveloped portions of Patagonia, with that of the western territories of the United States forty years ago. . . . With the courage and foresight of a great statesman, Dr. Ramos-Mexía saw a vision of his country's prosperity and set himself to effect its realization."

Willis was an experienced geologist who had done surveying for the Northern Pacific Railroad in the United States, and understood that if Ramos-Mexía's plan were to be implemented, it would have to ensure state control of railroads and

water resources, and resort to the type of protection the United States had used in the early days of its development. In a detailed proposal written to Ramos-Mexía on how protectionist methods could be used to industrialize the region, Willis emphasized that "the nation needs the economic element of domestic manufacturing. The government could promote, wisely, the development of that element, as the United States did through protectionist customs tariffs, until such measure were no longer necessary. . . . The protection to be offered would depend on Congress, and the government would be in a position to encourage industrialization, by adjusting transportation rates and customs tariffs."

Ramos-Mexía's proposal wasn't just an isolated project of an idealistic public servant. Agriculture Minister from 1906 to 1910, and then Public Works Minister until 1913, he belonged to the nationalist grouping led by Carlos Pellegrini and his teacher and mentor, Vicente Fidel López, which saw in the industrialization of the United States, and in the writings of Henry Carey, Abraham Lincoln's chief economic adviser, and of the German-American economist Friedrich List, a protectionist model Argentina could emulate—particularly given its great natural riches.

During his stints as Agriculture Minister and Public Works Minister in the administrations of José Figueroa Alcorta (March 1906 to October 1910), and Roque Saenz Peña (October 1910 to August 1914), Ramos-Mexía tried to advance critically needed infrastructure projects, for irrigation and sanitation. Earlier, in the late 1870s, he had worked with Pellegrini's group at *La Opinión*, a newspaper which supported the ideas of the American System of political economy.

In 1876, it was the Vicente Fidel López-Pellegrini group which led the fight in the national Congress on behalf of a protective tariff, which would, as Pellegrini said, free Argentina from a future as "the farm of the big manufacturing nations," destined to supply food and other raw materials to England and other industrialized nations. In a 1987 paper delivered at the Jockey Club in Buenos Aires, entitled "Carlos Pellegrini, Industrialist," Arturo Frondizi detailed the evolution of the Pellegrini-Vicente López faction and their bold organizing on behalf of protection for national industry.

When Vice President Pellegrini suddenly became President in 1890, after President Juárez Celman resigned, Vicente Fidel López, as his Finance Minister, was the driving force behind the founding of the state-owned national bank, the Banco de la Nación Argentina. In 1891, just prior to the bank's founding, he had asked a German-Argentine citizen, N. Napp, to prepare for him a study on banking legislation in Germany. López, a student of Friedrich Schiller and Alexander and Wilhelm von Humboldt (he had studied philology extensively), noted that "the United States speaks highly in favor of our [protectionist] ideas, and Mr. [Henry] Carey has taken on the responsibility of telling the world of science about the precious results which the wise introduction of this principle—protection for national industries—has had there [in the United States]."



Dr. Arturo Frondizi (right) being honored by the Argentine Industrial Union on Sept. 2, 1994, for the pro-industrial policies that he promoted during his Presidency (1958-62). Frondizi cited the collaboration between American geologist Bailey Willis and Public Works Minister Ezequiel Ramos-Mexía, on the project to build the industrial city of Nahuel Huapí, as an example of the approach needed to industrialize Patagonia.

In the textbook he wrote for a course he taught in 1875, *A Manual for a Course in Political Economy, or a Succinct Explanation of Program (Prontuario del curso de Economía Política o Explicación sucinta del programa)*, López remarked, “A famous American economist, Mr. Carey, has noted that all great inventions serve the principle of equality; gunpowder ruined the superiority of horses over soldiers; the printing press did away with the monopoly over knowledge; the [invention of] the steamship, has left the carriages and stables for the children; and credit has destroyed the terrible usury of capital, offering a point of support for the poor man to create capital, and placing capital at the service of intellectual labor and aptitude.” While pointing to the “greatness of credit as a social institution,” López said, “these considerations . . . also show its dangers—it’s like gunpowder, the printing press, and the steamship: sometimes the origin of ruin, but at the same time incontestable bases of civilization and modern commerce.”

This was the intellectual and political tradition to which Ramos-Mexía was heir.

The Great Industrial City

Aside from building the city of Nahuel Huapí, Ramos-Mexía’s plan for northern Patagonia also included a great transcontinental railroad, extending the one already begun from the Atlantic port of San Antonio Oeste, to Nahuel Huapí, and then across the Andes to Chile’s Pacific port of Valdivia. In Ramos-Mexía’s plan, other railroads were to be built off the main trunk extending north and south to existing towns, while also encouraging the establishment of new cities and towns in the region. Branches of the railroad were to include one from Lake Nahuel Huapí south to Colonia 16 de Octubre,

and north to San Martín de los Andes (450 km). A separate branch to the north of Lake Nahuel Huapí to Lake Villarino, would be part of the transcontinental line from San Antonio Oeste to Valdivia on the Pacific (**Figure 2**).

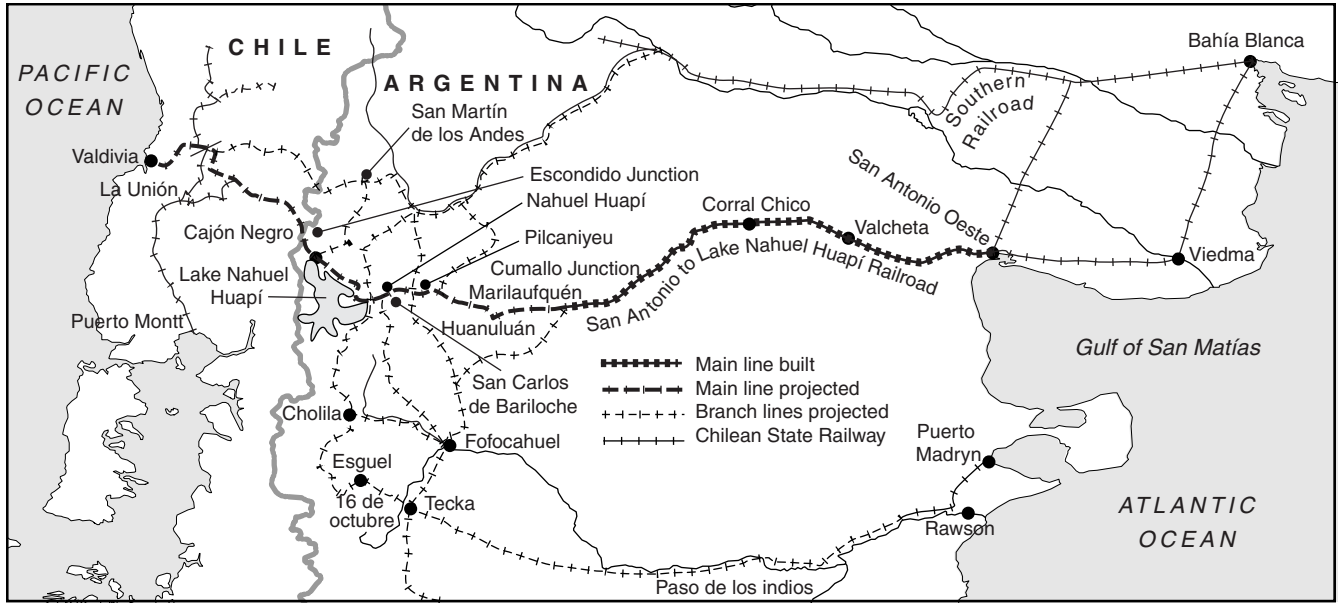
From the time he hired Willis in 1910, when the latter was attending the International American Scientific Congress in Buenos Aires (a date coinciding with the 100th anniversary of Argentina’s declaration of Independence), Ramos-Mexía gave the American scientist carte blanche to perform studies of the broadest possible scope, and in Willis’s words, “constantly encouraged the extension of the surveys to the broadest possible field of usefulness.”

In the more personal account of his four-year experience in Argentina, entitled *A Yanqui in Patagonia*, Willis wrote that in his plan, “the great patriot, Ramos-Mexía, . . . saw a thriving city of many thousand industrious citizens, engaged in manufacturing, commerce, education, and sports, winning prosperity for themselves and riches for the Republic; and also receiving from their environment the vigor and the inspiration for high thinking and national enterprise.” Ramos-Mexía “held up his ideal to me and charged me to seek a site for the city that was to be built. I embraced the opportunity with enthusiasm and the vision was ever with me as I rode the Cordillera.”

Given the lack of adequate water resources in the northern Patagonia, Willis remarked that a similar situation in the United States had “been successfully relieved by geologic investigations which led to the discovery of artesian waters. Dr. Ramos-Mexía, having heard of those investigations,” hired Willis and other geologists “from the United States for work of the same kind in Patagonia, in the hope that a similar result might follow their labors.” Other members of the U.S.

FIGURE 2

Plan of the San Antonio Transcontinental Railroad and Projected Branches



Source: Comisión de Estudios Hidrológicos.

Geological Survey on the Commission included geologist Chester W. Washburn; topographer and geologist J.R. Pemberton, a graduate of Stanford University; Wellington D. Jones, a geographer from the University of Chicago; topographer C.L. Nelson, and topographer and engineer Washington B. Lewis.

Argentine engineer Emilio Frey, who had earlier worked under Dr. Francisco P. Moreno in determining Argentina's boundary with Chile, was the Commission's assistant director. Dr. Moreno was an ardent supporter of Ramos-Mexía's development plan. Two highly trained Swiss-born Argentines, Otto Luginbuhl and Walter Graenacher, formed part of the technical group which carried out basic instrumental measurements. Both jobs required tremendous technical abilities and precision. The highly competent Torrontegui brothers, Juan and Alejandro, were managers of the staff.

The Spanish-language version of *Northern Patagonia* notes that Ramos-Mexía and Willis "agreed that in the rich Patagonian territory, it would be worthwhile to make any investment necessary, to carry out studies, build transportation and communication lines, transform hydro power into energy, attract population and promote the establishment of industries for use of the region's raw materials, in the area in which they are produced. They foresaw an era not too far distant, in which the Republic of Argentina could become independent of the foreign manufactures of wool and leather goods, such that its citizens would cease to pay ocean freight charges and taxes on shoes and clothing, as these could be

produced in the country. Both saw the future of an industrial province, which would enrich and liberate the country."

There were many sites throughout the region where cities could be built, Willis explained, "but not the great industrial city, not the seat of learning and culture, not the political center of the province. It must be on a transcontinental route, at the crossroads with north-to-south lines of communication." In November 1912, Ramos-Mexía gave Willis instructions to examine the coast of Lake Nahuel Huapí and vicinity, to determine the site for the city that would be the terminal point of the San Antonio Railroad. He gave no written instructions, but indicated, as Willis explained, "that the site to be selected should be adequate for the development of a city of notable importance, adequate to concentrate within itself the principal manufacturing industries, which should develop by the application of hydroelectric power to the utilization of the raw materials which the country affords."

To meet these qualifications, Willis discovered a simple but brilliant solution. San Carlos de Bariloche, on the southern shore of Lake Nahuel Huapí, was rejected as a site, due to a variety of factors, not the least of which was its exposure to heavy winds. But, in surveying the valley of the Limay River, Willis confirmed that if a 150-foot dam were built at the Segunda Angostura, a canyon located 15 kilometers below Nahuel Huapí, this would form an artificial lake, Lake Limay, which would be confluent with Lake Nahuel Huapí at the level of 770 meters above sea level, and would leave between the two lakes a plain, with an area of approximately 1,100

hectares (4.4 square miles), which would meet all of the qualifications required by Ramos-Mexía. *Northern Patagonia* spells out the advantages of the site:

“The transcontinental railroad can readily be built through the upper part of the plain, and would there have a junction with the line to Neuquén. The canal formed by Lake Limay between Lake Nahuel Huapí and Lake Limay, would afford access for all kinds of boats to wharves located at the head of Lake Limay in perfectly quiet waters. The plain has a gentle slope toward the proposed Lake Limay and fulfills the conditions required for streets, sewers, and foundations. An abundant water supply may be provided and maintained at moderate cost by damming the Nirihuau River at an appropriate point, so as to create the Nirihuau Reservoir at about the level of the city, and establish by the overflow of the stream, a power sufficient to pump the supply to a high-service reservoir.”

A terminal moraine (the mass of rocks, gravel, and sand carried or deposited by a glacier at its lower end), whose height was 60 to 70 meters above the lake’s level, and which lies between the site and the lake, would protect the site from strong winds. Moreover, as Willis explained, the creation of Lake Limay would produce a fall in the river “which, taking the average flow of the last ten years, will give theoretically 80,000 horsepower, yielding in the city, 12 kilometers from the power house, probably 50,000 horsepower, constantly available.”

Willis added: “Lake Limay would wash the base of the outwash plain on which the industrial city would rise; railroad tracks and the manufacturing establishments would spread along the shore, the provincial capital would occupy a central position, and the University of Patagonia would overlook the scene from the slopes of the terminal moraine.”

In 1914, Washington Lewis, one of Willis’s colleagues from the Geological Survey, surveyed the site of the industrial city of Lago Nahuel Huapí in detail. “We planned and laid out the avenues, marking them with permanent monuments; different sections were designed to serve diverse functions, including even a military quarter and also *un Campo de Sport*. The sewage system and water supply were laid out on paper. I studied to leave nothing undone. The plan was eventually approved by the government; but the city has yet to be built.”

The Project Aborted

For four years, Willis’s team worked tirelessly under the aegis of the Commission of Hydrological Studies of the Public Works Ministry, to carry out the exhaustive study of the topography, climate, soil, geology, water, timber, and other natural resources of northern Patagonia, in preparation for launching the projects envisioned by Ramos-Mexía. But, in the end, the plan never came into being. At one point, the opposition from free-market advocates in the Congress was so strong, that it cut off funds not only for these particular projects, but for Ramos-Mexía’s entire Ministry! After Ramos-Mexía left his post, his successors even threatened

Willis with jail, on charges of misuse of funds.

As Dr. Frondizi related in his book on Willis, one day Ramos-Mexía called Willis into his office to tell him that the Commission “was no longer a simple instrument of his ministerial policy, but had been recognized as a vehicle for national development.” It had become a hot potato—so hot in fact, that in 1913, Ramos-Mexía was forced to resign. While his immediate successor, Meyer-Pellegrini, favored continuation of the project, his stay in the Ministry was short-lived. The next Minister of Agriculture was Manuel Moyano, described by Willis as “a bureaucrat and one-time director of the English Railway Company, the Southern Railway (Ferrocarril Sud). That organization regarded Patagonia as a future field of expansion of its lines and had been strongly opposed to the development of the National Railways.” It was Moyano who threatened to jail Willis.

Commenting on the political fight around his work, Willis described Ramos-Mexía as “representing the intelligent governing class” up against the “politicians elected by the unintelligent masses” and the “invisible empire of capital which extends its control over both.” Ramos-Mexía “is a man of courage, elevated sentiments and dignity; an aristocrat of character, a visionary and patriotic statesman.”

The Fight for National Development

As was the case elsewhere in Ibero-America, railroad building in Argentina was a battleground between those British-backed financial interests who wanted to use the railroads to facilitate their looting of the country’s raw materials, and national governments and entrepreneurs who saw the railroads as a way to guarantee the colonization and economic development of the country’s interior, as had occurred in the United States.

Argentine historian Raúl Scalabrini Ortíz describes this battle, in his book *History of the Argentine Railroads (Historia de los ferrocarriles argentinos)*, detailing how predatory British financiers, and their Argentine free-trade collaborators, systematically sabotaged efforts by the federal and provincial governments to use the railroads for development. He cites as one example the Oeste railroad, owned by the Buenos Aires provincial government, which provided excellent service, maintained low rates, yet made profits healthy enough to invest in expansion and infrastructure. A law passed in November 1868 ordered the Oeste to complete a line to the foothills of the Andes, and by 1872, studies had been completed for a transcontinental railroad to Chile.

As Scalabrini Ortíz describes it, a law passed in August 1872 also mandated that the Oeste set up special schools and workshops of “mechanical arts,” to train personnel in subjects such as “mathematics, elements of physics, descriptive geometry, practical mechanics, linear drawing, and the trade of carpentry, blacksmith . . . painter, upholsterer, and harness maker.” Similar schools would be set up in 1884, by the Andino and North Central state railroads. Argentina’s railroad development was so impressive, that the same N. Napp from

whom Vicente Fidel López had requested a report on German banking, prepared a report on it for the U.S. Bicentennial Exposition in Philadelphia in 1876, singling out the Oeste as an example of a successful state-run railroad, whose operations encouraged economic growth and development.

But, by the 1880s and 1890s, aided by local monetarists who insisted that state ownership of the railroads was “bad” for the country, British financial interests had bought up many of the Argentine state railroads, with generous contracts guaranteeing them lucrative profits. The usurious rates charged by the British-owned railroads made their use by manufacturing, agricultural, and other entrepreneurial interests in the country’s interior provinces prohibitive, causing their demise in many regions, and on more than one occasion provoking popular outrage and demonstrations demanding that the state expropriate these lines. Ferment against the British was particularly strong under Pellegrini’s 1890-92 regime.

In 1909, as Scalabrini Ortíz reports, national deputy Celestino Pera described the effect of the British-owned railroads’ usurious rates on Argentina’s interior: “In what is called the granary of the Republic, in the heart of the wheat-growing region, industrial establishments, which yesterday were the strongest, most prosperous and important, are closing their doors. . . . The power plants, factories, and warehouses of one of the country’s central industries are closing. Who is to blame? The interested parties say it clearly. There is no work, nor can there be, without going bankrupt or into disaster, because of the excessive freight charges of the railroad companies, which won’t let us work without ruining us.”

Willis gave the example of his dealings with the president of the British-owned Southern Railway, which served the region in which Ramos-Mexía wanted to build state railroads. In a meeting with the man, whom Willis described as “a blunt English businessman,” Willis reported on Ramos-Mexía’s plans for the region, including the building of a transcontinental railroad. The British bureaucrat replied, “No doubt your work is of much value. But you will understand that it is not to the interest of the Ferrocarril Sud that the National Railways be extended.” Willis reported, “I understood. I felt the weight of the British Lion’s paw.”

Willis: ‘A Yanqui in Patagonia’

Bailey Willis was uniquely qualified for the job of surveying Northern Patagonia. In 1880, upon graduating from the Columbia School of Mines, he was hired by prominent mining geologist Raphael Pumpelly, and worked for four years in appraising iron and coal resources for the federal Tenth Census, and in a private survey for the projected Northern Pacific Railroad. Pumpelly was not only a distinguished mining engineer, but also a great explorer, who, among other things, had spent a year in Japan teaching Western methods of mining, and who was the first to show the Japanese how to fire a blast, as Willis reports in his autobiographical work *A Yanqui in Patagonia*.

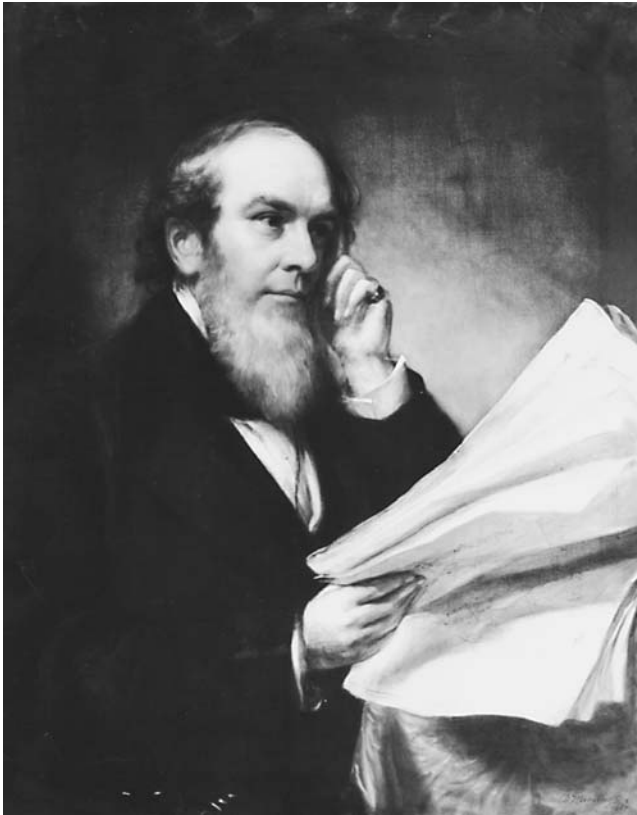
In 1884, Willis joined the U.S. Geological Survey, for which he worked over the next 30 years, holding such posts as geologic map editor, and geologic assistant to the director. The latter position, which he held from 1897 to 1892, was a roving assignment to observe the geology of many parts of the United States. He also collaborated with G.W. Stose on a geological map of North America, published in 1912. In 1903, well before traveling to Argentina, he led a geological expedition to northern China, the data from which were published in his 1907 two-volume study *Research in China*.

Willis’s upbringing and Classical education were crucial in shaping his outlook. Born in 1857, as a child he lived at his parents’ estate on the Hudson River near Cornwall, New York. His mother, Cornelia Grinnell Willis, was the niece and adopted daughter of Joseph Grinnell, a New Bedford, Massachusetts merchant, Congressman, and textile manufacturer. As he reports in *A Yanqui in Patagonia*, as a child growing up during the Civil War, Willis became aware of the presence of several Negro servants at his parents’ house, only a few of whom “were permanent.” His house was a stop on the underground railway. “The others were fugitive slaves, secretly received and put to work in our secluded country place till they could safely be dispatched on their way to Canada. My mother was anti-slavery and true to her principles.”

Willis was ten when his father died. It was his mother who, using the example of her uncle Henry Grinnell, a benefactor of polar exploration, instilled in Bailey a love of travel and adventure. Immersing him in the study of Classical literature, music, and art, she also insisted that his studies focus on mathematics and science. In 1870, she enrolled him in a German boarding school, first near Frankfurt and then at Ludwigsburg, near Stuttgart, where he remained until 1874.

Willis came to Argentina in the early 20th Century. But he had been preceded by hundreds of Americans who had travelled to the Río de la Plata region, as well as other parts of Ibero-America earlier in the 19th Century, to participate in nation-building projects in the areas of science, education, housing, transportation, and other infrastructure projects. Many, although not all, of these individuals were connected to nationalist circles in the United States, and were confident that their collaboration would succeed in advancing Argentina’s industrial development.

As Willis reported in *Northern Patagonia*, key aspects of his work there relied on the contributions made in Argentina by the brilliant American scientist Benjamin Althorp Gould, for example, a close associate of Alexander Dallas Bache, Benjamin Franklin’s descendant who, in the 1840s, organized and led a group of scientists and political leaders in Philadelphia to fight for national industrial and scientific development. Following studies at Harvard University, Gould studied at Germany’s Göttingen University with the great German scientist Carl Gauss. He could have taken a job there, but instead returned to Albany, New York in the 1850s, where, together with Benjamin Peirce, another of Dallas Bache’s



Alexander Dallas Bache. *The scientific contributions of his associate Benjamin Althorp Gould in Argentina, in the 1870s-'80s, contributed greatly to the later work of American geologist Bailey Willis in 1911.*

collaborators, he founded the Dudley Observatory, as a major center of “pure research” in astrophysics.

In 1870, Gould was invited to Argentina by then-President Domingo Faustino Sarmiento, where he founded and directed an astronomical observatory in Córdoba, the city to which the railroad from Rosario, capital of Santa Fe province, had just been completed by the veteran American railroad entrepreneur William Wheelwright, in 1869. With a team of Argentine and American scientists from many different fields, Gould worked and lived in Argentina until 1884, during which time he also urged the Argentine government to set up its Meteorological Service, which he managed. Between 1872 and 1884, the Service set up 52 observation stations. Gould oversaw the publication of four volumes on Argentine meteorology, the construction of accurate isothermal maps, and established the Service on a permanent basis. In 1885, Walter G. Davis, one of Gould’s associates at the Córdoba observatory, took over the Meteorological Service and ran it for the next 30 years, during which time more than 2,000 observation stations were set up. In addition, Davis set up a weather bureau, a hydrometric section, and a magnetic section, and published a number of scientific works.

Because of the work by Gould and Davis and their Argentine and American collaborators, the rivers and the climate of this region were better known than those of any other part

of South America. Their investigations and records were of crucial importance in navigation, flood control, electrification, and irrigation. As Willis reported in *Northern Patagonia*, “The climate of Patagonia is better known than any other natural condition which affects its occupation by man. This is due to the enterprise of Walter G. Davis, for twenty years the chief of the Argentine Meteorological Bureau, who has developed every opportunity to establish meteorological stations even in these outlying Territories and to obtain records of climatic conditions and their variations.” Willis’s discussion of the rainfall, temperature, snowfall, and seasonal climatic changes in the Patagonia was largely based on Davis’s 1910 work “Climate of the Argentine Republic,” published by the Argentine Department of Agriculture.

‘The Colony in the Cordillera’

On Feb. 6, 1913, Willis wrote a memorandum to Ramos-Mexía in which he detailed his ideas on how the “colony” of Nahuel Huapí, as well as the broader region of the Andean Cordillera, could be financed and organized to ensure that it would be the “location of a rich manufacturing state, given that the raw materials and the driving power are concentrated there. . . .” The city should be conceived as “a future state, populated by progressive people whose intelligence, economy, and initiative will develop the resources of this marvelous region. They will be prosperous; they shall distribute their finished products among the agricultural populations, and contribute to the nation that element of industriousness necessary to free it from foreign nations.”

Willis discussed a general plan on how the region could be developed, involving three agents: the Argentine government, a financing syndicate, and the settler. He underscored that the colonization of the region would be contingent on finishing the state-run railroad from San Antonio to Nahuel Huapí, and on the government’s adopting a definite policy on land use. The government would issue a series of regulations governing the colonization of the land, and provide incentives for farming, although this was seen as an interim activity, until manufacturing could get off the ground. In discussing how the northern Patagonia could be successfully colonized, Willis pointed to what had happened in the western United States:

“How then, was it possible to populate the remote regions of the Far West of the United States? Independent and intelligent people went there by the thousands, without help, and with no incentive other than the offer of free land (homesteads). They founded prosperous communities where, 25 years before, only the railroads were found, and where the only border regions frequented by the ‘cowboys’ were little towns like Bariloche. I myself knew that Far West at that time, and then I subsequently saw increasingly prosperous agricultural, industrial, and commercial activities on the virgin land I once explored.

“Why couldn’t we obtain the same results here, in a region of tremendous resources and natural attractions. . . ? Every-

thing depends on the confidence the government can instill. The settlers of the Far West had the security that the Homestead Act would be fairly administered. Those to whom the syndicate might offer land, will only be attracted by the opportunity, if they can have the same faith in Argentina's administration."

The syndicate, comprised of "financiers with the ability of statesmen," would provide the working capital, and would act as an agent of the government in the colonization and development of the region, Willis proposed. The government would employ the syndicate to provide certain services. In addition to Argentines, settlers would come from France, Switzerland, Germany, England, and the United States.

Public works to be built would include transportation (highways, railroads, ship or steamship lines, trolleys) as well as dams, canals, and electricity-generating plants. A national highway would be built from San Martín de los Andes to Colonia 16 de Octubre (400 km) (Figure 2). Train routes from the main railroad line to population centers farther away would be an important aspect of the transportation system. All of the transportation would be built and operated by a single company, either the syndicate, under terms defined by the government, or the government itself. However, Willis insisted, the transcontinental line should remain in government hands, "because it is the most important element in the control of the Cordillera's development, and of the syndicate. It is Argentina's essential way of gaining access to markets, and abroad, without which the region would be forced to remain in its current, semi-backward, condition. Intelligence policy will dictate low rates for this primary [railroad] line. . . ."

Willis also stipulated that electricity-generation, using the region's excellent water resources, must remain in government hands. "All hydroelectric energy must remain as government property, in perpetuity, because it represents the life of this community, and its control represents the defense of same." The government, Willis said, should build all the public works related to development of hydroelectric power, to be eventually purchased by the new Patagonian state. He cited the example of the U.S. Reclamation Service, which invested millions in irrigation projects, which were then later bought by the communities that sprang up around them. Even if the syndicate were granted the concession to build these works, the community should never be denied ownership, Willis said. The syndicate should control them for a period of years, until the community was on its feet.

"The damming of Lake Limay at the Second Angostura and creation of energy for the industrial city of Nahuel Huapí, according to the plan already submitted by this Commission, is one of the first projects to be undertaken. Other projects will be described in a future report on the studies being carried out."

Willis's plan identified the port of Bahía Blanca in the province of Buenos Aires, the port of Buenos Aires, and the port of Rosario in the province of Santa Fe (Figure 1) as

wholesale distribution centers for manufactured goods, all accessible via the state railroad to San Antonio Oeste and then via the Southern Railway or by sea. Rates charged by the Southern Railway were to be determined by maritime rates, and on the state railroad by "a policy of stimulus to domestic industry." Thus, products reaching the markets would be able to compete with similar products imported from abroad, on which tariffs were to have been paid.

As a way of encouraging manufactures, Willis proposed that the government subsidize the manufacture of certain products for some period of time, arguing, "The nation needs the economic element of domestic manufactures." He adds: "The objective of this policy, were it to be adopted, would be the establishment of manufacturing operations with a reasonable government guarantee. It would replace the common method of a guarantee of a certain interest rate on the capital invested, which is the equivalent of an advance payment for a service to be rendered, which leaves the government helpless, should the company abuse such an opportunity. It would especially prevent monopolies." Willis insisted that "no monopoly or exclusive concession should exist to carry out manufacturing operations in this community of men of initiative and forgers of the state."

Responding to Willis, Ramos-Mexía wrote: "I have read with the greatest interest your vast projects to colonize the Patagonia, and it is most satisfactory for me to tell you that I find them perfectly well founded on indisputable facts, and on probabilities which are reasonable from every standpoint. You should not consider my opinion at all doubtful. . . . Before, I would have rejected your projects outright, as I had rejected others that asked for thousands of miles in order to build railroads; but I shall not vacillate in accepting now, a combination of the kind you propose, which is grand for the country. . . . In its general outlines, your plan is healthy and serious."

In 1941, Willis donated to the Argentine government, his report on the proposed industrialization plan, which was published by the Department of National Parks and Tourism of the Ministry of Agriculture as the "History of the Commission." But instead of being used to industrialize the Patagonia, Willis's studies became the basis for the development of the Nahuel Huapí National Park, and today, parts of this region have become a playground for international speculators like George Soros, former U.S. Federal Reserve Chairman Paul Volcker, as well as many Hollywood stars or members of the international jet set who have bought up large tracts of land.

In his *A Yanqui in Patagonia*, speaking to his old friend, the geographer Francisco Moreno, Willis concluded: "Beyond the pleasure grounds that attract the soft and self-indulgent, there are still wilds to be explored, canyons to be threaded, mountain peaks to be scaled. Come on! Why do we talk and talk here where the politicians swarm like gnats? To horse, and away!"