

NON-FICTION UTOPIA

Arvida, Cité Industrielle Made Real¹

> LUCIE K. MORISSET

Architectural and urban historian LUCIE K. MORISSET is a professor in the Department of urban and tourism studies at Université du Québec à Montréal. She is a member of the university's Institut du patrimoine, associate to the Canada research Chair on urban Heritage and a researcher with Centre interuniversitaire d'études sur les lettres, les arts et les traditions. Following on her work on the hermeneutics of built landscape and urban representations, her current research focuses on Quebec's patrimonial memory and the history of the province's heritage. She is currently finishing up a new monograph on Arvida for Presses de l'Université du Québec.

Une cité industrielle, that milestone in Western architectural and urban history, was conceived by Tony Garnier in the first decades of the 20th century. The book was first published in 1917 and went on to enjoy a phenomenal critical reception (fig. 3). Pevsner (*Pioneers in the Modern Movement*), Banham (*Theory and Design in the First Machine Age*), Giedion (*Space, Time and Architecture*), and Alexander (*A City is Not a Tree*) have enshrined it as a classic in the evolution of urban planning: “*Projet de cité idéale le plus complet depuis les Salines de Chaux*” [the Saltworks of Chaux, published in *L’architecture considérée sous le rapport de l’art, des mœurs et de la législation*] de Ledoux, (1804)² Cité Industrielle “practically provided a blueprint for a new type of urban centre designed around the possibilities of contemporary technology, new construction methods and efficient transportation.”³ In the years immediately following its publication and before a series of reprints later in the century, *cité* was noted in 1919 by Le Corbusier,⁴ but seems to have been most carefully considered in a 1926 article in *La construction moderne*, in which Pierre Bourgeix noted its philosophy of urban design.⁵ However, it is as an archetypal precursor to integrated planning,⁶ an approach that took hold in the wake of the Athens Charter (published in 1941), that Garnier’s influence has most readily been acknowledged. European researchers, having noted a citation of Garnier by Lewis Mumford, concluded that the Cité Industrielle must have served as a model for the development of the Hiwassee Valley by



FIG. 1. ONE OF THE OLDEST STREETS IN ARVIDA, IN THE HEART OF “THE CITY BUILT IN 135 DAYS,” BOULEVARD TASCHEREAU, NOW KNOWN AS DU SAGUENAY. | PHOTOGRAPH BY GUILLAUME ST-JEAN.



FIG. 2. ORTHOGRAPHIC VIEW OF PRESENT-DAY ARVIDA (NOW PART OF THE CITY OF SAGUENAY) AS BUILT BETWEEN 1925 AND 1950, CENTRED ON ITS ALUMINIUM SMELTER. THE FORMER MODEL CITY IS CURRENTLY THE SITE OF A MAJOR MODERNIZATION INITIATIVE LED BY RIO TINTO ALCAN, SUCCESSOR COMPANY TO ALCAN, WHICH SUCCEEDED ALCOA AS MANAGER OF THE SMELTER. | TERRA METRICS/GOOGLE.

the Tennessee Valley Authority between 1936 and 1940. As Mumford had collaborated on this project, it was thought that he must have used *Une cité industrielle*, borrowing its “innovative” notion of regional planning (although regional planning was already part of the vocabulary at the national city planning conferences in the United States, the first of which was held in 1909⁷).

But, as we shall see, another “*cité neuve*,” (“new city”) to use Garnier’s vocabulary, was contemporary with the *Cité Industrielle* and seems to share many of the features that in Garnier have been seen as revolutionary. It was hailed both for its planning and overall design and recognized in the interwar period as “[an] example of significant advances actually executed throughout the world,” “[an] entirely new city established in the wilderness.”⁸ It made headlines at the time and appeared in textbooks on both sides of the Atlantic. No fewer than three university theses, two monographs, an essay, and even a novel took it as a subject, in addition to some fifty specialized architecture, engineering, economics, and sociology articles (Figs. 1, 2, 4, 5). Late in the century, the *Robert II* encyclopedia featured the following entry:

ARVIDA. V. industrielle du Canada (Québec) sur le Saguenay, proche de Chicoutimi. 14 500 hab. – Usine d’aluminium traitant la bauxite [...], grâce à l’hydroélectricité. (Arvida: Industrial city in Quebec, Canada, on the Saguenay River near Chicoutimi. Population: 14,500. Aluminum smelter processing bauxite [...] using hydroelectricity.)

Insofar as French Canadian clerical nationalist censorship in the twenties and Arvida’s critical role in the Second World War (akin to that of the Secret City—Oak Ridge, Tennessee) kept the Aluminum



FIG. 3. BIRD'S EYE VIEW OF CITÉ INDUSTRIELLE DRAWN BY TONY GARNIER, FIRST PUBLISHED IN 1917. THE CITY STANDS ON A ROCKY PLATEAU NEXT TO A VALLEY WITH AN IMPOSING DAM. | TONY GARNIER, *UNE CITÉ INDUSTRIELLE*, 1917.



FIG. 4. THE OLDEST STREET IN ARVIDA, ORIGINALLY CALLED RUE RADIN, NOW KNOWN AS LA TRAVERSE, WHERE THE CITY'S FIRST HOUSES WERE BUILT IN 1926, SEEN AROUND 1930. | VILLE DE SAGUENAY.



FIG. 5. AERIAL VIEW OF ARVIDA FROM THE SOUTH LOOKING NORTH, SHORTLY AFTER THE SECOND WORLD WAR. | RIO TINTO ALCAN (MONTREAL).



FIG. 6. RESIDENTIAL DISTRICT OF CITÉ INDUSTRIELLE. | TONY GARNIER, *UNE CITÉ INDUSTRIELLE*, 1917.

City off the world's critical radar, the history of its contribution to urban design has also remained incomplete. With recent works like *The Company Towns*, *Company Towns in the Americas*, *Fordlandia* and *Duluth, U.S. Steel, and the Forging of a Company Town*⁹ from John S. Garner, John W. Reys, Margaret Crawford, and Jean-Pierre Frey¹⁰ arriving to enrich the critical corpus made up of such 20th century classics as *The City in History* (1961) and *The Making of Urban America* (1965), it seems like a good time to revisit the adventure in architecture and urban planning that was

Arvida,¹¹ the city created from scratch in the Canadian backcountry in 1925 and named from its founder's names: ARthur VIning DAVIS, president of the Aluminum Company of America and one of the last of the industrial utopians.

After Robert Owen's New Lanark (Scotland, c. 1800), which was added to the UNESCO World Heritage List in 2001 for having seen "the construction not only of well designed and equipped workers' housing but also public buildings designed to [address] their spiritual as well as their physical needs,"¹² the

industrial era gave new impetus to the age-old quest for living environments conducive to human fulfilment. As such, Tony Garnier belongs to a long line of thinkers stretching back to Hippodamos of Milet and Thomas More. This is the context in which our article intends to situate both the "cité neuve" of Arvida and Garnier's Cité Industrielle—mirror images in the history of urban planning. Indeed, the utopia given modern graphic form by Cité Industrielle seems to have developed and taken root in a unique (and tangible) way in Arvida, which in turn can only be properly understood in



FIG. 7. "AERIAL PLAN OF THE CITÉ INDUSTRIELLE PROJECT AS PRESENTED AT THE EXHIBITIONS IN ROME AND PARIS IN 1901 AND 1904." | TONY GARNIER, *UNE CITÉ INDUSTRIELLE*, 1917.



FIG. 8. PROMOTIONAL PICTURE AND MAP OF PULLMAN, ILLINOIS. | PRIVATE COLLECTION.



FIG. 9. YORKSHIP VILLAGE (CAMDEN), NEW JERSEY, WAS NAMED USING AN ANAGRAM OF THE NAME OF NEW YORK SHIPBUILDING CORPORATION. | ELECTUS DARWIN LICHTFIELD, ARCHITECT AND TOWN PLANNER, 1914-1917.

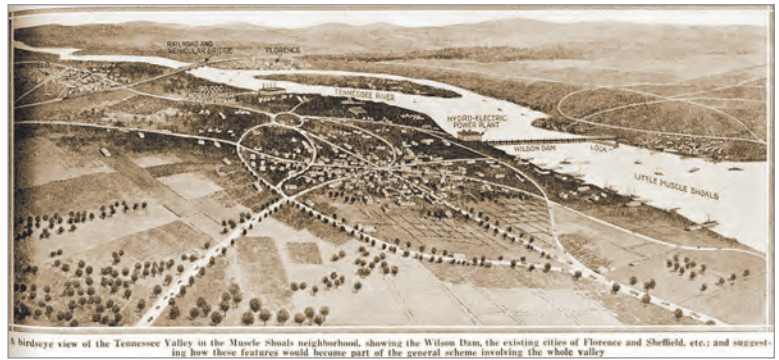


FIG. 10. FORD'S PROJECT AT MUSCLE SHOALS, ALABAMA, AS PUBLISHED IN *SCIENTIFIC AMERICAN* IN 1922.

light of the history of ideas and ideals that inspired Garnier. The comparison exercise we propose here aims to better measure a contribution to a history of city planning that the literature has heretofore attributed more exclusively to Garnier's Cité Industrielle, while at the same time placing both model cities in a broader context. It also seeks to define the conditions of possibility that other industrial cities lacked and Arvida possessed. After the experiences of Badin, North Carolina, and Alcoa, Tennessee, that put the Aluminum Company of American at the forefront of developments in urban planning, it was particular industrial preconditions,

like those Garnier himself imagined for his hydro-powered metallurgical city, that brought Arvida into being. For the first and undoubtedly the last time in the history of cities, a particular conjunction of idealism, expertise, and exceptional geography allowed what remained only a dream in Europe to come to fruition in Arvida, the town where reality went beyond fiction.

UTOPIAS WITH HISTORY

As I noted, Garnier's impact has generally been assessed according to the episteme of those who saw his work as a reflection of their own thinking,

with a resulting tendency to focus on certain relatively peripheral aspects. Concrete buildings conjured links between Garnier and Perret, and the open block design used by reconstruction designers were traced back to the Lyonnais architect's urban ideas to produce a particular analytic framework (fig. 6). As we have mentioned, Garnier was also associated, following Bourdeix, with the origin of modern city planning principles according to which "strict segregation into separate zones for industry, residential and civic functions provided the formula for towns that would be both humane and economically productive" (fig. 7).

The European, and especially French, framework in which *Cité industrielle* has habitually been placed has it that its contribution to the history of urban planning lies in its use of public space to promote residents' wellbeing. In addition, *Cité industrielle* is noted for the fact that its urban and architectural plan is entirely diagrammed out, an aspect the 19th century utopias lack, even the renowned Garden City of Ebenezer Howard (1898). Urban historiography has further seen *Cité Industrielle's* intersection with 20th century modernity as personified in the conjunction of metallurgy and hydroelectricity that calls it into being. Scholars pondered the astonishing realism of the project before eventually tagging it as an "ideal realism" more typical of utopianism than urban design,¹³ at least in its predominant 1930s and 40s forms, and situating it in the lineage of Fourier's phalansterian theories.¹⁴ After extensive research, fuelled by the project's very realism, failed to turn up the intended site of the *Cité Industrielle*, many concluded that Garnier had meant only to propose an archetype rather than provide a specific solution—to illustrate the philosophical or architectural productions of its time. At best, this would make *Cité Industrielle* one of the last of the great dreams: "Tony Garnier," it was said, "was the initiator of an entirely independent science of town planning and architecture, which ended with him as well."¹⁵

Thus apart from finding traces of the Lyonnais architect's ideas in his successors or in functionalist urban design, or seeking the "real" *Cité industrielle* in the southeastern France where Garnier exegetes following his own indications, went looking for it, scholars have paid little attention to the relationship between this utopia and its materialization in the real context of contemporary

planning. More specifically, as the above examples show, the relationships between *Cité industrielle* and town planning in its familiar Frontier Town America form—where we know Garnier for a time considered moving¹⁶—have scarcely been considered. In the United States and Canada, ubiquitous post-World War I housing problems engendered a lively field of research and practice—that of the town planner, precursor to the urban designer and heir to the Beaux-Arts architects who created the City Beautiful. At the same time as Garnier was publishing his *Une cité industrielle*, the guiding principles of what was then called comprehensive city planning—"from street pattern up" as the expression went—were being laid out in textbooks such as *City Planning: The Essential Elements of a City Plan, Industrial Housing and Rural Planning and Development*, in the pages of *Landscape Architecture, Architectural Record, American Institute of Architects Journal, Journal of the Town Planning Institute of Canada, Town Planning Review, Construction, and Architectural Forum*, and in the works of urban designers such as Thomas Adams, Morris Knowles, and John Nolen.

Although we find relatively few contemporary European examples of comprehensive and detailed city plans—with buildings, functions, and institutions all laid out and everything from the general plan to the shape of dwellings included—what in Garnier was an innovation was already relatively common in North America by the 1910s. While specialized periodicals of the time maintained, at least until the war, a certain number of more fictional than objective theoretical propositions, hands-on examples of real North American know-how were multiplying. One pioneering experiment was

Pullman City, Illinois, where, in 1880, George Pullman commissioned architect Solon S. Beman and landscape architect Nathan F. Barrett to produce an overall plan for the town where his workers—his "children" as he apparently called them—would build rail cars (fig. 8). Their work attracted attention as far away as Garnier's Europe: discovered by the crowds during the 1893 Chicago Columbian Exhibition nearby, Pullman City, which contained businesses, parks, and a church, as well as row housing for the prosperous industrialist's "children," was dubbed "The World's Most Perfect Town" at an 1896 exhibition in Prague.

It is important to recall that—its historic cities aside—most North American towns and cities were founded in the late 19th century and especially in the early decades of the 20th, and that, in order to play the role they did in opening up new Canadian and American territory, they needed to be planned carefully and holistically. They are called "planned industrial towns," "company towns," and sometimes "resource towns," since they were generally built around the natural resources being exploited by companies penetrating ever deeper into the hinterland—hence the need for worker housing. "Most new towns built from now on," wrote Garnier, "will focus on industry."¹⁷ The prediction certainly held true for North America, where examples proliferate to negate any claim Garnier might have had to inventing, say, segregated urban functions: after Pullman City, the plans for Vandergrift, Pennsylvania (Frederick Law Olmsted and J.C. Olmsted, 1895), and Yorkship, New Jersey (Electus D. Lichtfield, 1914), to name but two, both segregate industrial, residential, and civic functions rationally within the urban setting, with circulation meticulously mapped out between them (fig. 9).



FIG. 11. RIVERSIDE AVENUE IN FORDLANDIA. THE HENRY FORD MUSEUM, PUBLISHED IN GREG GRANDIN, *FORDLANDIA...*, P. 274.



FIG. 12. EUGENE HABERER, BIRD'S EYE VIEW BASED ON THE PROPOSED SHAWINIGAN TOWNSITE PLAN, 1901. | CITÉ DE L'ÉNERGIE, SHAWINIGAN.

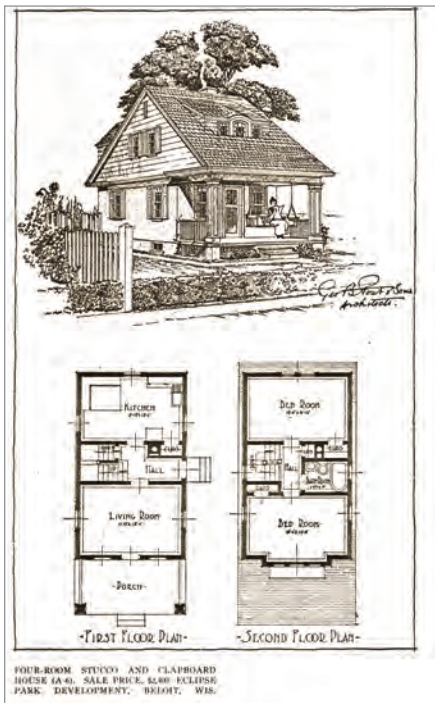


FIG. 13. ONE OF THE ECLIPSE PARK (BELOIT, WISCONSIN) HOUSE MODELS AS PUBLISHED IN 1918 BY LAWRENCE VEILLER IN A SERIES OF ARTICLES IN *THE ARCHITECTURAL RECORD*, ENTITLED "INDUSTRIAL HOUSING DEVELOPMENTS IN AMERICA."

With industrial development, the concept of model city became, in North America, an instrument of territorial conquest, with vast expanses of undeveloped land

fuelling dreams of all kinds. From Robert Owen, who after New Lanark went on to found New Harmony in Indiana, to Frank Lloyd Wright with his mythic Broadacre City, the geographic potential of the territory excited the imaginations of those who credited agrarian settings ("nature") with hygienic and even character-building virtues. We thus see not only the sudden appearance of agrarian utopias, but also of urban creations, which, despite charges of paternalism levelled at them by certain historians, still shared many of the social aims of Garnier's Cité Industrielle. To take two less familiar examples: Baie-Comeau, Quebec, was first conceived in the 1920s by industrialist Robert R. McCormick and built in the 1930s as a pulp and paper town of some 2,000 residents, while Hershey Town, Pennsylvania (1924) was the chocolate-producing town created by industrialist Milton Hershey. It became a popular tourist attraction and billed as "the sweetest place on earth [...], where the streets are lined with Hershey's Kisses-shaped street lights," as well as a "model town [built] for employees and their families so they have an attractive place to live, work, and play."¹⁸ Starting at the beginning of the century, there is a concrete paradigm shift in North America

that, above and beyond the focus on detailed planning, also reflects Garnier's Cité Industrielle in the idea of the industrial town as an integrated organism that, rather than ignoring or fleeing industry, uses it, as well as its modern corollaries (transportation, habitat, and economy) as a lever for individual development and fulfilment. Town planning and industrial philanthropy join forces.

This idea of a new, modern industrial Arcadia did not survive the fragmentation of urban design and the Athens Charter's functionalism, but did find expression in a certain number of communities founded before the end of the Great War: Kistler, Pennsylvania (1918), Morgan Park, Minnesota (1917), Kohler, Wisconsin (1913), and Fairfield, Alabama (1910) are some of the best known U.S. examples of company towns that inherited, through urban planning, this combination of industry and a supportive environment.¹⁹ That this idea should inspire the great industrialists of the period is hardly surprising. We find Henry Ford promoting his "seventy-five-mile-long-city" at Muscle Shoals, Alabama, next to a hydroelectric development, that would free up "one million workers" from local trusts, make



FIG. 14. STREET IN ARVIDA TODAY. | PHOTOGRAPH BY LUCIE K. MORISSET.



FIG. 15. STREET IN ARVIDA TODAY. | PHOTOGRAPH BY GUILLAUME ST-JEAN.

them rich, and in Ford's words, provide an opportunity "to eliminate war from the world."²⁰ Frank Lloyd Wright himself would say in 1922 of the seventy-five-mile-long city that it was "one of the best things"²¹ he had ever heard of (fig. 10).

Ford's Alabama project would founder on Congress's refusal to concede Tennessee River exploitation and development rights to the company.²² His next utopian project, Fordlandia, was actually built on a two million hectare parcel of land that Ford acquired in Brazil. The would-be rubber-producing megalopolis also illustrates a few gaps in Ford's grasp of the reality of urban design, as well as perhaps a certain as yet unresolved discrepancy between theory and practice. Historians tend to attribute Ford's failure in the forests of the Amazon to the geographic, social, and cultural disconnect between Ford's American world view and the tropical wilderness environment, where his "typically American-as-apple-pie" wooden houses produced, it is said, a most singular impression (fig. 11).²³

Although their numbers multiplied in North America, many of these town plans had only a marginal real-life impact,

leaving the landscape littered with, as one commentator harshly put it, "centres without cities" and "cities without centres." Beyond the urban utopias that had marked the preceding centuries and left historical if not material traces, the first years of the American 20th century seem to have been characterized by a phenomenon of such proportions that a name had to be created for it: the "paper city." This was the work of an illustrator or town planner commissioned by a company or group of industrialists to produce a plan, not so much to provide workers with better conditions or found a town, but simply to entice investors with an impressive layout. Shawinigan, Quebec, home of companies such as the Pittsburgh Reduction Company (later Aluminum Company of America), Shawinigan Water and Power Company, and Belgo Canadian Pulp Company, remained for the most part just such a paper city: the plans ordered by the Shawinigan Water and Power Company and magnificently represented in a bird's-eye view to impress the electricity-using industry never to that extent saw the light of day (fig. 12). Other comparable projects ran up against changed material circumstances with the rising prices of the First World War: the plans for Allwood, New

Jersey, (1917) where industrialist and philanthropist William Lyall promised an ideal city in which both unskilled and skilled workers would have access to homes, parks, and community services designed by the most prominent town planners of the period (notably John Nolen, Morris Knowles, William Somerville, and George B. Post), was thus famously abandoned after the construction of only a few houses, funds having been exhausted.²⁴ Similarly, plans for Eclipse Park in Beloit, announced in 1917 by the Fairbanks Morse Company as a new city of 40,000, styled as the "Typically American Garden Village" and noted by critic Lawrence Veiller for its forty different models of luxurious houses (fig. 13), was reduced before construction began to a neighbourhood of about 300 houses reserved for white employees only. Only 80 were eventually built.²⁵

The situation of Cité Industrielle, which Garnier himself qualified as "*imagination sans réalité*" ("not real"), is thus hardly unique, at least in its status as paper city—insofar as the term can even be applied. By expanding the frame of reference beyond the heritage of European architectural design through which Garnier's



FIG. 16. STREET IN ALCOA, TENNESSEE, CIRCA 1920. | BLOUNT COUNTY GENEALOGICAL AND HISTORICAL SOCIETY.

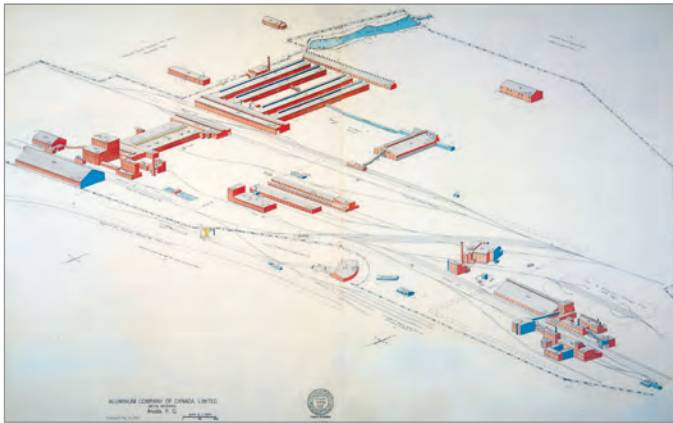


FIG. 17. LAYOUT FOR ARVIDA FACTORIES AS BUILT IN 1929. THE FIRST FOUR POTROOMS BROUGHT ON STREAM CAN BE SEEN BESIDE THE ELECTRODE FACTORY TO THE SOUTH. THE SLAG ORE PLANT IS AT THE LOWER RIGHT. WITHIN 15 YEARS, THE SMELTER, CONSCRIPTED FOR THE WAR EFFORT, EXPANDED TO OCCUPY ALL THE SPACE SET ASIDE FOR IT HERE. THE SLAG ORE (DRY PROCESS) PLANT HAD BY THEN BEEN CONVERTED TO A BAYER REFINERY. IT WAS DESIGNED ACCORDING TO PLANS BY ARCHITECT JAMES CURZEY MEADOWCROFT AND EQUIPPED WITH SÖDERBERGH POTROOMS, THE MOST MODERN TYPE OF THEIR TIME. | RIO TINTO ALCAN (MONTREAL).

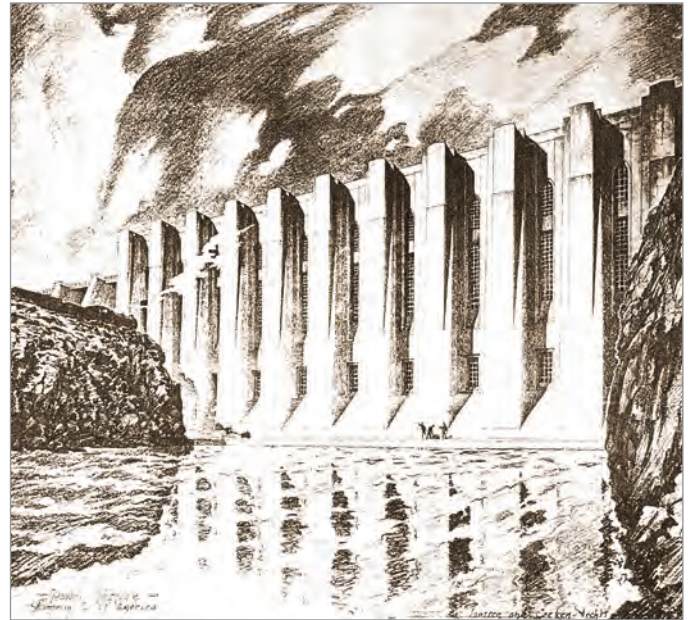


FIG. 18. DRAWING BY JOHN RICHARD ROWE OF THE SHIPSHAW POWER STATION, NOW KNOWN AS CHUTE-À-CARON, PUBLISHED IN THE MAGAZINE *PENCIL POINTS* IN AUGUST 1929. IT WAS THE FIRST POWER PLANT BUILT BY THE ALUMINUM COMPANY OF CANADA. THE PLANS WERE BY THE PITTSBURGH ARCHITECTS BENNO JANSSEN AND WILLIAM YORK COCKEN. IT WAS INAUGURATED IN 1931.

vision has traditionally been interpreted, we see it clearly as a creature of its time: a one-off encounter between social utopia, urban planning, and modern industry. It is true that as late as 1918, one of the “fathers” of industrial urban design, Thomas Adams, known from the national city planning conferences where he served as the first secretary of the Garden City Association before emigrating from Great Britain to found the Town Planning Institute of Canada, wrote that “We have not failed to build wholesome industrial communities; we have not tried to build them.”²⁶ Was this an implicit response to Garnier’s proposal? An indirect acknowledgment that *Cité Industrielle* was yet to come? Let us continue our explorations on either side of the Atlantic and outside the admittedly dated modernist historiography. Only a few years later,

this “not real” city was nothing of the sort. It took form as what the French urban design historian Pierre Lavedan would describe in 1956 as “the aluminum city,” a full-fledged example of a “factory city,” with the layout “of the freest possible design.”²⁷ This is the Canadian city of Arvida, long recognized in the United States as the “most outstanding social achievement”²⁸ of one of the richest and most active industrialists in 20th century America: Arthur Vining Davis, president of the Aluminum Company of America from 1910 to 1957, who also provided the anagram for its name out of the first two letters of his three names. This “Washington of the North” and “Jewel of the North Canada Steppe” was already a model city from its beginnings and quickly became “famous as an example of community housing”²⁹ (figs. 14-15). The promise made

in announcing its creation, expressed in the *Journal of the Town Planning Institute of Canada* as “an opportunity to create a town which will meet the ideal of perfection which all town planners cherish,” was for once kept.

Thus even as Ford was abandoning his seventy-five-mile-long-city for want of hydroelectricity to power his industrial utopia, Davis was acquiring “1,340,000 horsepower [100 000 kW] of probably the cheapest hydro-electric power on the North American continent”³⁰ on Quebec’s Saguenay River. Fresh from his experience in Alcoa, Tennessee, where the Aluminum Company of America had, beginning in 1919, built 700 houses in three years and, as earlier in Badin, North Carolina, where he caused a sensation by including housing for black workers (fig. 16),



FIG. 19. ISLE-MALIGNE POWER PLANT AS SEEN IN 1938. PLANS BY ENGINEER W.S. LEE. IT WAS THE ALUMINUM COMPANY OF AMERICA'S FIRST IN THE SAGUENAY-LAC-SAINT-JEAN AREA. | LIBRARY AND ARCHIVES CANADA.



FIG. 20. BIRDSEYE VIEW OF THE "QUARTIER DES ANGLAIS" IN KÉNOGAMI, AROUND 1920. | BIBLIOTHÈQUE ET ARCHIVES NATIONALES DU QUÉBEC.

Davis wanted to break new ground, taking to new and even greater heights the company he had built into an enormous multinational and world's largest producer of aluminum. Arvida was to be the company's first aluminum plant in virgin territory,³¹ a "longed-for opportunity to begin at the beginning,"³² as the planning journal described it. As such, it was provided with an unusual array of services: together with the school system and cultural, social, and sports activities extensively cited by commentators, it employed from the beginning a convincing reformist discourse and an egalitarian vision that disavowed the social and racial segregation typical of company towns. The Aluminum Company of America president's attachment to Arvida has been well documented by historians and is attested by a number of contemporary sources: Edwin S. Fickes, the company's chief engineer, sent to the Saguenay to oversee the city's construction, recalled Davis's unflinching desire to "make it a desirable place in which to live at reasonable cost. Mr. Davis [...] properly insisted that no pains should be spared to this end."³³ Davis also said he wanted to build a tower from which he could look out over his model city. This is

hardly surprising: around the integrated smelter, where incidentally he aimed not only to reduce aluminum in some forty potrooms, but also to employ a new and experimental process to extract and refine local bauxite (fig. 17), he had laid out a "new city" without precedent on North American soil, where everything, from streetlights to worker housing, had been planned out and elegantly diagrammed to the last detail (fig. 18). The scale of this industrial utopia invariably evokes another: Garnier's, and not merely in their shared hydroelectric plant, transoceanic port, and metallurgical production facility to refine local ore.

"A city built in 135 days, without ever having known the slums and ugliness of haphazard growth, and where the construction required no tearing down"³⁴

– Harold Wake, Arvida construction superintendent

Located just upstream from the hydroelectric station that prefigured its creation, the most powerful in the world at the time (fig. 19), and nestled around its smelter, Arvida was typical of North America company towns in that it was

designed to house workers for an industrial operation. In the immediate region, Arvida is a successor to Val-Jalbert (1899), Kénogami (1912), Port-Alfred (1915), Riverbend (1923), and Dolbeau (1927) (fig. 20). But just as Cité Industrielle stands apart from the utopias that preceded it, Arvida's resemblance to ordinary company towns ends there. It differs in its planning and resulting urban forms as well as in its layout and landscaping and in the way it came into being as a construction project unprecedented in method and scale to produce a genuine model city providing workers with an incomparable habitat—one of the high points of architectural history. The town also stands out for its marvellous state of preservation. It was meticulously protected by its parent company, the Aluminum Company of America and its subsidiary the Aluminum Company of Canada, later Alcan, well beyond the 1940s and 50s, when Arvida, world aluminum capital, would join the pantheon of industrial cities, just as it became one of the most closely guarded secrets of the British Commonwealth and one of Canada's best protected sites, producing the very "flying vehicles" imagined by Garner and crucial to the outcome of the Second World War.



FIG. 21. ATTRIBUTED TO HJALMAR E. SKOUGÖR, COLOUR LITHOGRAPH OF THE ARVIDA PLAN, 1925-1926. | VILLE DE SAGUENAY.



FIG. 22. SCALE MODEL OF ARVIDA, 1925-1926: THIS MODEL IS LIKE A THREE-DIMENSIONAL TRANPOSITION OF CITÉ INDUSTRIELLE, WITH ITS RESIDENTIAL AREA, DOWNTOWN, SMELTER, HYDROELECTRIC FACILITIES, AND RIVER. THE "OLD TOWN" (THE INDUSTRIAL TOWN OF KÉNOGAMI) IS SEEN TO THE LEFT NEAR THE OUTFLOW OF A SMALL INDUSTRIAL BUILDING PROBABLY REPRESENTING A PULP MILL. | SOCIÉTÉ HISTORIQUE DU SAGUENAY, PHOTOGRAPH BY PAUL LALIBERTÉ.

Arvida was essentially built in three broad phases: 1925 to 1935, 1936 to 1942, and the period up to 1950. Carved out of the natural surroundings it absorbed, it shares more than a few similarities with Garnier's Cité Industrielle: the two projects are both "total cities," from the street layout and functional zoning all the way down to the design of each house. Garnier and the Aluminum Company of America both conjured an urban centre glittering with lavish buildings and imposing avenues, yet

dedicated to the efficient operation of a prosperous metallurgical industry fuelled by massive hydroelectric development.

Like Garnier's "not real" creation, Arvida's legacy includes an outstanding documentary record preserving not just the plans for, but also the construction of the city. Arvida's records are in fact far more extensive. They include some 2,000 sheets of plans; high-quality drawing; hundreds of films, photographs, brochures, newspaper and journal article;

meeting records; a number of theses and historical research papers; a variety of contemporaneous reports; and a relatively abundant correspondence, all housed in a dozen or more archival collections in Canada and the United States. It is these records, along with the city as it exists today, that have served as our guides through this epic of urban planning, of which this article maps out some of the high points. In addition to a lithographed and published overall plan in black and white and in colour (fig. 21), there is a model illustrating the scale of the project. It depicts a city harnessing the river torrents and spreading out across the benchlands above the river, not far from the older settlements of Jonquière and Kénogami (fig. 22). Arvida, again like Cité Industrielle, would be connected to these settlements as well as to raw material production and distribution networks by a railway running along the plain, linking the gigantic smelter to transoceanic port and lavish city, running like clockwork and lovely as a work of art.

Is there any connection other than mere providence linking Cité Industrielle to Arvida? What did Arvida's creators know of their imaginary predecessor's author?

THE FRENCH CONNECTION

While Lyon in the 1910s was a hub for city planning ideas,³⁵ the flow and exchange of information between North America, Europe, and France was increasing in the days of Cité Industrielle and Arvida, particularly in the specialized and relatively circumscribed field of town and city planning. One of the first to publish the lithographed plan for Arvida was in fact a German city planner, Werner Hegemann, who immigrated to New York City in 1933 and whose transatlantic travels were the subject of an important essay.³⁶ Also



FIG. 23. AERIAL VIEW OF BADIN, NORTH CAROLINA, POST-1920, ON THE SITE PREVIOUSLY IDENTIFIED BY THE FRENCH COMPANY AND ITS SUBSIDIARY, THE SOUTHERN ALUMINUM COMPANY, FOR AN ALUMINUM SMELTER OF UNPRECEDENTED SIZE. SEE THE "QUADRAPLEXES", AS THEY ARE NAMED THERE, DESIGNED FOR THE FRENCH COMPANY, POSSIBLY BY NEW YORK'S ENGINEERS PIERSON AND GOODRICH. THEY BECAME TYPICAL LOCALLY DESPITE BEING MORE CHARACTERISTIC OF THE SEMIDETACHED HOUSING OF EUROPEAN INDUSTRIAL TOWNS. THE ALUMINUM COMPANY OF AMERICA DESCRIBED THEM AS "NOT GOOD AS HOUSES, NOR THE TYPE THAT THE COMPANY WISHED TO PROVIDE FOR ITS EMPLOYEES." | ALCOA ARCHIVES, HISTORICAL SOCIETY OF WESTERN PENNSYLVANIA ARCHIVES, LIBRARY AND ARCHIVES DIVISION, HEINZ HISTORY CENTER, PITTSBURGH (PA).



FIG. 24. ORTHOGRAPHIC VIEW OF THE MARIA ELENA MINE AND TOWN, BUILT IN CHILE BY THE GUGGENHEIM BROTHERS ACCORDING TO PLANS BY HARRY B. BRAINERD AND HJALMAR E. SKOUGOR, 1926. | DIGITAL GLOBE/GOOGLE.

notable was the path followed by Thomas Adams³⁷—the manager of Letchworth, the "first" Garden City—who, in addition to founding the Town Planning Institute of Canada (1914) and managing the New York Regional plan (1923-1930), also designed several new towns before

returning to Great Britain to found the Institute of Landscape Architects (1937). The travels of French architect Jacques Gréber are similarly familiar: known mainly in his own country as the master architect of the 1937 Paris International Exhibition, Gréber crisscrossed the



FIG. 25. REDUCED PLAN FOR ECLIPSE PARK (BELOIT, WI), GEORGE B. POST AND SONS, AS PUBLISHED IN 1918 BY LAWRENCE VEILLER IN THE MAGAZINE *ARCHITECTURAL RECORD*. THE CONTOUR STREET SYSTEM, WHICH WAS BEGINNING TO SPREAD AT THE TIME, WAS USED HERE. THE PART OF THE PLAN TO THE LEFT OF THE MONUMENTAL CENTRAL AXIS WAS NEVER BUILT: A SHOPPING CENTRE AND PARKING LOT ENDED UP OCCUPYING THAT AREA.



FIG. 26. "AIRPORT-DOCKS FOR NEW YORK," HARRY B. BRAINERD, ARCHITECT: A PROPOSAL FOR AN INTERMODAL PORT NEXT TO THE CITY TO FACILITATE ACCESS TO INTERCITY TRANSPORTATION, PARTICULARLY THE NEW AIRPLANES. | *SCIENCE AND MECHANICS* NOVEMBER 1931.

northeastern United States from 1910 on.³⁸ He was a ubiquitous vector of contamination, turning his observations into a monumental work, published in 1920 under the title "Architecture in the United States, with the curious subtitle "Evidence of the expansion capability of the French

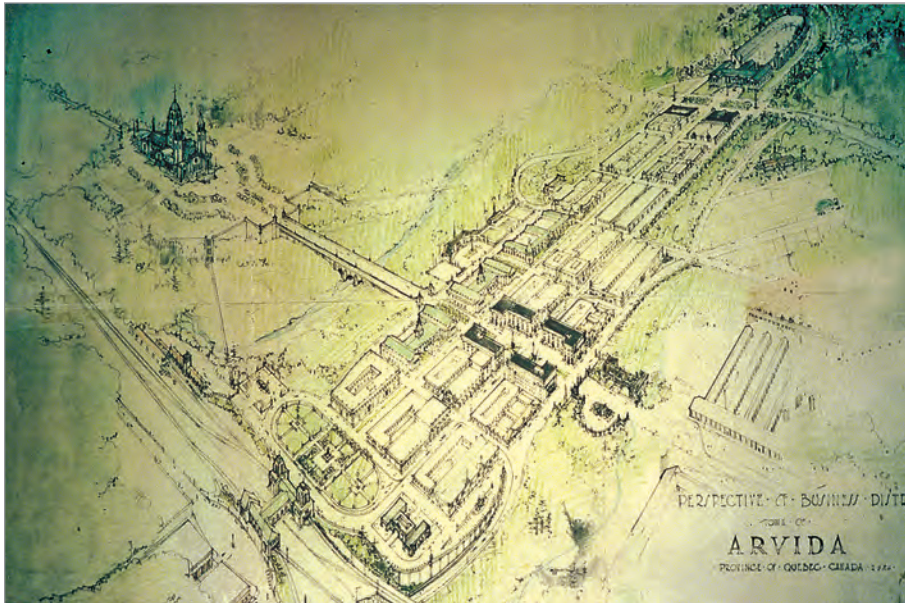


FIG. 27. ATTRIBUTED TO HARRY BEARDSLEE BRAINERD, "PERSPECTIVE OF BUSINESS DISTRICT, TOWN OF ARVIDA PROVINCE OF QUEBEC, CANADA, 1926." AS IN GARNIER'S CITÉ INDUSTRIELLE, THE "MOST IMPORTANT STREET ORIGINATES AT THE TRAIN STATION" AND "THE NEIGHBOURHOOD AROUND THE TRAIN STATION IS RESERVED PRIMARILY FOR [...] HOTELS, DEPARTMENT STORES, ETC., SO THAT THE REST OF THE TOWN CAN BE FREE OF TALL BUILDINGS." | RIO TINTO ALCAN (SAGUENAY).

genius."³⁹ Although we find scarcely any signs of French urban design projects migrating to American soil, the chapter "Community Housing: Garden Cities, Worker Cities"⁴⁰ discusses the "methodical organization"⁴¹ of planning with respect to certain aspects that, as we shall see, are particularly significant to our story:

Thanks to powerful means of production in the service of flawless methods of organization, Americans have, in recent years, made enormous strides in the construction of economical housing for large groups. They have mass-produced not the houses themselves, but the materials for constructing them, making it possible to standardize rationally without monotony.⁴²

We note incidentally that Gréber, Adams, and Edward Bennett, coauthor of the 1909 *Plan of Chicago* (in which many have pointed out French influences⁴³), Noulan Cauchon, who would give a notable talk in Arvida itself,⁴⁴ and Frederick G. Todd, student of Frederick

Law Olmsted and inaugural chair of the Arvida Planning Committee, with which he completed a number of landscape architecture projects in the 1940s, had, if not necessarily become fast friends, certainly met around the drafting table at Canada's Federal District Commission,⁴⁵ where they worked together planning the City of Ottawa.

Could the idea found in *Une cité industrielle*, either prior or subsequent to Garnier's publication, have followed such channels?

In the relatively globalized sphere of resource industries, and especially aluminum—that "magic metal of the 20th century" whose lightness and conductivity held such immense promise if only the tremendous amounts of energy required for reducing the metal through electrolysis could be secured—American and French interests had crossed paths more than once. In 1915, the Aluminum Company of America took over facilities

in North Carolina built from 1911 under the stewardship of Adrien Badin, director of Compagnie des produits chimiques d'Alais et de la Camargue (later known as Pechiney). Badin had also been mayor of the first aluminum-producing town of Salindres, where Pechiney was established, some 250 kilometres downstream from Lyon, at the same time that Garnier's patron, Édouard Herriot, was mayor there, and also headed Aluminium Français, the cartel he had launched to bring together France's five aluminum companies, and its subsidiary Southern Aluminum Company, established in the United States in 1912.⁴⁶ The North Carolina town was named Badinville or Badin, and its similarities to Garnier's Cité Industrielle are striking, including, considering the change the project underwent,⁴⁷ the location of its dam, hydroelectric station, aluminum smelter, and residential district (fig. 23). Noteworthy aspects include the townsite's location on a plateau, its position above the smelter, its relationship to the nearby older settlement of Palmerville echoing Cité industrielle's "ville ancienne" ("old town") represented by Garnier and the granite mines acquired by the Southern Aluminum Company near the townsite.⁴⁸ ("There are also mines in the region,"⁴⁹ Garnier had written). A number of particularities still found in Badin also belong more to Cité Industrielle and its European context than to town planning in the United States: amongst them, the quadraplexes built by the French company to house its employees, usual in Europe,⁵⁰ but very uncommon in America, and pathways through lots, between houses, or, as Garnier wrote:

[...] the built area must always be less than half the total surface area, the rest of the lot becoming a public garden for pedestrians; that is, each building must leave on the unbuilt part of its lot an unimpeded passage from the street to the building

situated at the back. This arrangement allows circulation through town in any directions independent of the streets which one no longer needs follow; the land of the town as a whole is like a large park, with no enclosing walls to limit the ground.⁵¹

Was Garnier familiar with the Aluminium Français undertaking together with France's leading industrial companies, which promised, specifically through this Yadkin River settlement, to make France the world's leading aluminum producer,⁵² and has been described as "probably the largest, and most ambitious, French Investment in pre-World War I America"⁵³? Given that the Aluminum Company of America itself undertook to build in Badin a model city remarkable in many regards, and that Arthur Vining Davis and Adrien Badin communicated with each other,⁵⁴ is it possible to conjecture that the ideals of Cité Industrielle circulated on the North American frontier—and made their way from Aluminium Français to Arvida? In addition to the likely intersection of the spheres of influence of Adrien Badin, with his plans to relaunch the aluminum industry through a spectacular undertaking, and Paul Héroult, the well-known French inventor of the electrolytic reduction process, who went to stay in Whitney to supervise the building of Badinville, and Garnier, who imagined the renewal of the planned city under the aegis of metallurgical industry and hydroelectricity, the similarities, scale, and contemporaneity of Cité Industrielle and its North Carolina cousin constitute convincing circumstantial evidence.

It is likewise unlikely that Garnier was unaware of North American resource towns in general. Could the creators of Arvida, following as they did in the footsteps of the Aluminum Company of America's settlement built on Badin's

French foundations, likewise have had contact with Cité Industrielle?

In addition to being built under the supervision of engineering superintendent Harold R. Wake, who until then had been managed the company's real estate services in Badin, Victor J. Hultquist, who had performed with distinction during the construction of Alcoa, Tennessee,⁵⁵ and Edwin Stanton Fickes, who is credited of a contribution to the town plan of Alcoa and who from 1901 did about everything for the company, from building plants to rethinking the aluminum production process, Arvida was in 1925-1926 the work of two main planners. One, Harry Beardslee Brainerd (1887-1977), was a New York-based architect, theorist, and town planner, known at the time for having drafted the plans for the Chilean industrial town of María Elena (fig. 24), and noted for his work developing and testing theories of the nascent discipline of city planning in a number of thoroughfares plans, reports, and other zoning primers and city plans, notably for Cleveland, Ohio.⁵⁶ During his town planning apprenticeship with the firm of Murphy and Dana, he probably took part in the residential development of Elizabeth, New Jersey, where he became a consulting architect with the City Planning Commission in 1927. While at the New York firm of George B. Post and Sons, he undoubtedly helped design the paper city of Eclipse Park (Beloit, Wisconsin) with its forty model dwellings and its urban layout combining a vast, solemn mall in the City Beautiful style and picturesque residential streets gracefully winding along the topographic contours (fig. 25), and was noted in 1931 for proposing an ingenious system of airport docks for New York City (fig. 26). He had completed his architectural education at New York's Columbia University where the library catalogue shows a copy of

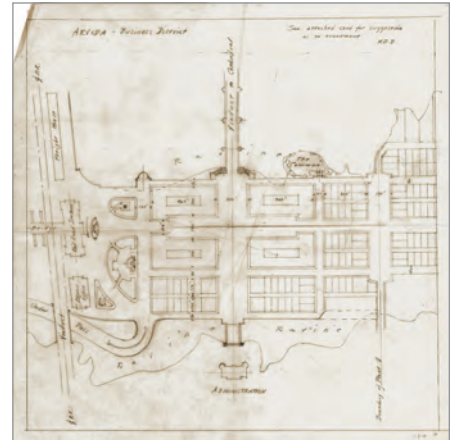


FIG. 28. "ARVIDA – BUSINESS DISTRICT": PLAN BY HARRY BEARDSLEE BRAINERD ESTABLISHING THE DOWNTOWN AREA BETWEEN TWO RAVINES AND SETTING OUT BUILDING DIMENSIONS AND THE ARRANGEMENT OF ROADWAYS, INCLUDING THE "VIADUCT TO CATHEDRAL." | UNIVERSITY OF OREGON LIBRARY, COLLECTION RICHARD HAVILAND SMYTHE.



FIG. 29. PLAN OF CHICAGO, PROPOSED BOULEVARD. JULES GUÉRIN FOR DANIEL HUDSON BURNHAM ET AL., COMMERCIAL CLUB OF CHICAGO, 1909.

Garnier's *Une cité industrielle*, first edition, to which he would have had access. He studied at Columbia under Harvey Wiley Corbett (1873-1954), who had graduated from École des beaux-arts de Paris in 1900 and was thus a former colleague of Garnier, who had received the Prix de Rome there in 1901.



FIG. 30. "PERSPECTIVES: TOWNSITE HOUSES," C2 AND C3, ALUMINUM COMPANY OF CANADA, 1927. | VILLE DE SAGUENAY.

The other, Hjalmar Ejnar Skougor, Brainerd's partner, is credited with the lithographed plan of Arvida as well as the original design for most of the houses. He seems to have been known for his expertise in house design.⁵⁷ Skougor had previously attracted attention from his compatriots by proposing moving sidewalks for New York City, inspired, he said, by the examples seen at the 1900 Paris International Exhibition.⁵⁸

Two other architects can be added to the list of Arvida's inventors: New Yorker Richard Haviland Smythe (1899-1965), known for having designed a number of real estate development projects,⁵⁹ had collaborated with Brainerd and Skougor previously, and the collection of his work at University of Oregon has plans for "workmen's houses" of what was called the "Sycamore type," identical to the staff houses built in Arvida for city and smelter construction workers, as well as a plan for the Arvida business district signed by Brainerd in the latter's own hand. Smythe had also graduated from Columbia and subsequently completed a fellowship at the American Academy

in Rome.⁶⁰ Other possible participants in the Arvida plan, according to recently uncovered documents,⁶¹ are civil engineer D.L. Turner,⁶² and most importantly architect James Gamble Rogers II (1901-1990), who designed the elevations of 24 Arvida house models. He was the son of architect John Arthur Rogers (1870-1934) and worked with his father in the 1920s in Daytona, Florida, going on to design the residential architecture of Winter Park, a Florida resort for industrialists on the east coast of the United States, where he set up an office in 1928, and where Arthur Vining Davis may have met him. Although there are no other documents attesting to Rogers' contribution to Arvida, at least one of the house types there bears a strong resemblance to a Winter Park building, of which we have a signed plan. At the very least, it attests to a certain similarity between his style and that of Arvida's designers.⁶³ Rogers does not seem to have any significant French, Parisian, or Lyonnais connections, with the exception of his uncle, the architect James Gamble Rogers (1867-1946), who was also a contemporary of Tony Garnier at *École des beaux-arts de Paris*, graduating in 1898.

Nothing in all this militates against a possible connection between Arvida and *Cité Industrielle*. Indeed, Garnier's thinking is all over the Arvida project, with its classical notions of beauty and its utilitarian concern for traffic flows, hygiene, and economy. The lithographed Arvida plan of course in no way neglects urban functionality, yet, curiously, it is oriented with the south at the top rather than on the bottom, favouring pictorial composition over conventional usage. The colour design thus circumscribes and apportions residential, commercial, institutional, and industrial functions, finely divides the plan of lots, and creates a hierarchy of transportation corridors cut into the lush natural landscape in a highly characteristic style confirmed in its quasi-Vetruvian windrose design, legend, and title block. If this beaux-arts aesthetic seems in 1925 somewhat dated, it at least explains the drawings' expressive quality and refinement, also incidentally shared with the plates of *Une cité industrielle*: alongside the meticulous drawing seen in the aluminum city's lithographed plan and the perspectives of its seventeen house types (fig. 30), we find the plan views favoured by Garnier echoed in the spectacular perspectives used to trace out Arvida's business district (figs. 27-28).

This evocation of Versailles, as well as the monumental flourishes common to both the Arvida plan's diagonal layout and the depictions of *Cité Industrielle*, can also be seen in, to take the best-known examples, Walter Burleigh Griffin's plan for Canberra, Australia (1912-1918) and above all in the plan of Chicago (1909) drafted by Jules Guérin for Burnam and Bennett (fig. 29). Garnier could scarcely have been unaware of these two projects. In this same *City Beautiful* lineage elaborated at Chicago's Columbian Exhibition, both Arvida and *Cité Industrielle* have ties to a still

more celebrated project begun in 1901, the reworking of the original French plans for Washington, D.C. (1791). The authorities at Aluminum Company of America specifically referred to Major Pierre-Charles L'Enfant's "paper city" in outlining the relationship between Arvida and "Washington, today one of the world's most beautiful cities, tomorrow the most beautiful."⁶⁴

Other contemporaneous written descriptions of Arvida refer instead to Ebenezer Howard, promising "The First Garden City of Canada." This is hardly surprising, given the influence Thomas Adams had at the time over the *Journal of the Town Planning Institute of Canada* where this pledge appeared. Still more specifically, the Garden City model is echoed in the very act that constitutes Arvida's birth: the acquisition by the Aluminum Company of America in August 1925 of specifically 6,000 acres (2,400 ha) of land—precisely what Howard had prescribed for his *Garden Cities of To-Morrow* (1902). Although Letchworth (the first Garden City built on Howard's principles) was designed for 32,000 residents (the similarity to Garnier's city for "35,000 inhabitants" has been noted), Arvida was initially intended for 50,000, closer to Welwyn Garden City, founded more recently. This population figure, however, taken from an article entitled "Our capital aids Canadian industry" in the *New York Times* of September 27, 1926, is not agreed upon by everyone. Amidst ads for share, bond, and sinking fund issues, the editor of *Canadian Machinery and Manufacturing News*, returning from a visit to the Arvida site in August 1926, speaks of a city of 25,000 to 30,000 residents; the *Ottawa Citizen* mentions 40,000 in the summer of 1925; and the July 1928 *Financial Post* gives a figure between 30,000 et 50,000. Harold Wake, the engineer superintendent of



FIG. 31. THE ALUMINUM COMPANY OF AMERICA'S PITTSBURGH ARCHIVES PRESERVE NUMEROUS WINTER AND SUMMER IMAGES FROM PHOTO ESSAYS ON ARVIDA SHOWING THE CITY, HOUSES, THE SMELTER AND REFINERY BUILDINGS INSIDE AND OUT, AS WELL AS A FEW STREET SCENES LIKE THIS ONE. | ALCOA ARCHIVES, HISTORICAL SOCIETY OF WESTERN PENNSYLVANIA ARCHIVES, LIBRARY AND ARCHIVES DIVISION, HEINZ HISTORY CENTER, PITTSBURGH (PA).

construction and probably the most credible source, writes in the November 1926 issue of the *Engineering Journal* of a city of between 30,000 and 40,000 residents.

What conclusions can we draw from these convergences and divergences? First, it is undeniable that, without specifically referring to each other, Arvida and Garnier's Cité Industrielle share the same ambitions and certain frames of reference. Second, and this is confirmed by the flurry of superlatives deployed throughout North America in announcing the creation of this "world centre of aluminum production,"⁶⁵ the city planned by the Aluminum Company of America in the Canadian hinterland is an object of representation first and foremost. It is therefore more likely that the proposal for 50,000 residents, at a time when most of the world's cities numbered closer to half that, was meant to associate the power bonds issued by Davis's company with the success of Gary, Indiana, with its population of 50,000, than to reflect Arvida's actual aims. The average of 35,000, an oft-cited figure, is likely closer to what the planners really

intended, thus bringing Arvida more in line both with Howard's ideal and Garnier's model, which was more contemporary and realistic, at least in its urban design aspects. In any case, this drive for publicity and concern for quantification demonstrates the necessity for Arvida to differentiate itself from competing capital projects of the day, and *a fortiori* from the paper cities that had disappointed so many investors. It was no accident that the *New York Times* went so far as to announce, in 1926, an inspection of the Aluminum Town by "American and Canadian corporation presidents and financial and industrial executives" to attest to the town's growth, or that the Aluminum Company of America produced a series of photo essays providing further evidence to the work's truly being underway (fig. 31).

It is this background of capitalist ferment which probably explains the multiple virtues attributed to Arvida: Wake noted Davis's obsession with advertising on a number of occasions. We note that although Arvida's developers rarely pass up the opportunity to buttress their

project with an impressive reference, their failure to mention Garnier's *Cité Industrielle* is not necessarily significant. None of the American or Canadian articles we have examined do so either, which not only tends to corroborate the views of Garnier exegetes regarding the tepid critical response to Garnier's project in the first years after its publication, but renders the presence of a first edition copy of Garnier's book in the Columbia University library all the more significant. Although the developments and connections between Garnier's *Cité Industrielle* and its forebears and successors clearly remain to be explored in the North American context, the economic situation in which we find no references to that project in the discourse around Arvida do not disprove a link between these two "industrial cities." In fact, the economic circumstances explain why Arvida does not equal, but rather manifests *Cité Industrielle* to which the North American project gave reality. "Imitation of a model," wrote researcher André Corboz, "occurs selectively."⁶⁶

It is time to consider the "*organisation systématique*" noted by Gréber, in search of conditions of fulfilment that Garnier's "not real" city leaves unmet.

ARVIDA, CITÉ INDUSTRIELLE

If the American paper cities—and the various social and urban utopias that marked earlier centuries—were largely left on the drawing table, it may be because there were few companies like the Aluminum Company of America. At the beginning of the 1920s, the youthful, dynamic multinational had assets of close to \$200 million and controlled over 30 companies busily involved in mining bauxite and electrolyzing, transforming, transporting, and selling aluminum in every corner of the world.⁶⁷ It had other

calling cards too: in Badin, as we have seen, the company set forth a storm of commentary with its unorthodox egalitarian attitude, as we have seen, toward "coloured people."

This is the company that in 1925 announced plans to build on the Saguenay River the third largest city in Quebec—behind Montreal (618,506 residents in 1921) and Quebec City (95,193) but far ahead of Sherbrooke (23,515) and Trois-Rivières (22,267).⁶⁸ It is hardly surprising that the project made headlines: while the premier of the province was announcing that the company would be paying "\$15,000 in wages per day to its employees" and establishing "the world's biggest aluminum plant,"⁶⁹ local and national newspapers were trumpeting the investment of \$75 million.

An ideal site, unprecedented energy potential, a new and prosperous industry, and 35,000 residents: on this the industrial city was founded. Still it was necessary, "450 miles north of Boston" as the Aluminum Company of America directors put it, to attract workers and staff—and to retain them once part of the local labour pool with other company towns already springing up. It was not enough to charm investors, workers needed charming too. So the company wasted no time getting to work on this "real" city, as attested by the exceptional measures of the March 1926 Arvida charter, adopted to make sure the company controlled the urban landscape.

We will now, using Tony Garnier's words, look at how this "real" city in the Saguenay brought his "not real" city to tangible life. The next sections of this article will outline the principal motifs of the project alongside the themes Garnier used in describing his "not real" idea.

"In our case, the determining factor is a rushing stream that supplies energy"⁷⁰

– Tony Garnier, *Une cité industrielle*

What then would draw the Aluminum Company of America to a place "450 miles North of Boston"? There is of course the industry's hunger for hydroelectricity—the "low cost power at tide water" whose abundance lifted the reason in what the period called the "power towns." Not long before Aluminum Company of America, the American industrialist James Buchanan Duke—tobacco magnate and pioneer of hydroelectricity in North Carolina (in 1904 he started operating a power station on the Catawba River some fifty kilometres from Badin)—had found and spectacularly developed these hydroelectric resources at Isle-Maligne, where the enormous reservoir of Lac-Saint-Jean drains into the river. Henry Ford was probably another industrialist drawn to the hydroelectric potential Duke had developed. Even as he was attempting to obtain exploitation rights to the Tennessee River and take control of aluminum production for his cars, he could have been manoeuvring through a vague partnership with Baush Machine Tool Company, which in 1924 had contracted for Isle-Maligne electricity.⁷¹ What would Ford's industrial utopias have become on Canadian soil, one wonders. But it was Arthur Vining Davis and the Aluminum Company of America that got the exploitation and development rights, following two years of negotiations and the eventual intervention of Andrew W. Mellon,⁷² U.S. treasury secretary from 1921 to 1932 and a major aluminum shareholder. The company bought participation in what was at the time called the "Upper Development" (fig. 32), by opposition to the "Lower Development" downstream. Then, after obtaining its first megawatts from the "Upper Development" at

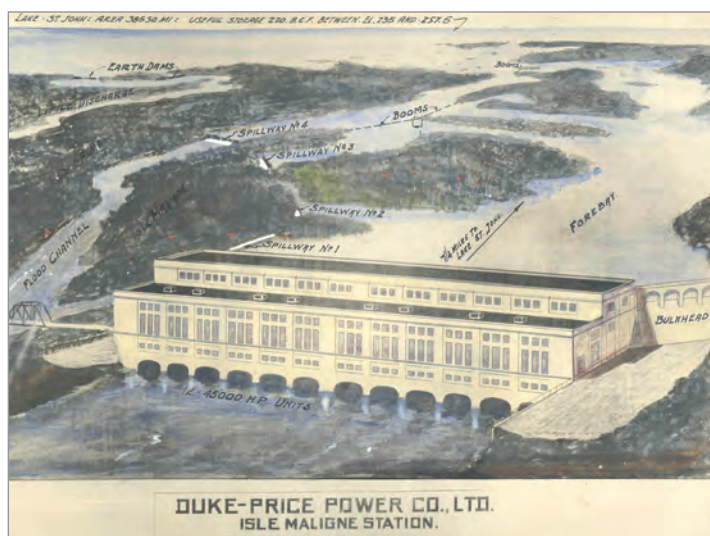


FIG. 32. PLAN VIEW, CIRCA 1925, OF THE LAC SAINT-JEAN OUTFLOW WITH THE ISLE-MALIGNE POWER PLANT AND HYDROELECTRIC FACILITIES DESIGNED BY HYDRAULIC ENGINEER WILLIAM S. LEE. | ALCOA ARCHIVES, HISTORICAL SOCIETY OF WESTERN PENNSYLVANIA ARCHIVES, LIBRARY AND ARCHIVES DIVISION, HEINZ HISTORY CENTER, PITTSBURGH (PA).



FIG. 33. THE SAGUENAY RIVER HYDROELECTRIC FACILITIES AROUND 1952. PLANS DATE BACK TO 1925 FROM THE ALUMINUM COMPANY OF AMERICA AND WERE COMPLETED BY THE ALUMINUM COMPANY OF CANADA WITH THE INAUGURATION OF THE SHIPSHAW II POWER PLANT AND DAM (FOREGROUND) IN 1942. THE FIRST OF THE TWO PLANTS, CHUTE-À-CARON, WITH ITS GRAVITY DAM, PUT INTO OPERATION IN 1931, IS SEEN IN THE BACKGROUND UPSTREAM. THE TWO SPECTACULAR PROJECTS SUCCESSIVELY CREATED THE MOST POWERFUL GENERATING STATION IN THEIR RESPECTIVE DAYS. | LIBRARY AND ARCHIVES CANADA.

Isle-Maligne, the Aluminum Company of America went on to build the most powerful station in the world for its own use at the “Lower Development” of Chute-à-Caron, with “1,340,000 horsepower of probably the cheapest hydroelectric power on the North American continent [...]” This station was designed by engineer James W. Rickey who, it should be noted, was previously stationed in Badin where, apparently building on the French idea to combine several stations (at least two downstream the Yadkin River from the Whitney dam), he proposed an hydroelectric scheme very close to the one that would take place in Arvida, where the gravity dam of Chute-à-Caron in fact echoes the one previously completed by the Aluminium Company of America at the Narrows, near Badin. The hydroelectric station there was also, as would be Chute-à-Caron, the most powerful of its time. However, the building of Chute-à-Caron was orchestrated in a feat “[taking its] place with the notable pieces of recent

years, if not of all times.”⁷³ To dam the 30 metre wide river, a “precast concrete dam” was built on the shore and toppled with dynamite into the river. It weighed close to 10,000 tons and was 28 metres high (figs. 33-34).

Although the company’s decision to set up shop in the Canadian hinterland is partly explained by the impossibility of transporting electricity over long distances, the location had much to commend it. For Garnier, “the determining reason for the establishment of a similar city could be the proximity of raw materials, the existence of a natural energy source easily harnessed for industry, or the convenience of modes of transportation.”⁷⁴ Aluminum Company of America and Alcan chroniclers have stressed certain legal requirements requiring the company to establish a bauxite refinery on British territory before 1929 in exchange for a 1916 operating lease in British Guyana conceded to its subsidiary Demerara

Bauxite.⁷⁵ However, this only partially explains the choice of the Saguenay location, as the company already had an operation in Shawinigan. Although aluminum production requires electricity, its ore, bauxite, must undergo two successive processes: alumina must be refined or extracted, then be reduced in solution with cryolite and calcium fluoride through electrolysis in a smelter. Because the high cost of refining bauxite, a single refinery can be used to feed a large number of smelters. At the beginning of the 1920s, the Aluminum Company of America—after dropping the French project to build both an alumina plant and a smelter in Badin⁷⁶—mainly depended on a refinery built before the war in East Saint Louis, Illinois, to supply alumina to its smelters in Niagara Falls and Massena, New York; Shawinigan, Quebec; Alcoa, Tennessee; and Badin, North Carolina. This may explain why by the mid-1920s the company had still not satisfied its obligations under the Guyanese lease.



FIG. 34. THIS PRODIGIOUS SAGUENAY RIVER HYDROELECTRIC DEVELOPMENT PLAN, FROM ISLE-MALIGNE (UPPER LEFT) TO SHIPSHAW II (LOWER RIGHT), DISPLAYS THE AREA'S POTENTIAL IN A LUXURIANT PERSPECTIVE THAT HIGHLIGHTS THE GLITTERING SMELTER. | ALCOA ARCHIVES, HISTORICAL SOCIETY OF WESTERN PENNSYLVANIA ARCHIVES, LIBRARY AND ARCHIVES DIVISION, HEINZ HISTORY CENTER, PITTSBURGH (PA).

However, in grappling with constant bauxite supply problems in the days when aluminum production was still generally based on experimental techniques, the innovative Aluminum Company of America—"born on research,"⁷⁷ as it was said—had since the 19th century ceaselessly improved the processes for extracting alumina from various grades (i.e., bauxite with higher or lower silica or iron content), and concentrations (i.e., aluminum content) of bauxite. Charles Martin Hall, the American inventor of the electrolytic reduction process (at the same time Paul Héroult invented it in France) and cofounder of the Aluminum Company of America, had tested a dry process for separating out the alumina from other metals and impurities in bauxite.⁷⁸ Compared to the Bayer process developed for European bauxite and based on heating a liquid bauxite-based solution under pressure, the dry process seemed more promising for more siliceous low-grade American

ores, like those of the Arkansas mines that had allowed Aluminum Company of America to break free of German and other outsourced alumina. However, the uncertain success of the dry process and developments in the 1910s motivated the company to switch its focus to adapting the Bayer process to American bauxite, and most of the experimental dry process refineries were abandoned or, in the case of the East Saint Louis refinery, converted to the Bayer process.

So while to comply with the terms of the British Guyanese lease, the Aluminum Company of America could have built a refinery somewhere within the British Empire, it turned instead, in Arvida, to construction of a refinery using the dry, or slag ore, process. This was because the company intended to refine, besides American bauxite, which was at the time declining in alumina content, anorthosite, an abundant substance in the Saguenay area subsoil. The slag ore plant, which

contemporary postcards show as featuring decorative columns (fig. 35) ordered by Davis, was in fact probably needed to supply the large number of potrooms planned for—and built—in Arvida. The plans for this plant show us that that "450 miles north of Boston," the advantages of the site countered its remoteness to back up the promise to establish "the world's biggest aluminum industry." In the final analysis, it was self-evident that, around this autarkic refinery, a city on a similar scale deserved to be built. And while the world's previous model cities often amounted to collections of residences—the most original examples, such as Margaretenhöhe in Essen, Germany, 1909-1938, built on the initiative of Margarethe Krupp, or those that followed Arvida, such as the celebrated Radburn, New Jersey, 1929—this city, like Cité Industrielle, was fully integrated from the word go, with residences and of course the smelter, as well as a downtown, hospital, schools and other

institutions and in every neighbourhood a neighbourhood centre.

Already in 1911, Julien-Édouard-Alfred Dubuc, a well-known local industrialist, had sought to promote the site's advantages specifically to attract U.S. promoters, including possibly the Aluminum Company of America, to found a city he called Saguenayville. A painting by Hiram Harold Green he commissioned in 1911 shows these advantages (fig. 36). "A major railroad passes between the factory and the town,"⁷⁹ wrote Garnier: all around the Arvida site, a well-established transportation network connected it via the Ha! Ha! Bay Railway and the Quebec and Lake St. John Railway to the deep-water anchorage of Baie des Ha! Ha!, where ocean vessels could deliver raw materials and products could be exported around the world. Engineer Edwin S. Fickes, who oversaw the birth of the Aluminum Company of America's settlements in Shawinigan, Massena, Badin and Alcoa, could not say enough about the site:

For making aluminum, the Saguenay power is one of the most desirable on the Atlantic seaboard of North America; it can be developed at low cost, and Lake St. John and its tributaries can be used as reservoirs to regulate the flow of the river so as to produce almost one hundred percent of primary power; abundant labour and railway transportation are at hand and, last but not least, it is close to tidewater so that the bulky raw materials required, and much of the metal made, can be transported by water.⁸⁰

As we have seen, other industrial cities, such as Port-Alfred (established by Dubuc) and Kénogami, were also quick to set up shop this part of the country. In August 1925, just beside William Price's Kénogami and not far from the older town of Jonquière (like Garnier's "old town next



FIG. 35. THE ARVIDA BAUXITE REFINERY, OR SLAG ORE PLANT, WAS PROMOTED ON POSTCARDS FROM ITS INAUGURATION IN 1927. IN LIGHT OF UNSATISFACTORY RESULTS FROM THE INITIAL DRY PROCESS, A BAYER PROCESS REFINERY WAS BROUGHT ON LINE TO REPLACE IT IN 1935, WITH PLANS BY ARCHITECT J.C. MEADOWCROFT. | BIBLIOTHÈQUE ET ARCHIVES NATIONALES DU QUÉBEC.

to the waterfall"⁸¹); at the very point where the railway lines meet and where the clay-covered rock provides a solid foundation for a factory, the Aluminum Company of America acquired from some sixty farmers the location for its planned city at a cost of \$1 million. "It includes," in Garnier's words, "both mountains and a plain, the latter crossed by a river,"⁸² the Saguenay.

The plan delivered by town planners Brainerd and Skougors takes advantage of this specific topography crisscrossed by ravines and "coulées," as they are called locally,⁸³ allowing the city to be permeated with its natural surroundings. Here Morris Knowles's contour system is adroitly appropriated and applied, systematically, on an entirely different scale that what is seen in, for example, Eclipse Park. It provides a permanent contact between the city and its natural surroundings, more realistically of course than Ford's linear city would, but even more effectively

than would Garnier's segregation of park and city. The typically furrowed terrain of the site was carefully surveyed *in situ* by the Aluminum Company of America's engineers and designers and used to create a true system of parks, like that of Olmsted, crisscrossing and separating the various parts of the city, dotting it with green space even among houses and streets built on flat land. The Arvida plan integrates and draws on all the urban planning expertise of its time, as much in adapting to its site (it incorporates for example the old Chemin Radin leading to its version of Garnier's "old town") as in laying out streets according to that adaptation, providing for future development, and creating a traffic hierarchy. In addition to the thoroughfares common to Brainerd's work—in Arvida 106 feet (31.8 metre) wide—roads are divided according to whether they connect city sectors, *i.e.*, the factory, downtown, and residential sectors, or run between blocks, neighbourhood centres, or internally



FIG. 36. HIRAM HAROLD GREEN'S 1911 PLAN VIEW OF THE SAGUENAY RIVER AND AREA FROM JONQUIÈRE TO THE BAIE DES HA! HA! THIS AREA WAS SERVED BY THE HA! HA! BAY RAILWAY, WHICH RAN FROM THE PORT AREA (THE SITE OF PORT-ALFRED) TO THE SAINT-MATHIAS RANGE ROAD (THE FUTURE ARVIDA SITE) AND INTERSECTED WITH THE QUEBEC AND LAKE ST. JOHN RAILWAY. | BIBLIOTHÈQUE ET ARCHIVES NATIONALES DU QUÉBEC, SOCIÉTÉ D'ARCHIVES SAGAMIE.

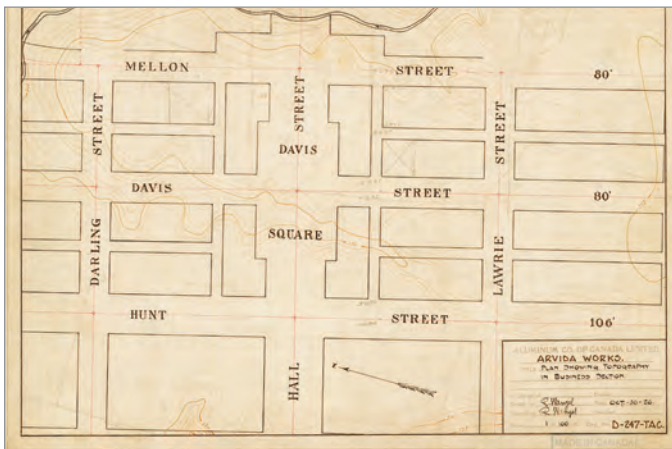


FIG. 37. ARVIDA WORKS' "PLAN SHOWING TOPOGRAPHY IN BUSINESS SECTION," OCTOBER 30, 1926. THIS, LIKE MOST ARVIDA PLANS, IS STAMPED "MADE IN CANADA," WHICH, OFTEN BESIDE A "PITTSBURGH DRAWING NUMBER," INDICATES THAT IT LIKELY CROSSED THE U.S. BORDER, UNLIKE BRAINERD, SKOUGAR, ROGERS AND SMYTHE, WHO PROBABLY NEVER SET FOOT IN ARVIDA. THE ALUMINUM COMPANY OF AMERICA WAS A MULTINATIONAL TO THE CORE AND FAMILIAR WITH CANADIAN REGULATIONS. AS EDWIN S. FICKES REPORTED IN 1899, THE COMPANY'S NIAGARA FALLS, ONTARIO, SMELTER PLANS WERE PREPARED AT THE OFFICE OF THE NIAGARA FALLS MUNICIPAL ENGINEER "SO THAT THEY WOULD NOT HAVE TO BE IMPORTED FROM THE UNITED STATES AND BE SUBJECT TO CANADIAN CUSTOMS DUTY." | VILLE DE SAGUENAY.



FIG. 38. THE ENGINEERS, TECHNICIANS, AND OTHER DESIGNERS AT ARVIDA WORKS, RESPONSIBLE FOR PLANNING AND OVERSEEING THE CONSTRUCTION OF THE CITY AND SMELTER. | COLLECTION CHARLES BOIVIN.

inside a block. They can be compared to the 20, 19, and 13 metre wide streets of Cité Industrielle (though these are closer yet to the 58, 50, and 40 foot streets of Badin), and are 80, 60, or 50 feet (24, 28, or 15 metre) wide in order to accommodate cars, another corollary of the aluminum century's modernity. The winding of the roads was probably not however designed to slow down vehicle traffic, as in American suburbs of the 1950s, but to create and enhance the picturesque character of each artfully selected site. Only the downtown area, called "business district," received large-scale levelling of

uneven terrain, in order to accommodate the monumentality of the planned whole (fig. 37).

Work on all this, as well as the construction of the city and factory, was begun in the summer of 1925. Arvida Works, the subsidiary the company established for the purpose, built temporary work camps in the future new city for the project (fig. 38). These were duly photographed, like every other step of the worksite and city, and recorded in a "General Layout of Camp Buildings" to display the meticulous planning and prove that work was really

going forward. It shows an office, dining hall, staff quarters, labourers' quarters, family residences, a bank, post office, dispensary, boiler house, and garage, all linked to waterworks and sewers (fig. 39). Based on the general city plan, which spelled out each step of future developments or the residential, commercial, and industrial zones, the Arvida engineers subdivided the land into sections (designated by letters) and subsections (roman numerals) which were further subdivided into blocks (numbered), each of which three to five times as long as it was wide. Their detailed plans show the

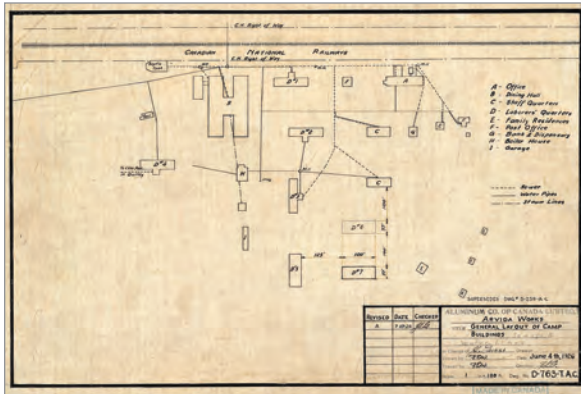


FIG. 39. ARVIDA WORKS, "GENERAL LAYOUT OF CAMP BUILDINGS: SEWERS AND WATER LINES." | VILLE DE SAGUENAY.

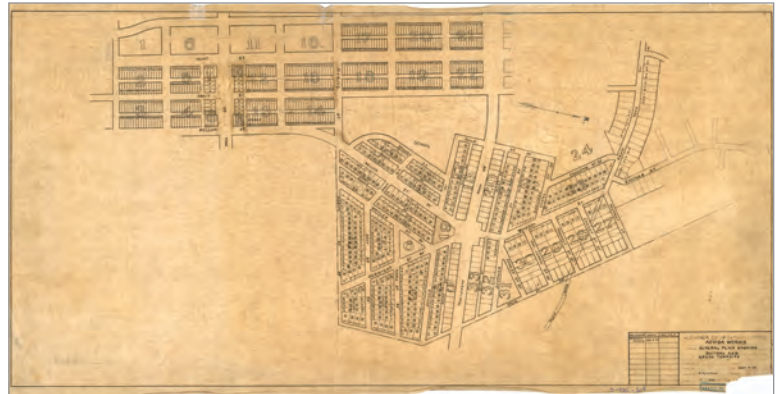


FIG. 40. DRAWING BY O. HJERTHOLM, ARVIDA WORKS. "GENERAL PLAN SHOWING SECTIONS A AND B ARVIDA TOWNSITE." | VILLE DE SAGUENAY.

single-family detached houses typical of the Arvida design, each set in the centre of a 50 by 100 foot (15 by 30 metre) lot, backing on the others and facing the street (figs. 40-42). The new city was taking shape.

In the history of urban design, Arvida stands out not just for the integration of its "machine city" and the refinement of its plan. The Aluminum Company of America's industrial city stood on the cutting edge of North American research, standing out for its worker accommodations, urban facilities, and the aesthetic value of its landscape and monuments.

"In order to arrive at a design that completely fulfills the moral and material needs of the individual"⁸⁴

– Tony Garnier, *Une cité industrielle*

In July 1926, the smelter produced its first ingot. A month later, with 800 workers still hard at work on construction, the first Arvida residents moved into their homes. Engineer Harold Wake, who ruled the worksite with an iron hand, declared victory: less than three years after the first plans had been laid: Arvida was now a real community, with houses,

banks, a movie theatre, a grocery store, and a hospital (fig. 43). The assembly hall imagined by Garnier is echoed in 1920s Quebec by a Catholic church seating 1,000 and a Protestant one as well, both paid for by the Aluminum Company of Canada (Aluminum Company of America's subsidiary for Arvida) as was of course everything else (figs. 44-45). The model city, which stood out on the Canadian scene for the excellence of its general, technical, and vocational schools even had its own newspaper, *The Arvidian*, a cousin of Alcoa, Tennessee's *Aluminum Bulletin* (fig. 46). And although there was no museum of local identity like the one in Cité Industrielle (also recommended by Patrick Geddes), Arvida boasted baseball and football fields, tennis courts, and a skating oval, as well as a town hall, hotel, arena, and had a library on the way (fig. 47). Geddes-style regionalism had here found more effective forms of expression.

Beyond paper drawings and plans, Arvida, a worthy heir of the Beaux-Arts tradition, had to marry beauty and functionality. No façade or sight-line could be left to chance. Reports of Davis demanding the repainting of a gas station or the demolition and reconstruction of a factory

building for aesthetic reasons testify to his idea of the city's function as a promotional tool, whatever its role in ensuring workers' well-being (and productivity). Like Garnier who planned out even the street lamps of Cité Industrielle, the Aluminum Company of Canada carefully planned down to the last detail, including the urban furniture, garbage cans, tourist plaques, and (aluminum) street signs (fig. 48). It planted hundreds of trees, developed parks and playgrounds, and awarded prizes each year for the most beautiful yards. Although fully electrified, Arvida had no more need for power poles and overhead lines than did Cité Industrielle, where, wrote Garnier, "the Administration takes care of wastewater and waste disposal, and also oversees regulation of the dam and the provision of energy, light, and heat to the factories and individuals." In Arvida, it was said,

Every modern improvement has been provided: running water, sewers, and electricity. The power lines will run along underground passageways throughout the city—not a single pole will be seen in the streets except for street lamps. Every street will be paved and residential houses, for workers and upper-level company officials alike, will be detached.⁸⁵

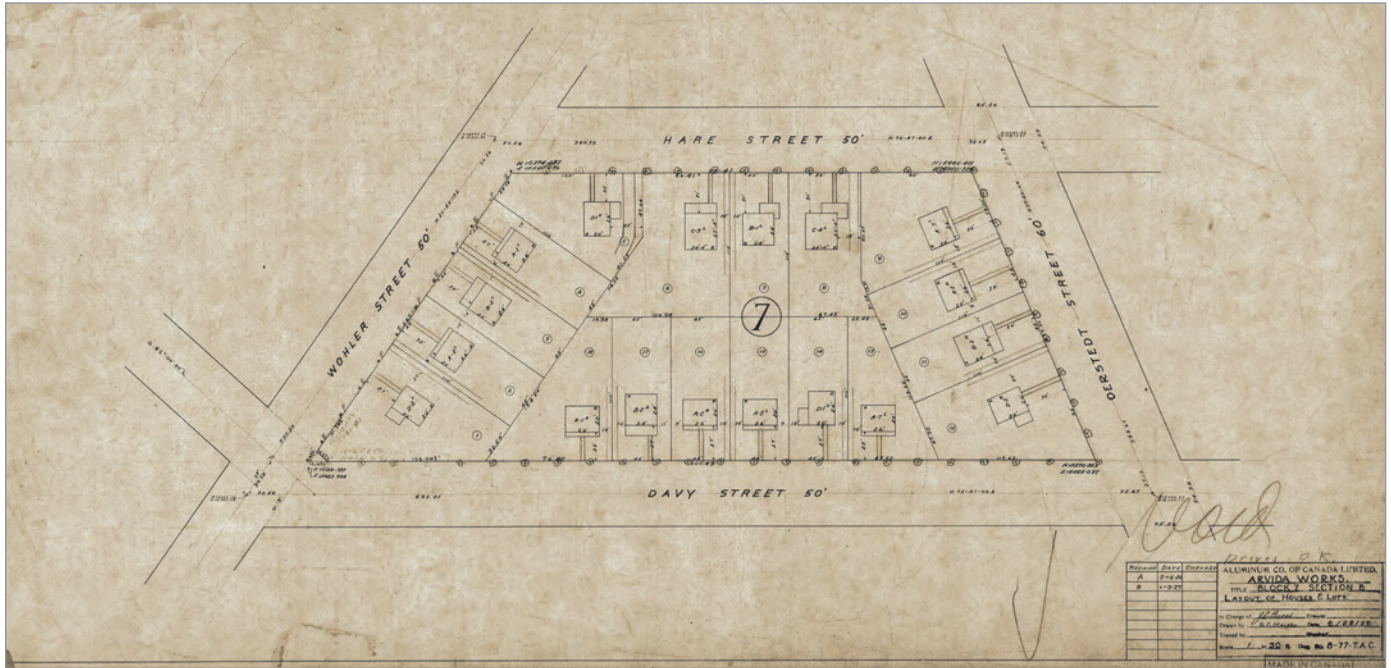


FIG. 41. ARVIDA WORKS, "LAYOUT OF HOUSES AND LOTS, BLOCK NO. 7, SECTION B.," JUNE 1926. | VILLE DE SAGUENAY.



FIG. 42. VIEW FROM THE ROOF OF THE CARBON-BAKING BUILDING (ELECTRODE MANUFACTURING PLANT) IN 1927, SHOWING THE FIRST FOUR POTROOMS AND THE NEW RESIDENTIAL AREA WITH ITS SINGLE-FAMILY DETACHED HOUSES. AT LEFT, THE ALUMINA STORAGE BUILDING IS VISIBLE, AS WELL AS THE HOSPITAL IN THE BACKGROUND TO THE LEFT, NEAR HOMES. | LIBRARY AND ARCHIVES CANADA.



FIG. 43. POSTCARD OF THE ARVIDA HOSPITAL FROM 1927. | BIBLIOTHÈQUE ET ARCHIVES NATIONALES DU QUÉBEC.

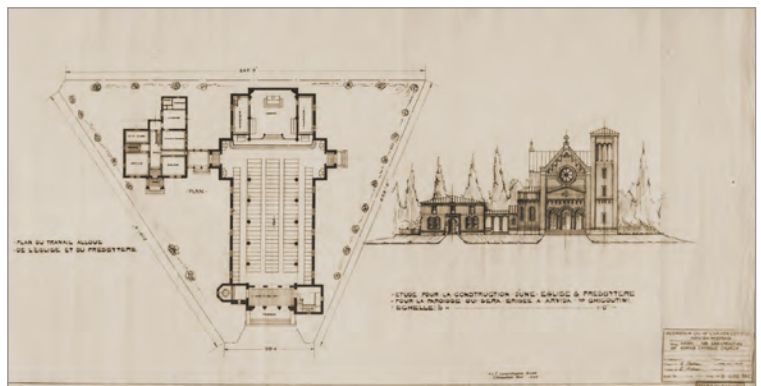


FIG. 44. COPY OF PLAN FOR THE SAINTE-THÉRÈSE CHURCH AND RECTORY, ALFRED LAMONTAGNE, APRIL 1927. | BIBLIOTHÈQUE ET ARCHIVES NATIONALES DU QUÉBEC.



FIG. 45. ARVIDA'S FIRST UNITED CHURCH, CIRCA 1930. | SOCIÉTÉ HISTORIQUE DU SAGUENAY.



FIG. 46. JULY 31, 1929, OF THE ARVIDIAN: THE SAGUENAY VALLEY DEMOCRAT. | PRIVATE COLLECTION.



FIG. 47. THE EARLIEST ARVIDA RESIDENTS STILL VIVIDLY REMEMBER THE ROLE THAT COMPANY-PROVIDED SPORTS FACILITIES AND RECREATIONAL ACTIVITIES PLAYED IN LIFE IN THE MODEL CITY. HOCKEY GAME CIRCA 1940. | PRIVATE COLLECTION.

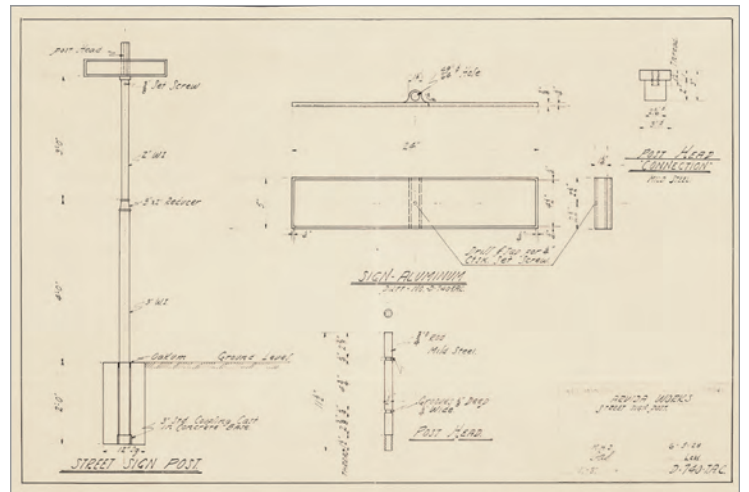


FIG. 48. ARVIDA WORKS, "STREET SIGN POST," 1928. | VILLE DE SAGUENAY.

Garnier's "large public bath [...] with many dressing rooms and baths [...] showers" was however not reproduced in Arvida, as every house had its own sanitary facilities—in accordance with standard North American usage. Jacques Gréber had expressed astonishment, as

we have seen, at this particularity of North American housing.

The first part of Arvida to be built, called Section A, was of course the part closest to the smelter (fig. 49). But the first residents found many more benefits there

than that of living close to their place of work. To grasp the novelty of this city, we need to picture ourselves in Tony Garnier's world, a world in which houses where each bedroom had "at least one window" could seem like a dream. It was no small challenge, as the company



FIG. 49. AERIAL VIEW OF ARVIDA'S "SECTION A" CLOSE TO THE SMELTER, AROUND 1927. | MCCORD MUSEUM OF CANADIAN HISTORY.

had decided, as it had done in Badin, to house all workers, skilled and unskilled, in single-family detached houses and create a place where "not a single house was built," as the Wake put it, "that resembles its neighbour."

Le Corbusier was said to be particularly impressed by the variety of dwellings proposed by Garnier in *Une cité industrielle*.⁸⁶ Given the contemporary tendency to uniformity, this is hardly surprising. Although the *Werkbund* and other Berlin, Stuttgart, Vienna, and Prague architectural exhibitions showcased neighbourhoods planned with a variety of houses "from street pattern up," most developments at the time more closely resembled Thomás Bat'a's Zlín in what is today the Czech Republic, based essentially on a single model reproduced hundreds of times. Even in North America, the idea of varied housing—much less its actual construction—was the exception rather than

the rule. A particular North American innovation, the Sears Modern Home, allowed buyers to order a prefabricated house in their choice from a variety of house designs via mail order catalogue, though they were more expensive than the houses in Arvida. Other prefabricated models, like those from Canadian Aladdin, a few of which were built by Shawinigan Water and Power, were so primitive that they became object of scorn among architects; in Arvida they were banned. And, while the forty house types developed for the paper city of Eclipse Park impressed the critic Lawrence Veiller, few were ever built. At best, as Veiller also noted, an attractive landscape might be created through winding streets lined with duplexes, quadruplexes, and quintuplexes, as seen in Elizabeth, New Jersey. Arvida Works, however, championed the single-family detached house from the start. Drawing, undoubtedly on the abilities of Wake's assistant L.S. Grandy,

who had previously supervised the construction of 700 houses of a half-dozen types in Alcoa, the company developed 65 distinct housing models for the first phase of construction alone. To attain this degree of variety, the company put together a remarkable organization, running a construction site of unprecedented proportions: by 1926 the first 270 houses had been built in twenty-nine models, most offered in left and right versions, the mirror-image of each other.

"The monotony of today's typical street alignment is completely avoided"⁸⁷

– Tony Garnier, *Une cité industrielle*

Forty years after Pullman, the orthogonal plan—considered "the world's most perfect," and greatly favoured by Garnier—was no longer sufficient to ensure the fortunes of a company town as ambitious as the one the Aluminum Company of America was planning. Arvida used curvilinear patterns carefully modeled on the contours of the land, and overcame the "monotony of alignments" feared by Garnier through a meticulous arrangement of residential architecture—the prime matter of the urban landscape. The decision in Arvida to build single-family detached houses on fence-free lots, as in Alcoa and previously Badin, reflects Cité Industrielle's vision of a spacious parkland free of barriers and demarcations between lots. Arvida, like Garnier's proposed city—which incidentally is much closer to American than European models—marks a clear departure from the rowhouse tradition of the English company town typical of Saltaire, U.K.; Pullman, Illinois; and the "corons" of Belgian and French mining villages. The party wall, still present in symbolic form at least in the fences separating houses in Eclipse Park (fig. 13), is completely forgotten here in favour of a pastoral

monumentalization of the home that will later in the century characterize suburbs throughout North America (fig. 50, 51).

Although traditions of multi-family housing were better established in Europe than in North America, the choice of varied single-family detached houses reflects not just American practices but also the ideal of many utopians, Fourierists of course excepted. Many company towns, moreover, still provided such housing only to managers and qualified employees—Quebec’s notorious “*quartiers des Anglais*”—while the most paternalistic of them generally opted for a less costly option building like row housing—semidetached and the more French quadruplexes of Badin being a step up. Arvida houses, on the other hand, are designed specifically to foster a sense of ownership and belonging on the part of both labourers and qualified employees. This was accomplished first and foremost by promising Arvida families a level of comfort absolutely unattainable in the major centres: “The principal objection to our houses,” as Wake put it, “comes from the fact that they are of a better quality than is necessary for [...] the ordinary workman.”⁸⁸ The second lure being that despite being anchored in a very American capitalist spirit, the residential landscape of Arvida manifests an identity-forming egalitarianism that echoes Cité Industrielle’s regionalism and credited socialism.

Thus, instead of establishing distinct communities of workers, specialized employees, and managers—more “*quartiers des Anglais*”—the company opted in Arvida for the mixed neighbourhoods proscribed by American racial segregation. The company had eventually been forced to prohibit black workers from owning property in Alcoa’s white districts, but in Arvida the city charter declares that



FIG. 50. EARLY POSTCARD SHOWING ARVIDA HOUSES LIKE ELEMENTS OF A PARK. | SOCIÉTÉ HISTORIQUE DU SAGUENAY.



FIG. 51. AN ARVIDA STREET AROUND 1930, WITH ITS HOUSES ON UNFENCED LOTS, AS IF SPRUNG UP IN A PARK. ALL TRACE OF THE PARTITIONED SPACE COROLLARY OF ROW HOUSING INHERITED FROM EUROPEAN INDUSTRIAL CITIES HAS GIVEN WAY TO THE SEMIOTIC OF THE SINGLE-FAMILY DETACHED HOME. | SOCIÉTÉ HISTORIQUE DU SAGUENAY.

“the city shall comprise but one ward.” The distribution of house types confirms that the usual segregation found in industrial towns was no more. Houses for various classes of worker were built side by side. Only after planning was long complete did the reality of Arvida’s incarnation on Quebec (and Catholic) soil succeed in splitting the community in two. Planners Brainerd and Skougor had not anticipated the complexity of harbouring Catholic and Protestant religious traditions in the same city. Thus in place of a single neighbourhood centre and church, Arvida’s Section A ended up with two: the area planned around Sainte-Thérèse Church drew Catholics, while the corner of Moissan and La Traverse, where the Protestant church was to rise, drew its own practitioners, who represented, at least in Arvida’s early years, more than a quarter of the city’s population.⁸⁹ Specialized employees, often American engineers

or English or Scottish Canadians, were often Protestant. Labourers seem mainly to have been Catholic (or Orthodox), although Catholic French Canadians only made up half the population at the time. Arvida was thus quick to develop two distinct districts, although, as historian José Igartua noted, “white and blue collar workers mixed in both.”⁹⁰

For all that, the homes of the seventy-odd staff and two hundred labourers were essentially indistinguishable. As in the community of Margarethöhe, known at the time for its egalitarian housing in which outside features indicated nothing about the social standing of the occupants, none of the first 270 houses in Arvida had any adornment or special character showing the class of worker living inside. The most imposing houses might be home to French Canadians, Russians, Czechs, or Poles, while smaller houses might belong to American or

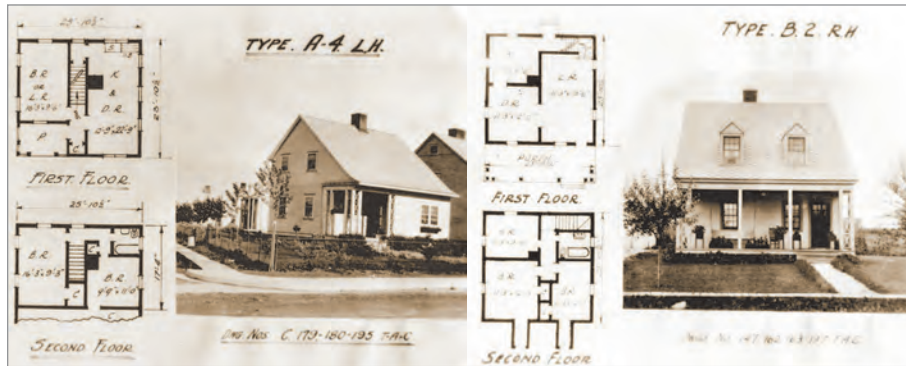


FIG. 52. TWO OF THE HOUSE MODELS LISTED BY ARVIDA WORKS IN THE CATALOGUE *ARVIDA: TOWNSITE HOUSES*. ONE IS A TYPE B-2, WITH SEPARATE KITCHEN AND DINING ROOM, BUILT FOR \$5225 (1926); THE OTHER IS TYPE A-4 BASED ON "THE USUAL TYPE OF HOUSE IN THE PROVINCE" WITH "SALLE FAMILIALE," BUILT AT A COST OF \$5022 (1926). | RIO TINTO ALCAN (SAGUENAY).



FIG. 53. HOUSE MODEL TYPE C-5, BUILT FOR \$9103 EACH (1926). | RIO TINTO ALCAN (SAGUENAY).

English Canadian engineers. Telling them apart meant looking for the closets, central heating systems, and hardwood floors more common in the second group than the first. Differentiation was through the total comfort of manager and specialized staff houses, with luxury features rather than size accounting for different production costs. These ranged from \$4,200 (in 1929 dollars) for the four type A-3 houses, to \$14,223.50 for the two type J-1 and J-2 houses. In Arvida, you really couldn't judge a book by its cover (figs. 52-53).

This is confirmed by another particularity of the Arvida habitat, where according to Wake, "one hundred of the original [...] houses [of] the Quebec design"⁹¹ could be found. Mainly clustered around the Catholic church, some of these houses featured a single *salle de famille*—not a family room—in place of separate living room, dining room, and kitchen. This relatively archaic space shows the way Arvida's habitat was designed to foster identity: the *salle de famille* was typical of the traditional French Canadian dwelling, settler houses, while Arvida's Americans were more likely to expect a separate kitchen and dining room. Wake proudly told of rejecting most of the house plans designed for Arvida in the United States, accepting only the elevations, in order to

model Arvida house designs on "a typical ordinary house common in the province of Quebec,"⁹² which would help make workers feel more at home.

Architectural regionalism was at the time certainly winning converts, at least in theory: in addition to the California houses of Irving J. Gill or the "Mexican" houses of Bertram Goodhue's Tyrone, New Mexico, there was also the industrial town of Norrbyskär in the late 19th century, which borrowed typically Swedish architectural features.⁹³ The usual approach of the Arvida designers, Richard Haviland Smythe, James Gamble Rogers II, and Brainerd and Skougor, was reflective of this Zeitgeist, as seen in the Latin American style of the María Elena, Chile, plans delivered at the same time (fig. 54), and probably reflect the express intention of the Aluminum Company of America as well. But at a time when the Province of Quebec Association of Architects had just called for a return to "the tasteful architecture of yesteryear,"⁹⁴ the decision to opt for "typical" local styles was significant. Wake's effort was in fact one of the first attempts to codify Quebec's vernacular architecture. All of Arvida, not only its residents, would thereby gain an identity: Arvida would constitute one of the first repertoires of

regionalist, neo-French Canadian architecture, made up of modern interpretations of the local heritage (figs. 55-57). It was certainly the first case of this repertory actually being built. No wonder the local paper, *Le Progrès du Saguenay*, lauded this "company that shows such concern for us."⁹⁵ These first houses, together with those to come in the 1930s and 40s from some of Canada's most important architects, were, and continue to be, warmly received. Initially rented at preferential rates (for company workers) ranging from 5.6% to 7.6% of the cost of their construction⁹⁶ (thus as a rule at lower rates of return than what industrial housing professionals recommended at the time⁹⁷), they were after 1927 sold via lease at no real profit at all through an innovative process locally known as the "partial payment plan."⁹⁸ After the mixed success of house sales in Alcoa (fig. 58), the company in Arvida committed even more to its decision to encourage worker home ownership, calculating monthly payments according to the worker-purchaser's income rather than according to preset terms (in Alcoa this had been ten years if the purchaser was unable to pay upfront⁹⁹). Two years later, 88 Arvida houses had been snapped up under the special terms provided by the company, which went so far as to reduce payments



FIG. 54. STREET IN MARIA ELENA, CHILE. | PATRICIO CABEZAS.



FIG. 55. THE SAGUENAY INN IS AN ARVIDA LANDMARK AND ONE OF THE MOST IMPRESSIVE MONUMENTS OF QUEBEC REGIONALISM. IT WAS BUILT IN 1939 FROM PLANS BY ARCHITECT HAROLD LEA FETHERSTONHAUGH, PARTNER OF ALEXANDER TILLOCH GALT DURNFORD, WHO PROBABLY INFLUENCED THIS MAGISTERIAL TAKE ON FRENCH CANADIAN VERNACULAR ARCHITECTURE, ACCORDING TO ROBERT HILL'S ANALYSIS (*BIOGRAPHICAL DICTIONARY OF CANADIAN ARCHITECTS*). | PHOTOGRAPH BY GUILLAUME ST-JEAN.



FIG. 56. THE REGIONALIST FIGURATION OF THIS HOUSE, BUILT IN ARVIDA IN 1942, EARNED IT AND MANY OF ITS ARVIDA SIBLINGS A PLACE IN *INVENTAIRE DES ŒUVRES D'ART DU QUÉBEC*, UNDER THE HEADING "MODERN RESIDENCE IN THE FRENCH CANADIAN STYLE." | SYLVIO BRASSARD, *INVENTAIRE DES ŒUVRES D'ART DU QUÉBEC*, 1944, BIBLIOTHÈQUE ET ARCHIVES NATIONALES DU QUÉBEC.



FIG. 57. ONE OF THE HOUSES BUILT IN THE 1930S FROM ARCHITECT LÉONCE DESGAGNÉ'S PLANS FOR ARVIDA HOUSE TYPE D-5 AND INSPIRED BY THE BELLCAST EAVES OF FRENCH CANADIAN HOUSES IN THE BAS-DU-FLEUVE REGION. | PHOTOGRAPH BY MARC ELLEFSEN. SOCIÉTÉ HISTORIQUE DU SAGUENAY.

from worker-owners in financial difficulties. In its own way, the Arvida system, to which we will return, recycled the advantages of the collective ownership system championed by Ebenezer Howard, and probably by Garnier. Could the company's decision to sell off lots and buildings downtown without measures to retain control while going out of its way to help workers lease and acquire their own homes be considered a translation

of Cité Industrielle's collectivist principles into the materialist language of North America? On October 1, 1929, Wake reported that \$68,607 had been received through the lease and the sale of building lots in the residential sector and downtown. Most telling is the pride with which he adds that "quite a number of our people have been paying for a sufficient length of time that they now have a real interest in the property."

Times had changed since the days when paternalistic companies held workers virtually captive in a web of company housing, company stores, and company jobs. Most theorists and critics at the time agreed it was in the company interest not to hold on to any residences it might build, some even arguing for instalment plans, since this would provide the advantage of freeing the company from control of its worker residences in the long term

while allowing it to safeguard the town's architectural quality in the short term. It might even provide the company with a way to raise funds through the government housing grants that first appeared at the end of the 1910s. By the 1920s, town planners and no doubt many industrialists themselves had in any case grown more cautious about the real benefits of company towns after their experiences in the Great War, which had seen a proliferation of single-industry towns planned around factories to supply the war effort. While acknowledging the expertise acquired through the United States Housing Corporation and the Emergency Fleet Corporation's housing division, which between them built close to 30,000 housing units in over 150 new towns during the war, Morris Knowles, author of the textbook *Industrial Housing*, wrote in 1920 that "at its best the duty of managing an industrial town is an onerous one; it complicates rather than simplifies plant administration [...]. It is perhaps the very reason why so many industries have held aloof from the whole question of industrial towns [...]. Isolated sites should be chosen only as matter of necessity."¹⁰⁰

Even so, the sale of housing stock in company towns remained for a long time the exception. A Central Mortgage and Housing Corporation report from 1953 even declared "company ownership of family dwellings the universal hallmark of the single-enterprise community."¹⁰¹ It may then appear that the commitment to a social ideal outweighed straightforward financial concerns for the Aluminum Company of America and the Aluminum Company of Canada. They defied ordinary recommended practices with a property management system bringing no returns on *in situ* worker housing, and followed instead a utopian course toward a spectacular model city combining the new industry with a new aesthetic unity.

Nonetheless, whatever the benefits in enhanced worker stability and loyalty to be gained by treating Arvida residents better than they would be elsewhere, the bottom line remained the bottom line, following the dictates of the capitalism Davis manipulated so adroitly. Capital dictated the concretization of Garnier's "not real" city. Money was at the bottom of the "systematic organization" that Jacques Gréber described in North America. It is also the key to the feat of building the first 270 Arvida houses in 135 days.

"The building materials used are indigenous to this region."¹⁰²

– Tony Garnier, *Une cité industrielle*

Obviously Arvida as it was manifested did not share the socialism of Cité Industrielle.¹⁰³ Historians are divided as to the reason for the absence of churches in Garnier's project. Unlike the relatively anticlerical atmosphere of a France that had recently legislated the separation of Church and State, the church-dominated society of North America could probably not imagine Arvida without them. In any case, we can see that the Garnier's "progress in the social order"¹⁰⁴ is translated in the Aluminum Company of America as a certain (and unusual) egalitarianism combined with a benevolent paternalism regarding its workers' needs and futures. Describing the garden contests organized to get people involved in beautifying their homes, Wake complained that "the people occupying the Quebec type house (renting at a lower rent) have made little or no effort to improve the appearance of their yards, due [...] more than anything else to the fact that they have always lived in unimproved surroundings" but straight away pledged "to overcome [this attitude] eventually by education of the children in the schools to an appreciation of what

flowers, shrubbery and neat surroundings mean."¹⁰⁵ The general reforming spirit—as in most company towns the sale of alcohol was prohibited—was what enabled the development of the Quebec house, the lease purchase system and which, handed on and exercised by local Aluminum Company of America authorities, brought to workers an environment they otherwise could only dream of. So it was that when Davis expressed a wish to consolidate the promotional image of Arvida in a new "staff house" to impress visitors, Wake, who had looked at several architectural options to make houses even more affordable, replied as follows:

I do not think such a building is necessary for the benefit of our employees for the next few years at least, because they have practically all of the benefits which such a clubhouse would provide right in their present locations, and, in some ways, I think the separate houses much more suitable than one big building, and I do not think they cost much more to operate.¹⁰⁶

It is clear however that Arvida's system of land tenure, however idealistic it may appear in the North America of company towns, could be opposed, in its underlying ideology at least, to the "free reign over the disposition of land" Garnier referred to.¹⁰⁷ Private property remained, after all, an article of faith for the overwhelming majority of 20th century government urban planning and housing programs. The individual single-family houses that are its corollary are different from the typical residences in *Une cité industrielle*, both in their detached design and in their architectural diversity. Perhaps however it is precisely by diverging from Garnier's prescription that Arvida managed to pass the reality test that left so many paper cities hanging in the air. It held to Garnier's "simplicity of means," in which "our structure stays simple, without



FIG. 58. ADVERTISEMENT FROM THE ALCOA ALUMINUM BULLETIN OF 1919, PROMOTING HOME OWNERSHIP IN THE ALUMINUM COMPANY OF AMERICA'S TENNESSEE TOWN VIA A VARIETY OF SCHEMES.

ornament,¹⁰⁸ allowing it to deliver what the most innovative projects of the time, even the collective housing of Bruno Taut's *Hufeisensiedlung* in Berlin were unable to: lost-cost housing in a landscape designed to foster identity.

To build 270 houses in twenty-nine architectural configurations in 135 days, the Aluminum Company of America drew on its extensive industrial experience and know-how. It thus provided concrete foundations for every house—a virtual necessity in the Canadian winter, though often treated as a luxury reserved for paper cities like Eclipse Park—using only four sizes beneath the great variety of house-types. Each model was planned in detail: beside the attractive drawings, plans, cuts, and details were used to apply the American ready-cut system on an unprecedented scale (figs. 59-61). Construction would not be individual; it was the overall vision that would provide the intended variety. Possible variations in trim (corniches, doors, windows, and frames) were listed and standardized, both to increase the number of permutations available and of course to allow for mass production, speeding up

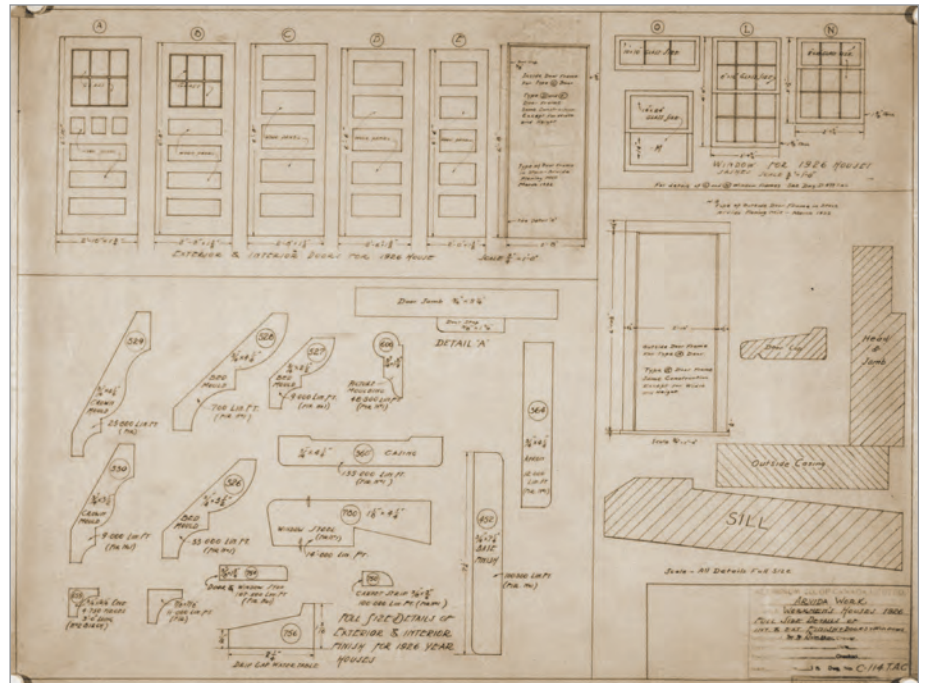


FIG. 59. ARVIDA WORKS, "WORKMEN'S HOUSES 1926: FULL SIZE DETAILS OF INTERIOR AND EXTERIOR FINISH AND DOORS AND WINDOWS." | VILLE DE SAGUENAY.

construction *in situ* (fig. 62). Arvida's contribution to the history of worker housing rests for that matter on its use of wood, which, unlike the cast concrete sections advocated by Garnier and widely used in Europe, allowed for both standardization and diversity. Framing components could therefore be cut in advance and used on different houses interchangeably. This was because traditional wood frame construction was as widespread in North America as Garnier's concrete and cement was in the southeast of France. In any case Garnier was fully aware that "other systems of construction, other materials would lead, no doubt, to other forms that would also be interesting to study."¹⁰⁹ Arvida and Cité Industrielle here share a spirit, not unrelated to the regionalism of Geddes, of being rooted in their local area and thus perfectly adapted to the geography—even, in the case of Arvida, to the local culture. Although the

consideration of Lyon residents' expectations regarding collective or single-family housing falls outside the scope of this article, we must note that Garnier's typological catalogue of housing designs is typically French, while the single-family detached house has deep roots in North American culture.

But this is not the sole key to this Canadian incarnation of Cité industrielle. A number of North American companies seeking to diversify their activities and investment potential built resource towns, establishing subsidiaries to do the building: Price Brothers created Kenogami Land and Kenogami Loan (1912); Julien-Édouard-Alfred Dubuc established Compagnie immobilière de Port-Alfred, Société de construction ouvrière, and the Ha! Ha! Bay Land and Building Company (1915); the Shawinigan Water and Power Company created the Shawinigan Falls

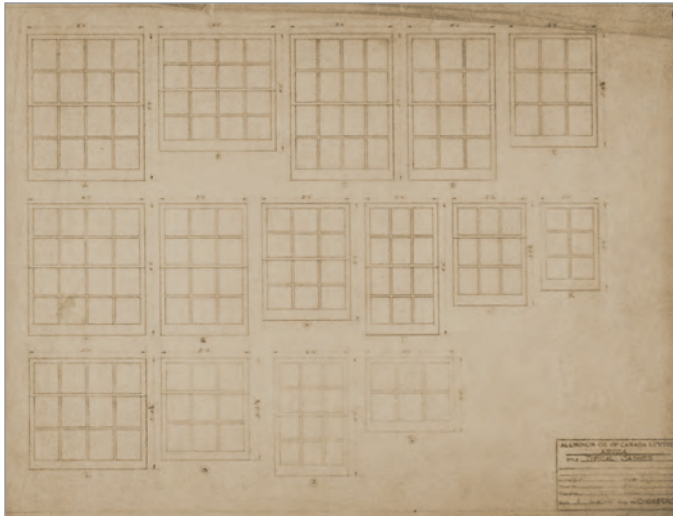


FIG. 60. ARVIDA WORKS, "TYPICAL SASHES." | VILLE DE SAGUENAY.

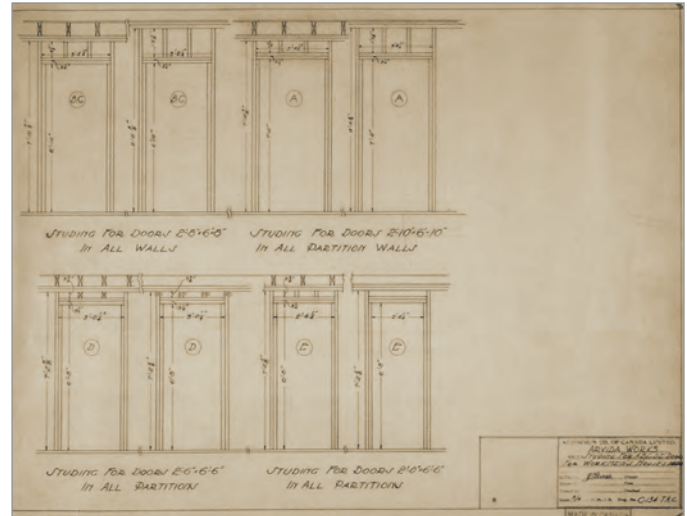


FIG. 62. ARVIDA WORKS, "STUD(D)ING FOR A, B, C, D, E DOORS FOR WORKMEN'S HOUSES." 1926. | VILLE DE SAGUENAY.

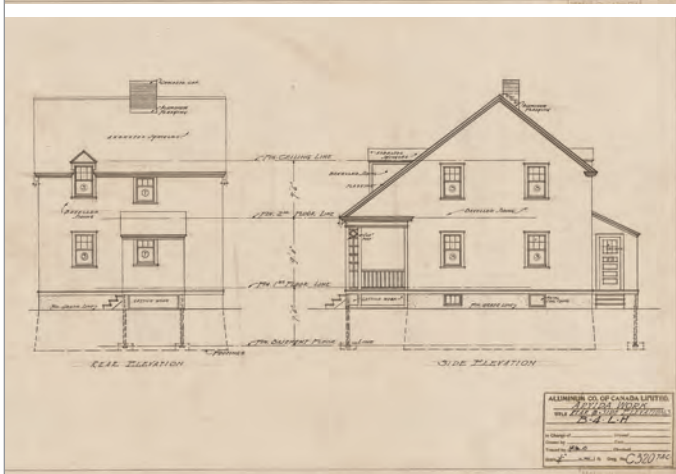
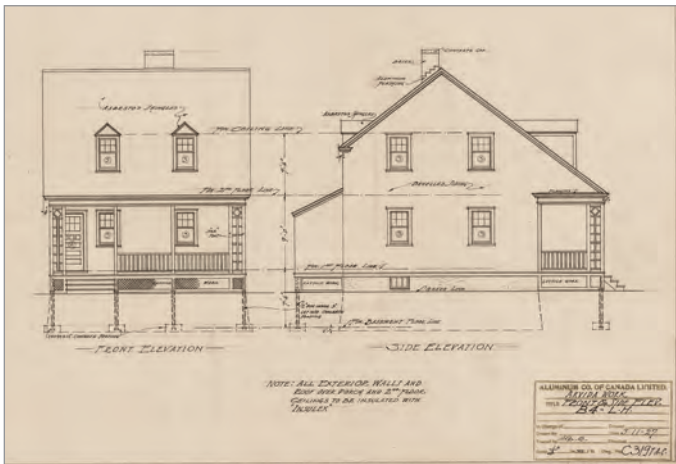


FIG. 61. ARVIDA WORKS, SET OF PLANS FOR THE MODEL B-4, 1927. | VILLE DE SAGUENAY.

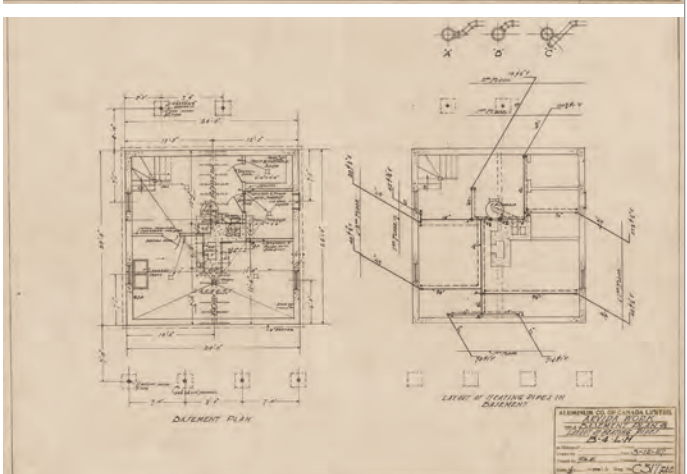
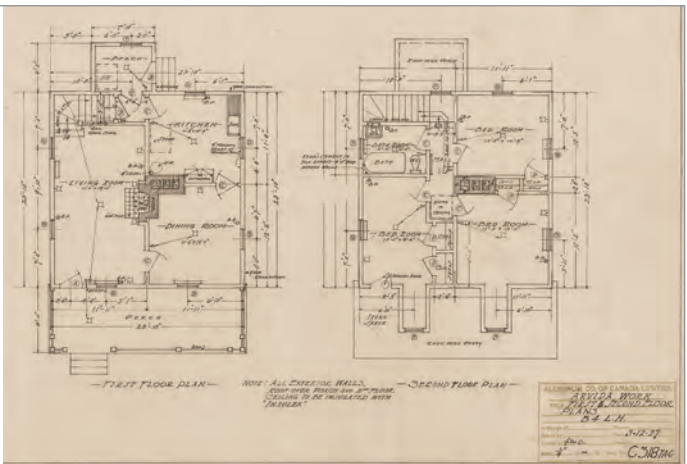




FIG. 63. CONSTRUCTION SITE OF THE "CITY BUILT IN 135 DAYS." A RAILCAR DISTRIBUTES PRECUT ARCHITECTURAL COMPONENTS FROM LOT TO LOT. | SOCIÉTÉ HISTORIQUE DU SAGUENAY.



FIG. 64. ARVIDA WORKS, "PROGRESS CHART: ARVIDA HOUSES 1926-27," JULY 24, 1926. | VILLE DE SAGUENAY.

Hotel Company (1900) and Shawinigan Falls Arena Company (1910) to develop part of Shawinigan. South of the border in Beloit, Wisconsin, the Fairbanks Morse Company, before significantly scaling back on the scope of their project, created Eclipse Home-Makers¹¹⁰ to carry out it out.

Yet if none of these projects came close to rivalling Arvida's 270 houses in so many models in 135 days, it was because the Aluminum Company of America and the Aluminum Company of Canada had successfully and profitably pushed the economic system to its limits, making a bundle by doing it with an implacably "systematic organization." The Arvida construction site, designed as much to attract purchasers and workers as investors, gigantic in scale due to the diversity of models and the number of houses all going up at the same time, required an unprecedented degree of planning. House models were first distributed on "House Designation Charts" with the resulting diversity carefully mapped out in the blocks of the first phase. Excavation of sites began on June 15, 1926, followed by assembly of formwork for the concrete

foundations, reused from house to house. Precut framing components (from a sawmill set up near the site), duly identified according to sets of detailed plans referring to the house model in question, were delivered on railcars running along tracks following the future streets from lot to lot. The houses could then be assembled with a hammer and nails. "They fitted so nicely," it was said, "that house after house was put up without a saw being used on the framing" (fig. 63). It was like the Alcoa, Tennessee site before it but even more efficient, and was the talk of the town. "Houses are being built [in Arvida] in much the same fashion as Henry Ford builds automobiles, with the exception that the carpenters go to the work instead of having the work come to them." All that was left was to watch and monitor its growth, in detail, using plumbing, interior painting, and other "progress charts" (fig. 64). The assembly line that was Arvida churned out a new house every five hours.

It is hardly surprising that, like the colour plan and house images, the city construction site itself became an "object of

representation," a key part of the company brand. The Aluminum Company of America photographed it from every angle and invited distinguished visitors such as the prime minister and presidents of the Engineering Institute of Canada and the Mellon National Bank, who could in 1926 attest Arvida's manifestation as much more than a paper city. The "huge investment in Canada"¹¹¹ announced in April 1926 was also reported breathlessly in September's *New York Times*: "In three months, 300 houses have been erected and two churches are being built"¹¹² (fig. 65).

Thus it was as Garnier foresaw: the industrial conditions that conjured Arvida in the first place were what allowed it to become real.

EPILOGUE

After the completion of this initial phase, the city continued to spread across the surrounding countryside until the 1960s. A fitting object of representation for a multinational in constant expansion, it could take pride in its catalogue of



FIG. 65. THE AREA AROUND SAINTE-THÉRÈSE CHURCH, ARVIDA, IN 1928. | COLLECTION CHARLES BOIVIN.

distinctive buildings and its array of houses, schools, churches, businesses, and parks, designed by such notable figures as Frederick Gage Todd, Ernest Isbel Barrott, Léonce Desgagné, Harold Lea Fetherstonhaugh, Alexander Tilloch Galt Durnford, some of the best-known Canadian architects and landscape designers of the period (figs. 66-68). During the Second World War, when the smelter, with its fully integrated production process, attained the jaw-dropping capacity the 1925 plans had aspired to and catapulted the city to the status of world aluminum capital, a new power plant (James Curzey Meadowcroft) was built on Arvida's north side, Shipshaw II, of course one of the world's most powerful generating stations, received the Canadian government's highest architectural award and created a sensation rivalling that of the world's first aluminum bridge, which the company, now Alcan, would build just upstream a few years later. Arvida was born as an

industrial utopia and forged in a tradition of excellence that its residents still enjoy the benefits of. The commitment of the aluminum companies of America and Canada and Alcan to this model city never flagged with continued growth: despite a seven-fold increase in population between 1939 and 1950, the new neighbourhoods that sprang up were as charming as the old (fig. 69). After the meticulously documented boom mapped out in complex charts now held in the municipal archives,¹¹³ the city could boast property valued at over \$45 million on an initial investment of a little under \$700,000 (1948) and a full documentary record in the tradition of the original, ambitious plans. A new hospital with its aluminum ornamentation was built in the 1950s, confirming the city's regionalist vocabulary: It was also located "on a mountain north of the centre of town," to quote Garnier, and to this day "curtains of greenery frame [it] to the east and west."¹¹⁴

Thus, if Arvida's downtown had not yet attained the monumentality seen in the 1926 City Beautiful plan, this was no doubt because immediate completion was less important to Arthur Vining Davis's social utopia than was its living environment. The construction of the first two commercial blocks, which resembled those of Badin and Alcoa, took place under very tight company supervision to ensure architectural quality. "It has taken constant supervision and endless patience to get the buildings constructed according to the plans,"¹¹⁵ complained Wake as he struggled with the whims and financial reversals of businesses that had acquired lots in the business district. A subsequent slowdown in Arvida's development has been attributed to the splitting up of the company in 1928. Suspected of monopoly, the company hived off its Canadian operations and formed the new, autonomous Aluminum Company of Canada. Arthur



FIG. 66. THIS ELEGANT TAKE ON FRENCH CANADIAN VERNACULAR ARCHITECTURE, ONE OF THE NEW MODELS OF HOUSE BUILT IN ARVIDA DURING AND AFTER THE SECOND WORLD WAR, WAS DESIGNED BY THE FIRM FETHERSTONHAUGH AND DURNFORD, SPECIFICALLY (IT BEARS HIS INITIALS) BY ALEXANDER TILLOCH GALT DURNFORD BEFORE HE LEFT TO SERVE IN THE ROYAL CANADIAN NAVY. IT WAS SUBMITTED BY HAROLD LEA FETHERSTONHAUGH WHILE FETHERSTONHAUGH WAS SERVING ON THE ARVIDA PLANNING COMMISSION. | MCGILL UNIVERSITY ARCHIVES.



FIG. 68. IN 1936, ARCHITECT ERNEST ISBEL BARROTT, KNOWN AT THE TIME FOR HIS WORK ON A NUMBER OF HOUSING DEVELOPMENTS (INCLUDING SEVERAL HOUSES FOR THE TOWN OF IROQUOIS FALLS FOR ABITIBI LANDS AND FORESTS) DELIVERED PLANS FOR 17 NEW ARVIDA HOUSE MODELS AS WELL AS THIS SET OF WATERCOLOURS ILLUSTRATING THE VARIETY OF LANDSCAPES AVAILABLE WITH THE PROPOSED MODELS. | COLLECTION PIERRE THIBAUT.

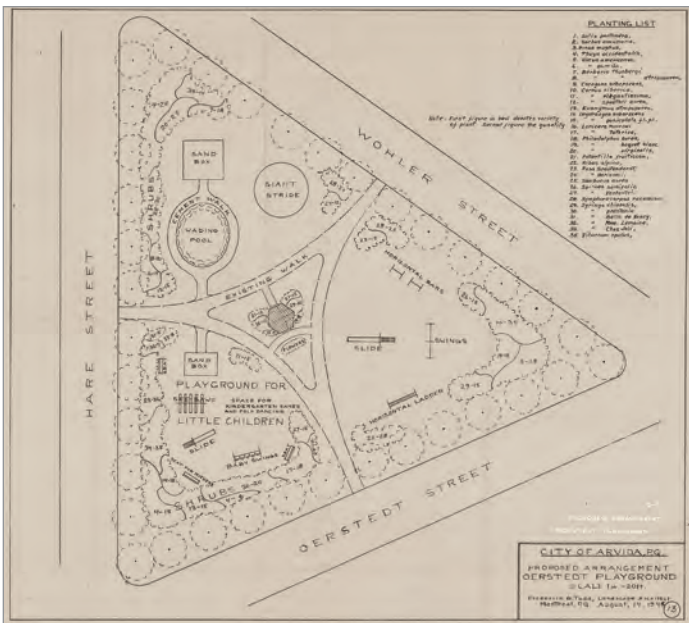


FIG. 67. LANDSCAPER AND ARCHITECT FREDERICK GAGE TODD WAS THE FIRST PRESIDENT OF THE ARVIDA PLANNING COMMISSION, ESTABLISHED IN 1942 BY THE ALUMINUM COMPANY OF CANADA. THIS 1946 PLAN OF OERSTED PARK WAS ONE OF A NUMBER OF PROJECTS HE DESIGNED FOR THE MODEL CITY. | VILLE DE SAGUENAY.



FIG. 69. LIKE MANY VIEWS OF ARVIDA, THIS IMAGE WAS ALSO PRODUCED AS A POSTCARD. IT SHOWS ONE OF THE NEW NEIGHBOURHOODS BUILT DURING THE SECOND WORLD WAR, AND DEMONSTRATING THE SAME ATTENTION TO AESTHETIC ASPECTS AS PREVIOUS DEVELOPMENTS. | COLLECTION CHARLES BOVIN.



FIG. 70. ARMED GUARD BY THE SHIPSHAW DAM. THE POWER STATION WAS BUILT IN BARELY 18 MONTHS IN 1942, STILL ACCORDING TO THE 1925 HYDROELECTRIC DEVELOPMENT PLANS. THE DAM, SMELTER, REFINERIES, AND CITY OF ARVIDA TOOK ON STRATEGIC IMPORTANCE TO THE COMMONWEALTH DURING THE SECOND WORLD WAR, AND EXCEPTIONAL MEASURES WERE TAKEN TO PROTECT THEM, INCLUDING CONSTRUCTION OF ANTI-AIRCRAFT BATTERIES AND THE ESTABLISHMENT OF THE BAGOTVILLE MILITARY BASE. | LIBRARY AND ARCHIVES CANADA.

As we see in the buildings completed between 1930 and 1960, the innovative Arvida Planning Committee the company established in 1942, and the Arvida of today, the model city and world aluminum capital has managed to preserve and even amplify that image-creating impulse that originally carved it out of nature “450 miles north of Boston.” Arthur Vining Davis’s vision aside, Arvida began its existence as just another Aluminum Company of America asset, but went on to become the birthplace, centrepiece, and flagship of its Canadian successor, as that company rose to the forefront of world aluminum producers and its homeland took its place as a world aluminum power (fig. 70). Taking over from its forerunners Badin and Alcoa, Arvida, by the mid-20th century, had fulfilled the utopian dream it sprang from. And Cité Industrielle?

In the end, it serves little purpose to draw firm conclusions as to the ignorance or awareness of one or the other model in this case. All the same, in winding up our observations, there is no doubt that Cité Industrielle was more anchored in its time—less “not real”—than some of Garnier’s successors acknowledged. Beyond any importance Arvida might have to the history of urban planning in the West, the transfers of knowledge across the Atlantic that we have tried to trace here perhaps reveal unrecognized connections between Garnier’s project and his horizons and between the two cities and their times, while shedding light on an unexplored network of relationships between the Cité Industrielle ideal, set forth with great realism in Europe within that continent’s long utopian tradition, and the unique—and typically North American—conditions of fulfilment that gave rise to Arvida.

Vining Davis’s appointment of his brother Edward K. Davis as president of the new multinational operating Arvida Works seems however to indicate an underlying desire not to lose sight of his great project. In any case it seems more likely that the slowdown in Arvida’s commercial development was not a result of what some have seen as a brutal rupture in the founding of the future Alcan, but rather of the Great Crash of 1929. Wake noted that year that “all of these stores are for

sale and I believe we will be able to get rid of them when the town grows a little more.”¹¹⁶ The social appropriation characteristic of the model city worked to Arvida’s advantage here. While in Alcoa, Tennessee, the last vestiges of the unfinished downtown were demolished, Arvida’s downtown saved the industrial city from becoming just another bedroom community. Today, as the smelter is itself at the center of a redevelopment project, Arvida’s downtown awaits only completion.

NOTES

1. A great number of people were critical to the documentary research underpinning this article. To name but a few of them: Gilles Bertrand, Line Lafontaine, Martin Lanthier, and Suzanne Lemaire (Library and Archives Canada), Anne Buteau and Nicol Guay (Rio Tinto Alcan Saguenay), Paul Chénier (Canadian Centre for Architecture), Becky Darrell (Blount County Genealogical and Historical Society), David Duggan (City of Alcoa, Tennessee), Gaston Gagnon (Ministère de la Culture, des Communications et de la Condition féminine du Québec), Davis Summerlin, Jim and Jane Harrison, Martha Garber, Larry Drye (and all the other board members of the Badin Historic Museum who welcomed me), Nancy Hadley (American Institute of Architects), Nicole Hébert (Rio Tinto Alcan Montreal), Paul K. Kerr (Beloit Historical Society), Roger Lavoie (Ville de Saguenay), Claire Leymonerie, Patricia Helle, and Jenny Piquet (Institut pour l'histoire de l'aluminium), Art Louderback (and other staff at the Senator John Heinz History Center of Pittsburgh), Jacques Morin, Colombe Dallaire, and Céline Villeneuve (Bibliothèque et Archives nationales du Québec), Barbara R. Stewart (Alcoa), Bruce Tabb and Tanya Parlet (University of Oregon Libraries), Jonathan A. Underwood (Stanly County Historic Preservation Commission and Museum).
I also wish to acknowledge the excellent work of Ken Howe, translator at Anglocom, for giving this article its English form.
 2. Eaton, Ruth, 2001, *Cités idéales. L'utopisme et l'environnement (non) bâti*, Anvers, Fonds Mercator, p. 199.
 3. Mariani, Ricardo, 1990, *Tony Garnier. Une cité industrielle*, New York and Milan, Rizzoli, p. 38. See also on this interpretation, among others, Siderakis, Kriti, 1996, "Introduction," *Tony Garnier. Une cité industrielle*, Princeton Architectural Press.
 4. Le Corbusier's letter to Tony Garnier on finding Garnier's work in a bookstore in 1919 has been reproduced a number of times. See the reprint of Princeton Architectural Press, 1989.
 5. Cited and analyzed in Mariani, *op. cit.*
 6. Mariani, *id.*
 7. On this topic, see Hodge, Gerald and Ira M. Robinson, 2002, *Planning Canadian Regions*, Vancouver, UBC Press.
 8. Hegemann, Werner, 1938, *City Planning and Housing*, vol. III, *A Graphic Review of Civic Art 1922-1937*, New York, Architectural Book Publishing Company, cover and p. 6.
 9. Green, Hardy, 2011, *The Company Town: The Industrial Edens and Satanic Mills that Shaped the American Economy*, Philadelphia, Basic Books, 2010; Dinius, Oliver J. and Angela Vergara (ed.), *Company Towns in the Americas: Landscape, Power, and Working-class Communities*, Athens (GA), University of Georgia Press; Grandin, Greg, 2009, *Fordlandia: The Rise and Fall of Henry Ford's Forgotten Jungle City*, New York, Picador; Alanen, Arnold R., 2007, *Morgan Park: Duluth, U.S. Steel, and the Forging of a Company Town*, Minneapolis, University of Minnesota Press.
 10. To take these well-known examples: Garner, John S. (ed.), 1992, *The Company Town: Architecture and Society in the Early Industrial Age*, Oxford, Oxford University Press; Crawford, Margaret, 1995, *Building the Workingman's Paradise: The Design of American Company Towns*, New York, Verso; Frey, Jean-Pierre, 1986, *La ville industrielle et ses urbanités. La distinction ouvriers/employés. Le Creusot 1870-1930*, Brussels, Mardaga; Reys, John W., 1965, "The Towns the Companies Built," *The Making of Urban America. A History of City Planning in the United States*, Princeton, Princeton University Press, p. 414-439.
 11. We have published a number of writings on Arvida in the last fifteen years. Alongside *our Arvida, cité industrielle. Une épopée urbaine en Amérique* (Québec, Septentrion, 1998), there are: (Morisset, L.K.), 2006, "Arvida, ville du patrimoine mondial?" *Saguenayensia*, vol. 48, no. 2, p. 9-27; (Morisset, L.K. and Luc Noppen), 1996, "La ville de l'aluminium," *Les villes industrielles planifiées au Québec*, Montreal, Centre Canadien d'Architecture / Boréal, p. 167-227 and 259-270; (Morisset, L.K. and Luc Noppen), 1995, "Arvida, ville de l'aluminium," *Cahiers de l'Institut d'histoire de l'aluminium* [Paris], no. 16, p. 39-59. We will not repeat the references cited in those publications as they can be found in those works. The sources for this article come from new research.
We thank Jean-Michel Leniaud and Philippe Dufieux for the opportunity to give an initial presentation on this topic at a symposium on Garnier's *cité industrielle* in Lyon, an initiative of Rhône's Conseil d'architecture, d'urbanisme et de l'environnement.
- This paper led to a publication: Morisset, Lucie K., 2009, "Ville nouvelle pour pays neuf," In Philippe Dufieux (ed.), *Tony Garnier, la Cité industrielle et l'Europe*, Lyon, CAUE du Rhône Éditions, p. 105-130.
12. UNESCO World Heritage Committee, *Twenty-Fifth Session Report*, Helsinki, 2001, 429REV.
 13. Wiebenson, Dora, 1960, "Utopian Aspects of Tony Garnier's *Cité industrielle*," *Journal of the Society of Architectural Historians*, vol. 19, no. 1, p. 16-24.
 14. Even to the point of proclaiming it a "Vision of a Mediterranean Socialist Arcadia," as did Kenneth Frampton in *Modern Architecture: A Critical History* (1980, New York, Oxford University Press, p. 103).
 15. Mariani : 38.
 16. According to Mariani : 12.
 17. "C'est à des raisons industrielles que la plupart des villes neuves que l'on fondera désormais vaudront leur fondation." (Ellis, translator, in Mariani's edition of *Une cité industrielle, op. cit.*)
 18. Commercial promotion of Hershey, now a resort town, from [<http://www.hersheypa.com>], accessed on February 7, 2011.
 19. These examples are taken from Reys : 414-438; see also Alanen, *op. cit.*
 20. Ford's adventures in Muscle Shoals are recounted in Grandin : 66s.
 21. Cited in Grandin : 67.
 22. Carr, Charles C., 1952, *Alcoa: An American Enterprise*, New York, Rinehart, p. 174-176.
 23. Grandin, *op. cit.*
 24. The case is recounted in Crawford : 164.
 25. Veiller, Lawrence, 1918, "Industrial Housing Developments in America," *Architectural Record*, no. 43, March, p. 231-256; Beloit Historical Society, Historic Preservation Division, undated typescript, *Eclipse Park*, Thematic Study no. 15, p. 208-253; National Park Service, 2003, *Park Lane Apartments, Jackson County, Missouri*, United States Department of the Interior, National Register of Historic Places, p. 21.
 26. Adams, Thomas, 1918, "Community Development in Wartime," *Landscape Architecture*, no. 8, April, p. 109-124.
 27. Lavedan, Pierre, 1956, *Histoire de l'urbanisme*, vol. III, Paris, Laurens, p. 224. [Our translation.]

28. [Arthur Vining Davis obituary], *New York Times*, November 18, 1962.
29. *Ibid.*
30. "Montreal Star Lauds Arvida District," *The Arvidian*, Arvida, September 19, 1927, p. 1.
31. Under its former name, the Pittsburgh Reduction Company, the Aluminum Company of America acquired the settlement of Bauxite, Arkansas, previously developed by the General Bauxite Company, to turn it into one of its "company towns" and build houses and facilities for its workers. More so than for Alcoa, Badin or Massena where the Aluminum Company of America's developments were built onto preexisting settlements, it is the case of Bauxite, and of course particularly of Arvida, that led the engineer Edwin S. Fickes, one of the Arvida project heads, to attribute to the company a "policy of always providing, in backward or isolated communities, excellent schools and medical care, supplemented by hospital facilities, for the benefit of its employees." (Cited in Smith, George David, 2003, *From Monopoly to Competition: The Transformation of Alcoa, 1888-1986*, Cambridge, Cambridge University Press, p. 118.)
32. "A Garden City for Canada," *Journal of the Town Planning Institute of Canada*, vol. IV, no. 4, 1925.
33. Fickes, Edwin S., 1938, *History of the Growth and Developments of the Aluminum Company of America*, unpublished typescript; Alcoa Archives, Library and Archives Division, Heinz History Center, Pittsburgh (PA).
34. "Une ville construite en 135 jours, qui ne connut ni les taudis, ni les laideurs à la vacomme-je-te-pousse, où l'on n'eut pas à débâter pour construire." [Our translation.]
35. Saunier, Pierre-Yves, 1999, "Changing the City: Urban International Information and the Lyon Municipality, 1900-1940," *Planning Perspectives*, no. 14, p. 19-48.
36. Casemann Collins, Christiane, 2005, *Werner Hegemann and the Search for Universal Urbanism*, W.W. Norton & Co.
37. See, for example, the article by Simpson, Michael, 1982, "Thomas Adams in Canada 1914-1930," *Urban History Review / Revue d'histoire urbaine*, vol. 11, no. 2, p. 1-16.
38. On Jacques Gréber's North American experience, see Gournay, Isabelle, 2001, "Revisiting Jacques Gréber's L'architecture aux États-Unis: from City Beautiful to Cité-Jardin," *Urban History Review*, vol. 29, no. 2.
39. Our translation.
40. "L'habitation collective. Cités-jardins – villes ouvrières." [Our translation.]
41. "L'organisation méthodique." [Our translation.]
42. Gréber, Jacques, 1920, *L'architecture aux États-Unis. Preuve de la force d'expansion du génie français*, Paris, Payot et cie, p. 101-126.
43. See notably Draper, John E., 1989, "Paris-sur-le-Lac: les sources du "Plan of Chicago," in John Zukowski (ed.), *Chicago: naissance d'une métropole 1872-1922*, Paris, Éditions de la Réunion des musées nationaux, p. 106-129, as well as, in the same volume, Loyette, Henri, "Chicago, une image française," p. 120-135.
44. "L'exposé d'une théorie urbaniste," *The Arvidian*, November 16, 1928, p. 3.
45. It would become the National Capital Commission in 1959.
46. See Hachez-Leroy, Florence, 1999, *L'aluminium français. L'invention d'un marché 1911-1983*, Paris, CNRS Éditions. See also Gignoux, Claude J., 1955, *Histoire d'une entreprise française*, Paris, Hachette.
47. When controlled by the Northern Aluminum Company, future Southern Aluminum Company created by Aluminium in 1911, the Badinville project was at first planned upstream, near a dam built by the Whitney Company some ten years earlier. The engineers working for the Southern Aluminum Company later proposed to establish dams at the sites called the Narrows and the Falls, where they finally were built, which resulted in the change of the townsite from Whitney to the actual Badin. (Lugeon, Maurice, prof Lausanne, 1913, *Rapport géologique sur le projet de barrage de la rivière Yarkin aux environs de Whitney (Car. du Nord, EUA)*, 21 janvier, Institut pour l'histoire de l'aluminium, collection Pechiney.)
48. Rapport des administrateurs soumis à la première assemblée annuelle des actionnaires, tenue à New York, le lundi 9 juin 1913. Institut pour l'histoire de l'aluminium, collection Pechiney.
49. Andrew Ellis, translator, in Mariani's edition of *Une cité industrielle*, op. cit.
50. In Zollverein, Le Creusot, Montceau-les-Mines for example. The quadruplexes, or combination of four dwellings, seem to come from the row housing and "corons" common in early mining towns.
51. "[...] la surface construite devrait toujours être inférieure à la moitié de la surface totale, le reste du lot formant jardin public et étant utilisable aux piétons : nous voulons dire que chaque construction doit laisser sur la partie non construite de son lot un passage libre, allant de la rue à la construction située en arrière. Cette disposition permet la traversée de la ville en n'importe quel sens; indépendamment des rues qu'on n'a plus besoin de suivre; et le sol de la ville, pris d'ensemble, est comme un grand parc, sans aucun mur de clôture pour limiter les terrains." (Ellis, translator, in Mariani's edition of *Une cité industrielle*, op. cit.)
- It must be noted that although similar arrangements can be found in later planned towns, Garnier's proposal, in 1917, describes an arrangement very unusual at that time. To find it in Badin, built before the publication of *Une cité industrielle*, is thus even more surprising.
52. This information on the growth of Aluminium Français is from the article by Smith, Michael S., 1998, "Putting France in the Chandlerian Framework: France's 100 Largest Industrial Firms in 1913," *The Business History Review*, vol. 72, no. 1, p. 46-85.
53. Wilkins, Mira, 1993, "French Multinationals in the United States. An Historical Perspective," *Entreprises et histoires*, no. 3, mai, p. 18.
54. Archives at the Institut d'histoire de l'aluminium keep several traces of a cordial relationship between Davis and Badin.
55. This information has newly come to light in recently uncovered documents. (Fickes, op. cit.)
56. *American Architects Directory*, R.R. Bowker, 1956, p. 59.
57. Fickes : 258.
58. "Large Areas in Need of Transit," *New York Times*, February 23, 1919; and "Sees Shuttle Cure in Moving Sidewalks," *New York Times*, November 29, 1918.
59. *American Architects Directory*, R.R. Bowker, 1956, p. 522.
60. According to his 1946 responses to the *Questionnaire for Architect's Roasters*, held by the American Institute of Architects (NY).

61. Aluminum Company of Canada Limited, 1929, *Analysis of Procedure at Arvida in Connection with City Development*, Arvida, October 1. Typescript, Archives de Ville de Saguenay; and Fickes, *op. cit.*
62. Fickes : 258.
63. This is Arvida type K3. Some of the houses built during Arvida's second and third phases and signed only by the Arvida Work's designers may also be related to some of Rogers's work. On his Winter Park houses, see McClane, Patrick W. and Debra A. McClane, 2004, *The Architecture of James Gamble Rogers II in Winter Park, Florida*, Gainesville, University Press of Florida.
64. "Washington, aujourd'hui l'une des plus belles villes du monde, demain la plus belle." [Our translation.]
65. *New York Times*, May 17, 1927.
66. "L'imitation du modèle advient sélective-ment." [Our translation.]
67. Campbell, Duncan C., 1985, *Mission mondiale; Histoire d'Alcan*. Vol. 1 *Jusqu'à 1950*, Toronto, Ontario Publishing Company Limited. Translation by Geneviève Heuet-Fauteux of *Global Mission: The Story of Alcan*, vols. 1 to 1950.
68. This population information is from Linteau, Paul-André, André Durocher and Jean-Claude Robert, 1989, *Histoire du Québec contemporain*. Vol. 1, *De la Confédération à la crise*, Montréal, Boréal, *passim*.
69. Louis-Alexandre Taschereau, from *Le Devoir*, December 9, 1927.
70. "Ici, c'est la force du torrent qui est à l'origine." (Ellis, translator, in Mariani's edition of *Une cité industrielle*, *op. cit.*)
71. Smith, G.D. : 142-143; Carr : 174-178, 211-216.
72. Smith, G.D. : 143.
73. Dunn, C.P., 1930, "Blasting a Precast Dam into Place. Monolithic Structure Erected Vertically and Toppled into Place in Swift Saguenay Current," *Civil Engineering*, vol. 1, no. 30, p. 159.
74. "La raison déterminante d'une pareille cité peut être la proximité de matières premières à trouver ou bien l'existence d'une force naturelle susceptible d'être utilisée par le travail, ou encore la commodité des moyens de transport." (Ellis, translator, in Mariani's edition of *Une cité industrielle*, *op. cit.*)
75. Smith, G.D. : 142; Campbell : 32.
76. To my knowledge, that would have been, at the time, the only integrated—alumina and aluminum plants—production site in America before a similar, but much larger project, was put up in Arvida. The French project is known to us from the Pechiney archives kept at the Institut de l'histoire de l'aluminium. Hyppolyte Bouchayer, in 1938, recalls that the Badin refinery was completed in 1914, but was finally bought back by the Compagnie d'Alais, Froges et Camargue from the Aluminum Company of America, then dismantled and rebuilt in Saint-Auban (France) in 1916-1917. (Bouchayer, Hyppolyte, 1938, *Note sur la Southern Aluminium Co*, October, Institut d'histoire de l'aluminium, collection Pechiney.)
77. Carr : 135.
78. The dry process set up in Arvida is similar to the process known in France as the Deville process (after its inventor, Henri Sainte-Claire Deville). It involves calcinating a mixture of crushed bauxite, lime, and coke. The resulting sinter is then leached to obtain an aluminate solution, which is filtered to remove impurities. When the water is removed, the resulting aluminum hydroxide precipitate is used to produce alumina. The Bayer process involves heating a mixture of ground bauxite and sodium hydroxide under pressure, which is decanted and filtered to separate the aluminum hydroxide from the other bauxite constituents, which are removed as "red mud." The aluminum hydroxide is precipitated by cooling, then calcined to produce alumina and water vapour.
79. "Une voie ferrée de grande communication passe entre l'usine et la ville." (Ellis, translator, in Mariani's edition of *Une cité industrielle*, *op. cit.*)
80. Fickes : 252.
81. "ancienne ville au bord du torrent." (Ellis, translator, in Mariani's edition of *Une cité industrielle*, *op. cit.*)
82. "à la fois, des parties de montagne et une plaine, celle-ci traversée par un fleuve." (Ellis, *id.*)
83. This is probably a borrowing back of the English word "coulee," which was originally borrowed from the French word for "flow."
84. "En cherchant les dispositions qui donnent le mieux satisfaction aux besoins matériels et moraux de l'individu..." (Ellis, translator, in Mariani's edition of *Une cité industrielle*, *op. cit.*)
85. "Toutes les améliorations modernes ont été prévues : approvisionnement d'eau, égouts, électricité. Le courant électrique est amené dans les conduits souterrains par toute la ville et il n'y aura pas un seul poteau dans les rues, excepté les lampadaires. Toutes les rues seront pavées et les maisons résidentielles, pour les ouvriers comme pour les officiers supérieurs de la compagnie, seront toutes détachées les unes des autres." ("Arvida, ville-champignon : M.H.R. Wake décrit la construction d'Arvida en 135 jours," *Le Devoir*, Montreal, October 8, 1926, p. 8.) [Our translation.]
86. Siderakis, *op. cit.*, *passim*.
87. "Il n'y a pas lieu de craindre la monotonie de nos alignements actuels." (Ellis, translator, in Mariani's edition of *Une cité industrielle*, *op. cit.*)
88. Attributed to Wake, Harold, 1929, "Analysis of Procedure at Arvida in Connection with City Development," Arvida, October 1. Typescript, Archives de Ville de Saguenay. [Our translation.]
89. According to Igartua, José, 1996, *Arvida au Saguenay. Naissance d'une ville industrielle*, Montreal and Kingston, McGill-Queen's University Press, p. 42. [Our translation.]
90. Igartua : 121.
91. Attributed to Wake, *op. cit.* [Our translation.]
92. *Id.*
93. According to Ahlund, M., "The Company Town in Scandinavia," in Garner, *Company Town: Architecture and Society...*, *op. cit.*
94. "L'architecture de bon goût d'autrefois." [Our translation.]
95. "La compagnie [qui] fait preuve d'excellentes dispositions à l'égard des nôtres." [Our translation.]
96. José Igartua calculated that the annual rent for a labourer's house remained excessive at \$350, equal to 40% of a day-labourer's salary and 26% of a pot-man's. (Theorists at the time recommended that 20% of a worker's salary be devoted to housing.) (Igartua : 116-117.)
97. In 1920, Morris Knowles (*Industrial Housing*, New York, McGraw-Hill, p. 23) recommended rents providing a minimum return of 10% on investment, including capitalization, maintenance, and depreciation. It seems that the company's original plan in Arvida was to rent houses for between 8% (types A and D) and 10% of construction costs, estimating

- 3% for maintenance, 0.66% for taxes, 0.34% for insurance, and 4% for interest. Workers and employees however proved unable to pay more than 5.63% to 7.6%. (Wake : 10.)
98. *The Arvidian*, June 5, 1928.
99. "We find out the maximum monthly payment which the purchaser indicates he is able to pay and if that shows a reasonable margin over the rent charged we make the contract. The sales price of the property is the cost of the building, plus the sale price placed on the lot, plus cost of any sidewalk and extraordinary improvements that have been made on the property. We take this sale price and add interest on the unpaid balance at 4%, plus taxes and insurance, and divide the total thus obtained by the monthly payments, which gives us the number of months the contract has to run. Naturally our contracts will be very long." (Wake : 11.)
100. Knowles, Morris, *op. cit.*, p. 43.
101. Walker, Henry W., 1953, *Single-enterprise Communities in Canada: A Report to Central Mortgage and Housing Corporation*, Kingston, The Institute of Local Government / Queen's University, p. 3.
102. "Ce sont les matériaux en usage dans cette région qui seront employés par nous comme moyens de construction." (Ellis, translator, in Mariani's edition of *Une cité industrielle*, *op. cit.*)
103. Although socialist ideals attributed to Garnier could be understood in another way if placed in the American context. *Une cité industrielle* probably would gain from a new reading in that way.
104. "Progrès d'ordre social." (Ellis, translator, in Mariani's edition of *Une cité industrielle*, *op. cit.*)
105. *Id.*
106. *Id.*
107. "La Société a désormais la libre disposition du sol." (Marguerite E. McGoldrick, translator, in Siderakis's edition of *Une cité industrielle*, *op. cit.*) It is not clear, however, which meaning Garnier gives to "La Société" and whether he is really referring to a socialist tenure, as it has been written, or if he is only describing a mode of governance, especially since he continues: "Society then would have free reign over the distribution of land as well as water, bread, meat, milk, and medicine, since these products are responsible for its members' well-being." The French writing of Garnier might tell more in that way: "*La Société a désormais la libre disposition du sol, et que c'est à elle de s'occuper de l'alimentation en eau, pain, viande, médicaments, en raison des soins multiples que réclament ces produits.*"
108. "Notre structure reste simple, sans ornement." (McGoldrick, *op. cit.*)
109. "D'autres systèmes de construction, d'autres matériaux conduiront, sans doute, à d'autres formes qu'il sera aussi intéressant de rechercher." (McGoldrick, *id.*)
110. Beloit Historical Society : 247.
111. *New York Times*, April 28, 1926.
112. *New York Times*, September 27, 1926.
113. Lemieux, R.A., n.d., *Growth of the city of Arvida Since its Incorporation*, curve chart, E-976, Ville de Saguenay.
114. "Sur la montagne au nord du centre de la ville [...] des rideaux de verdure [l'encadrent] à l'est et à l'ouest." (McGoldrick, *op. cit.*)
115. *Id.*
116. *Id.*