CAPITALISM AND CLASS FORMATION IN THE ANGERS SLATE FIELDS, 1750-1891

by

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THESIS ABSTRACT

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The wave of working-class radicalism that swept across France at the turn of the twentieth century has largely been attributed by historians to the pressures of industrialization undermining traditional methods and organizations of labor. However, the Angers slate mining industry experienced a very stable production process from the eighteenth to the twentieth centuries limited as much by the environment as by the economy. Working-class formation here instead must be understood in contradistinction to capitalist-class formation coming in response to those same economic and environment factors. The steady growth of an entrepreneurial class in the slate mines around Angers, France, took place within a legal and social framework that allowed mine investors to begin associating and identifying as a class distinct from their workers. It was against this capitalist-class formation that workers began organizing in order to preserve the social organizations and independence they had enjoyed in the pre-capitalist era.

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TABLE OF CONTENTS

Chapter Page

CHAPTER I

INTRODUCTION

> Angers was only interesting to us for the ardoisières, thus we forgot Angers itself, Angers the old city, Angers the two cities, the black and the white: the black of straight back alleys, somber, arched, the cobblestone steps, the old towers and the gothic churches; white where the roads are excessively wide, that match the others in their straightness, and where the heavy transport of big commerce concentrates at the steps of the old city: because Angers has animated quays, steamships, Angers the meeting point of three navigable rivers was in a very favorable position for the movement of industry, and turned it into a citadel.
>
> —Boucheporn and Declerck, 1835[1]

First thing Monday morning, November 25, 2013, representatives of the workers and owners of France's last operational slate mine packed themselves into a room. Here, citing longstanding financial losses, international competition, and the exhaustion of quality slate deposits around Angers, the owners finally gave form to the fears that had been circulating among miners as a fleeting look or a whispered rumor: the mines would be closing permanently.[2]

In response, the 153 miners who had survived decades of layoffs, closures, and partial employment turned to their communities for support. First, they turned

[1] Boucheporn and Declerck, "Journal de voyage," 1838, EMP J 1835 45 1.

[2] Gérard Tual, "Onde de choc sur les Ardoisières," *Le Courrier de l'Ouest* (Angers,
[2] Gérard Tual, "Onde de choc sur les Ardoisières," *Le Courrier de l'Ouest* (Angers,
France), 26 November 2013.

to their work community, the General Confederation of Labor (CGT). Reflecting more than a century of working-class solidarity, CGT officials came to the mines and announced their wholehearted support for the miners.[3] Together they set up picket lines around the mine, keeping the air festive with bonfires and barbecues to ward off winter cold and dangerous despair.[4] The CGT also took to the street by the hundreds, the miners sporting their orange safety vests and small red stickers identifying their allegiance to the nation's largest labor union.[5] And meanwhile, distrustful of the bosses' assessment, they pieced together a plan to reevaluate the condition of the remaining slate deposits and the possibility of restarting production.[6]

Next, the miners turned towards the family and friends that constituted their social community. With demonstrations, protests, and articles, they spread the word throughout the region that the slate miners, backbone of the community for centuries, needed help.[7] Within weeks the size of these demonstrations had grown

[3] Anthony Pasco, "Les élus veulent y voir plus clair," *Le Courrier de l'Ouest* (Angers, France), 20 December 2013.

[4] Gérard Tual, "Les ardoisiers font le blocus du siege," *Le Courrier de l'Ouest* (Angers, France), 13 December 2013.

[5] Gérard Tual, "Les mineurs sur la place publique," *Le Courrier de l'Ouest* (Angers, France), 5 December 2013.

[6] Gérard Tual, "Une descenderie: le contre-projet des ardoisiers," *Le Courrier de l'Ouest* (Angers, France), 10 February 2014.

[7] "Les ardoisiers comptent leurs soutiens," *Le Courrier de l'Ouest* (Angers, France), 20 December 2013.

until at least 1500 local citizens poured into the street in support of the miners, in opposition to the closure, and in demand of a reassessment.[8]

Finally, they turned to their political community as the only body with the legitimate power to forestall their fate. From the very beginning the city pledged its support to the miners that had built it, refusing to accept the inevitability of the closure.[9] Local support secured, they brought their case all the way to the Prime Minister, asking only that he hear their pleas for respite.[10] Ultimately, their demands were heard, their petitions heeded, their position acknowledged. But, on February 24, 2014, as the men crowded back into a room to receive their sentence, the state engineers announced there was no hope of profitable exploitation; the mines would close permanently.[11]

As this issue was laid to rest, a number of questions about the workers' response arose. Why were they in such disbelief that the slate deposits might ever run dry? Why were they so mistrusting of the mine owners? Why were the mine owners a distinct and opposed group? Why did the miners turn to the state for support against their bosses' claims? Why did the local population and politicians identify so strongly with such a small workforce? How did this outpost of slate miners become so tightly engrained in the national labor movement? How did the

[8] Gérard Tual, "Un soutien massif aux ardoisiers," *Le Courrier de l'Ouest* (Angers, France), 2 February 2014.

[9] Gérard Tual, "Trélazé derrière ses ardoisiers," *Le Courrier de l'Ouest* (Angers, France), 29 November 2013.

[10] Gérard Tual, "Les ardoisiers sollicitent une audience auprès du Premier minister," *Le Courrier de l'Ouest* (Angers, France), 11 February 2014.

[11] Gérard Tual, "Ardoisières: le coup de grâce."

slate market come to be an international one? The answer in each case lies in the history of the Angers slate fields, in the rise of an industry, and in the creation of class.

Historians, Industrialization, and Class Conflict

Such questions have long drawn the attention of historians. The history of class formation contains all of the elements necessary for a riveting tale: romanticized passion, fierce conflict, heroic protagonists, and dastardly antagonists. The history of the working class in particular has been a vessel into which generations of men and women yearning for a more just world have poured their hopes and dreams. As such, the history of the working class has offered an inspirational model and cautionary tale alike for those seeking to emancipate humanity from the fetters and chains of what they perceive as a cold and brutal social order.

The most potent theoretical framework through which to view the struggles of the working class developed out of historical materialism and posited, in essence, that the progress of history is guided by material relations.[12] Applying the core elements of this theory, whether maintaining or abandoning its Marxist elements, many historians have studied the formation of a European working class in the nineteenth century as the outcome of industrialization. According to this model, the pressures of rapid industrialization created a proletariat drawn from peasants as

[12] Walter L Adamson, "Marx's Four Histories," in *Marx and the Disillusionment of Marxism* (Berkeley, CA: University of California Press, 1985), 13-39; Frederick Engels, *The Origin of the Family, Private Property, and the State: In Connection with the Researches of Lewis H Morgan* (Peking, China: Foreign Language Press, 1978); Richard Price, "The Labour Process and Labour History," *Social History* 8, no. 1 (January 1983), 57-75.

well as from artisans. This latter group rests at the heart of such narratives, responding to their deteriorating status and wealth by taking a leadership role in developing a class consciousness uniting all those who work regardless of skill level in order to combat their class enemy, the capitalists.[13] Perhaps stemming from a desire to draw practical lessons from the past in order to address continued conditions of capitalist class conflict in contemporary civilization, most of these studies attempted to create a definitive linkage between material conditions and political outcomes to explain working-class politics as the product of industrialization and thus a necessary outgrowth of capitalism.[14]

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[13] Kathryn Amdur, "The Making of the French Working Class," in *The Transformation of Modern France: Essays in Honor of Gordon Wright*, ed. William B Cohen (Boston: Houghton Mifflin, 1997), 66-96; Christopher H Johnson, *The Life and Death of Industrial Languedoc, 1700-1920: The Politics of Deindustrialization* (New York: Oxford University Press, 1995); Ed. Ira Katznelson and Aristide R Zolberg, *Working-Class Formation: Nineteenth-Century Patterns in Western Europe and the United States* (Princeton, NJ: Princeton University Press, 1986); Bernard H Moss, *The Origins of the French Labor Movement, 1830-1914: The Socialism of Skilled Workers* (Berkeley, CA: University of California Press, 1976); Ed. John M Merriman, *Consciousness and Class Experience in Nineteenth-Century Europe* (New York: Holmes and Meier, 1979); Joan Wallach Scott, *The Glassworkers of Carmaux: French Craftsmen and Political Action in a Nineteenth-Century City* (Cambridge, MA: Harvard University Press, 1974).

[14] Kathryn E Amdur, *Syndicalist Legacy: Trade Unions and Politics in Two French Cities in the Era of World War I* (Urbana, IL: University of Illinois Press, 1986); Ronald Aminzade, *Ballots and Barricades: Class Formation and Republican Politics in France, 1830-1871* (Princeton, NJ: Princeton University Press, 1993); George Esenwein, *Anarchist Ideology and the Working-Class Movement in Spain, 1868-1898* (Berkeley, CA: University of Califronia Press, 1989);David M Gordon, *Merchants and Capitalists: Industrialization and Provincial Politics in Mid-Nineteenth-Century France* (University, AL: University of Alabama Press, 1985); Michael P Hanagan, *The Logic of Solidarity: Artisans and Industrial Workers in Three French Towns, 1871-1914* (Urbana, IL: University of Illinois Press, 1980); Raymond A Jonas, *Industry and Politics in Rural France: Peasants of the Isère, 1870-1914* (Ithaca, NY: Cornell University Press, 1994).

Such an approach, collectively known as the New Social History, possessed many positive attributes. First, it shifted attention away from history from above, the story of the elites and institutions, and instead focused on the lives of common people, offering them agency in a bottom-up view of historical change. Second, this body of work was largely interdisciplinary, drawing on advances in sociology, politics, and economics to better understand the changing conditions within which individuals lived. Finally, a major strength of much of this scholarship was its intensive use of quantitative data, although it often came at the expense of agency. Overall, the New Social History offered a powerful approach with which to explain the rise of working-class militancy in the late nineteenth century.

Despite the invaluable contributions made by these historians, their inquiries lacked many elements crucial to a fuller understanding of the past. First, they assumed as a given the existence of a capitalist logic in society, and thus mitigated the agency of their historical actors by only offering them a way in which to respond to material conditions, not shape them. Second, while definitively showing the ability of structural changes to beget structural changes, they lacked an explanatory mechanism through which such changes were experienced, interpreted, represented, and only then reacted to. Finally, they contained implicit assumptions about who and what was worthy of investigation, who was progressive and who was backwards, and what qualified as a reasonable program from the point of view of an idealized class-consciousness and historical hindsight, and thus hinted at the determinism that has plagued Marxist historiography since its inception.

Responding to these shortcomings, as well as a shift in political ideologies, historians in the 1980s began adopting post-structuralist approaches that stressed subjectivity, discourse, and identity.[15] The first point of entry into the field of history came as historians sought to redress a previous paucity of women as historical subjects by incorporating gender, treating it as a social construct, into their analysis of class.[16] The resulting movement, known as the New Cultural History, quickly escaped the confines of gender and spread its investigations into three new facets of history. First, it delved into a detailed description of the lived experience of individuals, not within broader structures, but within a network of cultural communities.[17] Out of this detailed analysis of the culture of daily life, these historians next constructed a political analysis that favored contingency over continuity and representation over inherent qualities.[18] The consequences on

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[15] Michel Foucault, *The History of Sexuality*, tr. Robert Hurley, vol. 1, *An Introduction* (New York: Pantheon, 1978); Madan Sarup, *An Introductory Guide to Post-Structuralism and Postmodernism*, 2nd ed. (Athens, GA: University of Georgia Press, 1993).

[16] Elinor Accampo, "Class and Gender," in *Revolutionary France, 1788-1880*, ed. Malcolm Crook (New York: Oxford University Press, 2002), 93-122; Anna Clark, *The Struggle for the Breeches: Gender and the Making of the British Working Class* (Berkeley, CA: University of California Press, 1995); Gay L Gullickson, *Unruly Women of Paris: Images of the Commune* (Ithaca, New York: Cornell University Press, 1996); Joan Wallach Scott, *Gender and the Politics of History* (New York: Columbia University Press, 1988).

[17] Alain Corbin, *The Life of an Unknown: The Rediscovered World of a Clog Maker in Nineteenth-Century France*, tr. Arthur Goldhammer (New York: Columbia University Press, 2001); Daniel Roche, *The People of Paris: An Essay in Popular Culture in the Eighteenth Century,* tr. Marie Evans and Gwynne Lewis (Berkeley, CA: University of California Press, 1987).

[18] Maurice Agulhon, *The Republic in the Village: The People of the Var from the French Revolution to the Second Republic*, tr. Janet Lloyd (New York: Cambridge University

traditional labor histories were profound. Most notably, in order to understand the lens through which nineteenth-century workers understood industrialization, they emphasized the traditional forms of organization through which they attempted to resist its indefatigable march, stressing continuity rather than novelty.[19]

The New Cultural History brought profound contributions to the study of the past, but also carried its own shortcomings. While this approach offered a powerful framework through which to understand and explain individual events, it lacked a comprehensive method of explaining change over the longue durée. In fact, much of the postmodernist movement was predicated on the belief there is no logic to the unfolding of history, just an endless cavalcade of vignettes fading one into the other. While offering a method for understanding the more subtle and invisible operations of power shaping the subconscious paradigms of historical actors, the New Cultural History pushed the structural forces propping up those powers into the background. Most crucially for labor historians, while such an approach offered a useful tool for getting at how workers understood changes to their living and working conditions,

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Press, 1982); Lynn Hunt, *Politics, Culture, and Class in the French Revolution* (Berkeley, CA: University of California Press, 1984); Sheryl Kroen, *Politics and Theater: The Crisis of Legitimacy in Restoration France, 1815-1830* (Berkeley, CA: University of California Press, 2000).

[19] James R Farr, *Artisans in Europe, 1300-1914* (New York: Cambridge University Press, 2000); Iorwerth Prothero, *Radical Artisans in England and France, 1830-1870* (New York: Cambridge University Press, 1997); William M Reddy, *The Rise of Market Culture: The Textile Trade and French Society, 1750-1900* (New York: Cambridge University Press, 1984); William H Sewell, jr., *Work and Revolution in France: The Language of Labor from the Old Regime to 1848* (New York: Cambridge University Press, 1980); George J Sheridan, jr. and Lynn Hunt, "Corporatism, Association, and the Language of Labor in France, 1750-1850," *The Journal of Modern History* 58 (1986), 813-44; Michael Sonenscher, *The Hatters of Eighteenth-Century France* (Berkeley, CA: University of California Press, 1987).

it offered no framework through which to understand how those very changes came to pass. In short, post-structuralism too frequently lacked any reference to material or even social realities.

Recognizing these shortcomings but eager to incorporate the promising attributes of both the New Social and New Cultural Histories into their work, a new generation of historians has begun calling for a rapprochement between these two polarized camps.[20] The result of this union has unleashed a stream of formidable monographs, whether coming during the rise of the New Cultural History or its subsequent demise, that emphasize representation but contextualize it within broader structural transformations.[21]

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[20] Lenard R Berlanstein, "Working with Language: The Linguistic Turn in French Labor History," *Studies in Society and History* 33, no. 2 (April 1991), 426-40; Geoff Eley and Keith Nield, *The Future of Class in History: What's Left of the Social?* (Ann Arbor, MI: University of Michigan Press, 2007); Richard Price, "Historiography, Narrative, and the Nineteenth Century," *The Journal of British Studies* 35 (1996), 220-56; William H Sewell, jr., "Language and Practice in Cultural History: Backing Away from the Edge of the Cliff," *French Historical Studies* 21, no. 2 (Spring 1998), 241-54; Ed. Lex Heerma van Voss and Marcel van der Linden, *Class and Other Identities: Gender, Religion and Ethnicity in the Writing of European Labor History* (New York: Berghahn Books, 2002).

[21] Laird Boswell, *Rural Communism in France, 1920-1939* (Ithaca, NY: Cornell University Press, 1998); Kathleen Canning, *Languages of Labor and Gender: Female Factory Work in Germany, 1850-1914* (Ithaca, NY: Cornell University Press, 1996); Paul Cheney, *Revolutionary Commerce: Globalization and the French Monarchy* (Cambridge, MA: Harvard University Press, 2010); Gay L Gullickson, *Spinners and Weavers of Auffay: Rural Industry and the Sexual Division of Labor in a French Village, 1750-1850* (New York: Cambridge University Press, 1986); Keith Mann, *Forging Political Identity: Silk and Metal Workers in Lyon, France 1900-1939* (New York: Berghahn Books, 2010); John M Merriman, *The Red City: Limoges and the French Nineteenth Century* (New York: Oxford University Press, 1985); Roger Price, *People and Politics in France, 1848-1870* (New York: Cambridge University Press, 2004); Tyler Stovall, *The Rise of the Paris Red Belt* (Berkeley, CA: University of California Press, 1990).

One of the most fruitful fields for this blossoming hybrid approach has been in environmental history. Resource extraction industries were a staple of the New Social History, with mining in particular offering an archetypal example of rapid industrialization creating a class-conscious proletariat.[22] More recent scholarship, however, has used resource extraction as a way of getting at the materiality of labor, reconstructing what one historian has termed the "workscape," in addition to social relations while simultaneously allowing room for cultural representation.[23] Another potent approach currently emerging under the name History of Capitalism continues this trend of synthesizing material, structural, and cultural histories in order to understand capitalism as a distinct and totalizing historical epoch with its

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[22] Eds. Stefan Berger, Andy Croll, and Norman LaPorte, *Towards a Comparative History of Coalfield Societies* (Burlington, VT: Ashgate 2005); Samuel Cohn, *When Strikes Make Sense—And Why: Lessons from the Third Republic French Coal Miners* (New York: Plenum Press, 1993); David F Crew, *Town in the Ruhr: A Social History of Bochum, 1860-1914* (New York: Columbia University Press, 1979); John Gaventa, *Power and Powerlessness: Quiescence and Rebellion in an Appalachian Valley* (Urbana, IL: University of Illinois Press, 1982); BR Mitchell, *Economic Development of the British Coal Industry, 1800-1914* (New York: Cambridge University Press, 1984); Donald Reid, *The Miners of Decazeville: A Genealogy of Deindustrialization* (Cambridge, MA: Harvard University Press, 1985).

[23] Thomas G Andrews, *Killing for Coal: America's Deadliest Labor War* (Cambridge, MA: Harvard University Press, 2008); William Cronon, "Kennecott Journey: The Paths Out of Town," in *Under an Open Sky: Rethinking America's Western Past*, eds. William Cronon, George Miles, and Jay Gitlin (New York: WW Norton, 1992), 28-51; Alison Fleig Frank, *Oil Empire: Visions of Prosperity in Austrian Galicia* (Cambridge, MA: Harvard University Press, 2005); Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, MA: MIT Press, 1998); Christopher H Johnson, "Lifeworld, System, and Communicative Action: The Habermasian Alternative in Social History," in *Rethinking Labor History*, ed. Lenard R Berlanstein (Urbana, IL: University of Illinois Press, 1993); Samuel Temple, "The Natures of Nation: Negotiating Modernity in the *Landes de Gascogne*," *French Historical Studies* 32, no. 3 (Summer 2009), 419-46; Donald Worster, "Hydraulic Society in California: An Ecological Interpretation," *Agricultural History* 56, no. 3 (July 1982), 503-15.

own unique internal logic operating simultaneously in the interrelated economic, social, political, and cultural spheres.[24] Taken together, these new approaches offer historians a comprehensive framework to begin examining structural and personal aspects of human life, not as independent elements, but as the complex and intertwined realities humans have always faced. Any attempt to divorce or prefer one part of life to another is doomed to give a lopsided understanding of our past, and thus at best a crippled understanding of our world today.

History of the Angers Slate Industry

This thesis seeks to draw broadly from the achievements of preceding historiographies and aims to incorporate them in a holistic understanding of the development of class consciousness in the Angers slate fields during the eighteenth and nineteenth centuries. I am heavily indebted to the work of the New Social Historians, especially in my emphasis on the effects of economic and legal conditions on the development of the slate industry. However, unlike many of these historians, I am interested in these historical subjects as both pre- and post-political rather than political: post-political in the sense that I treat the political and legal environment as fixed from the point of view of the workers in order to fix this variable and treat changing class-consciousness *ceteris paribus*, although in reality even the most autocratic system of rule is shaped in complete interaction with every member of society; pre-political in the sense that in this current work I am not so

[24] Sven Beckert, "History of American Capitalism," in *American History Now*, eds. Eric Foner and Lisa McGirr (Philadelphia, Temple University Press, 2011); Jürgen Kocka, "Writing the History of Capitalism," *Bulletin of the German Historical Institute* 47 (Fall 2010), 7-24; William H Sewell, jr., "The Temporalities of Capitalism," *Socio-Economic Review* 6 (2008) 517-37; Tyler Stovall, *Paris and the Spirit of 1919* (New York: Cambridge University Press, 2012).

interested in examining what political choices the class-conscious and unified workers eventually made, but rather the process leading up to their unification of identity. Finally, I separate from the prototypical social history in asking not how changing material conditions in the workers' lives led to class-consciousness, but how to explain the development of class-consciousness in the absence of substantial industrialization, in a work environment marked above all by a static division of labor and work process.

Drawing on the trenchant definition of E.P. Thompson, I instead treat class not "as a 'structure', nor even as a 'category', but as something which in fact happens…in human relationships." Like him, I hope to catch glimpse of the ephemeral class, nonexistent at any point yet omnipresent at all times, flittering like a fairy just barely traceable by the thin sparkling of dust left in its wake, by examining the evolving relations of human beings over the course of generations. Finally, like Thompson I hope to understand how this tenuous class leads to class-consciousness.[25]

In order to do this, I attempt to explore the creation of a working class through the creation of a capitalist class. While the conditions of labor changed very little, if at all, during the 150 years that comprise the scope of this particular inquiry, the capitalist class was born and grew to adulthood. In doing so, I draw on the heritage of the New Cultural Historians to show how power is ultimately created and transmitted through individual interactions, with rhetoric forming a crucial cultural code inventing and reifying identity at the same time. It is my hope that

[25] EP Thompson, *The Making of the English Working Class* (New York: Vintage Books, 1966), 9-13.

whatever agency I robbed from the workers by placing them in a political purgatory I have returned to them by recognizing the employer-employee relationship as an equal and integral one. I hope my treatment of these entrepreneurs reveals the impartial view of them I hold.

I am further indebted to the Environmental Historians for their emphasis on the importance of materiality in human life. At every stage of this story, nature stands as a constant, silently guiding the decisions of workers at the quarries and the entrepreneurs seeking to make their fortunes from them. To the Historians of Capitalism I owe the effort of trying to reconcile what is at once a labor history, an environmental history, a business history, and a legal history in to a coherent whole. Ultimately, by treating each of these factors as necessary constitutive elements of the capitalist system, I hope to make the lives of the Angevin slate miners both accessible and relevant to us. *Homo sum, humani nihil a me alienum puto.*

CHAPTER II

LIFE AND LABOR IN THE SLATE QUARRIES, 1750-1800

> Our beautiful country of Anjou is not remarkable only for the sweetness of its climate, the variety and the quality of its agricultural products, it possesses also, thanks to the geological composition of its soil, construction materials of every kind, of an exceptionally economical and advantageous employment. It is this that explains why our cities and our towns fill so quickly with public buildings and private houses, that charm the stranger's eye by their elegance, their harmonious proportions, and their color.
>
> —Aîmé-Etienne Blavier, 1888[26]

Nineteenth-century visitors to the ancient French city of Angers experienced a rich and colorful agricultural land marked by dark green orchards of the d'Anjou pears that bear the region's name, golden fields of grain bracketed by thick hedgerows teeming with rabbits and birdsong, and gentle slopes strung with vines whose fruit was destined for the bottle as the local specialty Couteaux du Layon. They paced through the labyrinthine alleyways of the Old Town between the Place du Ralliement, once stained red beneath the shadow of the guillotine, and the massive medieval spires of Saint-Maurice cathedral, one of the earliest surviving examples of Gothic architecture and stained glass. Beyond this they marveled at the castle that once headquartered an empire reaching across Italy and into Jerusalem, or the university that was a center of renaissance thought.

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[26] Aîmé-Etienne Blavier, *Note sur la résistance de schiste ardoisier d'Angers* (Angers, France, 1888), 3.

But only by pulling back and letting their eyes come out of focus on these jewels of Angevin history could such tourists see what lay beneath the town. As a British visitor remarked in 1841, "the town is of course in a great measure built of the materials so near at hand, and the consequence is that it presents a singularly somber and gloomy appearance…The contrast of the dark, grim-looking walls with the bright, sunny, smiling meadows beneath them, is striking and effective."[27]

In looking deeper, these tourists would find that beneath the verdant fields of Anjou lay a river of black stone ripe for harvest. Slate is found in several scattered locations across the globe, usually cropping up in narrow bands stretching out under the countryside at odd angles.[28] But in the lands around Angers it rests in just a few massive veins up to 2500 feet across and plunging nearly vertically into the earth for at least a thousand feet.[29] Such concentration of the slate made it easier to find new sources and to extract it in more concentrated and efficient worksites.

Once removed from its primeval bed, the Angers slate proved to be of a quality unsurpassed anywhere. Its sateen black hue, sometimes tinged with blue or red, betrayed no hint of the crystalline impurities that corrupt other, lesser slates. This left no openings for water molecules to penetrate, remaining impermeable

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[27] Thomas Adolphus Trollope and Frances Milton Trollope, *A Summer in Western France* (London: Henry Colburn, 1841), 233.

[28] "Art des Mines," review of *Essai sur l'industrie ardoisière d'Angers* by Aîmé-Etienne Blavier, *Bulletin de la Société d'encouragement pour l'industrie nationale* 2 no. 11 (1864), 417.

[29] Julien François Turgan, *Les Grandes usines de la France, tableau de l'industrie française au XIXe siècle*, vol. 6 (Paris: Librairie nouvelle, 1860), 143.

even after centuries of exposure; other slate could only claim half this longevity.[30] Appearing solid from the front and back, a glance along a tile's thin sides revealed a delicate stack of paper-thin layers, like a petrified croissant crushed flat. These miniscule sheets are key to slate's usefulness because with a well-placed wedge they can be split again and again into tiles just millimeters thick. In Angers, the deep pressure of the earth aligned these grains with unparalleled precision, meaning that with a single blow whole boulders could split in two, leaving an exposed face flat enough and smooth enough to serve as a classroom blackboard, a laboratory countertop, or a country-club billiards table. The ability of this slate to be split apart so easily, known as its fissility, gave this region's industry an advantage by easing the workers' efforts and determined the most propitious sites for harvesting the resource.[31]

Once pulled from the earth and processed, slate from Angers again proved its worth, covering the houses of Angers, the landmarks of Paris, and even architectural feats as far away as the basilica in Lyon or the train station in Amsterdam with beautiful, intricately-layered patterns of matte black tiles. After subjecting the slate of Angers to a series of scientific experiments designed to test every aspect of the material, an engineer announced that his results "demonstrate that the schist *ardoisier* of Angers, due to its resistance to breakage and its elasticity, gives exceptional guarantees of solidity and durability to all constructions in which one

[30] L Smyers, jr., *Essai sur l'état actuel de l'industrie ardoisière en France et en Angleterre, suivi de quelques observations pratiques sur la formation du schist ardoisier* (Paris: Poulet-Malassis et de Broise, 1858), 83.

[31] Jacques Cailleteau, ed., *Les Ardoisières en Pays de la Loire: Loire-Atlantique, Maine-et-Loire, Mayenne, Sarthe* (Paris: Inventaire Général, 1988), 2-8.

makes a judicious employment."[32] Less sober or more biased commentators were quick to describe Angers slate as quite clearly the finest in the world.

Given such a rich bounty simply lying beneath their feet, the residents of Angers began early on to exploit this natural resource. The first sustained exploitation of the slate fields began in the twelfth century under Licinius, the bishop of Angers.[33] His critical role in developing the slate industry, alongside the legend that during a cave-in he gathered the fearful workers around him and through a miraculous act protected them, made Licinius, as Saint Lézin, the patron saint of slate workers, with a modest chapel and a celebration made in his honor every February 13.[34] Throughout the Middle Ages, the slate industry was the dominant resource extraction industry in the region, paving the way for the granite and coal quarries that eagerly copied and adapted techniques pioneered here.[35] Initially, this extraction simply consisted of a few peasants digging in their fields during the offseason, but by the fourteenth century many of these impromptu excavations had crystallized into ongoing works, some even using horse-powered

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[32] Aîmé-Etienne Blavier, *Note sur la résistance de schiste ardoisier d'Angers* (Angers: [1880-1895]), 5.

[33] Brossard de Corbigny, "Rapport au nom de la commission charée d'examiner le memoire présenté au concours de 1862," *Bulletin de la Société industrielle et agricole de Maine-et-Loire* 3, no. 4 (1863), 47.

[34] Logerais, "Les Ardoisières de Trélazé," *L'Union de l'ouest* {Angers, France] March 27 1852.

[35] Romain Brossé, "Mines et carrières en Anjou: cadre géologique, modalités d'exploitation," *Annales de Bretagne et des pays de l'Ouest* 104, no. 3 (1997) 12-4; Philippe Cayla, "Aspects de la technologie minière en Anjou: le cas des ardoisières et des mined de charbon," *Annales de Bretagne et des pays de l'Ouest* 104, no. 3 (1997), 20.

machinery to keep them drained year-round.[36] These open-pit (or to translate from the French, open-sky) quarries were usually operated by three or four workers leasing a plot of land and working together, or sometimes by an entrepreneur taking out a lease and hiring up to a couple dozen peasants to work it for him.[37] Describing a similar operation in Brittany during the early nineteenth century, a team of engineering students remarked that "the exploitation of this quarry is done by [eight] peasants," who shared every stage of the work together. They lined up to chisel off a new block of slate as a team, then, while some lifted it out of the pit, others used a rope winch and bucket to drain the water collecting at the bottom, and finally they broke it up and sold the resulting roofing tiles at the local market.[38]By the seventeenth century, up to two hundred men were employed like this in scattered little sites throughout the Angers region.[39] Indeed, this type of exploitation persisted at a few sites clustered around Avrillé, to the west of Angers, until the mid-

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[36] Jacques Cailleteau, ed., *Les Ardoisières en Pays de la Loire: Loire-Atlantique, Maine-et-Loire, Mayenne, Sarthe* (Paris: Inventaire Général, 1988), 8.

[37] François Lebrun, Jacques Mallet, and Serge Chassagne, *Histoire d'Angers* (Toulouse, France: Edouard Privat, 1975), 97-8.

[38] Boudousuie, Transon, et Coste, "Journal de voyage," 1827, EMP J 1827 17 5. This essay draws heavily on the diaries of engineering students from the École des Mines. Throughout the nineteenth century, students completing an advanced degree in engineering were required to travel throughout France or abroad in order to observe and report on mining practices being used in various industries and locations. Their thesis-equivalent assignment was to then write a journal of their trip, including detailed descriptions of the sites they had visited: Jean-Yves Andrieux, "Les Élèves ingénieurs de l'École des Mines et les exploitations minières et ardoisières des bords de la Loire au XIXe siècle," *Annales de Bretagne et des Pays de l'Ouest* 104, no. 3 (1997), 39-48.

[39] Furcy Soulez Larivière, *Les Ardoisières d'Angers* (Beaucouzé, France: Ménard-Garnier, 1986), 26-8.

nineteenth century, each employing five to fifteen workers and putting out a modest amount of low-quality slate.[40]

From early on, however, observers recognized that the vagaries of geology meant "it is with great risk that one undertakes to open and work a slate quarry"; the unpredictability of the deposits meant that what began as a promising venture could, only after substantial investment, prove worthless.[41] As early as the 1480s, entrepreneurs signed multi-year leases on Church land in exchange for furnishing fixed numbers of slate tiles for use on religious and public buildings as well as promising to maintain a workforce with steady employment. [42] Rather than bear such risk alone, by the mid sixteenth century teams of workers, investors, or both were pooling their resources to meet the initial outlays and split the resulting profits.[43] Tracing the history of the great Angers slate quarries reveals in the industry's infancy a cycle of groundbreaking and bankruptcy as informal

[40] Fleury, "Rapport général sur la situation des ardoisières d'Angers," transcribed by Furcy Soulez Larivière, 15 October 1849, ADML 70 J 5.

[41] Denis Diderot, ed., *Encyclopédie, ou dictionnaire raisoné des sciences, des arts et des métier, par une société des gens de lettres,* vol. 1 (Paris: Chez Briasson, David, Le Breton, et Durand, 1751), 628.

[42] MP Marchegay, "Recherches historiques sur l'exploitation des ardoisières," *Bulletin de la Société industrielle et Agricole d'Angers et du department de Maine et Loire* 2, no. 6 (1855), 217-28.

[43] Turgan, *Les Grandes usines de la France,* 118.

corporations formed and folded, developed or abandoned their interests, and struck it rich or lost it all.[44]

As a result of these processes, by the mid eighteenth century certain aspects of the future slate industry had already taken shape. First, the high quality of the slate meant that the tiles coming out of Angers found ready markets throughout the region and were even the sole supplier of slate to Paris.[45] This increasing demand could be met because the size of the slate deposits easily furnished enough material. Thus, by 1750, seven large quarries were open, employing around eight hundred workers between them, and reaching up to 260 feet into the ground.[46] As the size of these operations grew, distinct class structures took shape. Among those working in the quarries, demand for higher quality products led to a specialization of labor between the workers "from below" who did the actual extraction, the day laborers that carried the slate away, and the artisanal "splitters" who shaped it into finished tiles.[47] With a fulltime specialized workforce in existence by the eighteenth century, the traditional ties of peasants only recently converted to wage labor to their

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[44] Célestin Port, *Dictionnaire historique, géographique et bibliographique de Maine-et-Loire* (Angers: Lachèse, Belleuvre, et Dolbeau, 1874), 1:554, 2:117-8, 2:208-9, 3:46.

[45] L Smyers, jr., *Essai sur l'état actuel de l'industrie ardoisière,* 101.

[46] Furcy Soulez Larivière, *Les Ardoisières d'Angers* (Beaucouzé, France: Ménard-Garnier, 1986), 46.

[47] Louis Sartre, *Memoire et instruction pour traiter et exploiter les carrières d'ardoises d'Angers, à meilleur marché et plus utilement* (Angers, France: Chez Louis-Charles Barriere, 1765), 35.

traditional lands that has been used to explain militancy elsewhere is inapplicable in this case.[48]

Another division of labor occurred as the costs to open and sustain these larger works mounted. Whereas workers themselves had previously been able to afford such a venture, by 1750 the failure of a single excavation could cost its investors over 150,000 francs. So, groups like the several workers who had opened a quarry at La Paperie discovered within a decade they "were not in any state to support the expense that this enterprise demanded and incidentally found themselves divided by the misunderstanding that reigned amongst them, this soon obligated them to cede their interests to other entrepreneurs more in a state to support this enterprise and to cover the risks," while the four workers who together opened a quarry at La Gaulardière in 1746 "a short time later …were obliged by their faulty abilities to sell their interests to two wholesalers from La Rochelle."[49] By the second half of the eighteenth century, therefore, the basic class structure of the slate quarries of Angers had been driven by environmental and economic conditions into a four-part hierarchy between the day laborers, the quarrymen, the artisans, and the entrepreneurs. This structure would prove to have lasting impacts on political and social life in the region for the next two centuries.

Preparation of the Worksite

The first step in opening a quarry was choosing where to do so. Residents of the region had long realized that the slate fields stretched southeast from the edge

[48] Joan Wallach Scott, *The Glassworkers of Carmaux,* 53-71.

[49] "État des carrières à ardoise situées aux environs de la ville d'Angers," February 1750, ADML 70 J 2.

of Angers in four veins, of which two were larger and had higher quality slate that could be mined more easily.[50] As a result, a potential entrepreneur could just trace a line along existing quarries and be likely to hit something, although the presence of occlusions and varying slate quality meant this was no guarantee for success. In order to test a potential site, self-styled engineers simply made an educated guess, sometimes digging a test pit to verify their decision before investing in full-scale operations.[51] However, even such a test could be misleading, as the slate might prove to either increase or decrease in quality as it went deeper.[52] This was the risk the entrepreneurs ran.

Once a decision had been made to commence operations, the site had to be prepared. While it is true the slate typically became better the deeper and thus more sheltered from the elements it lay, until the late nineteenth century technological and financial constraints limited excavations to a maximum depth of 250 to 270 feet.[53] The leaders of this venture faced an engineering dilemma here because as the mine went deeper they had to strike a balance in the angle of the quarry walls. If they were too steep, as much as seventy degrees in places, the risks of a catastrophic rockslide grew; if they were too shallow, as little as twenty degrees in places, the expenses of clearing a wide enough area at the surface grew. Thus, most engineers

[50] Turgan, *Les Grandes usines de la France,* 127.

[51] Pierre Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[52] Diderot, ed., *Encyclopédie,* 629.

[53] Grégoire Bordillon, "Notice sur les carrières d'ardoises d'Angers," *Annuaire statistique de Maine et Loire pour l'année 1837* (Angers, France: Imp de Ernest le Sourd, 1832), 173.

opted for a quarry with its walls stretching up to the sky at forty-five-degree angles. In planning, this meant the surface of the quarry needed to be as wide as it would ultimately be deep, usually 250 to 270 feet across in each direction.[54] Beyond this, the proprietor had to include enough room for workshops, depots, and roads all around the sight. Finally, for residents' safety, the boundaries of the quarry had to be at least fifty feet from any neighboring houses, with a wall or ditch constructed between the two.[55]

While nature bestowed on the Angevins the bounty of slate, it also burdened them with the double-edged sword of water. The high risk of annual floods, when the mighty Loire River overflowed its green banks and submerged the flat plains around Angers each winter, forced the miners to erect massive earthen fortifications around their quarries if they were to stave off the devastating impacts of complete inundation every winter. In practical terms, this meant the entire worksite had to be surrounded by a wall. The standard practice was for unskilled day laborers to hack a channel down through the soil until they struck bedrock. Inside this they would then insert a clay dam three feet thick, lined with loose gravel up to ground level, and then sandwiched between two walls of slate blocks stretching ten feet above it. Finally, they covered the entire edifice with loose dirt taken from the construction

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[54] "Mémoire sur les carrières d'ardoise et les mines de charbon de terre situées en Anjou," [18th century], ADML 1 F1 184.

[55] Jean Blavier, *Jurisprudence generale des mines, en Allemagne, traduite de l'ouvrage de Franz Ludwig von Cancrin, avec des annotations relatives à ce qui a trait à la meme matière, dans les principaux états de l'Europe, et notamment en France* (Paris: Chez Adrien Égron, 1825), 3:459.

site.[56] The cost of employing the teams of day laborers working on such a massive project was clearly prohibitive to all but the largest investors and would have helped centralize mine ownership among a single class.[57]

Only after workers had outlined and cordoned off the entire worksite could the quarry take shape. Slate is very commonly degraded by the presence of minute iron particles that, when exposed to air and water, rust and fuse the grains of slate together, making them impossible to split along neat lines.[58] As a result, workers had to dig down seventy-five to one hundred feet below ground level, passing through striated layers of sandy soil colored by the deep water table and then layers of the rusted rock before finally hitting layers of usable stone.[59] To achieve the necessary forty-five-degree angle in the walls, each ten-foot tall level was set in ten feet from the next. The result resembled a massive amphitheater, a "gigantic stairway" descending through layers of "red, black, and dirty yellow" earth until they reached the layer of "grey-black with a flash of blue and takes the tone so characteristic of recently uncovered slate."[60]

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[56] David, "Voyage en Bretagne et dans le midi de la France," 1861, J 1861 254 no. 1.

[57] Hubert, Guillon, and Fort, *Mémoire pour les intéressés de la carrier de la Porée, commune de Trélazé, defendeurs sur une demande en delaissement d'un terrain situé dans ladite commune, demandeurs en expropriation dudit terrain pour cause d'utilité publique, contre M Jubin fils, Lieutenant de vaisseau* (Angers, France: Imp de Cosnier et Lachèse, 1839), 14.

[58] Turgan, *Les Grandes usines de la France,* 128.

[59] David, "Voyage en Bretagne et dans le midi de la France," 1861, J1861 254 no. 1.

[60] Turgan, *Les Grandes usines de la France,* 129.

The men doing this work were at the bottom of the social hierarchy. In teams of about a dozen, they labored with rudimentary picks and shovels, digging through the dirt and rock day after day for months and even years on end.[61] They often had to clear more than five million cubic feet before further work could begin. Along the way they passed through layers of fossilized troglodytes betraying the region's maritime prehistory, layers where tiny quartz crystals embedded in the black and "pretty dark blue" stone sparkled like stars in the night sky, and layers where shimmering flecks of fool's gold warned of occlusions that could threaten a cave in.[62]

Only through this arduous process could the workers discover if a site was too laden with impurities to profitably mine or if they had simply happened across the filled-in grave of an old abandoned quarry. Although in the nineteenth century gunpowder was sometimes employed to speed up this work, overall it remained a job for low-wage manual labor paid by the twelve- or fourteen-hour day. With such labor cheap and plentiful, the entrepreneurs had no reason to attempt to mechanize this process. As early as the eighteenth century, one author remarked on "the indifference of the entrepreneurs in general…[towards] machines and manual labor…[caused by] the damages of the extraordinary expenses that would be able to [discover?] more efficacious machines and means."[63]

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[61] A Bovet, "Journal de Voyage," 1875, J1875 537

[62] Costé, "Mémoire sur le gisement et l'emploitatioon des ardoises; sur le calculaire et la cuissons de la chaux à Angers (Maine et Loire) voyage de 1827," 1827, EMP J 1827 60.

[63] "Note sur l'exploitation des ardoisières," [18th century], BMA 473.

Harvesting the Slate

Only once the face of the slate deposit had been exposed could the skilled teams of quarrymen, the workers "from below," begin their work. They appeared on the top of the site with the sun, clambering hundreds of feet down a rickety network of ladders to where they had last left off.

At each new level, the workers "begin by digging in the middle of the quarry following the parallel diameter of the slate layers and along the entire length of this line, one *foncée* 1.5 feet wide and ten feet deep," using the four to six pound "small pick" to "break the schist into little pieces." From the point of view of the workers, this was wasted labor, because the shattered stone was worthless for production and would simply have to be discarded.[64] Little more than a heavy steel spike strapped to the end of a wooden rod, the small pick was supplemented by the occasional use of powder as the nineteenth century wore on.[65]

After opening up this gap, a team gathered on one side, each man carrying an assortment of picks, sledgehammers, and long iron spikes. These teams usually had ten to fifteen members, although they could reach as many as thirty or forty at times.[66] Each team was overseen by its most experienced and respected member, referred to as the "clerk from below."[67] On the clerk's cadence, each of these men, standing nearly shoulder-to-shoulder, would lift their picks high overhead and

[64] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

[65] Aîmé-Etienne Blavier, "Essai sur l'industrie ardoisière d'Angers," *Bulletin de la Société industrielle d'Angers et du dépertement de Maine et Loire* 3, no. 4 (1863), 114.

[66] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

[67] Logerais, "Les Ardoisières de Trélazé," March 26 1852.

swing them down in perfect unison. Obeying a tight rhythm in order not to crack the slate unevenly, these men first hacked an even line of small holes on the top surface spaced about two feet apart and about three feet in from the open face. They called this step "making the path."[68] Next, they inserted a steel shank ranging between six inches and four feet in length called a "quill" into this hole and came down on it with hefty twenty- to thirty-pound sledgehammers, always in unison, driving the spike down until it was flush with the surface. Then, they put another on top and drove the first one down even further. Through this method, over the course of days, a team could sink their points ten feet deep.[69] At this point, the men could finally place their long iron crowbars into these holes and, prying back and forth, slowly coax the series of holes to merge into one big crack before a slab twenty to thirty feet long, ten feet tall, and three feet thick would come lose from its ancient home and crash down into the space previously opened up before it.[70]

The quarry was an intensely loud place, with the sounds echoing off the steep walls all around. Visitors frequently described the noises, stating that "no narration can exactly render the effect produced on the visitor's imagination by the underground chasm, the deafening caverns, the collision of picks and iron bars, the sudden explosions, the rolling noises of the shadowy depths!"[71] Looking down into

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[68] Diderot, ed., *Encyclopédie,* 629.

[69] Jules Ichon, "Notice sur l'exploitation," *Bulletin de la Société de l'industrie minerale* 3, no. 4 (1890), 762.

[70] "Art des Mines," 422.

[71] Eugène Gasté and F Hervé-Bazin, *Les Grandes industries de l'Anjou* (Angers, France: E Barassé, 1875) 7:99.

the quarry from above, "the workers, in the depths, looked like pygmies, and the air only carried the sound of their hammers to the ear a long time after the eye saw them fall simultaneously on the iron wedges."[72] While hammering, the quarrymen had to remain synchronized or risk splintering the slate. To do so, they sang. The air carried the soft chant up out of the workplace as "one of them sets the pace of their movements by a sort of monotone song similar to those of sailors of all countries while they load and unload commercial ships."[73]

Production now split into two separate tasks. Given that this massive block of slate, presumably still intact, was far too large to be carried out of the pit, a team of three or four highly skilled workers would gather around it with a series of wedges and hammers. These men had to have enough experience and training to be able to recognize and follow the stone's grain; a false split could render this product of hundreds of man-hours worthless.[74] As twentieth-century worker Mario Fernandes described the task:

> "you took the block by the weakest corner. Often you were wrong. You believed it was here that you would have to start and so began again. So here, to split it, you made a hole a foot deep and placed a set of needles, two bits of scrap and a big one in the middle and took the sledgehammer and tapped it until it gave way. You felt the rock when you started to work. You could see

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[72] "Carrières à ardoises," *Annuaire Statistique de Maine et Loire pour l'année 1834* (Angers, France: Imp de Ernest le Sourd, 1834), 176.

[73] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

[74] Aîmé-Etienne Blavier, "Essai sur l'industrie ardoisière d'Angers," 115.

the handsome stone, and you told yourself you were going to make some money there, and you bit into it. This was combat."[75]

By carefully reading the stone and creating a line of holes in just the right place, they could set their five- or six-inch iron wedge so that, with a firm blow from their sledgehammer, they could send a crack running clear through the block.[76] Despite their skill in breaking the slate into more manageable pieces, mistakes meant that one-third to one-half of the rock was not worth hauling out, and so was simply left in place.[77]

Meanwhile, the rest of the team set about smoothing out the floor. Because the bottom of the block did not always break cleanly or smoothly, the workers had to go back in with picks, wedges, and even bare hands to scrape the surface flat.[78] If they failed to do so, the next block falling in this space might land upon a protuberance and shatter, again rendering hundreds of hours worth of labor useless.[79] While at it, several of the men might use their picks to carve out a small channel from the base of the next block in order to topple it more easily.[80] Overall,

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[75] APTIRA, ed., *Mémoire de migrations à Trélazé de la fin du siècle dernier à aujourd'hui* (Vauchrétien, France: Ivan Davy, 1996), 96.

[76] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

[77] Jules Ichon, "Notice sur l'exploitation," 771.

[78] Diderot, ed., *Encyclopédie,* 629.

[79] Aîmé-Etienne Blavier, "Essai sur l'industrie ardoisière d'Angers," 115-6.

[80] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

this part of the process might take up to half of the workers' time and, given that it produced no workable stone of value, was unpaid labor.[81]

Every three months, the mine overseer would tally up a team's total output. With the height of the *foncée* set at ten feet and the depth of the block fixed at three feet, all that was left to do was measure out the number of horizontal six-foot segments, called *toise*, extracted.[82] From this total, the pay was split into six and distributed by the manager to the team clerk every fifteen days, although some places paid once a month instead.[83] Out of this sum, the clerk would apportion out each worker's share based on the number of days he had worked in that period.[84] The clerk also accounted for seniority in dividing up the pay, taking the most for himself, then paying the more experienced quarrymen, and finally splitting the last of it, if any, among the newest members.[85] This system of payment thus offered the team as a whole and the individual members within it a degree of autonomy that the day laborers lacked.

The workers were also united by the dangers they faced, both immediate and long-term. The biggest fear was of a massive rockslide. As the witness of a collapse in 1835 wrote, "we have seen these schistous avalanches break away in massive

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[81] Jules Ichon, "Notice sur l'exploitation souterraine des ardoisières d'Angers," 772-3.

[82] Louis Sartre, *Memoire et instruction*, 36-7.

[83] Bineau, Gazella, and Reverchon, "Journal de voyage," 1829, J 1829 23 no. 5.

[84] Logerais, "Les Ardoisières de Trélazé," March 26 1852.

[85] APTIRA, ed., *Mémoire de migrations*, 100.

chunks at the same time and suddenly engulf an entire exploitation."[86] But such catastrophic events, caused by the erosion of the slate once exposed to the region's humid air and jostled by the relentless reverberations of pounding picks, crashing blocks, and exploding charges, could often be predicted and the miners evacuated. Much more dangerous was the routine threat of small pieces of slate slicing down unforeseen towards the workers below. In 1827, the local surgeon explained to a visiting engineering student that he always had wounded quarrymen recuperating in his hospital in Angers, and that hardly a week went by that he did not have to amputate one of their limbs.[87] Yet, having to face these dangers every day, the workers from below simply accepted the fact that "rock falls should be considered inevitable," and carried on with their labors.[88]

For those who dodged such deadly forces, a lifetime spent breathing in dust and smoke, performing backbreaking labor, and oftentimes working in damp or even flooded conditions, respiratory diseases were another very real threat. The most common was schistose, a deadly lung disease that is the slate miner's equivalent of the coal miner's black lung.[89] Describing the slate quarrymen of the Riviera in this period, one engineer explained that "the nature of the labor in which these workers engage renders them subject to different diseases, of which the most

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[86] Boucheporn and Declerck, "Journal de voyage," 1835, J 1835 45 no. 1.

[87] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

[88] "Note sur l'exploitation des ardoisières," [18th century], BMA 473.

[89] Marcel Goacolou and Maurice Faës, *Paroles d'ardoisier* (Valencia, Spain: Graphic 3, 2005), 196.

common is consumption; they are old at thirty years, and rarely pass the age of fifty."[90]

As has been demonstrated by Donald Reid, such danger could often prove a key catalyst for class formation.[91] For the quarry workers in Angers, such threats bonded the men together. As one miner remarked, "one often talks about the great solidarity between slate miners….I only knew this solidarity in the depths, in the mine, and only there."[92] Reflecting this solidarity, the workers came up with common funds to support those who were sick or injured, or to support the wives and children of those who had died. Even after the mining firms attempted to institute their own company-controlled accident funds, the workers still pitched in to supplement the benefits of a fallen comrade.[93] Summing up the feeling, a wife and daughter of quarrymen explained, "there was this formidable solidarity in the profession. When one was sick or injured for more than fifteen days, a collection was made for them. If one died at work, all the slate workers of Trélazé, everyone came up, quit work until the boy was buried. This solidarity[…] a solidarity between three thousand people. This was something, a true solidarity of…class maybe."[94]

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[90] L Cordier, "Statistique minérologique du département des Apennins," *Journal des mines* no. 176 (August 1811), 125-6.

[91] Donald Reid, "The Role of Mine Safety in the Development of Working-Class Consciousness and Organization: The Case of the Aubin Coal Basin, 1867-1914," *French Historical Studies* 12, no. 1 (Spring 1981), 98-119.

[92] Goacolou and Faës, *Paroles d'ardoisier*, 149.

[93] Logerais, "Les Ardoisières de Trélazé," March 26 and 27, 1852.

[94] APTIRA, ed., *Mémoire de migrations*, 90.

Bound by long days of synchronized labor and a shared sense of danger, it is little surprise that these men formed tight bonds of community. A boy could begin his apprenticeship by his early teens. If he had a family member working in the mines this was free, but otherwise he had to pay a fee, fifteen francs in the mid nineteenth century. On their first day they were treated to an initiation ceremony where they were presented with the heavy iron clogs that marked a man of the trade. As every worker from below in the quarry gathered around, the apprentice's sponsors, his "godfather" and "godmother," dropped to their knees and each sewed a small strip of felt to the boy's legs. Then, to solemnize the occasion, they each made the sign of the cross three times. The ceremony now complete, the men all celebrated with vast quantities of the region's heady white wine, provided by the mine owners for the occasion. After this point, the apprentice would work his way through several stages of training, paying a fee (twenty francs in the 1850s) to pass from one to the next. The apprentice also had to pay fees for each milestone in his personal life, such as marriage or childbirth. But with each successive stage in his training the apprentice was paid more and more. By the time he was a full member of the community, after a couple years of apprenticeship, he had probably paid up to two hundred francs. Other workers and quarry owners alike complained about this system, which in practice created a slush fund "spent for the most part in the cabaret" by the other members of the brotherhood.[95] Although these men had access to liquor, beer, and the fine cider of neighboring Brittany, local records show

[95] Logerais, "Les Ardoisières de Trélazé," March 26, 1852.

that wine was by far the drink of choice.[96] As a result, an official decree in 1860 outlawed the practice of dues, converting it instead to a fixed monthly fee paid just for the training.[97]

Thus formed, each team operated as a family unit. At the top was the clerk, the patriarch elected to oversee the labor and represent the men to the mine owners. Within the family, they shared their own language and set of customs. As miner Edouard Wiecek recalled his first day in the mines, "there were such terms! The first time someone asked me to go find a 'slut,' the surprise passed…On the other hand, certain terms were pretty, like 'the mandolin' in place of a shovel. Maybe it would have been less hard to work with a mandolin than with a shovel."[98] Similarly, workers were expected to uphold core traditions, such as always remembering to make the sign of the cross on each block pried from the wall; those who forgot were fined fifteen francs.[99]

Clearing the Quarries

Once the skilled laborers had broken up the slate, cleared the jobsite, and recommenced their task atop the next block, it was time for the unskilled workers to move in. In the early days of the industry, the workers had carried their own slate up top or hired day laborers to rest the heavy stone pieces in baskets strapped to

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[96] Guillory aîné, "Tableau des diverses natures de boissons consommées dans la ville d'Angers," *Bulletin de la Société industrielle d'Angers et du department de Maine et Loire* 1, no. 14 (1843).

[97] Turgan, *Les Grandes usines de la France,* 144-5.

[98] APTIRA, ed., *Mémoire de migrations*, 93.

[99] Logerais, "Les Ardoisières de Trélazé," March 26, 1852.

their backs while they scaled the steep and rickety network of ladders guiding them towards the surface. Even late into the eighteenth century such work was still done by children.[100] The introduction of extraction equipment by the seventeenth century, however, reduced the scope of the day laborers' post to carrying the planks of split slate from the extraction site to one of the few central collecting points in each mine. Here, the slate was stacked in a small box, about three feet wide, five feet long, and a foot deep, made of wood and iron with a hinged opening on the back side and four iron hooks reaching out from the top. In the early nineteenth century, such *bassicots* carried one thousand pounds per load, a saving grace to the day laborers' legs and backs as production expanded.[101]

Each *bassicot* was then attached by means of the four hooks to a steel or rope cable stretching to the engine hundreds of feet overhead. Projecting from the stepped black walls of the quarry, such machines were housed in "a little cabin suspended over the abyss …[by] scaffolding of an extreme solidity, but whose elevation gives it a terrifying lightness."[102] Such constructions were always erected on the north side of the excavations, where the slightly angled grain of the slate offered more stability and a smaller risk of collapse.[103] The wooden scaffolding necessary to support machinery hundreds of feet above the ground was massive, yet paled in comparison to the size of the quarry. A visiting engineer confessed his fear

[100] Diderot, ed., *Encyclopédie*, 630.

[101] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

[102] Turgan, *Les Grandes usines de la France,* 129.

[103] "Mémoire sur les carrières d'ardoise et les mines de charbon de terre situées en Anjou," [18th century], ADML 1 F1 184.

in seeing "at the bottom of this vast funnel the men who work there seem so small, the extraction machines suspended above them seem so puny and their scaffolding so spindly!"[104]

Here, the earliest types of machines were simply a rope run vertically from the quarry floor to a pulley at the top of the scaffolding and then horizontally to a harnessed horse walking straight forwards and backwards along a path to raise and lower the bucket.[105] Such techniques quickly evolved so that by the eighteenth century the scaffolding now supported a vertical wooden post eight or nine feet thick with a fifteen foot lever jutting out horizontally. A team of three horses was harnessed into this lever and driven in circles, winding and unwinding a rope around the central post that then ran to a four-foot pulley before plunging down into the quarry, and thus raising or lowering each *bassicot*.[106]

Such techniques limited the reach of the *bassicots* to a single point directly below each crane, meaning more work for the day laborers and thus less profit for the mine owners. The problem was that "this machinery is stationary on one spot at the brink of the pit, and the sort of barrow on which the slate is raised has to be conducted to all parts of the bottom of it—a space of considerable extent." The solution, then, was to create "a quantity of ropes crossing the pit horizontally or obliquely in every direction, which are attached to different points of the main ropes that raise the slate, and thus guide them as they descend to the spot at which the

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[104] Boucheporn and Declerck, "Journal de Voyage," 1829, EMP J 1829 23 no. 5.

[105] "Art des Mines," 419.

[106] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

workmen are employed."[107] The initial method proposed by engineers in the early nineteenth century was a two-cable system. To achieve this they put up a copper tower with a series of small pulleys attached directly across the quarry from the engine, situated atop the opposite peak. While this allowed the workers to reach clear down to the deep center of the quarry, it also allowed them to operate two *bassicots* at once, one going up while the other came down, doubling the extraction speed while also creating a counterbalance.[108] This two-cable system was soon supplemented by whole networks of cables crisscrossing the mine site, and one even set up a horizontal cable around the perimeter of the mine site, so that the *bassicots* could be "maneuvered by workers who can thus direct the movement of ascent and descent of the *bassicots*" with increasing accuracy directly to the extraction site.[109] Working under this system must have been an unnerving experience to the uninitiated, with thousands of pounds of stone "suspended over the abyss" and rising jerkily overhead, followed by "the sharp whistling of the trap when one of those who braces the cable with a pulley detaches the knot that holds it to slide towards its other stop."[110]

Collapses were rare on these platforms, despite the heavy weight of the equipment and slate supported by it, but must have ensured an unsettling worksite

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[107] Trollope and Trollope, *A Summer in Western France*, 251.

[108] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

[109] Aîmé-Etienne Blavier and Edouard Sens, "Voyage en Espagne," 1850, EMP J 1850 132.

[110] "Carrières à ardoises," *Annuaire Statistique de Maine et Loire pour l'année 1834* (Angers, France: Imp de Ernest le Sourd, 1834), 176.

nevertheless. As one visitor described his experience, "at first, you hesitate to stay on these planks vibrating at every jolt, and that the wind, violent enough on the slate plains, seems like it should carry it off at any moment."[111] Spending their long days atop such a rickety worksite were teams of two to four men whose job was to receive the slate and load it for transport. As each *bassicot* arrived at the top, these men reached out with crooks to avoid the platform's edge and so that their hands did not slip on the *bassicots*, always caked in a layer of mud.[112] A worker next weighed and marked the stone to ensure proper record keeping.[113] Finally, the team pushed the slate onto an awaiting horse cart, sent it on its way, and prepared to receive the next *bassicot*.[114]

The lowest level of worker was tasked with driving these horse carts. Usually they were children working at the jobsite until they were old enough to start their apprenticeship or become a fully-fledged day laborer. Otherwise, workers who had been injured on the job had to leave their highly skilled and highly paid jobs to drive the carts around the quarry site day after day. [115] The carts themselves were simply a wooden platform supported between two wheels and mounted on a hinge, so that when the cart reached the artisanal workshops to which its payload was destined,

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[111] Turgan, *Les Grandes usines de la France*, 131.

[112] *Ibid.,* 139.

[113] APTIRA, ed., *Mémoire de migrations*, 103.

[114] Blavier and Sens, "Voyage en Espagne," 1850, EMP J 1850 132.

[115] Goacolou and Faës, *Paroles d'ardoisier*, 102.

the child could easily unload the slate.[116] These boys could, on average, carry twenty-five or thirty loads a day from the cranes to the rows of workshops stretching out from the excavation.[117]

This carting system was crucial throughout the life of a quarry. During the initial phases of operation, as the thick layers of soil and corrupted slate were scraped off to reveal the virgin beds underneath, wheelbarrows and horse carts ran trips back and forth incessantly to carry off the detritus.[118] Although the day laborers doing this work weren't paid much for their long days spent goading old horses and donkeys along rutted roads slicked over with mud, to the mine owners it was still wasted labor and money. Yet these mountains of earth gave the quarries the air of an industrial wasteland.[119] One visitor described the land "covered in almost every direction by immense mounds of the refuse slate. These vast accumulations, which are the result of the labor of many generations, are annually increasing, although some of the exhausted pits have been filled up with this refuse material."[120] An author in the late nineteenth century described the results: "along the approaches to a quarry [one finds] hills of a sad appearance; the yellowish earth of the opening serves as a base for veritable hills formed by the black debris of the employed slate; embankments that, in winter, are converted into a lake of mud, and

[116] Blavier, "Essai sur l'industrie ardoisière d'Angers," 120.

[117] Ichon, "Notice sur l'exploitation," 782.

[118] Pierre Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[119] Brossé, "Mines et carrières en Anjou," 12-4

[120] Trollope and Trollope, *A Summer in Western France*, 250-1.

in summer mounds of dust, separate these rises and will unfavorably dispose the visitor to the surprising spectacle that seizes them."[121] Up and down these mounds, whose covering of slate shards shifts under the pressure of a foot struggling to find enough traction to finish pushing a wheelbarrow to the top, day laborers struggled from the time the sun first peaked over them in the morning until it fell behind them in the morning, their deep black hue a sharp silhouette against the horizon regardless of the sun's position.

Although less noticeable to the passing observer, the removal of excess water was no less crucial to a quarry's success. The flat plains around Angers, bracketed between several mighty rivers, are prone to massive floods that can quickly inundate a quarry. At the same time, the high water table means that, even absent a flood, water flows continuously into the quarries and threatens to submerge them.[122] In the primitive excavations, workers kept their worksite relatively dry by digging a large cave at the bottom to catch and store the excess water.[123] However, this created serious constraints on how deep the quarries could go and how long they could stay open while offering no means to combat a flood. In response, eighteenth-century engineers took up the struggle to push past the 270-foot limit where water flowed in too fast and the existing pumps proved too weak.[124] By the eighteenth century it was recognized that removing water from the quarries was,

[121] Turgan, *Les Grandes usines de la France*, 128-9.

[122] L Smyers, jr., *Essai sur l'état actuel*, 104.

[123] Diderot, ed., *Encyclopédie,* 630.

[124] "Mémoire sur les carrières d'ardoise et les mines de charbon de terre situées en Anjou," [18th century], ADML 1 F1 184.

alongside extracting slate, "the objects of the most considerable expenses; nothing would be so advantageous as to find the means to do these operations more usefully."[125]

The first solution for extraction rather than containment of the water was a hybrid approach, with small a reservoir dug on each level of the stepped quarry walls. At the next level up, a post sunk in to the slate balanced a horizontal beam across a rocker. A bucket dangled from one end of the horizontal beam; a young boy dangled from the other. By letting out some rope until the bucket dipped into the reservoir and filled with water and then pulling it back tight, the child worker could raise the water to his own level. Spinning the horizontal beam until the bucket of water was suspended over the small channel at this higher level, the boy could upend the bucket and have successfully raised a gallon or two of water ten vertical feet. Boys stationed at each subsequent level repeated this process until, at long last, water from the depths was poured out at the top and into a channel running off towards the river.[126]This was clearly a slow, cumbersome, and inefficient means of drainage made possible only by the exceedingly low cost of child labor.

Quarry operators sought more efficacious means of keeping the quarries dry, with one site experimenting with a windmill designated for this task in 1784.[127] However, during the eighteenth and into the nineteenth century, the horse-powered crane was the preferred method of extraction. This was essentially the same process

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[125] "Note sur l'exploitation des ardoisières," [18th century], BMA 473.

[126] Bineau, Gazella, and Reverchon, "Journal de voyage," 1829, EMP J 1829 23 no. 5.

[127] Gasté and Hervé-Bazin, *Les Grandes industries de l'Anjou,* 7:103.

used to remove slate from the quarry, except that in place of a *bassicot* workers slung a ninety-gallon wooden bucket beneath the steel cable. The teams of three horses providing the motive force for this process were kept at a fast-trot, "continually whipped and excited by children who thus earn thirty or forty centimes per day."[128] These children lived with the steady panting of the horses and the reverberation of their hoof beats on the wooden platform that shook until "you think it threatens ruin."[129] The horses were worked in hour-and-a-half shifts, each three shifts a day. At this pace, each machine could raise a 750-pound bucket of water from the quarry floor to the surface in just eight minutes, draining six hundred gallons of water each hour.[130] As each bucket reached the top of the scaffolding, a worker reached out with a crook to help flip it upside down, draining the contents into a series of canals leading off to abandoned mines or valleys outside of the worksite.[131] The horses quickly became adjusted to their task, so that as soon as they heard the water splash out into the gutters they automatically reversed direction. Picking up on such auditory cues was crucial if horses were to avoid the whip, because most of the horses employed in this task couldn't see. Blind horses

[128] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

[129] "Carrières à ardoises," 176.

[130] "Mémoire sur les carrières d'ardoise et les mines de charbon de terre situées en Anjou," [18th century], ADML 1 F1 184.

[131] Bineau, Gazella, and Reverchon, "Journal de voyage," 1829, EMP J 1829 23 no. 5.

did not need to see to walk in a tethered circle, and the mine owners found they could save money by buying livestock so useless for other types of work.[132]

The presence of the dozens of horses and donkeys added a distinct air to the worksite. Confined within the tight constraints of the surrounding dykes, livestock, their stables, and the grain they ate shared space with workers, their workshops, and the empty casks of wine they drank. The excess product of this grain and wine also found its way into the muddy paths the men and animals trod continuously, surely giving the quarry a distinct odor reminiscent of a sewage treatment plant. Although the effects on the men's health can only be inferred, mine owners were concerned that horses driven hard and put away wet, when exposed to "the humidity and bad air, [were] necessarily exposed to 'pulmonies,' glanders and even dangerous epizootics."[133]

Shaping the Slate

Arranged in tidy rows all around the quarry were the small workshops of the artisanal *fendeurs*, who split and shaped the slate blocks into finished slate tiles ready for delivery. Originally, these workshops were a simple windbreak, a square wooden frame interwoven with straw and propped against a notched stick, that could be easily rotated to offer shelter from the sun or wind.[134] Over time they became more substantial structures, with discarded slate bricks stacked up on three sides and covered with a straw roof. These men worked year round, and so this was

[132] Auguste Fougeroux de Bondaroy, *Art de tirer des carrières la pierre d'ardoise, de la fendre et de la tailler* (Paris: Desaint et Saillant, 1762), 6.

[133] Hubert, Guillon, and Fort, *Mémoire pour les intéressés*, 14-5.

[134] APTIRA, ed., *Mémoire de migrations*, 105.

their one refuge from the sun and snow, heat and cold, wind and rain. As one *fendeur* eulogized: "the cabin, my cabin, that which was going to become my second home, the place around which, all the time, I was going to accomplish my task."[135] Within these homes away from home, the men passed their long days split between work and socializing, "all the while smoking and chatting with each other, without any concern for the indiscreet glance that observes them."[136]

Two workers shared the tight space around each windbreak. Quite often, they were father and son, united at work and at home, blurring the lines between labor and family. Because the repetitive tasks involved were so tiring, working in a team allowed the men to alternate tasks, giving one a chance to rest his back while the other hunched over his material.[137] So unifying was this work that the men doing it came to be called *parageux*, whose etymology is sketchy, but reflects the fact that they always worked in pairs and that they acted together as equals.[138]

The *fendeur*'s work began with the arrival of the slate. Distribution was determined by seniority, with the greatest quantity and quality going to the oldest workers. The standard cart could carry four *hottées*, the term reflecting the amount that a single day laborer in the era before mechanization could carry out of the

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[135] Goacolou and Faës, *Paroles d'ardoisier*, 92.

[136] Gasté and Hervé-Bazin, *Les Grandes industries de l'Anjou,* 7:98.

[137] Turgan, *Les Grandes usines de la France*, 147.

[138] Logerais, "Les Ardoisières de Trélazé," March 27 1852.

quarry on his back.[139] Although the exact distribution shifted over time as child labor laws were introduced, throughout most of this period a worker from birth was entitled to one *hottée* per day, increasing to two on their ninth birthday, three on their tenth birthday, and a full load of four *hottées* on their fourteenth.[140]However, although entitled to a certain amount of slate per day, the *fendeur* operated as an independent producer, purchasing the material from the quarry owners and then selling the finished product back to them.[141] Because the slate was purchased and sold by surface area, lower quality slate rife with cracks could mean a substantial loss of potential profit, and frequently bred resentments between the senior artisans receiving first pick of the material and their apprentices.[142]

After receiving the slate, a *fendeur* sized it up to determine his approach. Paying careful attention to the course and thickness of the grain, its orientation, and with an eye out for potential faults, the skilled artisan quickly honed in on the spirit of the slate and, laying a steel or iron wedge horizontally against its edge, delivered a few swift blows from a wooden hammer and sent a single crack spreading along a flat plane throughout the piece. With some coaxing from a crowbar, the block gave way and split into planks several inches thick.[143] With either a chisel or saw, the

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[139] "Explication du mot de hottée ou droit d'ouvrier fabriquant d'ardoises," [late 19th century] ADML 1 F1 228.

[140] "Note manuscript sur les usages observés par les ouvriers et regisseurs des carrières d'ardoise," [late 19th century] ADML 1 F1 229.

[141] APTIRA, ed., *Mémoire de migrations*, 105.

[142] Goacolou and Faës, *Paroles d'ardoisier*, 86-7.

[143] Costé, "Mémoire sur le gisement," 1827, EMP J 1827 60.

fendeur next cut a series of notches into the perimeter of the plank, lining each up carefully so that, with a sharp blow to the apex of one a fine crack would shoot straight across to the apex of another like lightening reaching directly down for a pole. With this done, the slate was now in manageable rectangular planks several inches thick, a foot wide, and a couple of feet long.[144]

Next, the *fendeur* worked through his arsenal of specially crafted wedges to deliver the finished tiles.[145] Resting the plaque across his oversized wooden clogs, an artisan greased up the cutting edge of his thickest wedge with one hand and set the point across the thin edge of the plaque perpendicular to the grain so that, with a quick ninety-degree rotation, the fine blade fell in line with the center of the stone. Then, a few taps from a wooden mallet split the sole piece into two identical plaques. It was critical for the split to be perfectly centered, otherwise the resistance of the thicker side would drive the wedge towards the thinner side and shatter it. This process was repeated, with the *fendeur* moving through progressively smaller wedges, until at last he had around his feet a pile of plaques just millimeters thick.[146]

The final stage of the *fendeur*'s production process was to shape the plaques into rectangular tiles. In order to conform to predetermined sizes, the worker used a template. Resting the plaque on the frame, whether a simple log with a notch carved into one side or a specially crafted metal plate that became common by the mid nineteenth century, the *fendeur* dropped the blade of a large knife on the ragged

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[144] Blavier, "Essai sur l'industrie ardoisière d'Angers," 122.

[145] Goacolou and Faës, *Paroles d'ardoisier,* 148.

[146] Interview with fendeur, September 10, 2013.

edge sticking out beyond the frame. What was left was a flat edge on the tile and a few scraps of excess trimmings on the ground.[147] The trick for the artisan was to harness his skill to do this in a way that minimized waste, which meant a loss of income.[148] Repeated on each side until the tile was a smooth rectangle, at last the slate had been transformed into a uniform product for sale back to the quarry owners.[149] The finished tiles were stacked in rows according to size alongside their workspace for pickup, inspection, and counting.[150]

A skilled *fendeur* could thus churn out four to six hundred finished tiles per day.[151] This process was repeated day after day, breaking down the men's bodies and leading to sudden injuries while manipulating heavy blocks, swinging large hammers, or driving sharp wedges. But it also led to long-term injury and exhaustion, with scoliosis an especially common malady. With injury and illness so common, these workers since early on created a common fund to support those among them unable to work. [152] Time off for recuperation was thus crucial if one hoped for anything resembling longevity in the quarries, but bosses were skeptical of such needs. One entrepreneur complained openly that these *fendeurs* only worked around twenty days per month in the early nineteenth century, adding

[147] Turgan, *Les Grandes usines de la France,* 148.

[148] Diderot, ed., *Encyclopédie,* 631.

[149] David, "Voyage en Bretagne et dans le midi de la France," 1861, EMP J 1861 254 no. 1.

[150] Goacolou and Faës, *Paroles d'ardoisier*, 92.

[151] Sartre, *Memoire et instruction*, 52.

[152] Goacolou and Faës, *Paroles d'ardoisier*, 91-3.

sarcastically "they really must rest one or two Sundays."[153]The slate companies would spend the rest of the century attempting to subject these workers to a more disciplined and intensive work process, but the fact that they were self-employed gave these men an independence through which to resist.

Such a spirit of independence was further bolstered by the tight sense of camaraderie that developed amongst the *fendeurs*. One man recalled "the *fendeur* on the hill after his [apprenticeship] became an artisan, regulating his work himself and not easily accepting the advice or observations of his neighbors."[154] This apprenticeship was the gateway to a career as an artisan. In the nineteenth century, the apprenticeship began by the age of nine.[155] It consisted of between two and five years spent studying under a master artisan, usually the boy's father, learning how to read and work the slate. At the end of this arduous training period, the young artisan received his "baptism."[156] On the appointed day, every artisan at the jobsite gathered around, each wearing the enormous hardwood clogs that marked them as members of this elite group of men and holding their hats in their hands; any interruptions of the solemn ceremony were met with a swift five-franc fine on the offender. The boy's father knelt down in front of his right leg while the boy's sponsor knelt in front of his left. They each held a thick, colorful mass of discarded rags and scraps of fabric each *fendeur* wore over his shins to protect him from

[153] Bordillon, "Notice sur les carrières d'ardoises d'Angers," 176.

[154] Goacolou and Faës, *Paroles d'ardoisier*, 90.

[155] Christophe Aubert, *Le Temps des conspirations: la répression politique en Maine-et-Loire entre 1814 et 1870* (Cheminements, 2006), 204.

[156] APTIRA, ed., *Mémoire de migrations*, 104.

wayward slate shards or steel blades during the splitting process and, with two crossed strips of leather, "tied it very tenderly around their leg." The freshly anointed artisan was then given a nickname that would identify him amongst his new brotherhood. The ceremony complete, the *fendeurs* all partook in the fifteen-liter cask of wine furnished by the mine owners for the occasion. Further reserves of wine were surely available as the apprentices paid fees of two liters for each stage of their professional and personal development, whether graduating to a new level of training or growing their first beard, and fines for misbehavior were similarly assessed in wine.[157] As a final demonstration of goodwill, the boy's first act as a *fendeur* was to go down into the quarry and offer tobacco to each of the workers from below.[158]

In many ways, the *fendeurs* resembled a guild.[159] Their ceremonies and traditions created a structure and symbolism through which to express a collective identity, while at the same time establishing a distinct social hierarchy among themselves based on work experience. Furthermore, by doing so these workers established themselves as a separate class of workers, whether as "gentlemen, relative to those who worked underground," as an aristocracy of labor, or even as

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[157] The practice of assessing fines in drink has been described as a common way to reinforce masculine culture amongst a group of workers because, in the collective consumption of the fine, the men were drawn together: Clark, *The Struggle for the Breeches*, 33.

[158] "Note manuscript sur les usages observés par les ouvriers et regisseurs des carrières d'ardoise," [late 19th century] ADML 1 F1 229.

[159] James R Farr, *Artisans in Europe*, 222-75; William H Sewell jr., *Work and Revolution in France*, 1-61.

the "lords of the proletariat."[160] And, in fact, those artisanal construction workers responsible for installing the finished slate tiles on roofs throughout the region had been afforded official status and protection as a guild since at least the middle of the seventeenth century.[161] However, the quarry workers themselves, *fendeur* and from below alike, existed "without regularly granted privileges, without possessing a guild like the other state bodies."[162] Furthermore, sharp divisions existed between the workers of each worksite, between each type of work, and between the quarrymen and the rest of the working class.[163] The battle between workers, capitalists, and politicians over what privileges these men did properly have would leave a defining imprint on the region's economic, social, and political life for centuries.

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[160] APTIRA, ed., *Mémoire de migrations*, 106; Goacolou and Faës, *Paroles d'ardoisier*, 177. The concept of an "aristocracy of labor" is one fraught with debate over the nature of this specialized group of workers, their political leanings, and relative class affiliations. In this case, the term is most likely being used simply to highlight the leadership role of the fendeurs and their highly respected status among the slate community, and is thus a cultural product: EJ Hobsbawm, "The Labor Aristocracy in Nineteenth-Century Britain," in *Labouring Men: Studies in the History of Labour* (London: Weidenfield and Nicholson, 1964), 272-315; Henry Pelling, "The Concept of the Labor Aristocracy," in *Popular Politics and Society in Late Victorian Britain* (London: Macmillan, 1968), 37-61.

[161] "Les Couvreurs d'ardoise à Angers," April 26 [1696], AMA HH 35.

[162] Blavier, "Essai sur l'industrie ardoisière d'Angers," 169.

[163] Logerais, "Les Ardoisières de Trélazé," March 27 1852. Fierce tensions almost certainly developed as well between the journeymen and masters of this pseud-guild, although overall the unity of trade identity overrode these various divisions: Robert Darnton, "Workers Revolt: The Great Cat Massacre of the Rue Saint-Séverin," in *The Great Cat Massacre and other Episodes in French Cultural History* (New York: Vintage Books, 1985), 75-106.

Class Consciousness in the Era of the Revolution

By 1789, workers and entrepreneurs in the slate fields around Angers had formed identities that distinguished them from the surrounding social milieu. In examining the *cahiers de doléances* drafted that year, the state of the industry becomes clear. First, the cahiers were drafted both by commune and by corporation. The sixty-seven corporations represented included groups as diverse as lawyers and clog makers, master bakers and masons, fishermen and wig makers, and coopers and surgeons. However, no class of slate workers was to be found among these roles.[164] The declarations of the region's Third Estate as a whole reveal an interest in liberal economic policies balanced by the maintenance of public welfare: bankers were to be granted the right to lend money at interest but with limits set against usury; government officials were to "recognize equally the execution of settlements between the merchants-entrepreneurs of factories and their workers," with input coming from "the body of wholesalers and merchants," but tempered by the maintenance of corporate rights; and while they asserted that "nothing can be more advantageous to the state than the great freedom of commerce" and that legislators ought to give this "liberty of commerce every extension of which it can be capable," they also urged the state to retain its role acting within the market to prevent famine.[165] This represented a balanced and collaborative approach to relations between capitalists and workers.[166]

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[164] A Le Moy, *Cahiers de doléances des corporations de la ville d'Angers et des paroisses de la sénéchaussée particulière d'Angers pour les États generaux de 1789* (Angers, France: Imp A Burdin et cie, 1915), 1:414-7.

[165] *Ibid.,* 1:ccxiii-ccxlii.

Within the surrounding quarry communities, however, class relations were much more contentious. In Trélazé, citizens sought a more representational government that would create canals to facilitate goods shipment and constrain the clergy to live "honestly and decently." More directly, they asserted that the "great proprietors" had a responsibility to the community to "make bridges and roadways, large roads and more solid levees," to "render the rivers navigable," and "that the entrepreneurs of the quarries restore those [roads] that they particularly degrade." At the same time, they also urged the state to decrease taxes on lands being used for slate production.[167]

The residents of neighboring Saint-Léonard commune were much more vociferous in their complaints:

> The said inhabitants charge their deputies to demand a moderation…long awaited that the entrepreneurs of the slate quarries occupy and have devastated one-third of the lands and dwellings of the Saint-Léonard parish who find themselves now occupied by chasms and mountains of detritus;

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[166] The use of the term "capitalist" in regards to the French Revolution is contentious. However, in this context it is used not to refer to an archetypal capitalist class in the Marxist sense, but in the more direct way that there was clearly a group of individuals pitted in a discursive binary against the general public made up of peasants and workers who held their position on account of their possession of capital (meaning here ownership of the means of production as land, but obtained through monetary investment for profit) and with an interest in market economics. For a discussion of this issue, see: George V Taylor, "Noncapitalist Wealth and the Origins of the French Revolution," *American Historical Review* 72, no. 2 (January 1967), 469-96; Timothy Tackett, "Nobles and Third Estate in the Revolutionary Dynamic of the National Assembly, 1789-1790," *American Historical Review* 94, no. 2 (April 1989), 271-301.

[167] A Le Moy, *Cahiers de doléances*, 2:222-37.

> that the government puts a brake on the enterprises of these quarries, who have for two years multiplied infinitely in the said parish of Saint-Léonard and harm principally agriculture by the lands that they devastate and by all the laborers that they take out of the work of the countryside; that the government wants to take good care of a settlement between the different quarries that will be kept to make the tyranny cease, and a sort of servitude that the entrepreneurs of the said quarries exercise over their workers that they seek to attach to themselves for life by the shackles that harm the liberty of citizens and public interest in general, and that finally these quarry entrepreneurs would be charged with maintaining all the roads of Saint-Léonard parish that they have degraded and ruined with their wagon and cart drivers that, against the rules overload their carts constantly and in every season of the year, whereas all the roads were sufficient, being maintained during several centuries, as soon as the transport of rock and lime was done with horses, also that these entrepreneurs would be responsible for all the damages, embezzlement, and offenses that are committed by their workers and cart drivers on the neighboring estates of said roads."[168]

Clearly, the residents of Saint-Léonard identified a cruel modern economy that degraded traditional commercial ties and ignored its communal responsibility with a new class of entrepreneurs seeking to change this system, leading to the corruption of the community and workers alike.

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[168] *Ibid.,* 2:511.

At the same time, members of the Saint-Barthélemy committee pinpointed such problems as the product of the quarry workers: "the parish of Saint-Barthélemy demands the establishment of means to prevent the pillaging of the workers from the slate quarries that are nearby, who constantly ravage the vines, the woods, vegetable and fruits of the wine-growing part of this parish."[169] While not directly siding with the entrepreneurs, such a view certainly echoed the presentation of the quarry workers as a licentious lot in need of constraint that would be utilized by the mine owners throughout the nineteenth century to justify increasing control of the working class.

Such class conflict emerged as a militant trend during the 1780s. In 1783, police had to show up at La Gravelle to mediate a fight between the workers from below and the entrepreneurs over how many feet were in a *toise*. Ultimately, the police sided with the quarrymen, who received a larger paycheck as a result.[170] This case is interesting in that it blended a debate over traditional rights and customs with more immediate material interests, revealing that such concerns were frequently conflated.

A more serious potential threat emerged on July 18, 1789, just four days after the fall of the Bastille in Paris. Under the leadership of the aptly named Pierre Perisseau, two thousand quarry workers offered "to join the inhabitants of Angers

[169] *Ibid*., 2:563.

[170] Police Councilor, "Ardoisières," September 7 1783, AMA HH 6.

and defend them" as the Angevin Militia, if only the city would arm them.[171] Within days, however, city officials became alarmed at "troubles" among the quarry workers caused by some "bad intentioned persons wanting to excite them to sedition."[172] The potential threat of this large group prompted local officials to divert more energy into monitoring the subsistence and wellbeing of the miners.[173]

As revolutionary turmoil grew intensely and harvests shrunk precipitously, tensions came to a breaking point. Grain prices rose steadily over the summer of 1790, prompting discontent among Angers's laboring classes, whose income now scarcely sufficed to keep their families from starving.[174] On the first Saturday of September, quarry workers in the city's grain markets rebelled against their inability to feed their families by setting fire to a stall, attempting to burn a sixteen-year old boy alive. Officials quickly called out the troops from their barracks in the nearby castle to restore order, a mounted cavalry regiment scattering the crowds. By eleven in the morning, the Angers city council had been summoned to address this "insurrection of quarry workers and bad citizens," claiming that "the high price of grain and suspicions of its hoarding" were simply pretexts, and that "there seem to exist other secret motives." However, while they did order the arming of "good

[171] Letter Guerion de la Piverdière, 18 July 1789, ADML 70 J 2, transcribed by Furcy Soulez-Larivière.

[172] Letter Comandin de Lanoüe, 30 July 1789, ADML 70 J 2.

[173] Soulez Larivière, *Les Ardoisières d'Angers,* 62.

[174] The subsequent events in Angers were in no way unique, merely echoing the riots taking place across France as municipal governments clashed with starving workers while attempting to use market pressures to stabilize and reduce grain prices: Judith A Miller, *Mastering the Market: The State and the Grain Trade in Northern France, 1700-1860* (New York: Cambridge University Press, 1999), 116-33.

citizens" alongside the National Guard and regular army, they also ordered an immediate reduction in grain prices and a public assembly to hear out the workers' grievances.[175]

At the beginning of the day on Sunday, the city council reconvened and determined that the primary problem was an insufficient grain supply. They sent officials out into the surrounding countryside to make a census of all grain stores in the department, to track their movement, and to requisition it if necessary. Clearly, these officials did see some merit to the concerns expressed at the public assembly over hoarding. But despite this decree, that night "mobs of bad citizens and women armed with batons, stakes, and rocks [were] disturbing the public tranquility," the quarrymen's wives showering the posted cavalry regiment with rocks and insults until a second regiment arrived and drove them off.[176]

Late that night, anxious about a repeat of the previous days' unrest, a few officials sent to check on the quarries rushed back to the city to report having heard "the most sinister noises." A quarry worker shadowed their flight, arriving early Monday morning, sweaty and panting from his hurried trip, and demanding to speak with the city council immediately. He carried with him news that two thousand miners were "armed with batons, rifles, picks, hatchets, pitchforks, metal rods, etc.," had sounded the tocsin in all of the quarry communes to call in reinforcements, and would be in Angers by noon six thousand strong. Finally, the

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[175] "Extrait du register des deliberations du directoire de département de Maine et Loire, relativement aux troubles qui ont eu lieu dans la ville d'Angers le 4 septembre et jours suivants," (Angers, France: Mame, 1790), BMA, 5-8.

[176] *Ibid.,* 9-11.

worker added that he could not understand their motives, because the mine owners had offered jobs to all of them.[177] Warnings continued to flood in that people had "heard everywhere the tocsin sound in the neighboring municipalities; that the quarry workers had armed themselves and formed a mob to invade the city with open force," and that "groups of women and bad citizens had turned themselves over to excesses." Troops were summoned and dispatched to intercept this looming threat, with the city leaders declaring the protestors' demands to be "absurd and ridiculous," and thus clear evidence that they were bent only on anarchy. Nevertheless, they offered to meet their demands by lowering grain prices below cost, with the ensuing losses to the bakers to be made up for by a city subsidy.[178]

As a crier ran throughout the town announcing the newest diminution of bread prices, the column of nine hundred workers and their wives arrived at city hall. There they confronted a motley army of fifty "patriots" that had volunteered to take up arms against them, the scattered few members of the National Guard that had obeyed their deployment orders rather than being "seduced by the quarry workers," and the cavalry regiment seated high on their war horses in white and grey uniforms lined with red piping. However, even these regular soldiers found that they "agreed with the rioters and favored the insurrection" as proved by the fact that they would not charge the mass of citizens, instead simply blocking their

[177] Aimé de Soland, "Révolte des Perreyeurs," *Bulletin historique et monumental de l'Anjou* 4 (1859), ADML 15 J 409, 97-8.

[178] "Extrait du register des deliberations,"11-2.

progress.[179] By two in the afternoon, the battle lines were drawn, but calm ensued following the announcement of lower bread prices. Even the crowd of women gathered in the square had dispersed. However, the steady rhythm of the quarry workers' drums must have contributed an uneasy pulse to the air when the men added to their demands that the National Guard arrayed against them be disarmed, although they expected to keep their own rifles.[180]

After some further negotiations and city assurances that "severe measures were taken to punish hoarders," the workers, still arranged in orderly military rows, decided to return to their homes.[181] According to the official story, as the workers marched away, waving their hats and chanting "long live the nation, long live the National Guard of Angers," on a prearranged signal the front row of miners stepped aside and those behind them leveled a volley of rifle fire point blank into the ranks of the National Guard. The Guardsmen returned fire, but were quickly chased from the square by the charging workers while the cavalry regiment stood by silently.[182] This unleashed a horrifying scene for the local bourgeoisie, as the mob spread throughout the city, raiding the houses of the rich and raising the red flag of revolution over city hall. Meanwhile, Catherine Gaulthier became the symbol of women's role in this struggle as she ran through the town brandishing a sabre and calling on the working class to take up arms in support of their brothers. As she

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[179] De Soland, "Révolte des Perreyeurs," ADML 15 J 409, 100-3.

[180] "Extrait du register des deliberations," 13-4.

[181] De Soland, "Révolte des Perreyeurs," ADML 15 J 409, 104-7.

[182] "Extrait du register des deliberations," 15.

went, the air must have been thick with the smell of burning gunpowder and blood, carrying the sounds of rifle fire, the screams of the dying, and the heavy ruckus of every church bell in the city ringing incessantly. Panicked officials called out a regiment of grenadiers with their cannons. With such heavy firepower they quickly put down the revolt, retook control of town hall, tore down the red flag flying over it, and drove the workers back to the quarries.[183]

Monday night, city officials met in city hall while the quarry workers met in the quarry. The former decided to increase the available grain supply, stiffen punishments of hoarders, and employ more quarry workers. From the quarries, the workers fanned out once more, breaking their way into the region's prisons and freeing their comrades who had been arrested during the day's combat. Defectors pleaded for mercy with the military and police forces, claiming that they had been forced to fight, that the workers had divided themselves and the city into distinct administrative units with the goal of "destroying the three administrative bodies, in order to throw the Department into trouble and confusion," and that "mobs of women wanted to force the doors of the richest private citizens; that others met with fire to burn the houses." However, things soon calmed down and returned to normal, with all church bells kept silent by official order.[184] In the aftermath, a National Guard unit was specifically tasked with inspecting the distribution of grain, and those accused of fanning the flames of revolt were hanged. Legend held that on

[183] De Soland, "Révolte des Perreyeurs," ADML 15 J 409, 104-7.

[184] "Extrait du register des deliberations," 15.-20

the gallows, Gaulthier was recognized as her own executioner's wet nurse.[185] However, this is probably apocryphal and more reflective of her status as a lower-class woman.

In analyzing the revolt, a few issues become clear. First, the official reports compiled immediately afterwards are skeptical about grain prices being a true motive. Instead, they argued that "the enemies of the public good, jealous of the splendor that the French Empire will owe to the Constitution, came together today to arm citizens against citizens, and to spread suspicion in families. Like those reptiles that poison all they touch, the infectious venom they spread made them dangerous crawling in the dark." Instead, they blamed the plotting of the royalist press for launching a counterrevolutionary putsch.[186] Such an explanation would fit in well with the general air of conspiracy gripping the nation in the early years of the revolution.[187] However, bread riots were ubiquitous in France during these uncertain years, and such a conspiracy is unlikely. Furthermore, claims that the workers first opened fire on the National Guard, who turned and fled, do not seem to jibe with the fact that only a few Guardsmen emerged with minor injuries from this clash while the lifeless bodies of sixty workers were left on the field as a result. It is also clear that in attacking those suspected of hoarding and by trying to "break down the doors of the richest private citizens," the workers clearly conceived of

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[185] De Soland, "Révolte des Perreyeurs," ADML 15 J 409, 117.

[186] "Extrait du registre des deliberations," 1-4.

[187] Timothy Tackett, "Conspiracy Obsession in a Time of Revolution: French Elites and the Origins of the Terror, 1789-1792," *American Historical Review* 105, no. 3 (June 2000), 690-713.

themselves as victims of machinations by the rich. In other words, both sides were animated by suspicions of conspiracy.[188] More interestingly, the frequent reference to the role of women in these events can reveal beliefs that such a revolt was unnatural.[189] Finally, what is perhaps the most cited account of the revolt was written seventy years later by a descendant of one of the soldiers most responsible for putting down the uprising, and largely seems to exist to glorify him. More importantly, being written shortly after another revolutionary march of the quarry workers against Angers, references to the desire of these "anarchists" that would "do everything they think necessary to be masters of the city" and who only "pretend that the price of bread was still too high," is probably more reflective of working-class tensions in the mid nineteenth century than an accurate interpretation of events in 1790.[190]

What all of these descriptions lack is an explanation for why, in a period of general famine, it would be a single industry's workers that rallied together to demand a redress of grievances, using violence if necessary to achieve their ends. A more recent Marxist explanation highlights the fact that these workers possessed a degree of freedom in their work and incomes that enabled them to challenge authority while other workers remained too dependent on their bosses' goodwill to

[188] "Extrait du register des déliberations," 18.

[189] Gullickson, *Unruly Women of Paris.*

[190] De Soland, "Révolte des Perreyeurs," ADML 15 J 409, 99.

risk such a venture.[191] There is undoubtedly some truth to this. However, even this misses the fact that, by the French Revolution, the slate miners around Angers possessed a community of shared interests defined and propelled by their work. Furthermore, this loose-knit community shared a mistrust of merchants and monopolists and acted in common to defend their traditional interests. The ramifications of this would unfold over the next century.

[191] François Simon, *Les "Perrayeux" d'Angers, de Trélazé et des Environs avant et pendant la Révolution française de 1789: contribution à l'histoire des ardoisiers angevins* (Angers, France: Imp du Commerce, 1939), 29-30.

CHAPTER III

THE LEGAL AND SOCIAL CONDITIONS OF INCORPORATION, 1800-1855

> The primary cause [for the slate industry's nineteenth-century growth], is the emancipation of labor delivered by the Revolution of all the shackles of the corporation, and above all of the minute and stifling regulations….One of the consequences of the development of industry is the fading away of little industry before the big. This is not only a fact, it is an economic necessity.
>
> Felix Benoit, 1899[192]

The nineteenth century dawned on the Angers slate industry's shattered remains. At the outbreak of the French Revolution in 1789, the industry was a regional leader, employing over 3300 workers in fourteen quarries. However, Angers soon found itself as the last bastion of republican rule before the political wilderness of the Vendée, the rallying point for French soldiers to cross the Loire and defend the revolution against the spontaneous royalist uprising to the south.[193] Although the civil war itself quickly ended in the rebels' defeat, scattered bands of resistance fighters turned brigands continued to threaten transport and communication in western France for over a decade.[194] As one historian described,

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[192] Felix Benoit, "Étude d'économie sociale, lue par M Couchard, secrétaire général, à l'assemblée générale du 27 mai 1899," *Bulletin de la Société industrielle et agricole d'Angers et du département de Maine-et-Loire* 4, no. 9 (1900): 62-5.

[193] Charles Tilly, *The Vendée* (Cambridge, MA: Harvard University Press, 1964), 305-44.

[194] Georges Lefebvre, *The French Revolution: From 1793 to 1799*, trans. John Hall Stewart and James Friguglietti (New York: Columbia University Press, 1964), 47-51; Jacques Maillard, *L'Ancien Régime et la Révolution en Anjou*, vol. 3 of *L'histoire de l'Anjou* (Paris: Éditions A. et J. Picard, 2011), 344-50.

"the revolution that exploded…and whose backlash resulted in exciting the civil war in the department of the Maine-et-Loire, paralyzed all the works, all the industries.[195] As a result, by 1802 only six quarries remained operational, employing just 1500 workers. While Napoleon's ascension brought an end to this highway robbery, it also carried with it the pressures of imperialist war and ultimately a British blockade. After nearly two decades of commercial decline, in 1806 the region supported only seven quarries, offering work to barely one thousand men.[196]

At the nadir of the Angers slate industry, tensions between workers struggling to earn a living and proprietors fighting to stay in the black boiled over.[197] In Year II of the revolutionary calendar (1794), workers from below went on strike in protest of unemployment. Writing to explain their actions to officials, these men described "the quarry workers are obliged, due to a lack of work, to remain idle, their misery growing day by day, and so asked simply for work 'to earn their bread.

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[195] Marchegay, "Recherches historiques," 231.

[196] Note on Maine-et-Loire Slate Quarries, 1807, ADML 70 J 4.

[197] As Alain Cottereau has shown, strikes were a relatively infrequent means of worker resistance, especially in France. Much more common were methods to control and set the pace of work, the day-to-day struggle between employee and employer over the shape of the work. Alain Cottereau, "The Distinctiveness of Working-Class Cultures in France, 1848-1900," in *Working-Class Formation: Nineteenth-Century Patterns in Western Europe and the United States*, ed. Ira Katznelson and Aristide R Zolberg (Princeton, NJ: Princeton University Press, 1986), 111-54. Through its much greater emphasis on strikes as clear evidence of class struggle, this essay makes no claim about their greater importance. Rather, this author is simply constrained by the imbalanced amount of evidence available to describe these different approaches: Michelle Perrot, "Le Problème des sources pour l'étude du militant ouvrier au XIXe siècle," *Le Mouvement Social* 33/34 (March 1960), 21-34.

Only their bread.'"[198] In response, the prefecture issued an order sending the men back to work. At the core of the government's actions were beliefs that "every coalition attempting to terminate markets under the pretext that they are not lucrative enough, every step likely to lead the workers to forget their obligations, every appeal to slow or stop the fabrication of marketed works, to make the workers mutiny against the clerks, to enter into debauchery; are gravely reprehensible," and that regional prosperity was dependent upon the unencumbered production of industry, including slate. Therefore, any contracts negotiated during the strike were nullified, all workers would henceforth be required to receive permission from their employer before moving to a new worksite, their work hours were standardized and fixed, and in any future disagreements over wages workers were forbidden to strike while a state arbitration panel determined whether their incomes were in fact below subsistence. Any attempts by workers to mobilize against this or their employers would be dealt swift justice.[199]

The next wave of troubles began, according to the owners, in early September 1807, when the artisanal *fendeurs* demanded a wage increase at two of the quarries.[200] The clerks here rejected their request on the grounds that the cost of

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[198] Letter Slate quarry workers to departmental administrators, 11 June 1796, ADML 70 J 4.

[199] "Arrêté de l'Administration du département de Maine et Loire relative à la cessation du travail des ouvrières d'en bas des carrières d'ardoises," Year II, ADML 1 F1 185.

[200] The term "*fendeur*" comes from the verb "*fendre*," meaning "to split." The *fendeurs* were those highly skilled artisans tasked with breaking down and splitting

living was holding steady and that the industry was struggling under the effects of the blockade, and the men quit the jobsite and went to seek employment elsewhere. When the owners of the surrounding quarries supported their supposed competitors by refusing to hire these intransigent workers, the men raised a storm of protest and convinced their fellow artisans already working at these sites to "mutiny." The *fendeurs* launched an industry-wide strike. With the workers unified against them, "all the owners and investors came together" and petitioned the prefecture to defend such an important local industry by dispatching the gendarmes to restore order.[201] In January 1808, a commission of two local notables tasked with reporting on the situation to the prefecture asserted that "the price of labor is only a specious motive," and that the workers were, in fact, motivated primarily by their desire to work less. Upholding the request of the *ardoisières*, this commission also urged the prefect to use force with "zeal" to crush the illegal labor league that threatened public order, agreeing that the slate industry deserved state protection because of its economic and social importance to the region.[202]

The workers saw the situation very differently. In a petition drafted at the beginning of the conflict, they argued that the mine owners had previously formed a coalition to lower wages in all of the quarries. The *fendeurs* who had walked off the job at the first two sites, they claimed, had not asked for a wage increase, but had

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large blocks of slate into properly sized roof tiles. Gérard Linden, *Les mots des mines et carrières du Maine-et-Loire* (Le Coudray-Macuouard, France: Cheminements, 2004), 110.

[201] Owners and stockholders of the quarries of Angers to the Prefect of the Maine-et-Loire, Spetember 10, 1807, ADML 71 M 1.

[202] Report by Testu and Dupont, January 3 1808, ADML 71 M 1.

only refused to accept a wage decrease. When their traditional liberty to move from work site to work site was blocked by the allied clerks' refusal to hire them, they formed a council with one commissioner elected to represent the men of each quarry.[203] While they did want higher wages, their chief animating desire was to retain their traditional prerogatives to control the distribution of slate amongst the workers by giving priority to those with more male children to feed. The real conflict, according to the prefectural commission, was over whether the entrepreneurs or the workers knew best how to distribute the material.[204]

The Prefect sided with the owners, responding to their request that he "put an end to this rebellion" by targeting "the most mutinous" artisans.[205] To that end, he ordered the police to arrest four men designated by the quarry clerks as ringleaders, while a heavy police presence at the worksites finally put the rebellion to rest as winter fell.[206] Reflecting on the incident a year later, however, the national government chided the Prefect for his rash actions. It ordered the local administrators to intervene and upheld the right of the workers "to choose the masters that offer them the most advantageous conditions."[207] The Minister of the Interior even went so far as to blame the strike on the prefect's actions and, while

[203] Worksite mobility was a key element of artisanal culture in this period: Farr, *Artisans in Europe*, 206.

[204] Report by Testu and Dupont, January 3, 1808, ADML 71 M 1.

[205] Delauney and Maussion to the Prefect, September 12, 1807, ADML 71 M 1.

[206] "Ouvriers de carrière designés par les clercs pour la plus matin," 1807, ADML 71 M 1.

[207] "Séance, Bureau consultative des arts et manufactures," 21 March 1809, ADML 70 J 4.

recognizing the need to enact special regulations for the quarry, advised against the implementation of any law that would limit the mobility of workers or their ability to choose their own apprentices.[208]

This event has been variously interpreted as the righteous birth of a labor union or as the pretentious protest of undisciplined workers.[209] However, this incident can best be understood as the clash of moribund and nascent systems of social relations. The workers, by clinging to their traditional rights to shape their own work, to move about freely, and to negotiate wages with each individual employer, were operating within the Old Regime organization of labor. In this paradigm, the workers collaborated as a guild to collectively determine their course of action, looking to the state as arbiter and defender of their moral economy. The entrepreneurs, meanwhile, were operating within the capitalist organization of labor. While retaining archaic notions of patronage and social duty, they now believed their own search for economic profit would allow the industry to grow and eventually benefit the workers. In doing so, these businessmen counted on the support of a willing state to protect their political economy. This conflict could not have occurred without the changes to intellectual conceptions of property rights, business organization, and labor relations that had been codified in the French Revolution and Napoleonic Empire. These changes would shape social relations in the Angers slate fields for the next century.

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[208] Letter Minister of the Interior to Prefect, 7 July 1809, ADML 770 J 4.

[209] Maurice Poperen, *Un siècle de luttes au pays de l'ardoise* (Angers, France: Imprimerie cooperative angevine, 1972), 20-3; F Soulez Larivière, *Les ardoisières d'Angers*, 73-4.

Property Law

The legal structure overseeing the slate quarries under the Old Regime was founded on the principle of royal authority.[210] In this system, the state owned the mines and the sovereign owned the subsoil rights. The king was responsible for granting mining rights and mediating between the needs of the entrepreneurs, the workers, and the nation. According to the engineer Jean Blavier, "the preservation and prosperity of the mines is essentially dependent on the adoption of a system of proper laws to conciliate all at the same time the general interest and that of the operator."[211]

Since 1500, French mining law had increasingly shifted privilege to mine operators in order to encourage mining. While in 1604 Henri IV exempted slate mines from national laws and placed them under the jurisdiction of the local nobility, French mining law at the end of the seventeenth century offered subsoil rights to whoever was willing to exploit the natural resources, having to pay the landowner in exchange a fixed rate per ton of mineral extracted.[212] A royal judgment in 1744 extended subsoil rights to allow any landowner finding coal beneath their property to mine it, albeit under government oversight and inspection and a 10

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[210] Carla Hesse, *Publishing and Cultural Politics in Revolutionary Paris, 1789*-1810 (Berkeley, CA: University of California Press, 1991), 41-3; Hilton L Root, *The Fountain of Privilege: Political Foundations of Markets in Old Regime France and England* (Berkeley, CA: University of California Press, 1994), 5-10; Jean-Laurent Rosenthal, *The Fruits of Revolution: Property Rights, Litigation, and French Agriculture, 1700-1860* (New York: Cambridge University Press, 1992), 15-9.

[211] Jean Blavier, *Jurisprudence générale des mines,* 1:i-iii.

[212] *Ibid.*,, xix-xxi.

percent tax.[213]

By 1740 the drawbacks of the localized system were becoming evident. Even as a construction boom increased demand for slate roofing tiles, slate output declined.[214] The primary problems confronting would-be entrepreneurs were uncertainty and entry costs. Investors interested in slate mining faced the enormously expensive prospect of opening a quarry, which involved outlays lasting years for infrastructure and wages before any slate could be harvested. Furthermore, the risk of a slate deposit proving unworkable threatened to negate the entire sunk investment. On top of this, the existing legal code demanded that entrepreneurs pay landowners a percentage of their finished product as rent. Together, this mix of high entry costs, high risk, and diminished returns created a disincentive for investment.[215]

In response, the monarchy issued a judgment in 1740 aiming to boost slate production. It achieved this by stipulating that any time an entrepreneur wanted to open a quarry, the landowner had to either allow it or to do it himself within one month. If he opted to allow the entrepreneur to do the work, this landowner could accept an annual rent or a one-time payment, with the rates being determined by a fixed two-tier system depending on land quality. The beneficial nature of this

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[213] Jourdan, Decrusy, and Isambert, *Recueil générale des anciennes lois françaises depuis l'an 420 jusqu'à la révolution de 1789*, vol. 22, (Paris: Librairie de Plon Frères, 1830), 166-70.

[214] Lebrun, *Histoire d'Angers,* 98.

[215] "Arrest du Conseil d'estat du Roy, portant réglement pour l'exploitation des carrières à ardoise, situées aux environs de la ville d'Angers," October 25, 1740, ADML 70 J 2, 1-4.

transition for quarry operators can be judged by the stern opposition of the Church, which unsuccessfully demanded a return to the previous percentage-based system of forestry rights that brought much more silver and slate into their coffers.[216] This system also frustrated property owners, who might pour money into improving their lands and houses only to have to cede them to upstart entrepreneurs who suspected slate beneath the soil.[217]

While this law did increase the potential net profits of a quarry, it created its own set of market distortions. These necessitated a new royal judgment raising the rental rates to combat the "cupidity of the entrepreneurs" who used the law to dig a small pit on valuable land and thus gain legal right to it at below-market-value rates. [218] Such laws remained under the influence of the monarchical legal code in terms of the state being the holder of subsoil rights and protecting the public good from falling to "the mercy of a single individual." This law was found effective enough to remain in force for well over a century.[219]

The French Revolution overthrew the monarchical social and political order, inaugurating an era rooted in the Enlightenment and its belief in reason as the ultimate guardian of the national interest. The very foundations of authority and right had shifted, necessitating the complete reinvention of the legal code. In

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[216] Turgan, *Les Grandes usines de France,* 6:119-20.

[217] "Ordonnance de l'intendant d'Aine portant defense à des entrepreneurs d'ouvrir une carrière au lieu dit du puits le Grand Colombier situé près Saint-Léonard lès Angers en raison du gêner qui en [illegible]," 8 July 1786, ADML 1 F1 183.

[218] *Ibid*., 1-9.

[219] Hubert, Guillon, and Fort, *Mémoire pour les intéressés*, 25-7

marathon sessions, revolutionary legislators met every day for years to rewrite the new nation's entire legal framework from the ground up, using the ideals of private property and individual rights to give the new system shape. In normal times, the French parliamentary logs could fit a few years of legislative discussion into a single volume. In this era of indefatigable activity, however, one volume could scarcely contain the heated debate of a single month as every detail became a potential battleground for conflicting ideologies.

In 1791 this political concentration undertook an overhaul of the nation's mining laws. In a radical break with the past, the new law emphasized the importance and unassailable right of private property.[220] The "principal question," that which opened the debate, was "can the mines be considered as private property, or public property?" The drafters' explicit intent was to enforce the Lockean natural right that "the source of all property [comes] from labor continuously by one undertaking an object." In order to preserve the "wonders of human industry," they sought above all else to protect the entrepreneur.[221] To this end, slate miners were now permitted to open quarries without state oversight.[222]

Cataloguing the positive effects of the 1791 law in the mid nineteenth century, the engineer Aîmé-Etienne Blavier asserted that it had "reformed the old

[220] Sewell, *Work and Revolution in France,* 114-42; William H Sewell jr., "Property, Labor, and the Emergence of Socialism in France, 1789-1848," in *Consciousness and Class Experience in Nineteenth-Century Europe*, ed. John M Merriman, (New York: Holmes and Meier, 1979), 45-63.

[221] J Mavidoel and E Laurent, *Archives Parlementaires de 1787 à 1860*, vol. 27 (Paris: Paul Dupont, 1867), 223-6.

[222] JB Duvergier, *Collection complète des lois, décrets, ordonnances, réglements, avis du conseil d'état*, vol. 3 (Paris: Chez A Guyot et Scribe, 1834), 105.

abuses that opposed each subterranean industry and the metallurgical arts to which it served to nourish, rejecting every extension that the needs of commerce demanded" by decreeing that: 1) "mines constituted a new perpetual and transmissible property"; 2) "the government can alone confer mine ownership" on those who could best operate it "to the profit of all"; 3) created a "special" property right without violating land rights; 4) anyone, regardless of nationality, could thus invest in a mine; 5) the landowner has the right to an indemnity; 6) the government will have "active surveillance that extends essentially to guarantee the search for mineral material, their organization, and finally the good order of the work so necessary to the security of people and things"; and 7) the government would oversee and mediate any subsequent property disputes.[223] In doing so, this law established a certain degree of republican liberalism in the mining industry.

But in other industries deemed more essential to the national economy, the limits of this liberalism became readily apparent. Property rights were considered, through their own inherent justice and morality, to provide for the long-term good of the nation. However, they were also seen as secondary to the short-term good of the nation: "the ownership of the mines belongs to whoever applies to it his labor, his funds, and his intelligence," but "the refusal of the owners [to exploit their resources] will be considered as the abandonment of their property rights."[224] Thus, the resulting legislation retained the feudal concept that mines exist at the

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[223] [Aîmé-Etienne] Blavier, "Programme d'un cours de legislation et d'economie des mines, à l'usage des elèves-ingénieurs," [mid-19th century], ADML 1 F1 72.

[224] William Doyle, *The Oxford History of the French Revolution*, 2nd ed. (New York: Oxford University Press, 2002), 114; Miller, *Mastering the*, 166-96; Mavidoel and Laurent, *Archives Parlementaires, 27:*410-5.

"disposition of the nation," but allowed entrepreneurs to exploit them without government interference. Meanwhile, landowners also held rights to the mining of their property, able to lease it to entrepreneurs for an annual rent. In the years after the law was passed, further amendments were added to place the mines increasingly under the surveillance and direction of government engineers and tribunals. For small landowners, this law offered an opportunity to exploit their land for their own economic benefit.[225] Ultimately, this system founded on inconsistent conceptions of property rights generated uncertainty, and growth in mine output slowed as entrepreneurs stopped investing in new operations.[226]

In order to address these inconsistencies, Napoleonic legislators passed a new national mining law in 1810.[227] This law navigated the shortcomings of the 1791 law by declaring that mineral rights would be private property tied to landownership, but only when this connection was granted by the state on a case-by-case basis in order to foster their exploitation. This law sought to balance the public good with individual rights through the intervention of the state as mediator.[228] Later that year, a subsequent law established a national corps of engineers to visit every mine in their district annually in order to defend the

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[225] Reid, *The Miners of Decazevill,* 14.

[226] Blavier, *Jurisprudence générale des mines*, 1:xxx-xxxix.

[227] Alessandro Stanziani has argued that the Napoleonic Code was largely an attempt by businessmen to reestablish the stability brought under the Old Regime by custom and subsequently dislodged during the Revolution: Alessandro Stanziani, *Rules of Exchange: French Capitalism in Comparative Perspective, Eighteenth to Early Twentieth Centuries* (New York: Cambridge University Press, 2012), 48-52.

[228] Blavier, *Jurisprudence générale des mines*, xl-lviii.

interests of the consumer and worker alike.[229] Slate mining, determined to be especially dependent on the geological environment of each individual quarry, was exempted from these restrictions. The slate miners now had to pay an annual fee and face state safety inspections, but no longer had to obtain government permission to operate.[230] In other industries, however, this law returned dominance to capital investors at the expense of landholder rights and reestablished the state as ultimate holder of subsoil rights.[231]

Cataloguing the beneficial impacts of the 1810 law in the mid nineteenth century, Aîmé-Etienne Blavier explained that it: 1) clarified the relevance of old property rights, outlined how to obtain a mining concession, and set the legal process for getting and granting such a concession; 2) fixed the rules for exploring unopened mines, determined the ownership of the subsequent iron to the landowner or forge owner, granted permission for metallurgical factories and rock quarries; 3) provided for the supervision and regulation of the mines for "the good order of underground works" without "compromising the safety of the public, that of the workers and the needs of the consumer"; and 4) established who had authority over the mines and in mining conflicts.[232] In other words, the 1810 law set in place a fairly comprehensive framework for the mining industry. Nevertheless, as late as 1860 there remained uncertainty over the effects of this law on the slate

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[229] Duvergier, *Collection complète des lois*, 221.

[230] *Ibid*., 84-92.

[231] Reid, *Miners of Decazeville*, 15.

[232] Blavier, "Programme d'un cours," ADML 1 F1 72.

industry.[233]

The effects of the legal code on property rights were evidenced in a series of lawsuits during the 1830s. In the first, local investor Monsieur Jamin was caught in a "ridiculous maneuver" attempting to profit from the stipulations of the 1810 law. The Grands Carreaux quarry had been abandoned and was slowly becoming a placid lake, the surrounding land coated by black mounds of slate detritus and thus useless for farming. The land's only redeeming value appeared to be a couple of little houses, a kitchen garden, and a ramshackle old mill. Even at the price of twenty-six hundred francs, this looked like a poor investment. However, Jamin soon formed a new slate company to drain the quarry and restart exploitation. According to a stipulation of the 1810 law, this company now had to buy the land at double its assessed value, which Jamin's experts claimed made the deal worth 7100 francs. Ultimately, the courts ruled that this was a reasonable exchange, allowing the deal to go through at the reduced figure of 3600 francs.[234]

A more contentious lawsuit erupted in 1839 over Monsieur de Joybert's attempts to reopen the quarry at La Porée. He had begun the process of excavating the site four years earlier, but its presence in a low-lying floodplain meant that work was restricted to the two or three months per year it was dry. After two seasons of labor, the dike was finally in place, and local farmer Monsieur Jubin trusted the earthen dam to protect his fields. Floods that winter broke through the levees and ruined Jubin's crops, but by 1838 the quarry was ready to begin operation. The

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[233] Turgan, *Les Grandes usines de France,* 6:120.

[234] Grégoire Bordillon, "Précis pour les intéressés de la carrière des Grands-Carreaux, contre M Jamin et consorts," 1834?, ADML 1 F1 232.

company offered to repay Jubin for his losses and to buy his land. Thus began a series of refusals. Each time, Jubin would ride through the fields in a cabriolet with the company's majority stockholder, Monsieur Hubert; and each time Jubin would agree to the sale, pending his son's approval. Every couple of months this son would return home from his work on a riverboat and reject the deal, starting the process all over again. After a year of this back-and-forth, the company sued under the mining laws to force the Jubins to sell their property and sent their assessors to value the land when it was under water and thus essentially worthless.[235] Though the record doesn't specify whether it was under court order or voluntarily, in April 1839 Jubin finally sold his lands to the quarry at La Porée.[236]

Corporate Law

Establishing a coherent system of mining property rights was a necessary precondition to the continued growth of the slate industry. However, it was not sufficient by itself to permit the accumulation of capital necessary to undertake large-scale operations. As early as 1764, a local notable and stakeholder in a slate quarry, Louis Sartre was asked to compile a list of recommendations for the king on the best ways to promote the Angers slate industry.[237] Sartre began by lauding the law of 1740 for opening up lands for entrepreneurs to exploit. However, he asserted, this law met only half of investors' needs. The author defined the principal problem

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[235] Hubert, Guillon, and Fort, *Mémoire pour les intéressés*.

[236] *Ardoisières de la Porée, Acte de Société* (Angers, France: Imprimerie de Launay-Gagnot, 1841), ADML 15 J 73, 5.

[237] "État des carrières à ardoise situées aux environs de la ville d'Angers," February 1750, ADML 70 J 2.

continuing to face potential entrepreneurs as one of insufficient capital. First, the commencement of an operation was very expensive and entailed a large risk of failure. Second, competition between firms in the slate market drove down prices and thus profits to a level incommensurate with the degree of risk. The result was that the *ardoisières* were unwilling to invest.[238]

As a remedy to these faults, Sartre advised that prosperity for the entrepreneurs, the workers, and the nation depended "on the concert of the Entrepreneurs; and immediately, on the shelter of wise regulation." Here he anticipated corporatist concepts, arguing in favor of the public good by serving the "legitimate interests of Entrepreneurs" in order to promote commerce.[239] Sartre's plan called for monopolistic control of the region's slate quarries in order to raise prices enough to warrant increased investment, to concentrate on maintaining the most productive sites, and to invest collectively in more efficient crane and pump machinery.[240] For the author, the industry had to either organize or collapse. He ended his report with an appeal to the king:

> Already the Magistrate, the Citizen, the true Patriot is interested in favor of the best-intentioned Entrepreneurs; all demand the authority of Laws: and that we should not await their zeal in these circumstances where it seems indispensable to invoke Government protection, in order to make cease the abuses so detrimental to the Province, so contrary to the interests of the

[238] Sartre, *Mémoire et instruction*, 6-8.

[239] *Ibid*., 9-10.

[240] *Ibid.,* 61-6.

> King, as well as Agriculture and Commerce, and so opposed to the spirit of the judgment of His Majesty's Council, of October 25 1740, carrying Regulation for the exploitation of the slate Quarries of Angers.

This impassioned plea represented the new conception of the public good as best pursued by unleashing the dynamic self-interest of capable entrepreneurs, but with state protections and guidance. It also argued in favor of a new legal structure to protect this nascent industrial class.[241]

The case for incorporation was still being made in 1837. In an essay, Gautier argued that environmental factors coalesced to give the Angers slate industry the potential to grow to an enormous size, but that these same factors created such risk for entrepreneurs that they were "threatened by an impending extinction, if prompt and sure measures aren't brought by wise planning."[242] What was needed, he argued, was to "procure for the owners of schistose soil…profitable rights in exchange for those that often turn to their ruin" by extending the rights of the 1810 law to slate quarries. If people were able to invest in "a new property, available and transmissible like all other property assets," self-interested individuals would quickly "unite in order to exploit together the most advanced and advantageous sites."[243] Gautier predicted as a result of such a law that "the direct cooperation of all the interested towards the same objective, brings a cooperation of wisdom, of zeal and of progress, that is impossible to find in the middle of diversely modified

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[241] *Ibid.,* 70.

[242] A Gautier, *Rapport sur la concession des ardoisières de l'arrondissement d'Angers* (Angers, France: Ernest le Sourd, 1837), 7.

[243] *Ibid.,* 8.

interests, and often oppose one another."[244]

Yet, in the late eighteenth century, such laws were still lacking. Questions over corporate ownership reached the courts, as families debated whether shares in a slate quarry could be considered inheritable property, like land, or whether they existed only on the authority of the king, like guilds. In one such case, a man holding a one-third share in a quarry had children with one woman, who subsequently died, and then with another woman, but in the meantime had sold off his shares. After the man's death, the children from his original marriage argued that shares in a mine were inheritable property granted to a family whether they were sold or not. The purchaser of the shares countered that in paying for them he had become an owner of the mine as transferable property.[245] The answers to such questions remained ambiguous under the Old Regime legal code.

And so, even after the revolutionary tide had ebbed, legislators in Napoleonic France took up Sartre's call. In drafting the law of 1810, they chided the law of 1791 for not making explicit the critical role of capital in mining. Because mineral deposits rarely aligned with the legal division of land, the assignment of mining rights to individual landholders created too many problems for organizing mining operations. Furthermore, small landholders typically lacked the cash capital necessary to undertake such exploitation. Legislators argued "capitalists alone can engage in hazardous operations, and run the chances always inseparable from large

[244] *Ibid.,* 12.

[245] Delauney, "Précis pour dame Claude-Marie Saucier de la Boderie, Épouse du sieur Pierre-Michel Testu, négociant, de son mari autorisée, demanderesse à retrait lignager; contre le sieur Aubin-Léonard Taillebois, négociant à Nantes, défendeur," 1788, ADML 1 F1 182.

enterprises." Capital, they said, must be united if large-scale mines were to succeed. The parliamentarians finally urged the state to help direct capital towards the mines, open up transport, and lower taxes.[246]

Investors interested in opening new mines and quarries received fresh impetus when the Napoleonic commercial code was passed in 1807. Limited grants of incorporation had been given to French investors since the seventeenth century. However, these grants were products of the Old Regime, originating from the king's will rather than law, being tied primarily to nobles without transferability, and saddling investors with unlimited liability. The 1807 code established the principle of the *société anonyme*, which was still granted by the state, but now offered capitalist investors limited liability and transferability of shares. Such *sociétés* began emerging throughout France during the Restoration, growing in size and number as massive new mining and canal building projects attracted capital with promises of profit.[247] In keeping with the Napoleonic legal tradition, this law granting individual protections in order to encourage economic activity was balanced with attempts to protect the public good. In 1810, article 419 of the French Penal Code established consumer protection by banning cartel formation and monopoly market power, notably against collieries. However, enforcement was uneven, and the law offered

[246] Mavidal and Laurent, *Archives Parlementaires,* vol. 10, 756-61.

[247] Charles E Freedeman, *Joint-Stock Enterprise in France, 1807-1867: From Privileged Company to Modern Corporation* (Chapel Hill, NC: University of North Carolina Press, 1979), 3-33.

minimal challenges to monopolies.[248]

In the slate fields of Angers, such laws allowed firms to codify their organization and to grow more brazen in their attempts to coordinate. In the late eighteenth century, many of the quarries operating in the region had already formed unofficial Societies to mutually invest capital. Many of these had even attempted to collaborate with other quarries to sell in common at fixed prices, but unequal power bred jealousy and greed and doomed these early cartels. In 1772, the owners of five quarries came together to address the growing stacks of unsold tiles piling up around their worksites. They agreed to abide by production quotas, together lowering their output from twenty-five to fifteen million tiles until Easter, when they would return to their earlier output levels. Within this cartel, each firm had to agree to not surpass their quota and to charge uniform prices for each product.[249] Although this agreement was short lived, it did represent the model the industry as a whole would strive for throughout the nineteenth century.

As soon as Napoleonic rule restored order to the markets of western France, *sociétés* began to enter the historical record. The earliest manifestations were grassroots attempts to coordinate work. In 1802 a collection of miners were joined by a merchant and a few bakers to "uncover a quarry in the Canton of la Bremandière, Commune of Trélazé, at their risk and perils." These workers had the foresight "before undertaking this enterprise to avoid all contestations that could

[248] Robert O Paxton, "The Calcium Carbide Case and the Decriminalization of Industrial Ententes in France, 1915-26," in *The French Home Front, 1914-1918*, ed. Patrick Fridenson (Providence, RI: Berg, 1992), 153-4; Stanziani, *Rules of Exchange,* 247-56.

[249] "Association," 1772, ADML 70 J 5.

arise between them," dividing up the company's shares according to the size of each holder's investment and establishing a system of statutes. These statutes point to an anarchistic conception of incorporation, with each member being able to sell their own products independently, and with a democratic system of voting by shares. Anticipating the consumer cooperatives of the late nineteenth century, the statutes even allowed for wine to be bought in common and paid for out of each member's share of the profits, stipulating that "all the associated will only pay for the wine they drink."[250]

Similar associations were formed throughout the Restoration and July Monarchies. As time went on these Societies became increasingly oligarchic, taking power away from the miners themselves. The statutes for the quarry at La Paperie in 1808 brought together twenty wealthy professionals alongside four workers sharing a 5 percent stake. Here the stockholders elected a clerk elected to regulate the worksite.[251] Three years later, a collection of twelve outsiders and twenty miners invested to reopen the quarry at Grand Bouc. This *société* was a blend of these two earlier approaches, with bread bought in common and with independent sales, but with an elected clerk serving as the central buyer.[252] By 1825, of the twenty-eight investors in the quarry at Fresnais eleven were miners, but together

[250] "Acte de société de la carrière de la Bremandière," July 6, 1802, ADML 15 J 73; Iorwerth Prothero, *Radical Artisans,* 145-74

[251] "Acte de Société pour la carrière à ardoises de la Paperie," January 15, 1808, ADML 15 J 73.

[252] Acte de société, Carrière du Grand Bouc en Saint Barthélemy," January 10, 1811, ADML 1 F1 186.

they owned just 5 percent of the shares while one capitalist owned 20 percent.[253] Within a few years the seven workers out of thirty-two investors held just 2.5 percent of the firm, while one other worker held another 2.5 percent. Meanwhile, five merchants controlled half of Fresnais.[254] At Grands Carreaux in 1832 miners still made up eight of seventeen investors, but held only 15 percent of shares while majority control fell into just four hands. These large investors were able to increasingly pass amendments to the *société* statutes to centralize authority at the worksite over the workers.[255] By this time the *société anonyme* had become the standard method for organizing quarries, with ten run this way while just one family-run firm remained.[256]

At the turn of the century, the miners themselves had owned the majority of shares, occasionally joined by related professionals such as wholesalers and merchants with capital free to invest in these workers' labors. Increasingly, stock ownership came to fall into the hands of industry outsiders, listing their profession only as "proprietor." They were a new class of capitalists, who gathered "around an enormous cake, discussing their interests with glass in hand," while those with a firsthand knowledge of the quarries were increasingly marginalized from the

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[253] "Acte de Société, carrière des Fresnais," 1825, ADML 1 F1 222.

[254] "Ampliation d'un contrat d'exploitation de la carrière des Fresnaies entre plusieurs proprietaires angevins," [late 1820s or early 1830s], ADML 1 F1 222.

[255] "Acte de Société de la carrière des Grands Carreaux," April 12 1832, ADML 15 J 73.

[256] "Carrières à Ardoisies," *Annuaire Statistique de Maine et Loire pour l'année 1832* (Angers, France: Imprimerie de Ernest le Sourd, 1832), 152.

decision-making process.[257] As a result, investors not versed in either the economics or geology of slate mining had to invest and then "follow blindly" the leading stockholders, further magnifying their influence and power.[258] When Hubert finally succeeded in incorporating his massive quarry at La Porée in 1841, which included the land he had wrested from Jubin two years prior, he had certainly benefited from the property laws passed earlier in the century. He also benefited from the incorporation laws passed at the same time. There were very few slate industry professionals and not a single worker among the twenty-six stockholders in this *société*, with the rest listing their profession as just "proprietor" and collecting their share of profits each year while Hubert's dominant stake allowed him to manage the industry as he saw fit.[259]

The changing nature of these associations can be seen in the *société* for the quarry at La Madelaine. Founded in 1809 between two young friends, it was originally just an agreement to sell their products in common and maintain their fraternity. By 1817, four more investors had joined in order to purchase and sell products in common. Just two years later, the founding members had been squeezed out and control centralized under a single management structure.[260]

If control of each individual mine was increasingly concentrated in just a few hands during the first half of the nineteenth century, the same was true for the

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[257] Bordillon, "Notice sur les carrières d'ardoises d'Angers,", 173-80.

[258] Guillory, "Mémoire sur les Ardoisières d'Angers," in *Bulletin de la Société industrielle d'Angers et du département de Maine et Loire*, 1, no. 1 (1830), 31.

[259] *Ardoisière de la Porée.*

[260] "Acte de société de la carrière de la Madelaine," [1819?], ADML 70 J 5.

industry as a whole. In 1808, the first officially registered attempt to coordinate between Societies since 1772 was launched, the Commission des Ardoisières d'Angers (CAA). Here representatives from each of the eight participating quarries voted equally to standardize the quality and sizes of finished tiles, to manage the central treasury, to control prices and output, and to distribute profits proportionally.[261] Although this alliance was short lived, it represented a crucial step forward in the effort to manage the market by forming a cartel.[262]

After a few other brief attempts, including the failed fusion of six quarries in 1820, the next incarnation of the CAA was founded in 1839.[263] When this year began, there were seventeen different quarries operating in and around Angers managed by seventeen different *sociétés*. Of these, only two were selling their slate in common. But on August 28, representatives of every quarry signed their names to an agreement to sell in common with their standardized product receiving a standardized price. This "monopoly" was promised as a way to raise prices and thus raise profits for each of the members, although early attempts appear to have drifted too far above market rates and resulted in growing stockpiles of unsold slate.[264] This agreement created a binding contract, offering the constituent firms an equal voice on the board of directors, but locking each of them into the Commission

[261] "Association," 1808, ADML 70 J 5.

[262] Cailleteau, *Les ardoisières en Pays de la Loire*, 10.

[263] Gasté and Hervé-Bazin, *Les Grandes industries de l'Anjou*, 7:106.

[264] *Tribunal de commerce d'Angers, Tessier-Menuau contre les carrières de Monthibert, 9 Juillet 1841* (Angers, France: Imprimerie de Launay-Gagnot, 1841), ADML 70 J 5, 1-6.

for ten years. Investors arriving for the weekly meetings at CAA headquarters at 52 Boulevard Roi René could look across the broad street sloping down towards the massive medieval castle banded in black slate and white talc. Beyond that the *ardoisières* could see the bustling docks along the Maine where finished tiles from all of the quarries were loaded onto barges to carry their product up and down the Loire. Months later they would return to these docks full of cash profit.[265] This agreement was renewed for another ten years in 1845, adding statutes to offer credit to customers out of the central treasury and guaranteeing that all orders would be shipped within twenty-four hours of receipt.[266]

Although the CAA represented a lucrative and lasting effort at concentration of control over the mines, not all attempts were as successful. In 1837 investors failed to convince local authorities to grant them exclusive control over a seventy-five square mile swath of land. Their argument that the rationalized administration of one massive mine would boost production apparently proved unpersuasive.[267] Even some mine owners were unconvinced by the lofty promises of incorporation. In 1841 stockholder Monsieur Tessier-Menuau filed suit against the CAA. He confessed that such a cartel was "undoubtedly a beautiful and vast conception," but warned that it could very well prove "as disastrous as it is vast." He protested that the CAA violated stockholders' rights of independence and input in the conduct of

[265] "Copie du traité des ardoisières d'Angers. Projet de société," (Angers, France: Imprimerie de Cosnier et Lachèse, 1839), ADML 70 J 5.

[266] *Ardoisières d'Angers. Acte de Société* (Angers, France: Imprimerie de Cosnier et Lachèse, 1845), ADML 70 J 5.

[267] A. Gautier, *Rapport sur la concession des ardoisières de l'arrondissement d'Angers* (Angers, France: Imprimerie Ernest le Sourd, 1837) ADML 1 F1 208.

their own firms. He further argued that it was illegal under Article 419 because "all the *ardoisières* of Angers have entered in a league for the ends of being masters of the price and of the monopoly of slate." Finally, Tessier-Menuau contested that the CAA had overstepped the legal restrictions placed on Societies and therefore required state approval if it was to continue functioning.[268] The refusal of the state to act on these claims left the CAA a free hand to operate as it saw fit in pursuit of its members' economic interests.

The problem with this increasing centralization was the concentration of wealth and power into fewer and fewer hands. Even by 1750, of the thirty-three men with interests in the local slate quarries, six had invested in two separate firms.[269] As *sociétés* were formed around each individual quarry, families like the Jamins and especially the Montrieux were able to accumulate sizable shares of ownership in many of them. As a result, while these select few men never held a majority share in any one firm, they were able to use their important positions across several firms to exercise an inordinate influence on the cartel. René Montrieux offers a clear example of this. Born in 1806 to a slate merchant of the same name, Montrieux grew up in luxury. As a child, his family spent as much on wine each month as a skilled slate worker could bring home to his family in six months.[270] When young Montrieux became eligible for the draft, the family fortune

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[268] *Tribunal de Commerce d'Angers, Tessier-Menuau contre les Carrières de Monthibert.*

[269] "État des carrières d'ardoise situées aux environs de la ville d'Angers," February 1750, ADML 70 J 2.

[270] "Compte de vin de M Montrieux," 1806-1807, ADML 1 F1 27.

paid for Coat Eduard, a twenty-six-year-old blond-haired potter from Nantes, to don the French uniform in his place.[271]

Montrieux increasingly invested this wealth in the slate mines around his home in Angers. By the late 1840s, he was enjoying a substantial return on his investments, spending more each month than one of his most skilled workers could in two years.[272] This level of income allowed Montrieux to continue purchasing shares in local slate companies and to turn this diffuse power into a leading role at the CAA, being elected to its presidency in 1845.[273]

The Angers slate industry had, by the middle of the nineteenth century, undergone a radical transformation in structure made possible by a shifting legal system. First, property law was adjusted in order to incentivize investment in mining by allowing potential entrepreneurs to expand the size of their operations more easily. Next, the creation of legal protection for multiple investors to operate collectively and with limited liability decreased risk and allowed the concentration of capital necessary to open large-scale operations. This increasingly removed decision-making power from the workers and placed it in the hands of a few investors. Finally, the lax enforcement of anti-cartel laws gave monopoly control over the entire regional slate industry to the most powerful shareholders in the constituent *sociétés*. The end result was that by 1848 a tiny elite controlled the

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[271] "Certificat d'activité de service," July 24 1829, ADML 1 F1 60.

[272] "Registre des dépenses de M Montrieux," 1820-1852, ADML 1 F1 26.

[273] Élisabeth Verry, "Georges Bordeaux-Montrieux: Président de la Commission des Ardoisières d'Angers, 1854-1930," *Annales de Bretagne et des Pays de l'Ouest* 104, no. 3 (1997), 159.

Angers slate industry.

Labor Law

These directors represented the burgeoning French capitalist class. They justified their rule by their success. Seeing themselves as the motor behind dramatic industrial growth, which catapulted these capitalists to the peak of the local power structure, this class of businessmen undertook to fulfill their social obligations. As one engineer explained, the entrepreneur of mines has a responsibility to form firms and increase production, but also to ensure "the subsistence of the workers and the maintenance of their work."[274]

The artisanal *fendeurs* had by the eighteenth century established a guild among themselves. They elected leaders, celebrated special occasions together, set regulations for apprenticeship and work standards, controlled entry to their profession, bestowed colorful nicknames on their members, and set themselves apart as an aristocracy of labor.[275] In these ways, the *fendeurs* operated in much the same way as any other guild.[276] But the monarchy had never actually granted such a privilege to these workers. Their actions were thus viewed as an illegitimate obstacle to industrial progress in the eyes of the entrepreneurs and the king, who issued several judgments against their pretensions in the late eighteenth century.[277]

As early as 1764, Sartre systematically addressed the worker question and

[274] Blavier, "Programme d'un cours," ADML 1 F1 72.

[275] APTIRA, ed., *Mémoire de migrations*, 92; Goacolou and Faës, *Paroles d'ardoisier,* 91.

[276] Farr, *Artisans in Europe*, 222-75; Sewell, *Work and Revolution in France,* 1-61.

[277] Blavier. "Essai sur l'industrie ardoisière d'Angers," 169.

proposed legislative solutions to it. The author believed that "the exploitation of a slate quarry should resemble an economic body that only functions by agreement and by the continuous activity of all its members: if harmony comes to cease, so the body will languish and not be able to sustain itself."[278] The problem impeding the smooth functioning of this industrial organism was "the spirit of revolt and independence that reigns amongst these workers," preventing the managers from successfully guiding production.[279]

The chief culprits, according to Sartre, were the *fendeurs*. As with many artisans and in contrast to day laborers, the *fendeurs* possessed enough skill and independence to be able to stand up to their bosses. As Iorwerth Prothero has described, for the artisans this capacity engendered a sense of leadership and power that often led them to take a leading role in labor militancy.[280] But to Sartre, these men were corrupted by their "penchant for debauchery and revolt," and that they were "lost in debt and debauchery." In spite of royal judgments in 1741 and 1749 attempting to curtail their assumed privileges, he asserted that these workers continued to operate as a guild, maintaining their independence by "the most illicit paths," "usurp[ing] the most respectable authority," and forcing the managers to "submit to their whims." Sartre believed in 1765, as did the mine owners in 1807, that the ability of these artisans to regulate hiring and apprenticeship, to move freely from worksite to worksite, and to set rules for the distribution of slate

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[278] Louis Sartre, *Mémoire et instruction*, 46.

[279] *Ibid*., 35-6.

[280] Prothero, *Radical Artisans,* 8-22.

amongst the workers undermined the rational operation of the quarries and spawned the laziness and destruction that would ruin the industry.[281]

The corrections Sartre prescribed began with the reassertion of the *ardoisières'* "legitimate authority" over the worksite. To do this, he advocated replacing the current system, in which clerks were chosen from among the workers and thus "disposed to foment their revolts," with a professional managerial class hired from outside the mining community and thus not subject to ties of *compagnonnage*.[282] With this step complete, the competent manager would be able to rationalize the labor force by balancing the ratios of each type of worker. Sartre proposed firing one-third of the underground miners and day laborers, raising wages and hours for those remaining, and cutting the *fendeurs'* piece-rates by 40 percent while firing half of them, forcing those remaining to become more productive.[283] Finally, he called for the association of all the owners with the goal of standardizing wages across the industry.[284] While such adjustments seemed harsh, Sartre believed they would ultimately benefit the entrepreneurs, the consumer, and even the workers themselves, who would suddenly find "in a more regular life the infinite resources for the subsistence and affluence of their families."[285] In essence, Sartre's recommendations to the king reflected a deeply held Old Regime belief in

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[281] Sartre, *Mémoire et instruction* 37-40.

[282] *Ibid*., 31-3.

[283] *Ibid*., 49-60.

[284] *Ibid*., 26.

[285] *Ibid*., 43-4.

corporatist patronage, with each element of the national body performing its specific duty for the public good. All that was necessary was legislation to grant the entrepreneurs the power to harness a recalcitrant labor force and put them to work.

In 1791, revolutionary legislators echoed many of Sartre's concerns. First, the Le Chapelier law showed that worker protections were to be considered as special privileges no different from aristocratic ones, and thus as impediments to the advancement of the nation.[286] Second, as expressed in the Mining Law of 1791, they believed that workers, when left to their own devices, were "not very bothered with conserving the mines, [resulting] in works still worse directed" than those run by entrepreneurs. In fact, the rapid growth in mining output that these lawmakers attributed to the strong and centralized control of rational managers over the indolent workers led them to stipulate in the law that tribunals would be implemented to ensure miner obedience. The tribunal was also intended to protect the workers from their bosses' excesses. This was interpreted as providing for the good of the nation.[287]

Legislators tacked a similar amendment on to the Napoleonic mining law in 1813, demanding that all workers carry a *livret*, a small booklet showing the endorsement of a worker's previous employer and certifying that he had been granted permission to work elsewhere. The unspoken reasoning behind the *livret* was that it forced workers to be obedient or else risk dismissal without such an endorsement to work elsewhere: an unendorsed *livret* could be a slow death

[286] Sewell, *Work and Revolution in France,* 62-91.

[287] Mavidal and Laurent, *Archives Parlementaires*, vol. 27, 228-33.

sentence for a worker and his family. At the same time, this law balanced strict police repression of worker insubordination with demands that the employer provide a safe work environment, a company doctor, and an indemnity for the families of workers injured on the job.[288] Such legislation reflected the social order of patronage, in which the working class was expected to provide obedient service under the direction of their social superiors. The ruling class, in turn, had to shepherd its subordinates sagely and magnanimously. This would eventually prove difficult to reconcile with a capitalist ideology founded on the pursuit of self-interest, but contained within its logic a fundamental conceptual shift that placed labor directly under capitalist control.[289] To the extent that there was a proletarianization of the working class within the Angevin slate fields, it took the form of this conceptual transformation rather than any real structural change.

Such concerns over class relations were very current in Angers during this period. In an 1831 debate played out in the Industrial and Agricultural Society of Angers over how to best help the working class, society president Monsieur Guillory the Elder summed up the patron's position well. He described the working class as a base and degraded lot, but called on the ruling class to help save these fellow members of the "industrial family." Guillory pointed towards the establishment of schools to educate the masses in morality, to help provide capital for savings accounts to teach them foresight and thrift, and to help workers form mutual aid

[288] Duvergier, *Collection complète des lois*, vol. 18, 201-3.

[289] Reddy, *The Rise of Market Culture,*61-86.

societies in case of accident or death.[290]

In the rebuttal, mine owner Grégoire Bordillon agreed that the elites had a responsibility to "emancipate and deliver [workers] from their moronic state and from misery." He believed, however, that ultimately only capitalism and the entrepreneurial pursuit of self-interest would generate enough wealth to do so, that any other means were "nothing but deception and chimeras." While backing the provision of moral education, he also called for vocational training to make workers more productive.[291]

Bordillon made his views of the working class clearer a few years later. He described the mine workers as relentless drunks, asserting that every payday "all the workers get together in a cabaret and serve themselves wine," with the effect that there "follows days lost to drinking." In fact, the author calculated that the workers lost the first week or two of every month to drinking. Furthermore, he characterized the miners as indolent above all else, defining their animating desire as being to "work twelve or fifteen days a month at their pleasure" and "to live day to day" while their families starved. [292] Finally, Bordillon accused the *fendeurs* of

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[290] Guillory ainé, "Réflexions sur les moyens d'améliorer le sort de la classe ouvrière," *Bulletin de la Société industrielle d'Angers et du département de Maine et Loire* 1, no. 2 (1831), 43-52. The use of schools to further ingrain patronal control was common at this time across Europe: Fleig Frank, *Oil Empire,* 101; Donald Reid, "Schools and the Paternalist Project at Le Creusot, 1850-1914," *Journal of Social History* 27, no. 1 (1993): 129-43.

[291] Grégoire Bordillon, "Rapport sur le mémoire de M. Guillory ainé, ayant pour titre: Moyens d'améliorer le sort de la classe ouvrière," *Bulletin de la Société industrielle d'Angers et du département de Maine et Loire* 1, no. 2 (1831), 142-51.

[292] Such depictions of drunk and lazy miners were common among mine owners during this period, but were not always rooted in fact: José Sierra Álvarez, "'Rough

fighting a class war against their benefactors, claiming that their motto was "our enemy: that's our master" and that these men were prone to violent attacks on their bosses. Reiterating his earlier call for education, the author averred that schools could teach working-class children to plan for the future, to "respect themselves," and to understand the social order and their place in it. He anticipated as the result of such education that "drunkenness will disappear, and the workers will understand that their interests lie with those of the entrepreneurs, in production being regulated and following the needs of commerce." In the meantime, only by the judicious use of tools such as the *livret* and financial incentives, he reasoned, could these beasts be tamed and made to work for their own good.[293] While the evidence necessary to assess the accuracy of these accusations is absent, entrepreneurs used traditional aspects of artisan culture such as drinking and holidays to discredit the morality of the men and thus their ability to regulate themselves, infantilizing them in order to justify their patriarchal control over them.

The slate mining firms heeded such advice and implemented many positive changes that benefited the workers. Montrieux, in particular, took up the charge of building schools throughout the slate fields. In 1825 the companies established a savings account for the workers, deducting 1 percent of each paycheck to place into

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Characters': Mines, Alcohol, and Violence in Linares at the End of the Nineteenth Century," in *A Social History of Spanish Labor: New Perspectives on Class, Politics, and Gender*, eds. José A Piqueras and Vincent Sans Rozalén, trans. Paul Edgar (New York: Berghahn Books, 2007), 176-96; Jorge Orîa, "Traditional Popular Culture and Industrial Work Discipline: Asturias, 1880-1914," *A Social History of Spanish Labor*, 153-75.

[293] Bordillon, "Notice sur les carrières d'ardoises d'Angers," 176-8.

a treasury carefully managed by the company.[294] Although a prefectural order was ultimately responsible for the establishment of this account, the companies used it to support "those individuals who have been wounded at the *ardoisières* or at the works concerning them; the widows and the orphans of said individuals who will have been victims of accidents." If the account grew large enough, the capitalists were also able to invest the funds in any "interest that would increase the products of the commission [which] will be able to take the measures it judges appropriate."[295]

Similar savings accounts were established by the Industrial and Agricultural Society of Angers and the Department of the Maine-et-Loire. Founded in 1830, this society was composed of "industrialists and proprietors" who "were eager [to be] contributing to the well-being of the working class in suggesting to it the love of labor, of order, and of education."[296] Acting through the organization, its founder and president, Guillory aîné, who was the owner of a refinery and whose father was a judge on the Tribunal of Commerce under Napoleon, created a savings account for workers and farmers in 1834 and a mutual aid society in 1837.[297] Such actions were frequently linked to the need to form cartels. In seeing the benefit of a monopoly as

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[294] Guillory, "Réflexions sur les moyens," 49.

[295] Prefectural Arrêté on Caisse d'Épargne, 10 May 1825, ADML 15 J 214.

[296] Bouchard, "Origine et travaux de la Société industrielle et agricole de Maine-et-Loire," *Bulletin de la Société industrielle et agricole d'Angers et du département de Maine et Loire* 3 no. 21 (1880), 55.

[297] *Ibid.,* 56-9; Célestin Port, Pierre d'Hérbecourt, and Jacques Levron, *Dictionnaire historique et biographique de Maine et Loire et de l'ancienne province d'Anjou* (Angers, France: H Siraudeau et cie, 1965), 2:.

the ability to charge above-market prices, mine owners said they could afford to pay above-market wages. But these workers could not be trusted to look out for their own interests: "Workers who at fifty years, after thirty years of laborious life, regret the ten centimes employed in the purchase of tobacco and eau-de-vie, and that, placed in a savings account, would produce for them a capital around 1800 francs. It is thus a duty of the capitalist who loves the worker and who is interested in him to combine his salary in a manner that he can live and manage his own resources for old age and certain life events." The solution, alongside proper education in morality, would be to ensure that "every infraction would be liable to a fine," that would in turn be deposited in the savings account.[298] In 1839, the new quarry at La Porée purchased additional tracts of land in order to build houses for the workers close to the worksite, seeing this as the "most comfortable and most economical" way to establish a workers' community with a minimal commute. They also argued that this was "very important for good administration...in order to exercise over these [workers] continuous surveillance."[299]

Over a half-century after Sartre first set this class war to paper, a new battle erupted. *Fendeurs* fired the first shots across the mine owners' collective bow in 1817. In a letter to the owner of Fresnaies, they wrote "to purely and simply give [them] a note of the arbitrary abuses that burden our estate…[and] have often occasioned big trouble." Having described themselves as an estate, they demanded

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[298] August Myionnet-Dupuy, *Mémoire sur la position critique des Ardoisières d'Angers et des ouvriers attachés à cette industrie* (Angers, France: Imp de Georges Pignet, 1849), 12.

[299] Hubert, Guillon, and Fort, *Mémoire pour les intéressés.*

the right to be the sole source of authority for granting the title of master, and that recipients of this title must be workers in slate quarries. They said that they paid fees into the estate and thus had paid for these rights, and threatened to walk off the job if these requests were not met.[300]

On May 9, 1818, the prefect of the Maine-et-Loire issued a proclamation that all miners would henceforth be required to abide by the *livret*. Within a week the mayor of Trélazé wrote to the prefect to inform him that the *fendeurs* had abandoned the quarries and launched a trade-wide strike. Organized and united, these artisans began holding clandestine gatherings, although the meeting plans were passed on to the mine owners either intentionally or by a spy on a small, hand-scrawled note.[301] Here the strikers announced their simple claim: "We are workers, our tools are ours, we should be free to change workshops when it seems good to us."[302] Pleading to royal authorities for protection from the organized employers, they settled in for a long strike by sharing work at Guérin de Brosse's quarry while benefiting from the generosity of a baker known as Girard of rue Michel, who distributed bread to them.[303]

Equipped with a strong community, some work, and their daily bread, these workers settled in for a long fight. Political and business leaders did little to defuse the tension. The police department, for instance, was sent door to door on the night

[300] Letter Fendeurs of the quarry at Fresnais to the stockholders, 28 April 1817, ADML 1 F1 219.

[301] Letter to La Société du Ponceau, [1818?], ADML 71 M 1.

[302] Letter from de Cagueray to his commander, 14 June 1818, ADML 71 M 1.

[303] "Observations à faire à M le Préfét," [May or June 1818?], ADML 71 M 1.

of May 23 to order two hundred *fendeurs* to show up at their worksites the next morning. When the workers arrived at the quarry, the police read aloud the prefectural decree ordering them to carry their *livrets* on their person. The quarry clerks then offered to rehire half of the men immediately, presumably exempting the most ardent strikers.[304] Police were dispatched again just before dusk on September 19 to arrest four workers who had refused to carry their *livrets*. They were held in jail overnight.[305]

This coalition of the *fendeurs* proved unbreakable by direct employer assault, so the bosses had to resort to more underhanded means of evicting these artisans from their privileged position. They attempted to do so by simply hiring new workers from outside the trade, but roving gangs of militants began assaulting these new hires. Begging for police protection, the mine owners wrote that "every day occur several bloody scenes that almost always go unpunished due to lack of witnesses. The terror that these three or four hundred workers inspire in all of the inhabitants around the quarries forces them to hide themselves" or risk a savage beating. These entrepreneurs worried that murder would be the next step, or so they claimed.[306] Perhaps fearing such a turn, the Prefect wrote back to the mine owners on May 25 to inform them that, while the workers were required to carry *livrets*, the managers could not use this to shackle workers to a single site indefinitely. Furthermore, while an insubordinate worker could be banned from a

[304] Report of the police chief, May 24 1818, ADML 71 M 1.

[305] "Proces verbal d'arrestation du nommés Louis Lemay, Pierre Lemay, et Henry Guillot d'après une requisition de M le Préfét," September 19 1818, ADML 71 M 1.

[306] Letter Commissaires des ardoisières d'Angers to Prefect, [1819?], ADML 71 M 1.

single quarry, the bosses were not to use the *livret* as a tool to institute a blacklist against them at all of the quarries. Finally, he upheld that the *fendeur* was "free to retire when the day is finished, or his task fulfilled," in contrast to the wageworkers, but did qualify this by reiterating his opposition to strikes and the right of the owners to take "extraordinary measures" to end them.[307] The workers returned to work over the next two days and the strike was over.

Explaining the situation to the Minister of the Interior, the Prefect pinpointed the problem as being the pretensions of the *fendeurs* to treat themselves as a guild, enabled by the lack of laws specifically "abolishing the privileges of all workers corporations." It was this pretension that "resulted in an almost habitual state of fighting between them and the entrepreneurs or owners of the quarries" over the right to limit access to their sons, to control the distribution of the *hottées*, and to quit work when they wanted. The solution, he argued, was the institution of the *livret*, although the workers believed "the measure had less for its goal to punish a badly noted worker, than to abolish the right they pretended to have to be received in all the quarries at the moment they presented themselves." The prefect did see blame on both sides, stating that against the workers, "the claims of the entrepreneurs seemed to grow from the conflict." He concluded by calling for a strong law on workers' rights to prevent future unrest.[308]

Although the issue of the *livret* had been settled, disagreements over the workers' collective rights remained contentious as the entrepreneurs took the

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[307] Letter Prefect to quarry owners near Angers, 25 May 1818, ADML 70 J 4.

[308] Letter Prefect to Minister of the Interior, 4 August 1818, ADML 70 J 4.

offensive. On May 4, 1819, mine owners successfully convinced the mayor of Saint-Barthélemy to declare that the *fendeurs'* practice of taking Sundays and holidays off caused disorder and was "essentially contrary to the law." As a result, such days off were banned.[309] A month later, *fendeurs* struck in defense of their rights to hire more workers when work conditions warranted and to set their own hours, provided "they have fulfilled their obligations."[310] To the mine owners, the fact that a strike in one quarry quickly spread to the *fendeurs* in all quarries proved "there exists an illicit association having for its goal to make work cease." They asked the prefect to use force in order to force the men back to work.[311] In August 1819, over fifteen months after the conflict started, managers were still reporting problems in the quarries.[312]

Like a decade earlier, many local elites were dismissive of the workers. For the mayor of Trélazé, the culprits were "always the same characters. The workers want, against all reason, to govern themselves, to dictate the rules to the masters, abandoning to their whims a quarry in operation." He clearly identified their driving motives as those of moral economy, of attempting to maintain control over their work environment. However, the mayor also claimed that the workers were

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[309] Arrêté from Mayor of Saint-Barthélemy, 4 May 1819, ADML 70 J 4.

[310] "Extrait d'une deliberation des ouvriers de la carrière des Fresnaies relative à l'augmentation du nombre des ouvriers de cette carrière," 12 June 1819, ADML 1 F1 220.

[311] Letter manager and superintendent of the slate quarries of Angers to Prefect, 12 June 1819, ADML 70 J 4.

[312] Letter Lelong de Belair to Prefect, August 25 1819, ADML 71 M 1.

demanding wages "outside of reason."[313] Struggling to deny the fact that he was hiring many of the "mutinying" workers, de Brosse recognized that these workers just wanted mobility, but added that this represented a usurpation of the entrepreneur's role by the workers.[314]

Unlike a decade earlier, many local elites were sympathetic to the workers. A major investor in the quarry at Grand Bouc blamed the conflict on the machinations of the owners of the quarries at Bremandière and La Paperie, accusing them of bringing in apprentices from outside the artisanal community and enforcing the *livret* laws in order to control the workforce and prevent them from organizing. Against such scheming businessmen, he saw the *fendeurs* as "a class of estimable men" who "hold on to their ancient privileges," privileges which he believed helped "maintain their good morality."[315] The departmental chief of the royal gendarmerie corroborated that the workers were asking only for the right to move freely between worksites. Sympathetic to their struggle, he informed the head of the national gendarmerie that differences in slate quality between mines necessitated a variable wage scale and savings accounts, especially for those *fendeurs* too old and worn out to support a family from their own labor.[316] Even the local police chief dutifully carrying out raids on recalcitrant workers sympathized with these men, who he believed were being abused by the quarry clerks. He too suspected a

[313] Letter Mayor of Trélazé to Prefect, May 14 1818, ADML 71 M 1.

[314] Letter Guérin de Brosse to Prefect, May 21 1818, ADML 71 M 1.

[315] "Observation sur les ouvrières de carrières et sur le difference qui existe entre les ouvriers dite d'en haut et ceux dite d'en bas," [1818?], ADML 71 M 1.

[316] Letter de Cagueray to his Commander, June 14 1818, ADML 71 M 1.

conspiracy at the "frequent assemblies of clerks and commissioners, whose deliberations seek a division of the number of workers or a diminution of the price of their labor." He confessed that there were some hotheaded workers, but excused their "excesses" as being provoked by the *ardoisières'* abuses. He worried that the situation might explode into violence if these provocations were not addressed.[317]

Less than five years later, the *fendeurs'* struggle for their traditional rights was brought to an anticlimactic end by a new royal judgment. The royal ordinance of 1823 was intended to maintain order in the slate fields by clearly delineating the responsibilities and rights of the workers and bosses, with the state operating as a heavy-handed mediator between the two. It required that all quarries be registered with the prefecture, placed under continuous police surveillance, and subjected to engineer inspections every six months or whenever "disorders, abuses, or problems" threatened the "public order." The law also endorsed the creation of a special police force requested by the owners in 1819 to be paid for out of their bankroll, ostensibly to monitor potential crime. Any issue that might arise was to be brought to the police, mayor, or prefecture for arbitration or punishment.[318] By inserting the state between these conflicting sides, the Restoration Monarchy reverted back to feudal conceptions of class relations, with the crown responsible for bringing harmony to the social body.

This apparent neutrality, however, was heavily skewed in favor of the entrepreneurs. The new law did require that the quarry owners accept ultimate

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[317] Letter Commander of Police to Prefect, September 26 1818, ADML 71 M 1.

[318] Blavier, *Jurisprudence générale des mines*, 3:454-62.

responsibility for workers killed or maimed on the job, forbade them from hiring children under the age of nine to work underground, and ordered them to keep a record of every worker's personal information whenever they went down or came up from the quarry in case of an accident. Other elements of the law also presented a balance between the working and capitalist classes. Any coalition between workers or entrepreneurs was to be "noted, pursued, and punished"; while every worker was required to carry with them a *livret* endorsed by their previous employer, every manager was forbidden to hire anyone without it; and the methods for distributing slate amongst the *fendeurs* were to be decided by agreement of both parties. However, the true impact of these stipulations weighed much more heavily on the workers than the capitalists: the *livret* was clearly greater threat to the worker's very survival than to the manager's, and the prefect was to standardize the length of the work day, but to do so following the entrepreneurs' recommendations. Most importantly, the King decreed: "The free consent of a quarry entrepreneur…will be the sole regulation for the admission, the distribution, and the maintenance of the workers in the worksite."[319] In other words, the ultimate authority in the quarries lay squarely in the hands of the bosses.

The *fendeurs* soon voiced their opposition to these onerous new restrictions. No longer free to move between jobs, to limit access to apprenticeship, or to manage the distribution of slate, they had with a stroke of the royal quill lost nearly all of their traditional prerogatives. The workers were perhaps provoked further by the collective decision of the owners of eight quarries to increase their output by

[319] *Ibid*., 459-65.

increasing the number of *fendeurs* on their payrolls by 50 percent, hiring children of the underground workers to fill out the ranks.[320] Tensions were also thus running high at the beginning of 1824 as the effects of this decision meant that nearly one in four of the *fendeurs* working around Angers were new hires, stretching community ties among the artisans.[321] Incidentally, the tipping point for this conflict came from a squabble among capitalists. In the summer of 1824, Monsieur Albaret of Grand Bouc attempted to lure some of these workers away from his competitors at Pigeon and Gavelle by offering them a 150- franc bonus on top of standard wages in return for their agreement to an eighteen-month contract. Twelve workers took the offer, while the other *fendeurs* contested it as a break with custom. Fearing a spread of the disturbance, the new quarry police were called in. The other mine owners decided to offer all of their workers three-month contracts to induce them to stay on the job, which quickly quelled their quarrelsome nature.[322]

One year later, the workers from below made a rare and short-lived display of protest when a coalition of several hundred walked of the job site.[323] This move was prompted by a May 31, 1825, decision by the managers of three quarries to increase the workday from twelve to thirteen hours. In response, the men simply

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[320] "Commissaires et intéressés des carrières des Fresnaies, de la Bremandière, de la Désirée, de l'Aubinère, de la Paperie, du Grand Bouc, des Petits Carreaux, et du Perrain," 3 September 1823, ADML 70 J 4.

[321] "État des ouvriers d'en haut employés dans les carrières d'Angers," August 30 1823, ADML 70 M 1.

[322] Letter Garde des Ardoisières d'Angers to Prefect, June 6 1824, ADML 71 M 1.

[323] Letter Judge of Angers to Prefect, June [16?] 1825, ADML 71 M 1.

left work at the customary time.[324] The miners claimed that working the extra hour a day was simply beyond their physical capacity given the tough nature of their work. The departmental engineer agreed, advising a return to the old workday.[325] Within a month, the gendarmes reported that all workers in the slate fields were in a state of tranquility.[326]

There were a few more attempts by the workers to challenge state-supported capitalist authority. In 1840 another conflict over who had the right to set the workday led to a short walkout. The owners argued that the minimum wage of two francs they had set for the workers from below meant they were subject to the same workday as the day laborers. The workers clearly disagreed, but "a picket of gendarmes [was] sufficient" to end the protest.[327] These brief stirrings were little more than the death rattle of the traditional labor movement centered on moral economy. By 1827, the departmental engineer announced that the 1823 labor laws were being "observed exactly" in the quarries.[328] An entire generation would enter and leave the mines before working-class struggle next appeared in the quarries around Angers.

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[324] Letter Guard of the Ardoisières to Prefect, 31 May 1825, ADML 70 J 6.

[325] Report Matthieu to Prefect, 15 June 1825, ADML 70 J 4.

[326] Report Chief of the Gendarmerie of the Maine-et-Loire, July 20 1825, ADML 71 M 1.

[327] Letter Le Chatelier to Prefect, 11 October 1840, 70 J 6, transcribed by Furcy Soulez Larivière.

[328] Letter Departmental Engineer to Prefect, 14 July 1827, ADML 70 J 6.

Rebellion in the Slate Fields

The decades following this struggle over the 1823 regulations were relatively peaceful around Angers, and the growth of the slate industry continued during this time. Even when the 1830 Revolution temporarily interrupted sales and caused a decline in the price of slate by one-third over two years, worker protest was minimal. Even though the industry found itself "in a truly critical and deplorable situation," the entrepreneurs were willing to exhaust their reserve funds to keep the quarries open and the workers working.[329]

Meanwhile, in cabarets and cafés scattered throughout the Maine-et-Loire, political discontent among the artisanal and bourgeois classes was slowly fermenting. Republican posters began appearing in the night, plastered to light posts or scrawled on walls. One typical note, posted on a wall near Angers city hall, made the same impassioned cries for liberty and equality to trump monarchical tyranny as so many others. It grabbed the attention of passersby with "Death to the tyrant, vengeance to the mayor!!! Health to the citizen. Vive la république. Brave Angevins!!!" before informing the reader that "famine, fire, war should be our vengeance, that our pikes don't rust from carnage until they have been redded in the blood of our cruelest enemies." What made this poster unique, however, was its liberal economic position. While the author(s) believed "this is the position of all those who desire the death of tyrants," they also called for "the rebirth of commerce,

[329] Report to the Consultative Chamber, 31 March 1832, ADML 70 J 6, transcribed by Furcy Soulez Larivière.

the abolition of monopolies."[330]

The ability of such discontent to express itself publicly received a partial boon following the Revolution of 1848 and the declaration of the Second Republic. The National Assembly in Paris decreed freedom of assembly to the nation. But the execution of the law fell to Bordillon, the quarry owner who had previously expressed his patronal contempt for the working class, who had championed of the managed market, and who had become departmental prefect in the aftermath of the revolution. As a politician, he was known for his devout Christian beliefs, for making "inflammatory proclamations, but at the same time [for] his attachment to order, reassuring the diverse classes of society." He was especially noted for the "attitude he took against the socialists."[331] In reference to the law granting the freedom of assembly, he feared "that men animated by bad intentions could abuse the terms of the law" to form secret societies in order to "propagate disobedience of the laws or revolt." Thus, while allowing such gatherings to occur, Bordillon made sure that all clubs were regulated, open only to members, and transparent, and that every meeting was overseen by the police. In this way, he hoped to root out and squash the dreaded secret societies flourishing in France amidst the new republican order.[332] Following these directives, police throughout the region sent a steady stream of correspondence flowing into the prefectural offices. In 1851, the prefect

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[330] "Copie d'un placard," 5 September 1836, AMA 5 I 138.

[331] *Ibid.,* 56-9; Port, d'Hérbecourt, and Levron, *Dictionnaire historique et biographique,* 1:428-9.

[332] Letter Prefect to Mayor of Angers, 29 September 1848, AMA 5 I 142.

wrote to the mayor of Angers to warn him that fifty socialists had recently met in Nantes.[333] In 1853, the prefect alerted the mayor that the Socialist Party was planning on holding a rally in Angers, and ordered him to crack down, break up any and every meeting, and arrest those involved.[334] These officials feared most the shadowy presence of secret societies, such as the Freemasons, their imaginations fueled by suspicions of clandestine conspiracy.[335] However, this amorphous threat seemed to take concrete form in the fear that a "certain number of proselytes working tirelessly to spread their anarchist principles" might see their ideas gain traction, "primarily in industrial towns," and "above all among the workers of the large factories."[336] For the time being, however, most of the discontents were from the upper middle class. When nineteen republicans were arrested in Angers in the early 1850s for "having republican ideas," most were listed as proprietors and entrepreneurs, joined by a few highly skilled artisans such as a watchmaker and a printer. Among them was only one quarryman, fifty-two-year old René Coconnier, who was described as "always [having] republican ideas, but he is without influence, and cannot be dangerous. We can without harm halt surveillance of him."[337] Likewise, among the thirty-seven republicans arrested in the aftermath of Napoleon

[333] Letter Prefect to Mayor of Angers, 6 February 1851, AMA 5 I 139.

[334] Letter Prefect to Mayor of Angers, 4 April 1853, AMA 5 I 142.

[335] Letter Prefect to Mayor of Angers, 29 August 1852, AMA 5 I 142.

[336] Letter Councilor of the Secretary General to Prefect, 1 August 1848, AMA 5 I 142.

[337] "Noms des internés à Angers," [Early 1850s], AMA 5 I 140.

III's coup d'état, although most were workers, only four were quarry workers.[338] Amidst this environment of repression, in 1850, a small underground branch of artisans from the republican clubs formed an organization they called "La Marianne." This referenced the female embodiment of freedom, but was also slang for the guillotine. Their express intent was to fight the "omnipotence of the bosses" and the state that supported them.[339]

Indeed, discontent was beginning to brew in the slate fields around Angers. As following every revolution, the Revolution of 1848 gave birth to economic panic, credit freezes, and the decline of trade and industry. In this economic environment, the slate fields of Angers accumulated an excessive back stock of finished slate tiles.[340] Until this back stock could be cleared, the quarries would have to fall silent as their thousands of workers were cast into the already strained local job market.[341]

In the year before the revolution, the Angers slate mines had employed 2400 workers who collectively produced 146 million slate tiles. In 1848, output dropped to 112 million. An annualized prediction in June of 1849 revealed that employment

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[338] "Individus arrêtés à la suite du mouvement du 3 décembre 1851," [Late 1851/early 1852], AMA 5 I 140.

[339] Aubert, *Le Temps des conspirations,* 201-4. The working-class opposition to the Second Empire peaked in the years following Napoleon III's coup, but overall most workers were passive if not necessarily enthusiastic supporters of the regime, and even more distrustful of the socialists: David I Kulstein, "The Attitude of French Workers towards the Second Empire," *French Historical Studies* 2, no. 3 (Spring 1962), 356-75.

[340] Prosper Jamin, *Mémoire sur la fusion des ardoisières de l'arrondissement d'Angers* (Angers, France: Imp de E Barassé, 1856), 6.

[341] Letter Mine Engineer to Prefect, 18 April 1848, ADML 70 J 13.

would drop to 1300 men, with a collective output of just 102 million tiles. The slate entrepreneurs attempted to borrow five hundred thousand francs to keep the quarries open, but amidst a financial crisis, the government explained, all available cash had to be poured into "public expenses" rather than "private enterprises" because "the efforts of personal credit that should sustain private establishments, until the moment doubtless not far, when transactions will again take their habitual course."[342] Public workshops were set up throughout the area in an attempt to relieve the pressures of unemployment, but the work was low-paid and low-skilled, and leaving at least one hundred quarrymen without a job.[343]

The long-lasting solidarity in the industry began to fall apart under this economic pressure. At first, quarries such as Grands Carreaux increased wages in an effort to poach the best workers from other quarries.[344] However, this was quickly followed by steep pay cuts as the owners struggled to maintain employment and profitability. But, with families to support, workers proved unamenable to such a move. By the first day of August 1848, the workers from below at one quarry walked off the jobsite, and soon their fellow miners throughout the slate fields had joined

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[342] Letter Minister of Finance to Minister of the Interior, 22 May 1848, ADML 70 J 13, transcribed by Furcy Soulez Larivière.

[343] Fleury, "Rapport général sur la situation des ardoisières d'Angers," 15 October 1849, ADML 70 J 5, transcribed by Furcy Soulez Larivière. Such public work projects were a key feature of the republican phase of 1848, but were insufficient everywhere to meet the overwhelming need: Thomas R Christofferson, "The French National Workshops of 1848: The View from the Provinces," *French Historical Studies* 11, no. 4 (Autumn 1980), 505-20.

[344] Note, [1848], ADML 71 M 1.

them.[345] The *fendeurs* immediately joined them to protest a fifty-centime reduction in their piece rate, amounting to about a 10 to 15 percent reduction in their daily take-home pay.[346] Given that this followed a fifty-centime reduction just a few months earlier, the *fendeurs* were able to negotiate for only a seventy-five-centime total reduction.[347] Giving voice to the workers' growing animosity, a note posted to the National Guard headquarters explained that "the suffering workers demand only commerce, that the first iron balls shoot the bad rich, who instead of working hoard their money, [we] demand pillage and arson, that will not wait."[348]

However, this moment of resistance and anger quickly passed. Describing the *fendeurs* in 1852, a local author wrote that "these workers are honest, generally religious, maybe a little inclined to drunkenness; they are never seen given over to vice or grave faults; crimes are very rare among them. One sole time, [1790], the *perreyeurs* produced disorder in the city." In perhaps an overly nostalgic and premature description of their character, he wrote: "these workers, who are often excited, have never failed in their duties as good citizens." The author claimed that in 1848 the *fendeurs* had gone to the quarries and convinced the other workers not to strike, but to stay at work and to take care of their common interests. He concluded his description by saying: "here, we meet almost always the good spirit of the quarry worker," who rejects the memory of Robespierre and recognizes him as

[345] Letter Mayor of Saint-Barthélemy to Prefect, 1 August 1848, ADML 71 M 1.

[346] Letter Boitard to Prefect, 2 August 1848, ADML 71 M 1.

[347] "Rapport sur les ardoisières d'Angers," 8 November 1848, 70 J 13.

[348] Note on National Guard office, 1 February 1849, AMA 5 I 139.

"nothing but a monster."[349] Such a rosy portrait could not stave off the cold reality for long. By the end of 1854, a weak harvest and continued recession coupled with the exhaustion of private and public charity works created a situation of too few jobs and too expensive bread that threatened to boil over.[350]

The humid air clung stubbornly to the day's warmth on Saturday night, August 26, 1855.[351] Emerging from cabarets and homes, hundreds of slate miners with empty bellies and fiery eyes gathered silently in the suburbs around Angers.[352] Just about midnight, a group of four policemen on their nightly rounds rounded a corner and came face to face with a mass of forty armed men lurking at the head of a promenade pointing like a dagger straight to the heart of Angers city hall. Startled and unprepared, these would-be rebels quickly faded into the surrounding neighborhoods while the police, doubtlessly confused by this unexpected encounter, rushed back to headquarters to make their report.[353]

Neither side in this brief run-in yet realized that two hours earlier the main assault had broken out. A gendarme, who correctly suspected that the bulky object hidden under a man's blouse was a loaded pistol, had launched the rebellion by

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[349] Logerais, "Les Ardoisières de Trélazé," *L'Union de l'ouest*, 27 March 1852.

[350] Letter Prefect to Mayor of Angers, 23 November 1854, AMA 5 F 2.

[351] "Août,"*Bulletin de la Société industrielle d'Angers et du départment de Maine et Loire* 2, no. 6 (1855), 242.

[352] François Simon, *La Marianne: société secrète au pays d'Anjou* (Angers, France: Imp Angevine, 1978), 81.

[353] Eugène Talbot, *Attentat contre la commune d'Angers: acte d'accusation* (Angers, France: Cosnier et Lachèse, 1856), 8-9.

apprehending Joseph Teneu. Enraged at the arrest of their comrade, a forty-two-year old father and quarry worker, dozens of armed men besieged the small police station where Teneu was being held. The isolated detachment of gendarmes quickly surrendered when a musket ball came crashing through the wall, leaving the rebels to eagerly distribute the stockpile of carbines and sabers stored inside.[354]

Armed and emboldened by this minor victory, the mob moved on to the home of a quarry owner. Finding it empty, they broke in and raided it for guns and gold. The next stop was the mayor's house, where this same scene of looting repeated itself.[355] At the head of the crowd stood two leaders, Jean-Marie Secrétain and François Attibert. Both men were five-foot-seven, in their early thirties, and fathers. Secrétain had strong facial features beneath his brown beard, while Attibert looked out from blue eyes over an aquiline nose; the sun had tanned the skin of both men dark in their long hours spent splitting slate in the local quarries.[356] They announced to the gathered crowd: "We promise then three or four days of pillage; and order reestablished, we will return to our homes." [357]

Still not satiated in their quest, the crowd of miners moved on to the quarry at Hermitage. Breaking the locks to the storehouse, they liberated nearly five hundred pounds of blasting powder and a horse to cart it. Along with these explosives, the men grabbed tools: the hammers, the picks, and the axes their hands

[354] *Ibid.,* 11-12.

[355] *Ibid.,* 12.

[356] Court description, [Late 1855], ADML 70 J 13.

[357] Talbot, *Attentat contre la commune d'Angers,* 5.

swung every day for the profit of their bosses. Now they armed themselves with this grisly assortment of tools-turned-weapons to take that wealth back.[358]

Steering towards Angers, they stopped to see the manager of Hermitage, commandeering his two pistols before moving on. As the group wound through the fields on its way into Angers, with Secrétain and Attibert at the head and the cart of gunpowder in tow, it stopped at the homes of every local notable along its route to requisition firearms in the name of revolution. At this point they were on a mission to pillage the homes and stores of the rich. They raided their homes, one after the other, showing up and demanding weapons and wealth; those who resisted were beaten. All in all, thirteen houses were thus liberated of their arms and gold.[359] Only twice did they have to resort to violence to convince the owners to part with their weapons.

By three in the morning a collection of workers from another suburb joined this group, and together they continued their trail of pillage. Together, they raided two more quarries for blasting powder and weapons before leaving Trélazé. On the edge of town, next to the freshly laid railroad tracks, the men stopped long enough to wait for the last scattered bands of rebels to come in. And to sharpen their hatchets on nearby rocks.[360]

Now measuring up to eight hundred men strong, in the early morning hours these slate miners made the final push into the city. Marching down the main street

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[358] *Ibid.,* 14.

[359] Court description, [Late 1855], ADML 70 J 13.

[360] Thomas-Jules Métivier, *Acte d'accusation contre Cheret, Chotard et autres* (Angers, France: Parquet de la Cour impériale d'Angers, 1855).

into the heart of Angers, chanting "It's our turn to become the masters," the men were surprised to find the French Army, hidden down side streets, march out along the rebel flank with rifles raised and bayonets fixed. In the ensuing chaos, each of the confused miners struggled with the decision to fight, flee, or stand his ground. Ultimately, they opted against violence, and the rebellion was put down by dawn, with hundreds of arrests but without any bloodshed.[361]

These men came from diverse backgrounds, but were largely united in the work they did. The fifty-nine arrested before dawn on August 27, 1855, ranged in age from a juvenile nineteen to a weary fifty-two, with the average being thirty-three. This was not just an expression of youthful rebellion; this was a serious and risky uprising. Of a partial list of twenty-four of the men, all were married and nineteen had at least one child.[362] Another partial list of fifty-three rebels showed that only twelve were single, and that the rest had between one and five children apiece.[363] One-third of the men had been born in Trélazé itself, with most of the rest coming from towns surrounding the slate fields. About one-fifth of the men came from outside of the Maine-et-Loire, but mostly from neighboring departments, especially those with a tradition of slate production. That is because the single

[361] Talbot, *Attentat contre la commune d'Angers,* 15-6.

[362] "Renseignment sur les ouvriers de l'Hermitage detenus par cause de l'affaire du 26 au 27 Août 1855," [1855], ADML 70 J 13.

[363] "État nominatif des ouvriers detenus indiquant la composition et la position de leurs familles," [1855], ADML 70 J 13.

biggest unifying factor for these revolutionaries was that, of the fifty-nine men arrested, fifty-four were quarry workers.[364]

This simple fact led contemporaries and historians alike to question the connection between the quarry workers and this rebellion. The first explanation relies on the high cost of bread that summer. It was reported that the organization, La Marianne, called for "the blood of those who want to make us die of starvation! That is the only cry adopted."[365] And, in fact, most believed that the workers participating in the movement believed their hunger to be the result of speculators in the grain market, and so wanted state controls to lower the cost of living.[366] The Commission des Ardoisières d'Angers itself lent credence to such a view by creating a fund to support poor workers in the immediate aftermath of the revolt.[367] Conservatives were quick to dismiss the validity of these workers' desires for bread and life, seeing them as pawns in the machinations of a conspiratorial organization bent on overthrowing the state. As the chief prosecutor described, "it is very much doubtless that within the commune of Trélazé, amidst the population of mine workers, that the leaders of the insurrection counted on to unite their most imposing forces."[368] Such an explanation has appealed to historians as well,

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[364] Court description, [Late 1855], ADML 70 J 13.

[365] Talbot, *Attentat contre la commune d'Angers.*

[366] Aubert, *Le Temps des conspirations,* 109-11.

[367] Eugène Talbot, *Réquisitoire prononcé par M Eugène Talbot, avocat général: audience du 20 octobre 1855* (Angers, France: Cosnier et Lachèse, 1856), 15.

[368] Talbot, *Attentat contre la commune d'Angers*, 4.

justifying the actions of the rebels by their just desire to feed their families.[369] However, such explanations fail to explain why, if grain prices were high for everyone across France and indeed Europe, the quarry workers were unique in choosing to revolt.[370]

Another explanation put forward has suggested that the decline of the slate industry after 1848 put a particular pinch on these workers, thereby motivating their uprising.[371] However, this cannot explain the timing of the revolt. It is certainly true that production and employment dropped following the Revolution of 1848, but by 1851 these had essentially stabilized. During those two years, the quarries employed about eight hundred *fendeurs* and four hundred workers from below.[372] Production began picking up after this, growing 15 percent over the course of 1852. While the number of *fendeurs* employed stayed the same, fifty more workers from below were hired. The department's engineer even described a "very prosperous situation among the *ardoisières*."[373] Production increased by another 33 percent

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[369] Poperen, *Un Siècle de luttes au pays de l'ardoise*, 49.

[370] MS Anderson, *The Ascendancy of Europe, 1815-1914*, 3rd ed. (Harlow, England: Pearson, 2003), 147. Part of the explanation for why grain riots failed to materialize elsewhere in France has been the success of state intervention in the market to stabilize prices, although it is unclear to what extent this applies to conditions in Angers or whether this particular city faced extenuating circumstances relative to government action: Miller, *Mastering the Market,* 286-90.

[371] Soulez Larivière, *Les Ardoisières d'Angers*, 127.

[372] Aîmé-Etienne Blavier, "Rapport général sur la situation du service des mines dans le département de Maine et Loire pendant l'année 1851," 28 July 1852, ADLA 8 S art. 2.

[373] *Ibid.*

over the course of 1854.[374] As a result of this growth, by the beginning of 1855 another 250 workers from above and one hundred workers from below had been hired.[375] This brought employment back to the pre-recession levels of 1847.[376]

Further evidence of the rebounding job market was reflected in the population of Trélazé. After a peak in 1846 of 3385, the number of inhabitants of the town fell to 3025 in 1851. Presumably, the movement of workers to more hospitable labor markets caused this decline. The number of births also dropped by one-third during this period. Contemporaries accredited some of this to the proximity of the slate fields to the city of Angers, where it was "easy for single mothers to hide a fault."[377] However, as Elinor Accampo has shown, workers frequently used methods of birth control to limit family growth during periods of economic difficulty.[378] Following this brief decline, between 1851 and 1856 the population grew to 3794. This points towards a recovery in the job prospects and, as the quarries were the area's dominant employer, to a recovery in the slate mining market in particular. Evidence of rising aggregate output over this period can be seen in the number of deliveries made, which increased 250 percent between 1850

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[374] Letter Louis Jamin to Montrieux, 17 January 1855, ADML 70 J 13.

[375] "Etat des ouvriers d'en haut et d'en bas," 29 June 1855, ADML 70 J 13.

[376] "Rapport sur les ardoisières d'Angers," 8 November 1848, ADML 70 J 13.

[377] Delalande, "Études statistiques sur la population de la commune de Trélazé," *Bulletin de la Société industrielle d'Angers et du département de Maine et Loire* 3, no. 1 (1860), 43-4.

[378] Elinor Accampo, *Industrialization, Family Life, and Class Relations: Saint Chamond, 1815-1914* (Berkeley, CA: Unniversity of California Press, 1989).

and 1860.[379] In fact, between January 1852 and June 1856, Grands Carreaux alone brought in one million francs of net profit.[380]

Providing more direct evidence of the recovering job market, quarries were rapidly trying to increase their workforce at the beginning of 1855. Hermitage requested fifty more workers.[381] Compared to 1854, in 1855 this site increased the number of employed *fendeurs* by almost 200 percent.[382] The site claimed that it was already producing at maximum capacity and needed these workers to meet consumer demand.[383] Likewise, the owners of La Porée sought an increase of their workforce by twenty men at the end of 1854.[384] By the beginning of 1855, they were actively recalling workers to the quarry.[385] Similarly, Grands Carreaux sought a 10 percent increase in the number of *fendeurs* at the worksite for 1855.[386] Therefore,

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[379] Commission des Ardoisières d'Angers, Statistique générale 1882," [1882], ADML 15 J 300.

[380] Smyers, *Essai sur l'état actuel*, 93.

[381] Letter Hamon to President of the Commission des Ardoisières d'Angers, 29 December 1854, ADML 70 J 13.

[382] Letter Hamon to President of the Commission des Ardoisières d'Angers, 23 December 1859, ADML 70 J 13.

[383] Blandin and Jamin, "Carrière de l'Hermitage," 15 Jan 1855, ADML 70 J 13.

[384] Letter Caillard to President of the Commission des Ardoisières d'Angers, 16 December 1854, ADML 70 J 13.

[385] "Carrière de la Porée," 17 January 1855, ADML 70 J 13.

[386] Letter David to President of the Commission des Ardoisières d'Angers, 26 December 1854, ADML 70 J 13.

attempts to pin the quarrymen's participation in the insurrection on the state of the slate industry are not satisfactory.

Another explanation has been put forth describing the chief animating motives of the rebels to have been not their material concerns, but their republican spirit.[387] Auguste Blanqui contributed to the acceptance of this version by visiting Angers on August 28 to congratulate the miners for their courageous action.[388] The prosecution of the participants also supported this conclusion. During the trial, Attibert declared that the goal of La Marianne had been to form "the democratic and social republic," and to "destroy the municipalities, the clergy, and the nobility."[389] To the prosecutors, the movement thus represented both a political and social protest. On the one hand, they argued that La Marianne "was not, in effect, a question at this moment of a salary increase, or a demand, as alleged, for the decrease of food prices; it was a matter of taking the city of Angers, that they could pillage and ravage; it was authority they wanted to destroy, and the rich fortune they wanted to appropriate for themselves."[390] They were accused of attempting to reverse the existing social order, "to become rich in a day in their turn by usurping the rich," by "lowering the great and ruining the rich…The situation is thus reversed and the roles are changed." To the conservative forces, these workers wanted

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[387] Simon, *La Marianne,* 225-7.

[388] Aubert, *Le Temps des conspirations*, 117.

[389] Thomas-Jules Métivier, *Acte d'accussation contre Secrétain, Attibert, et autres* (Angers, France: Parquet de la Cour impériale d'Angers, 1855), 6.

[390] Talbot, *Attentat contre la commune d'Angers,* 25.

simply "to fight against [society], to reverse it, to change its foundations."[391] This version, whether championed by the left or right for their own reasons, also fails to explain why the quarry workers in particular took up arms on that August night. Even efforts to combine material and political motivations cannot offer a clear explanation for this action.[392]

Although individually unsatisfactory, together the high price of bread, a recent memory of unemployment, and the allure of republican ideas undoubtedly played an important role in provoking the revolts.[393] However, these facts only become concrete with a final piece of the puzzle.[394] In 1854, the mine owners passed a new set of regulations made possible only by their increasing cooperation and control of the industry. In essence, these new rules created a monopsony in the labor market. A worker who chose to leave a worksite without the manager's permission was henceforth to be blacklisted from hire at any affiliated jobsite for three years. Meanwhile, the apportioning of workers to the different quarries was to be decided collectively. Any quarry that wanted to increase its workforce had to

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[391] Talbot, *Réquisitoire,* 10.

[392] Aubert, *Le Temps des conspirations,* 110-11, 211.

[393] Perhaps part of the reason that historians cannot agree on a cause is that the French republican movement itself was fragmented and incoherent coming out of 1848: James Livesey, "Speaking the Nation: Radical Republicans and the Failure of Political Communication in 1848," *French Historical Studies* 20, no. 3 (Summer 1997), 459-80; Peter Amann, "Prelude to Insurrection: The Banquet of the People," *French Historical Studies* 1, no. 4 (Autumn 1960), 436-44.

[394] Jacques-Guy Petit, "Marianne en Anjou: l'insurrection des ardoisiers de Trélazé (26-27 août 1855)," *Annales de Bretagne et des pays de l'Ouest* 104, no. 3 (1997), 187-200.

petition the central authority for more men. If there were not enough trained artisans to go around, the quarries would unilaterally take on more apprentices.[395] Further dehumanizing the proud workers, the managers could now trade workers among themselves, provided that a transfer was replaced by a worker of relatively equal skill and ability.[396] The regulations also implemented a system of fines for transgressions of decorum such as absence, drunkenness, and fighting that, while hardly onerous, would have been seen as an insult.[397]

The most likely explanation of the uprising, therefore, is that the workers, after years of unemployment and wage cuts, were saddled with additional regulations. These undercut the artisans' traditional prerogatives and independence, the loss of which would have been felt only as the industry recovered, which it did in the first half of 1855. Only the unification of the bosses into a single entity could have allowed this, with the implicit approval of a government more interested in crushing republican and working-class organizations than in preventing perceived monopoly and hoarding. Furthermore, many of the government officials most responsible for the repression of the workers were themselves mine owners. The political, social, and material interests were thus intertwined when, over the summer of 1855, rising grain prices provided the immediate catalyst for rebellion. Only by emphasizing each of these factors can we

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[395] Jamin and Blandin, "Réglementation des ouvriers," 15 April 1854, ADML 70 J 13.

[396] "Modification au traité du 14 avril 1854 cencernant les ouvriers des carrières en commission," 27 November 1857, ADML 70 J 13.

[397] "Amendes imposées aux ouvriers en avril 1856," 9 May 1856, ADML 70 J 13.

explain why the quarry workers dominated the revolt, why it occurred in the summer of 1855, and why they targeted politicians alongside quarry owners.

Regardless of the causes, the government response was swift: three of the accused (including Attibert and Secrétain) were deported to the Devil's Island penal colony, another fifteen deported to Algeria, and another around 250 subjected to imprisonment or fines. Only twenty-three were acquitted of their crimes.[398] To prevent further unrest, the prefect ordered the quarry owners to pay a five-thousand-franc annual fee in order to establish a special police commission in Trélazé to maintain order.[399] Although unhappy about the fee, the quarry owners did confess that "this population of workers within which live [illegible] militant customs and traditions, accepts and respects with much more reverence [the gendarmes] than those of the police properly said," because they were more heavily armed. The owners also bolstered their education efforts in order to "shield workers from the invasion of bad doctrines." In order to keep the workers away from the bad influence of the cabarets, they started offering quality wine at cost at the quarries themselves. They used a system of fines "to reestablish in this population healthy customs of order, discipline, and hierarchy." In total, the capitalists felt acutely the burden of their responsibility, but readily made "the most expensive sacrifices caused by the intimate and permanent struggle provoked by the introduction of the

[398] Lebrun, Mallet, and Chassagne, *Histoire d'Angers*, 246.

[399] Letter Prefect to President of the Commission des Ardoisières d'Angers, 10 March 1857, ADML 70 J 13.

customs of order and discipline into the environment of workers traditionally hostile to all regulated obedience."[400]

[400] Letter Commission des Ardoisières d'Angers to Prefect, 6 August 1858, ADML 70 J 13.

CHAPTER IV

INTERLUDE: THE FLOOD OF 1856

On June 5, 1856, the mercury plummeted to an unseasonable chill, while a strong northeastern wind blew a sudden storm over the slate fields of Angers.[401] As a heavy rain fell, the region's residents went calmly about their normal Thursday routines. In and around the quarries men continued dragging slate out of the earth and dressing it for sale. According to lore, a French zouave freshly home from the Crimean War, perhaps still wearing his baggy bright red pants, knocked on his aging parents' door to announce his safe return. As the long-separated family embraced, the drops of their joyous tears likely blending in unobtrusively with the thick rain splatters soaking the soldier's dark blue coat, a roar grew louder and louder. Suddenly, a wall of water smashed into the side of their home and shattered it, dragging the hapless family down the raging Loire and out to a watery grave in the Atlantic.[402]

For days, the telegraph hammers had been jumping in a rhythmic code of soft metallic clicks, warning the town of impending catastrophe. Heavy rainfall high up the Loire had persisted for most of May, culminating in a major tempest on the 26 and 27 of that month. As the water collected in the riverbed, the mighty Loire quickly swelled and spilled over the confines of its banks. Moving even faster than the river, a stream of telegrams notified the towns downriver as the flood hit Orléans, Tours, and Saumur in sequence; they also carried news that the flood was

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[401] "Juin,"*Bulletin de la Société industrielle d'Angers et du département de Maine et Loire* 2, no. 7 (1856), 192.

[402] Octave Féré, *Les Inondations de 1856* (Paris: Boisgard, 1856), 77.

growing as it went.[403] By the time the flood hit Saumur, it was almost thirty-five feet above its normal flow. It was so bad that the Cadré Noir, the pride of the French cavalry, had to flee with their prized stallions.[404]

When the great flood finally reached Trélazé on September 5, water poured down from the sky and rose up from the low-lying plains. Seeking refuge from this onslaught, people fled to any high ground they could find. For many this was the second floor or roof of their homes; for over two thousand this meant the black snaking ridges of detritus ringing the quarries. As the waters "roared like the most formidable tiger," the workers and their families clustered atop the makeshift atolls let out a "lugubrious and hopeless whistle," the two sounds mixing into the hellish cacophony trumpeting the scale of the disaster. As a finale, "the ground swayed like an earthquake when the torrent rushed into the [quarries] with a sort of furious joy."[405]

The sound of so much water cascading over the sides of the quarries and down, down, down to the bottom of the pits hundreds of feet below could be heard from over the horizon, as people in distant towns stopped to listen to "the torrent roar." The workers watching their livelihood demolished saw a "layer of water, leaping on the rough lumps of rock, resembling an immense trail of dust and froth. Muffled noises [and] cracking [from] the interior mixed with the rolling of the waterfall: the earth trembled beneath [their] feet." Suddenly the shocked witnesses

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[403] AMA 3 O 8.

[404] Féré, *Les Inondations de 1856*, 40.

[405] *Ibid.,* 76-9.

of nature's fury heard a loud cracking noise as whole walls of the quarries splintered, and "within a few moments a perpendicular crevasse opened the rock from bottom to top," loosing a sixty-foot block of stone into the churning morass. "Everyone was mute with astonishment."[406]

As the river slowly receded to its normal course, a week of clear skies cast a bright light on the damage. Five of the quarries had been completely flooded, with only three others escaping this devastation. This left 1500 men out of work. With the frightening of La Marianne still fresh in their minds, mine owners worried this mass of men would either rise up or leave in search of work. To prevent the former, mine owners quickly compiled lists of their unemployed workers and the number of their children.[407] From this impromptu census, mine owners assessed need and began distributing bread to stave of the revolutionary side effects of starvation. Usually this only amounted to a pound or two per family, but in some cases they were more generous, delivering five or so pounds of bread to the neediest.[408] All told, about two-thirds of the quarrymen received such aid.[409]

To address their second concern, that of a vanishing workforce, the mine owners called on the government to build a massive levee to the southeast of town.

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[406] *Ibid.,* 74-5.

[407] "Dossier des listes des ouvriers d'en bas appartenant aux carrières submergées qui se trouvent employés sur les carrières en activité au 22 août 1856," [August 1856], ADML 70 J 14.

[408] "État du pain délivré gratuitement aux ouvriers de la carrière des Grands-Carreaux en juin 1856," [July 1856], ADML 70 J 14.

[409] "État nominatif des ouvriers de la carrière des Grands Carreaux actuellement sur travail," [Summer 1856], ADML 70 J 14.

Doing so would protect the town and, by extension, its quarries from future floods, but it would also provide a massive public works project to keep the men employed and in the area. Pitching the idea, the entrepreneurs announced: "the work that it will be possible to give them when we construct the Trélazé dyke will have thus, from a double point of view, a happy result."[410] Incidentally, it would also open up a marshy area to potentially lucrative slate exploitation.

The mine owners called for "absolute devotion" in finishing what they were now calling *Levée Napoléon*. They even offered to pay maintenance costs on the project if the state funded the construction.[411] The national government of Napoleon III played a large role in supporting the project, perhaps motivated by memories of La Marianne. Writing to thank their patron, the Trélazé city council promised "to remember the concerned benevolence and generosity that [he] demonstrated during the disaster occasioned by the flood."[412] By May 1858, less than two years after the flood had ravaged the community, the project was finished.[413] Napoleon III himself came to the inauguration, to the wild enthusiasm of the inhabitants of the slate fields. Even today, over 150 years later, monuments around the town still mark his visit as a high-water mark in its history.

In the first half of the nineteenth century, class relations here had remained contentious and fluid. For their part, the quarrymen had sought to retain the

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[410] Letter [From Commission des Ardoisières d'Angers] to Prefect, 25 June 1856, ADML 70 J 14.

[411] Trélazé City Council, "Réunion de 4 juin 1857," 4 June 1857, MAT.

[412] Trélazé City Council, "Réunion de 21 janvier 1858," 21 January 1858, MAT.

[413] "Digue Napoléon, question de l'entretien," 26 May 1858.

traditional independence and control over their work that they had enjoyed since at least the eighteenth century. The entrepreneurs, meanwhile, only a nascent force a half-century earlier, had risen into a new economic and social space created by the erection of a capitalist legal and market system. Up until this point, the government had vacillated in its dual responsibilities to the promotion of private enterprise versus the promotion of public welfare. In the aftermath of La Marianne, however, with the working class decapitated and dispirited, the mine owners and politicians alike recognized the proper order. As revealed in their reaction to the Flood of 1856, both now agreed to support one another for the advancement of business and the patronal oversight of their workers. It would be another generation before anyone challenged this version of the capitalist order.

CHAPTER V

THE TRANSITION TO MINING AND THE CRYSTALLIZATION OF CLASS, 1856-1890

> The ardoisières, that's the jewel, messieurs, in the crown of Angevine industry.
>
> —A Bouchard, 1896[414]

Blessed with rich veins of high-quality slate, residents of this region in the department of the Maine-et-Loire have harvested the material for construction since at least the thirteenth century. However, water necessitated the concentration of production in two ways. First, the interaction of water and slate causes the iron content to rust, fusing the fine lateral grains of the stone and ruining its use for roofing. As a result, miners must dig down dozens of meters below the earth's surface just to reach the top of the workable slate. This required from an early time that slate production be organized on a large scale. Second, because Angers is located in a lush river valley, even in the best of times the region had to cope with an excessive water supply. In the worst of times, floods blanketed the valley floor and turned quarries into lakes. In order to keep their quarries dry, mine owners had to employ massive pumps, which necessitated the kind of heavy capital investment that can only come from concentration of ownership and management of the market.[415]

Perhaps, given the natural demands for industrial concentration and the size

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[414] Bouchard, "Éloge funèbre de MA Blavier," *Bulletin de la Société industrielle et agricole d'Angers et du département de Maine et Loire* 4, no. 6 (1897), 9.

[415] Aîmé-Etienne Blavier, "Note relative à l'influence des crues de la Loire sur le basin des ardoisières d'Angers," *Bulletin de la Société industrielle et agricole d'Angers et du department de Maine-et-Loire* 3, no. 20 (1879): 9-14.

of the regional market, the slate industry of Angers would have remained but a craft industry, "as it still is [in 1837] in some localities in old Brittany, [where the tiles] have neither determined form nor thickness," and small groups of men dig in their backyards during their spare time to earn a bit of extra cash. But the water that made small-scale and independent production impossible in Angers also connected the town to the outside world. Angers lies at the intersection of two major rivers: the Loire, stretching far into eastern France, and the Maine, which reaches north deep into Normandy. The slate fields of Angers thus benefitted from being a "neighbor to three grand rivers and to a *fleuve* that has the advantage of communicating with one of the most frequented ports of the Ocean."[416] With access to this cheap source of transportation, the slate industry was able to access a large enough market to justify its firm size.[417]

With this transportation source so crucial to the industry's survival, owners campaigned hard for the further development of river and canal transport.[418] By the

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[416] A Gautier, *Rapport sur la concession des ardoisières de l'arrondissement d'Angers* (Angers, France: Ernest Le Sourd, 1837), 2.

[417] By means of contrast, the slate industries in Wales and New York lacked access to reliable means of transportation and, as a result, did not transfer to industrial-scale production until the arrival of rail transportation: Jean Lindsay, *A History of the North Wales Slate Industry* (London: David & Charles, 1974), 88-151; Gwilym R Roberts, *New Lives in the Valley: Slate Quarries in North Wales, New York, and Vermont, 1850-1920* (Portland, Maine: Maine Printing Company, 2011), 1-15.

[418] Debates over public good and private property were frequently connected to the increasing frequency of aquatic public works in the nineteenth century, but was generally dominated by local government, which was itself most susceptible to pressure from local interest groups: Alice Ingold, "To Historicize or Naturalize nature: Hydraulic Communities and Administrative States in Nineteenth-Century Europe," *French Historical Studies* 32, no. 3 (Summer 2009), 385-417.

thirteenth century, Angers slate was being shipped by river and canal to Paris.[419] But, remarked one commentator, "it was only later, by the improvement of the roads and waterways that…our [industry] grew to gigantic proportions."[420] In 1790, the commercial interests of Angers were solicited in an attempt to justify building a canal network to cut a channel clear across the Breton peninsula.[421] In 1838, the mine owners of Angers began a multi-decade push to construct a canal linking the Maine and Loire rivers by digging a channel directly beside the series of slate quarries. Believing that loading the finished tiles directly onto boats at the work site, rather than carting them to the nearest dock first, would lower transportation costs and double production, the mine owners enthusiastically backed an ambitious plan to build the ten-mile project. This plan called for the canal to be carried by bridge for 175 feet across a river in one place, and for it to pass two full miles as an underground tunnel in another.[422] Understandably, considering the enormous costs and engineering difficulties such a project would entail, government engineers rejected such a project, as did even the Angers Chamber of Commerce, in which the

[419] Note by F Soulez-Lariviere, ADML 70 J 25.

[420] Miyonnet-Dupuy, *Mémoire sur la position critique*, 4.

[421] De la Grezillonnaye et al., *Addresse du d'épartement de l'Isle et Vilaine à l'Assemblée nationale pour demander la continuation de la navigation intérieure, et une somme de 679,044 liv. 10 sols 8 den., pour mettre à perfection les travaux de Redon à Rennes* (Rennes, France: J Robiquet, 1791).

[422] Victor Houyau, *Mémoire pour server à l'étude du canal de junction de la Loire à la Maine* (Angers, France: Imp de Ernest le Sourd, 1838).

slate industry was a powerful faction.[423] Refusing to give up the potential benefits of such a canal, the slate industry continued to push for it as the best option to provide clean drinking water for the city's fountains, offering to pay the largest share of the expenses itself.[424] While nothing became of this plan, as late as 1852 the industry sent its chief engineer along with the author of this earlier proposal to Britain to conduct research in hopes of convincing Angers of such a canal's feasibility for supplying the city's water needs.[425] Some entrepreneurs were so desperate to access the river that they resorted to litigation over property rights with the sole intention of connecting their worksites to the rivers by canal, arguing that it would "extremely diminish the cost of transport, and avoid above all the breakage" of the tiles caused by overland transportation.[426]

Further schemes were hatched, such as building an extraordinarily expensive two-hundred-mile-long canal alongside the Loire River. This was offered as a way to guarantee more regular transportation for the region's industries, especially

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[423] Extract from Chambre consultative de la ville d'Angers, séance du 6 mars 1842, ADML 70 J 25.

[424] Victor Houyau, *Réponse aux objections présentées par la Commission des fontaines publiques d'Angers sur les avantages que présenterait le canal de jonction de la Loire à la Maine, et sur la possibilité d'alimenter les fontaines avec l'eau de la Loire que ce canal amènerait sous nos murs; avec une note sur l'avantage que la ville aurait à s'en tenir aux caux de la Maine dans le cas où le canal ne serait pas executé* (Angers, France: Imp de Ernest le Sourd, 1838).

[425] Victor Houyau and Aîmé-Etienne Blavier, *Rapport addressé à M le Maire d'Angers sur le résultat du voyage entrepris par eux, au mois de juin 1852, pour l'étude des principals questions relatives à la distribution des eaux dans plusieurs villes d'Angelterre et d'Écosse* (Angers, France: Imp de Cosneir et Lachèse, 1852).

[426] Hubert, Guillon, and Fort, *Mémoire pour les intéressés*, 20.

slate.[427] Proposals continued to pour in for canal projects and, while they must be contextualized as especially unrealistic plans at a time when the largest capital investments were tied up in public-private canal-building partnerships, the fact that they all referenced their potential benefits specifically to the slate industry reveals that this industry was uniquely dependent on its ability to move its product cheaply and efficiently.[428]

For all of their benefits, canals also presented a number of problems for the slate industry. First and foremost, river transport is limited by the natural geography. Thus, shipments like that of an 1812 order of over six hundred thousand tiles had to pass through several stages of transport. First, the tiles had to be loaded into carts at the mines and wheeled overland to the Angers docks, regardless of whether the paths were baked to dust by the summer sun or a muddy morass in the winter rains.[429] Along the docks in Angers the tiles were transferred into boats, which after just a few miles drifting down the Maine, joined the mighty Loire. From there a quick half-day trip followed along the current down to Nantes. However, this 1812 shipment had to fight its way upriver to Tours, a two-day slog.[430] The tiles were then unloaded and placed back in carts, rolled up to Orléans, then to Paris, and finally to their destination in Rouen. Naturally, such transport was slow, expensive,

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[427] Jay de Rosdy, *À MM les membres des conseils d'arrondissements et de départements* (Paris: Imp Béthune et Plön, 1837 or 1838?).

[428] Freedeman, *Joint-Stock Enterprise in France,* 28-29.

[429] Hubert, Guillon, and Fort, *Mémoire pour les intéressés*, 20.

[430] Trollope and Trollope, *A Summer in Western,* 88.

and damaged much of the fragile product.[431] Furthermore, the Loire was only seasonably navigable: "In the wet season it must present a body of water of imposing extent; but in the summer the constantly recurring sandbanks…divide the shallow water into so many currents."[432] River and canal shipping was also dependent on the winds and required expensive dredging to keep the lanes open.[433]

Despite these drawbacks, water transport, where feasible, remained the preferred method of reaching French markets. With access to the river, quarry owners claimed, "their products [were] easily transported along the banks of the greatest rivers, where they embark for Paris and the interior of France, or Nantes and the principal ports of Europe and America."[434] By 1802, most houses along the Loire were roofed black with Angevin slate, and the industry was doing "a considerable commerce with Paris, Nantes, Rouen, Bordeaux, and other cities."[435] By 1834, the industry was sending slate up the Loire to Paris and Lyon and down the Loire to Nantes, where it took to sea to reach markets in Normandy, Provence,

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[431] Letter to M Charles Clément, 10 March 1812, ADML 70 J 25.

[432] Trollope and Trollope, *A Summer in Western France*, 93.

[433] Henry Ducoudray-Bourgault, *Curage de la Loire* (Nantes, France: Imp de Forest, 1829?); Cormier, *Rapport fait à M Bérard, conseiller d'état et directeur general des ponts-et-chausées, sur les obstacles qu'éprouve la navigation dans la Loire entre Orléans et Nantes; sur les ouvrages propres à les détruire; sur les resources pécunniaires à l'aide desquelles ces ouvrages peuvent être executés sans qu'il soit besoin de recourir à des compagnies* (Paris: Imp de H Fournier, 1830).

[434] "Carrières à ardoises," *Annuaire Statistique de Maine et Loire pour l'année 1832* (Angers, France: Imp de Ernest le Sourd, 1832), 151.

[435] Joseph-Étienne Renou, "Notice pour servir à la statistique du département de Maine-et-Loire," 1802, AMA 1 J 2375, 32.

Britain, and the colonies.[436] Business had picked up enough to warrant the establishment of depots for Angers slate in Paris, Amiens, Arras, Lille, and Dunkirk and a warehouse in Nantes. However, the firms did face a hard time selling their black stone in the decidedly sunnier markets of Lyon and North Africa.[437] By this time, while foreign exports were only of "mediocre importance," each year about fifteen million tiles stayed in the departments of the Maine-et-Loire, Sarthe, and Mayenne, thirty million tiles were shipped up the Loire to inland markets, and thirty-five million tiles were sent to Nantes and sea ports beyond.[438] Even in the late 1850s, a series of agents sent by the slate companies throughout the northern half of France made extensive notes on the potential of river and canal transport to break into new markets. Despite the fact that shipping added 30 to 50 percent to the sale price of slate depending on the season, took two to three months in rivers, canals, and the sea to complete, and often broke a large percentage of the merchandise en route, it was still half as expensive as overland transport.[439] In fact, as late as 1889, the presence of reliable river transport could afford Angers slate an insurmountable

[436] "Carrières à ardoises," *Annuaire Statistique de Maine et Loire pour l'année 1832* (Angers, France: Imp de Ernest le Sourd, 1832), 151.

[437] Tribunal de commerce d'Angers, *Tessier-Menuau contre les carrières de Monthibert, 9 juillet 1841* (Angers, France: Imp de Launay-Gagnot), 3.

[438] "Carrières à ardoises," *Annuaire Statistique de Maine et Loire pour l'année 1834* (Angers, France: Imp de Ernest le Sourd, 1834), 179-80.

[439] "Rapport de M Boudron sur son voyage dans le nord dans l'interêt des ardoisières d'Angers," 1854-55?, ADML 70 J 25.

competitive advantage over its more landlocked French competitors.[440]

The first railroad reached Angers in 1849, linking it directly to Paris and the Atlantic, but it was only in the late 1850s that this connection was secured.[441] With its agents combing the north of France for new outlets, the slate industry of Angers began coming into competition with other producers. All along the Normandy coast they encountered Welsh slate in cities like Dunkirk and Calais. Since the end of the Napoleonic period, the locals here preferred this material for its durability. And, given the relatively low cost of cross-channel shipping, Welsh slate was able to compete effectively against thinner slate tiles from the Ardennes. The costs of sending British slate further inland and the risk of breakage, however, erased this advantage by the time it reached landlocked cities like Lille. Still, despite costing up to 50 percent more per square meter, many builders continued to prefer imported slate, especially government engineers in places like Arras. A mix of nationalism and reputation led many merchants to promise Angers their slate business, but only provided that it could be produced as thick as the Welsh slate.[442]

Further inland, these agents typically encountered competition from the Ardennes producers at Rimogne, with six hundred workers churning out thirty-four million tiles in 1854, and at Fumay, with an output of forty million tiles that same year. But while changing transportation technologies promised to give Angers access to new markets, these technologies also threatened to bring it into conflict

[440] Lariviere to Administrators of the Commission des ardoisières d'Angers, 27 September 1889, ADML 70 J 25.

[441] Marais, *Le Maine-et-Loire,* 31.

[442] Rapport de M Boudron.

with competitors not facing similar geographical constraints. Perhaps in anticipation of this, the quarries at Fumay, to which the Meuse River granted access to Belgian and Dutch slate markets, shifted their focus to domestic consumers by leveling a broadside of pamphlets against the Angers quarries.[443] Expressing their intention with these brochures more clearly in 1858, the Ardennes quarries from Rimogne trumpeted that "the new means of communication, that open on all sides, and notably the Railroad of the Ardennes that will be inaugurated shortly, as well as the Aisne canal on the Marne whose completion is actively pursued, are going to finally permit the slate of the Ardennes to penetrate the mass of localities where it is absolutely unknown." To do this, they had to prove their superiority to Angers.[444] However, a year later, reports from the Ardennes firms confess that, of their thirty-six to forty million tiles produced that year, almost all of it was destined for Belgium, where they had to contend with protectionist policies intended to shelter Belgian slate producers from the French. Within France, Fumay only shipped slate to four major departments, with theoretical or partial access to nine others.[445]

Another major regional competitor was the industry at Chateaulin, with a more modest 250 workers producing five to six million tiles.[446] By contrast, in 1853

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[443] *Notice sur le prix et l'avantage que présentent sous le rapport de la durée les couvertures en ardoises de Fumay de préférence à celles d'Angers* (Amiens, France: Caron et Lambert, [c. 1850]).

[444] A Moreaux, "Aux ardoisières de Rimogne," 4 July 1858, ADML 1 F1 232.

[445] Société anonyme de l'ardoisière du Moulin Sainte Anne, à Fumay, "Directions des bâtiments civils," [1859], ADML 1 F1 232.

[446] Ibid.

the Angers quarries employed over 2500 workers and produced 135 million tiles.[447] The result of this larger size was a reduction in price slightly below what the smaller producers could match, partially due to lower wages. This allowed Angers slate to cement its hold over the market in the larger cities, such as Le Havre and Rouen.[448]

If the Angers slate companies found themselves competing against the British in Normandy and the Ardennais in the North, in Brittany the market was very different. Here, the agents reported, each area met its slate needs through local producers. By 1859, the railroad made access to the regional capital in Rennes simple, and Angers slate quickly cornered the market. But with limited connections to the surrounding countryside, expensive road transportation and local pride at first represented serious obstacles to further market expansion.[449] Wherever they went, these agents discovered Breton slate sold in a unique assortment of sizes; some places did not even bother with standardized sizes, cutting each tile to whatever size and shape seemed right.[450] For the massive and centralized industry in Angers, such piecemeal production by self-directed teams of six to ten men was reprehensible, a situation begging to be rectified by something "more rational."[451] In fact, the disparity between the industrial production of Angers and the regionalized competition was so great that each locality desperately sought capital to expand its

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[447] Soulez Larivière, *Les Ardoisières d'Angers*, 133.

[448] Rapport de M Boudron.

[449] "Rapport sur le voyage de M Tison de Rennes à Bretagne," 1859, ADML 70 J 25.

[450] "Voyage de Barazer," 1857, ADML 70 J 25.

[451] "Voyages de M Barazer du 7 avril au [illegible] 1856," ADML 70 J 25.

production, with one distant village even going so far as to ask the slate industry of Angers to annex them.[452] Perhaps the intentions of the Angers businesses can be made most clear by observing the fact that, in 1860, they sent an agent across the north of France, from the English Channel to the Swiss border, to survey all 73 slate merchants in 44 cities and to develop details of how to take over their business.[453]

If that report can be seen as the blueprint for an economic assault on their competitors in the slate industry, the railroad was to serve as the Angers mine owners' secret weapon. As enthusiastic as the industry was in the 1830s and 1840s about the potential of canal projects to ease transport costs, they were thrilled in the 1850s about the incipient railroad revolution.[454] By 1842, the Industrial and Agricultural Society of Angers was pressing the departmental prefecture to steer any proposed line towards that city in order to benefit local producers.[455] As with the canals, many entrepreneurs and bureaucrats proposed new lines and networks, always appealing first and foremost to the shipping needs of major industries like

[452] "Voyages de M Lanette," 1857, ADML 70 J 25.

[453] "Rapports de M Mariel-Coquereau," 1860, ADML 70 J 25.

[454] Access to railroads often proved the battleground for fierce political conflicts in France, as those industries deprived of access ultimately faced decline and extinction in favor of better-connected competitors: Johnson, *The Life and Death of Industrial Languedoc,* 176-96.

[455] Guillory aîné, "Lettre à M. le Préfét de Maine et Loire, sur deux chemins de fer projétés de Paris à Nantes, écrite au nom de la société par son président," *Bulletin de la société industrielle d'Angers et du département de Maine et Loire* 1, no. 13 (1842): 364-8.

the slate mines of Angers.[456] As with the canals, some proposals simply seemed unrealistic, such as one designed to reroute the railroad through the slate fields at the extra expense of six million francs, including a one-mile underground tunnel.[457] It is clear that the commercial interests of major industries, especially slate, received top priority in choosing what direction lines would take. For example, the ability of the companies to reach into the untapped Breton markets was behind the decision to adjust a northbound route out of Angers, and when the prefect had to determine the best way forward, representatives of the slate industry were specifically invited to participate in the decision to ensure that it would best meet the needs of their business.[458] By 1883, the quarries had access to two specially constructed train stations whose primary purpose was to move slate from Angers to the rest of France.[459]

The economic results of improved access to transportation were astounding. In 1841, the slate industry was shipping over fourteen million tons per year by

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[456] La Commission centrale du Mans, *Mémoire sur la veritable direction à donner au Chemin de fer de l'Ouest par Versailles, Chartres, le Mans, Angers, et Nantes* (Le Mans, France: Imp de Monnoyer, 1842), 5-7.

[457] "Variante du projet pour le passage de la ligne principale par Angers," 1838, AMA 2 O 154.

[458] Général Rogé et al., *Note supplementaire au mémoire soumis au conseil d'état par les delegations de Nantes et d'Angers au sujet de l'interdiction de la concession du Chemin de fer du Mans à Angers* (Paris: Imp de Cuiraudet et Jouaust, 1853); Vallory to M le Président de la Commission des ardoisières d'Angers, 10 July 1856, ADML 70 J 25.

[459] Pierre Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

cart.[460] By 1868 this figure had dropped to twelve million tons.[461] By 1888, it was down to one million.[462] At the beginning of the 1850s, the miners delivered 105 million tons of slate to fifteen departments, almost all of them in adjacent to the Maine-et-Loire or easily accessible by river and sea.[463] In 1868, they were delivering 170 million tons to seventy departments, with the railroad carrying over two-thirds of this.[464] By 1897, the slate fields of Angers were shipping almost 4.5 million tons per year to Britain alone.[465] So thorough was this revolution that, in 1888, one quarry owner proudly announced that his products are "today delivered through all of France, thanks to the railroads."[466] Advancements in transportation thus allowed the Angers slate companies, which had already centralized and capitalized their production processes, to effectively compete in new roofing markets throughout France as cities deep in the interior of France made the switch from traditional local roofing material to the rich black look of mass-produced Angevin slate.[467]

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[460] "Mouvement des marchandises par le roulage, l'année 1841," ADML 70 J 6.

[461] "Résumé du travail de statistique pour l'année 1868," ADML 70 J 25.

[462] Transports from Angers by water and land, 1888, ADML 70 J 25.

[463] "Division par zones de vente de toutes les livraisons faites en 1850," ADML 70 J 25; "Division par zones de vente de toutes les livraisons faites en 1851," ADML 70 J 25.

[464] "Résumé du travail."

[465] "Livraisons de 1897 en Angleterre," [1897], ADML 15 J 300.

[466] Blavier, *Note sur la résistance*, 4.

[467] Merriman, *The Red City*, 89.

Immigration and Class Relations

Beyond the immediate profit motives of the businesses, the railroad also represented new approaches to broader employer concerns. Following the Revolution of 1848, the Angers slate industry began to experience a downturn. As finished tiles piled up in their warehouses, the owners began laying off workers by the hundreds in an effort to cut costs and relieve their backlog. Having a mass of unemployed workers is socially dangerous in the best of times; having a mass of unemployed workers amidst famine and the spread of revolutionary republican ideals is inviting catastrophe. The construction of the railroads had long been touted as a way to provide temporary employment in the locality.[468] As the unemployed slate miners became restless, the mine owners appealed to the state to hire them as general laborers to construct the new railways.[469] It seems that, beginning in 1848, many were able to find relief through this early experiment in countercyclical spending, albeit at half wages.[470] Such efforts at amelioration were ultimately unsuccessful, however, and on August 26, 1855, nearly eight hundred miners marched on Angers carrying picks and dynamite in an abortive attempt to overthrow the new government known as La Marianne.[471]

Given the economic difficulties of the early 1850s, one can assume that workers initially welcomed the arrival of the railroad. If it both offered backup

[468] Gucqueau-Galbrun to M le Maire d'Angers, 15 October 1838, AMA 2 O 154.

[469] Soulez Larivière, *Les Ardoisières d'Angers*, 126-7.

[470] M Bordillon to Mayor of Angers, 10 October 1848; M Biolay to Mayor of Angers, 10 November 1848, AMA 2 O 158.

[471] Simon, *La Marianne.*

employment in the short term and an expanded market and production in the long term, it might have truly benefited the workers. However, as noted earlier, neither event came fast enough to put off the starvation behind the 1855 revolt.

The conquest of the Breton slate market ultimately had unintended consequences for the miners. As the dozens of miniscule local mines scattered throughout Brittany gave way to the economic might of the Angers complex, hundreds of Breton slate miners suddenly found themselves unemployed and no longer able to support themselves by working their own land. Then, in 1859, the mine owners began using the rail lines to send a new type of agent deep into the depressed corners of the region. They promised the migrants high, steady wages, work for all boys eleven or older, and even housing for the men and their families.[472] Giving free, one-way train tickets to the miners and their families as a final incentive, the entrepreneurs convinced increasing numbers of Bretons to quit their homeland and seek success in the slate fields of Angers.[473] The quarry owners had used this tactic before to depress wages after the 1819 strike wave.[474] But this time, perhaps due to the rapid effects of the railroad, the migration proceeded at a breakneck pace. The campaign picked up even more speed amidst increasing labor unrest in the 1880s. By this time, Bretons comprised over 10 percent of the quarry

[472] Pascal Houdemont, "L'Immigration aux ardoisières de Trélazé: un exemple aatypique dans l'histoire minière française (fin XIXe-milieu du XXe siècle," *Annales de Bretagne et des Pays de l'Ouest* 109, no. 4 (2002), 127.

[473] Catherine Fauchet and Nathalie Hughues, "Une Ville noire, terre de migrations bretonnes: Trélazé, 1850-1914," *Annales de Bretagne et des pays de l'Ouest* 104, no. 3 (1997), 201-11.

[474] Lebrun, Mallet, and Chassagne, *Histoire d'Angers*, 202.

workforce. By 1908, they made up 50 percent.[475]

The Bretons "arrived with their hats and their wooden clogs, [and were] welcomed at the Angers train station by employees of the ardoisières."[476] Typically the men would come first and settle in before sending for the rest of their families. Instead of the paradise they expected, within Trélazéen city life they were sorely disappointed. The company housing promised to the Bretons to lure them into the city was woefully inadequate, and it took decades of protest for the companies, the government, and private charity to provide funding to bring it up to a reasonable living standard. [477] Furthermore, people from the remote stretches of Brittany still clung to their traditional, Gallic patois. As one miner remembered later, "my two Breton grandmothers were illiterate and didn't speak one word of French."[478] Yet the immigrants persevered in their cultural traditions. Mining executives eager for these workers to settle brought in Breton doctors and priests, erected Breton churches, and allowed Breton holidays to be celebrated. Eventually, these immigrants were fully incorporated into local life.[479]

The story in the quarries was essentially the same. The Bretons had been brought in specifically to undercut the wages of the native miners and prevent future unrest, and so were used as low-skilled and low-wage labor. As a testament

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[475] Houdemont, "L'Immigration aux ardoisières de Trélazé, 125-7.

[476] APTIRA, *Mémoire de migrations*, 37.

[477] Goacolou and Faës, *Paroles d'ardoisier*, 33-5, 40.

[478] APTIRA, *Mémoire de migrations*, 130.

[479] Fauchet and Hughues, "Une Ville noire, terre de migrations bretonnes," 210-1.

to the bonds of unity forged in the dangerous and painful work of the mines, however, there appears to have been no real opposition or tension between the native workers and these recent invaders; both worked peaceably side by side day after day.[480]

Mining Technology

As the early proponents of incorporation had predicted, the unity of the *ardoisières* allowed for the pooling of resources and investment in new mining techniques that opened up new avenues of extraction and contributed to the flourishing of the industry. Given the excess of water confronting the slate quarries around Angers, it was natural that the first target of the newly amalgamated firms would be water removal. Where the ability of hand-powered machines to pump water reached its maximum depth at fifty to sixty vertical feet, and horse-powered machines could reach down to a maximum depth of 270 feet, steam technology offered almost unlimited power and thus almost unlimited quarry depth while costing one-third less to operate.[481]

Angevin coal miners were using steam pumps by the end of the eighteenth

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[480] *Ibid.,* 211. Such outcomes have been uncommon in mining communities, where ethnicity frequently creates divisions and tensions among miners: Leen Beyers, "Everyone Black? Ethnic, Class, and Gender Identities at the Street Level in a Belgian Mining Town, 1930-1950," in *Towards a Comparative History of Coalfield Societies,* ed. Stefan Berger, Andy Croll, and Norman LaPorte (Burlington, VT: Ashgate, 2005), 146-63; Stephen Catterall and Keith Gildart, "Outsiders: Trade Union Responses to Polish and Italian Coalminers in Two British Coalfields, 1945-54," in *Towards a Comparative History*, 164-76); Brian McCool, "The Struggle for Polish Autonomy and the Question of Integration in the Ruhr and Northeastern Pennsylvania, 1880-1914, in *Towards a Comparative History*, 177-90.

[481] Fleury, "Rapport général sur la situation des ardoisières d'Angers," 15 October 1849, ADML 70 J 5, transcribed by Furcy Soulez Larivière.

century to go deeper into the earth, having adopted the technology from Belgian collieries.[482] And, by at least 1798, the slate quarries in Tournai were using five steam machines to drain their pits each spring.[483] But it wasn't until 1826 that the first steam engines were introduced to the Angers slate quarries, when a specially constructed machine was imported from Paris to a quarry in Avrillé. However, this initial essay was disappointing, being out of commission more often than not, and requiring a series of engineers and expensive materials to keep it running at all. Despite these drawbacks, the entrepreneurs were ecstatic about what they saw as the future of their industry.[484]

The next major attempt at steam power was made at Grands Carreaux in 1835. The year before, a flood had turned several once-bustling quarries into now-placid ponds where the scarred landscape reflected itself in the smooth waters.[485] In response, the entrepreneurs imported two powerful steam machines outfitted to drain the site, which they quickly did.[486] Soon, a series of eight- and twenty-five-horsepower engines were driving pistons up and down with a quick, steady chug to

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[482] Phillippe Cayla, "Aspects de la technologie minière en Anjou: cadre géologique, modalités d'exploitation," *Annales de Bretagne et des pays de l'Ouest* 104, no. 3 (1997), 20.

[483] Baillet, Duhamel fils, Laverrière, and Blacier, "Mémoire et rapport fait à la conférence hes mines, sur l'exploitation des mines en masse ou en amas," *Journal des mines* no. 43 (Germinal An VI), 518-20.

[484] Costé, "Mémoire sur le gisement," 1827, EMP M 1827 60.

[485] "Carrières à ardoises," *Annuare statistique de Maine et Loire pour l'année 1834* (Angers, France: Imp de Ernest le Sourd, 1834), 175-7.

[486] Boucheporn et Declerck, "Journal de voyage," 1835, EMP J 1835 45 no. 1.

keep the quarry dry 270 feet below ground level.[487]

Seeing the success of this new technology firsthand, over the ensuing decades the entrepreneurs invested in ever more powerful steam engines. By 1847, six quarries had introduced the new technology, operating twenty-eight of the department's thirty-eight steam engines.[488] Describing the type of equipment being used in quarries like these, an engineer in 1850 said that such pumps, with each piston weighing in at sixteen tons and resting atop its own massive foundation, could pull four to six thousand gallons out of a site every hour. Each team of three pumps was fed by a series of five steam engines arranged side by side, each thirty feet long and three feet wide, with a labyrinth of pipes, pistons, and valves tying it all together while belching steam. All told each apparatus represented sixty-six tons of iron and steel.[489] Such a device required a team of skilled engineers to operate, blacksmiths to repair, and day laborers to shovel mountains of coal into the hungry belly of the furnace. More typically, however, the engines in this era produced ten to twenty horsepower, averaging just shy of seventeen apiece.[490] They tended to power more modest pump pistons, although even these were nine feet tall and eight

[487] Comte and Conche, "Journal de voyage," 1838, EMP J 1838 54 no. 1.

[488] Lebrun, Mallet, and Chassagne, *Histoire d'Angers*, 202.

[489] Garot, "Note sur une machine d'épuisement des mines de Chalonnes-sur-Loire," *Bulletin de la Société industrielle d'Angers et du département de Maine et Loire* 2, no. 8 (1857), 86.

[490] "Tableau des machines à vapeur; et leurs force, le nombre de cheveaux vivant employer aux ardoisières, fin décembre 1858," [Late december 1858], ADML 70 J 13.

inches in diameter.[491] This type of device remained the industry standard until at least the 1880s.[492] Overall, reflecting on the impact of such technology, an engineer proclaimed steam machines to represent a "radical revolution" dawning over the slate fields of Angers.[493]

During this period the mine owners and their engineers also introduced black powder as a labor saving technology. By at least 1827, slate quarries in Cherbourg had incorporated it into their mining practices. The workers from below used their hammers to drive iron quills into the slate along a line just as had been done for centuries. Once a two-foot-deep hole had been created, however, they pulled their wedges out and poured up to a half pound of black powder into the gap. Finally, they carefully poured sand in on top of it, presumably to shape the blast down into the slate by providing resistance above it, and lit a fuse. The effect was to "make the rock jump to a great height" and speed up the extraction process.[494] Such techniques were adopted in the Angers slate fields by at least 1850.[495] Quarrymen here found it most effective to space themselves three to five feet apart and drill a one-inch hole through all nine feet of the *foncée*. After packing the gap with powder,

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[491] David, "Voyage en Bretage et dans le midi de la France," 1861, EMP J 1861 254 no. 1

[492] Pierre Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[493] Aîmé-Etienne Blavier, "Rapport sur l'état de l'industrie minérale dans le département de Maine et Loire," 12 April 1851, ADLA 8 S art. 2.

[494] Boudousuie, Transon, et Coste, "Journal de Voyage," 1827, EMP J 1827 17 no. 2.

[495] Aîmé-Etienne Blavier and Edouard Sens, "Voyage en Espagne," 1850, EMP J 1850 132.

the miners triggered an explosion that unzipped the slab from its nest and, with a little bit of prying, coaxed it out with a crash.[496] Using mining powder was about 20 percent more costly, but occasionally the increases to speed it offered justified the extra expense.[497] In fact, this technology was impressive enough that in 1864 the slate firms around Angers used over seventy-five thousand pounds of powder in their quarries.[498]

In the aftermath of national defeat following the Franco-Prussian war of 1870, the French government began subsidizing the production of dynamite for military and industrial use. Engineers readily tested the new product, weighing its pros in allowing simultaneous electronic ignition as compared to the imprecise method of touching off powder that could break the slate being worked, versus its cons in being too strong for the delicate composition of slate. Overall, however, these engineers sided with dynamite over its predecessor because it reduced labor costs further than powder, especially in the opening of new excavations. In their spirit of patronage, these men declared that they decided to switch because dynamite offered "such an advantage to the worker" and would increase their salaries as compared to the "true deadweight loss" of the powder.[499] These

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[496] David, "Voyage en Bretagne et dans le midi de la France," 1861, EMP J 1861 254 no. 1.

[497] Ichon, "Notice sur l'exploitation," 768.

[498] Letter Société des Ardoisières d'Angers to Minister of Agriculture, Commerce, and Public Works, 20 November 1864, EMP.

[499] Aîmé-Etienne Blavier, "Note sur l'emploi de la dynamite en agriculture et dans l'exploitation des ardoisières d'Angers," *Bulletin de la Société industrielle et agricole d'Angers er du département de Maine et Loire* 3, no. 20 (1878), 15-8.

engineers were so excited by the capacity of dynamite to improve workers' lives that they even undertook experiments using it in the farms around Angers to reduce tilling costs by simply blowing up the fields.[500]

Such an increase in productivity did not come without its own set of costs, however. Explosives are, by their nature, very dangerous. In the decade between 1850 and 1860, for example, one quarry worker was killed and six were wounded using powder.[501] Explosives of this era were quite volatile. This became evident in such instances as in 1885, when a cart transporting five hundred improperly packed fuses suddenly exploded.[502] The resulting blast blew out the windows of several surrounding houses and injured seven residents with shards of flying glass.[503] As class conflict grew more contentious in the early 1890s, fears of anarchism and terrorism were often rooted in the presence of dynamite and powder at the quarries, where workers might get their hands on it and turn it towards more nefarious purposes, as they had intended to do in 1855.

With the extraction method sped up by explosives and the quarries kept dry by steam pumps, engineers had removed two of the major impediments to deeper worksites. However, in order to maintain a safe forty-five-degree angle in the quarry walls, every foot the workers dug down meant that every superior level also had to

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[500] Aîmé-Etienne Blavier, "Experience sur l'emploi de la dynamite pour les défoncements agricoles," *Bulletin de la Société industrielle et agricole d'Angers er du département de Maine et Loire* 3, no. 18 (1878), 62-7.

[501] Turgan, *Les Grandes usines de France,* 6:133.

[502] Letter Central Commissar to Mayor of Angers, 22 May 1885, AMA 5 I 147.

[503] Reprt Commissar of Trélazé, 21 May 1885, AMA 5 I 147.

be widened by a foot. This remained an incredibly costly task, and so the open-sky quarries were still limited in their maximum depth. But if the slate was fissile enough to require such shallow walls when exposed to the degrading effects of the weather, it was also solid enough to maintain an opening provided it was not allowed to rust.[504] This opened up the possibility of creating underground chambers that could be reached by a small tunnel, avoiding the expensive preparations hitherto necessary to open a quarry.

The first effort to put this theory into practice came in the mid 1830s at Grands Carreaux, where mine owners were motivated primarily by the potential reduction of the costs associated with opening a site.[505] To cut exploratory costs further, the entrepreneurs simply ordered the workers to start tunneling their way into the solid wall of an already opened quarry. By 1836, they had dug a horizontal tunnel nine feet square and sixty-five feet long leading to a thirty-foot vertical shaft, at the bottom of which lay the excavation site.[506] Opened by 1838, this mine was innovative and novel, but was still only partially underground. The first truly subterranean slate mine in Angers was opened in 1844 at Fresnais. Here, exactly as expected, the entrepreneurs were able to cut the costs of opening a new site in

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[504] Turgan, *Les Grandes usines de France,* 6:137.

[505] Aîmé-Etienne Blavier, "L'Éclairage électrique aux ardoisières d'Angers," *Bulletin de la Société industrielle et agricole d'Angers er du département de Maine et Loire* 3, no. 20 (1880), 154.

[506] Comte and Conche, "Journal de voyage," 1838, EMP J 1838 54 no. 1.

almost half, saving them 150 thousand francs.[507]

Naturally, new methods of extraction translated into new positions and experiences for the workers involved. Whereas previously large teams of day laborers worked in tandem to excavate massive fields of wet earth and fissile slate down to the bedrock, the confines of a tunnel limited each team to three or four men. Their first task was to dig a vertical shaft straight down through the striated bands of brown, white, and blue earth. Packed back to back within the confines of the shaft, they swung the same picks as their ancestors had in opening the old-style quarries. And, just like them, this new generation of day laborer was privy to a secret world of glittering crystal and shimmering fools gold, witness to the ancient history of the region as his spade broke through layers of fossils left by prehistoric creatures and loaded them into buckets to be carried up daylight for the first time in millions of years. In this way, these few men created a well ten feet by sixteen feet—just wide enough to allow a *bassicot* to safely move through when the mine was opened—at least one hundred feet deep.[508]

Once the team had reached their planned depth, they switched out implements and proceeded to digging horizontally. Using a ten-foot steel spike like a battering ram, they attacked the rock face, slowly wearing it down and chipping away at the resilient stone. The men sent out two tunnels from the bottom of each shaft at ninety-degree angles. This gave them flexibility in choosing which sites to

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[507] Rapport general sur la situation des ardoisières d'Angers. 15 October 1849, ADML 70 J 5, transcribed by Furcy Soulez Larivière.

[508] Turgan, *Les Grandes usines de France,* 6:137.

extract slate from once the mine was open.[509] All of this exhausting work was "made exclusively by the tip [of the ram] and by dynamite." The men also had to shore up the sides of the well and the roof of the tunnels with foot-thick oak beams as they went along, perhaps adding the refreshing scent of freshly-sawn wood to the damp odor of the earth, the musk of each others' sweat, and the acrid aroma of black powder. So much work to do and such small teams to do it meant that progress was very slow going; a glacial pace of ten to twelve feet per month was all that could be expected.[510] Nevertheless, by 1880, after years of hard and unceasing labor, such wells pierced nearly three hundred feet vertically into the heart of the earth before shooting out hundreds of feet farther horizontally.[511] Only once this had been done could mining and extraction finally commence.

This new approach to slate mining affected the work environment not just of the day laborers responsible for opening the site, but also of the skilled workers from below responsible for harvesting the precious stone. On arriving at the quarries off of which subterranean chambers had been launched, visitors remarked on the immensity of the excavation. One described seeing at Grands Carreaux in 1841 that "about halfway down the pit, a horizontal opening has been made in the side of it, which is closed with a little door in the face of the rock, to which a series of

[509] Ichon, "Notice sur l'exploitation," 764-7.

[510] Pierre Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[511] "Puits de l'Hermitage no. 1 et no. 3," 15 May 1880, ADML 15 J 198.

perpendicular ladders are attached to conduct to it."[512] The miners scaled down the small network of ladders scattered over the quarry wall, clinging to the face of the slate at peril of a long drop into the depths below. Engineers had the foresight to place platforms every thirty feet, offering a place for the men to catch their breath, gather their nerves, or arrest their fall.[513] But for those not yet accustomed to the descent, "it demands…a certain strength of spirit, and above all a small disposition to vertigo; it demands, in effect, that reason triumph over the first moment of repulsion that the abyss makes those who confront it for the first time experience."[514]

Having successfully navigated their way to the mine opening, workers and visitors alike entered a new world. This was the world of work that belonged to the men from below. Pushing their way through the narrow tunnel, they soon

> saw a huge, low-arched cavern, whose extent was dimly and uncertainly visible by a multitude of little lamps scattered over every part of it.
>
> The dark nature of the slate rock in which the cavern was pierced, and its great size, made the limits of it, with the exception of the central part of the arched roof undiscernible [sic], and each dim lamp seemed only to illuminate the space within a small circle around it, forming a little oasis of light in the vast wilderness of darkness. The confused noise of a vast number of pickaxes clicking against the rock was echoing through the vault, and here

[512] Trollope and Trollope, *A Summer in Western France*, 252.

[513] Pierre Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[514] Turgan, *Les Grandes usines de France,* 6:138.

> and there I could discern a form by the light close to him, and now and then a halloo made itself heard above the din of the work.[515]

On entering this dark and ghostly world, "the eyes, whose pupils dilate, little by little distinguish first a multitude of luminous points, glittering on the walls like sparks of fire on burnt paper; around these luminous points, in their sphere of radiance, one begins to distinguish the black and shiny banks on which bustle human forms whose close light give gigantic shadows."[516] The sheer size of the dark caverns, in which the black walls made it impossible to separate open space from the walls themselves and gave witnesses the true sense of being in an eternal abyss, was commonly remarked upon. And although the flickering of dim lamps may have provided a sense of security in knowing that one was not alone, their "glow [was] diminished by the thick layer of dust and powder smoke that separates the visitor from the miners."[517] In fact, the sheer size of these underground worlds was amazing, with the cavern roofs reaching up to 250 feet overhead, the worksite stretching out over twenty thousand square feet.[518] Such seemingly boundless environments, surrounded only by the faint glow of lamps, the ground littered with discarded slag heaps and crags unfit for further processing, all cloaked in a thick haze no breeze would ever clear, must have been a truly otherworldly experience that set the workers apart from those confined to the land of sunlight and fresh air and bonded

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[515] Trollope and Trollope, *A Summer in Western France*, 252-3.

[516] Turgan, *Les Grandes usines de France,* 6:139-40.

[517] Smyers, *Essai sur l'état actuel*, 33.

[518] *Ibid.,* 91.

them as the brave explorers of another planet.

Like the environments inhabited by all humans, this one was not confined to the sense of sight alone. Alongside the overwhelming sight of the mines, visitors and workers clearly remembered the sonic environment. They recalled the incessant and rhythmic clank of teams of steel picks striking the rock face in perfect cadence, the songs keeping the men in time, yells up to the crane operators high overhead, and the clinking of chains going up and down the well shafts. Caught within this echo chamber and transformed by the reverberations of the slate itself, sounds were felt as much as heard. They felt the "thuds, jerky, worrisome, coming up from the depths where the earth shakes, where the ceilings split, and where workers from 'down there' sometimes die."[519] They lived and worked "in the middle of noise coming from all sides, from the incessant movement of wagons whose vibrations add singular sounds to the inexplicable tapping, the first thought that comes to mind is that you are at the gates of hell."[520] This sonic environment was so overwhelming, recalled one worker, that men with hearing damage frequently frustrated their families by always yelling.[521]

This air was pregnant with more than sound. Smoke from the gas lamps and black powder mixed heavily in the air with slate dust, rendering the atmosphere of this world thick and pungent. It was also hot this far below the earth's surface, and "at work you were always sweating." This environment was so oppressive that, for

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[519] Goacolou and Faës, *Paroles d'ardoisier*, 51.

[520] Smyers, *Essai sur l'état actuel*, 34.

[521] Goacolou and Faës, *Paroles d'ardoisier*, 150.

the day laborers, the most highly sought after position was being the one to carry full toilet pans up to the surface to dump because it guaranteed a trip up into the fresh air, however brief, however tainted.[522] Summing up the situation, a visiting engineer stated matter-of-factly that "there certainly are some small inconveniences that cannot be avoided, such as the need to work in the light, the vapors of fumes from the lamps or explosive charges that part with difficulty when the air is calm, and sometimes too a lack of breathable air."[523]

Although the environment was different than that of the open-sky quarries, the work remained essentially the same. For the miners responsible for coaxing the slate out of its burrow, work continued to be done in the same teams, with the same tools, and in the same manner as it had been done for generations.[524] The only real difference was that some of the teams dug from the ceiling up as opposed to digging from the floor down. Dangling from a narrow platform of three wooden planks suspended from the vault, sometimes hundreds of feet above the hard stone floor, teams of men stood shoulder to shoulder and drove their quills into the stone with synchronized strikes for hours or days until, at long last a block was loosed and went tumbling down into the black abyss. Although in the air rather than on the ground, "these underground works are conducted otherwise like the open-sky works."[525]

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[522] *Ibid.,* 171, 181, 189.

[523] Smyers, *Essai sur l'état actuel*, 151.

[524] Ichon, "Notice sur l'exploitation," 770-1.

[525] Blavier and Sens, "Voyage en Espagne," 1850, EMP J 1850 132.

This new work environment did change the work process of the day laborers, albeit slightly. Although many subterranean mines had a second well shaft piercing its vault to promote better air circulation, they were typically much smaller than the main entrance. This left only one point of egress for the worked slate rather than the multiple points in an open-sky quarry. In practical terms, this meant that as the mine bore its way ever further into the earth, day laborers had to make increasingly long trips to carry the split slate from the mine face to the extraction point.[526] But with only one path now existing between the two poles that marked the day laborer's work world, a rail system became feasible for the first time. Rather than any longer carrying the slate slabs all that way in repeated trips, the men could now load a *bassicot* with hundreds of pounds of rock and push it along rails to the entrance in a single trip.[527] Eventually, pulley systems and even electricity from an onsite power plant sped up the process, much to the benefit of the day laborers' backs.[528]

Once the workers had maneuvered the *bassicot* into position at the bottom of the well, they hooked it up to the crane above with chains. Then, in a unique and precise language, they yelled up to two workers perched alongside the crane hundreds of feet above. One can only imagine how thin and echoing these yells must have sounded emerging out the other end and into wind. The two topside workers then quickly "convey to the mechanic the necessary orders. These men whose

[526] Pierre Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[527] Boucheporn and Declerck, "Journal de voyage," 1835, EMP J 1835 45 no. 1.

[528] Ichon, "Notice sur l'exploitation," 780.

mission is very important from the point of view of the safety of the workers at the bottom carry the name of 'drivers.'"[529] Once the mechanic had received his orders, the harnessed steam sent steel spools over twenty feet in diameter spinning, pulling thousands of pounds of slate out of the earth within minutes.[530]

Without the daily and seasonal constraints imposed by the cycle of the sun, these underground mines were often kept operating twenty-two hours per day. If the machinery did not need routine rest and maintenance, it is likely operations would have been maintained around the clock.[531] This manner of exploitation proved much more efficient and effective than the traditional open-sky quarries. As a result, by 1883, the slate firms of Angers were running sixteen mines and only two quarries.[532] By 1898, not a single open-sky quarry was still in use.[533]

Underground mining brought with it a need for new technological developments. Initially, underground miners each used an oil lamp, which would have only added to the thick smell and smoke in the air.[534] Although this method persisted for decades in a few firms, by 1847 many had made the switch to gas lamps.[535] This move was immediately recognized as leading to improvements in

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[529] Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[530] Turgan, *Les Grandes usines de France,* 6:131.

[531] Blavier, "L'Éclairage électrique aux ardoisières d'Angers," 157.

[532] Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[533] Marais, *Le Maine-et-Loire aux XIXe et XXe siècles*, 55.

[534] Ichon, "Notice sur l'exploitation," 776.

[535] Cailleteau, ed., *Les Ardoisières en Pays de la Loire,* 12.

worker health.[536] However, with every worker now wearing a gas lamp on their hats and large stationary lamps attempting to clear the hazy depths, gas consumption rose quickly. Marshaling their capital, the slate field entrepreneurs invested in an onsite factory to distill carbon into gas.[537] The distillation sites at Grands Carreaux and Fresnais each cost about twenty-seven thousand francs and employed an overseer and two day laborers, who between them shoveled 1500 pounds of coal into the furnaces each day.[538] Although better than the original oil lamps, the gas lighting system was rife with its own problems. The centralized light fixtures were fed by a stream of gas pumped through a pipe from the surface, but pressure problems made this impracticable beyond six hundred feet. Fallen rocks or a worker's careless footstep might pinch off this pipe and suddenly cut off lighting entirely. Furthermore, because the light from these lamps was uneven and weak, each worker still had to wear his own individual headlamp. This meant that a single mine might consume nearly fifty gallons of gas per hour, an expensive proposition. Although cleaner burning than oil lamps, these gas lanterns still contributed to the chokingly polluted air in the caverns.[539] Finally, maintaining a steady supply of gas in such close proximity to dynamite and powder explosions is generally an

[536] Smyers, *Essai sur l'état*, 98.

[537] Turgan, *Les Grandes usines de France,* 6:138.

[538] Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[539] Blavier, "L'Éclairage électrique aux ardoisières d'Angers," 157-8.

inadvisable practice from a safety perspective.[540]

In response to these problems, in 1878, after years of prodding, the entrepreneurs invested the 33,770 francs necessary to convert over to electric lighting. This sum purchased for the mine owners a twenty-horsepower steam engine devouring 1300 pounds of coke per day to spin the brushes of eight electrical generators. It also bought them the system of electrical cables and the lamps to which they carried the current. The bulbs on these lamps only burnt out about every three weeks, and could be changed out in less than a minute.[541] The light cast by these electric lights was also brighter, more even, more consistent, and, best of all for the workers, produced no smoke or noxious fumes. Himself glowing about this miraculous invention, a local industrialist celebrated "the first electric headlight that projects through the night its powerful rays of light on the slate plateau of Trélazé."[542] Although demanding a higher initial investment, all told electric lighting cost a mere tenth what gas lighting did, reinforcing mine owners' beliefs that the heavy investments of capital only made possible by incorporation did, in the long run, lead to better outcomes for worker, consumer, and capitalist alike.

One of the ways the firms were able to cut costs associated with lighting was by fabricating their own cables to carry the electricity. They were able to tailor make the cables to most efficiently carry current in their specific conditions without

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[540] Brossard de Corbigny, "Note sur léclairage électrique, appliqué aux ardoisières d'Angers," *Bulletin de la Société industrielle et agricole d'Angers er du département de Maine et Loire* 3, no. 4 (1863), 262-4.

[541] Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[542] Bouchard, "Éloge funèbre de MA Blavier," *Bulletin de la Société industrielle et agricole d'Angers er du département de Maine et Loire* 4, no. 6 (1897), 10.

having to pay an outside contractor to manufacture it for them.[543] This cable factory had been built as a collaborative effort between multiple slate firms in 1856 to provide the iron cables used by steam-powered cranes to lift the *bassicots* in and out of the quarries. They wrapped this move in patronal terms, declaring they did so "in order to shelter these workers from any chance of breakage."[544] However, this act of vertical integration was likely a very profitable one, reducing the expenses of contracting out to an external organization and the entailed costs.

Further attempts at technological advancement were frustrated by the nature of the slate itself. Other mining industries were able to easily direct the brute force of steam power into battering its way through the earth and rock. Unlike materials like coal or iron, however, slate is only useful insofar as it is removed intact. This requires finesse rather than power, which was the opposite of what late-nineteenth-century technologies could provide.[545] By 1858 an early form of sandblaster designed to replace the *fendeurs'* steel wedges in splitting and shaping slate tiles was tested in Angers, but it proved slower and less effective than the traditional hand methods and so was soon abandoned.[546] A proposal to speed up the miners' task with a saw that could cut vertical or horizontal channels in the slate

[543] Blavier, "L'Éclairage électrique aux ardoisières d'Angers," 162.

[544] Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[545] APTIRA, ed., *Mémoire de migrations,* 101.

[546] Smyers, *Essai sur l'état actuel,* 122.

met a similar fate.[547] A Belgian engineer attempted to sell the mines on a massive drill, weighing 15500 pounds, with a relatively large five-horsepower steam engine driving a 450-pound bit. Although it had previously proved itself in marble quarries, this contraption was discovered to be inefficient at carving slate. Undaunted, this same engineer returned to the slate fields of Angers three years later with a hydraulic jackhammer in tow. This device was designed to glide along a rail network and relieve the miners of the unpaid but necessary task of smoothing out the mine floor after each block was removed. Unlike his last machine, the man from Brussels made this one electric to keep the air clean and weighed a paltry 1500 pounds. Unfortunately, this meant that the hammer had only a one-horsepower engine and so only cleared ten square feet per day. Fears were also expressed that the vibrations radiating out from it would likely cause debris to fall.[548] Although his bids were ultimately unsuccessful, this man's repeated attempts hint at the fact that the mine owners were searching for ways to mechanize production and replace skilled labor with cheaper machines and willing to pay for it.

Despite this desire, however, traditional productive methods proved resilient. Compressed air, used in coalmines since the 1870s, was not tried in slate mines until 1899 and was not adopted until the 1920s. Pneumatic drills, meanwhile, were only incorporated into the slate miner's tool kit in 1955.[549] Up above ground, a simple spring-powered blade for shaping and sizing the finished tiles was only

[547] "Lettre circulaire proposant un nouveau mode d'exploitation des carrières," [Late 19th century], ADML 1 F1 255.

[548] Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

[549] Cayla, "Aspects de la technologie minière en Anjou," 21.

introduced in 1890, but did not become standard until women were trained to be *fendeurs* during the First World War.[550] 1958 marked the first time machinery was able to replicate the *fendeurs'* artisanal finesse in splitting the stone into plaques, with this old aristocracy of labor finally retiring from the worksite in the 1980s.[551]

The second half of the nineteenth century was thus a period of technological progress. Canals allowed Angevin slate to ship throughout the Atlantic World, while the arrival of the railroad opened up markets across France. Advances in steam engines and explosives permitted miners to abandon their attachment to the world and disappear into the earth. This in turn necessitated the development of electrical technologies. Only an industry marked by cartel, one in which firms cooperated in lobbying for access to the benefits of modern transportation, in which technologies could be shared rather than jealously guarded, in which collaborative financial and capital ventures were readily sought, in which standardized pricing eased competitive pressure enough to guarantee the profitability of these efforts, and one in which the working class was treated with a common social, legal, and moral approach could such advances take place. The results were increased production, the arrival of new immigrants, and a drastic change to the working conditions of the miners from below. However, although the work environment was transformed, the work itself for miners and *fendeurs* alike, the relative numbers and wages of the workers, and the social relations at the mining site remained static from before 1750 until after 1950.

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[550] Cailleteau, ed., *Les Ardoisières en Pays de la Loire,* 14.

[551] APTIRA, ed., *Mémoire de migrations*, 106-7.

Patronage

When the twenty-four-year-old Aîmé-Etienne Blavier stepped onto Angevin soil in 1851, light brown hair topping his 5'7 athletic frame, a thin red ribbon trailed from his lapel. It was the scarlet mark of a member of the Legion of Honor, matching perfectly the blood its bearer had shed on the streets of Paris during the heady days of the Revolution of 1848. But the young Blavier, still a student at the nation's prestigious School of Mining when workers had joined students to topple the July Monarchy, was not a man prone to adventurism or rashness. He had donned a uniform and scaled the barricades against the uprising and for the restoration of order. Aîmé-Etienne Blavier was an engineer. [552]

Born on the banks of the Loire just west of Angers in 1827, Blavier was the descendent of a long line of mining engineers. His grandfather had been one of the key voices calling for the reconstitution of French mining law, and his father had overseen Maine-et-Loire coal mines. Blavier inherited from his forefathers an insatiable appetite for knowledge, a penchant for politics, and a belief in balancing business with charity. Above all, he believed in order. It was order that made the mines safe, it was order that made the mines profit, and it was order that made society function.[553]

Now, as Blavier's cool grey eyes surveyed the city he must have known as a child, and one whose slate industry he had studied as a graduate student, he saw

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[552] Jean-Louis Kérouanton, "Blavier (1827-1896), Inénieur des Mines et Président de la Commission des Ardoisières d'Angers," *Annales de Bretagne et des pays de l'Ouest* 107, no. 3 (1997), 150.

[553] Bouchard, "Eloge funèbre de M. A. Blavier," *Bulletin de la Société Industrielle et Agricole d'Angers et du department de Maine-et-Loire* 4, no. 6 (1896), 5-7.

opportunity. The community was a regional hub, one where practical philosophers came together to share ideas for the benefit of industry and agriculture alike. It was a town on the move, connected by river, road, and now rail to the nation's markets. And it was home to a slate industry growing more powerful every year, one whose director had spent the last half-century centralizing and expanding the industry's capital and productive power. For an ambitious young engineer with an appetite to conquer the world, Angers was the perfect place to be.

Quickly after arriving in Angers, Blavier immersed himself in local industrial society. By 1853, he had been elected a member of the Industrial Society of Angers.[554] The bimonthly meetings and organizational journal offered his insatiable mind an outlet for its boundless interests, presenting and writing studies and musings on mining technology and techniques, including his award winning description of the Angers slate industry that remained the central work on the topic for well over a century, but also branching out into fields such as the sardine fishery, industrial organization, methods for combatting the phylloxera epidemic, and even a particularly beautiful description of a storm.[555] But this was also a social club, where Blavier would have mingled with many of the brightest, wealthiest, and most powerful citizens in the Angevin community. It would have been here that he made the political contacts that would fuel his successful electoral campaigns; it would have been here that he consorted with other capitalists on joint ventures and joint-stock formations to open mines throughout the region; and it would have been here

[554] Lebrun, Mallet, Chassagne, *Histoire d'Angers*, 3.

[555] Bouchard, "Eloge funèbre de M. A. Blavier," 5-7.

that he became close to René Montrieux, mayor of Angers and largest shareholder in the Angers slate mines, before marrying his daughter Juliette in 1855.[556] It is perhaps little surprise that Montrieux shortly thereafter named his new son-in-law chief engineer and administrator of his mines.[557] For the time being, however, Blavier had much more pressing concerns than his social engagements or hobnobbing in high society; there were lives at stake.

On January 9, 1849, the anchors holding two massive scaffolding structures gave way, and the hundred-foot towers fell into the open quarry with such a crash that the Trélazé mayor heard it from over a mile away. Just three days later, at Buisson, three hundred thousand cubic feet of rock gave way and collapsed into the quarry there. This was so much rock that it covered the entire 2700-square-foot quarry floor with debris twelve feet thick.[558] Compiling a list of such incidents in the 1870s, the *ardoisières* wrote:

1871	June 7	PETITS-CARREAUX — Open-sky quarry — Fall of a *bassicot* into the quarry, caused by the contact of the pulley chain with the pole of a worker hanging out of an ascending *bassicot*. This contact caused the descending *bassicot* to detach, which, driven by the guide wire mortally struck the

[556] Such social organizations were critical for the formation of a common entrepreneurial class and familial ties were one of the most common methods of establishing a new ruling class, just as they had been for the aristocracy: Johnson, *The Life and Death of Industrial Languedoc,* 67-94.

[557] Kérouanton, "Blavier," 153-4.

[558] Fleury, "Rapport general sur la situation des ardoisières d'Angers," 15 October 1849, ADML 70 J 5, transcribed by Furcy Soulez Larivière.

		gentleman Guignard busy loading a second *bassicot*.
1872	August 23	GRANDS-CARREAUX — Open-sky quarry — *Bassicot* fell into the quarry following its detachment while being lifted into the cart. Potrie Michel killed.
1872	November 23	HERMITAGE — Mine no. 1 — Rock fell from a *bassicot* during its ascent, killed the gentleman Losquin Pierre, worker from below.
1873	December 11	GRANDS-CARREAUX — Open-sky quarry — Rock fell from a *bassicot* its arrival at the station, killed the gentleman Baumier J., worker from below.

Nine more such deadly incidents followed these by the end of the decade, killing seven more men.[559] During the decade after Blavier's arrival in Angers, there were thirty-seven cave-ins at the quarries, one of which in 1860 involved a single block of slate encompassing 1100-1400 cubic feet loosing itself from a quarry wall and crushing nine men in an instant.[560]

Everyone recognized the danger in these quarries and mines. A worker recalled that "all those who have gone to the depths have all had something damaged, if it's not a broken finger it's a foot, it's an arm, it's a ruined back…But you don't think about an accident. If you thought about it you wouldn't work."[561] An

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[559] "Mémoire des exploitants des ardoisières d'Angers sur le systemme d'élévation duschiste par grosses pieces," 20 February 1880, ADML 15 J 198.

[560] Société des Ardoisières d'Angers to Minister of Agriculture, Commerce, and Public Works, 20 November 1864, EMP.

[561] APTIRA, ed., *Mémoire de migrations*, 102-3.

engineer added categorically: "one can say absolutely that underground mining by the *ardoisières*…is dangerous."[562] A government mine inspector stated it more bluntly: "if you don't want to kill men don't make mines."[563]

The advent of underground mining shifted the threat of accident in subtle but important ways. Because mines were completely encased in sturdy stone, they were less susceptible to the effects of weathering and more protected against catastrophic collapse. As a result, between 1848 and 1889, even as underground mines came to far outnumber the open-sky quarries, large rockslides in quarries outnumbered those in mines by five to one.[564] However, because men in mines worked all day under a ceiling of slate, they were much more vulnerable to individual injury from small shards of slate slicing down to their unsuspecting bodies. As a result, mortality rates for underground miners were over 30 percent higher and injury rates almost 50 percent higher than those endured by quarry workers.[565] Acknowledging the situation, Blavier confessed: "it would not be contested that, by the fact of mechanized labor, the risks run by the worker increase significantly and that accidents, of which he is necessarily the victim, become more frequent, more grave, causing permanent work disabilities or death, that deprive a whole family of their

[562] Ichon, "Notice sur l'exploitation," 833.

[563] Smyers, *Essai sur l'état actuel*, 147.

[564] Ichon, "Notice sur l'exploitation," 816.

[565] "Art des Mines," 430-1.

breadwinner."[566]

By its nature, slate is not prone to sudden shifting or collapse. Rather, the fissile material slowly cracks and peels apart until it eventually gives way.[567] This meant that, if regularly inspected, such cracks could be detected early and the walls shored up or the mine evacuated. Before long, every mine had one employee whose job it was to slowly pace back and forth across the narrow catwalks suspended from the vault ceiling looking for changes in the constitution and consistency of the slate.[568] As one such worker described, "the mine safety experts would tap the rock with a little hammer and listen. If it sounded heavy they made it fall. If it rang sharp it was fine."[569]

Invested with the responsibility to defend their fellow workers' lives, these skilled men were entrusted with a heavy charge. Failure meant death. On June 4, 1878, an inspector missed the warning signs of a collapse and a 5300-cubic-foot block of stone fell onto a crowded worksite. The survivors waited outside the mine entrance until the bodies of their comrades were cleared from the rubble before going back to work in what could have become their own tomb.[570] Failure also meant jail time. When one hundred cubic feet of rock fell at Grands Carreaux and

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[566] Aîmé-Etienne Blavier, É*tude sur la question de responsabilité civile en cas d'accidents* (Angers, France: Germain et G Grassin, 1883), 3.

[567] Smyers, *Essai sur l'état actuel,* 144.

[568] Ichon, "Notice sur l'exploitation," 795.

[569] APTIRA, ed., *Mémoire de migrations,* 97.

[570] Letter Police Commissioner of Angers' 4th Arrondisement to Prefect, 5 June 1878, ADML 71 M 1.

seriously wounded four workers, the courts ruled that the inspector should have seen it coming and sentenced him to eight years in prison for negligence.[571]

In Blavier's opinion, while such incidents were tragic, they also revealed the key issues facing mining firms and industry in general. He readily acknowledged that "this type of mineral exploitation is by its very nature dangerous," but contended that "the *ardoisières* of Angers is no more dangerous than in the other underground exploitations" in Ardennes and Wales.[572] For Blavier, the heroes of this admirable safety record were not the workers or the mine owners, but the professional class of engineers. He advocated for better training of engineering students and an increased role for them in the management of mining enterprises. Blavier believed that "the economic principles of mining should no longer be foreign to the instruction of the engineering students," and that future curriculum needed to include an understanding of commercial and mining law as it pertained to worker privileges, property rights, and corporations.[573] For Blavier, these were the three key principles to understanding the true role of the engineer, "the prosperity and expansion of the exploitations."[574]

This ardent supporter of the use of a professional class of experts to oversee

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[571] Ichon, "Notice sur l'exploitation," 827.

[572] Aîmé-Etienne Blavier, "Statistique minerale de Grande Bretagne et de France d'après les plus récents documents," *Bulletin de la Société Industrielle et Agricole d'Angers et du department de Maine-et-Loire* 3, no. 24 (1883), 42.

[573] Aîmé-Etienne Blavier, "Programme d'un cours de legislation de d'économie des mines, à l'usage des elèves-ingenieurs," [Mid 19th Century], ADML 1 F1 72.

[574] Aîmé-Etienne Blavier, Notes on Mining Economics, [Mid 19th Century], ADML 1 F1 72.

the working class in the interests of industrial expansion was around while his fellow mine owners introduced new methods of controlling the worksite. By 1864, they required that workers from below wear heavy leather helmets at all time, "quite often against their will," for their own protection.[575] Similarly, in 1887 the entrepreneurs decreed that an inspector would henceforth circulate through the *fendeurs'* workshops to examine their work and assess fines on both the worker and the counter, whose job had traditionally been to determine which tiles were adequate for sale.[576] Both cases are clear evidence of the entrepreneurs' growing sense of self-importance encroaching on the independence of the workers themselves, often through the medium of professional engineers, but always predicated on the belief that the workers were incapable of directing themselves, that they needed someone to look over them for their own good. This is the essence of paternalism.

The issue of independence versus paternalism manifested itself in the mid 1880s in the debate over worker delegates. In 1885 the citizens of the Maine-et-Loire elected Blavier, an avowed Catholic royalist wounded in 1870 while leading a volunteer regiment of Angevins against the German army, to the French Senate by a vote of two to one over his republican challenger.[577] Two years earlier he had already argued vociferously against proposals that France follow the British model,

[575] Letter Société des Ardoisières d'Angers to Minister of Agriculture, Commerce, and Public Works, 20 November 1864, EMP.

[576] "Règlement relative à la surveillance de la fabrication," 1 March 1887, ADML 70 J 25.

[577] Port, d'Hérbecourt, and Levron, *Dictionnaire historique, géographique et biographique*, 1:379.

which allowed workers to appoint delegates from within their ranks to oversee worker safety. Blavier saw this as a thinly veiled socialist attempt to give "the tool to the worker, the mine to the miner." In fact, he argued that most mining accidents were caused by the workers themselves, and so the only way to improve mine safety was to "submit these important exploitations to an attentive surveillance on the part of competent civil servants."[578] Immediately upon assuming office, he used his newfound power to fight such a move. Explaining his actions to the Industrial Society of Angers, Blavier wrote that workers simply did not have the knowledge necessary to successfully monitor mine safety, nor did they have "a sufficient independence…to be able to demand of the capitalists that they accept all the sacrifices necessary in view of avoiding accidents of people." Ignorant and powerless, the workers thus needed to be protected by a professional class of engineers. Perhaps more revealing of Blavier's innermost biases, he dismissed claims that the delegate system in Britain had improved mine safety by stating that "the English workers are naturally more attentive and more serious than the French workers; that they play less easily than these with danger and observe more regularly the instruction of the engineers and foremen in the execution of their underground work." Like undisciplined children, then, these French workers needed to be watched closely. Most importantly, Blavier worried that the election of delegates would make workers more bold in asserting themselves and thus "sow

[578] Aîmé-Etienne Blavier, "Statistique minerale de Grande Bretagne et de France d'après les plus récents documents," *Bulletin de la Société Industrielle et Agricole d'Angers et du department de Maine-et-Loire* 3, no. 24 (1883), 40.

permanent seeds of discord."[579] When such proposed legislation was revived in 1890, Blavier again argued that the only way to ensure safety in the mines was to trust "the zeal and mastery exercised by the mine engineers."[580]

Like mine owners and engineers, local government officials took seriously their responsibility to protect the workers. The protective laws they designed developed over time in response to changing production techniques employed at the quarries and mines. One of the most common targets of departmental legislation was the system of raising slate out of the mine. In order to prevent injuries and deaths stemming from blocks of slate spilling over the sides of rising *bassicots*, an 1833 decree fixed the sidewall height of these baskets to at least fifteen inches and forbade the slate from projecting more than one inch above this level.[581] Twelve years later, a new decree outlawed the common practice of directing the *bassicots* over active work sites because of similar safety concerns.[582] Fifteen years later, citing the fact that as mines grew deeper the voice signals directed from the depths up to the crane operators grew fainter and thus opened the door for "misunderstandings and accidents," a new decree ordered the institution of a

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[579] Aîmé-Etienne Blavier, "La Question de délégués mineurs," *Bulletin de la Société Industrielle et Agricole d'Angers et du department de Maine-et-Loire* 3, no. 26 (1885), 19-24.

[580] JB Duvergier, J Duvergier, and E Goujon, *Collection complète des lois, décrets, ordonnances, règlements et quis du conseil d'état, (de 1788 à 1836 inclusivement par ordre chronologique), publiée sur les editions oficielles, continuée depuis 1836, et formant un volume chaque année* (Paris: L Larose, 1890), 90:268-9.

[581] "Arrêté Maine et Loire," 28 January 1833, ADML 15 J 198.

[582] "Arrêté Maine et Loire," 16 June 1845, ADML 15 J 198.

uniform series of claxon signals.[583] In this way, legislation entered an interactive relationship with the miners' workscape, responding to changes in it while in turn altering the sonic and procedural environment of the men.

Such legislation also entered an interactive relationship for the mine owners, balancing their mutual concerns for the workers' wellbeing with the owners' profits. In 1851, the slate firms began offering specialty products such as park urinals, orphanage showers, laboratory countertops, and country-club billiards tables. Because these items were constructed of slate slabs too large to fit inside of a *bassicot*, workers carved a deep notch into each side, wrapped a chain around it, and hauled it up alone.[584] Mine owners came to prefer this system because "from an economic point of view it presents great advantages over the system of elevation by *bassicots* because it removes the work of dividing the blocks in the bottom of the quarry…and so diminishes the numbers of workers." In addition to lowering wage costs, this method could carry 50 percent more slate per trip. Overall, mine owners claimed that "by the elevation of the schist in pieces one increases the production power of a worksite by a noticeable degree."[585] However, the prefecture was concerned about the risk of such pieces falling on hapless workers far below, and so issued a decree "for the security of the workers" that such methods could only be

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583 "Arrêté Maine et Loire," 17 July 1860, ADML 15 J 198.

584 "Mémoire des exploitants des ardoisières d'Angers sur le systemme d'élévation du schiste par grosses pieces," 20 February 1880, ADML 15 J 198.

585 Pierre Larivière, "Journal de voyage: les ardoisières d'Angers," 1883, ADML 15 J 301.

done at night when the mines were otherwise empty.[586] This sparked an immediate outcry from the entrepreneurs, eager to retain their more profitable methods. They argued primarily that the increased production made possible by raising slabs rather than *bassicots* was of critical importance to their industry. Then, less convincingly, they revealed statistics showing that the new method killed one worker for every fifty-seven slabs brought up, while the old system killed one worker for every fifty-five *bassicots* brought up. Such a variance, to their minds, proved "the advantage of the new system."[587] Apparently the prefect was convinced by this marginal variance, and thereafter rescinded his earlier restriction and permitted the raising of slate by slabs provided the owners made good on their promise to turn the task over to specialized workers and maintain a buffer space around the extraction point.[588]

Similar dialogues were carried back and forth between the mine owners and legislators over a whole range of issues affecting the mineworkers, who, incidentally, were never included in the discussions over their own lives. As both a senator and an entrepreneur, Blavier was in a unique and revealing position. As a senator, he voted consistently with the right, objecting to public spending on things like schools or state interference in the worksite.[589] From this position, Blavier

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[586] "Arrêté Maine et Loire," 9 January 1880, ADML 15 J 198.

[587] "Mémoire des exploitants des ardoisières d'Angers sur le systemme d'élévation du schiste par grosses pieces," 20 February 1880, ADML 15 J 198.

[588] "Arrêté Maine et Loire," 29 June 1882, ADML 15 J 198.

[589] Adolphe Robert, Edgar Bourloton, and Gaston Cougny, *Dictionnaire des parlementaires français: comprenant tous les membres des assemblées françaises et*

fought to maintain patronal and paternalist control over France's working class, giving them benefits tied closely to continued obedience.[590] But as a local industrialist, Blavier believed that businesses held an obligation to help their workers, "to lighten their suffering and misery [for the] functioning of the social order."[591] His fellow industrialists remarked upon his death that together he and his father-in-law had "left a deserved reputation among their contemporaries of equity and justice of spirit," and that they understood that "'patron' means to know how to set in equilibrium opposed interests."[592]

An example of this Janus-faced position can be seen in the sometimes-sticky issue of worker health and safety. The common workers' fund established in 1823 out of a compulsory 1 percent deduction from each man's paycheck included provisions for the payment of a medical professional. However, as late as 1849 a state engineer was petitioning for the slate firms to come into accordance with an 1813 law necessitating that they hire a doctor, not just a medic.[593] The mine owners eventually came into compliance in 1855 by keeping a doctor on retainer, hiring him fulltime in 1866 to care only for slate workers and their families. Subsequent relations between employers and employees as mediated through the doctor reveal

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tous les ministers français depuis le 1er mai 1789 jusqu'au 1er mai 1889 (Paris: Bourloton, 1891), 1:.

[590] *Ibid.,* 2:628.

[591] Blavier, *Étude sur la question de responsabilité*, 5.

[592] Bouchard, "Éloge funèbre de MA Blavier," 10-1.

[593] Fleury, "Rapport général sur la situation des ardoisières d'Angers," 15 October 1849, ADML 70 J 5, transcribed by Furcy Soulez Larivière.

serious tensions growing sharper over time. In the early part of this period, the company doctor was paid above market level and provided with subsidized drugs courtesy of Montrieux, who also owned a pharmacy. By the early 1880s, however, perhaps due to a stagnant economic environment, the mine owners began guarding their investment much more jealously. They complained at having to pay a higher percentage of the doctor's wages out of their own pocket, moved to only reimburse him for services provided to men injured at work and shift the burden of other costs to the workers' fund, accused him of distributing subsidized prescriptions outside of the quarry community, and in 1883 fired him when a worker fell into an open quarry on Christmas Eve and died while the doctor was busy delivering a baby in town. Justifying this move, Blavier asserted that the slate cartel was only authorized to sell tiles in common, and could no longer accept the responsibility of overseeing the medical and retirement funds. Fuming and bitter, the doctor accused the mine owners of being more interested in their profits than in the wellbeing of their workers.[594]

This incident reveals the tenuous position of employer patronage during the second half of the nineteenth century. On the one hand, the mine owners prided themselves on their patronal role in protecting their workers. On the other hand, they found themselves unable or unwilling to pay to provide the necessary aid to their workers. Complicating the issue, in the interest of the social order they strongly objected to the intervention of the state into these local affairs. The solution, then, was to move away from a material patronage and towards a moral

[594] Ambroise Guichard, *Mémoire sur le service médical et pharmaceutique des ardoisières d'Angers* (Angers, France: Germain et G Grassin, 1886).

paternalism. Blavier, for example, sternly opposed legislation intended to make employers responsible for the pensions of workers disabled at the jobsite. He declared such efforts beyond socialist, "a reversal of every notion of natural rights and equality," and sure to pit the bosses' and workers' interests against each other in an "unfortunate antagonism." After all, workplace accidents were, according to Blavier, the fault of the workers, not the bosses.[595] Instead, the mine owners favored a system whereby the workers would pay for their own disability and retirement with a fixed percentage taken out of their paychecks and deposited in a fund to be overseen by the owners. In 1886, they sent the department's state mining engineer to conduct research on the efficacy of such programs in Germany in order to better apply the lessons in Angers.[596] However, when such legislation was brought before the senate, Blavier fought hard to ensure that slate quarries would be excluded from consideration as mines under the law, that retirement age be raised from fifty to fifty-five, and that *fendeurs* specifically be removed from the scope of the law.[597]

Even as the entrepreneurial class sought to extricate itself from financial responsibility, its members extended their dominion farther into their workers' domestic lives. The Maine-et-Loire was a hotbed of moralistic conservatism. It was here, after all, that the Catholic renewal movement first sprung up in the aftermath

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[595] Blavier, É*tude sur la question de responsabilité.*

[596] Hervé-Bazin, "Les Institutions de prévoyance pour les ouvriers mineurs de Prusse par M Ichon, ingénieur des mines: compte-rendu adressé à la société," *Bulletin de la Société industrielle et agricole d'Angers er du département de Maine et Loire* 3, no. 27 (1886), 44-50.

[597] Duvergier, Duvergier, and Goujon. *Collection complète des lois,* 94:130.

of the Franco-Prussian War.[598] It was also here that birthed the first legislative efforts to keep women and children out of the workplace.[599] This 1874 law meant children under twelve could no longer work in the slate mines, the minimum age being raised to thirteen in 1882.[600] Blavier, incidentally, revealed himself to be a liberal and employer above being a Catholic and nationalist during the debates on an 1892 law limiting the types and hours of work available to women and children. Although he recognized the importance of "protecting the interest of the family" and "*la puissance natale*," Blavier successfully added an amendment ostensibly defending women's right to work as they chose by extending men's eleven-hour workday to women as well.[601] Questions of workers' family lives were thus of central importance to slate entrepreneurs.

In a similar concern over their workers' domestic lives, mine owners took a leading role in overseeing housing conditions. Partially in order to keep miners close to the worksite where they could be carefully monitored and partially in order to attract Breton immigrants, by the 1860s slate quarries were providing company housing to their employees. Reflecting this interest, Blavier was central to a piece of 1894 legislation seeking to address "the material and moral situation of the workers, and, consequently, of the nation," as well as "this other great question that

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[598] Raymond Jonas, "Sacred Mysteries and Holy Memories: Counter-Revolutionary France and the Sacré-Cœur," *Canadian Journal of History* 32 (December 1997), 348.

[599] Joshua Cole, *The Power of Large Numbers: Population, Politics, and Gender in Nineteenth-Century France* (Ithaca, NY: Cornell University Press, 2002), 174.

[600] Marais, *Le Maine-et-Loire*, 64.

[601] Duvergier, Duvergier, and Goujon, *Collection complète des lois,* 92:363-75.

we have come to call the social question," by providing cheap and sanitary houses for workers. This certainly stemmed, in part, from a genuine interest in the wellbeing of the lower classes, but it also sought to ensure a worker did not "pass his evenings in the cabaret" where traditional family and social values came under assault by strong drink and radical ideas. The solution was to create corporations operating in the public interest and with a board appointed by members of the city council, chamber of commerce, and industrial organizations to build cheap housing.[602] Such legislation reveals the interest of Blavier taken as a representative of the slate entrepreneurs in continuing their social role in providing for moral and material wellbeing of their social inferiors in an era when direct financial responsibility was no longer forthcoming at its former levels. It is telling that their solution to the problem of poor housing conditions lay in a *société* with a social conscience. This would prove to be a driving consideration in the mine owners' final push towards full incorporation.

In the meantime, however, absolved of their direct responsibility, these capitalists allowed their existing stock of company housing to deteriorate. Throughout this period, workers lived in horrendous conditions unmitigated since the 1860s. One immigrant worker described the situation in vivid terms: "imagine these lodgings assigned to these men arriving in number into unheard of uncleanliness, setting foot into the hovels offered them, tired, with young children crying of hunger, crying into the arms of their mothers, themselves frozen, in front of these slums worse than the ones they had left just days before!" These houses

[602] *Ibid.,* 94:257-66.

were all uniform, made of black stone, and with one window and an ill-fitting door on the front of each. They lay in treeless plains of black detritus, interrupted only by the occasional swamp of a flooded quarry.[603] The working-class inhabitants spent their days in slate mines in which their bosses increasingly came to dominate every aspect of their work life, and they spent their nights in slate houses in which their bosses increasingly came to dominate every aspect of their family life. There was no escape from the slate. There was no escape from the bosses.

Summing up the entrepreneurs' position, one quarry owner explained that they truly wanted "to assure [the workers'] wellbeing and to ameliorate their lot," but that the only path to the workers' prosperity rested in the prosperity of the slate enterprises. The capitalists wanted to improve working-class life, "but in order for this assistance to be profitable [they] must stimulate the workers' zeal." The problem was that the workers, tied together by work and association, possessed an "esprit de corps, source of independence and revolt." The result was that the men wanted "to make themselves masters of all work." Clearly, however, an industry operating without the guidance of the entrepreneurial class could not succeed and the workers would starve as a result of their intransigence. To the owners, the only way to "improve their situation [was] to change their mores and to make them profit from the protection of the new institutions."[604] The true problem, the mine owners concluded, was that "the licentiousness and the turbulence of the workers

[603] Goacolou and Faës, *Paroles d'ardoisier*, 40.

[604] Jamin, *Mémoire sur la fusion des ardoisières de l'arrondissement d'Angers,* 24-8.

has long compromised the prosperity of the slate industry."[605] Therefore, the only way for the slate capitalists to fulfill their patronal responsibility to help the working-class was to grow their industry. The only way to do that was to subdue worker independence and instill an obedient work ethic.[606] The only way to break the resistance of unified working-class communities was to form a unified ruling-class community. The mining firms thus had to fuse themselves into a single corporation for the wellbeing of everyone.

Fusion

The blossoming network of rail lines presented the capitalist class with a new model for incorporation. Since the middle of the eighteenth century, entrepreneurs around Angers had pushed for the need to concentrate, organize, and rationalize ownership of the mines. As noted earlier, this was largely necessitated by the geographical conditions of the region. However, legal reform and concentration of ownership came only fitfully in the first half of the nineteenth century.

In 1854, Blavier left his post as chief mining engineer to take up a highly compensated position in the Western Railroad Company (Chemin de fer de

[605] Brossard de Corbigny, "Rapport au nom de la commission chargée d'examiner le memoire présenté au concours de 1862," *Bulletin de la Société industrielle d'Angers et du département de Maine et Loire* 3, no. 4 (1863), 50.

[606] Kathryn Amdur, "Paternalism, Productivism, Collaborationism: Employers and Society in Interwar and Vichy France," *International Labor and Working-Class History* 27 (Spring 1998), 137-63; Michelle Perrot, "The Three Ages of Industrial Discipline in Nineteenth-Century France," tr. Micheline Nilsen, in *Consciousness and Class Experience in Nineteenth-Century Europe*, ed. John M Merriman (New York: Holmes and Meier, 1979), 149-68; Roger Price, *People and Politics in France,* 19-63.

l'Ouest).[607] When he had come to Angers four years earlier as an engineering student to visit the slate mines, his journey took four days by railroad, steamship, and buggy.[608] But in those few years railroads had rapidly blossomed to incorporate vast swathes of France with quick and reliable transport. His responsibility at the Western Railroad Company was primarily to oversee mundane details of safety planning and engineering.[609] However, Blavier was so inspired by the cartelization of the national railroad industry that, over twenty-five years later, he used this as the model to organize the slate industry. In essence, his argument lamented the effects of free competition in driving down the price of products, whether rail fare or slate tiles. While he conceded that this provided a short-term benefit to the consumer, he argued that such low profit rates would create a long-term disincentive for capital investment. Without investments in repairs, much less new technologies, the rail industry would decline and consumers would ultimately be left with higher prices and inferior service.[610] But if, on the other hand, firms within an industry were to unify, they could guarantee rates of profit high enough to provide access to capital and credit at low interest rates, especially if the

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[607] Chemin de fer de l'Ouest management list, 1854, ADML 1 Fn 73; "État comparative de l'organisation des bureau de service du matériel et de la fonction au 31 décembre 1854 et de l'organisation proposée à dater du 1er janvier 1855," ADML 1 Fn 73.

[608] Aîmé-Etienne Blavier and Edouard Sens, "Voyage en Espagne," 1850, EMP J 1850 132.

[609] M Baude to M Blavier, 10 December 1854, ADML 1 Fn 73.

[610] Aîmé-Etienne Blavier, "Les Tarifs des chemins de fer," *Bulletin de la Société industrielle et agricole d'Angers et du département de Maine et Loire* 3, no. 22 (1881): 151-70.

government guaranteed them.[611] Lest this organization of prices to ensure above-market rates of profit, perhaps by government decree, be confused as a call for socialism, the author submitted a follow-up article specifying that even when the market had to be constrained for the greater good, it should still be left to private enterprise or else risk stagnation and failure.[612] It was with this model in mind that this author launched a decade-long struggle to incorporate all of the slate firms of Angers under a single management structure.[613]

Within just a few years of the 1845 fusion, observers increasingly came to credit the cartel with the slate industry's rising tides.[614] In 1858, a visiting engineer fretted over the results of competition on the working-class: "the capitalists often only see as their last recourse the reduction of their workers' salaries. Isn't it deplorable, ridiculous" he added, "that to sustain an unnatural reduction in order to fight against their neighbor, they must be reduced to believing it is permissible to discount the sweat of the fortunate?"[615] For him, incorporation was clearly a patronal responsibility. Fearing the social dangers of the free market, mine owners a

[611] Aîmé-Etienne Blavier, *La Question du rachat des chemins de fer par l'état* (Paris: Imp Centrale des Chemins de Fer, 1880), 3-14.

[612] Aîmé-Etienne Blavier, "Le Rachat des chemins de fer et ses conséquences budgetaires," *Bulletin de la Société industrielle et agricole d'Angers et du department de Maine et Loire* 3, no. 22 (1881): 208-220.

[613] Kérouanton, "Blavier," 154.

[614] This attribution was not unique to the slate quarries, although it occurred earlier here than in most other industries, as firms across France increased their market dominance throughout the second half of the nineteenth century despite vacillating state support: Charles E Freedeman, *The Triumph of Corporate Capitalism in France, 1867-1914* (Rochester, NY: University of Rochester Press, 1993), 106-28.

[615] Smyers, *Essai sur l'état actuel*, 178.

few years later congratulated themselves on not having "shrunk before the necessary sacrifices…to improve the method of exploitation followed in this center from time immemorial, illuminated by the council of men of the art…in order to introduce in the material of their worksites the improvements recommended by science and practice" and thus establishing "a purely moral order." Without the continuous technical and above all safety improvements made possible by increased capital and justified by increased profits, they argued, workers would accuse them of being "always disposed to sacrifice the life of men to the conservation of some blocks of slate." The result of competition, therefore, was social disorder.[616] Stating the threat of competition quite bluntly, one author expressed in 1860 that "the creation of a commission of *ardoisières* has saved the Angevin industry from the local competition that was ruining it."[617] Against such dire threats, in trumpeting the success of the industry at the 1858 Exposition held in Angers, Blavier insisted the cartel "exists to avoid the price oscillations that were the ruin of the weakest of enterprises. Directed by an intelligent man, it has extended its action, it has encouraged, even undertaken notable improvements; it has finally given to our quarries the unity that alone permits the realization of great things."[618]

But such collaboration also had distinctly negative consequences for the industry through the concentration of power. With the direction of the industry

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[616] Société des Ardoisières d'Angers to Minister of Agriculture, Commerce, and Public Works, 20 November 1864, EMP. Underlining in the original.

[617] Turgan, *Les Grandes usines de France,* 6:151.

[618] *Souvenirs de l'exposition d'Angers en juin 1858* (Angers, France: Imp de Cosnier et Lachèse, 1858), 45.

determined by representation and shares, a guiding interest in just a few firms offered the investor control over the industry as a whole. This threat became real by 1881 when Montrieux held 15 percent and Blavier 10 percent of all shares in the incorporated firms, meaning that the father- and son-in-law together had a right to one-quarter of all votes.[619] Furthermore, the investors chose to deposit their reserves in a few major banks outside of the region, depriving local industries of access to the capital resulting from above-market-level profits.[620]

Despite these drawbacks, the allure of stronger cooperation led to a push for stronger ties of incorporation in the late 1880s. In 1887, the bylaws enacted in the 1845 agreement were adjusted so that voting privileges would be divided evenly among the constituent firms rather than by capitalization size. Because several of the founding firms had since merged, the result was that they lost power relative to smaller and unmerged firms. Voting rules were also altered so that the members of each constituent firm had to vote in unison, giving whoever held the most shares in the most firms control of the entire industry.[621] Many members opposed what they perceived as a naked attempt by Blavier to seize practical control. They claimed that such an effort would constrain the ability of each firm to mediate problems with

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[619] Stockholder List, 1881, ADML 15 J 198.

[620] Marais, *Le Maine-et-Loire,* 60. The process of concentrating industrial capital holdings into the hands of a few central banks was one of the key features of French capitalist development in the second half of the nineteenth century: Michael Stephen Smith, *The Emergence of Modern Business Enterprise in France, 1800-1930* (Cambridge, MA: Harvard University Press, 2006), 67-130.

[621] Société à Angers-Fresnaies-Trélazé Fusionnées, "Contre-Projet de M Bessirard à opposser aux modifications et additions proposes par M Fonteneau," [1887], ADML 70 J 5.

workers and find compromises to their grievances. They also believed the result would be to transform what had hitherto only been a legal cartel into an illegal monopoly.[622]

Such accusations appear justified in light of his adjustments to the commission's regulations just two years later. Perhaps exploiting the struggling state of some of the firms, Blavier now proposed dividing the votes among the constituent firms as determined by amount of available capital minus any debts. This gave the company in which he held the largest share a 50 percent stake in all votes.[623] He defended this as the only rational way to calculate the relative size of each firm.[624] Some of the entrepreneurs agreed that such an inclusive calculation was the only fair way since those firms holding debt would need to liquidate their stocks to meet their obligations.[625] For others, however, the division had been manipulated so that "alone, in this combination, M Blavier finds all the advantages."[626] Despite such oppositions, over the next two years plans for increasing incorporation progressed until, by 1891, the entire industry was united

[622] "Observations et conclusions de M Blandin contre l'avant projet présenté pour reformer l'acte consultatif de la Commission des ardoisières d'Angers," 1887, ADML 70 J 5.

[623] Aîmé-Etienne Blavier, Act of Incorporation of the Commission des Ardoisières d'Angers, 26 April 1889, ADML 15 J 198.

[624] Aîmé-Etienne Blavier, "Observations sur la constitution du fonds de roulement de la société fusionnée à créer," 17 May 1889, ADML 15 J 198.

[625] Bordeaux, "Réponse de MM Blavier et Bordeaux à la note de M Blandind du 24 mai 1889," 7 June 1889, ADML 15 J 198.

[626] Blandin, "Observations faites par moi en réponse à celles présentées par M Blavier sur la question de fusion, notamment sur la manière d'établir les parts," 19 April 1889, ADML 15 J 198.

in a single corporation, the Commission des Ardoisières d'Angers.

Workers

Despite the best intentions of the slate capitalists to care for their employees and maintain good social order, the workers grew increasingly alienated from and antagonistic towards their bosses. This was the direct result of the concentration of mine ownership into a single and unified group of people that identified as a cohesive class in opposition to the working class by nature of their relation to the means of production. According to Michelle Perrot, it was not the degrading effects of paternalism that workers rebelled against, but the psychological impact of their perceived inability to escape to other employers.[627] Such concentration not only had cultural and psychological effects, but as Jean-Luc Marais has shown, the creation of a monopsony in the labor market also allowed mining firms to decrease wages well below those prevailing for the industry in competitive labor markets.[628] Although not expressed in such terms by the entrepreneurs in the slate fields around Angers, the very logic of their position entailed class conflict.

The workers' organization and unity had been devastated in the aftermath of La Marianne. With their leadership in exile and the Second Empire ruthlessly cracking down on strikes and unionization, for over a decade the mines and quarries around Angers remained peaceful. But discontent had not been arrested with La

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[627] Michelle Perrot, "On the Formation of the French Working Class," in *Working-Class Formation: Nineteenth-Century Patterns in Western Europe and the United States*, ed. Ira Katznelson and Aristide R Zolberg (Princeton, NJ: Princeton University Press, 1986), 71-110.

[628] Jean-Luc Marais, "Salaires des ardoisiers des villes et des campagnes (1833-1914)," *Annales de Bretagne et des Pays de l'Ouest* 104, no. 3 (1997), 123-31.

Marianne in 1855 or swept away by the flood in 1856; it continued to seethe beneath the surface; it was August Spies's infamous subterranean fire. In 1869, the *fendeurs* appealed to the Prefect and Napoleon III for the preservation of the traditional rights and prerogatives they had fought to maintain throughout the nineteenth century. They wanted to maintain the *hottée* system to support pensioners against efforts by the mine owners to diminish the retirement payments granted to pacify the workers in the aftermath of La Marianne. In addition, they accused the slate commission, which controlled the operation and distribution of the mutual aid fund drawn from mandatory employee contributions, of embezzling the annual surplus of several thousand francs for their own profit. They therefore wanted the existing account liquidated and, beginning in 1870, to create their own mutual aid society under the supervision of the departmental mining engineer rather than the mine owners. The real problem underlying these specific grievances, they argued was that "always, whatever the object of their complaints, the will of *the master* is law," and that any worker "who complains exposes themselves to losing their job, that is to say their bread, in the quarries of the [cartel]." They thus wanted an impartial council "to lift the difficulties that can arise between the masters and the workers."[629]

This petition is very telling about the changes to the *fendeurs'* position by the middle of the nineteenth century. At first glance, the age-old fight to maintain their traditional rights seems very familiar. However, the intractable problem is not in the observance of existing rights or regulations, but in the inability of the men to

[629] "Pétition des ouvriers fendeurs des ardoisières d'Angers-Trélazé," 3 October 1869, BNF.

negotiate with their bosses. Once the slate firms had fused into a single entity, employers held monopsony power in the labor market; they could exercise absolute authority at each job site because a disobedient worker could be blacklisted from all the mines. It was against this overwhelming power that the workers sought to enlist the aid of the state. They were to learn soon, however, that any hope for change would have to be found within.

Within a year the *fendeurs* confessed that they had "naively thought that our demands" would be listened to, or that maybe the mine owners would rather cultivate "their reputation for generosity and for philanthropy" than for cruelty. Disabused of this notion, they offered a trenchant assessment and warning: "you are the strongest, messieurs; you have the power of capital and you know how to use it. You apply perfectly this principle to which you would like to habituate the worker to respect: *The strongest reason is always the best*. So be it, messieurs; but this is a bad example you set for us." They accused the mine owners of destroying the *hottée* system "because it further restricts our liberty to work so little respected by you….to tie us more tightly to your establishments, to chain us more solidly to your mounds like in the old days a serf to the glebe." They then challengingly asked: "they say there are no more serfs. What do you think messieurs?...."[630]

If the overriding problem from the point of view of the workers was that the bosses had formed themselves into a new seemingly unassailable ruling class, the more immediate concern was the reversal of a few practical matters. First, as they

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[630] *Les Fendeurs d'ardoises à M Montrieux président et à MM les membres de la Commission des ardoisières d'Angers-Trélazé* (Senlis, France: Ernest Payen, 1870), 1-3.

had explained to the prefect, they wanted to reestablish the *hottée* system. Second, they claimed that the retirement account, "fed by deductions taken from the salary of the workers, is the collective, unquestionable, inalienable property of the workers," and so demanded that control over it be put "back in the hands of the workers!" They confessed that there had once been a time for the bosses to oversee the management of the fund, but argued that "today we know how to read and count," and, more importantly, that "the relations between [entrepreneurs] and workers are not the same." The *fendeurs* were also somewhat unhappy about the present distribution of the funds caused by the equal payments put in by *fendeurs*, by workers from below, and by day laborers in contrast to the higher payouts going to the more dangerous professions. Ultimately, the workers felt they were in a better position to oversee the distribution of the account effectively because "we know better than you, messieurs, the anguish and suffering of these unhappy families whose heads are crushed so often today in order to live and to enrich you."[631]

The *fendeurs* concluded by clearly explaining to their bosses how changes to the organization of the slate industry over the last century had directly created the present class conflict:

> In the old days the master lived closer to the worker; the worker was freer and spoke more confidently. You wanted to make the worker a slave; each of the modifications you brought to the division of labor, all of your measures, all of your efforts seem to have but one goal: *to make the worker a machine of*

[631] *Ibid.,* 3-7.

> *production in the service of capital*. Well, we have withdrawn our trust. Consequently, in the name of right and justice, we give you notice to respect or to violate, we ask you to return the management of *our* retirement account. What would you think, messieurs, supposing that we were the strongest, if we pretended, us, workers, to manage, even with your cooperation, your commercial accounts filled by our labor, and to distribute to you, each trimester, your dividends wet with our sweat?...Such an absurd supposition, isn't it, what a ridiculous pretention! But it is no less true than what in reality you do towards us."

Having identified the root problem as the creation of a capitalist class existing only through the exploitation of the workers, these men followed the logic of what this meant for them as a class themselves and the only recourse left open to them:

> The workers from below are our brothers, and on the day when you return to us our money, that you detain against our will, you will learn that the *fendeurs* of slate tiles have nothing to learn from you on the relations of fraternity. Yet to the eyes of the public that ignore the detail of our eternal regulations, you seem to charitably assist the widows and orphans of those who died on the field of labor, and we, who demand the liquidation of the retirement accounts, we seem to be selfish. This error must cease. They must know what is the secret reason, the real reason, the only reason that keeps you from agreeing to our demands for this liquidation. They must know that if the widows and orphans of the workers killed in your quarries no longer received help from *us* (from *us* do you hear) they would raise their voice, and

> you would be required, you, our masters, that our sweat has made rich and powerful, you would thus have to help them out of your pocket. Voila, messieurs, the secret of the generosity that you make with our money. It is time the mask falls off and the public knows the truth

And with that, the *fendeurs* had announced the class war.

Preparations began with the formation of a union open to all slate workers, regardless of occupation, in 1877. Growth was slow in the first few years, encompassing only 120 workers in the early 1880s. Their main efforts revolved around fair wages, the formation of producer and consumer cooperatives, and the creation of a school and library for the workers.[632] Such demands were typical of mid-nineteenth-century worker radicalism.[633] Otherwise, outward manifestations of worker militancy were at low ebb, with one brief strike in 1879 and another in 1881.[634]

Their radicalism ran deep, however, shaping class relations in the city. In the early 1860s mine owners had helped push for the erection of a chemical match factory in Trélazé in order "to procure work for the wives and daughters of the slate workers."[635] This factory quickly came to reflect the town's leftist lifeblood. In 1879, while the quarry workers quickly settled down following a mass layoff, two hundred

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[632] Maurice Poperen, *Syndicats et lutes ouvrières au Pays d'Anjou* (Laval, 1964), 23.

[633] Prothero, *Radical Artisans*, 145-74.

[634] Letter Gendarmerie to Prefect, 22 November 1879, ADML 71 M 1; Letter Police Commissioner of Angers 4th Arrondissement to Prefect, 18 May 1881, ADML 71 M 1.

[635] Société des Ardoisières d'Angers to Minister of Agriculture, Commerce, and Public Works, 20 November 1864, EMP.

match workers struck to protest a wage decrease.[636] Nonetheless, their actions were reported to have been conducted "very calmly."[637] As time wore on, however, these female match workers developed such a reputation for anarchist militancy and independence that the national federation of match workers regarded them with mistrust and suspicion.[638] The accuracy of this assessment would soon be clear.

The state of the slate workers' drive to develop a class-conscious movement was evidenced during a strike in 1886. Amidst a national economic downturn, the mines at Pont Malembert had begun laying off hundreds of workers late in 1885, reducing the salaries of the rest by 10 percent. Government officials grew concerned about social unrest, the workers having "really suffered from unemployment."[639] Then, on January 23, 250 quarrymen reacted to the announcement of another reduction in work hours by pelting the managers with rocks.[640] From there they marched over to the firm's owner's house en masse, smashing windows there before moving on to another quarry to rally support.[641] Nervous officials noted that, "for

[636] Letter to Minister of the Interior, 29 November 1879, ADML 71 M 1.

[637] Letter Mayor of Angers to Prefect, 27 November 1879, ADML 71 M 1.

[638] Bonnie Gordon, *Phossy Jaw and the French Match Workers: Occupational Health and Women in the Third Republic* (New York: Garland Publishing, 1989), 83-5.

[639] Letter Secretary General of Maine-et-Loire to Minister of the Interior, 9 February 1886, ADML 71 M 1 181.

[640] Report by Special Commissioner of Angers, 23 January 1886, ADML 71 M 1 179.

[641] Letter Central Commissioner to Prefect, 23 January 1886, ADML 71 M 1 175.

the moment, there are only some malcontents."[642] The primary fear, however, was that on February 12 the *fendeurs* still finishing work at Pont Malembert would be laid off and the strike actions would reach a new pitch.[643]

For their part, local officials attempted to act swiftly to prevent the situation from escalating. They complained that the mine owners were acting "excessively severe," firing workers at "the least discrepancy, the lightest act of insubordination" in what was "evidently an attempt to diminish without end the number of workers."[644] More substantively, they petitioned the national government to forward three thousand francs to support public works that might alleviate some of the suffering. But, given the national scope of the downturn, federal coffers had already been drained by similar desperate requests pouring in from around the country.[645] Ultimately, the prefecture was able to distribute only five hundred francs to the workers six months after the unrest had ended.[646] State intervention thus proved unnecessary in this case. Although workers had begun to think of themselves as a single class, they remained divided by worksite and by trade. Not until the ownership of the mines was finally concentrated into a single firm would the miners also unite.

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[642] Letter Gendarmerie Captain of Angers to National Gendarmerie, 23 January 1886, ADML 71 M 1 173.

[643] Letter Gendarmerie Captain of Angers to National Gendarmerie, 5 February 1886, ADML 71 M 1 172.

[644] Report Special Commissioner of Angers to National Gendarmerie, 29 January 1886, ADML 71 M 1 179.

[645] Letter Minister of the Interior to Prefect, 18 February 1886, ADML 71 M 1 182.

[646] Letter Prefect to Mayor of Trélazé, 7 August 1886, ADML 71 M 1 186.

CHAPTER VI

CONCLUSION, 1890-1891

The 1890s dawned over seemingly placid industrial relations. The previous year, the entire Maine-et-Loire had experienced only three strikes, encompassing just 160 workers in total and each lasting between one and eight days.[647] But beneath the surface worker discontent was seething. The 1200 socialists believed to reside around the slate quarries were drifting further to the left, rejecting participation in representative politics and embracing anarchism.[648] Unbeknownst to the workers packing meeting halls to hear the passionate speeches of Parisian anarchist militants and sing politically charged songs, the next two years would see the class tensions that had slowly formed in the slate fields over the previous century erupt into full-scale conflict.[649]

On July 23, 1890, the *fendeurs* at Pont Malembert voted to strike. In a letter to a local republican newspaper sympathetic to the workers' plight, they explained that over the previous two years their piece-rate pay had been cut no less than three times at this quarry, adding up to a 40 percent reduction in take-home pay to a mere two and a half francs per day, or sixty francs per month. They were striking, the workers announced, for a return to their previous wages plus a 15 percent

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[647] "Grèves et coalitions, année 1889, état récapitulatif," [1889], ADML 71 M 1 25.

[648] Special Commissioner Report on Socialists and Legislative Elections, 5 September 1889, ADML 71 M 2.

[649] Letter Central Commissioner to Prefect, 28 April 1890, ADML 71 M 2.

increase.[650] Seventy men walked out on strike, but tough economic conditions meant that one-fifth of the *fendeurs* had stayed at the jobsite and many more soon had to return as scabs.[651] The *fendeurs* at this quarry thus entered the strike divided among themselves, isolated from the day laborers and workers from below at this quarry, and lacking strike action from any other site.[652]

The quarry owners quickly seized the offensive. In letters to the editor, they argued to the Angevin public that they were not responsible for the workers' conditions. They cited, on the one hand, poor performance of the slate industry in general resulting in lower slate prices that had been transmitted into lower wages. Until prices recovered, they argued, a raise was financially impossible. They also accused the *fendeurs* of exaggerating their poverty, saying that most of them were earning nearly six francs a day, or over 133 francs per month, an assertion they were to later back down from.[653] More importantly, they argued that the workers themselves, driven by lazy habits and avarice, were to blame because they "hardly work twenty days per month and earn well over sixty francs."[654] This helps exemplify the self-conceptions held by the entrepreneurial class. First, they were operating within an external and natural market system over which they had no

[650] O Georget, Letter to the Editor, *Le Ralliment* (Angers, France), 28 July 1890.

[651] Letter Ardoisière du Pont Malembert to Prefect, 20 September 1890, ADML 71 M 1 314.

[652] Telegram Mayor of Trélazé to Prefect, 23 July 1890, ADML 71 M 1 350.

[653] Moysan Brothers, Letter to the Editor, *Le Ralliment* (Angers, France), 27 July 1890.

[654] Moysan Brothers, Letter to the Editor, *Le Ralliment* (Angers, France), 30 July 1890.

personal control. Second, they were struggling against a backwards working class yet to accommodate itself to the exigencies of the capitalist economy. In between these two forces, the *ardoisières* were but a rationally acting class operating to steer existing resources towards maximal production.

In early August, 1890, these owners asserted the property rights granted to their class nearly a century before by removing the *fendeurs'* tools and shelters, threatening to place them by the side of the road if the artisans failed to come retrieve them.[655] However, they pressed their position too far in announcing that, without any workers to shape harvested slate, there was no reason to continue quarrying it; all remaining workers at Pont Malembert were to be laid off. The worker response was overwhelming: six hundred men from throughout the slate fields gathered in a night meeting and promised to support the strikers.[656] An aged Attibert, who had originally risen to a position of prominence during La Marianne, now organized solidarity throughout the quarries, with pledges of support pouring in from as far away as Ardennes.[657] They formed a strike committee called Social Studies, promising that "a series of conferences will be held to benefit the strikers," and that representatives would be dispatched to "Cholet, Nantes, Saint-Nazaire, Rennes, Le Mans, Tours, Châteauroux, Châtellerault, and Poitiers" to solicit strike funds.[658] The bosses' attempt to smother the protest had only fanned the flames,

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[655] Telegram Mayor of Angers to Prefect, 6 August 1890, ADML 71 M 1 322.

[656] Report Gendarme Captain, 3 August 1890, ADML 71 M 1 324.

[657] "Trélazé," *L'Éclaireur de la Vienne* (Châtellerault, France), 24 August 1890.

[658] Letter to Minister of the Interior, 19 August 1890, ADML 71 M 2.

threatening to turn it into a conflagration, as workers came to see their interests as unified despite trade in response to the owners' unilateral actions.

The situation heated up in mid-September, perhaps driven by the desperation of men still out of work after two months. On September 19, forty-three of the striking *fendeurs* surrounded the worksite at Pont Malembert and beat every scab they could get their hands on as a warning. The next morning, sixty of the strikers came back and viciously attacked any of the scabs that had failed to take their not-so-subtle hint so badly that two were "gravely wounded."[659] At four o'clock that same morning, five men held up a cart delivering slate tiles from the quarry and smashed its contents. Elsewhere, a scab gathering water for Pont Malembert's steam engines was attacked. Meanwhile, crowds of workers kept a round-the-clock rally at the quarry owners' homes.[660] In response, the prefect ordered police to descend on the site in order to defend the scabs' "freedom to work." By this point, the strikers had received pledges of support from over two thousand other workers in the Angers slate mines, indicating that it was no longer a matter of *fendeur* solidarity, but a conflict of classes.[661] The threat of large-scale violence seemed to grow immanent, especially as masses of quarry workers marching on the quarry owners'

[659] Letter Ardoisière du Pont Malembert to Prefect, 20 September 1890, ADML 71 M 1 314-5.

[660] Letter Ardoisière du Pont Malembert to Prefect, 21 September 1890, ADML 71 M 1 314-5.

[661] Letter Prefect to Minister, 22 September 1890, ADML 71 M 1 296.

homes confronted squads of gendarmes.[662] The local gendarmerie commander issued a warning to the prefect that workers from several of the mines were now involved and that "if the strike continues for Pont Malembert, it is feared that the number of strikers will grow. In this case, I will not be in control."[663]

Perhaps bowing to political pressure, the quarry owners decided to meet with strike delegates on September 22, but at first refused their demands for a wage increase.[664] However, by the end of the day an agreement had been ratified granting the workers' demands and, after two months, the strike was over.[665] Class-conscious class conflict was thus on the rise in 1890. And although the Pont Malembert strike was the fiercest, that year saw four more strikes break out in the Maine-et-Loire, encompassing nearly five hundred workers, of which 350 were in two other strikes in Trélazé in the first half of September.[666]

1890: Fusion and Union

On January 1, 1891, the fruit of a century of struggle finally blossomed. Under Blavier's leadership, seven companies encompassing eighteen mines and workshops officially coalesced as the Commission of Ardoisières of Angers. Henceforth, all constituent sites were to function under the same standardized rules. Although the

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[662] Telegram Mayor of Trélazé Mayor to Prefect, 20 September 1890, ADML 71 M 1 316.

[663] Letter Gendarme Captain Bertrand to Prefect, 22 September 1890, ADML 71 M 1 324.

[664] Letter Mayor of Trélazé to Prefect, 23 September 1890, ADML 71 M 1 294.

[665] Telegram Mayor of Angers to Prefect, 22 September 1890, ADML 71 M 1 300.

[666] "Grèves et coalitions, année 1890, état récapitulatif," [1890] ADML 71 M 1 192.

immediate cause for the fusion was the ever-increasing stockpile of slate tiles caused by a poor market, it came as the logical outcome of a century of advocacy on part of the entrepreneurs, operating within a new legal framework and in response to economic, social, and environmental conditions, to merge their capital, productive forces, and patriarchal control in order to more effectively master the market.[667]

The unification of the owners meant that demands made at any quarry would be applicable at all quarries, creating a community of interests among the entire working class. At noon on Monday, March 16, 1891, the day laborers in charge of loading and unloading the *bassicots* at Petits-Carreaux voted to strike for a twenty-five-centime raise. That night, the rest of the workers at the quarry, regardless of trade, voted unanimously to strike in support of the day laborers' demands. The freshly formed strike committee explained that they "reckon that the price they demanded is still well below what is needed for the father of a family to feed his children and to feed himself," and that the raise would ultimately only cost the company seven hundred francs per year.[668] When the Commission balked at this request, what was an isolated strike over limited demands erupted into a general strike: "'you refuse,' they told the directors, 'to agree to the raise demanded by the *bassicotiers*? Well then, we are all going on strike.'" Within days, 1200 workers showed up at a public meeting place only to find the doors locked. Rather than retire, they marched on the mayor's house to demand the keys, wounding a

[667] Soulez Larivière, *Les Ardoisières d'Angers*, 153-5.

[668] "Grève à Trélazé," *Le Patriote de l'Ouest* (Angers, France), 20 March 1891.

gendarme who had stoically announced that he would only let them in "over my dead body" before settling for breaking down the meeting hall door and filing inside. In an attempt to maintain order, the next day a squadron of fifty light cavalry were sent in, only to be confronted with a mob of two thousand men and women who hurled insults and rocks at the troops before a cavalry charge scattered them.[669] Despite this militant start, on March 25 the workers called off the strike, provided that the day laborers received their twenty-five-centime raise. Calls for the mayor to step down, though, failed to make any real headway against his obstinate refusal.[670]

On March 31, workers at all of the mines returned to work only to discover that the Commission had implemented a set of strict new rules in their absence. By ten that morning they were back on strike.[671] Each trade developed its own set of demands for the ensuing strike. They prefaced their demands by saying that the fusion of the mines into a single company had standardized wages at a lower level and implemented new rules.

The *fendeurs* called for an end to the fines used to enforce proper workplace behavior, an end to the now centralized workshops that took specialized work out of their hands, and above all an end to the new regulations regarding the production of the English Model tiles.[672] These larger, thicker English Models had been

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[669] "La Grève générale à Trélazé," *Le Patriote de l'Ouest* (Angers, France), 22 March 1891.

[670] "La Grève générale à Trélazé," *Le Patriote de l'Ouest* (Angers, France), 25 March 1891.

[671] "La Grève de Trélazé," *Le Patriote de l'Ouest* (Angers, France), 3 April 1891.

[672] "Grève des ardoisières, 1891," 6 May 1891, ADML 71 M 2 467.

introduced in the 1850s as improved transportation methods brought Angers slate into competition with Welsh slate in Britain and Normandy.[673] Now, however, *fendeurs* were tasked with producing a fixed number of these tiles per month, despite their being much more difficult to fashion, and were penalized by fines for failure to meet their quota. Defending the decree, Blavier explained that "the slate industry, being subjected, like all other, to the law of supply and demand, the exploiters always need to demand from the workers the production of the slate the clientele demands...Thus, at the moment, the purchasers' preference is given towards tiles of large dimensions and very thick, called English Model tiles, the directors of the quarries have had to fix the quantity of these tiles the workers have to provide during the semester." Since the *fendeurs* were essentially self-employed, the only way to effectively increase the numbers of English Model tiles produced by them was to levy such fines.[674]

Meanwhile, the employees tasked with counting the finished tiles called for an end to fines, to be paid even if a shipment was damaged in transport, and to receive a daily salary. Workers from below wanted a pay raise, an end to the negotiations that took place each semester over their piece-rates, and crucially, the ten-hour day. Other workers around the mines were content just to ask for a wage-

[673] Tessier Menuau, "Report on the history of fabrication since 1827," transcribed by Furcy Soulez Larivière, [1881], ADML 70 J 25.

[674] Aîmé-Etienne Blavier, Letter to the Editor, *Le Patriote de l'Ouest* (Angers, France), 8 April 1891.

increase.[675] Blavier responded that even a twenty-five-centime raise across the workforce would cost the Commission over one hundred thousand francs each year, and was therefore entirely unreasonable.[676] Backing Blavier's claim, a government engineer compiling a report that year on the feasibility of a shorter workday concluded: "the slate industry could not accept an increase in price coming from the legal reduction of the workday...[which] would have as its immediate consequence a proportional lowering of salaries."[677]

The mine owners quickly called for support from the authorities, claiming that continued work was impossible so long as scabs were afraid, having been "threatened" and having had their families "terrorized."[678] In response, the Prefect ordered the Eighteenth Infantry Division into the slate fields "to maintain order."[679]

A more peaceful solution seemed to present itself the next day when the miners invited their bosses, including Blavier, to a meeting to discuss an end to the

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[675] "Grève des ardoisières, 1891," 6 May 1891, ADML 71 M 2 467. Disputes over the piece-rate negotiations were a common cause for conflict in mines during this period: James A Jaffe, *The Struggle for Market Power: Industrial Relations in the British Coal Industry, 1800-1840* (New York: Cambridge University Press, 1991); Jean Lindsay, *The Great Strike: A History of the Penrhyn Quarry Dispute of 1900-1903* (Newton Abbot, Great Britain: David and Charles, 1987).

[676] Aîmé-Etienne Blavier, Letter to the Editor, *Le Patriote de l'Ouest* (Angers, France), 31 March 1891.

[677] "Réponse au questionnaire de l'ingénieur des mines relatif à l'organisation du travail dans les exploitations souterraines," 18 July 1891, ADML 15 J 198 73.

[678] Larivière, Letter to the Editor, *Le Patriote de l'Ouest* (Angers, France), 9 April 1891.

[679] Letter General Fabre to Mayor of Trélazé, 5 April 1891, ADML 71 M 2.

strike.[680] These entrepreneurs believed the uprising was ultimately only the result of a few fiendish ringleaders instigating discontent.[681] Reflecting the patriarchal views of his class, in his newspaper Blavier referred to the striking workers as "*les petits*," labeling their demands for a raise to feed their families disingenuous and accusing the workers of spending more on liquor for themselves than on food for their families. To the eyes of observers sympathetic to the workers, Blavier had clearly unilaterally cast himself as their protector.[682] Defending his position against the demands of the workers, he declared: "such pretentions were inadmissible." He stated that the Commission had closed the worksites because "the workers maintained their demands in not understanding their true interests, because they will not find in any industry better or even equal conditions to those given to them at the *ardoisières*, where work is guaranteed to them without unemployment during the whole year." However, rather than accepting this mutiny as the result of legitimate and adult grievances, Blavier explained his belief about his misguided industrial children: " I believe, honestly, that these workers are the unwitting victims of leaders, especially the most dangerous."[683]

The most dangerous was Ludovic Ménard. Born just two weeks after La Marianne in Saumur, the next major town up the Loire from Angers, Ménard grew up in a poor household, and became an apprentice *fendeur* in 1866 at just eleven

[680] Georget, Letter to the Editor, *Le Patriote de l'Ouest* (Angers, France), 9 April 1891.

[681] "La Grève de Trélazé," *Le Patriote de l'Ouest* (Angers, France), 8 April 1891.

[682] "La Grève de Trélazé," *Le Patriote de l'Ouest* (Angers, France), 26 March 1891.

[683] Aîmé-Etienne Blavier, Letter to the Editor, *Le Patriote de l'Ouest* (Angers, France), 7 April 1891.

years old. Although he later became an ardent pacifist, Ménard tried to enlist in the French Army during the Franco-Prussian war in hopes of steady meals, but was just shy of the required age of fifteen. Shortly thereafter, however a kindly doctor noticed a particularly keen aptitude in this young man and undertook responsibility for his education. Now able to read and write, Ménard immersed himself in the world of radical ideas and, throughout the 1880s, was a leading voice for anarchism in the Maine-et-Loire.[684] As a police report described him in 1890:

> Intelligence: Very Intelligent
>
> Morality: Good
>
> Conduct: Good, Good Worker
>
> Considered as Ambitious[685]

Ménard was an effective organizer, adeptly drawing on the strong Christian traditions of workers in Western France to preach his own brand of anarchism with "a mystical rather than an economic sense."[686] Seeing beyond the immediate material concerns of the workers, he wanted a new order, one in which the workers themselves held the power, both political and economic, beginning with control of their retirement accounts.[687]

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[684] François Lebrun and Alain Jacobzone, *Ludovic Ménard (1855-1935): fondateur du syndicalism ardoisier* (Trélazé, France: Imp Angevine, [1985]), 1-14.

[685] Report Central Commissioner, 8 May 1890, ADML 71 M 2.

[686] Michelle Perrot, *Workers on Strike: France 1871*-1890, tr. Chris Turner (New Haven, CT: Yale University Press, 1987), 234.

[687] Ludovic Ménard, "La Question des salaires à Trélazé," *Le Patriote de l'Ouest* (Angers, France), 15 April 1891.

On April 6, 1891, he stood at the front of the packed meeting hall, five feet four inches tall, brown haired, skin tanned dark from working in the sun, with piercing grey eyes and "a horseshoe mustache."[688] As in all of his pictures, Ménard's most noticeable attribute standing up there must have been his massive, powerful hands tempered by decades of work at the mines.[689]

Blavier and his fellow mine owners arrived at the hall, slowly making their way through the crowd to where Ménard and the union leadership waited, and the debate began. After listening to a presentation conveying the workers' demands for further raises, Blavier announced that the Commission had already granted a round of wage increases. Adopting a sarcastic tone, one of the union officials relayed that "Blavier judges that this salary is sufficient, because unemployment doesn't exist in the quarries." Blavier replied that another increase beyond the generous one already granted was simply impossible given the company's financial situation, prompting another mocking rejoinder that "the commission has millions and can't live, we're starving to death and have all the money." The real problem, Ménard expressed, was not that a cabal of maniacal ringleaders had tricked the workers into striking, but that the employers had caused it themselves by "the posting of arbitrary rules." Thus, there were two levels of worker discontent: the immediate material concern of higher pay, but also a lingering desire to escape the owners' arbitrary authority and to regulate their own work. The situation quickly devolved from here, and the entrepreneurs attempted to walk out, only to find their exit

[688] "Notice individuelle concernant le nommé Ménard suspect d'être dangereux," [1890], ADML 71 M 2.

[689] Photographs, Musée de l'Ardoise, Trélazé, France.

blocked by hostile workers.[690] Forced to stand, insulted, and "violently jostled," one can only imagine how infuriating this experience must have been for Senator Blavier.

Two days after this contentious showdown, the Commission decided to meet the demands of the workers responsible for counting the finished tiles.[691] Further concessions were ultimately made granting modest pay increases to most of the categories of workers involved in the strike, never as much as the workers had demanded but averaging to be a twenty- to twenty-five-centime daily raise.[692] The strike was officially over.[693]

Some unrest continued in the ensuing weeks. The union continued its efforts by appealing to the prefect to outlaw "arbitrary and persecutory" fines.[694] They were now openly referring to themselves as the Union of Slate Workers of Angers-Trélazé.[695] However, despite this new title, the working-class had split. Although the strike officially ended April 8, about one-third of the *fendeurs* and another hundred

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[690] "La Grève de Trélazé," *Le Patriote de l'Ouest* (Angers, France), 31 March 1891.

[691] Larivière, Letter to the Editor, *Le Patriote de l'Ouest* (Angers, France), 31 March 1891.

[692] "Journaliers d'à bas," "Journaliers divers," and "Ouvriers d'à bas," [Summer 1891], ADML 71 M 2 535.

[693] "La Grève de Trélazé," *Le Patriote de l'Ouest* (Angers, France), April 11 1891.

[694] Letter Corporation des Ouvriers des Carrières to Prefect, 19 April 1891, ADML 71 M 2 629.

[695] Letter Syndicat des Ardoisières Angers-Trélazé to Prefect, 15 April 1891, ADML 71 M 2 632.

or so workers from other trades were still out on April 11.[696] Two weeks later, these meager numbers had declined even farther. The action lost all support among groups like the counters, who had already gained all of their demands, and those specializing in the English Models, to whom the *fendeurs'* demands were a threat.[697] Soon, the last of the slate workers were back on the jobsite, just as they had been for generation after generation in the slate fields of Angers.

But this was just the birth of a powerful and unified working-class movement whose descendants march through the streets of Trélazé against the unilateral actions of the entrepreneurs to this day. This movement was not conceived as a response to the conceit of the slate entrepreneurs any more than the formation of a single mining corporation was the response to the intransigence of the slate miners; the actors in this story, capitalist and worker alike, acted earnestly in pursuing their rational and limited self-interest, generally tempered by altruistic considerations. This movement was not conceived as the necessary response to environmental conditions and cold industrialization any more than the environment and industry themselves yielded unilaterally to human will; technology, nature, and people all entered into an open and interactive dialogue of progress. This movement was not conceived as the reaction to a political and legal system consciously codifying a new order any more than labor strikes throughout the period were attempts to build a long-term socialist alternative; the people at every level of society made short-term

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[696] "Situation de la grève de Trélazé à 11 avril à 8 heures du matin," 11 April 1891, ADML 71 M 2 535.

[697] "Situation de la grève de Trélazé à 25 avril à 9 heures du matin," 25 April 1891, ADML 71 M 2 599.

decisions in order to react to prevailing conditions in the way most in line with their own worldviews.

Instead, this movement was born of the rise of a capitalist logic, a new paradigm rearranging social, economic, environmental, and political relations. The marches of 1890 had little in common with those of 1790, but many similarities to those of 2014. This is because the nineteenth century witnessed the slow and halting birth of the capitalist system in the slate fields of Angers. To understand how its underlying logic, its very DNA, operates in our own age, one in which it has become a totality, we must look back to its infancy, when conflict with the previous order illuminated unseen forces like instantaneous sparks in a hadron collider. That is what this essay has hoped to accomplish.

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