

"A Dive Into Nature's Great *Grab-bag*": Nature, Gender and Capitalism in the Early Pennsylvania Oil Industry

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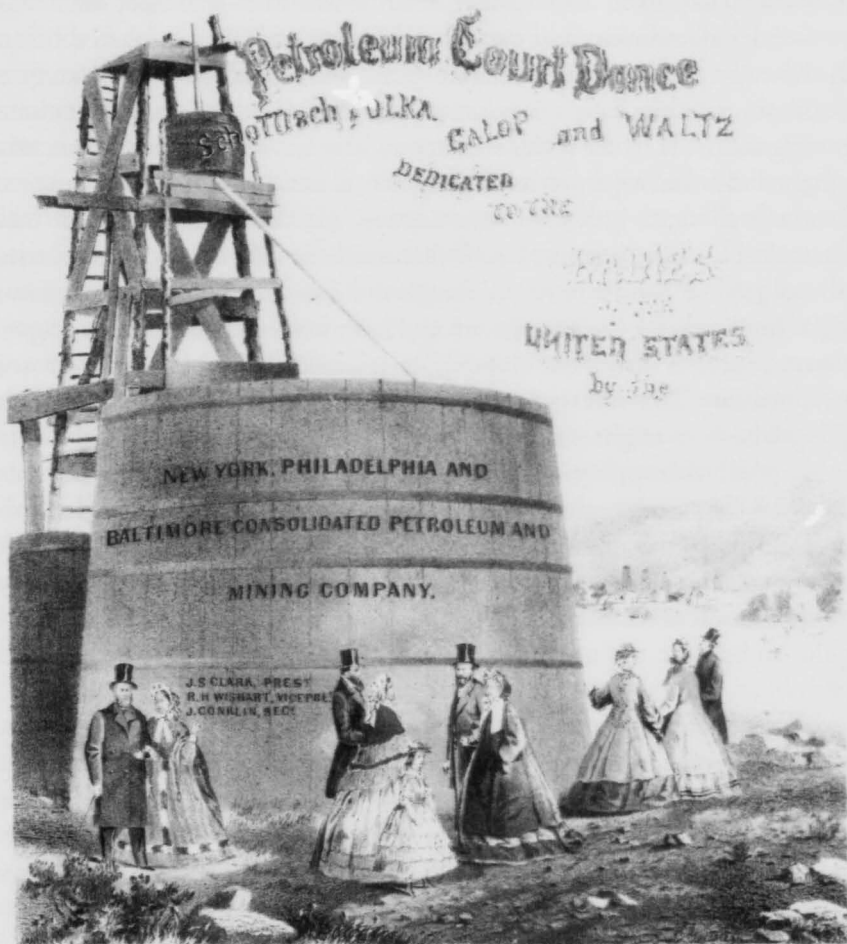
"Was the like ever witnessed anywhere else in the world, out of these oil regions?" asked Americans during the 1860s and 1870s as they sought to make sense of the startling rise of the Pennsylvania oil industry.¹ Historians have amply documented the economics of the early oil industry and recounted Standard Oil's seizure of industrial control.² Concurrent with this economic and industrial transformation, the rising oil industry also became a pervasive yet ambiguous cultural force. As the British *Cornhill Magazine* complained in 1862, just three years after the first well had been drilled, oil, "that unsavoury production of the prolific earth,"

is now imparting a taste of its quality to everything wearable, eatable, and drinkable, throughout whole sections of the Union, from the eggs and muffins you devour at breakfast, to the sheets in which you lie at night. . . . The whole Atlantic and Great Western Railway smells like a leafy parafine [sic] lamp; and unless some means can be discovered of overcoming the miasma, an American and a Canadian will be detected in society by his scent.³

As the smell of oil spread rapidly through American society, it assumed meanings beyond its functional use or chemical composition. People wrote songs, polkas, and plays about oil as well as newspaper articles, scientific accounts, and magazine stories.⁴ This essay explores such popular representations of the oil industry in the 1860s and 1870s, revealing to us a struggle by American observers to incorporate the wild phenomenon of oil into a view of the natural world as rational, ordered, controllable, and, above all, exploitable for human profit. Mysterious oil underscored the tenuous basis for this "practical" understanding of nature in the mid-nineteenth century.

Oil and common sense just did not mix, as the explosive power and sheer abundance of petroleum astonished popular authors. "We have just got back," the editor of the *Warren Mail* reported breathlessly. "We are neither drunk nor crazy, though we shall hardly expect strangers to oil diggings to believe all we tell you."⁵ The sudden plenty reinforced a general conviction that Providence uniquely blessed the United States. At the same time, the unpredictability of this good fortune confused many. During the 1860s, pe-

Courtesy Drake Well Museum



COMPOSED
by
HENRY CHATTS ON & CHARLES FRADEL.

NEW YORK,
Published by: Wm Hall & Son, 543 Broadway.

"American Petroleum," a medley of songs published to celebrate the nation's first oil strike in Western Pennsylvania.

troleum seemed to reawaken a perception of the earth as animate, and mysterious Nature, the source of oil, assumed the characteristics of a productive, temperamental female best managed by ingenious oil men. Although oil helped to light and power the industrial transformation, Americans did not view it as

separate from nature as they did the machinery of industrialism—in particular the railroad. Even as oil disturbed the pastoral landscape, its animate, disorderly character linked it to Mother Earth as well as to technological man.

Gendered, animate, and earthly representations distinguished oil from both the railroad and other minerals such as coal and gold. This study of representations of the early oil industry thus provides a fresh cultural twist to a growing literature in the social sciences on how natural resource characteristics shape industrial organization.⁶ The characteristics and familiarity of a resource, as well as its industrial organization, yielded distinct, though malleable, cultural constructions of mid-nineteenth century extractive industries. Coal and gold sat solidly in or on the ground awaiting discovery and extraction. Technologies for their extraction and knowledge of their reactive properties were centuries old. Thus these other minerals lacked oil's mystery and unpredictability. This was true even from the very beginning of the gold rush. While goldseekers might not know exactly where to find gold in California, they accepted, with appropriate frustration, its random distribution, and they understood the simple techniques for its removal from rock and soil. Like oil, gold raised profound questions about fortune and social mobility, but gold did not spark the same animate and gendered imagery. In the coal industry, the combination of social hierarchy and natural order allowed coal, unlike oil or gold, to become the centerpiece of an idealized industrial pastoral landscape.

The cultural trajectory of oil changed with the dynamic young petroleum industry itself. Although the location and behavior of oil wells remained mysterious, industrialists disciplined the industry by controlling transportation, refining, and distribution. In the 1870s, as Standard Oil and its competitors struggled to superimpose market order over oil's natural disorder, the early popular fascination with nature's wayward behavior yielded to expressions of social and class conflict. Popular authors, who had earlier marveled at nature's contributory role, now considered nature insignificant to the petroleum industry. Increasingly, workers and investors "produced" oil. Petroleum joined coal as raw material for a late-nineteenth-century struggle between small and large producers and between labor and capital.⁷

* * * *

"Energy! Activity! Promptness! Life!—these are the maxims of the day," *Scientific American* declared exuberantly in 1859, the same year that Edwin Drake struck oil amidst the quiet farms and woodlands of western Pennsylvania. "Rejecting all fiction, selecting only what is authentic and reliable . . . we present our readers with the very cream and pith of what the human race is learning and doing."⁸ In 1859, many Americans in the northeastern states

exuberantly celebrated the steady rise of science and economic enterprise, and journals like *Scientific American* chronicled the nation's technological progress. Nature was viewed as controllable, predictable, and, above all, malleable in the hands of science and industry. "The *Scientific American* calls for practical facts," declared Professor Charles Seely in 1865, as he explained to readers the workings of recent technological innovations in the oil industry. Seely's account embodies the practical and pragmatic approach to the natural world current in northeastern America. In great detail he described the iron pipes that conveyed oil to the railroad, the tank cars that transported the oil, and the "torpedoes," a type of explosive used to unblock stopped wells. "The inventor has recently been on Oil Creek," Seely exclaimed, "and his devices has [sic] changed the whole order of thought and action so quickly and thoroughly that one is reminded of the shifting of scenes at a theatre."⁹ Early spectators like Seely thus instinctively set oil development in the context of practical science and economic opportunity. Fascinated by the workings of technology and industry, witnesses of the first oil wells meticulously noted the heights to which oil spurted from the ground or the exact tools used to extract the fluid.¹⁰ Reporters from local newspapers like the *Oil City Register* and New York and Boston publications celebrated the fusion of American destiny and abundant oil, seeing in it a providential endorsement of the "practical mind of the American people."¹¹

Seeking in the fledgling oil industry a confirmation of the rapid rise of the American nation and American science and industry, these budding entrepreneurs were thus all the more surprised and confused when oil refused to bend to their will. Oil's peculiar character confounded observers. Particularly in the early years of the oil industry, questions abounded: How much oil was there? Where could petroleum be found? Why did wells suddenly start or stop flowing?¹² As the *New York Times* summed up the situation in the winter of 1865, "How long our oil-wells will last is of course a most vital question to our business community. Neither science nor practical skill can answer it."¹³ Such uncertainty about the supply of oil and the location of oil wells caused considerable consternation among investors and observers alike. "The oil capitalists . . . can pursue no course but to grope their way," observed the *Oil City Register* in 1865.¹⁴ Andrew Carnegie and his partner William Coleman exemplified this risky groping. Believing that the supply of oil would rapidly decline, Carnegie and Coleman stored a hundred thousand barrels of oil in a pool while they waited for the price to rise. As successful oil wells continued to be drilled and prices fell, the two investors abandoned their plan after having lost thousands of barrels to wastage.¹⁵

Reporters writing about the young industry sought to suggest ways to remove the speculative aspect of drilling but did not know how. The *Oil City Register* in 1864 bemoaned such wasted investment, noting that "probably

there are five wells sunk foolishly and hopelessly to one that pays." The *Register* described the confusion of the public, which wanted to distinguish sound investments from pure speculation. The author could give no useful advice, however, and concluded lamely "Everything depends, therefore, on getting a favorable location."¹⁶ In "After Petroleum," the appropriately named B. Franklin revealed to *Harper's Monthly* readers just how uncertain the science of well location remained. "If you have a well," Franklin astutely observed, "you have it; if you haven't a well, you haven't it: and that is all one positively knows."¹⁷

The uncertainty led some entrepreneurs to turn to divining rods and other mystical practices to locate wells. In the instance of oil, folk beliefs could not be wholly disbelieved. Commenting on the "generally practiced" use of the divining rod in 1865, the skeptical *Oil City Register* concluded, "The sum and substance of the whole matter is simply this: As there are no certain indications by which to locate an oil well that will prove productive, it is just as well to try the divining rod. The investment is usually moderate."¹⁸ People throughout the oil regions also spread the tale of Abraham James, a spiritualist suddenly possessed by the "spirit guide" while driving near Pleasantville in the fall of 1867. James jumped out of his vehicle and leapt over the fence into a farmer's field where he immediately fell unconscious. Upon regaining consciousness, he declared that oil lay below. Widely ridiculed, "Crazy James" built tanks for his oil and drilled to the unprecedented depth of seven hundred feet. To general astonishment, James struck oil four months after the initial incident, sparking a small boom locally.¹⁹ One journalist visiting Pleasantville after James' strike described "a number of spiritualists, of the practical sort, at Pleasantville, and a still larger class of persons who do not believe in spiritual agencies, but who yet have faith in the location of wells through the indications of the hazel switch in sensitive hands. A goodly proportion of the wells now drilling are going down on spots where mediums have stuck their sticks or the hazel rods has turned."²⁰ Amid the uncertainty of oil exploration, practical science thus incorporated a "practical sort" of spiritualism to make sense of the natural world.

Petroleum threw a number of other accepted notions about the natural world into question, including the primacy of daylight and the laws of gravity. As one author in *Cornhill Magazine* remarked, "so sanguine has the abundance of the article rendered many scientific fanatics, that they are unable to discover any reason why gas-light should not become very shortly as cheap as day-light." This author doubted that anything artificial could bring light as cheaply as "Nature's old-fashioned solar lamp," but inexpensive petroleum illuminant undermined the basic distinction between night and day.²¹ The movement of oil against gravity also challenged the popular imagination. In *The Wonder of the Nineteenth Century! Rock Oil in Pennsylvania and Elsewhere*, published only ten months after Drake struck oil, Thomas Gale exclaimed

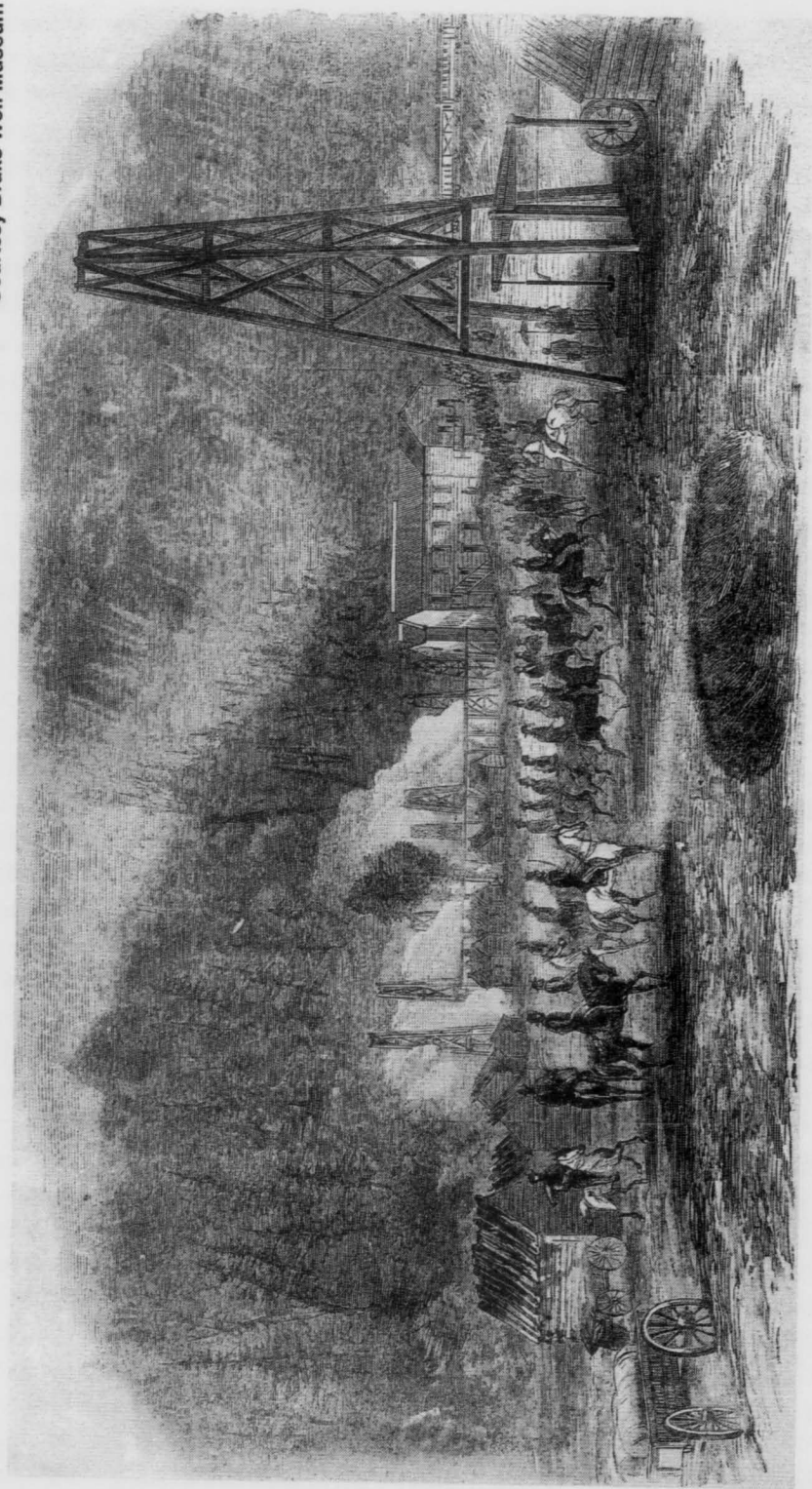
that "One is almost constrained, from his intuitive notion of the natural world, to suspect such a story is a *whooper*; and that the man who talks in this manner of oil flowing up, has been drinking poor whiskey."²² Captivated by the counter-intuitive action, Gale remarked on the same upward flowing movement in another passage, where he wrote that people "hastened to see for themselves, if it could be that natural oil existed in the bow[e]ls of the earth, and flowed up spontaneously in prodigious quantities when an orifice was made."²³ As Gale's use of "prodigious" suggests, the sheer abundance of oil compounded his amazement at its upward flow. Petroleum was, he thought, the "mystery of the age."²⁴

* * * *

Because science and personal experience had not prepared American observers for the abundance, uncertainty, and upward flow of oil, they reacted with wonder and astonishment. "They attempted to describe it," wrote one newspaperman of witnesses to the Williams well, "but language proved inadequate."²⁵ When the journalist investigated, he was similarly "astonished beyond measure" by both the oil well and the general excitement. "We have no language at our command by which to convey to the minds of our readers any adequate idea of the agitated state at the time we saw it. We are told it continues the same."²⁶ Each new success elicited a rush of awed onlookers. "The Crossley well eclipsed its predecessors," wrote Thomas Gale in 1860, "the gaping crowds who had been struck with wonder at the others, now flocked the boat, paid their dime and were landed across the creek, to feast their admiration upon this new object."²⁷ Even the Court of Common Pleas in Franklin, Pennsylvania, adjourned for the day to investigate the new Evans well, reported one contemporary writer. The "attorneys, jurymen, and witness who were concerned in the various cases then pending . . . because a self-constituted tribunal to decide upon the merits of this uncommon cause of public excitement."²⁸

Because rational science only partially explained the phenomenon of oil, many observers saw the earth and its oily fluid through a lens of animate imagery, strongly gendered to represent a special relationship to Mother Earth. The animism and gendered metaphors drew on traditions in Western thought older than the Scientific Revolution. By the nineteenth century, however, as humans more fully controlled nature, the idea of a living female earth had begun to slip away before a flood of scientific developments and the industrial revolution.²⁹ Writings about the Pennsylvania oil boom demonstrate that the idea of an animate, gendered nature persisted in the mid-nineteenth century.³⁰

In the early years of oil development, Americans relied on an animistic conception of nature to represent aspects of petroleum that resisted the domi-



Excursion to the oil regions of Pennsylvania—leaving Schaffer for Pit Hole City.—[Sketched by Theodore R. Davis.]

nant scientific and technological tendencies of the day. Writers about the oil region used gendered and occasionally sexual language to explain not only the mysterious behavior of oil in the earth, but also the workings of oil wells constructed by men. Observers talked about the wells as if they were alive, often portraying them as unpredictable or temperamental women whom the male worker could not fully understand but still hoped to master:

"She intermits," says her proprietor, standing below, cigar in mouth and hands in pockets. "It's a way she has. She'll pump an hour or two right smart, then she'll intermit twenty minutes. It's about time for her to start up again,"—looking at his watch.³¹

From a stereotypically male stance—"cigar in mouth and hands in pockets"—the male owner described oil wells as men might talk about women. The erratic mysterious nature of the wells, men could reassure themselves, was in itself predictable. In this example, as elsewhere, male expectations were formulated around a sense of a knowable pattern to nature's (and women's) behavior.

Male writers portrayed unreliable nature like the woman whose biology, they thought, determined her essential instability. This association drew on contemporary "scientific" understanding of female physiology. In *Mental Hygiene* (1863), prominent psychiatrist Dr. Isaac Ray, for example, wrote

With woman, it is but a step from extreme nervous susceptibility to downright hysteria, and from that to overt insanity. In the sexual evolution, in pregnancy, in the parturient period, in lactation, strange thoughts, extraordinary feeling, unreasonable appetites, criminal impulses, may haunt a mind at other times innocent and pure.³²

In a similarly professional fashion, Dr. Charles Meigs described in *Woman: Her Diseases and Remedies* (1851) how the female genitalia exerted "strange and secret influences" on a woman's "nervous constitution."³³ Just as contemporary medicine brought the irrational female under male scientific authority, by analogy these scientific beliefs helped to organize the way that Americans imagined oil development in relation to the natural world. In J. T. Trowbridge's article in the *Atlantic*, workmen recount the problems of water seepage in one well almost like doctors dealing with an ailing female patient. They conclude "Anyhow, she ha'n't produced for two days, and we are going to see what the matter is."³⁴

Seeing "what the matter is" meant poking and probing into the well, and the act of penetration, particularly through drilling, could carry disturbing sexual overtones which needed to be justified, also in uneasy sexual terms.

In his 1865 *Derrick and Drill*, Edmund Morris described how young men enthusiastically “kicked down”³⁵ the early wells, and he associated it with the violation of “Mother Earth”:

Occasionally horses are used, but at present it appears that almost every man wants to put his own foot into it, and *jump himself* rich. It is certainly an innocent occupation; and, in these days of physical development, why should not our young men develop their *understandings* by so healthful and inspiring an employment? Alas! that poor Mother Earth should be so treated, however, and be so grievously *bored*.³⁶

Mother Earth getting “jumped” and “bored” by young men in healthful innocent activity? Such violative imagery was not unique to oil, of course, as all mining is full of inescapable sexual undertones. The images range from phallic structures like tipples, shafts, and derricks to the ravished (feminine) landscape of the gold fields.³⁷

Men predicted the continued abundance of oil in the same way that they assured themselves that the cycles of female biology brought fertility and that women would continue to dedicate their reproductive and nurturing abilities to the well-being of their male husbands, fathers, and sons. One writer in the *Pithole Daily Record*, the newspaper of a short-lived oil town in western Pennsylvania, declared optimistically:

Nature is a kind and beneficent mother, and her resources are inexhaustible. She is capable and willing to supply all the wants of man. He has only to apply the unlimited stores which she has provided for him to wholesome and useful purposes.³⁸

The gendered distinction between the female earth and the male workers established a division of labor in which the technical and practical male manipulated the raw abundance. The model often sounded more marital than filial. American men claimed credit for having had the ingenuity to bring forth the oil and transform it into commodities, but they also, in a limited and deprecating way, recognized the role of nature as helpmate. In “Recuperation of the Globe,” in the *Oil City Register*, for example, the reporter celebrated the “achievements of mind,” and the “ingenuity of our countrymen,” while in a more restrained tone he recognized the “subtle efforts” of nature as “interesting,” perhaps even “inspiring.” The “skill and cunning of man” clearly overshadowed nature’s contribution.³⁹ Nature’s secret bounty was like the “hidden treasure” of female bodies. Oil and other resources, the author wrote, “nature has slowly gathered in for ages, until the adventurous foot of man roaming through the wilderness strikes upon the hidden treasure and forthwith distrib-

utes it to the world."⁴⁰ The adventurous male alternately destroyed nature and created new functional products through his action. His manipulation and her capacity for regeneration even justified a certain promiscuity: "Are there not new mines also forming? In the dark and silent laboratory of nature, fathoms below the surface of the earth, who shall say what wonders are now transpiring for the future benefit of mankind?" Female regenerative power tempered the destructive consequences of the "thoughtfulness of man."⁴¹

The implicit association of the earth's production of oil with female reproduction and nursing occasionally became explicit declaration. Inspired by a visit to Pithole's defunct United States well, which had sparked the town's boom in 1866, S. N. Holmes of Pleasantville blended his description of unpredictable and animistic nature with the image of a nursing female:

Its breath has ceased, its giant toil
To bless the earth by spouting oil,
is checked at last—it takes its rest,
And stops its flow from Nature's breast.
It may, perchance, renew its flow—
The unknown future who can now—
Its suc[ce]ding babes may take a nap,
Then draw again its oily pap.⁴²

Similarly, the dramatic emergence of oil from the earth elicited metaphors of childbirth from those who visited the wells. Listing gold and coal as first and second children, the author of "The Petroleum Region of America" in *Harper's New Monthly Magazine*, announced the birth of a third child, Petroleum:

Seemingly not satisfied with the present development of mineral wealth bestowed on us, Nature, keeping pace with the necessities of man, suddenly unfolds another wonder—Oil, Petroleum—which now comes spouting from the bowels of the earth, from inexhaustible basins hidden deep down amidst the sandstone rocks below.⁴³

The labor of childbirth could obscurely shade into indigestion or diarrhea in the violent throes of a well's activity. "During the upheavings of the gas," a journalist who visited the Williams well wrote, "it seems as if the very bowels of the earth were being all torn out and her sides must soon collapse. At times the unearthly sounds, and the seemingly struggling efforts of nature, imperceptibly drew one almost to sympathize with earth as though it were animate."⁴⁴

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"As though it were animate"—the vitalist and gendered imagery detailed above illustrates the many ways that Americans groped for a metaphor through which to understand the behavior of petroleum. In their struggle to master the earth, they characterized nature and the female as the object of male ingenuity, penetration, and control. But since the imagery used to describe the wells served largely as a gloss to cover over the unpredictable motion, mysterious location, and startling abundance that could not be easily explained by conventional science, the metaphors for Nature as viewed through the oil industry were not consistently female. When spectators anthropomorphized oil and the earth, they often blurred gender lines. A few sentences before the editor of the *Titusville Gazette* associated the explosion of oil with violent images of childbirth, he described the well's action as the throes of a "dying man":

During such a discharge the vat surrounding the pipe would become filled considerably above the pipe, so that when the gas subsided for a few seconds, the oil rushed back down the pipe with a hollow, gurgling sound, so much resembling the struggle and suffocating breathings of a dying man, as to make one feel as though the earth were a huge giant seized with the pains of death and in its spasmodic efforts to retain a hold on life was throwing all nature into convulsions.⁴⁵

This author suggests metaphorically, and perhaps prophetically, that the practical-minded oil-seekers may have been killing the earth by sucking out its bodily fluids and "throwing all nature into convulsions."

The more violent and frighteningly out-of-control the wells got, the more writers turned from reassuring, beneficent female images to metaphors of giant men and rampaging animals.⁴⁶ The editor of the *Warren Mail*, visiting the booming area of Tidioute, Pennsylvania, alternately called one well a neuter animal and a female being; either way, the well was clearly seen as almost alive, just barely under the control of its keeper, the oil worker Kim Russell: "When we got there it was plugged up tight. Kim Russell had it in charge. . . . We tried to get Kim to stir the animal up so it would perform for our especial benefit. But he wouldn't—said he couldn't hold it—it would spoil his best clothes and squirt all over creation and the like."⁴⁷ When the editor persuaded Russell to "let 'er run" the following day, Russell feared that "She wouldn't start" until he heard "a rumbling in her bowels," after which,

the oil began to boil up two or three feet rising higher every second. Out they jerked the pump and in Kim drove the pug, the oil in the mean time squirting all over him from end to end and some twelve feet high through the half inch hole. Kim pitched for the river to wash the oil out of his eyes. He was greased the slickest of any candidate we ever heard of. Then they put a pail over the stream forcing the oil down into the barrel . . .⁴⁸

Kim Russell subdued this wild well like a lion tamer at the circus. After being "stirred up" to "perform," as an animal might be prodded into action, the well acted crazily until the keeper brought it once more under control. Similarly, an observer of the Nobel well in 1863 described it like a ferocious dragon: "The well puffed and blowed, and roared, and the earth about it fairly trembled with agitation. No one dared approach it." Then workers stripped off their clothes and entered the derrick to subdue the erupting oil and water, to struggle naked with the terrifying beast.⁴⁹

While ingenious oil men usually emerged victorious from their contests with animate nature, the fact that the metaphorical struggle occurred at all ran contrary to the idealized interaction of the technical American with pastoral nature. In *The Machine in the Garden*, cultural historian Leo Marx explains how the industrial pastoral ideal presented the machine as compatible with the pastoral landscape. In one passage, Marx writes of the painting, "The Lackawanna Valley," by George Inness that "Instead of causing disharmony, the train is a unifying device. The hills in the background and the trees of the middle distance gently envelop the industrial buildings and artifacts. No sharp lines set off the man-made from the natural terrain. Nor is the Lackawanna's smoke unpleasant."⁵⁰ Marx describes this reworking of the traditional pastoral framework as part of a "distinctively American, post-romantic, industrial version of the pastoral design."⁵¹ In this view, Inness, like Emerson, Whitman, and even the Jacksonians, despite their "misgivings," shared "the prevailing assumption that machine technology (and all that it represents) belongs, or can be made to belong, in the middle landscape," where civilization and nature were in harmony.⁵²

Abundant oil seemed to endorse this technological vision of the pastoral because it confirmed the blessing of Providence on American economic expansion. Nature had offered her oil to fulfill the United States' destined leadership in the pursuit of practical advancement.⁵³ In the gendered ideology of practical intelligence and providential American progress, the ingenious male manipulated and exploited the bountiful resources of female nature. The very abundance of oil seemed an endorsement of their action by nature herself.

Yet other characteristics of oil would not submit to the industrial pastoral vision. Oil's unpredictability subverted the orderly conception of beneficent nature while also leaving technological progress temporarily in shambles. Most dramatically, oil fires countered the steady march of American enterprise. An October, 1865, fire in the town of Pithole left \$1.5 million in damages to oil and property. Nine wells burned, along with many of the houses.⁵⁴ Because most buildings in the oil region had been hastily constructed out of wood, oil's flammability had particularly devastating consequences. Blazes and explosions physically undermined the progress of the machine, as one contemporary observer revealed when he described the impact of a fire on March

31, 1866: "Nearly forty acres of territory was covered with blackened and charred remnants of engines, houses, derricks and tanks."⁵⁵ The fires terrified onlookers, but rather than raise fears of dangerous technology, they made people respect the power of nature, leaving the "remnants" of industry symbolically "blackened and charred." The writer J. T. Henry described the "grand" burning of Henry Rouse's well in somber, apocalyptic language:

From the driving pipe, six inches in diameter, to the height of sixty or seventy feet arose a solid column of oil and gas burning brilliantly. Above this hovered an immense cloud of black smoke, which would seize sections of the ascending flames, and rolling over and over, first exposing to the view cloud, and then flame, would rise a hundred feet higher before the flame would fade out. From the main column below, millions of individual drops of oil would shoot off at an angle and then turning the arc of a circle drop burning to the ground, presenting all the hues of the rainbow making a scene like enchantment. The whole accompanied by a roar hardly inferior to that made by Niagara Falls.⁵⁶

Because it emerged from the six inch pipe, the roaring flame could be seen as a product of the machine; yet at the same time it clearly asserted independent action beyond the control of the human bystanders.

As the association with Niagara Falls suggests, nature's terrifying force presented itself elsewhere in the nineteenth-century American discourse about the natural world.⁵⁷ Yet oil's mysterious origins and the threat fires posed to industry, settlement, and human life gave this non-human force a darker twist than crashing water at Niagara. Most strikingly, the fires made some observers think about the Christian concept of hell instead of human domination over nature: "Taking the fire at its height, when the whole farm was enveloped in this burning sea of oil, it could only be compared to Dante's description of the mouth of Pandemonium. The terrible excitement of the people, and the rushing to and fro of the masses, all of whom seemed rushing from 'the fate to come,' almost impressed us with the idea of its reality."⁵⁸ A witness to the Rouse fire described an even more hellish scene:

Scenes followed each other, and occurred simultaneously, begging both description and imagination. One poor wretch struggled out of the fire, believing himself to be in the hands of the evil one. His charred and naked figure was speedily placed in a blanket, and he was borne from the place. He lamented his supposed arrival in —, in piercing tones of agony, which proceeded from lips burned to a cinder, and hence powerless to give proper accent to his language. He bemoaned his own fate, and calling the names of various friends warned them of his own terrible punishment.⁵⁹

Terrible accidents such as the Rouse fire reminded the people of the oil regions that nature could unleash its power with terrifying force in opposition to technological progress.

Yet oil fires did not show nature asserting its perfect independence. While lightning sparked some fires, more commonly careless people ignited them. And people could also stop the fires. The fires may have raged three days at Rouse's well, but eventually the oil men subdued this manifestation of Nature's might. A similar logic applied to other ways in which oil's animistic character challenged human control. For while oil may have been unpredictable and uncertain, Americans in the 1860s proved themselves highly successful in its extraction. The threat of nature to human dominance, in the instance of oil at least, remained largely a specter, not palpable enough to impinge on economic behavior.

Oil's independent action—the chaotic gushing wells and the devastating fires—elicited humorous as well as fearful responses. Even the terrifying 1861 Rouse fire, which killed nineteen people and injured eight or ten more, had a lighter side. J. T. Henry wrote in 1873: “The disaster, although so mournful, was not wholly destitute of ridiculous incidents. One woman in an agony of fear, rushed nearly across Oil Creek through water waist-deep, ere she realized the situation; and a man of strong religious convictions, climbed one hundred and fifty feet of the hill in rear of the well, before he could understand that it was not the day of judgment which he was making such good time in getting away from.”⁶⁰ American wit could almost always master the inferno, even when the flames eluded the strict dominance of science and technology.

Petroleum's threatened subversion of human control could amuse because it exemplified nature posing a mock, symbolic challenge to the rise of technological man. A writer for the *Titusville Gazette* told the story of a man who went to visit a well and met with a mishap that all found amusing rather than foreboding. The well, he wrote, soon

commencing throwing up the greasy and odorous substance far above our heads, and sprinkling us in a manner which was death to white vests and black pants. We were amused at one gentleman, who did not appear to like that kind of a bath, and undertook to get away by going down the ladder. He started as though he would go down a pair of stairs, but as ill luck would have it, he fell through, between the rounds and barked himself considerably.⁶¹

The unpredictable behavior of oil and its tendency to burst out of ordered form represented “death” to the stable, genteel world of “white vests and black pants,” suggesting both nature's non-compliance and the social disruption of

the oil boom and its instant millionaires. The onlookers, however, saw the incident as comic, rather than ominous. Men (and women) could laugh at their interaction with this temperamental female nature so long as they got the oil that they wanted in the end. Since human dominance and social hierarchy seemed assured, unpredictable oil and nature did not significantly threaten progress and social order even if Americans could not fully understand them. Indeed, many Americans charted their society's progress partly by its ability to contain wild nature.

Although ultimately controllable, the vagaries of the early oil industry still disrupted the myth of industrial progress within a harmonious pastoral order more radically than did the development of other resources such as coal. Coal epitomized the industrial pastoral. "There are few trips so delightful as that through the great Coal Fields of Pennsylvania" observed H. M. Alden in *Harper's Monthly* in 1863.⁶² With considerable enthusiasm, Alden recounted his journey to the anthracite coal fields. Passing through "beautiful" valleys, he found spots among "the most picturesque that this green earth of ours can yield." Further along in his journey, he wrote, "More and more, romantic features become characteristic of the country." While the growing coal town of Scranton "presents neither a very beautiful nor magnificent appearance," it was set within a "natural scenery" of "striking beauty."⁶³

By contrast, *Harper's Monthly* reporter B. Franklin found only "dismal scenery" in the oily landscape of Western Pennsylvania. Sent there by his doctor for a restorative holiday, Franklin found, however, that "The whole aspect is as unattractive as any one with a prejudice for cleanliness, a nose for sweet smells, and a taste for the green of country landscapes can well imagine."⁶⁴ Nature could be seen "only up toward the sky . . . away along the tops of the rocks," for all else was "in sombre clothing, except the sparkling creek." Yet even "this gorgeous stream" (made beautiful by the iridescent colors of waste oil) suffered from the presence of "square, black, oily scows, filled with greasy, 'loud smelling' barrels . . . driven by muddy oily men."⁶⁵

While coal fields could be harmonized into a scene of pastoral pleasure, oil posed a more diabolical challenge to the picturesque. J. T. Trowbridge's two-part "Carpetbagger" series in the *Atlantic* on Pennsylvania's oil and coal regions underscored this contrast. Whereas oil's "lonely derricks" stood in "desolate fields," Trowbridge located the coal mines in a dramatic landscape, amid "superb scenery" and "mountain summits."⁶⁶ Piles of coal—"picturesquely creamed over with an imperfect coating of snow"—contrasted remarkably with Trowbridge's account of looking into an oil tank some days later. "I climb a ladder, and look over into a still, black, shining lake of petroleum, which mirrors with calm, diabolical intensity the shed roof and my own peering face."⁶⁷

Why did oil suggest the diabolical while coal could be absorbed by the pastoral? The difference certainly had much to do with the physical layout

and location of the two industries. Any traveler to western Pennsylvania would have seen abandoned and working derricks littering the landscape, and oil spilled over the land and into the waterways. The oil-muddy streets also could not be easily disguised. The *Philadelphia Ledger* described Oil City in this unappealing fashion: "the town itself is so impregnated with oil in all its forms and odors that it seems almost impossible to exist there to one uninitiated. In wet weather the rain mixing with the oil oozing from half a million barrels of Petroleum exported from the town forms a mud that destroys the clothes and all things with which it comes in contact."⁶⁸ Nineteenth-century coal mining, by contrast, did not present the same ravaged landscape because it took place largely underground. The breaking, sorting, and shipping of the coal above ground concentrated spatially, rather than being strewn like oil derricks over the landscape. Finally, central Pennsylvania, where the anthracite coal mines predominated, simply possessed a more striking topography in its steeper mountains than did the oil region of the western portion of the state.

But beyond the actual differences between the obtrusiveness of coal and oil and between central and western Pennsylvania, the contrasting representations also extended different cultural constructions: oil was fluid and explosive, animate and disordered, "impregnating" and "oozing," while coal remained immobile—predictable and stable. The coal mines therefore could conform more easily to a pastoral vision of natural and social order. In contrast to oil's mysterious whereabouts, Alden's article on "The Pennsylvania Coal Region" divided the coal fields precisely into three regions, and wrote confidently of different stratas of coal, describing their origin in vegetable matter and explaining their geological deposition.⁶⁹ Trowbridge wrote with similar assurance of the "other valuable coal-seams lying under this one" and declared confidently that the enormous size of the first seam is "known."⁷⁰ Upon entering the mine itself, he marveled at its order, the "perfect perpendicular walls of shining black coal, running parallel to each other."⁷¹

Social relations in the coal and petroleum industries mirrored the sharp contrast between disarray in the oil fields and the neat right angles and parallel lines of the coal mines. Oil promised social mobility as rapid and disruptive as a surging well, threatening to undermine the stable class relations upon which an idealized pastoral landscape rested. Virtuous agriculture was abandoned and new millionaires conjured up out of the lower class, in one author's description of the rampant speculation and social change of the 1860s oil craze:

Rich farms are laid waste. The plow turns no more furrows. . . . The farmer himself, with his homespun clothes is seen no more in the fields. All is changed! The farm is sold! The old man and his grown-up sons are worth millions and the old homestead is deserted forever.⁷²

While only a few farmers deserted the agrarian life with their millions, the oil boom provided an adequate basis for this imaginary scenario. Coal mining produced no such change in actual social relations, and it promised even less to the popular imagination. Coal relied on the steady and long-term investment of capital and produced sharper and more stable class distinction between miners and mine owners, conforming to class divisions characteristic of the emerging industrial society.⁷³ The idealized pastoral of the coal regions, of course, as Raymond Williams' cautionary perspective reminds us, obscured the *actual* labor occurring in the coal mines and the class conflict endemic to the coal industry in Britain and the United States.⁷⁴ Nevertheless, because of its social organization, a pastoral description of the landscape worked for writing about coal in a way that it could not for oil.

The long history of coal mining in Pennsylvania and Britain complemented the relative predictability and stability of coal in the earth and as a social phenomenon. Pennsylvania miners and mining entrepreneurs simply understood familiar coal in a way that they did not understand mysterious oil, a new commodity whose uses were only just being discovered in the 1860s.⁷⁵ Most of the mining technology, and many of the miners themselves, came over from Britain into the American coal mines. Problems of ventilation and fire persisted in the mines, but known for centuries already, these dangers had long ceased to astound.⁷⁶ The hazards had become practical questions to be addressed through technological innovation and careful calculations of the cost of improving safety. Americans welcomed these practical questions in the mid-nineteenth century, and they filled the *Journal of the Franklin Institute*, *Scientific American*, and other periodicals with articles and patents related to the technical aspects of coal mining.⁷⁷

Coal, more than oil, respected distinctions between industry, leisure, and nature, and between social classes, allowing the genteel visitor to revel in the "crowning glories" of the Susquehanna. In the coal regions, promised Alden's article in *Harper's Monthly*, the traveler might view nature from the security and comfort of civilization. "If you want the material for a picture you need not stir one step from your hotel," he reported. From the hotel verandah alone one could see the "meeting together, as for caresses and last adieus, of woods and clouds and sky."⁷⁸ By contrast, oil brought derricks, wells, and oily men to the doors of the finest hotels in the oil region.⁷⁹ A writer for the *New York Times* who visited the booming town of Pithole in 1865 described his hotel as "a wonder of comfort in such a district," yet with oil wells being drilled right around it. On the very day that this visitor arrived, drillers struck two flowing wells on the hotel property, a short distance from the main house.⁸⁰ With derricks erected in farmers' fields and hotel yards, the oil industry left less room than coal for a picturesque "middle" landscape, where the industry might exist in idealized harmony with its natural and social environment. The occa-

sional denial of oil's disruptive intrusions only underscored this point with fantastical incongruity, as when the cover illustrations of two polka song sheets from 1864, for example, showed men in top hats and black suits escorting women in fluffy white dresses through orderly oil farms.⁸¹

The "grasping, gold-seeking mania" of California's mining rush presaged the "fierce, mad energy" of the 1860s oil boom more accurately than did a more orderly resource like coal.⁸² Startling abundance characterized both booms, and many an early visitor went "in the most skeptical frame of mind" to the gold mines, as to the oil wells, "and came away a *believer*."⁸³ The gold rush threatened to disrupt the social order by rewarding the lucky rather than the hardworking, and by propelling lower-class miners into wealth and power.⁸⁴ Thus gold, like oil, clashed with pastoral ideals of social stability and of the harmony of civilization with nature. When the San Francisco *Californian* stopped publication on May 29, 1848, because the town had been abandoned for the mines, its bitter complaint about the "sordid cry of 'gold, GOLD, GOLD!'" foretold the transformation of Pennsylvania farmers ten years later—with the same image of fields "left half planted, the house half built, and everything neglected but the manufacture of shovels and pickaxes."⁸⁵ What "revolution in the ordinary state of affairs" would result, observers of the rush to California speculated, from common laborers abandoning work to join this "gathering of gold by the handful"?⁸⁶

Despite such parallels to the early oil boom, however, the migration of hundreds of thousands of people to California in search of gold created a complicated social situation more than a complex interaction with an almost animate nature. As Americans imagined the "Great California Lottery," they considered the implications of the gold rush for republican ideals of social order far more than they thought about the attributes of the natural world that provided the gold.⁸⁷ Although the uncertain location of placer gold inspired images of a fickle, whimsical Dame Fortune, the solid metal lay in the ground in a familiar way. Gold did not rumble and groan, erupt from the earth, or explode into hellish fires. Nor was gold immediately linked like oil to new industrial products and an unfamiliar industrial economy. Gold had been known for centuries and its properties were general knowledge, as the events at Sutter's Mill revealed. James Marshall discovered gold in 1848 without even looking for it, and knew to test for its malleability. Easily available technical knowledge helped John Sutter verify the initial sample, for he had only to turn to a long article on gold in his trusty *Encyclopedia Americana*.⁸⁸ Such widespread knowledge of gold's characteristics underlay the basic techniques of prospecting. In particular, as *Harper's* reported in 1860, the "known fact of the superior specific gravity of gold over all known metals and minerals (except platinum)" underlay nearly all methods for separating gold from rocks and dirt.⁸⁹

Where travelers to areas opened by the anthracite coal industry could conclude that "there are few regions in which a summer vacation can be more pleasantly passed," visitors to the oil regions more frequently despaired of "dismal scenery," complained of "miserable roads," and were dismayed by creeks covered with "an interesting glistening scum of oil."⁹⁰ Oil, like gold, raised similar questions about fortune and social order, but additionally forced an interaction with a nature that at times seemed animate and quite beyond human control. The ugliness, danger, and unpredictability associated with oil in early accounts created a counterforce to excitement about the new source of wealth and progress. As oil wells burst flowing from the earth—and then suddenly ceased—oil forced onlookers to confront what they did not know or control in the natural world. Tremendous fires left the signs of economic progress—the machines, houses, stores, hotels, and banks—"blackened" and temporarily in shambles.

Oil men and other observers reasserted mastery by their gendered construction of oil's mystery. A generous gift of the animate female earth, oil behaved like a temperamental woman who could be tolerated within certain bounds. Male attitudes towards women, as the model for male behavior in relation to the earth, reinforced the perceived dichotomy between a rational ingenious "man" and the bountiful, regenerative and subdued female. Successful domination of the female earth confirmed American pride in technological mastery and further prompted aggressive economic expansion and exploitation. The diabolical fires, hellish ooze, and even the unpredictable barrenness of promising wells constituted the drama of this new American romance with oil.

* * * *

Yet as with many new romances, heady days gave way to an uneasy stability as the oil industry matured beyond its first chaotic years. The conflicts and crises in industrial organization that occurred during the early 1870s shifted the focus of attention in the oil regions from an ambiguous interaction between men and the animate earth to relationships among different groups in the industrial hierarchy—producers, refiners, railroads, and pipeline companies. All of these sectors of the oil industry were unstable during the late 1860s and early 1870s. In addition to frequent crashes of crude oil prices as a result of overproduction, refining capacity surged far beyond the upper limits of crude oil output. By 1871, refining capacity had grown to at least twelve million barrels annually, more than double the amount of oil that the refineries processed during that year. Competition for oil among refiners brought about a flurry of refinery closings during 1871. Competition was also heavy among the multiple railroad lines that serviced the area. In order to secure steady

freight, the railroads offered discounted rates for refiners who had access to more than one railroad line. Rate wars helped refineries in distant locations, such as John D. Rockefeller's site in Cleveland, but competition among railroads sharply reduced railroad profitability. All of these factors—overproduction of crude, excess refining capacity, and railroad competition—together combined with the basic unpredictability of oil to make the oil business extremely volatile in the late 1860s and early 1870s.⁹¹

Because of this consistent industrial instability and conflict and because of the growing role of capital investment in well development, writings about the industry increasingly highlighted the character of oil men rather than nature. For a local newspaper like the *Oil City Derrick*, the oil producers, rather than nature or the land, became responsible for the growth of the oil region. As the *Derrick* declared of the small producers in February of 1872:

We have always felt great faith in the resources and inventive genius of the men of the oil regions. They are hard fellows to corner. Take an operator who has put down dry holes continuously for five or ten years; or a broker who has been busted more times than his fingers count . . . The men who have in ten years brought this region from a waste, howling wilderness to its present busy and wealthy life and created the mechanical, mercantile, and industrious department of an entirely new branch of business—these men cannot be defeated or cornered or, least of all, imposed on, robbed or tyrannized over.⁹²

Nature as the source of oil wealth was no longer mentioned, except as a “waste, howling wilderness” from which a new business had been “created” by the “resources” of determined men. As these rugged, virile oil men—men who did not wear “white vests and black pants”—increasingly struggled with railroad and refining companies to preserve their place in the industry, few Americans noted any longer the contribution of Providence or nature, or expressed astonishment at a wayward well.

The increasing depth of the oil wells with their steepening requirement for capital investment returned the oil fields to the standard economic “laws” of late nineteenth-century America. Touring the oil fields in the mid-1860s, B. Franklin of *Harper's* described how “when the first oil excitement arose, labor attempted to emancipate itself from capital.” Nature's generosity had allowed this disruption of the social hierarchy. But the transition from “kicked down” wells to deeper and more expensive wells renewed nature's alliance with capitalists and natural economic law. Because nature no longer provided oil close to the surface where inexpensive “rude” wells would suffice, the oil industry “vindicated” the “general law” that “to capital belong the enterprises involving risks.” “Now,” Franklin noted pointedly, “through the whole oil

region abandoned derricks stand rotting slowly down, warning many and attracting more. They warn labor to keep to its own sphere."⁹³

The growing role of capital overshadowed nature's apparent contribution to the industry and people ceased to marvel at her beneficence. In part, the images of nature also changed because observers of the oil industry grew more accustomed to repeated cycles of boom and bust, as they had with gold. Even as the local press continued to express astonishment at the fate of the declining boomtown Pithole, by the mid-1860s the *New York Times* already showed the future direction of the industry and its representation. The *Times* observed in 1865 in the language of ordered capitalism that "if there be one fixed principle discoverable in that region of unfixedness, it is that all the fountains of petroleum in the course of time become either dry, or so nearly dry that they can no longer be profitably operated."⁹⁴ The *Times* predicted that the cyclical pattern would continue: "In time, and no very long time at that, Pithole Creek will also become 'dry territory,' as the greater part of Oil Creek has already done. But new springs will be tapped and new sensations excited all over that country by fresh troops of operators, desirous of 'turning an honest penny.'" The *Times* expounded a new way of calculating this "unfixedness," proposing "a rule" for the decline of oil well output, by which "the third month's yield of a flowing well is barely fifty percent of that of the first and the seventh is scarcely half as much as that of the third."⁹⁵

Adjustment to nature's unpredictability also became apparent when the oil producers joined to resist the South Improvement Company, a combination formed in 1872 by railroad and refining interests, including John D. Rockefeller's Standard Oil, to gain control of the oil trade. At a rebellious Producer's Meeting called to denounce the conspiracy, for example, a General McCalmont of Franklin, Pennsylvania, declared that oil men accepted the variations of nature but refused to submit to the imposition of monopoly by the emerging petroleum aristocracy:

The men who have developed this region are not *the* men to be trampled on in this way. We endure hardship and obstacles patiently, when they come from Providence. It is not because oil is low that we rise. When McCray hill overflowed [laughter] and oil went down to \$2, no one complained; there was no trouble; no mass-meetings . . . We bear like men the burdens of our country or the visitations of God. But we will not part with a cent at the beck of a monopoly. We will fight it to the bitter end.⁹⁶

McCalmont's acceptance of the "visitations of God" illustrated how natural variations had been subordinated to more pressing concerns about industrial concentration. The South Improvement Company's attempt at monopoly ultimately collapsed under pressure from the producers, the press and the state

and federal legislatures. But efforts at organization persisted. During the controversy, John D. Rockefeller's Standard Oil managed to absorb a number of additional refining firms, including almost all the refining capacity of the Cleveland area. Standard Oil imposed industrial order during the rest of the decade partly in response to real difficulties within the business, including overproduction, excessive refinish capacity, and railroad rate wars. Industrial control also reflected the rationalization of nature as the oil industry was incorporated within the framework of America's emerging managerial capitalism.⁹⁷

* * * *

The establishment of a market order by Standard Oil in the late 1870s did not mean that oil became a better understood or more predictable resource. Because of continued uncertainty and competition in extraction, Standard Oil simply controlled the refining and transportation of oil, rather than its production. In an 1876 review of the oil trade, the *Oil City Derrick* revealed how the people of the oil region had resigned themselves to the "contradictory phases" of the oil business:

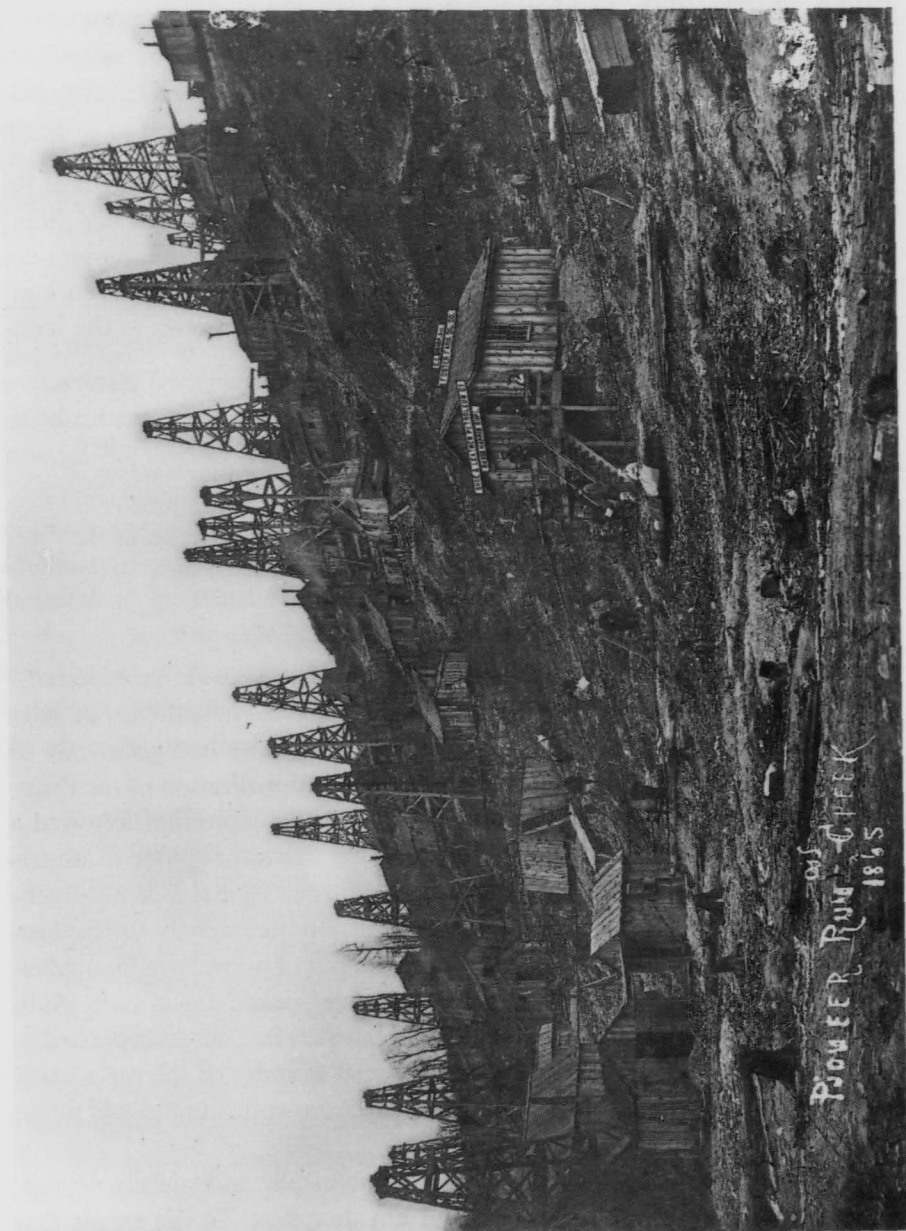
although [the oil trade] had apparently contradictory phases, still we may congratulate ourselves that there are not more. The oil business at best is an abnorm[al]ity, and frequently changes in a manner which puzzles its most intimate acquaintances. But such comfort as either faction of the petroleum trade, or its friends, can draw from this brief statement of the present condition of the trade, they are welcome to.⁹⁸

With the petroleum business in "as good a condition as could be expected," the *Derrick* demonstrated how the industry's "puzzles" remained, but were contained by the market structure. Chaotic opportunity had given way to social hierarchy and relative market stability. The rationalization of the Pennsylvania oil industry within the context of American capitalism followed a similar pattern to the California gold rush. After the initial phase of unpredictable natural abundance had passed in California, capital intensive technologies like hydraulic mining and stream diversion increasingly replaced individual prospecting for gold. The increasing depth of oil wells in Pennsylvania similarly reduced opportunities for inexpensive "kicked down" wells. As in the oil region subsequently, editors and town boosters in California pushed to establish stable institutions to counter the social disorder of the early years. Industrial order and social order emerged simultaneously first in the gold mines and then later in the oil industry.⁹⁹

As the oil industry became ordered economically and socially, its animistic representation diminished but did not disappear. To the extent that

Courtesy
Drake Well Museum

Pioneer Run Creek, 1865.



animate imagery persisted, it did so in a disturbing way. Combining the hubris of an expanding nation with the escalating power of American technology, animistic metaphors yielded a somewhat shocking picture of male exploitation of the female earth. In his 1896 *Sketches in Crude Oil*, John McLaurin described the exploitation of natural resources in language that seemed to celebrate the violation of nature by her aggressive male children:

After sixty centuries the game of "hide and seek" between Mother Earth and her children has terminated in favor of the latter. They have pierced nature's internal laboratories, tapping the huge oil-tanks wherein the products of her quiet chemistry had accumulated "in bond," and up came the unctuous fluid in volumes ample to fill all the lamps the universe could manufacture and to grease every axle on this revolving planet!¹⁰⁰

In this more perverse and violent extension of the gendered image of nature in the 1860s, the manchild grew more assertive and his relations with Mother Earth lost their earlier veneer of reciprocity.¹⁰¹ Articles in the 1880s and 1890s described the extraction of oil as a "dive into nature's great *grab-bag*" or a "race to see who shall first tap nature's till."¹⁰² "Whenever the needs of men knock at the treasure house of the world, nature opens the door," explained Peter MacQueen in *Cosmopolitan* in 1892. Nature thus lost the status of temperamental wife and became a submissive mistress responding to the desirous "knock" of man on the door of her "treasure house."¹⁰³ These overdrawn assumptions of human control and mastery stripped nature of autonomous identity and power, reducing it to an objectified and depersonalized "grab-bag" or "till." The harsh language reflected the spirit of an age in which Americans celebrated their triumph over nature and heralded the supplanting of divine will by human power. As Senator Orville Platt of Connecticut exclaimed of American advances in science and technology in 1891: "Formerly we ascribed creative faculty or force to the Divine Being alone . . . now, when we look upon the wondrous contrivances and inventions everywhere contributing to our life wants . . . we are forced to exclaim: 'Behold the expressed thought of the creator—man!'" Platt continued with startling hubris, "if you will think as you come to this place this evening how the thought of man has transformed black coal and viewless electricity into the agents which light your pathway, you will feel it scarcely irreverent to exclaim: 'And man said, 'Let there be light,' and there was light'"¹⁰⁴

With such growing self-assurance in the oil industry and American society as a whole, oil's mystique faded but did not vanish. Oil remained explosive and unpredictable. Dramatic oil discoveries continued to overturn preconceptions about nature—at Spindletop in 1901 or East Texas in 1930—sparkling new excitement in the oil industry and requiring renewed efforts to bring

it once more under tight control. Occasionally oil fires still raged out of control, conjuring hellish images of death and destruction. But the particular gendered, animate, disruptive, and mysterious character of oil in the early years of the American industry had passed.

* * * *

Through an examination of popular writings about the oil industry, this essay has offered a cultural history of the Pennsylvania oil boom. Many recent environmental histories of natural resources have taken a more anthropological approach to culture, examining the varying ways in which cultural groups have valued and used different resources, be they water, minerals, land, fish, or forests.¹⁰⁵ By contrast, I have used popular representations of the oil industry to illustrate how Americans thought about and imagined the natural world that is the source of natural resources like oil. Americans first and foremost understood oil from the practical and capitalistic perspective that increasingly dominated American culture in the Northeast in the mid-nineteenth century. The appearance of oil when the North eagerly sought substitutes for cotton exports led northeasterners to view the new oil development as a Providential endorsement of their national cause.¹⁰⁶ As the oil industry continued to grow during the 1860s and 1870s, Americans felt "exultation" at this dramatic confirmation of their faith in technological progress and their own creative powers.¹⁰⁷

At the same time, however, oil subverted efforts to bring nature under human control and left Americans astonished and dismayed. Oil men could neither fully harness nor completely tame oil through scientific means such as rational calculation. Instead they used gendered, animate imagery to explain oil's behavior and to justify their exploitation of it. The interactions between men and women and those between men and nature reinforced each other in a complex interplay of science, metaphor, industry, and human relations. Although the standard gendered images of the oil industry did not distinguish it from other mining, the gendered construction took on a greater importance with oil. An understanding of women as temperamental and unpredictable, yet ultimately productive and manageable, served to domesticate erratic wells; successful dominance of these gendered wells further bolstered confidence in the oil men's understanding and control of both oil and women.

Gendered imagery, however, could not smooth over all of oil's misfit ways. Oil, unlike coal, disrupted the industrial pastoral landscape with disorder and instability. The disturbance revealed both how ostensibly similar resources could carry divergent symbolism and how pastoral and animistic images depended on industrial organization. Despite contested labor relations, social and economic organization yielded an apparently stable, "pastoral" coal

industry; when refining companies and oil producers established a market order for oil in the early 1870s, the animate representation of the oil wells simultaneously declined. Market control—the economic rationalization of the oil industry—also reflected in many ways a typical response of a capitalist society to a new breakthrough in technology or a new source of raw material. Following a brief chaotic period of astonishment, wonder, and disconcerting confusion, Americans, and those writing about “muddy oil men,” turned back towards practical, rational science, subordinating wild nature to powerful, if increasingly contested social and economic relations.

Notes

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1. J. T. Trowbridge, "A Carpet-bagger in Pennsylvania: The Oil Region." *The Atlantic* v. 23 (June 1869): 729-747, 737. Beginning in 1859, when former railroad conductor Edwin Drake drilled the first oil well in Titusville, Pennsylvania, petroleum rapidly became one of the most important and sought after commodities in the world. Pennsylvania remained the center of the industry, but oil reserves were soon developed in Canada and Russia, and sought in California, Ohio, West Virginia, South America, and elsewhere around the world. By the end of the 1860s, oil had become the second largest export of the United States, after cotton, and valued at more than \$30,000,000. Whereas Drake's well in 1859 produced a meager 8-10 gallons per day, ten years later, the U.S. exported over 96,000,000 gallons a year. Paul Giddens, *Birth of the Oil Industry*. New York: MacMillan Company, 1938, 193.

2. Giddens, *Birth of the Oil Industry*; Ida Tarbell, *The History of the Standard Oil Company*. 2 vols. New York: McClure, Phillips & Co., 1904; Harold F. Williamson and Arnold R. Daum, *The American Petroleum Industry: The Age of Illumination 1859-1899*, Evanston: Northwestern University Press, 1959; Daniel Yergin, *The Prize: The Epic Quest for Oil, Money and Power*. New York: Simon and Schuster, 1991. For a recent environmental history of the Pennsylvania oil region, see Brian Black, "Oil Creek as Industrial Apparatus: Re-creating the Industrial Process Through the Landscape of Pennsylvania's Oil Boom," *Environmental History* 3:2 (April 1998): 210-229, and his essay in this volume.

3. "What are the Oil Wells?," *Cornhill Magazine* v. 5 (1862): 748.

4. See J. J. Watson, composer, "American Petroleum Polka," New York: Wm. Hall & Son, 1864; Henry C. Watson and Charles Fradel, composers, "Petroleum Court Dance: Schottisch, Polka, Galop and Waltz." New York: Wm. Hall & Son, n.d. (probably, 1864), originals in the Drake Museum. "The Amateur Millionaire, or What Came of an 'Oil

Strike.'" Warren, PA: Young Men's Literary Association, 1869, cover page reprinted in Paul Giddens, *Early Days of Oil: A Pictorial History of the Beginnings of the Industry in Pennsylvania*. Princeton: Princeton University Press, 1948, 33.

5. The editor of *The Warren Mail*, August 18, 1860, writing about Tidioute, Pa. in Paul Giddens, *Pennsylvania Petroleum, 1750-1872: A documentary history*. Titusville, Pa.: Pennsylvania Historical and Museum Commission, 1947, 211.

6. See, Bradford Barham, Stephen G. Bunker, and Denis O'Hearn, eds., *States, Firms, and Raw Materials: The World Ecology of Aluminum*. Madison: University of Wisconsin Press, 1994; Bradford Barham and Oliver Coomes, "Wild Rubber: Industrial Organisation and the Microeconomics of Extraction During the Amazon Rubber Boom (1860-1920)," *Journal of Latin American Studies* 26 (1994): 37-72; Oliver T. Coomes and Bradford Barham, "The Amazon Rubber Boom: Labor Control, Resistance, and Failed Plantation Development Revisited," *HAHR, Hispanic American Historical Review* 74, no. 2 (1994): 231-257; David Goodman, Bernardo Sorj, and John Wilkinson, eds., *From Farming to Biotechnology: A Theory of Agro-Industrial Development*. Oxford: Basil Blackwell, 1987; Susan Mann, *Agrarian Capitalism in Theory and Practice*. Chapel Hill: University of North Carolina, 1990. Although they have not theorized extensively about the subject, business historians and the "old" economic historians have paid ample attention to the micro-economic impacts of natural resource characteristics on industry organization.

7. For a discussion of a kind of nature-theory-of-value, see, William Cronon, *Nature's Metropolis: Chicago and the Great West*. New York: Norton, 1991, 149-50. Cronon writes, "The abundance that fueled Chicago's hinterland economy thus consisted largely of stored sunshine: this was the wealth of nature, and no human labor could create the value it contained . . . One earned great wealth from the western soil less because one expended great labor upon it than because the soil itself was already so rich."

8. "Valedictory for Volume I," *Scientific American*, VI No. 26, Series 2, (December 24, 1859) 415. Leo Marx nicely discusses American cultural responses to this new technological age

in his essay "The Railroad-in-the-Landscape: An Iconological Reading of a Theme in American Art," in Susan Danly and Leo Marx, eds. *The Railroad in American Art: Representations of Technical Change*. Cambridge: MIT Press, 1988, 183-208. See also, David Nye, *American Technological Sublime*. Cambridge: MIT Press, 1994.

9. These quotes are from an article written by Charles A. Seely for *Scientific American*, and reprinted in the *Titusville Morning Herald*, September 1, 1866, in Giddens, *Pennsylvania Petroleum*, 313.

10. See, for example, Thomas Gale, *The Wonder of the Nineteenth Century! Rock Oil in Pennsylvania and Elsewhere*. Erie: Sloan and Griffeth, 1860, 27, 79-80; and, Charles H. Harris, *History of the Venango oil regions . . . and other places of note in the oil regions*. Titusville, Pa.: Titusville Morning Herald office, 1866. In a similar vein, an 1859 *Scientific American* article on the use of distilled coal oil as steamship fuel observed in characteristic language: "The idea is far from being preposterous; it is founded on rational data. The simple question at issue between the use of coal and oil as fuel, either on steamships or under any kind of boiler, is one of economy entirely." The emphasis on "rational data" and the "simple question" of economy illustrates how many American observers focused single-mindedly on practical science and economic expansion. "Oil Fuel For Steamers," *Scientific American*, VI No. 26, Series 2, (December 24, 1859) 415. Coal oil was a liquid created out of solid coal. By the mid-1860's, only six or seven years after Drake struck oil, the United States Navy and private businessmen had moved from testing coal to experimenting with petroleum in Navy steamships. Those responsible declared the new fuel and its burning apparatus "simple, practical, efficient and safe." "New Fuel for Ocean Steamers," *New York Times*, July 4, 1867, 1:7.

11. *Oil City Register*, December 29, 1864. One early article in the *Oil City Register*, a small newspaper in the booming town of Oil City, PA, celebrated this fusion of American destiny and abundant oil. "Although Petroleum has been known and used ever since the days of Herodotus and Plutarch, yet it was destined for the practical mind of the American people to bestow upon it that importance to which it is entitled as a lubricating and illuminating material." For other examples, see *New York*

Times, January 14, 1865, 1:6; John S. Schooley, "The Petroleum Region of America," *Harper's New Monthly Magazine* [hereafter, *Harper's*] (April, 1865): 562-574, *Oil City Register*, August 18, 1864; Gale, *The Wonder of the Nineteenth Century!*, 57.

12. For examples of the uncertain dialogue over the origin and behavior of petroleum, see E. W. Evans, "On the Action of Oil Wells," *Oil City Register*, October 13, 1864; "The Rocks in Which Petroleum is Found" from *Scientific American*, reprinted in *Oil City Register*, November 18, 1864; "Petroleum," *Oil City Register*, February 2, 1865; R. C. Totter, "How did petroleum originate," letter, *Oil City Register*, January 19, 1865. For the mystery of wells that suddenly stopped producing, see "Freaks of the Oil Wells," *Oil City Register*, June 9, 1864; Trowbridge, "A Carpet-bagger in Pennsylvania: The Oil Region" *The Atlantic*: 735. For the inapplicability of scientific methods to well location, see also Williamson and Daum, *The American Petroleum Industry*, 89-92.

13. *New York Times*, February 16, 1865, 4:4.

14. *Oil City Register*, June 22, 1865.

15. Giddens, *The Birth of the Oil Industry*, 82.

16. *Oil City Register*, June 9, 1864. Thomas Gale wrote similarly that "the great Creator alone knows where the hidden treasure is and who will find it." Gale, *The Wonder of the Nineteenth Century!*, 77. The *Register* concluded in another instance: "In conclusion, we can only state that the best oil lands now are those which are producing the most. But we have no practical reason for doubting that much of what is now deemed worthless will prove equally as productive upon being thoroughly tested." *Oil City Register*, August 25, 1864.

17. Franklin, "After Petroleum," *Harper's* v. 30 (Dec., 1864): 59.

18. "Use of the Divining Rod in the Location of Oil Wells," *Oil City Register*, September 7, 1865. See also, "One Mode of Discovering Oil Wells," *Oil City Register*, January 19, 1865; and, Williamson and Daum, *American Petroleum Industry*, 91. At a later date, as discussed below, oil men would confidently mock the idea that one would seek oil with a divining rod. A cover of the *Standard Oil Bulletin* in 1916, for example, presented an overly bearded man with a divining rod. The slightly humorous article that accompanied the cover poked fun at the people who appeared to believe stubbornly in the divining rod (when it doesn't

work "the rods were poor ones, or out of order. Possibly the operators were inefficient.") The editors made clear that "The Standard Oil Company (California) does not now, nor never did, make use of the divining-rod in its field work. In selecting locations for drilling in unproven territory it depends upon its geologists, whose reports deal with surface indications, outcroppings and geological formations." "The Divining Rod," *Standard Oil Bulletin* 3, no. 11 (March 1916): 6.

19. See Giddens, *The Birth of the Oil Industry*, 165-166, and also Trowbridge, "A Carpet-bagger in Pennsylvania: The Oil Region," *The Atlantic*, 739.

20. Trowbridge, "A Carpet-bagger in Pennsylvania: The Oil Region," *The Atlantic*, 739-40.

21. "What are the Oil Wells?" *Cornhill Magazine*, v. 5 (1862): 747-48.

22. Gale, *The Wonder of the Nineteenth Century*!, 57.

23. *Ibid.*, 57.

24. *Ibid.*, 57.

25. Editor of *The Titusville Gazette*, *Crawford Journal*, September 4, 1860, in Giddens, *Pennsylvania Petroleum*, 206-207.

26. *Crawford Journal*, September 4, 1860, in Giddens, *Pennsylvania Petroleum*, 206-207. Faced with a "geyser of flowing wealth," a *New York Times* writer marveled similarly "What language, used to express our wonder at the mysteries of creation, would suggest in the reader the emotions these miracles excite? None. Lost in the bewildered maze of thought in which we are, our littleness is suggested by every turn." *New York Times*, October 28, 1865, 1:1.

27. Gale, *The Wonder of the Nineteenth Century*!, 60.

28. Quotation from anonymous author, in J. T. Henry *The Early and Later History of Petroleum, with Authentic Facts in Regard to its Development in Western Pennsylvania*. Philadelphia: Jas B. Rodgers, Co., 1873, 245.

29. See, e.g., Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution*. San Francisco: Harper & Row, 1980. Merchant writes that the Roman compiler Pliny argued that humans should not mine for metals and minerals because Mother Earth had purposefully "concealed" those substances in "her entrails." Pliny, *Natural History* (written ca. A.D. 23-79), quoted in Merchant, *The Death of Nature*, 30. This idea of a living Earth persisted in European thought into the six-

teenth century, but by the middle of the seventeenth century, the new scientific ethos of Bacon, Hobbes, Descartes and others, which viewed nature as mechanistic and which sanctioned the extraction of its resources, had begun to replace animism. A determined effort to dominate nature soon pushed aside the restraint of Pliny and Ovid. William Derham, in his *Physico-Theology* (1713), justified human control as part of people's responsibility as stewards. While stewardship might seem benign, for Derham it seemed to give license to exploit the earth in a way that verged, metaphorically, on either rape, robbery, or frivolous voyeurism. "We can, if need be," Derham declared, "ransack the whole globe, penetrate into the bowels of the earth, descend to the bottom of the deep, travel to the farthest regions of this world, to acquire wealth, to increase our knowledge, or even only to please our eye and fancy." William Derham, *Physico-Theology: or A demonstration of the Being and Attributes of God, from His Works of Creation*, 6th ed. (London: Innys, 1728; first published 1713): 111, quoted in Merchant, *Death of Nature*, 249.

30. For other gendered understandings of the nineteenth-century American landscape, see Annette Kolodny's studies of male and female writings about the development of the American continent. In *The Lay of the Land: Metaphor as Experience and History in American Life and Letters*. Chapel Hill: University of North Carolina Press, 1975, her study of male writers, Kolodny highlights the psycho-sexual drama of American males in a rediscovered Eden, with nature serving alternately as mother, mistress, or object of rape. In *The Land Before Her: Fantasy and Experience of the American Frontiers, 1630-1860* (Chapel Hill: University of North Carolina Press, 1984, her subsequent book on women writers, Kolodny argues that women fantasized instead about transforming the wilderness into "a potential sanctuary for an idealized domesticity" (Kolodny, *Land Before Her*, xiii). The animistic and temperamental portrayals of oil differ from Kolodny's more passive continental landscape.

31. Trowbridge, "A Carpet-bagger in Pennsylvania: The Oil Region," *The Atlantic*: 742.

32. Isaac Ray, *Mental Hygiene*. New York, 1863, 54. I am grateful to Emily Graves for directing me towards this work and the following two citations.

33. Charles Meigs, *Woman: Her Diseases and Remedies*. Philadelphia, 1851, 54. See also Edward Cope, who argues that the reproductive functions of woman restrained her mental development and led to men's "greater capacity for rational processes." Edward Cope, "The Relation of Sexes to Government," reprinted in Louise M. Newman, *Men's Ideas/Women's Realities: Popular Science 1870-1915*. New York, 1985, 210.
34. Trowbridge, "A Carpet-bagger in Pennsylvania. The Oil Region," *The Atlantic*: 743.
35. For the early wells that tapped oil lying close to the surface, laborers used their legs to physically lift and drop the drill. See, Williamson and Daum, *American Petroleum Industry*, 94.
36. Edmund Morris, *Derrick and Drill, or an Insight into the Discovery, Development, and Present Condition and future Prospects of Petroleum in New York, Pennsylvania, Ohio, and West Virginia*. New York: James Miller, 1865, 34-39, in Giddens, *Pennsylvania Petroleum*, 209 (emphasis in the original).
37. I am grateful to an anonymous reader for pushing me on this point about sexual imagery in mining generally. This sexual imagery changed over time. The old (male) student chant of the Missouri School of Mines that this reader notes—"I'm a miner, I'm a mucker, I'm a dirty mother——"—reflects the imagery of sexual violence and dominance that I argue became more prominent later in the nineteenth century, at least in the oil industry.
38. *Pithole Daily Record*, July 19, 1866.
39. "The achievements of mind are great and the ingenuity of our countrymen is of world-wide celebrity; the subtle efforts put forth by nature are not only interesting, but also inspiring in many senses." "Recuperation of the Globe," *Oil City Register*, June 9, 1864.
40. *Ibid.*
41. *Ibid.* Men did this talking and also the industrial activity to which they referred; they meant primarily "man" not "human." The use of the pronoun "she" similarly both shaped and reflected the way that the men thought about oil wells and the beneficence of nature.
42. "Letter from Oildom," from the *Syracuse Standard*, printed in the *Pithole Daily Record*, December 6, 1865. While many in the oil regions shared Holmes' imaginative way of thinking about oil, not all appreciated his poetry. The editors of the *Record* wrote on the following page that they had fallen asleep reading it.
43. Schooley, "The Petroleum Region of America," *Harper's*, 562-3.
44. *Crawford Journal*, September 4, 1860, in Giddens, *Pennsylvania Petroleum*, 206-207.
45. *Ibid.*, 206-207.
46. *Ibid.*, 206-207. The author who described the Williams well as a dying giant had remarked on the "fearful manner" by which the oil rose in "boiling, tossing and surging commotion," all made more dramatic by the "terrifying" noise.
47. *The Warren Mail*, August 18, 1860, in Giddens, *Pennsylvania Petroleum*, 212.
48. *Ibid.*, 212-3.
49. Henry, *History of Petroleum*, 383.
50. Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America*. Oxford: Oxford University Press, 1964, 221.
51. *Ibid.*, 32. Marx does not refer specifically to Inness with this phrase, but he characterizes the whole movement in this way.
52. *Ibid.*, 220-23. Barbara Novak argues that Inness' "Lackawanna Valley" presents a more ambiguous vision of progress, with a foreground of tree stumps providing an ironic twist. See Novak, *Nature and Culture: American Landscape Painting, 1825-1875*. New York: Oxford University Press, 1980, 174. Inness' "Delaware Water Gap paintings," with their small trains passing through prosperous, brightly-lit agricultural landscapes perhaps more decisively underscore the potential for harmony between the middle landscape and American technological society. "Lackawanna Valley" is all the more remarkable for Inness' ability to integrate tree stumps into what Marx calls "complete pastoralism." For further discussion, see the essays by Nicolai Cikovsky, Jr. and Leo Marx in Danly and Marx, eds., *The Railroad in American Art*.
53. See notes 9-11 above for citations.
54. Charles Leonard, *The History of Pithole*. Pithole City, Pa.: Morton, Longwell & Co., 1867, 52-55.
55. Harris, *History of the Venango Oil Regions*, 72.
56. Henry, *History of Petroleum*, 342.
57. At this particular moment in the 1860s, ironically, Niagara's spectacular waterfalls had dwindled to an unimpressive trickle due to water diversions for power and industry. In subsequent decades, the falls would regain their dramatic impression with the help of design plans by Frederic law Olmsted and Calvert

- Vaux. Anne Whiston Spirn, "Constructing Nature: The Legacy of Frederick Law Olmsted," in William Cronon, *Uncommon Ground: Toward Reinventing Nature*, New York: W. W. Norton & Co., 1995, 95-99.
- William Irwin, *The New Niagara: Tourism, Technology, and the Landscape of Niagara Falls, 1776-1917*. University Park, Pa.: Pennsylvania State University Press, 1996; Elizabeth R. McKinsey, *Niagara Falls: Icon of the American Sublime*. New York: Cambridge University Press, 1985; Henry Allen, "Fall of the Falls," *New York Review of Books* (January 9, 1997): 46-48.
58. Harris, *History of the Venango Oil Regions*, 72.
59. Henry, *History of Petroleum*, citing George Dimick, a witness, 338.
60. *Ibid.*, 342-3.
61. From the *Titusville Gazette*, in Gale, *The Wonder of the Nineteenth Century!*, 58.
62. H. M. Alden, "The Pennsylvania Coal Region," *Harper's*, v. 27 (1863): 455.
63. *Ibid.*, 458.
64. Franklin, "After Petroleum," *Harper's* v. 30 (Dec. 1864): 59.
65. *Ibid.*, 59.
66. For "lonely derricks" and "desolate fields," see Trowbridge, "A Carpet-bagger in Pennsylvania: The Oil Region," *The Atlantic*, 730. For "superb scenery," see Trowbridge, "A Carpet-bagger in Pennsylvania: Chiefly Concerns a New Coal Development," *Harper's* 23 (April 1869): 461.
67. Trowbridge, "A Carpet-bagger in Pennsylvania: The Oil Region," *The Atlantic*, 744.
68. *Philadelphia Ledger*, as quoted in "Oil City," *Oil City Register*, August 25, 1864.
69. Alden, "The Pennsylvania Coal Region," *Harper's*, 459. Many still lost money in poor investments. In an article on speculation, for example, the *Oil City Register* noted that coal, like oil, led the foolish astray: "Take for instance, the history of the coal trade in Pennsylvania. The hillsides and vallies of Schuylkill, Carbon, and Lehigh abound with sinkholes in which adventurous spirits have wasted hundreds of thousands of dollars in vain attempts to extract wealth from failing veins of coal, or deceptive spurs from the great veins which led to nothing and lost themselves in shale." *Oil City Register*, June 30, 1864.
70. Trowbridge, "A Carpetbagger in Pennsylvania: Chiefly Concerns a New Coal Development," *Harper's*, 457.
71. *Ibid.*, 456.
72. "The Petroleum Region of America," *Harper's* 30 (April, 1865) 562-574, 569.
73. For discussions of labor relations, the origins of the business, etc., see: Priscilla Long, *Where the Sun Never Shines: A History of America's Bloody Coal Industry*. New York: Paragon House, 1989; Grace Palladino, *Another Civil War: Labor, Capital, and the State in the Anthracite Regions of Pennsylvania, 1840-68*. Chicago: University of Illinois Press, 1990, chapter 2; John Gaventa, *Power and Powerlessness: Quiescence and Rebellion in an Appalachian Valley*. Urbana: University of Illinois Press, 1980, chapter 3; Anthony F. C. Wallace, *St. Clair: A Nineteenth-Century Coal Town's Experience with a Disaster-Prone Industry*. New York: Alfred A. Knopf, Inc., (1981) 1987. A full comparison of social relations in the coal and oil industries would require a separate article. Suffice it to say that the oil boom in Pennsylvania resembled the gold rush in its promise of instant fortune, as I discuss below in the text, while the coal industry fit more easily within the existing social order.
74. Raymond Williams, *The Country and the City*. New York: Oxford University Press, 1973.
75. The first American bituminous coal mines opened in Virginia around 1750, while the anthracite coal in Pennsylvania began to be developed in the first decade of the nineteenth century. See James Swank, *Introduction to a History of Ironmaking and Coal Mining in Pennsylvania*, Philadelphia: By the Author, 1878, 109-125. For a discussion of the familiar form that American coal mining took, see, Wallace, *St. Clair: A Nineteenth-Century Coal Town's Experience*, 30-35. Although writers could confidently discuss the stratas of coal and could opine on coal's origins, considerable uncertainty about coal persisted. Of particular concern at this time was the clash between the new geology of Charles Lyell and others and its implications for the notion of biblical time. The claims of geologists like Henry Rogers—that Pennsylvania's coal had been formed from peat bogs in the Carboniferous period—provoked an indignant response from Christians who theorized that coal had been formed on the third day of Creation, or in the short time between Creation and the present age. See, Wallace, *St. Clair*, 207-213.
76. Characteristic problems of ventilation in the mines, as well as devices to alleviate them, had been addressed as early as the sixteenth

century in Agricola's classic treatise on mining, *De Re Metallica*. Explosions in the coal mines occurred frequently enough in England that by the mid-seventeenth century the issue had become a prominent one for the newly formed Royal Society of London for Improving of Natural Knowledge. By the beginning of the eighteenth century, British coal mines reached depths of 300 feet; by the mid-nineteenth century, some coal mines reached depths exceeding 2,000 feet. In short, although problems and uncertainties persisted in the coal mines, American investors and miners could fit coal mining easily into their understanding of the natural world. Wallace, *St. Clair: A Nineteenth-Century Coal Town's Experience*, 30-53.

77. For a paper explaining how to cool deep coal mines and mechanize the coal-cutting, see, Henry D. Rogers, "Coal and Coal-Mining," *Harper's* v. 29 (1864): 163-168.

78. Alden, "The Pennsylvania Coal Region," *Harper's*, 462.

79. For "crowning glories," see *ibid.*, 462.

80. Then, "on the very morning of the very day we reached here two flowing wells had been struck within a few hundred yards of the house, promising to give an enormous yield." *New York Times*, October 28, 1865, front page, full spread.

81. J. J. Watson, "American Petroleum Polka"; Henry Watson and Charles Fradel, "Petroleum Court Dance."

82. For "grasping, gold-seeking mania," see, *Daily Alta California*, March 23, 1850, 2; for "fierce, mad energy," see, *The Nation*, September 21, 1865, 370-72, in Giddens, *Pennsylvania Petroleum*, 284-292, 286. Astonishment at the social mobility resulting from the oil boom was standard literary fare, but would require a separate article to treat in depth and is somewhat predictable. For stories about Coal Oil Johnny and songs like "Oil on the Brain," interested readers should begin with Paul Giddens' *Pennsylvania Petroleum and Birth of the Oil Industry*, and also consult the newspapers of the oil region.

83. Captain Folsom's letter to General Jessup, quoted in *Boston Evening Transcript*, December 26, 1848, 2 (italics in the original).

84. David Goodman, *Gold Seeking: Victoria and California in the 1850s*. Stanford, California: Stanford University Press, 1994.

85. Edward C. Kemble, "The History of California Newspapers," *Sacramento Daily Union*,

December 25, 1858, as quoted in Rodman W. Paul, *California Gold: The Beginning of Mining in the Far West*. Cambridge, MA: Harvard University Press, 1947, 19. The *Boston Evening Transcript* reported a similar tale of social disruption in December 1848: "In a letter dated October 8th Captain Folsom writes that the worst kind of laborers were getting a dollar an hour each for landing merchandize. When a sailor is offered \$80 a month, he laughs and replies that a man can get that amount in the mines in one day. Capt. F. wanting to employ a hand to labor in the public warehouse sent out a young man, who seeing an individual in a dilapidated buckskin hunting frock on the dock, told him what he wanted. The reply was: 'It is not that kind of work, sir, that I want, (at the same time taking a bag containing about two quarts of gold dust from his buckskin shirt;) I want to work in the mines sir. Look here, stranger, do you see this? This bag contains gold dust; and do you suppose I am to make a d—d nigger of myself, handling boxes and barrels for eight or ten dollars per day? I should think not, stranger!' *Boston Evening Transcript* December 26, 1848, 2. For a similar description of how the gold discovery "has entirely changed the character of Upper California," see the letter from Colonel R. B. Mason to General R. Jones, August 17, 1848, as printed in House Ex. Doc. 17, 31st Cong., 1st sess., pp. 529-536, 1850 and reprinted in Elisabeth L. Egenhoff, "The Elephant as They Saw It: A Collection of Contemporary Pictures and Statements of Gold Mining in California," *California Journal of Mines and Geology. Centennial Supplement* 45 (1949): 52, 55, 86; Letter from Thomas A. Larkin to Secretary of State James Buchanan, June 28, 1848, as reprinted in *ibid.*, 47.

87. For "Great California Lottery," see J. S. Holiday, *The World Rushed In: The California Gold Rush Experience An Eyewitness Account of a Nation Heading West*. New York: Simon & Schuster, 1981, 353. Excerpted letters in Holiday's book illustrate this great concern for the social implications of the gold rush and show little interest in the role that an independent "nature" might play in the drama. For example, one author looking back recalled the gold fever as a "disease" that "changed the American from a conservative, contented citizen satisfied with a reasonable return on his investment and toil to an excitable, restless, insatiable person who wished to realize on the

resources of the universe in a day. It was the beginning of our national madness, of our insanity of greed. In California a man might wash from a placer more gold in a week than he could accumulate in a life of business." William E. Connelley, *Kansas and Kansans*, as quoted in Holiday, 507.

88. Accounts of James Marshall and John Sutter from letters to J. M. Hutchings, printed in *Hutchings' California Magazine*, 2:5 (1857) and reprinted in Egenhoff, "The Elephant as They Saw It," *California Journal of Mines and Geology, Centennial Supplement* 45 (1949): 27-29, 34-38.

89. "How We Get Gold In California," *Harper's* v. 20 (1860): 598-616, 601 (Italics in the original). For an earlier example of the widespread general knowledge about gold's properties, see *Boston Evening Transcript*, December 28, 1848, 1.

90. For "summer vacation," see Alden, "The Pennsylvania Coal Region," *Harper's*, 467; for "dismal scenery," see Franklin, "After Petroleum," *Harper's*, 59; for "miserable roads," see "Notes from Oil-Dorado," *New York Times*, February 15, 1866, 8:1. For "scum of oil," see Trowbridge, "A Carpet-bagger in Pennsylvania: The Oil Region," *The Atlantic*, 730.

91. See Williamson and Daum, *The American Petroleum Industry*, particularly Chapter 14.

92. *Oil City Derrick*, February 22, 1872. For a similar article emphasizing the men's character and making no mention of oil or nature as a source of wealth, see *Oil City Derrick*, March 7, 1872.

93. Franklin, "After Petroleum," 54.

94. "About Oil," *New York Times*, November 5, 1865, 3:2.

95. *Ibid.*, 3:2. See also, "The Oil Regions of Pennsylvania," *Harper's Weekly*, March 30, 1878, 250-1, which stated matter-of-factly: "The life of an oil well is from two to five years. The old wells still give a few barrels a day, but are not profitable to work except in the most economical manner."

96. *Oil City Derrick*, March 21, 1872.

97. For details on the South Improvement Company and the rise of Standard Oil, see Williamson and Daum, *The American Petroleum Industry*, chapter 14. For more on the rise of managerial capitalism, see Alfred Chandler, *The Visible Hand: The Managerial Revolution in American Business*. Cambridge, MA: Harvard University Press, 1977.

98. *Oil City Derrick*, April 6, 1876.

99. For a consideration of this transition from the initial disorder of the gold rush to industrial and social order, see, Ralph Mann, *After the Gold Rush: Society in Grass Valley and Nevada City, California, 1849-1870*. Stanford: Stanford University Press, 1982. See also, Rodman W. Paul, *California Gold*; Paul, *Mining Frontiers of the Far West, 1848-1880*. New York: Holt, Rinehart and Winston, 1963. A straightforward summation of this link between economic rationalization and the return to idealized social hierarchy can be found in an 1879 article about the Georgia gold rush: "It soon came to be found here, as elsewhere, that gold was not to be picked up in twenty-eight-pound lumps every day, nor did every bushel of soil pan out a double eagle. The worthless, lazy, and dissolute majority of the early horde of invaders gradually drifted away, while only the small minority of new-comers, whose accession was of real value to the community, staid [sic]. The population, like the dirt, was slowly panned out, and the current of events carried the dross away. At present the mines are largely owned by corporations, or by private capitalists who are not residents of the district." "Gold Mining in Georgia," *Harper's*, v. 59 (1879): 506-519, 510.

100. McLaurin, *Sketches in Crude Oil*, 1. For similar language, see, "The Game of Hide-And-Seek," *Standard Oil Bulletin*, 13, no. 5 (September 1925): 1. "Wildcatting" is an expensive, risky enterprise. It is a great game of hide-and-seek, nature doing the hiding, man the seeking."

101. This piercing of nature's "internal laboratories," it could be argued, resulted from an almost Oedipal "game of hide and seek," with the manchild, and practical science, dethroning Father Sun as the partner of Mother Earth. The image of the dying giant discussed earlier, which made one "feel as though the earth were a huge giant seized with the pains of death," also suggested this image of man killing the figure of Father Sun. For earlier images of Father Sun and Mother Earth, see Merchant, *Death of Nature*, 25.

102. George Gibson, "A Lampful of Oil." *Harper's* 72 (January, 1886) 235-237 (italics in the original), 242.

103. Peter MacQueen, "The Petroleum Industry." *Cosmopolitan* 12 (February 1892): 399-408, 399.

104. Platt's omission of petroleum is surprising, since kerosene had been the first real pro-

vider of mass illumination. Orville H. Platt, "Invention and Advancement," in [Patent Centennial Celebration], *Proceedings and Addresses. Celebration of the Beginning of the Second Century of the American Patent System at Washington City, D.C., April 8, 9, 10, 1891* (Washington, 1892), 57-76, as reprinted in Henry Nash Smith, ed., *Popular Culture and Industrialism, 1865-1890*, New York: Anchor Books, 1967, 40-41. I am grateful to Lawrence Levine for directing me towards this quotation. For similar pride-filled language, see a 1921 article in the *Standard Oil Bulletin* about the use of the diesel engine to make artificial ice. "To aid or supersede nature seems to be the chief end of human ingenuity. When natural phenomena do not function to our satisfaction, we take a hand and do for ourselves. This practice dates back to the time when our cave-dwelling ancestors began constructing domiciles, presumably having found the abodes provided by nature too damp and cold . . . We became creators, doing for ourselves what Dame Nature did not do to our satisfaction, or at all." "Superseding Nature," *Standard Oil Bulletin* 9, no. 8 (December 1921): 5-6.

105. Among these studies that illuminate the different uses and valuations of natural resource, see: William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England*. New York: Hill and Wang, 1983; Cronon, "Kennebott Journey: The Paths Out of Town," in William Cronon, George Miles, and Jay Gitlin, eds. *Under an Open Sky: Rethinking America's Western Past*. New York: W. W. Norton (1992) 28-51; Norris Hundley, *The*

Great Thirst: Californians and Water, 1770s-1990s. Berkeley: University of California Press, 1992; Carolyn Merchant, *Ecological Revolutions: Nature, Gender, and Science in New England*. Chapel Hill: University of North Carolina Press, 1989; Arthur McEvoy, *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980*. New York: Cambridge University Press, 1986; Stephen J. Pyne, *Fire in America: A Cultural History of Wildland and Rural Fire*. Princeton: Princeton University Press, 1982; Louis Warren, *The Hunter's Game: Poacher's and Conservationists in Twentieth-Century America*. New Haven: Yale University Press, 1997; and, Donald Worster, *Rivers of Empire: Water, Aridity and the Growth of the American West*. New York: Pantheon, 1985. By contrast, Robert Pogue Harrison's *Forests: The Shadow of Civilization*, Chicago: University of Chicago Press, 1992, is a pioneering study of the role forests have played in the Western cultural imagination; Jennifer Price's *Flight Adventures With Nature in Modern America*, New York: Basic Books, 1999, explores the complex interplay between nature and American popular culture.

106. See, for example, Schooley, "The Petroleum Region of America," *Harper's; Oil City Register*, August 18, 1864; *Oil City Register*, February [?], 1865 (copy in the possession of the author). Between the end of 1862 and 1865, the federal government collected \$6.7 million in taxes on petroleum. This benefit does not include the importance of the foreign exchange earned during this period. See, Giddens, *The Birth of the Oil Industry*, 95.

107. *New York Times*, October 28, 1865, 1:1