

Research Reports

from the Rockefeller Archive Center Fall/Winter 2001

Current Events and History

By Darwin H. Stapleton
Executive Director

About 8:40 a.m. on September 11, 2001 a passenger airplane flew over, or nearly over, the Rockefeller Archive Center, headed for the North Tower of the World Trade Center and the first of a series of cataclysmic events. The staff of the Center and their immediate families were spared any direct and personal losses, but we were nonetheless transfixed by the unfolding of a hitherto unimaginable sequence of events in New York City, Washington, DC and south-central Pennsylvania.

The archival role is usually a tertiary one, engaging events downstream from specific dates and occurrences, after the initial news reporting and the rounds of journalistic analysis. Eventually deeper, more comprehensive examination of the context of the events is needed, and the documentary filmmakers, book writers, and historians seek out the documentation that shows how we arrived at a particular rendezvous with destiny.

The Rockefeller Archive Center can be, and should be, a resource that will give the American people, and the peoples of the world, some insights into the background of the global crisis that is now upon us. Among the 68 million pages of documents at the Center there are substantial elements of at least three stories that can extend our understanding and inform our judgments:

1. The History of World Trade Center

The Downtown-Lower Manhattan Association, founded by David Rockefeller in 1958, first proposed the idea of a World Trade Center to the Port Authority of New York. Nelson A. Rockefeller, as governor of New York State, was an enthusiastic supporter of the Center and proposed the adjacent development of Battery Park City as a state project.

The Rockefeller Archive Center's holdings of the Nelson A. Rockefeller Papers and the Downtown-Lower Manhattan Association Archives should be

particularly valuable for the study of the history of the World Trade Center.

2. The History of New York City

As we reflect on the role of New York City in the world, and on the meaning of great architectural spaces in the city, researchers can take renewed interest in the great urban projects documented at the Rockefeller Archive Center. Such sites as The Rockefeller University, Rockefeller Center, Lincoln Center, Morningside Heights, and Forest Hills (sponsored by the Russell Sage Foundation) should draw their attention. In addition, the Archive Center's documentation of the programmatic interests of the Rockefeller Foundation and the Rockefeller Brothers Fund in New York City

organizations and institutions, as well as of the Rockefeller family's involvement in numerous institutions, should be valuable to virtually any examination of the city in the 20th century.

3. Globalization

To the extent that international terrorism must be understood as a reaction to, and to some degree a manifestation of, globalization, the Rockefeller Archive Center is a substantial research resource with material regarding many aspects of international trade, diplomacy, and collaboration. These range from (but are not limited to) documentation of the international investment and philanthropic activities of the Rockefeller family; to the service of Nelson A. Rockefeller in five U.S. presidential administrations; to the interest and activity of John D. Rockefeller 3rd in east and south Asia; to the global activities of the Rockefeller Foundation; to the international connections of The Rockefeller University; to the West African, Southeast Asian, and Eastern European programs of the Rockefeller Brothers Fund; and the international research programs of the Social Science Research Council.

Researchers engaged in studies of these topics are welcome at the Rockefeller Archive Center. History can be called to the aid of a world at risk and can support a search for mutual understanding and nonviolent resolution of conflict.



The towers of the World Trade Center under construction, December 1970.

From the Downtown Lower Manhattan Association Archives

The Colorado Coal Strike of 1913-14 and Its Context in the History of Work, Environment, and Industrialization in Southern Colorado

by Thomas G. Andrews

In September 1913, United Mine Workers of America District 15 declared a strike against the coal operators of Colorado. The Rockefeller family owned a controlling interest in the state's largest coal company, Colorado Fuel & Iron (CF&I), and the events that followed the walkout – the eviction of strikers from company towns, the running skirmishes pitting armed strikers against mine guards and government troops, the shrill denunciations labor and capital heaped upon one another, and, most infamously, the blood shed near a railroad depot named Ludlow – cast an enduring stain upon the already tarnished Rockefeller family image. I visited the Rockefeller Archive Center in early March of 2001 to evaluate this blemish, to examine the circumstances that produced and fostered it, and to explore what the great coal field war of 1913-14 might tell me about the larger story of work, environment, and industrialization in southern Colorado in the late-19th and early-20th centuries.

The Rockefeller family's involvement with CF&I, I learned, began inauspiciously enough. CF&I mined more coal than any other operator in the Rocky Mountain West, and it was the only integrated producer of steel and steel products west of the Missouri River. Created in 1892 when Colorado's two biggest coal interests merged

their operations, CF&I garnered high revenues on its coal and coke products but consistently lost money on its steel plant because of high production costs, poor iron ore, and cutthroat competition by eastern mills allied with trans-continental railroads. In the late 1890s the company's Colorado-based leadership decided that the company's future success rested upon its ability to remedy its steelmaking problems and greatly expand production to meet the burgeoning demand for rails, barbed wire, pipes, structural members, plate, and other steel products in the rapidly industrializing American West. Geologists scoured the region for new deposits of ore and coking coal, land agents brokered a deal to purchase the coal- and timber-rich Colorado portion of the Maxwell Land Grant, engineers began surveying potential railroad routes to link the company's new properties with existing transportation networks, and executives scrambled to secure the capital needed to fund all of these initiatives.

The company's financial need and burgeoning promise attracted the interest of corporate raiders like John W. Gates, who acquired a substantial interest in the concern in 1901. Gates felt that the company's existing expansion plans were too timid. He engaged consulting engineers who had designed the great steel works of Pennsylvania and Illinois to come west and draft plans for a massive, integrated plant that would employ the most advanced production technologies available. Not soon after construction began, however, the Garrett & Cromwell Engineering Company revised its cost estimates for expansion from \$2.8 million to \$4.3 million. By 1903, the bill had risen to \$5.5 million, leading President John C. Osgood to lament that "the Company is in a most deplorable condition and unless it can get immediate relief there is nothing but a receivership and reorganization before it."

The "immediate relief" Osgood desired came a little over a month later, as John D. Rockefeller, Jr. and George Jay Gould brokered a deal with CF&I's Colorado leadership. The New York capitalists gave the company the transfusion of cash it needed to survive, though their motivation for propping up the company is not clear from the

Table of Contents

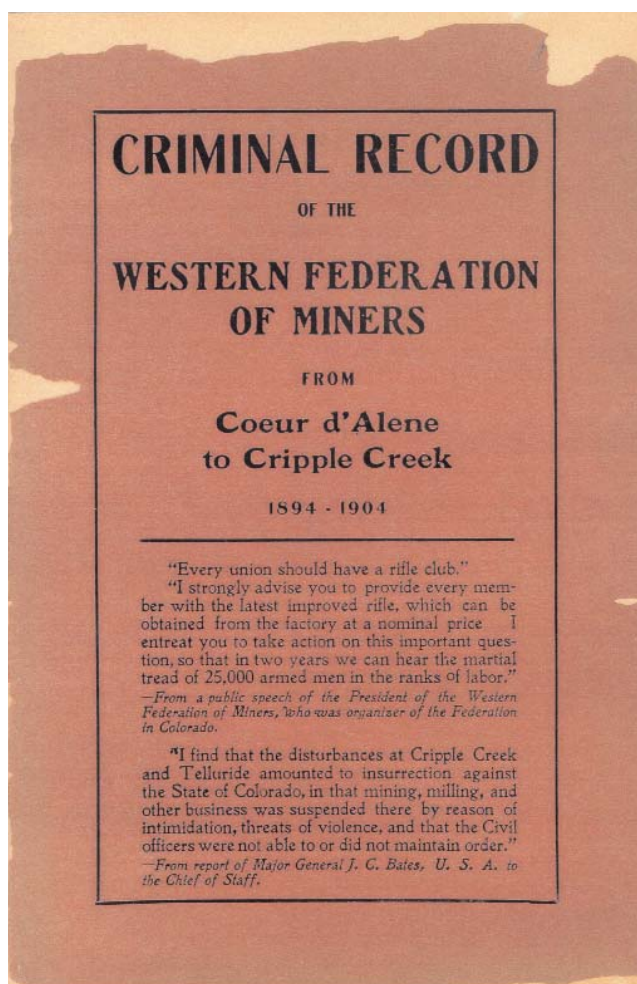
Workplace Democracy	8
Office of Inter-American Affairs and the Latin American Mass Media	14
The Impact of the Receptor Concept on 20th-Century Pharmacology	16
About the Contributors	19

Business Interest Series files in the Rockefeller Family Archives. Gould had enlisted the Rockefellers in his acquisition of the Denver & Rio Grande Railroad (D&RG), a company whose intimate ties to CF&I stretched back three decades to their common founder, the visionary entrepreneur William Jackson Palmer.

The D&RG relied heavily on CF&I for freight traffic, fuel, and rails, while CF&I shipped a large percentage of its products on D&RG lines. Gould evidently saw the potential benefits such synergistic relations could produce. He encouraged the Rockefellers to purchase large blocks of stock in the company and convinced them to help him purchase lands and securities held by CF&I, providing the company with the cash it needed to complete its expansion plans. It was a business decision the Rockefellers would later regret. Not only did it prove a poorly paying investment that hung like an albatross around their neck for decades to come (an accountant estimated that the family's average annual return on their CF&I investment was around 3.5% between 1901 and 1914), but it dragged them into the ongoing struggle between Colorado's mine owners and the workers whose underground labors unearthed the ore and fuel that drove the state's economy.

The first of these conflicts pitting CF&I against its organized mine workers broke out shortly after Rockefeller and Gould became the controlling shareholders in the company. In sympathy with hard-rock miners and smelter workers in Colorado City, Cripple Creek, and Telluride, and to protest numerous grievances of their own, the UMWA declared a strike in southern Colorado's coal fields in 1903 that lasted well into 1904. Contentious as the 1903-04 strike was, however, there is little evidence in the Rockefeller papers that the family played any substantial role in the turmoil. They were just shareholders, the family undoubtedly felt, investors who entrusted labor-management relations and the other daily operations of the company to the executive officers in Colorado. It was a defense that served the family well in 1903-04, but it would fall on deaf ears a decade later when another crisis struck the coal fields.

My earlier research in contemporary periodicals and union correspondence had given me a thorough understanding of the UMWA's position in the strike of 1913-14, while oral histories and government hearings shed light on how rank-and-file miners and their families experienced these tumultuous struggles. But my work in the RAC rounded out my analysis of Colorado's



From the Rockefeller Family Archives

An example of mine owners' anti-union propaganda: the Colorado Mine Operators' Association booklet, *Criminal Record of the Western Federation of Miners from Coeur d'Alene to Cripple Creek, 1894-1904* (Colorado Springs, Colorado, 1904).

industrial war by giving me a clearer sense of the concerns that motivated the state's coal operators to bitterly contest the UMWA's attempt to unionize the most important fuel-producing area of the American West. John D. Rockefeller, Jr. (JDR Jr.), his New York advisors, and officers of CF&I and its allies could not tolerate unionization



From the Rockefeller Family Archives

John D. Rockefeller, Jr., on the stand at a hearing of the United States Industrial Relations Commission in City Hall, New York City, on January 26, 1915.

because it raised the specter of anarchy, conflicted with their philosophical principles, and threatened their control over both Colorado's coal mines and the men who worked in them.

LaMont Bowers, whom the Rockefellers had sent West in 1907 to whip the faltering CF&I into shape, sometimes referred to the coal miners' union as the Western Federation of Miners. He surely knew the difference between the two organizations, but by associating the relatively conservative, Indianapolis-based coal miners' union with the anarcho-syndicalist, Denver-based union of hard-rock miners and smelter workers, Bowers rhetorically cast his striking employees as lawless radicals in the mold of the infamous "Big Bill" Haywood; the assassin Harry Orchard, who had gunned down the ex-governor of Idaho in 1907; and the saboteurs who blew up the Independence Depot during the Cripple Creek strike. Attributing the Colorado coal dispute to the contagious influence of "foreign agitators" amongst entirely satisfied but nonetheless impressionable immigrant miners, however, was far and away the most popular trope capitalists used in discussing the conflict. The operators

deployed this foreign-agitator trope to criminalize the UMWA, delegitimize the mine workers' portrait of hazardous work conditions and quasi-feudal power relations in the coal fields, and call into question the union's right to represent the interests of CF&I's employees. Employers and their contented employees were sailing smoothly along, Starr Murphy and others insisted, until the "wicked and criminal conspiracy which has been established and carried on by the United Mine Workers of America" rocked the boat.

JDR Jr., Bowers, and their associates assailed unionization on deeper principles, as well. The U.S. Constitution guaranteed the right to "life, liberty, and the pursuit of happiness," and, like other capitalists of the era, operators interpreted the "pursuit of happiness" to mean that Americans had the right to work for whom they pleased under whatever terms they pleased. In this worldview, employer and employee brought their various assets, desires, and needs to the table, bargained as free individuals to craft a mutually agreeable employment contract, and then lived up to their sacrosanct obligations. Such liberal thought harkened back to an earlier, preindustrial era and ignored the unequal power massive corporations and isolated workers brought to the bargaining table, but it did allow the Colorado coal operators to conjure up fundamental American values in support of their cause. The rule of law, the sanctity of contract, and the right to the pursuit of happiness were all in jeopardy in Colorado's industrial struggle, and the very meaning of liberty at stake. "The question at issue is so large," claimed JDR Jr., "so important and so vital, not alone in one state but to the entire nation, that no man could throw up his hands and maintain his self-respect."

The arguments that unionization constituted a threat to order and America's founding principles were grounded in underlying anxieties that recognizing the UMWA would imperil CF&I's control over the Colorado coal fields. The company had a long history of conflict over union recognition stretching back to a Knights of Labor strike in 1884, but officials like Bowers and CF&I President Jesse F. Welborn thought they could undercut future unionization drives by proactively

implementing reforms that would limit the organization's appeal. They shortened hours, raised wages, instituted semiweekly paydays, improved working conditions, and purportedly eliminated scrip payments in the early 1910s, but their expectations that such initiatives would keep mine workers from seeking a greater voice in the company's operation were shattered when the strike call went out in the fall of 1913.

Operators expressed their dread of union control even more clearly when they talked about how recognizing the UMWA would transform existing mining operations and work practices. Unionizing the mines, Welborn felt, was tantamount to "placing our business absolutely in their hands." Grievance procedures would short-circuit established lines of authority, they feared, union rules would limit the company's authority to structure work, and the collective strength of the miners would hamper CF&I's attempt to maximize the profits it garnered from their labor. Unionization would shift the balance of power both underground and in the company towns of southern Colorado, endangering CF&I's command over its property, complicating its relationship to its workers, and further endangering its already poor financial performance. Bowers feared union recognition would "practically take away the mines from the control of the owners and operators and place them in the hands of these, in many cases, disreputable agitators, socialists and anarchists." Literally and figuratively, the company and its allies simply could not afford to cede even a sliver of control to the UMWA. "We are right from every standpoint," crowed Bowers, "and in justice to ourselves and our loyal men we shall never recede an inch from the stand we have taken."

Operators justified their resolute stance against union recognition by portraying the UMWA as a lawless, anarchistic bunch of outsiders, by invoking basic principles such as the right to work, and by pointing out how union intervention would limit capitalists' control over the properties they owned. CF&I's assessment of business conditions galvanized its opposition to unionization. Rumors of the impending strike led many large coal purchasers to stockpile fuel during the

summer of 1913, general economic jitters slackened demand still further, mild weather reduced winter heating needs, and the grim financial outlook for most western railroads portended lower demand for coke as the company's Pueblo steel works faced its worst outlook in fifteen years. Moreover, the generally weak economy meant that labor was plentiful and workers desperate, easing the company's task of securing the strikebreakers needed to keep its most important mines open. In late December 1913, Welborn reported to 26 Broadway that CF&I had all the workers it required to satisfy existing demand for fuel in the Rocky Mountains and western Great Plains. Later that month, he explained to the company's executive committee that "there has been no time since the coal strike of 1903-4 when such a strike as we are now experiencing would have injured the Colorado operators less than this season."

At least for the first nine months of the strike, UMWA officials remained equally confident that conditions favored their cause. Solidarity seemed strong as thousands of miners and their families streamed out of Colorado's coal camps, some settling in tent colonies created by the union, others leaving the strike region altogether because they wanted to dig coal but were unwilling to do so at the expense of their fellow workers. Meanwhile, with an old officer of the union, W. B. Wilson, holding the office of Secretary of Labor, Woodrow Wilson's White House appeared more friendly towards organized labor than any administration in decades. Finally, CF&I was widely reviled throughout Colorado for its high-handed political machinations and monopolistic business practices, while the widespread opprobrium attached to the Rockefeller name generated support for the UMWA among working people, progressives, and radicals across the nation. Like Colorado's coal operators, the UMWA felt that both right and might were on its side. Companies and union alike were confident that they would prevail, and both eschewed substantive compromise. The stage was set for violent collision.

CF&I, its allies, and strikers began to arm themselves even before the strike call went out,

and skirmishes soon broke out. The violence began with isolated attacks—union men kangarooing scabs along dark railroad tracks, mine guards shooting at strikers lingering outside camps – then escalated into heated exchanges of gunfire, random but deadly sniping, and elaborately planned ambushes. A war was breaking out in the West, but what kind? To the strikers and their sympathizers, it was a civil war, a great struggle to emancipate Colorado’s industrial slaves. To the operators and their supporters, it looked more like a revolution, and an alarmingly Gallic one at that. Dozens of men were losing their lives, trade in the West was contracting even more as the coal that fueled the region became more expensive and less easily available, and charges and countercharges were filling the local and national press, but repeated attempts by government officials and civic leaders to broker a workable truce continued to founder. CF&I and its fellow operators claimed that all but two of the strikers’ demands were already guaranteed either by state law or company initiative. The union’s call for a ten per cent advance in wages, Bowers insisted, was “entirely buncombe,” a frivolous ploy by the UMWA to distract attention from their single-minded goal: union recognition. The UMWA, meanwhile, countered that beneficent company policies and protective state legislation were useless unless implemented and enforced. Individually, workers possessed too little power to ensure that the companies and the state met their obligations, but collectively, they represented a force that could not be ignored. As his hopes for a peaceful settlement faded, Governor Elias Ammons conceded to widespread demands and called out the Colorado National Guard to prevent further bloodshed in the strike zone.

The Rockefeller family papers, unfortunately, provide little insight into CF&I’s relationship to the Colorado militia. Contemporary observers and subsequent historical accounts allege that CF&I eventually managed to infiltrate the militia, replacing regular guardsmen with its own paid mine guards, stepping in to pay the organization’s bills when state funding ran short, cultivating sympathy among officers, and otherwise turning the neutral armed forces of the state into the

executioners of the coal companies’ will. Whatever the validity of these allegations, though, it is clear that John D. Rockefeller, Jr. and his associates at 26 Broadway either knew nothing of such activities, or destroyed all records that would reveal any involvement in this key step on the road to Ludlow. The Rockefeller Archives, then, are mute on the question of whether the Rockefeller family played any direct role in the Ludlow Massacre, but claims that JDR Jr. and his New York associates ordered state militiamen to attack the Ludlow tent colony in the early morning of April 20, 1914 are entirely unsubstantiated and seem highly unlikely.

Papers at Pocantico Hills do, however, contain ample information about how JDR Jr., and other key figures responded to the outbreak of open warfare in the southern Colorado foothills. As news of the bloodshed at Ludlow came across the news ticker at 26 Broadway and onto the headlines of the New York papers, JDR Jr. telegraphed Bowers that “we profoundly regret this further outbreak of lawlessness with accompanying loss of life.” Bowers’ telegrams confirmed Rockefeller’s interpretation that the strikers were to blame for the massacre because they made an “unprovoked attack upon [a] small body of militia.” Rockefeller remained obdurate a week later as he suggested to CF&I’s Colorado executives that they emphasize to the Congressional committee investigating the massacre that they and the other operators were still willing to accept the strike settlement suggested by Governor Ammons the previous November. “By doing so,” he felt, “they will place themselves in a very strong position before the public in that it would be evident that all disorder since November 27th has been due to the refusal of the unions to accept the settlement which was then proposed by the governor and accepted by the operators but rejected by the miners.” When Congressman M. D. Foster urged JDR Jr. to submit the dispute to arbitration, CF&I’s major stockholder replied that “there was nothing to arbitrate, except the recognition of the Union, which he would not do.” The Massacre only strengthened the resolve of 26 Broadway and the Colorado coal operators not to deal with the UMWA.

Rockefeller's hard line began to soften, however, after federal troops brought peace to the strike zone. His strategy towards the conflict changed in two important ways. First of all, he became more savvy about creating a favorable public image. Secondly, and more importantly, he began to doubt Bowers' version of the situation in Colorado. CF&I's fight against the UMWA, he realized, had been crippled by poor, disorganized publicity and the shrill refusal to accept that at least some of its employees had reason to be discontented.

"You've got to popularize the facts," newspaperman Charles Wayland Towne impelled JDR Jr. "Get some vitality, pen-pictures and 'sobs' into your Casuistry, John, via the Press, and the tables will soon be turned in your favor." Whether the initial impetus came from Towne or from within 26 Broadway, Rockefeller soon took the advice to heart. On May 24, he telegraphed Bowers and



At work in the Colorado coal mines.

From the Rockefeller Family Archives

Welborn that he wanted to implement "concentrated publicity measures calculated to bring out the truth and thus promote a more aggressive public opinion in complete support of [the] stand operators have taken. It seemed to us that such measures should be planned with a full understanding of existing public opinion in the East as well as in the West."

Rockefeller contemplated sending Jerome Greene, a trusted official in the family office, to Colorado to start the publicity drive, but Greene tapped Ivy Lee, a young public relations expert whose work for the Pennsylvania Railroad had gained widespread acclaim. Greene gave Lee authority to rent an office, hire an administrative assistant, and engage an investigator to gather

"facts" in Colorado, with "the expectation that a programme of publicity will be gradually developed by you."

While Lee began trying to put a positive spin on the operators' position in the Colorado strike, the Rockefellers were investigating how they might gain control over the media and place their version of the "facts" in front of the public. They considered trying to purchase one of the large news agencies that provided ready-made copy for thousands of smalltown and rural newspapers, for instance. In the end, however, JDR Jr. decided to focus on paid advertisements and direct mailings to a list of some 11,000 newspapers, federal and state legislators, mayors, college economics professors, and every person listed in the latest issue of *Who's Who in America*. The list grew still larger to encompass every subscriber to *The Survey*, members of the Federal Council of Churches, and "six hundred social service people." Meanwhile, Lee also instituted a program of placarding company mines to thank the miners company officials referred to as "loyal workers" and union men called "scabs."

Slowly but inexorably, support for CF&I and its allies grew. The trend was already discernible in the summer of 1914, when Starr Murphy claimed "that public opinion is crystallizing in favor of the operators," and it accelerated through the fall. One survey of newspaper editorials commissioned by the Rockefellers found that of 47 editorials published about the strike in American newspapers in early November, 28 supported the operators, 14 favored the strikers, and the remainder were neutral. Ivy Lee demonstrated his talents as one of the early masters of spin, more than earning his monthly keep of \$1,000 plus expenses.

At the same time as the Rockefeller interests sought to rectify CF&I's public image, they began to moderate their position. While Monty Bowers continued to insist that "the word 'satisfaction' could have been put over the entrance to every one of our mines" before the strike to express the miners' sentiments, JDR Jr. and his associates at 26 Broadway were starting to admit that Colorado's coal mines and company towns were less than utopian places to live and work.

While delicately side-stepping CF&I's own shortcomings, JDR Jr. conceded that "it is probably true . . . that taking the Colorado operators as a whole, many instances might be cited where the abuses complained of in regard to check-weighmen, working hours, company stores, etc., have occurred."

Spurred again by Jerome Greene, and advised by the future Canadian leader W.L. Mackenzie King, JDR Jr. began to reform CF&I's policies along three intertwined axes. First, he commissioned third-party surveys to give him a better sense of actual conditions in southern Colorado's coal camps. These reports failed to substantiate most of the UMWA's allegations, but they nonetheless revealed that there was "real work – missionary work – to be done" in CF&I's industrial empire. Second, he revived and transformed earlier attempts by CF&I to improve the quality of mining camp life. While these changes resulted in concrete benefits to many mining families, they also resulted in greater social control as CF&I replaced the autonomous social milieu of the saloon with paternalistic, company-controlled clubhouses and YMCAs and rationalized the coal field landscape by eradicating worker-owned vernacular housing, restricting mining families' ability to raise domestic animals like chickens and goats, and transplanting domesticated suburban ideals such as fences, gardens, and tidy single-family homes to the cramped, arid coal towns of southern Colorado. Finally, JDR Jr. commissioned King to engineer a company representation plan that would allow workers to air their grievances without threatening the company's control of its properties or jeopardizing its profits.

"I believe in the organization of workers," Rockefeller told an Iowa farmer in June of 1914, but in an earlier letter he attached important qualifications to this position. He supported organization, he wrote, only when it was done to "urge all to increase their efficiency in every way possible, and thus naturally increase their earning power, which will recognize and properly reward the greater efficiency of some as compared with others, which will stand for the principle that the interests of labor and capital are

one, that neither can be completely successful without the cordial cooperation of the other, and which will put a premium on fidelity the common interests of labor and capital." Together, the commission of surveys, the implementation of camp improvements, and the creation of a company union at CF&I constituted what became known as the Rockefeller Plan. By late fall of 1914, the UMWA prepared to call a halt to the strike, while JDR Jr., King, Lee, Greene, Welborn, and their associates stood poised to implement a new era in the company's history. The Colorado coal field war sputtered to a close, having cost more than one hundred lives and exacting a heavy toll on everyone involved.

Previous scholars have explored virtually all of the materials I examined at the RAC. Though I have few "new" findings to report, and though my research was shortened by a March blizzard, my work in the Rockefeller business papers has nonetheless provided me with important information and intriguing clues that will prove integral as I craft my reinterpretation of the Colorado coal field war, the Ludlow Massacre, and the larger context of work, environment, and industrialization that these epochal moments too often obscure. Just as importantly, my research has helped me to move beyond the charged rhetoric of the strike and its historians, clarifying the actions and attitudes of the Rockefellers and their associates and highlighting the extent and the limits of the family's power over the distant industrial hinterlands of southern Colorado.

An Employer Response to Workplace Democracy: The Rockefeller Plan and the Fate of Employee Representation Plans, 1915-1935

By Greg Patmore

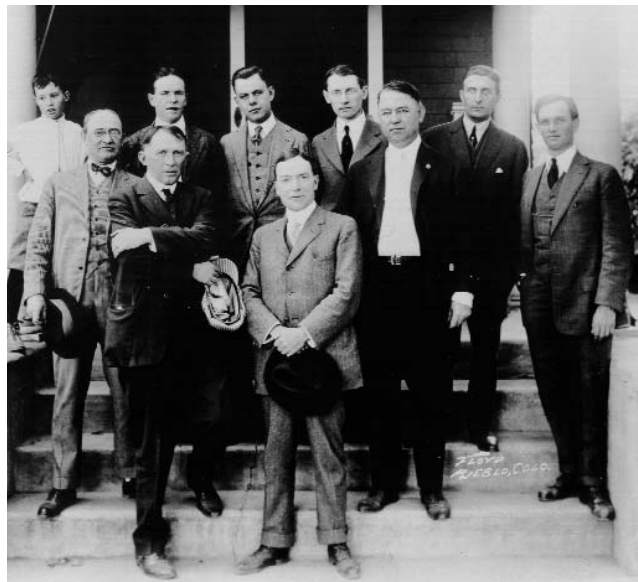
Can workers be represented without trade unions? Declining union membership in the U.S. in recent years has rekindled interest in the notion of employee representation plans to allow workers a voice in unorganized

workplaces. In 1935 Congress passed the National Labor Relations Act, which through Section 8(a) (2) banned Employee Representation Plans, or company unions, which were viewed as employer attempts to deny workers the rights to independent representation of their own choosing. An argument developed in the 1990s that Section 8(a) (2) should be reconsidered to allow industrial democracy to thrive, particularly in the non-union sector.

In December 1994 the Clinton administration's Commission on the Future of Worker-Management Relations recommended retaining the ban on company unions established by employers for the purpose of frustrating independent labor organization, but it also held that non-union employee participation programs should not be unlawful. Although a minority report by a labor representative on the commission argued that "real industrial democracy" is not possible without an independent trade union movement, several U.S. academics, such as David Fairris and Bruce Kaufman, have reinforced the majority recommendation of the Commission. The academic literature to support the liberalization of the National Labor Relations Act draws heavily upon a historical re-examination of the period prior to the legislation, when employee representation schemes were legal in the U.S.

A major impetus for developing these employee representation plans prior to 1935 was the "Colorado Industrial Plan" or the "Rockefeller Plan" at the Colorado Fuel and Iron Company (CF&I). This plan involved workers from a particular mine or workshop electing representatives to a district conference, where they met with senior representatives of the company at least three times a year. The district conferences elected joint committees on employment issues, which consisted of three representatives of the employees and three representatives of the company. The joint committee on industrial co-operation and conciliation dealt with issues such as wages and working conditions. There could also be joint committees on safety and accidents, sanitation, health and housing. Workers could appeal to various levels of company management and there was even a

provision for appeal to an external court if mediation failed. The company paid for all costs associated with the plan, including reimbursement for the loss of work time by employee representatives. While there was no place for unions in the plan, the original Rockefeller Plan prohibited discrimination against employees on the grounds of union membership.



From the Rockefeller Family Archives

"I don't mind it a bit," John D. Rockefeller, Jr. (front, center) replied when asked to pose for a picture with the newspaper reporters who accompanied him on his trip to mining towns in Colorado in September 1915, "but are you sure they care to risk their reputations by posing with me?" Rockefeller's companions signed the photograph: George R. Flannigan (Denver Times), A. G. Birch (Denver Post), J. M. Steele (Denver News), Edward T. Leech (United Press), Albert W. Stone (Pueblo Star Journal), William Hoster (New York American), Charles N. Wheeler (Chicago Tribune), and Edward S. Cowdrick (Associated Press, Denver), who later went to work for the Colorado Fuel & Iron Company.

The Colorado Fuel and Iron Company owned coal mines and the Minnequa steelworks at Pueblo, Colorado, and established this employee representation plan in the wake of the Ludlow Massacre. This incident occurred on April 20, 1914 during a violent coal miners' strike in Colorado against the company and other coal firms. A gun battle between the Colorado National Guard and the miners at the Ludlow strikers' camp left ten men and one child dead. Eleven children and two women also were asphyxiated in a tent fire after the National Guard overran the camp and put the tents to the torch.

There was public outrage against CF&I and the Rockefeller family, which had the largest shareholdings in the company. It was possible that President Wilson's federal administration would intervene and establish grievance procedures to settle disputes. If the local committees chosen by miners could not settle grievances, then they would be referred to an arbitration board selected by the president. John D. Rockefeller, Jr. (JDR Jr.) recruited W. L. Mackenzie King, a former Canadian Minister for Labor, to help him frame the plan. While Rockefeller and Mackenzie King did not publicly condemn trade unions, the plan was a substitution for collective bargaining with the United Mine Workers. With the union defeated in the strike, the miners gave their support to the plan in a secret ballot, where 84 per cent of the 2,846 votes endorsed the scheme. The company extended the plan to its Pueblo steelworks in May 1916.

The Rockefeller Plan spread to other companies. In the decade after the Colorado strike JDR Jr. promoted his plan through publications and public speaking. He also encouraged the extension of the plan to companies where the Rockefeller family had substantial interests, such as the Standard Oil Company, which had a major strike at its Bayonne, New Jersey, refinery in 1915. Clarence Hicks, who had played an important role for Rockefeller in implementing the plan at CF&I, transferred to Standard Oil to implement the plan there. The Standard Oil plan adopted in 1918 was part of an elaborate program of personnel management that included extensive company welfare benefits and the assumption of many of the supervisors' powers by industrial relations specialists. Although a Standard Oil executive, Hicks acted as a consultant to other oil companies interested in introducing similar plans. Other companies borrowed and modified the Rockefeller Plan. Arthur Young, a former employee of CF&I, and Mackenzie King drew up a modified plan for International Harvester. William Dickson, vice-president of the Midvale Steel Company in Pennsylvania, consulted with CF&I management before borrowing it with modifications in September 1918. The Bethlehem

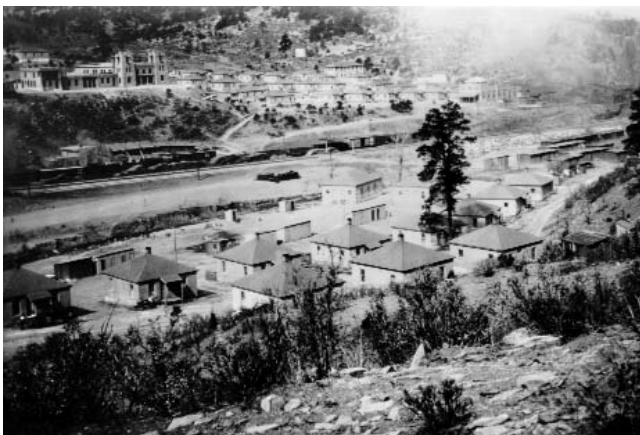
Steel Company also in 1918 employed Mackenzie King and Ivy Lee, Rockefeller's former publicity agent, to develop and promote a plan. It became a movement that spread throughout the U.S. to a wide range of industries and 2.5 million workers by 1935. The plan continued to operate at the Pueblo steelworks in the U.S. until 1942.

Some Canadian companies adopted variants of the Rockefeller plan, and the plan even influenced debates in Australia concerning employee representation following the First World War but did not gain a foothold. JDR Jr. directly contributed to the Australian debate by sending material relating to his plan to George Beeby, the Minister for Labour and Industry in the largest Australian state of New South Wales. Beeby visited New York in January 1919 and Rockefeller suggested that he meet with Hicks and Mackenzie King.

The supporters of employee representation plans claimed that they were more effective than trade unions in raising employee grievances and contributing to a firm's productivity. The plans countered the growing gap between senior management and workers in large-scale enterprises. They provided a communication link through which workers could bring minor grievances to management's attention and management could make workers realize that improved working standards depended upon reducing overheads and increasing efficiency. Trade unions, unlike the employer and employees, were "outside organizations" that were antagonistic to the firm and did not have as their primary interest the good of the company. Since the membership of employee representation plans or company unions was limited to the firm, one early commentator noted that employees "develop an interest in and a loyalty to that organization which tend to increased efficiency." David Fairris, in a recent reappraisal of U.S. company unions using industry data, argues that these schemes "marked a definite improvement for the worker as well as the firm" in the 1920s by reducing labor turnover, fostering worker loyalty and allowing workers a voice in determining shop floor conditions.

Critics of the representation plans argue that they do not provide an independent voice for

workers, since employers established and managed the plans. The company generally has the right of veto over shop floor initiatives in employee representation plans. Workers and their representatives are unwilling to raise grievances because they could lose their jobs. The plans also generally deal with minor matters and do not negotiate the general wage scale for the company or the plant. Without trade unions, workers are deprived of expert outside advice in arguing their case and conducting their negotiations. Workers



From the Rockefeller Family Archives

A view of the Morley mining camp, ca. June 1915. A team of YMCA workers who surveyed conditions in the camps found Morley to be an isolated company town of about 400 people, including 277 mineworkers, 69 of whom were Italian, 64 Mexican, 43 Austrian, 39 African-American, and 32 "American." All of the 123 houses in the town were owned by CF & I, and the people were "almost wholly dependent on the company store for their necessities and luxuries." The company store is on the bluff on the left.

cannot call upon outside help if employers decide to reduce wages and working condition. Since the plan only covers a particular plant or company, workers' knowledge of outside wages and conditions is limited.

My visit to the Rockefeller Archive Center primarily focused on the plan at the Pueblo steelworks, one of three iron and steel plants where I am examining the issue of labor representation in the first decades of the 20th century. The other two plants are at Lithgow in New South Wales, Australia and Sydney, Nova Scotia, Canada. While the management at Lithgow did not introduce an employee representation plan, the Sydney management did after a major strike in 1923.

The correspondence files of JDR Jr. proved very valuable in providing insights into labor

relations at the Pueblo plant. Well before the Ludlow Massacre, JDR Jr. corresponded with CF&I senior management, expressing concerns over safety at the Pueblo plant and the company mines. In February 1912 he called upon CF&I president LaMont M. Bowers to comply with Colorado state law following published allegations of dangerous conditions in the Pueblo steelworks. During a tour of the Pueblo plant in September 1915, he criticized management for the long hours that some employees worked. He was particularly concerned about employees who worked twelve-hour shifts and seven-day weeks. JDR Jr. also was concerned that there were no bathhouses for employees after work.

JDR Jr. monitored closely the operations of the employee representation plan after its implementation by the company. He was particularly sensitive about allegations of the victimization of union members. JDR Jr. felt strongly "that the cause of industrial peace is hindered rather than advanced by the indiscriminate, revengeful and unthinking attacks which are so often made upon unionism by capitalists and employers" and "deplored" the open shop movement. In February 1916 company officials were concerned that allowing union organizers to visit CF&I facilities would encourage employees to believe that the company was willing to enter into a contract with the union. JDR Jr., however, made it clear to company president Jesse F. Welborn that if the policy of allowing visits by union organizers were compromised, then the company would be open to the "charge of insincerity" and "would be an hundred fold more harmful to the success of the Plan than the worst condition which could be imagined as possibly resulting from a rigid adherence to the plan." He even drew up notices for the company to issue to employees explicitly indicating that they have the right to hold meetings on company property outside working hours and that union membership would not affect an employee's interests in CF&I. JDR Jr. also was critical of a proposal that managers should follow union organizers around CF&I camps, for this has "a little the appearance of detective work" and would undermine worker respect for company management. In December

1919 and January 1923 JDR Jr. asked Welborn to explain reports that mine superintendents were undermining the policy of no victimization of unionists in practice.

While the collection does not contain a comprehensive set of minutes of the various joint committees, there is sufficient material to examine some of the operations of the representation plan at Pueblo. There were occasional concerns by employee representatives that superintendents and foremen were indifferent to grievances and that CF&I management did not give the plan its full support. Foremen and superintendents were angry that employees with grievances would bypass them and go directly to the company president's Industrial Representative provided for under the Rockefeller Plan. The employee representatives at the Pueblo steelworks stood by the company in its conflict with the Industrial Workers of the World (IWW) in September 1927. A meeting of the representatives passed unanimously a motion calling for the dismissal of all IWW members at the steelworks. CF&I employed labor spies to monitor IWW activities in its mines and at the Pueblo steelworks.

The plan became a mechanism for changes in wages and conditions at Pueblo. Following frequent requests by employee representatives over several years and conferences between company officials and employee representatives, the working shift was reduced from twelve to eight hours on November 1, 1918. Ten per cent increases in the hourly tonnage and piece rates also were implemented. The reduction in hours led to increases in productivity rates beyond those when the twelve-hour shift was operating.

In January 1921 the company asked the Pueblo workers to accept a 20% wage cut due to a recession. Employee representatives argued that this was too severe and requested a 15% cut, which management accepted. The representatives said that they could make up for the other 5% by increased efficiency and elimination of waste. Two employee representatives did argue that the workers in their sections of the Pueblo plant believed that there should be no cuts in their wage rates, but accepted the majority view. There were further cuts of 15% in August 1921

following more discussions with employee representatives and a further 10% cut in January 1922. John Hogle has argued that employee representatives initially rejected the 10% cut in wages in January 1922. Only after management began to issue dismissal notices and threatened to place the remaining staff on short time, did the employee representatives agree. Hogle notes that "without a union, they could not strike. They had no independent treasury or strike fund." Unfortunately, JDR Jr.'s correspondence does not shed any further light on this incident.



The backyard of a house in Primero, Colorado that won first prize in the annual lawn and garden contest sponsored by the Colorado Fuel & Iron Company. The company furnished free grass seed to employees and in the Colorado Fuel and Iron Company Bulletin published horticultural tips in the spring and a list of prize winners in October.

The files also hold material relating to the impact of the Steel Strike of 1919 on the Pueblo plant. This is the only major strike at the Pueblo plant before the Second World War. CF&I management believed that Pueblo steelworkers would not join the national steel strike and were surprised when they were presented with strike demands on September 18, 1919. Management believed that the demand for the right of collective bargaining was met by the existence of the employee representation plan and that the general strike demand for the reinstatement of employees for union activities did not apply because there was no union victimization allowed by the plan. Welborn believed that the sole objective of the strike was to gain union recognition. The Pueblo plant initially ceased

operations because of the support for the strike and management feared that violence would arise if they attempted to break the picket line. Violent incidents occurred later during the strike. In December 1919 two men opened fire on the manager of the Pueblo steelworks. While he was not injured, his car was hit several times. Welborn claimed that Austrian women picketers threw rocks at men entering the plant. During the dispute a number of dissident strikers formed a "Back to Work League," which circulated petitions calling for a resumption of work under the old conditions. While CF&I admitted that the representation plan did not stop Pueblo steelworkers from joining the strike, "conditions outside the company" induced the men to strike and it was not the fault of Pueblo management or the representation plan. The company claimed that the strike was a national or international movement and not a "local movement" and "was organized by men representing the extreme radical section in labor union politics." JDR Jr. rejected requests by both the mayor of Pueblo and the strike committee to personally intervene in the dispute. In the wake of the strike the "Back to Work League" became the Industrial Brotherhood of the Minnequa Steelworks. The Brotherhood sent a letter to JDR Jr. regretting his decision to resign from the board of CF&I, but beyond this, the surviving correspondence reveals nothing about the fate of this organization.

The archives also provides insights into the demise of the employee representation plan at CF&I. Section 7 (a) of President Franklin D. Roosevelt's National Industrial Recovery Act of June 1933 recognized that workers had the right to bargain and organize collectively through their own representatives without employer interference. Unionism took off and employers rushed to set up representation plans to stop unions from organizing in their workplaces. The number of workers covered by these plans grew from 1.8 million in 1934 to 2.5 million in 1935.

Critics condemned these plans as "sham organizations" that impeded economic recovery and they were outlawed in the National Labor Relations Act of 1935. The National Labor Relations Board (NLRB), the agency charged

with enforcing the act, moved against the company unions after the Supreme Court upheld the legislation in 1937. In 1939 the Board won a major case against Newport News Shipbuilding and Dry Dock when the Supreme Court ruled that a plan in existence since 1927 was illegal, even though the employer no longer funded employee representatives' expenses and workers had voted for it in a secret ballot in preference to independent trade unions. The decision spelled the effective end of the movement inspired by the Rockefeller Plan.

The favorable climate for unions meant the end of the plan at CF&I. In October 1933 CF&I miners voted for collective bargaining through the United Mine Workers of America and against the Plan by 877 votes to 275. While CF&I officials recognized the wishes of the miners, they regretted the defeat of the Plan. They concluded that passive resistance was preferable to overt resistance, which "would lead to serious labor disturbances and probably bloodshed."

The Employee Representation Plan remained in operation longer at the Pueblo Steelworks. In February 1938 the company asked its employees to ratify the plan and designate the representatives as their collective bargaining agent. The subsequent vote was 2,426 votes in favor and only 198 against the plan. Many of the employees who voted for the plan, however, believed that the continuation of their insurance, pension and medical plans depended on a positive vote. The company changed the name of the plan to the Employees' Representation Organization (ERO) to indicate a break with the past, but most of the officers administering the plan were the same. Despite the vote and the changes, the full NLRB ruled on appeal in March 1940 that the representation plan was company dominated. At the first ballot in March 1941 the employee representatives and their lawyer circulated a publication to undermine support for the union. It noted that while Pueblo workers supported Roosevelt in the 1940 presidential elections, the CIO supported Wendell Wilkie. The representative organization made a strong appeal in the local newspaper for workers to vote against any outside representation. There was also a Western States Steel

Products Union, which company officials believed arose from a splinter group critical of the leaders of the ERO but not supportive of the CIO, that appeared on the March 1941 ballot and then disappeared. The supporters of the plan were victorious, as 2,670 workers voted for no representation and 1,783 voted for the CIO out of 4,838 votes cast. The ERO reorganized itself again following a decision by the Tenth District Court of Appeals to order the Company to stop dealing with it. It became ERO Inc., which the company identified as the collective bargaining agent for its employees on December 1, 1941. The Tenth District Court of Appeals ordered the company in July to withdraw recognition from ERO Inc., ruling that the company had given it a slight advantage over the union. During the final representation election in July 1942, ERO Inc. tried to persuade workers to vote against the union, hinting that the CIO was led by Communists and un-American. They were unsuccessful, however, in saving the final vestiges of the Rockefeller Plan: the resulting vote was 58% in favor of the union. The major reason for the defeat of the plan was a major influx of new employees as steel mill production expanded to meet wartime demand.

The Office of Inter-American Affairs and the Latin American Mass Media, 1940-1946

by Gisela Cramer

My visit to the Rockefeller Archive Center was part of a research project that explores U.S. foreign policy toward Latin America during World War II and, more precisely, the policies concerning cultural relations, the mass media and the communications sector. This was to a large degree the operational field of a war agency led by Nelson A. Rockefeller. Founded in August 1940 by executive decree, the Office for Coordination of Commercial and Cultural Relations Between the American Republics, later called the Office of the Coordinator of Inter-American Affairs, or, by 1945, the Office of Inter-American Affairs (OIAA),

has left a wealth of sources, located primarily in the National Archives (II) in Washington, but also in other research institutions, such as the Rockefeller Archive Center. While these records have been available for quite some time, they have not found the attention they deserve among Latin Americanists working on the war and immediate postwar years.

The new agency was founded for far-reaching purposes. Due to war-related dislocations of international trade and capital flows, by mid-1940 many Latin American republics seemed to be heading toward economic and political destabilization, a scenario that triggered deep security concerns in the United States. If the hemisphere was to be fortified as a bulwark against fascism, the destabilization of Latin America had to be avoided at all costs, and the OIAA was directed to elaborate rapid programs toward this end. Moreover, in order to effectively integrate the region into a strategic security system of “hemisphere defense,” the OIAA was to work to strengthen not only economic and political relations, but also the cultural ties between the Americas. Winning the support and collaboration of governments and elites south of the Rio Grande was deemed insufficient. The OIAA was to impress Latin American societies at large with the need for “hemispheric solidarity” and block any possible avenue for Axis influence, a task considered urgent after German military advances in Europe during the spring and summer of 1940 had revealed fascism’s aggressive capacities.

Subsequent developments toned down alarmist sentiments as far as Latin America was concerned. The region’s economies adapted better than expected to wartime challenges, and programs for emergency action drawn up by the OIAA and other agencies remained largely on the drawing board. Moreover, as is well known, the OIAA never reached the institutional standing for which Rockefeller and his crew were striving. After some acrimonious and time-consuming feuds, the OIAA was institutionally subordinated to the Department of State and consequently had to clear major policy initiatives with the State Department in Washington or with U.S. embassies in the respective countries. Congress proved to be

another limiting factor. With budget committees closely scrutinizing the expenditures of the new agency and more than one member of Congress ready to denounce a real or perceived waste of resources, the growth of the OIAA was kept firmly in check. Compared with other war agencies more directly involved in things military, the OIAA remained a rather small institution. While consolidating certain fields of operations, it lost some of its original functions, such as the elimination of German- and Italian-owned airlines or the “blacklisting” of Axis and Axis-related industrial and commercial enterprises, to the newly created Board of Economic Warfare and other agencies.

Such an institutional perspective, however, tends to underestimate the OIAA. While it is impossible to precisely gauge the degree of “good will” generated by the wide array of programs it carried through between 1940 and 1946, it is fair to say that the “Rockefeller shop” developed a massive presence in Latin America that has not been fully appreciated as yet. My research project examines activities that were part of the OIAA’s vaguely defined “propaganda” and “cultural divisions.”

The “Rockefeller shop” managed to compensate for the lack of manpower and limited financial resources by closely cooperating with U.S. enterprises, business associations, cultural and academic institutions, and private citizens eager to participate in activities related to “hemisphere defense.” Thus, operations in Latin America were supported by well-organized groups in and outside the United States. Among the most impressive examples of such interlocking agencies are the so-called Coordination Committees.

By late 1941, the OIAA had established Coordination Committees in most of the republics south of the Rio Grande. These committees were comprised mostly of U.S. businessmen with considerable experience in the local scene as well as press and media representatives. While some Coordination Committees were more active than others, the impact of this organizational setup was quite formidable. It allowed, for example, for an effective “blacklisting” in the media and communication field. Motion

Picture Subcommittees, comprised of OIAA officials, local distributors of movie pictures and representatives of companies providing film equipment and spare parts, worked closely with U.S. embassies and were able to screen the programs of movie theaters even in remote areas. Theaters exhibiting Axis-produced newsreels and movies faced being “blacklisted” and thus denied access to U.S. movies, equipment and spare parts. Since Hollywood productions tended to be the most successful commercially and since U.S. companies were by and large the only source for equipment during the war years, “blacklisting” proved to be a highly efficient instrument.

Due to very different organizational and technical conditions in the radio sector, operations destined to gain control over the content of radio broadcasting had to assume a more complex character. Again, the OIAA’s Coordination Committees took a very active part, screening foreign short-wave and locally produced radio broadcasts. In contrast to the motion picture field, the reception of Axis short-wave programs was difficult to prevent – unless regional Coordination Committees were able to employ a local transmitter to “jam” the respective short-wave frequencies, as was accomplished in parts of Brazil. But “blacklisting” could be employed against local stations to prevent a retransmission of such programs or the dissemination of news and commentaries considered inimical to the United States. “Blacklisting” in the radio field included, for example, the termination of advertisement contracts with U.S. enterprises. Moreover, in order to prod local radio stations toward contents considered desirable, the OIAA supplied them with prefabricated programs for rebroadcast and with truly vast amounts of information and propaganda materials, the usage of which was – as in the related newspaper and magazine field – carefully monitored by local subcommittees.

To be effective, radio programs had to be popular and attract listeners, and the OIAA was able not only to count on the collaboration of the major networks and experienced radio men and women in the United States, but on the expertise of the Coordination Committees. The latter

greatly contributed by designing local news, commentary, and entertainment programs adapted to local conditions and tastes, and sponsored by U.S. enterprises and their affiliates.

While trying to reach Latin American societies at large, the OIAA, of course, was well aware that programs employing movie theaters, radio and the print media had severe structural limitations. They were not sufficient to reach the poorer people, particularly in the less developed hinterland. Providing local Coordination Committees with 16mm projectors and sound trucks was one of the measures devised to cover even remote areas with educational or propagandistic materials. Some of the sub-committees in charge made very intensive use of this means, reaching considerable audiences, as their monthly activity reports show. Where it was politically feasible, arrangements with local government agencies could provide access to popular sectors, such as arrangements with education authorities that enabled the Coordination Committees to exhibit educational films and to distribute appropriate materials in schools.

Engaging well-known Latin American cartoonists for the production of anti-fascist comic strips was another conscious move to reach the less-educated and illiterate masses. Again, it was often the ingenuity of the Coordination Committees that found ways and means to overcome obstacles to their programs, such as illiteracy and the lack of electricity. Thus, the Honduran Coordination Committee contracted a local manufacturer to insert anti-fascist cartoon leaflets in cigarette packages. In areas where poverty and the lack of electricity prevented widespread ownership of radios, some committees resorted to installing battery-powered radio sets in public spaces. In some countries, arrangements with the local hierarchy of the Catholic Church seems to have provided another avenue to reach the popular classes. The church allowed Coordination Committees to participate, for example, in regional religious festivities by exhibiting films and information materials about the persecution of the Catholic Church in Nazi Germany and other matters.

My research until now has been largely concerned with the operational mode of the OIAA. The next stage will explore the contents of the materials produced and used by the OIAA in the press, radio, movie and educational and other cultural programs field. I will return to the Rockefeller Archive Center for another research visit that will be dedicated mainly to the holdings of films produced by the OIAA.

The Impact of the Receptor Concept on 20th-Century Pharmacology

by Cay-Rüdiger Prüll

Along with two colleagues at the University of Durham in the United Kingdom – Andreas-Holger Maehle, Chair of History of Medicine and Medical Ethics in the Department of Philosophy, and Robert Halliwell in the Department of Biological Sciences – I am engaged in a research project that deals with a concept which is central to the understanding of immunological processes and drug effects. The receptor concept is based on the idea that the surface of the cell contains certain “harbors,” or receptors, that enable chemical interaction with foreign bodies as well as the exchange of information with other cells of the human organism. Our project is funded by the Wellcome Trust, London and will provide a comprehensive historical study of the theory and discovery of drug receptors and their impact on 20th-century pharmacology. The aim is to analyze the fate of the concept in the course of medical and cultural developments in the late 19th and 20th centuries. The project is being carried out in four steps. First, we will analyze the period of the construction of the concept between 1878 and 1905, and then we will examine the survival of the concept in the early decades of the 20th century. Third, the project will deal with the development of the concept and its relevance for drug design and therapeutics after World War II. This part is based on two case studies: one on “adreno-receptors,”

which enable the coordination of the heartbeat and breathing, and another on “histamine-receptors,” which are important in immunological reactions of the human body. The fourth and last part deals with modern approaches and investigates historical continuities and discontinuities, as well as the consequences of the receptor concept for pharmacology and for medicine in general.

Research for the first part of our work, in particular the specific conditions of the early history of the concept, led me to the Rockefeller Archive Center. The creation of the receptor idea and its development into a system was strongly linked with the work of two scientists: the physiologist John Newport Langley (1852-1925) in Britain and the immunologist and physician Paul Ehrlich (1854-1915) in Germany. Whereas Langley — as far as we know at present — was the first to mention “receptive substances,” Ehrlich was the first scientist who independently explored “receptors” and developed in this way a detailed and versatile concept of immunity. It was therefore necessary to carry out research specifically on Paul Ehrlich and to examine relevant materials in the Paul Ehrlich Collection at the Rockefeller Archive Center. Its value for the project cannot be overestimated, for it sheds new light on the role of the receptors in Ehrlich’s scientific thought and life, especially the period between 1897 and 1905 when Ehrlich developed the core ideas of the concept. I examined his laboratory books and notes and his correspondence with colleagues during this period.

In the secondary literature Ehrlich’s life is often described as a well-organized working plan which led to the development of the chemotherapeutic drug Salvarsan. The latter is seen as a decisive step in combating syphilis. This view was fuelled by the Ehrlich scholar Leon Michaelis, who in 1919 found the lost dissertation of his teacher in the archive of the University of Leipzig. Michaelis claimed that this piece of work, dealing with the fixation of dye-stuffs in tissues, was of great interest because it mirrored Ehrlich’s whole life, which was shaped by his fight for the side chain theory. This theory — which is the basis of the receptor concept — was determined by the idea that certain “side chains”

of the cell were able to bind certain toxins. Because these occupied side chains became unable to fulfill their physiological function, the cell would overcompensate, producing a lot of additional side chains. These side chains — later called “receptors” — would be released into the blood stream, working then as antibodies or antitoxins. According to Michaelis, this theory was behind all of Ehrlich’s successes. The view that the way from the dyes to Salvarsan was a continuous process of research, a kind of master plan in Ehrlich’s mind, also influenced the historiography on the receptor concept itself. In 1999 Arthur Silverstein published a paper in which he claimed that Ehrlich followed the receptor idea for 20 years after his dissertation of 1878.

A closer look into the construction of the receptor concept in the course of Ehrlich’s career allowed me to revise this view on the basis of the materials found in the Rockefeller Archive Center. If one studies the different stages of Ehrlich’s academic life, the emergence of his immunological theory and of the receptor concept appears not to have been a predetermined program but rather the result of several events within the development of his thinking and research plans, as well as his socialization within the scientific community of his time.

First of all it is worthwhile to acknowledge that after he had finished his studies in 1878, Ehrlich tried to introduce into medical practice two main ideas from his time as a student: the examination of human diseases with the help of the staining of tissues, and the application of chemical thinking to histology and medicine. Ehrlich began his career with an appointment as first assistant physician in the Medical Clinic of the Charité-Hospital in Berlin, headed by Theodor Frerichs (1819-1885). Ehrlich used the method of staining to analyze histological specimens of dead as well as of living patients (biopsy samples) and to understand the functional aspects of diseases. He combined laboratory research, animal experimentation and human trials to examine disease processes and to provide diagnostic and therapeutic aids for physicians. One example is his research on hematological diseases. By testing and applying dye-stuffs, and in combination with

animal experimentation, Ehrlich was successful in exploring the different kinds of red and white blood cells and in relating this knowledge to diagnostics and therapy of several blood diseases and infectious diseases. Ehrlich became a pioneer in hematology. Furthermore, Ehrlich applied staining to almost every aspect of his research, and he also used dyes in therapeutic human experimentation. He did this work without any elaborated immunological theory. The side chain idea is mentioned only in his habilitation-thesis of 1885. It was not followed up during the next years. Further insights into the exact process of substance binding were not necessary to achieve therapeutically promising results.

Both Ehrlich's scientific work and his personal life were progressing well. He married in 1883, and his parents moved to Berlin only one year later. But his good fortune soon changed. In 1885, Ehrlich's sponsor, Theodor Frerichs, died. This caused tremendous difficulties for Ehrlich, since his new mentor, the clinician Carl Gerhard (1833-1902), had little interest in Ehrlich's laboratory work. Ehrlich suffered and became ill with tuberculosis in 1888. He resigned, ending his clinical career. Ehrlich later came under the influence of the bacteriologist Robert Koch (1843-1910) and did mostly immunological work. These new studies were mainly laboratory based and were carried out in Ehrlich's own research institute, located after 1896 in Steglitz near Berlin, and after 1899 in Frankfurt/Main.

Now in an independent position, Ehrlich tried to rebuild the setting at the Charité-Hospital where he had been so successful. But the immunological investigations led him to more or less theoretical work, which in turn led him to revive his side chain idea in 1897. He remodeled it as a complex theory, and from then on it was the basis for his immunological work and influenced his studies until about 1905. Ehrlich expanded the side chain theory more and more. His correspondence and his laboratory notes show that these investigations were carried out with tremendous effort and an extensive use of different animals and toxins. After 1900 he used the term "receptor" and the receptors now became the major concern of Ehrlich's efforts to

stabilize "the theory." In his view the receptors played a major role not only in immunology but also in metabolic processes. Soon Ehrlich detected various types of receptors and he developed a microworld of immunologically active substances in the blood. Ehrlich called his vision the "plurimistic attitude" (*plurimistischer Standpunkt*). In 1907 he concluded that receptors were not only able to bind toxins and substances produced by the body, but also applied drugs.

Although Ehrlich received the Nobel Prize for his work in immunology in 1908, all his results were based to a great extent on assumptions. There was early criticism of his theory, and the archival material shows how he dealt with critics of the side chain theory and the receptors. He characterized most of them as "unitarians" who were opposed to his "plurimism". For example, Ehrlich had a dispute with three critics at the Pasteur Institute in Paris: the immunologists and bacteriologists Pierre Roux (1853-1933), Jules Bordet (1870-1961) and Elias Metschnikoff (1845-1916). Bordet launched an attack against the side chain theory, arguing that there was only one "complement" (a substance able to combine with receptors, enabling the cell to digest certain molecules) called "Alexin." Ehrlich was embarrassed and immediately told his assistants to repeat the experiments of Bordet. Under the heading "Against Bordet" he gave his instructions on pieces of paper. Remarkably, all experiments confirmed the side chain theory. Ehrlich continuously promoted his theory, dividing the scientific world into friends and opponents of "the theory." He became more and more obsessed with his theory. Chiefly uninterested in cultural or political matters and talking only about his work, he painted the receptors on note pads, letters, postcards and even on tablecloths. It was only with his orientation towards cancer research and chemotherapy after 1905 that Ehrlich calmed down.

In spite of his enthusiasm concerning receptors, Ehrlich was not lucky at all, for he no longer had any patients now that he had his own institute. And he needed patients. After 1898 he remarked consistently in letters that he wanted to return again to histological and biological staining after being involved so long in immunological matters.

He desperately tried to establish again the approach he used at the Charité: laboratory and animal experimentation combined with clinical work. Ehrlich tested dyes on animals and subsequently asked clinicians to undertake human experimentation. For example, he contacted his old friend Albert Neisser (1855-1916), a well-known dermatologist in Breslau, and asked him to apply some of his dyes to patients. He himself had tested them on rabbits. Ehrlich advised Neisser to start with low doses and to try them “first in cases of headache, vague rheumatic plagues, gonorrhoea and cystitis.” Neisser was helpful, but others were not so generous. Ehrlich tried hard to find support, and if he got some, he often had to beg his colleagues for reports on the outcome of the trials. In 1899 he showed signs of fatigue, noting that “all these gentlemen undertake the staining therapy only to do me a favor, but not in devotion to the subject.” Between 1897 and 1905, Ehrlich tried in vain to return to his favorite style of working and what was left was the receptor idea.

Ehrlich did not possess a master plan that led him inevitably to the receptors. At the beginning of his career, he followed an approach which was not dependent on an elaborated theory of substance-binding to the cell. Ehrlich was able to achieve good results solely with laboratory work, animal experimentation and human trials. The death of his sponsor, Frerichs, and the end of his clinical career forced him to change his orientation. But even as head of an independent laboratory he tried hard to establish the same setting that had been so fruitful in his Charité days. Because these efforts were not successful, theory became much more important for him, and he concentrated on the construction of the side chain and then the receptor theory not only to explain immunological responses but also metabolic processes in general. The critics fuelled his research even more, and Ehrlich was dragged increasingly into the “plurimism” of his receptors. The development of the receptor concept was not inevitable. It emerged from a unique combination of different factors and events in Ehrlich’s academic, professional and social life.

About the Contributors

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JOHN D.: "I DIDN'T RAISE MY BOY TO BE CONSISTENT"



John D. Rockefeller, Jr.—a director—did nothing to learn the conditions of the miners and their starving families in Colorado—Congressional Mines and Mining Committee Report.

From the Rockefeller Family Archives

An editorial cartoon from the Detroit News, March 12, 1915, comments on the apparent disparity between Rockefeller philanthropic and business practices following the bitter and violent strike by coal miners in Colorado aimed in part at the Colorado Fuel & Iron Company, where John D. Rockefeller, Jr. was a director as a result of the family's investments. Two articles inside discuss the strike and the fate of the industrial relations plan that JDR Jr. developed as a result.

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