

JONATHAN E. HELMREICH

Gathering Rare Ores

*The Diplomacy of Uranium
Acquisition, 1943-1954*



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Princeton University Press

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To Nancy

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LIST OF ABBREVIATIONS

AEC	Atomic Energy Commission
CDA	Combined Development Agency, the successor in January 1948 to the
CDT	Combined Development Trust
CIA	Central Intelligence Agency (U.S.)
CPC	Combined Policy Committee
ERP	European Recovery Program
GOI	Government of India
MAUD Committee	Uranium subcommittee of Committee for the Scientific Survey of Air Warfare (U.K.)
MDAP	Mutual Defense Assistance Program
MED	Manhattan Engineering District
MLC	Military Liaison Committee (between the U.S. Joint Congressional Committee on Atomic Energy Affairs and the AEC)
MTU	Metric Tons of Uranium
NATO	North Atlantic Treaty Organization
NDRC	National Defense Research Committee (U.S.)
NSC	National Security Council (U.S.)
OCB	Operations Coordinating Board (U.S.)
S-1	Uranium (U.S.)
S-1 Committee	Office of Scientific Research and Development Section on Uranium (U.S.)
SGB	Société Générale de Belgique
UM	Union Minière du Haut Katanga
UMDC	United Mines Development Corporation
UN	United Nations

PREFACE

A premise of paucity undergirded the campaign of the United States, abetted by Great Britain and Canada, to gain a monopoly of uranium and thorium supplies during and immediately following the second world war. The falsity of that premise did not become clear until the early or middle 1950s; that discovery, the result of the detection of numerous sources of uranium and means to utilize low-grade ores, brought the major aspects of the diplomatic effort to an end.

The legacy of the venture was not negligible. It led to an increase of Cold War tensions just as it was a reflection of that Cold War. United States relations with its allies were influenced, most notably with Britain, France, and Belgium, as were contacts with such states as India and South Africa. The apparent success of the acquisition program built unrealistic visions of a *pax atomica Americana*, the dispelling of which provoked overreactions which only further excited a Washington atmosphere already heated by the debate over civilian versus military control of the atom. The pocketbooks of Americans and foreigners alike were affected, for the total expended directly and indirectly in dollars and pounds sterling was huge. It surely is one of the more startling examples of dollar diplomacy. Extravagant in scope, imagination, and expense, the campaign was conducted in great secrecy, with the right hand often uninformed of the activities of the left. In this case parliaments, congresses, chambers, cabinets, and state departments were only partially informed, while soldiers and businessmen made significant commitments affecting political arrangements.

In retrospect, the search for monopoly seems a wild-goose chase. One of the lawyers involved, John Lansdale, Jr., commented to the author that "Nobody had the faintest idea of how plentiful uranium was." Had they known, he went on, General Leslie Groves and his men would certainly not have tried to make deals with Sweden or Brazil. Yet until they knew, the endeavor seemed desperately necessary. If the situation was such that one nation could establish hegemony over the greatest destructive and constructive power source the world has known, then it was better to be that nation rather than not. The stakes were huge.

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and potentially long-lasting; if it presently may seem that the world is better off to have several nuclear powers than only one, the ultimate result still remains to be seen.

An interesting aspect of this issue of such grave import for the balance of power among the great nations is the crucial role of Belgium. Though one of the smallest of nations, Belgium proved to have statesmen of great heart and steadiness of commitment to the Western, democratic cause. To several American participants, it is this small number of Belgians, and especially Edgar Sengier and Paul-Henri Spaak, who are the heroes of the story and of the protection of the West at the time when Europe lay vulnerable to Stalin's divisions. Of course there were many more individuals involved. Yet it is worth noting that because of the dense secrecy and haste with which the search was undertaken, it was more the product of individuals than of institutions, of personal efforts than of established procedures.

An account of Western efforts to procure uranium is difficult to construct. Only a select number of men were privy to the innermost dealings. All of them have been circumspect in their public comments, and some no doubt have carried important information to the grave. Operations were compartmentalized, so that few individuals ever had a grasp of the entire picture. The nations involved are chary about releasing documents and have applied restrictions well in excess of those normally prescribed by law.

The British and Americans were influenced in their efforts to obtain uranium by what they believed and suspected to be the tactics of their opponents. The extent to which the two governments were correct in their judgments or acted inappropriately cannot be known without access to files that will not be available to Western researchers for some while, if ever. Many German records for the war years are lost or destroyed, and the prospect of Soviet archives being soon opened is remote.

Moreover, the story has many strands. Much has appeared on the scientific developments, their technical nature and their political and national security implications. The detailed two-volume official *History of the United States Atomic Energy Commission*, based on the still classified documents of that Commission, is invaluable for an understanding of the American situation in this regard. Margaret Gowing's three volumes on Britain and atomic energy from 1939 to 1952 play a similar role for the British side. But there were other strands, nor can official histories cover all aspects equally well. The role of espionage is still

obscure; the activities of private entrepreneurs and business firms cannot be easily traced, not to mention the feverish searches of individual prospectors.

Economy of space and clarity of focus require that attention be granted here only to the diplomatic give and take, with merely passing reference to related topics such as scientific debates or complexities of domestic politics. The existence of these should of course be kept in mind; they play an important role in the history of the period, if not in this account.

Archival restrictions currently prevent exploration of the topic past the early fifties, but absence of such extension does not cause too great a loss of understanding of the diplomatic effort. By then, the parameters of the situation had changed greatly. It was the assumed rarity of uranium, the secrecy surrounding the super weapon fueled by it, and the presence of war or the potentiality of war that lent such import to the negotiations in the 1940s. Slowly a number of these factors fell away. Germany was defeated, and the existence of an atomic weapon was terrifyingly revealed at Hiroshima and Nagasaki. In August 1949 Russia demonstrated her ability to produce an atomic weapon, and in October 1952 the British did likewise. Shortly thereafter the United States tested its first hydrogen bomb, a weapon requiring less uranium than earlier atomic bombs, and unanticipated reserves of the rare fuel were discovered.

Uranium-related diplomacy continued, but it took on a less frenzied tone as supplies became more readily available; mass production of bombs shifted emphasis from their manufacture to delivery systems, and authorities in the United States considered it possible—and a necessity—to turn over the development of uranium resources to private entrepreneurs. Concern remained high for secrecy of technology, limitation of the spread of atomic weapons, and the exchange of information regarding commercial and industrial usage of atomic energy, yet the scramble for an Anglo-American duopoly of uranium would be over.

My efforts to trace the campaign for rare ores have been aided by several persons to whom I owe sincere thanks. Mr. Edward Reese of the Modern Military Records Division of the United States National Archives was helpful. Ambassador Margaret Tibbetts, Mr. John Lansdale, Jr., Mr. Joseph Volpe, and Dr. Thomas Johnson shared their insights and experiences with me. Mr. and Mrs. David S. Clark, Mr. and Mrs. Kevin Miller, and Mr. and Mrs. Robert B. Stevenson offered shelter

Preface

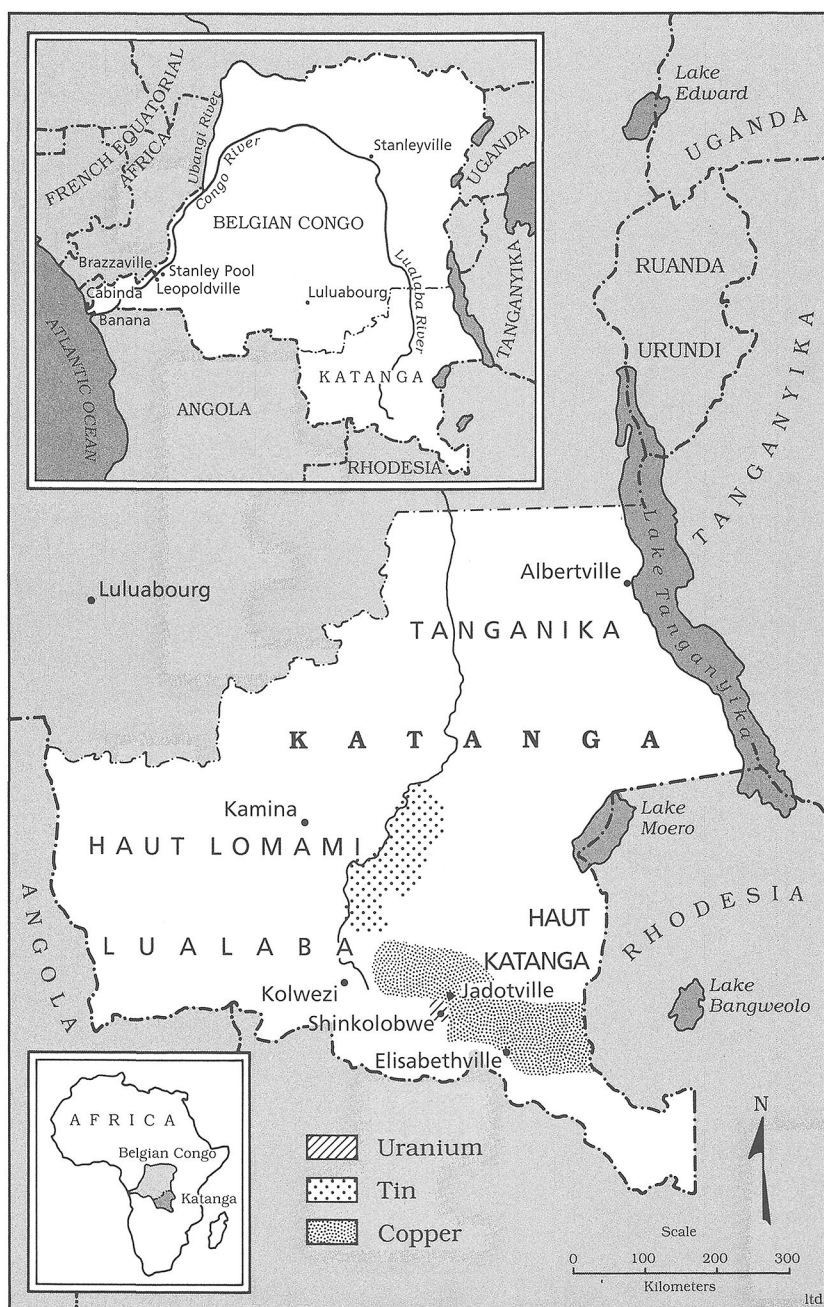
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My gratitude to my family is for even more than the happy atmosphere which enabled me to pursue this inquiry with support and enthusiasm. My parents, Professor Ernst and Dr. Louise Roberts Helmreich, each read all or part of the chapters and by their questions helped me to clarify the exposition. Nancy Helmreich typed numerous drafts as well as bringing sunshine to the darkest of winter days. The children, by their presence, hopes, and inquiries, provided animate reason for endeavoring to learn more about the roots of the atomic arms race.

To all of the above, I am indebted. Responsibility for any errors and shortcomings of the present account, however, falls only to myself.

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Meadville, PA*

Gathering Rare Ores



Province of Katanga, 1950

1 · Discovering the Need

In the summer of 1939 uranium was not an item which made much impression upon international affairs, world trade, or the public in general. Radium, with which it is usually associated when mined, was far better known for its use in scientific research and medical facilities. The ceramics industry did employ uranium to produce red and orange hues in its products, yet only about 100 tons of the metal were consumed the world over each year. Nearly 80 percent of this came from a mine at Shinkolobwe in Katanga Province of the Belgian Congo. When the threat of war increased the demand for copper and tungsten steel, even that mine was closed by its proprietors so that resources could be concentrated on exploitation of neighboring copper and cobalt mines.

This was to change, as did so much else, in the next few months. Scientific discoveries began to suggest the possibility of creation of a new and terribly powerful weapon from uranium. The outbreak of war lent an urgency both to the researchers' investigations and to the quest for the rare metal without which they could make little practical progress.

The desire of Great Britain and the United States in the nineteen forties and early fifties to gain control of foreign deposits of uranium and thorium which could provide the fuel for explosive atomic devices necessitated a major diplomatic campaign. The stakes were high and required unusual effort that nevertheless had to be sheltered from the public eye. Secrecy was essential both because of the danger of leakage of significant information and because the issues and tactics employed were not readily understandable. Diplomacy was carried out by an unusual mixture of military, civilian, and diplomatic personnel. Its twists and turns proceeded from technological discoveries and espionage as well as from a variety of conflicts: those of great powers as enemies, as differing allies, and as negotiators with independent and sometimes wary small powers. The dual goals were to assure the United States and Britain of a sufficient supply of uranium for their own weapons program and to deny their enemies access to the same material in a man-

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ner thorough enough to hamper or even forestall their atomic programs. Success was achieved on the first count, though at times the British feared their own research would be starved by the huge American appetite for radioactive ores. On the second count, success was more limited, though Russian progress (more so than the German) was no doubt slowed and made more expensive.

The quest for uranium reflected and furthered the transition of the role of major enemy of Britain and the United States from Germany to the Soviet Union after World War II. Its story therefore sheds light on a key source of tension and on the posture of the Western allies in the early years of the Cold War. Indeed, the American-British attempt to gain a preclusive duopoly on uranium regardless of whatever proposals for international cooperation were laid before the United Nations may arguably be among the prime origins of the Cold War, at least to the extent the Russians knew of the Anglo-American effort through their intelligence system.

The Early Search: Leslie Groves and Edgar Sengier

Recognition came slowly in the United States that uranium might be valuable to a weapons program. At the end of 1938 an isolated experiment in Berlin had suggested that uranium was fissionable. This was corroborated by further experiments. By the close of 1939 researchers at Columbia University in New York were investigating the possibility of creating a limited chain reaction, that is, of continuing fission once it had been initiated. Among them were the Italian scientist Enrico Fermi and the Hungarian Leo Szilard. Fear that the Nazis might be the first to achieve an explosive device utilizing the immense force of fission led Szilard to press for support from the U.S. government. Concerned also that the Germans might gain access to the best known source of uranium in the Belgian Congo, he and fellow Hungarian physicist Eugene Wigner approached Albert Einstein, then in residence in Princeton. As Einstein knew the Belgian royal family, they thought him the right person to warn the Belgians. Einstein agreed to write a letter, though to a lower-ranking individual. First a copy would be sent to the U.S. department of state. Were no response received, the letter would then be sent in two weeks to the Belgians.¹

No prompt reply came from the state department, but the letter to Belgium was not mailed. Szilard in conversation with Alexander Sachs,

an economist with access to President Franklin D. Roosevelt, learned that if government support were to be won the somewhat pessimistic views of Enrico Fermi and others at Columbia regarding the possibility of a fission bomb had to be overcome. Einstein again agreed to sign a letter, this one to Roosevelt. Drafted by Szilard and Sachs, it indicated that propagation of a chain reaction was imminent. It also warned that a frighteningly powerful bomb might conceivably be constructed, urged government awareness and support of research activities, and noted that the Congo was the best source of uranium and that Germany had stopped sale of Czech uranium.

After meeting with Sachs on 11 October 1939, Roosevelt appointed an Advisory Committee on Uranium. The need for defense research in the still neutral United States became more clear by June 1940, when the National Defense Research Committee (NDRC) was created under the leadership of Dr. Vannevar Bush. Bush, an inventive applied mathematician and electrical engineer, was a former vice-president of the Massachusetts Institute of Technology and currently head of the Carnegie Institution. The NDRC supervised the Uranium Committee until November 1941, when that committee's work became so important that it was placed directly under the Office of Scientific Research and Development, the governmental agency which also oversaw the National Defense Research Committee.

Fission research accelerated. In June 1942 the U.S. Army formed an engineer district—eventually named the Manhattan Engineer District (MED)—to assist with the effort. Among its chief responsibilities would be construction of production plants. It made little progress until in mid-September a newly promoted brigadier general, Leslie R. Groves, was appointed its head. Former deputy chief of construction in the Corps of Engineers, Groves was able, hard-driving, contentious, and blunt. He had a record of getting things done. Smart, he did not mind letting others be misled into thinking he was not. Thorough in preparation, he was nevertheless known to take decisions and actions abruptly. Groves had a strong sense of intuition about people and would follow it with a remarkably high degree of success, as one colleague noted.² In the Manhattan Engineering District he would develop a policy of compartmentalization of activities and knowledge so that few persons other than himself knew all that was going on. For security reasons also, he would work with as few people as possible.

On 17 September 1942, the day Groves was informed of his new duties, he discussed with an assistant the lack of uranium. There were

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few developed uranium mining sites in the Western hemisphere, for the market for uranium and most of the metals with which it is commonly found had simply not warranted their discovery or exploitation. In 1939 uranium imported to the United States brought only about 83 cents per pound, hardly enough to encourage much prospecting. Some had been found along with radium in Colorado, but its mining there had dropped off sharply after richer deposits discovered in the Congo were mined at far lower costs. The Eldorado company in Canada did produce uranium as a by-product of its gold mining ventures, but the amount was limited.³

Groves quickly learned that the only available supply of uranium was 1,200 tons of high-grade (65 percent) ore of which the MED had learned almost by accident ten days earlier. It was stored on Staten Island by the African Metals Corporation, an affiliate of Union Minière du Haut Katanga.

Union Minière (UM) was a partial affiliate of the Société Générale de Belgique (SGB), one of the two or three largest investment concerns in Europe and one of the oldest. Stock in UM was also held by individuals and holding firms in a number of countries, and stock in some of these investment firms was in turn held by the Société Générale. Belgium corporate law had no “arm-length” provisions, and interlocking directorates were common. The connection between UM and SGB has traditionally been close. In 1981, well after UM had been nationalized by Zaire in 1967, the company would become a wholly owned subsidiary of SGB. In the 1930s Union Minière was deeply involved in the discovery and development of non-ferrous metals in Upper Katanga, in the southwest section of the huge African country first established as the Congo Free State by Belgian King Leopold II in 1885 and eventually turned over to Belgium as a colony in 1908.

The uranium which interested Groves had been brought to New York on the order of Edgar Sengier, the managing director of Union Minière. Enterprising and far-sighted, he had encouraged vast investments by his firm in developing the initially unprofitable copper mines of Katanga. Although concentrating on copper, Sengier became aware that uranium might be of greater value than most people thought when he visited a fellow Union Minière director, Lord Stonehaven, in England in May 1939. Lord Stonehaven arranged for Sengier to meet Sir Henry Tizard, director of the Imperial College of Science and Technology, and deeply involved in British defense research.

Tizard knew that an outside possibility existed that a powerful bomb might be created from uranium, but he judged that possibility as only one in a hundred thousand. Nevertheless, alerted by a British researcher of the desirability of denying uranium to Germany and securing it for Britain, he asked of the Union Minière officials that his government be granted option to purchase all radium-uranium ore produced by the UM mine at Shinkolobwe in Katanga. Tizard did not press the matter vigorously, for he doubted the utility of uranium. Sengier refused the proposition, perhaps because the price the Belgian believed his ore was worth had not been offered. He did agree to let the scientist know of any abnormal demand. In parting, Tizard warned that the Belgian held "something which may mean a catastrophe to your country and mine if this material were to fall in the hands of a possible enemy."⁴

Sengier was next approached a few days later by French scientists led by Frederic Joliot-Curie. The latter was the son-in-law of the famous scientists and co-winner with his wife in 1935 of a Nobel Prize for work in nuclear physics and radiation. Would Sengier join them in an effort to explode a uranium fusion bomb in the Sahara? Sengier accepted the proposal in principle and agreed to provide the necessary ore. Outbreak of war and the invasion of France, however, prevented any development of these plans.

The possibility that Belgium would be invaded and communication between Brussels and the Congo cut off led the directors of Union Minière to take precautions. Sengier was quietly sent to New York in September 1939, a few weeks prior to his sixtieth birthday, with full powers to conduct the firm's business should contacts with its European directors be broken. Before leaving Brussels, Sengier ordered existing supplies of radium in Belgium and uranium ore at the refining plant at Oolen, Belgium, near Antwerp to be shipped to Britain and the United States. The radium arrived, but shipment of the Oolen ores was delayed; they fell into German hands in June 1940 when Belgium was overrun. Some 3,500 tons of uranium compounds, some already partially processed, thus became available—barring bureaucratic hold-ups—to the German atomic research program.⁵ Stockpiled ore in the Congo was shipped to New York promptly; it was this ore which eventually attracted the attention of the MED.

To Sengier's surprise, American officials at first took little interest in the uranium. In March 1942 Sengier talked with Thomas K. Finletter and Herbert Feis of the state department. These economic experts were

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more interested in cobalt than uranium, even after Sengier suggested that the latter was more important. Twice in April he raised the matter without significant response. This was no doubt because the state department did not know about the current U.S. research activities and indeed would not be informed until just before the Yalta conference of February 1945—such was the secrecy surrounding the project and so closely did Roosevelt hold his cards to his vest. Yet, as General Groves points out in his memoirs, the connection of valuable radium with uranium was widely known, and there were enough articles on recent research in the press to suggest the importance of uranium on its own.⁶

Apparently the Executive Committee of the Advisory Committee on Uranium (now known as the S-1 Committee) chaired by Dr. James B. Conant, the chemist president of Harvard University, also saw no need to acquire any additional supplies of uranium. At least that was the position taken at its 9 July 1942 meeting. It was expected that sufficient uranium might be obtained via the Canadian firm of Eldorado Gold Mines, Ltd., from which two small (6 to 8 and 5 tons) orders had been purchased in 1941. Eldorado's old mine on Great Bear Lake would, however, have to be drained and brought into repair. In order to persuade the company to take these steps, an order for 60 tons of oxide, the least amount necessary to make the re-opening economically possible, had been placed. But then in August the S-1 Committee learned that Boris Pregel, a White Russian who in 1917 fled to France and established various connections including that of a sales agent for Union Minière and also for Eldorado, was attempting to purchase 500 tons of Sengier's ore.⁷ On 11 September, Bush, as head of the National Defense Research Committee, suggested to the army the imposition of export controls on uranium.

In a marked alteration of its July posture, the S-1 Executive Committee recommended the imposition of export controls and the purchase of Sengier's ore. It was pushed to this point by the realization that otherwise it might, because of Pregel's connection with Eldorado, be buying ore for shipment to the United States which was not mined near the Arctic Circle but already on an island in the middle of New York Harbor. Also, Sengier's hand-sorted ore averaged 65 percent uranium oxide, while Colorado and Canadian ores held only .2 percent. That this fact may have been the chief motive for the change in the attitude of the U.S. officials is indicated by the Committee's confidence that a sufficient supply of uranium oxide for the war effort was available and its

acceptance of an army recommendation that the flooded mine at Shin-kolobwe in the Congo not be reopened.⁸

Colonel K. D. Nichols, an experienced hand at the Manhattan Engineering District, discussed all this with Groves on 17 September 1942. Both were more concerned about the limited ore supplies than was the committee. They acted promptly. Nichols arranged export controls through the state department, and the next day he visited Sengier at his office in the Cunard Building. Once the Belgian was convinced that Nichols meant to deal seriously, matters moved quickly. Within an hour it was agreed that the United States would buy all the ore stored on Staten Island and that the Americans could have first option on the 1,000 tons stockpiled above ground in the Congo; these were to be shipped immediately. Contracts were worked out later and signed on 19 October. To ensure secrecy, correspondence was limited, and the Federal Reserve Bank, which oversees banking activities in the United States, was instructed not to mention the transactions in its reports.⁹

A Joint Anglo-American Effort

If in 1942 the S-1 Committee was concerned only with procuring uranium for the war effort, by the following year this viewpoint had changed. Research had progressed to the point that creation of a bomb seemed a possibility, although the time frame was still vague. The implications this held for the future balance of world power were great. Groves in particular was concerned that at the war's end North American supplies of uranium might be exhausted and the United States would have no control over the world's best source in the Congo. Those ores were especially needed because of the physical and chemical properties of uranium and the inefficiencies of the technology then available to separate the small amounts of fissionable isotopes in the element.¹⁰

Vigilant that he not be left to work solely with low-grade tailings from Colorado and poor Canadian pitchblende, troublesome to mine and difficult to refine, Groves rushed a message to Roosevelt in August 1943. The president was meeting in Quebec with British Prime Minister Winston Churchill, and Groves knew that the agenda included the patching up of Anglo-American differences on interchange of atomic research information.

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Exchange of war research information, especially regarding short-range radio waves, had begun near the end of 1940. By the end of 1941 uranium (S-1 or Tube Alloys, the British code word) was being discussed, and the possibility of a joint production plant in Canada was mentioned. But little progress was made during the following year. American science administrators were reluctant to share information which went beyond the prosecution of the immediate war or into areas that the British themselves were not investigating. Bush and Conant both suspected that the British were looking toward postwar commercial advantages. The British insisted that they were concerned only for postwar security.

On 22 July 1943 a compromise formula had been outlined by Churchill at a meeting in London with American officials. In more polished form, this became the Collaboration Agreement which Churchill and Roosevelt would sign at Quebec on 19 August 1943. Among other points it called for full scientific research and development exchange to occur among persons working in similar endeavors; interchange on construction of large-scale plants would be by *ad hoc* arrangements. Neither party would use the bomb against the other, nor would either use it against a third party without mutual agreement. To facilitate collaboration, a Combined Policy Committee was to be created under the chairmanship of U.S. Secretary of War Henry L. Stimson. Of the six members, three were to be from the United States, two from Britain, and one from Canada.

The reestablishment of better relations with the British on uranium research was fortunate for Groves. Concerned that "in the future the United States would not lack the essential raw materials . . . suitable for the production of atomic energy," he had employed in May the Union Carbide and Carbon Company to assess world uranium supplies.¹¹ Two days after the Quebec Agreement was signed, the Military Policy Committee approved Groves' recommendation that the "United States allow nothing to stand in the way of achieving as complete control as possible of world uranium supplies."¹²

If the Americans were upset at British desires to look beyond the war years, they were interested in doing so themselves. That fall Groves sent Captain Phillip L. Merritt, a geologist, to the Congo to search for other uranium sources there in addition to Shinkolobwe. Merritt found none but learned that, because the ores at Shinkolobwe had been hand sorted and only the richest were exported, the tailing dumps contained supplies varying in uranium content from 3 to 20 percent. These were

promptly purchased, and efforts were made to persuade Sengier to reopen the mine and to promise its full output to the United States. The Belgian, aware of the importance of such an action and hesitant to take this step on his own, refused to give an option or first refusal on all ores produced; he did continue negotiations regarding sale of specific tonnages of newly mined oxide to the United States. These did not progress to fruition because of disagreement on price.¹³

Unable to get the full control it desired, the American Military Policy Committee turned to the Combined Policy Committee (CPC), established as a result of the Quebec accord. Moving the matter to this level promised two advantages. First, British involvement would bring into play both the long-standing close relationship between Britain and Belgium and the implied concerns of the British shareholders, who held about 30 percent of the Union Minière stock. Second, it would provide some cover for Sengier as an individual company officer if the cooperation of the Belgian government in exile could be elicited. As Groves later explained the matter:

The Military Policy Committee felt that if Great Britain took advantage of the location in London of the Belgian Government in exile or, later, of the normal British strong influence over Belgian policy, it could and would secure a monopoly over the Belgian Congo raw material. The United States would then be in a most disadvantageous position, even if it should take the British a number of years to develop atomic energy either for military or commercial purposes. [Although the Manhattan Engineering District was exploring a contract for reopening the mines] . . . it was realized that our best prospect for obtaining an exclusive long-term commitment from the Belgians would be through the medium of a governmental agreement between Belgium on the one hand and the United States and the United Kingdom on the other.¹⁴

The British by this time were themselves more interested in uranium. Their initial research needs had been small, in the range of less than one and a half tons of oxides through 1941. These had been obtained from Oolen at the urging of British scientists and with the aid of John Anderson, then Lord Privy Seal. Two more tons were bought from Canada at the end of 1941 through the Canadian National Research Council so as to prevent the Eldorado company from learning of British interest and driving up the price. In 1940 a uranium subcommittee of the British Committee for the Scientific Survey of Air War-

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fare had been established. Known by the cover name of the MAUD Committee, it investigated the possibility of creating an atomic bomb. In July 1941 it issued two reports on the use of uranium for a bomb and as a source of power, estimating that a bomb could be produced by the close of 1943.

The reports were read by Sir John Anderson, currently Lord President and soon to be chancellor of the exchequer. A former governor of Bengal, experienced as permanent under secretary in the home office, a member of parliament, and a current director of Imperial Chemical Industries, he was Churchill's specialist on uranium. Britain was already involved in a program of preclusive buying of scarce and valuable commodities from neutral countries. Anderson determined to further steps already underway to prevent Nazi access to uranium reserves and also to avoid the driving of prices upward by speculation. At his instigation, the British government bought up various small concessions, including the Urgeirica mine in Portugal. These were not expected to produce great quantities, and the purchases were considered primarily preemptive. The potential of Eldorado in Canada was far greater; Anderson, supported by the treasury and the Department of Scientific and Industrial Research, moved to gain control of the company.

Emissaries were sent to meet with C. D. Howe, Canadian minister of munitions, and with the president of the Canadian Research Council, Dr. Chalmers J. Mackenzie. Howe agreed that control should be obtained, but he was reluctant to use governmental wartime powers to do so because of the attendant publicity. Howe suggested that it would be better for the Canadian government quietly to buy a majority share of the company, a move which could be arranged by his friend Gilbert LaBine, who Howe believed controlled as well as managed the company. Bush was contacted in Washington and indicated his approval. A million shares were purchased from LaBine before it was discovered that, in order for the government to gain a majority of the stock, another million would have to be purchased on the open market. The cost of the effort was rising.

There seemed no need to hurry; to do so, in fact, would invite speculation. An order for 20 tons of oxide was placed and no effort made to inform Eldorado of future needs. Then the British learned indirectly that Groves, through a series of orders negotiated in 1942 and the following winter for some 850 tons of ore, had essentially taken over the entire Eldorado production for the next three years. Moreover, he had

also arranged for Eldorado's refinery to process the rich Belgian ores, giving them priority over Canadian ores. The refinery's capacity was limited and thus preempted for what turned out to be five full years.¹⁵

How the British and Canadians allowed this to happen never became truly clear; apparently it was a case of inattention, overburdened men, poor communication, and perhaps insouciant capitalism. The machinations of Pregel were also involved; already disliked by the British, he soon became *persona non grata* with Groves and would be cut out of later dealings. The affair naturally led to hard feelings between the British and Americans. Groves' action was scarcely tactful, especially after the British had so courteously tipped their hand to Bush. His act reflected both the poor Anglo-American scientific relations that winter of 1942-1943 and the importance of the reconciliation achieved at Quebec the following August.

The incident also created friction between the British and Canadians. In the summer of 1943, when the British asked Canada for 120 tons of uranium that she could not deliver, Mackenzie visited Groves in New York, hoping to reach some arrangement which would allow the Canadians access to some of their own uranium. Groves was reluctant to part with the amount of oxide Mackenzie requested but did hold out the hope that mine production and refinery efficiency might be improved to meet this need. Investigations were launched, but it was clear that no solution would be rapidly forthcoming. The Canadians resented the pressure brought to bear on them by London in the name of old relationships: one British representative noted a Canadian feeling "that some quite artificial and non-realizable condition is being forcibly substituted, by the British, for the obvious and natural state of complete cooperation with, and dependence on, the Americans."¹⁶

Facing American control of the Eldorado production, Colonel J. J. Liewellin, a British member of the new Combined Policy Committee, called for an independent British approach to the Belgians. Anderson argued against this, fearing that a separate approach might encourage the Belgians to play the British and Americans off against each other to raise prices. Anderson preferred a joint approach, which especially made sense if the new-found harmony of Quebec were not to be disrupted. He had also heard through informal channels that Sengier preferred not to be put in the position of choosing between the two powers—a choice that later might be subject to criticism by his company's board of directors—but might be amenable to a joint approach.¹⁷

The American members of the CPC were still hoping that Groves

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would reach his own agreement with Sengier when the British informally mentioned the possibility of talking with the Belgian government. Somewhat later, at the December 1943 meeting of the committee, when the topic was formally raised, the Americans responded more eagerly. They were no doubt pleased that it was the British who had been maneuvered into taking the first step.

On 17 December Major General Wilhelm D. Styer, chairman of the subcommittee dealing with uranium, told the Combined Policy Committee that control of the Belgian Congo supply was of "great importance" and required action at the highest levels.¹⁸ Groves reported this to Roosevelt, and on 15 February Bush received the president's permission to proceed. Thus it was the caution of Sengier, whom Groves always considered a staunch ally and highly cooperative, fear of British domination of Belgian policy, and determination to gain long-term control of the ore supply that led the Americans to treat the matter more as a political than a commercial transaction and to seek a joint Anglo-American approach to the Belgian government. The early suspicions of British postwar commercial considerations had not entirely died away; these may also have prodded the Americans, who would have preferred to go it alone, into co-opting the British through fear of being left out. From the British side it was also fear of being left without supplies, joined with concern that they might be trapped into an expensive bidding competition, that recommended a cooperative approach.

2 · *The Cornerstone: Agreement with Belgium*

Initial Contacts

The decision formally to approach the Belgian government in exile was taken at a meeting of the Combined Policy Committee on 17 February 1944. Among those present were U.S. Secretary of War Henry L. Stimson, Bush, Conant, and from Britain, Field Marshal Sir John Dill and Sir Ronald Campbell. Harvey Bundy, an American lawyer, and an Englishman, W. L. Webster, shared the secretarial responsibilities. Negotiations were to be carried on by the American ambassador in London, John G. Winant, and by Sir John Anderson, British chancellor of the exchequer, chief overseer of uranium policy for his country and possessor of close contacts with the Belgians. Anderson was expected to play the leading role. General Groves was reluctant to bring in a state department official at this point. Atomic energy matters had thus far been handled through the war department. Using the same people meant less security risk and firmer control for Groves. He therefore appointed Major Harry S. Traynor, then working at the Oak Ridge atom facility, to carry instructions to Winant and serve as liaison with himself.¹ Traynor arrived in London Saturday, 18 March 1944, and that weekend met with Winant at length. He explained the need for a long-term treaty and for the creation of a commercial entity to handle the anticipated uranium purchases.

At its 17 February meeting the Combined Policy Committee had drafted a tentative proposal for an Anglo-Canadian-United States corporation operating under the Combined Policy Committee. Its purpose would be to purchase or gain control of uranium outside the bounds of the United States, the United Kingdom, and the British Commonwealth. Control of uranium within the territories of the participating countries was to be left directly to those countries. The proposed preamble stated that, as adequate supplies of uranium were vital to those countries, it would be unwise to exhaust their reserves without taking steps regarding the richest known deposits, which were in the

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control of other nations. Continuity was necessary, and as no American administration could bind its successor without a vote by congress, which would create unwanted publicity, some sort of private corporation was envisaged. United States law, however, prevented the transactions of a corporate firm from being kept secret. At British suggestion, the concept of a Combined Development Trust was adopted. When on 13 June an Agreement and Declaration of Trust was jointly signed, the Canadians were not participants. They had not been party to the Quebec Agreement and therefore were dropped from the Trust proposal for the sake of consonance. As in the Combined Policy Committee, however, they would have one vote in the Trust. Research results achieved since February brought another change, as the acquisition of thorium as well as uranium was brought under the Trust's purview.

Winant and Traynor met with Anderson and W. L. Gorell Barnes, representing the British War Cabinet. The chancellor suggested that the first approach to the Belgians be made through Camille Gutt, the experienced Belgian minister of finance who had many years of contact with the British. Anderson would tell Gutt in strict confidence of the experimental atomic work and indicate there was no certainty of what the results might be but they could be of "greatest significance."² If they materialized, it would be important that uranium not fall into the wrong hands and that Britain and America obtain control of as much as possible of the world's supply. While his mind was open regarding the nature of the agreement, Anderson thought the first objective should be an option for a number of years on all the uranium in the Congo. Price would be a difficult issue; perhaps agreement could be reached on the basis of the metal's market value over the past few years.

Winant approved the approach: both men saw need for quick action. Anderson invited Gutt to his office late that afternoon of 22 March 1944 and asked his view of the best means of reaching an arrangement. Although Gutt would later comment that he found Anderson pompous, the Belgian proved sympathetic. He assured Anderson that his government would cooperate to prevent the material from falling into the wrong hands. Gutt bristled at the word "control," and Anderson quickly interjected that he was not thinking of anything which would derogate from the national sovereignty of Belgium. The powers just wanted control of the product, not of the mine, and since the matter was of such importance it could not be looked on as just a commercial transaction.

Indeed, it was of such importance it might be dealt with in any ultimate peace treaty.³ Gutt said he would have to consult with Prime Minister Hubert Pierlot, Foreign Minister Paul-Henri Spaak, and Minister of Colonies Albert de Vleeschauwer but saw no need to include the governor general of the Congo in the talks; after all, the matter was solely up to the Belgian government.

The Belgian cabinet met that evening and promptly agreed on an affirmative response in principle on two conditions. First, Belgium was to be kept informed "of all the developments the Anglo-American research had and would produce (save those which were strictly military secrets)."⁴ Second, price and delivery terms should be satisfying to Union Minière.

Before a joint meeting of the representatives of the three powers on 27 March, Anderson, Winant, Traynor, and Gorell Barnes had a quick huddle. Winant cautioned against including any mention of control of uranium in a peace treaty, for fear this might tend to postpone any final agreement. Control of uranium was needed now, without reference to later review. He assured the British that the United States had no constitutional problem in entering an arrangement continuing past the end of the war, as the president's authority to defend the country was a continuing one. Anderson in turn warned that Gutt was uneasy over the word "control"; it was clear that the Belgian ministers would need careful handling.⁵ Anderson would therefore limit himself to getting their reaction and to discovering the potential output from the Congo.

The meeting with Gutt, Spaak, and De Vleeschauwer went well. Gutt reiterated his country's desire to assure that uranium did not get in the wrong hands and to collaborate with the two powers. To Anderson's inquiry regarding the amount of ore which might be available, De Vleeschauwer pleaded ignorance and insisted that Sengier be brought over from New York. There was mutual agreement that to preserve secrecy no information would be sent to the Congo. The Americans, informed by their specialists, knew more about potential output than did the Belgian ministers. More puzzling is that, while aware of exports to the United States in recent years, the Belgians were not apprised of Sengier's contracts or of his current negotiations with Groves.⁶

Brigadier General Groves and his colleagues in the Manhattan District "were delighted" that Sengier would be involved, "since his presence during the negotiations would be an insurance against delay and unfortunate questions."⁷ But the American general underestimated Belgian bargaining capacity. On 8 May, at a meeting of the represent-