

list for publication

6 pp. +  
bibliog.

May 29, 1957

Tentative chronology of part played by scientists in decision  
to use the bomb against Japan

1. Early 1944 "Everyone took for granted that the new bombs would be used in Europe if they were ready in time." (Compton, p. 231; for complete references see attached bibliography)
2. Early 1944 The men on the metallurgical project beginning to think about the future of atomic energy. (Compton, p. 231)
3. Early 1944 H.D. Smyth presented A.H. Compton with an outline of major questions relating to future of atomic energy. (Compton, p. 232)
4. Summer, 1944 At request of Metallurgical Project Council the Jeffries Committee was appointed by Compton ~~to~~ to study "postwar work on nucleonics." (Compton, p. 232)
5. Autumn, 1944 The Tolman Committee was appointed by Gen. Groves to look into future possibilities of atomic energy. Formed background for much of work of Interim Committee in spring of 1945. (Compton, p. 232)
6. Nov. 18, 1944 Jeffries Report, "Nucleonics Prospectus," was submitted to Compton with a covering letter (unpublished) signed by Enrico Fermi, James Franck, T.R. Hogness, Zay Jeffries, chairman, R.S. Mulliken, secretary, R.S. Stone, and C.A. Thomas.
7. Dec. 28, 1944 Tolman Committee handed its report to Gen. Groves on future of atomic energy (Compton, p. 233)
8. Early 1945 Conversations between Groves and A.H. Compton on use of bomb. Groves brings to Stimson's attention the concern of scientists about immediate use and long-term planning. (Compton, p. 233)
- 9 March, 1945 Szilard prepares memo. for Roosevelt (Szilard "memo")  
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Chronology -2-

10. April 1945 Compton appointed a committee of those best informed to consider "anticipated human, military and political consequences" of use of the bomb. Report of this committee was brought directly to Stimson (Compton and Daniels).
11. Spring 1945 Franck Committee at work. Referred to by Compton as "Within our project, the subcommittee on social and political consequences headed by James Franck focused its attention on this problem [the use of bombs]." (Compton, p. 233)
- X 12. Spring 1945 Szilard writes to the President and went to Washington to urge that the bomb not be used. (Compton, p. 241)
13. April 12, 1945 Stimson tells Truman briefly about new explosive after Truman is sworn into office. (Truman, p. 10)
14. April 13, 1945 Byrnes gives Truman more details; "later" Truman received a scientific account from Bush. (Truman, p. 10)
15. April 25, 1945 Stimson discusses with Truman the relation of the bomb to foreign policy and presents a memorandum discussing secrecy and international control. (Truman, pp. 85 and 87.; Stimson & Bundy, p. 635 ff.)
16. April 1945 Appointment of Interim Committee by Truman "for recommending action to the executive and legislative branches." (Stimson "Decision")
- X 17. May 28, 1945 Szilard presents his March memo (which had not reached Roosevelt before his death) to Sec'y of State Byrnes in a personal interview in Washington. (Szilard, "Memo")
18. May 31, 1945 Interim Committee discusses use of the bomb. Possibility of non-military demonstration brought up; Scientific panel asked to prepare a report on this. (Compton, pp. 219, 234)
19. June 1, 1945 Interim Committee after consultations with Scientific Panel unanimously decided: 1) bomb should be used against Japan as soon as possible 2) dual target, military and other buildings 3) should be used without prior warning. (Stimson, "Decision")

20. June 1, 1945 Conclusions of Int. Com. & Sc. Pan. brought to Truman by Stimson. (Truman, p. 419) Ralph Bard later changed his views and dissented from recommendation No. 3 of the June 1st report. (Stimson, "Decision,")
21. June, 1945 "Eventually, in June, 1945, the suggestions of these various subcommittees [of the Jeffries Committee] were collected into a combined report for the use of the Interim Committee and its successors." (Compton, p. 232)
22. About June 9, 1945 Scientific panel to Interim Committee (Lawrence, Fermi, Oppenheimer, and A. H. Compton) to prepare report on possible non-military demonstration. (Compton, p. 240)  
*meets at Los Alamos*
23. June, 1945 Hearing that Truman was consulting Stimson about use of the bomb, Franck "and certain members of his committee hastened to draft their conclusions." (Compton, p. 235)
24. June 11, 1945 Franck report presented to Stimson; drawn up by committee of 3 physicists, 3 chemists, and 1 biologist; "dispatched to Washington" six days before test explosion. (Editorial, Bull. At. Sc., May, 1946); Cf. Compton, p. 236 which states that Franck was in Washington, but Stimson was away and report was left for him with Geo. L. Harrison, his assistant)
25. June 11-16, 1945 Interim Committee and its scientific panel consider the Franck report (Stimson states, "The Interim Committee and the Scientific Panel also served as a channel through which suggestions from other scientists...were forwarded to me and to the President. Among the suggestions thus forwarded was one memorandum which questioned using the bomb at all against the enemy." Stimson, "Decision")
26. June 16, 1945 Scientific Panel reports to Interim Committee that they can propose no technical demonstration likely to end war and see no alternative to direct military use. (Stimson, "Decision,")

Chronology -4-

- X 27. 1945 Szilard circulates petitions in Chicago; urges others to do so in Oak Ridge and Los Alamos, requesting that the atomic bomb should not be used in World War II. (Compton, p. 241)
- X 28. Szilard petition in original form gets no support. Szilard turns revised petition over to Compton for delivery to Washington, indicating that it was signed by 67 scientists residing in Chicago. (Compton, pp. 241-42)
- X 29. Counter-petitions to Szilard's circulated at Chicago and Oak Ridge. (Compton, pp. 241-42)
30. July 2, 1945 Stimson sends memo to Truman discussing issue of strong warning to Japan of destruction if she does not surrender. Bomb not specifically mentioned 1) because of secrecy and 2) because not yet tested. (Stimson "Decision")
31. July 6, 1945 President's party, including Byrnes but not Stimson, leaves Washington for Potsdam. (This and some of the following items are included as relevant because of the question of what key officials were in Washington to receive the opinions of scientists that were expressed after this date.)
32. July 12, 1945 Poll taken in Met Lab at Chicago. (Compton & Daniels)
33. July 15, 1945 Truman, Byrnes and others arrive in Berlin; greeted by Stimson at airport. (Truman, p. 339; on date of Stimson's arrival cf. also #35).
34. July 16, 1945 Bomb successfully tested at Alamogordo.
35. July 16, 1945 News of test flashed to Truman at Potsdam by Stimson. (Truman, p. 415); cf. Byrnes' statement, (p. 262), that it took several days for decoding. Stimson (Bull. At. Sc. Aug. 1948 & Bundy, p. 637) says word of test was received at Potsdam on July 16th.
36. July 17, 1945 Stimson flew to Potsdam and gave Truman full details of test (Truman, p. 415)

Chronology -5-

37. July 17 to 24, 1945 Truman makes the decision to use the bomb against Japan when it is ready for delivery unless surrender has taken place. Truman does not date this decision exactly, but says as soon as he received details of test from Stimson on July 17th he called together chiefs of staff to review military strategy in light of successful test. (p. 415) Truman also says when he talked with Churchill he favored use of bomb (p. 419) Compton (p. 245) says that Truman later told him that it was at that meeting with the Joint Chiefs that he gave his "formal assent" to use of bomb.
38. July 17, 1945 As soon as Stimson arrived in Potsdam, (Truman here uses the date given in #36) Truman called in Byrnes, Leahy, Marshall, Gen. Arnold and Adm. King; they reviewed military strategy in light of the successful test. (Truman, pp. 419-21)
39. July 23, 1945 Col. Nichols asks Compton at Oak Ridge for results of the poll at the Met. Lab. C. wrote out a message summarizing the results of the "votes and petitions" as objectively as he could. An hour later Nichols came back wanting to know what C. himself thought; gave opinion favoring use. (Compton, p. 246)
40. July 24, 1945 The War Department "was given orders" to instruct Gen. Spaatz that first bomb would be dropped as soon after August 3rd as weather permits. Truman told Stimson that order to Spaatz would stand unless Truman notified him of favorable Japanese reply. (Truman, pp. 420-21)
41. July 24, 1945 Truman tells Stalin of "new weapon of unusual destructive force." (Truman, p. 416)
42. July 26, 1945 Allies broadcast demand that Japan surrender or face destruction.
43. July 28, 1945 Premier of Japan rejects Potsdam ultimatum as unworthy of notice. (Stimson, "Decision"; Truman, p. 421)

Chronology -6-

44. between decision to use bomb and leaving Potsdam Truman authorizes statement to be released after first bomb is dropped. (Truman, pp. 422-23)
45. August 2, 1945 Truman leaves Potsdam; flies to England; home by ship. (Truman, pp. 406, 421, ff.)
46. August 3, 1945 1st day scheduled for dropping bomb, weather permitting. (Truman, p. 421.)
47. August 6, 1945 Hiroshima bombed (Aug. 5th at 7:15P.M., Washington time, Truman, p. 421)
48. August 8, 1945 Molotov informed Amb. Harriman in Moscow that Russia would consider itself at war with Japan as of Aug. 9th. Truman received this news on August 8th and immediately announced it at press conference. (Truman, p. 425)
49. August 9, 1945 Nagasaki bombed. ("We gave the Japanese three days in which to make up their minds to surrender, and the bombing would have been held off another two days had weather permitted." Truman, p. 426)
50. August 10, 1945 Japanese offer surrender on Potsdam terms but with reservation about sovereignty of emperor. (Stimson, "Decision")

~~April 27, 1957~~

DECISION TO USE THE BOMB

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ALEXANDER SACHS

## ECONOMIST GUIDED EARLY ATOM STEPS

Dr. Alexander Sachs, Before  
Senate Group, Reveals His  
First Talk With Roosevelt

### GERMANS' STUDIES CITED

They Were Stimulating Factor  
in Efforts of Our Scientists  
to Get the Bomb First

By ANTHONY LEVIERO  
Special to THE NEW YORK TIMES.

WASHINGTON, Nov. 27 — The late President Roosevelt listened to a persuasive man in the White House on Oct. 11, 1939, two weeks after Poland was crushed, and got interested in atomic energy. Then with characteristic vigor he brushed aside the hesitations of American scientists and officials, set the atomic project on its irrevocable course and pressed it toward the historic climax that came at Hiroshima after his death.

As the early history of the world-shaking discovery unfolded today before the special Senate committee on atomic energy it was disclosed that an economist, not a scientist, was stage manager of the atomic drama. This economist, the man who drew back the curtain on nuclear fission for Mr. Roosevelt, was the Russian-born Alexander Sachs, who served the President as an informal adviser.

In the near background when the President began to act stood Prof. Albert Einstein. This distinguished physicist read a report of recent experiments a month and a day before the outbreak of World War II and wrote out a prediction of an atomic bomb. He told Mr. Roosevelt that such a bomb, carried by ship, could destroy a port and the surrounding region.

#### Wants Blessing, Not Scourge

In opening the first session of the Senate "Blue Ribbon" Committee, the chairman, Senator Brien McMahon of Connecticut, said atomic energy might well hold tremendous benefits to mankind, but that the best judgment was necessary to keep it "a blessing to mankind and not a scourge." He added that specific legislation would not be considered until all the facts were known. This was interpreted to mean the Senate committee would disregard the controversial atomic energy control bill, now before the House.

It was Dr. Sachs who told the story about Mr. Roosevelt to the committee, and he handed it his written record of those early events—a record interspersed with scientific papers and letters from and to the White House. Among them was the paper that Dr. Einstein had studied. It was a report by the American physicist, Dr. Leo Szilard, recounting his own experiments and also those of Professor Enrico Fermi, a fugitive from Fascism.

Dr. Einstein and Dr. Szilard were revealed by Dr. Sachs' testimony as the first to worry about the implications for the United States of atomic energy in the hands of a hostile power. Dr. Einstein urged Dr. Sachs to do something, knowing that the economist could get the ear of the President.

So Dr. Sachs went to the President Oct. 11, 1939, with a letter from Dr. Einstein, Dr. Szilard's scientific paper and a memorandum by Dr. Szilard written in every-day language. Dr. Sachs had been dubbed as the "economic Jeremiah" for his gloomy views and predictions on Nazi power and world destiny in the years between wars.

Dr. Sachs also told the President that the Fermi and Szilard experiments were only one step ahead of those of Nazi physicists. Germany had already overrun Czechoslovakia, which had good uranium ore, and Hitler had forbidden its export. The Einstein letter pointed out that the most important source of uranium was in the Belgian Congo and Dr. Sachs added that he predicted the invasion of Belgium and the possibility of losing this source for the United States. That would leave only Canadian uranium for America, he added.

Nazi awareness on atomic energy was attributed by Dr. Sachs to the fact that the son of German Under-Secretary of State von Weizsaecker, was a physicist, who eventually became head of the Kaiser Wilhelm Institute, and later of the Institute of Physics. The Kaiser Wilhelm Institute, said the Einstein letter, was "where some of the American work on uranium is now being repeated."

#### Einstein Letter Quoted

In the Einstein letter President Roosevelt read suggestions for government development of atomic energy and this prevision of the use of atomic force:

"In the course of the last four months it has been made probable through the work of Joliot in France as well as Fermi and Szilard in America—that it may become possible to set up a nuclear chain reaction in a large mass of uranium, by which vast amounts of power and large quantities of new radium-like elements would be generated. Now it appears this could be achieved in the immediate future.

"This new phenomenon would also lead to the construction of bombs, and it is conceivable—though much less certain—that extremely powerful bombs of a new

type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port, together with some of the surrounding territory. However, such bombs might very well prove to be too heavy for transportation by air."

The memorandum of Dr. Szilard was in similar vein. Dr. Sachs suggested possibilities for industrial and medical use as well as military use.

As a result of the White House meeting, President Roosevelt told General Watson to bring together Dr. Sachs and Dr. Lyman J. Briggs, the then Director of the Bureau of Standards, and have them form a working committee. This was done, the group being organized as follows:

For the Government, Dr. Briggs, Lieut. Col. Keith F. Adamson of the Army, and Comdr., later Admiral, Gilbert C. Hoover of the Navy; Presidential representative, Dr. Sachs; cooperating scientists, E. P. Wigner, Professor of Theoretical Physics, Princeton University; Professor E. Teller, George Washington University; Dr. Fermi of Columbia University; and Dr. Szilard, then a visiting experimental physicist at Columbia.

The committee met on Oct. 21, 1939, and the discussion, according to Dr. Sachs, developed strong objections that those interested in the political-military implications were much too previous in converting a mere potential into an actual result of research. Hence they urged that the government should leave this project to the universities, which anyhow had evinced active interest.

Early in 1940 Dr. Sachs and Dr. Einstein were dissatisfied with the progress and scope of the atomic project and Dr. Sachs wrote to General Watson, pleading for larger aid that could be based on a favorable evaluation by Dr. Einstein of work then being completed at Columbia University.

In April, Dr. Sachs testified, he was back in the White House with new forebodings of Nazi aggressions and predicting invasions that would deprive the United States of contact with Western Europe. He reported that Dr. Einstein had information of the intensification of uranium research under the leadership of Weizsaecker's son, and that Dr. Szilard's work was proving more promising than Dr. Frederic Joliot-Curie's in France.

#### Dr. Sachs Is an American

WASHINGTON, Nov. 27 (AP)—In response to inquiries Chairman McMahon issued the following statement concerning Dr. Sachs' background.

"Dr. Alexander Sachs, presently economic advisor and industrial consultant, maintains his own offices at 72 Wall Street. Dr. Sachs was vice president and chief economist of the Lehman Corporation, an important investment corporation, during the entire Thirties.

"He predicted the great depression of 1929 and predicted further that the depression would end in the collapse of currency and the gold standard through a succession of bank crises; also that the economic collapse would come with such a rhythmic movement that every country on the face of the earth would become involved. He also predicted the collapse of Germany and the rise of Hitler in 1931.

"Through those predictions he became widely known in international economic circles. It was in this way that Dr. Sachs first became acquainted with the late President Franklin D. Roosevelt.

"In 1933 Dr. Sachs was appointed as first chief economist and organizer of the NRA, and was, thereafter, frequently called upon by the late President in connection with economic problems.

"Dr. Sachs was born in Russia and came to America at an early age. He was educated at Columbia University and Harvard University as well as Cambridge University in England. Dr. Sachs is an American citizen."

## A REPORTER AT LARGE

## THE CONTEMPORANEOUS MEMORANDA OF DR. SACHS

ALEXANDER SACHS, mentioned in the Smyth Report on the atomic bomb as the man who got President Roosevelt interested in atomic research, in the fall of 1939, came to this country from Russia when he was eleven, received a scientific degree at Columbia when he was nineteen, and when he was twenty went to work as a clerk for the Wall Street firm of Lee Higginson. A year or so later he returned to Columbia as a postgraduate student of philosophy. In 1916, when he was twenty-three, he was made a Francis Parkman Fellow in philosophy at Harvard, where later he was also made a Henry Rogers Fellow in jurisprudence and sociology. These appointments enabled him to spend a couple of years studying philosophy, jurisprudence, and sociology at Harvard, and further enabled him, when he returned to the Wall Street district, to join the Downtown Harvard Lunch Club, a group of Harvard downtown men who maintain a couple of lunch-rooms over Angelo's Restaurant on Pearl Street. Sachs has been an economic adviser to a number of important private investors, among them Walter Meyer, a brother of Eugene. In 1931, while Sachs was abroad, the late Lord Reading, then Foreign Secretary of the British Cabinet, invited him to serve as his informal economic consultant, without pay. Sachs accepted and, after he had returned to this country, proceeded to pelt Reading with long letters of economic counsel. In 1933 he was in Washington, working for the N.R.A. In 1936 he was elected a vice-president of the Lehman Corporation, an investment trust managed by Lehman Brothers, and in 1942 he resigned to become an independent economic consultant. He has been consulted by, among others, the Lehman Corporation; the War Emergency Pipelines Corporation, which during the war built the petroleum pipelines from the West to the Atlantic seaboard; and—again without pay—by the Petroleum Industry War Council, set up in 1942 at the suggestion of Harold Ickes, then Petroleum Administrator, to coordinate and oversee the war work of the oil companies. Sachs was also, during the war, an O.S.S. consultant on matters so secret that not even *Collier's* or *Life* has written them up, and he sent many hush-hush, and perhaps even hush-hush-hush, communications to General Donovan.

Sachs is fifty-two, has curls, and looks so much like Ed Wynn that when he was in Washington with the N.R.A., his colleagues would tell visitors that Ed Wynn was working there; they would then open the door to Sachs' office and permit these people from the outside world to peek in and admire this interesting bureaucratic wrinkle. Sachs likes to carry research around with him and is the possessor of forty second-hand briefcases, a birthday gift from some jocular Lehman Corporation officials. His pockets are stuffed with memoranda, which he deposits in a pile on the floor when he is looking for something, and both in writing and in conversation he uses such phrases as "if only we could overcome the scleroticism of the Right and the infantilism of the Left," "secular Calvinism," "this Jeremiahesque observer" (Sachs), and "an instrument of divisiveness among the survived triad of hegemonous powers" (the atomic bomb). Dr. Sachs likes to embed his phrases in rather long sentences. In 1932, in a typical three-thousand-word letter, he wrote Lord Reading: "The apparent success of the monetary doctrine and the forecasting technique based thereon in dealing with the business recessions of 1923 and 1927—which, while serious on the inadequate and misleading business curves, too heavily weighted with regressive economic activities, were mere pauses in the major postwar reconstruction expansion—so strengthened the belief in the validity of this monistic monetary doctrine that businessmen came to adopt a sort of fatalistic reliance on managed Federal Reserve policies, and abdicated their qualitative thinking and practical caution for mechanical indicators and quantitative measures which, for all their elaborate sophistication, had only a tangential relation to the dynamic realities of the economic overproduction and the financial inflation that they failed to grasp and evaluate." After a few staccato sentences of fifty or sixty words each, he went on: "It [the collective illusion about the forces underlying American post-World War I prosperity] can only be understood as a product and manifestation of the postwar culture: of the eclipse of certain attitudes and habits of rational management of affairs in the light of intellectually determined or accepted principles and ethical standards and critical judgment applied with old-fashioned logic, can-

dor, and caution; and of the emergence and diffusion of certain attitudes and habits characterized by facile skepticism as to all principles and standards, by an exaltation of the quantitative and ignoring of the qualitative—illustrated not least in the prevailing financial and business forecasting by mere mechanical guides which proved so unperceiving and so misleading in the greatest slump in history—by the vogue of irrationalism and psychologizing and the whole technique of propaganda, regimented opinion, and super-salesmanship for 'putting it over' on the public to the point of having succeeded in putting it over on oneself."

Dr. Sachs is credited with having furnished Dorothy Thompson and Major George Fielding Eliot with a number of their ideas. They, in turn, are credited with having made Sachs comprehensible, on occasion, to the public. Sachs himself is the man who accomplished the possibly more monumental feat of making Einstein, Dr. Leo Szilard, and Professor Enrico Fermi, three men whose work on uranium fission helped in the discovery of the secret of atomic disintegration, comprehensible to President Roosevelt. In the spring of 1939, around the time the Axis seized Prague, Szilard summed up the work he and Fermi had done at Columbia on the matter in a report entitled "Instantaneous Emission of Fast Neutrons in the Interaction of Slow Neutrons with Uranium." Einstein read the Szilard report, which was printed in the April 15, 1939, number of the *Physical Review*, and he and Szilard and Sachs and Professor Eugene P. Wigner, a Princeton physicist, all of whom were friends, began to discuss the rôle an atomic bomb might have in a world apparently about to go to war. Sachs had just covered the same subject, in an interoffice communication to himself called "Notes on Imminence World War in Perspective Accrued Errors and Cultural Crisis of the Inter-War Decades," which read, in part:

There is still time for Western Civilization, and especially for the exceptionally and fortunately situated United States, to use the time-drafts that can still be made on the Bank of History, for the preparedness that has and will become more and more urgent and inevitable for all members of Western Civilization as a result of the past errors committed and in the course of the prospective unfolding aggressions of Nazi Germany.

Through sources available to Einstein, the four men knew that Germany had stopped the exportation of pitchblende—the ore that yields both radium and uranium—from Czechoslovakia to other countries and that uranium research was going on at a great pace at the Institute of Chemistry of the Kaiser Wilhelm Institute in Berlin. “I am an economist, not a scientist,” Sachs has told friends, “but I had a prior relationship with the President, and Szilard and Einstein agreed I was the right person to make the relevant elaborate scientific material intelligible to Mr. Roosevelt. No scientist could sell it to him.” Sachs had been on casual terms with Roosevelt ever since he had done the economic research for some of Roosevelt’s speeches in the 1932 campaign.

THE following blow-by-blow account of the Roosevelt-Sachs-et-al. meetings which ensued, and which eventually produced the Manhattan District project, is the result of a recent conversation I had with Dr. Sachs in his office downtown. On October 11, 1939, visiting Roosevelt for over an hour, Sachs read to, and left with, the President three items: (1) an August 2nd letter to Roosevelt from Einstein which said, “This new phenomenon [i.e., the expected conversion of uranium into a source of energy] would also lead to the construction of bombs. . . . A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port together with some of the surrounding territory;” (2) an August 15th memo from Szilard which said, “There is no doubt that it [the destructive power of these bombs] would go far beyond all military conceptions,” and urged that a quantity of pitchblende be brought to this coun-

try from the Belgian Congo, then the major source of it, before the Germans invaded Belgium; (3) a letter to the President from his interlocutor which referred to “the construction, as an eventual probability, of bombs of hitherto unenvisioned potency and scope,” and went on to say, “It is necessary to enlarge and accelerate the experimental work, which can no longer be carried out within the limited budgets of the departments of theoretical physics in our universities.” In September of 1939, after the German invasion of Poland, the President and Congress were preoccupied with the revision of the Neutrality Act, and it took Sachs several weeks to arrange for this interview.

Sachs read his three documents out loud to the President because of a theory he has that busy people, especially Presidents, give anything they read almost an automatic brushoff. “People are punchdrunk with printer’s ink and it’s mostly mascara on the eyes,” he explained to me. The October 11th White House interview was one of a considerable series, during which Sachs, according to friends, would ease the President into the discussion with a few learned jokes. I asked Dr. Sachs about this, and he entered a modest disclaimer. “I’d just tell him I’d paid for the trip to Washington and couldn’t deduct it from my income tax and would he please pay attention,” he said. “I once made a joke about Americans’ being God’s Frozen People, during the wartime freeze on everything—to which, incidentally, I was in some particulars opposed.”

Roosevelt, to whom atomic research was news, reacted favorably to the October 11th talk, during which Sachs suggested that the President arrange for a continuous liaison between the scientists working on uranium, the Administration, and the War and Navy Departments. “He seemed to share the sense of urgency,” Sachs says. “He was a man of quick apperception.” Toward the end of this conversation, the President arranged for the liaison Sachs was asking for by calling in his aide, the late General Edwin M. Watson, and instructing him to set up an Army-Navy committee under the chairmanship of Dr. Lyman J. Briggs, Director of the National Bureau of Standards, to consider the ideas and material Sachs had presented. He also asked Sachs to stay over in Washington to confer with Briggs the next day. This conference led to a meeting, on October 21st, attended by the three members of the new government committee (the Advisory Committee on Uranium: Briggs, Colonel Keith F.

Adamson, of the Army Ordnance Department, and Commander Gilbert C. Hoover, of the Navy Bureau of Ordnance), by Sachs, as Roosevelt’s representative, and by Fermi, Szilard, Wigner, Fred L. Mohler, head of the atomic-physics section of the Bureau of Standards, and Professor E. Teller, a theoretical-physics authority at George Washington University. Einstein had also been invited, but, according to Dr. Sachs, his “health and shy disposition interposed obstacles.”

At the Uranium Committee’s first meeting, a number of the men were in favor of the government’s leaving atomic research to the universities. Briggs, however, after outlining the world situation for the benefit of the more cloistered scientists, urged everyone, as Sachs puts it, “to engage in a mental projection from the normal course of research-development to the impact of a mere scientific possibility upon the national defense” and to “weigh differently in the new setting the risk coefficients attached to even remote possibilities.” On November 1st, in a report to the President signed by Briggs, Adamson, and Hoover and entitled “Possible Use of Uranium for Submarine Power and High Destructive Bombs,” the committee said that if the chain reaction which would presumably follow uranium fission “could be controlled so as to proceed gradually it might conceivably be used as a continuous source of power in submarines, thus avoiding the use of large storage batteries for under-water power,” and that if the reaction “turned out to be explosive in character it would provide a possible source of bombs with a destructiveness vastly greater than anything now known.” The report urged that uranium research be given financial support by the government. By February, 1940, \$6,000 of Army and Navy funds had been allotted to the research being done at Columbia. Einstein and Sachs, who kept conferring with each other, felt that this was a tiny drop in the bucket. On March 7th, by prearrangement, Einstein wrote Sachs calling attention to the intensified atomic work going on in Berlin. “I have now learned,” he said, “that research there is being carried out in great secrecy and that it has been extended to another of the Kaiser Wilhelm institutes, the Institute of Physics.” Sachs forwarded this letter to Roosevelt, and in a talk with the President, early in April, he read a copy of it out loud and suggested that \$100,000 be provided for preliminary work toward the setting up

of a large-scale experiment. Roosevelt got General Watson to call another Uranium Committee meeting. This was held on April 27th and was attended by Briggs, Fermi, Szilard, Adamson, Hoover, Wigner, Sachs, Rear Admiral Harold G. Bowen, Director of the Naval Research Laboratory, and Dr. George B. Pegram, Dean of the Graduate Faculties of Columbia. Sachs again tried to get Einstein to show up, but, he says, "it became clear that indisposition on account of a cold and the shyness which makes Dr. Einstein recoil from participating in large groups would prevent his attendance." Einstein did, however, send Dr. Briggs a letter, to be read at the meeting, which seconded a Sachs suggestion that a board of trustees be set up to head "a non-profit organization which, with the approval of the Government committee, should secure from governmental or private sources, or both, the necessary funds for carrying out the work," so that it "could be carried out much faster than through a loose coöperation of University laboratories and Government departments."

The April 27th meeting gave Dr. Sachs the feeling that the time-drafts on the Bank of History were being exhausted without our making sufficient progress. "The majority of the committee," he said the other day, "accustomed to the small scale of physical laboratories at the universities and the correspondingly reduced scales of the budgets of governmental scientific laboratories, did not appear ready to design a large-scale and comprehensive program, and instead insisted on bit-a-bit procedures with ranked preferences and time deferments."

Two weeks later, history, in the shape of the German invasion of Belgium, came to the aid of Sachs and the more urgent of his scientist colleagues. ("The situation adumbrated in the initial presentation of October 11, 1939, had come to pass" is the way Dr. Sachs says it.) On May 11th, after a discussion with Einstein, Fermi, Szilard, Pegram, and Professor Harold C. Urey of Columbia, he wrote the President that the invasion of Belgium, heightening the danger that the supply of uranium from the Belgian Congo would be cut off, had accented the pressing need of governmental atomic-research backing. Four days later Dr. Sachs recommended to General Watson the establishment of a Scientific Council of National Defense "composed of executives, engineers, and economists, acting in behalf of the Government, who should be invested with administrative powers for the testing

and execution of technical projects of utility for national defense." Watson assured him the President would consider the matter, and on June 15th, the day after the German Army entered Paris, Roosevelt set up the National Defense Research Committee, headed by Dr. Vannevar Bush. After Pearl Harbor, it was renamed the Office of Scientific Research and Development. The Briggs committee became a subcommittee of the Bush committee, atomic-bomb research was on its way to becoming a two-billion-dollar federal project, and Dr. Sachs happily and voluntarily faded out of the picture. "I provided for my own disappearance," he told me.

AT that point in our conversation, Dr. Sachs gave me permission to dive into a pile of memoranda on the floor. I came up with a recent letter from General Donovan. "Unclassified," he said, relieved, and handed it over. "Dear Alexander," it ran. "History deserves the full story of the Atomic Project. The nation is indebted to you for the catalytic function which you performed. 'We may our ends by our beginnings know.' How could the project have ended other than successfully when you—the deft intermediary between committee room, laboratory, and planning board—helped lay its foundations so well? Sincerely, Bill."

"My relationship to the President was that of a possible Ishmaelite," said Dr. Sachs, filing General Donovan's letter back on the floor. "My contemporaneous memoranda threw into sharp relief the decisive choice of the period—namely, between the leisurely bit-a-bitarian procedure of dispersed university experiments and tense and coördinated large-scale experimentation. Today the choice is in a converse direction. If the research from here on remains under the control of the Army, then the military use will come to throttle the independence and initiative which, operating through a pluralism of sources, make for those novelties and mutations in human thought that give us the great discoveries."

Dr. Sachs thinks that the atomic bomb should be turned over to an international police force under Chiefs of Staff of a World Security Council and further developed on an island in the Pacific as a weapon to strengthen the control of the existing world organization. He also feels that atomic energy should be made available for peaceful projects. "From the vantage point of cultural-technological history," he said,

presumably surveying me from it, "a major source of new power enlarges the physical geography and transforms the sociographic complex along the dimension of depth. What have remained the desert areas of the world and the sterile spaces are related to the inadequacies and inaccessibilities of water and energy sources. In the light of the reflections given in certain exhibits connected with the formative stages of the atomic project, it is reasonable rather than speculative to say that new worlds will open up and that the existing world will be enriched. The areas from the Sahara to the Arctic, from the jungle to the arid, will in the course of a time that we can control be transformed by the lifting of the deep-lying water and by making accessible power and heat."

AS I was about to depart, Dr. Sachs reached into a briefcase and presented me with copies of some financial tables he worked up for President Roosevelt, including one whose title he had telescoped into "Close-up Comparison of American and British War Economies on Per Capita Basis Commensurating Per Capita Gross National Product and War Expenditures in Dollar Terms with Adjustments in Case Britain for (a) Productivity Shifts and (b) Resource Disinvestment." I wiped the mascara from my eyes and slipped out before he could start reading out loud or regale me with a learned joke.

—GEOFFREY T. HELLMAN