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THE FOREIGN SERVICE  
OF THE  
UNITED STATES OF AMERICA

77-22-173

Manhattan Engineer District  
Office of the Military Attache  
American Embassy, London  
29 August 1946

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**SUBJECT:** Atomic Energy Research in France.

**TO :** Lt. Colonel Richard H. Free, Room 4181, New War Department Building, Washington, D. C.

1. Sometime ago Lt. Commander Welsh and Lt. Colonel Dean agreed on a program wherein Commander Welsh would prepare a resume of Atomic Energy Research in Russia and Colonel Dean would prepare a similar report on France.

2. Inclosed is the resume entitled "Atomic Energy Research in France", dated 29 August 1946, prepared from notes left here by Colonel Dean.

3. The resume on Russia will be forwarded to your office as soon as it is available.

*Paul O. Langguth*  
PAUL O. LANGGUTH  
Major, C. E.

Inclosure:  
Rpt. dtd 8/29/46

CC: Lt. Comdr. Welsh.

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*Copy 3 given to Miss ... 11 Sept 46*

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ATOMIC ENERGY RESEARCH IN FRANCE

1. High Commissariat for Atomic Energy.

The most important single factor in the atomic energy program of France was the creation, by ordinance of 18 October 1945, of the High Commissariat for Atomic Energy. This organization is an Institution of scientific, technical and industrial nature, endowed with civil personality, ministerial powers and administrative and financial autonomy, under the authority and control of the President of the Provisional French Government. By law its aims are as follows:

- a. To pursue atomic research, both scientific and technical, for the purpose of developing atomic energy in the interests of science, industry and national defense.
- b. To study measures necessary for protection of personnel against destruction effects of atomic energy.
- c. To organize and control the prospecting and exploitation of necessary raw materials.
- d. To realize on an industrial scale the necessary developments for generating atomic energy.
- e. To furnish the government with all information concerning atomic energy, and to advise the government in negotiating international agreements.
- f. In general, to take all measures for placing France in a position to benefit from developments of this branch of science.

The program of the High Commissariat is directed by an administrative committee, named for a period of five years, and organized as follows:

High Commissioner : Frederic Joliot-Curie  
General Administrator: Raoul Dautry *died 1951*  
Scientific members : Irene Joliot-Curie  
Francis Perrin  
Pierre Auger  
Representative for National Defense: (General Bloch-Dassault)

The General Secretary is *\** (L. Demville), Prof. of Chemistry, Conservatoire National des Arts et Metiers.

Technical and scientific research in chemistry for the High Commissariat is under the direction of L. Kowanski, recently returned from America, J. Gueron and Bertrand Goldschmidt. Laboratories for research in the work of the Commissariat will eventually be located in the (Fort de Chatillon) on the outskirts of Paris, but in the meantime the facilities of the following laboratories are being used:

- a. Institut du Radium, under direction of Mme. Joliot-Curie.
- b. College de France, under Joliot-Curie.
- c. Laboratoire de Synthese Atomique, Ivry, under Joliot-Curie.
- d. Ecole Normale Superieure, under Pierre Auger.

*L. Demville*

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Announcement was made recently of the appointment of the following scientists to the High Commissariat as "Conseillers Scientifiques.":

Leon Bertrand  
Emile Borgel\*  
Louis de Broglie  
Maurice de Broglie  
Albert Caquot

Aime Cotton *died 1951*  
Marcel Delépine  
Paul Langevin = *died 1946*  
Paul Lebeau  
Gustave Roussy

Not all of these men are Communist sympathizers, and it will be noted that they are mostly "grand old men" of science. It is believed that their role in the program of the Commissariat will not be great, except as scientific advisers.

At the time of his appointment as High Commissioner of the Commissariat, Joliot publicly stated the following aims of the Commissariat:

- a. To coordinate experiments of French scientists.
- b. To operate:
  - (1) A small-scale semi-industrial center not far from Paris. (Fort de Chatillon).
  - (2) A large atomic plant situated in the provinces, far from large centers of population. *mile dashes*
  - (3) Production and purification of raw materials.
- c. To follow closely the progress of foreign experiments.

It is interesting to note that although Joliot places great emphasis on the peacetime aims of the organization, the ordinance creating the High Commissariat provides for research in the interests of national defense, or in other words, research to provide atomic weapons and defenses against them. The appointment of a military member, president of the Committee of Coordination of Scientific Research for National Defense, is, alone, a significant fact.

## 2. Other Research Organizations and Institutions.

Besides the Commissariat there are in France several other research organizations of a public character, long established, and carrying on a variety of research, some or all of which could have important bearing on the development of atomic energy. Principal among these are:

a. Centre National de la Recherche Scientifique. This is a public institution under the Ministry of Education, which coordinates and encourages scientific research in all fields and allots money for such work, both to institutions and to individuals. The Centre, formerly under the direction of Joliot-Curie, and now headed by Georges Teisser (formerly Joliot-Curie's "adjoint" or assistant director), operates the Laboratoire de Synthese Atomique at 67 Rue Franklin, Ivry (Seine), on the outskirts of Paris. This laboratory does not at present possess a cyclotron, but according to newspaper reports, a cyclotron weighing about five hundred tons is to be constructed there.

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- b. The Institut du Radium. This Institute operates a laboratory of radio-activity. It is here that Mme. Joliot-Curie carries research. The laboratory is concerned with research of a physical nature on radio-active bodies and the study of X-rays. Its director is Marie Debiérne, professor of the Faculty of Sciences of the University of Paris.
- c. The College de France. This is an institution of higher learning, devoted principally to researches and studies. Joliot-Curie occupies the chair of nuclear physics at the College de France, which possesses a thirty-ton cyclotron, until recently the only one in France.
- d. Faculty of Sciences, University of Paris. Numerous laboratories devoted to physics and chemistry.
- e. Institut de Chimie, University of Paris. This institute is attached to the Faculty of Sciences of the University. It gives practical instruction in the fields of chemistry for those interested in industrial or scientific careers. It awards the diploma of Chemical-Engineer.
- f. Institut Henri-Poincaré. This institute is under the Faculty of Sciences. It includes studies in theoretical physics, calculations of probabilities and mathematical physics. Its director is Emile Borel. Francis Perrin, Langevin, Louis de Broglie and Elie Cartan are, or have been, on the Comité de Direction of this institute.
- g. Institut du Cancer. Research in radio-biology.
- h. Institut d'Optique Theorique et Appliquee. Studies in optics. Director: Ch. Fabry.
- i. Office de la Recherche Scientifique Coloniale. Established in November 1944 for the purpose of encouraging and developing scientific research in the colonial possessions of France. This organization is particularly interested in developing young technicians for prospecting and exploiting natural resources in the colonies. The director is Raoul Combes. Joliot-Curie is president of the administrative council.
- j. Centre anticancereux, Marseille. Carries on research on radiations and their effects on cancer. Possesses a small cyclotron (diameter of pole pieces: 30 cm.)
- k. Institut de Physique Atomique, University of Lyon. Research and instruction in atomic physics, under the direction of Professor Jean Thibaud. This institution was damaged by bombing during the war, and will probably have to be rebuilt before serious research can be carried on.
- l. University of Strasbourg. Nuclear research may be going on under J. Gueron.
- m. New Laboratory of Mme. Joliot-Curie at Le Bouchet.

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n. Laboratory of Maurice de Broglie, Paris. This is an entire residence changed over. Location: rue de Chateaubriand. The laboratory extends through to the street in the rear of the building.

o. Groupe de Laboratoires, of the CNRS, (see 2a), at Bellevue, on the outskirts of Paris. These are laboratories for pure and applied research. A powerful electro-magnet, which belongs to the Academie des Sciences, is installed here.

p. To the above-listed laboratories and organizations should be added the facilities of the Compagnie Generale de Radiologie, the Societe Philips and the Societe de Recherches et d'Etudes d'Optique et de Sciences Connexes, designers and producers of equipment, also Thomson-Houston electrical equipment manufacturers, who have recently shown interest in the Smyth report and who, it is assumed, will be making nuclear research equipment.

### 3. Personalities.

France cannot boast of as vast a quantity of world-famed atomic scientists as can the United States, but the country has nevertheless a number of first-rate researchers in the nuclear field, principal of whom are:

a. Frederic Joliot-Curie, leading figure in the field of atomic research, Nobel Prize winner with his wife, and prominent personality in the French Communist Party. He is High Commissioner for Atomic Energy, Professor at the College de France, president of the administrative council of the Office de la Recherche Scientifique Coloniale and former director of the Centre National de la Recherche Scientifique.

b. Irene Joliot-Curie, his wife. Interested primarily in scientific research. She apparently takes little interest in politics.

c. Pierre Auger, brother-in-law of Francis Perrin, (each married the other's sister); former student of Joliot. Also worked in Canada on the British project. He is now Director of Primary Education in France. Communist.

d. Francis Perrin, Prof. of Atomic Physics, College de France; Commissioner on the Commissariat. Worked in US and Canada.

e. L. Kowarski, is probably in charge of administrative duties under Auger in the Commissariat. During the war he was a member of the British team engaged on the project. He will assist in the direction of the technical and scientific research in chemistry for the High Commissariat.

f. Maurice de Broglie, physicist, member of the Academie des Sciences. He is a specialist in radiations and a Scientific Consultant for the High Commissariat for Atomic Energy. Wealthy, head of the de Broglie family which has produced a long line of statesmen, scientists, military leaders and literary figures.

g. (Louis de Broglie) younger brother of Maurice. He is a theoretical, mathematical physicist. Also scientific consultant for HCAE.

h. (Georges Teissier), Director of the Centre National de la Recherche Scientifique and Professor at the Sorbonne. Not a nuclear scientist but a biologist. Is of interest as head of CNRS and as a Communist. May be tied with biological aspects of nuclear research.

i. Jean Thibaud, director of the Atomic Physics Institute of the University of Lyon, author of several books on nuclear physics.

j. (Maurice E. Nahmias), chief of the Radiobiological Laboratory of the Centre Anticancereux at Marseille. Author of the book (1946) Le Cyclotron. Has studied in the States with Lawrence (to whom his book is dedicated), and will probably take an active part in nuclear research with or under Joliot. He is a former student of Joliot and Assistant at the College de France.

k. (General Bloch-Dassault), Military member of the High Commissariat, is known as a technician on scientific warfare, as an aviation specialist and as a General who had political aspirations. Dassault is a pseudonym adopted by General Bloch when he joined the Resistance. He is known for his extreme left opinion and is a member of the Committee of Direction of the Communist organization Front National, of which he was formerly military commander. It was probably through the Front National that he came in close contact with Joliot. He is president of the Committee of Coordination of Scientific Research and National Defense, as well as Grand Chancellor of the Legion d'Honneur.

l. Bertrand Goldschmidt will assist in the direction of technical and scientific research in chemistry for the High Commissariat. He worked at Chicago on the "American project" and with the British group in Canada. He will be concerned, most likely, with ore dressing problems. He was an official French observer at Bikini.

m. Paul Langevin, age 74, recently retired as Director of the Ecole de Physique et de Chimie and Professor at the College de France. He is a member of the Communist Party and was recently appointed to the High Commissariat as one of ten Scientific Advisers. His chair of Experimental Physics became that of Atomic Physics and is held by Perrin (v. supra).

*File 14 Dec 44*

n. J. Gueron, Chef de Service to the Commissariat. The Free French forces placed him at the disposal of an English research group on slow neutrons. Went with it to Canada. Is Maitre de Conferences of the Science Faculty of the University of Strasbourg.

4. Raw Materials

Principal bottleneck in the work of the Commissariat is the lack of large stocks of fissionable material with which to carry on large-scale experimentation, for France does not have access to uranium supplies. A team of some twenty scientists is at present prospecting the French Empire



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purpose of discovering deposits of uranium, thorium and beryllium to carry on the work of the Commissariat. There are some twenty deposits of uranium in Metropolitan France, all in the region known as Massif Central. These deposits have been known to mining circles for about a generation, but until recently (within the last three months) none of them had even been prospected, so that little was known regarding the extent or quality of the deposits. According to Dr. George W. Bain their only value is as geological phenomena and exploitation is not practical. Some thorium and uranium is known to exist in Madagascar and it is to be expected that these deposits will be exploited, although the yield is small. Dr. Bain states that it is possible that thorium may be discovered in the French Congo but results of prospecting in that region are not yet known. In January 1946 Joliot told a Swiss scientist that France has on hand two hundred tons of uranium.

#### 5. Political

Joliot-Curie, leading personality in the nuclear field in France today, is a confirmed Communist, as is also the new Director of the Centre National de la Recherche Scientifique, Georges Teissier, formerly assistant director under Joliot. Auger and Francis Perrin are also said to be Communists. Langevin, Joliot-Curie's former teacher, is certainly Communist. It appears that Joliot has surrounded himself as much as possible with scientists who have more or less the same political views as he himself has, and it seems likely that the Commissariat for Atomic Energy, or at least the principal posts in the organization, will be held by persons who think along the same political lines as Joliot. A fairly good source in Paris states that prospective personnel are carefully screened for political views before being chosen to work with the High Commissariat. The presence of Dautry, a technician, is explained on the basis of his previous record as an expert organizer and manager of large enterprises. The Communist Party is unquestionably pushing Joliot for all he is worth and its organ, "Humanite", is enthusiastic in its praise of his greatness.

#### 6. Capabilities

France is far from being in a position to construct large installations such as the Manhattan Project built in the United States, and Joliot-Curie frankly admits it. The initial endowment of the French High Commissariat for Atomic Energy, 500,000,000 francs, is hardly adequate for such an undertaking, although it should be borne in mind that additional sums may be appropriated for the project as needed. Joliot has stated that one of the aims of his Commissariat is the operation of a small experimental plant for the study and development of uranium machines, and of this he is probably capable. Such an experimental plant would most logically be operated at Joliot's Ivry laboratory, where he already has facilities for carrying on research and where there is a source of great electrical power. The work could also be carried on at (Bellevue) or in the laboratory of the College de France.

Possibility of use of two new laboratories, one at Chatillon, in the fort, the other at (Le Bouche), in the explosive factory, should not be overlooked. The two laboratories, fairly isolated, would be ideal for construction and operation of experimental pile.

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Joliot further stated that he planned construction, in the provinces, far from centers of civilization, of a large atomic plant. His chances of building such an installation are probably remote at the present, since France now lacks a great many things in the way of construction material and equipment. Probable location of such a plant, viewed from the standpoint of need for electrical power, strategic location and isolated areas, would be in the Massif Central, in south central France.

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