100 Sussex Drive

The Temple of Science

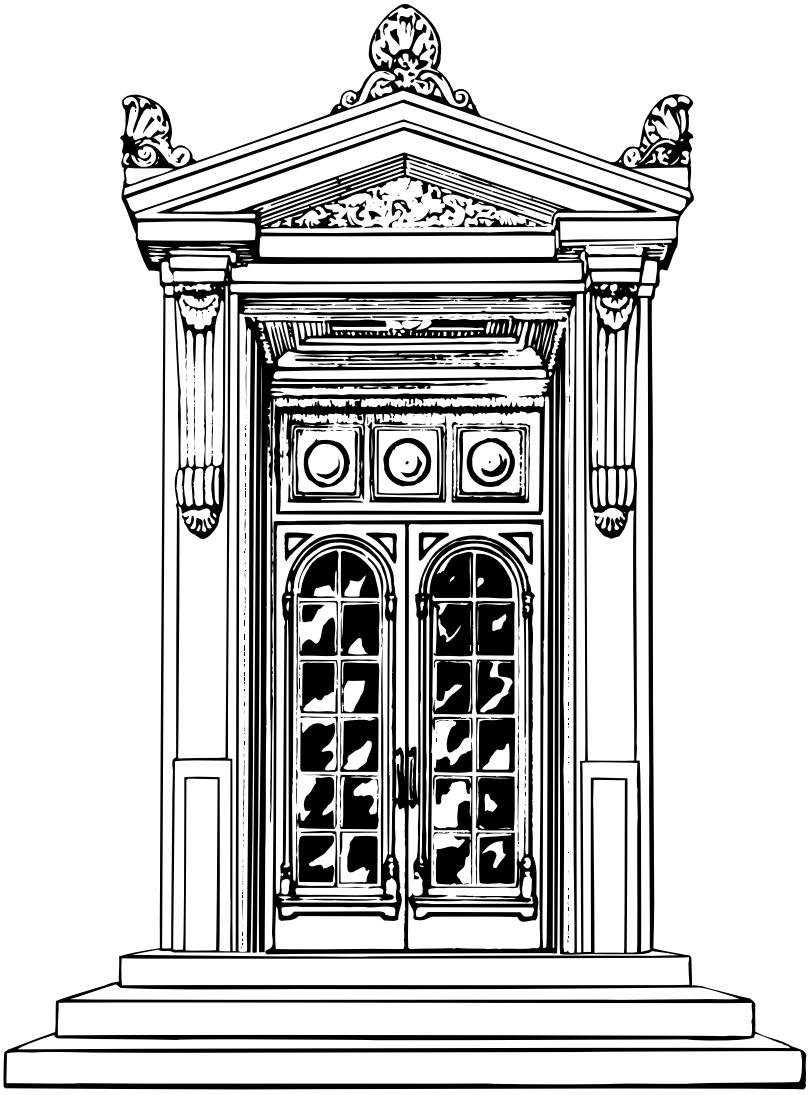
A concise story

of the building which was the

National Research Laboratories

National Research Council Canada
Conseil national de recherches Canada

Canada



When this building was officially opened on August 10, 1932, by the Governor General, an address was given by Prime Minister Bennett, and an Empire radio broadcast was arranged. A reception for the delegates to the imperial Economic Conference was hosted by H.H. Stevens, Chairman of the Privy Council on Scientific and Industrial Research.

This illustrates the importance attached to the building on its completion. The care lavished on its construction and internal fittings demonstrate that the building was intended not only to be a functional laboratory facility, but also a work of art.

The information following is all taken from printed records in the NRC Archives. "All" is not quite right because I had to get some information from old timers familiar with the building. There is, for instance, a story which someone told me years ago, that when the courtyard gardens were still in effect someone tethered a goat in one of them. Dr. Newton was not amused.

It is worth noting that the craftsmen and most of the materials involved in the building are of Canadian origin.

Dr. D.C. Mortimer,
Senior Archival Officer,
1989

The cover of the booklet is a reproduction of the original brochure cover prepared for the official opening of the National Research Laboratories August 10, 1932.

Published by
National Research Council Canada Archives
Ottawa Canada
KlA 0R6

2002

Aussi disponible en français

National Research Laboratories (1950)

The outside walls are of Wallace sandstone* (from Nova Scotia) standing on an eight-foot base of Scotstown granite* (from Quebec). The internal framework is of steel beam construction. The rock in the foyer and the staircases is Italian travertine as are the walls of the library reading room, the auditorium and the basement foyer. The entrance corridor to the exhibition halls and the halls themselves are finished in Tyndall limestone* (from Manitoba). A number of good fossils show on the cut surfaces of the lime stone. Some years ago, a paleontologically-oriented person pasted Latin names on a number of these but those labels are lost.

The building is 418 feet long (127.3 m), 176 feet wide (53.5 m) and 60 feet high (18.2 m). The main face has eight free-standing Doric columns of sandstone each side of the main entrance. The two side entrances on the front are similarly, but less dramatically, ornamented than the main. The main entrance doors, no longer used, are of sculptured bronze.

There is considerable detail to be seen in this entrance foyer. Proceeding into the building, eight broad marble steps lead into the main rotunda, and curving staircases on either side lead to the basement rotunda. Another pair of curved staircases lead to the second floor rotunda. These structures are described in the articles of the day as being fine examples of the best of ltalian Renaissance sculpturing. From the main rotunda there are also entrances to the side corridors and to the auditorium behind the entrance desk.

* (note the political balance in choice of materials)

Lower level foyer with its "Italian Renaissance" influence

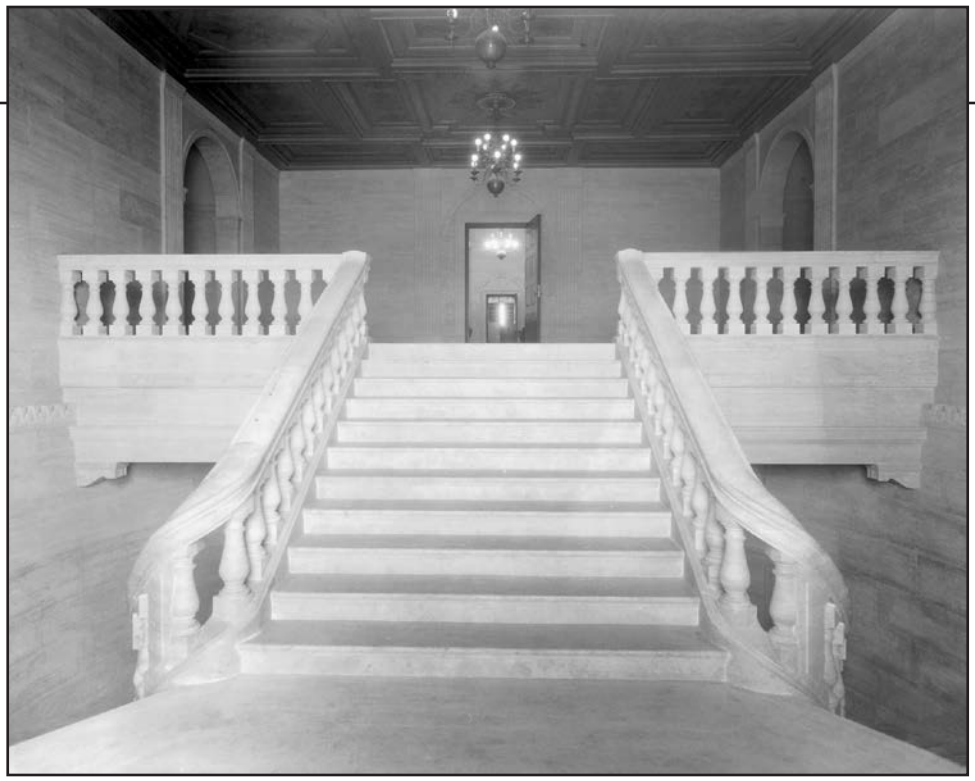
High over the main entrance these words are carved into the stone:

"NATIONAL RESEARCH LABORATORIES
GREAT IS TRUTH, AND MIGHTY ABOVE ALL THINGS:
IT ENDURETH, AND IS ALWAYS STRONG:
IT LIVETH AND CONQUERETH FOR EVERMORE
THE MORE THOU SEARCHEST, THE MORE THOU SHALT MARVEL."

The record is not complete but apparently President Tory, early in 1930, invited Prime Minister MacKenzie King to select a quotation for that space. King evidently devoted considerable time to the project and finally came up with these paraphrased statements from the apocryphal book of Esdras. This was forwarded to Tory on March 2, 1931. An election at this time put R.B. Bennett in power. There was bad blood between Tory and Bennett dating from the establishment of Edmonton as seat for the University over Bennett's home town Calgary. Tory evidently decided to play a waiting game which continued until Tory retired from the Presidency May 31, 1935.

A letter from McNaughton to the Deputy Minister of Public Works. J.B. Hunter, April 14, 1938 inquired what the workmen were doing up on the face of the building. It emerged that this was initiated by a letter from King to the Minister of Public Works, P.J.A. Cardin. November l2, 1937 asking that work proceed on carving the inscription agreed to seven years earlier. The record indicates that we have over the entrance to the building clear evidence of the spirit of MacKenzie King.

The names of famous scientists were to be carved in the base plates of the Doric columns. We have records of biographical sketches of people from Galileo onward. I suspect that this project foundered because there were only 16 slots and who among these were the most deserving of a place in



Upper level landing showing the formal, symmetrical architecture

Library is at top of stairs

Canadian history could not be agreed upon.

While we are still outside the building, we should note there are formal entrances at each end and two more at the rear. Only one rear entrance and the one at the east end are in use at present. On the front face near the west end, about one metre (3.28 ft.) above ground, there is an official benchmark measured at 189.876 ft. above MSL (57.874 m). If you look up from here you will note that the main floor windows peeking from between the columns have semi-circular arches at the top. These arches became an expensive problem in the late 70s when it came time to double the windows for energy conservation.

When we move indoors, there are a number of features of the building worthy of special comment. These include the library, main lobby, auditorium, exhibition halls, board room, president's office, heavy equipment section and laboratories. These will be considered in order.

The library — reached from the large second floor rotunda. The ceiling of this space is richly worked with panels painted in a floral motif. This pattern extends into the main library reading room but at a higher level. The reading room is two stories high, with upper level reading galleries overlooking the main room. The back exit of this room leads into the fifth floor of the library stacks. If you follow this route you emerge on the second floor of the main corridor on the river side of the building. The full length of this corridor is taken up with laboratory space, as is the full perimeter of the third floor. In the central cross piece, the library stacks occupy nine floors from the basement to the roof. These are serviced by a wraparound metal stairway around a small service elevator. The metal shelf framing is continuous

Foyer, upper level ceiling

over the nine floors and floors are translucent glass plates, 0.75 inches thick (1.9 cm) and 31 inches square (2 m^2). While this structure is good for storing books, it does create a serious problem in winter with the generation of large static electricity charges on browsing book worms. Sparks of 2 to 3 cm have been drawn off the end of a finger. This was the National Science Library until the Canada Institute for Scientific and Technical Information (CISTI) opened in 1974, and it continues as a branch library. The reading room has lots of interesting stone artwork, including a small marble balcony reached from the third floor main corridor. One has to sit and look around to appreciate the rich detail.

The marble staircase is best appreciated going down from the library to the main lobby. Morning light brings out the best colouring. In the lobby, the door pattern is a circular design. The ceiling has a similar circular pattern bordered with a Grecian key design which outlines a

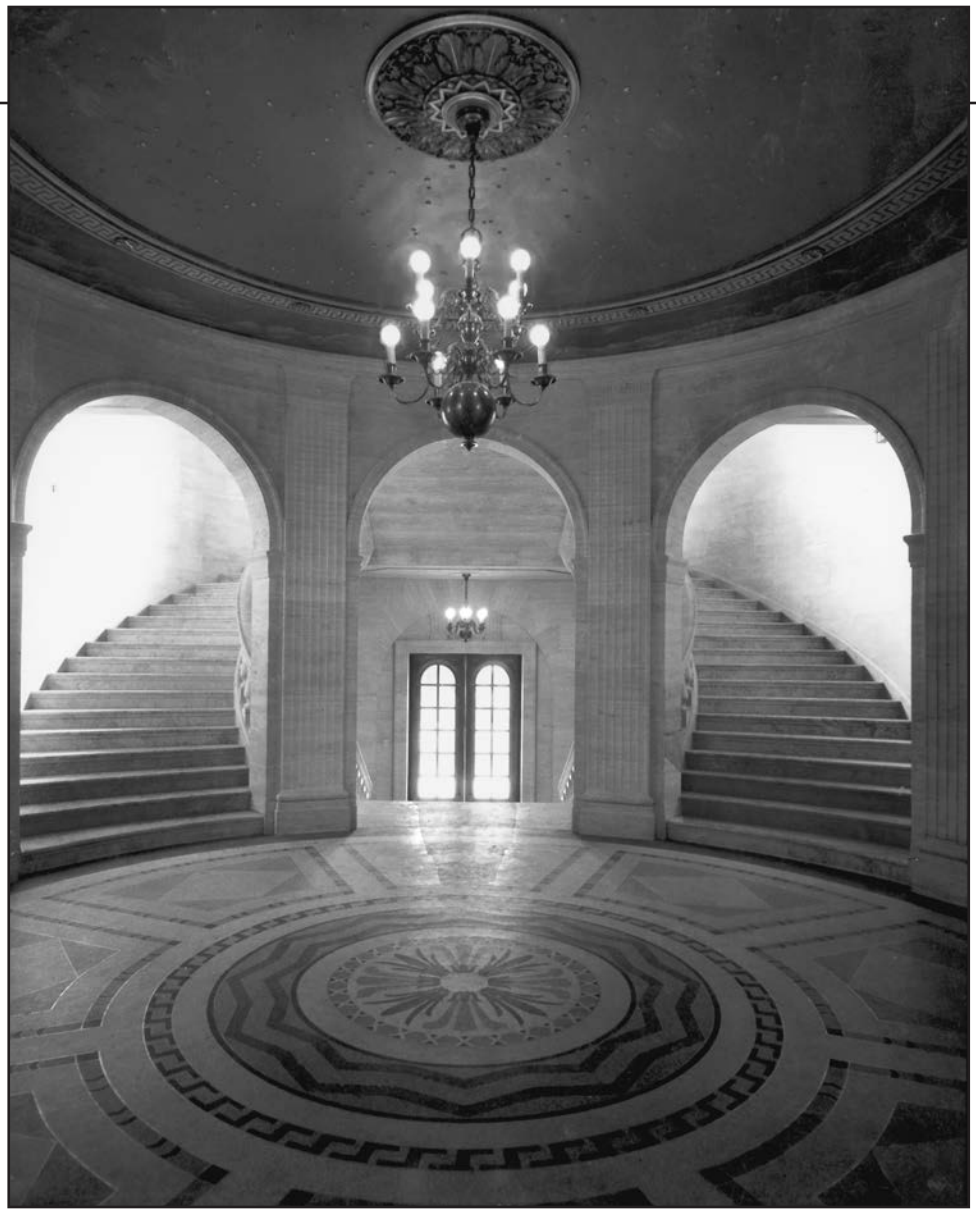
The library includes a two-storey reading room that once featured a naturally illuminated ceiling panel

Corridor, showing laboratory doors of steel with glass panels

night sky scene with many stars. This star pattern is the one seen from the Toronto Observatory on March 22, at 9:00 PM. There is a bit of carving over the main exit door on the inside. Most people do not see it. It includes a telegraph key, Ohms Law, and some mathematical symbols. Other small items, like Alchemy symbols, sunrises, sea shells, and maple leaves are found in tastefully discreet places. Over the door frames down the hall, there is a design which varies.

The auditorium walls are Italian marble, with rounded corners, fluted columns and other tasteful ornamentation. The ceiling is a work of art. The painted panels are deeply recessed in artfully decorated wooden framing in a hexagonal pattern. There is a border about a foot (30 cm) wide around the edge of the ceiling which is a carved pattern in wood. One must stand and look around the auditorium for many minutes, to take in all of the detail. The 290 seats are the original ones but they have been recovered. For many

Main staircase of Italian travertine

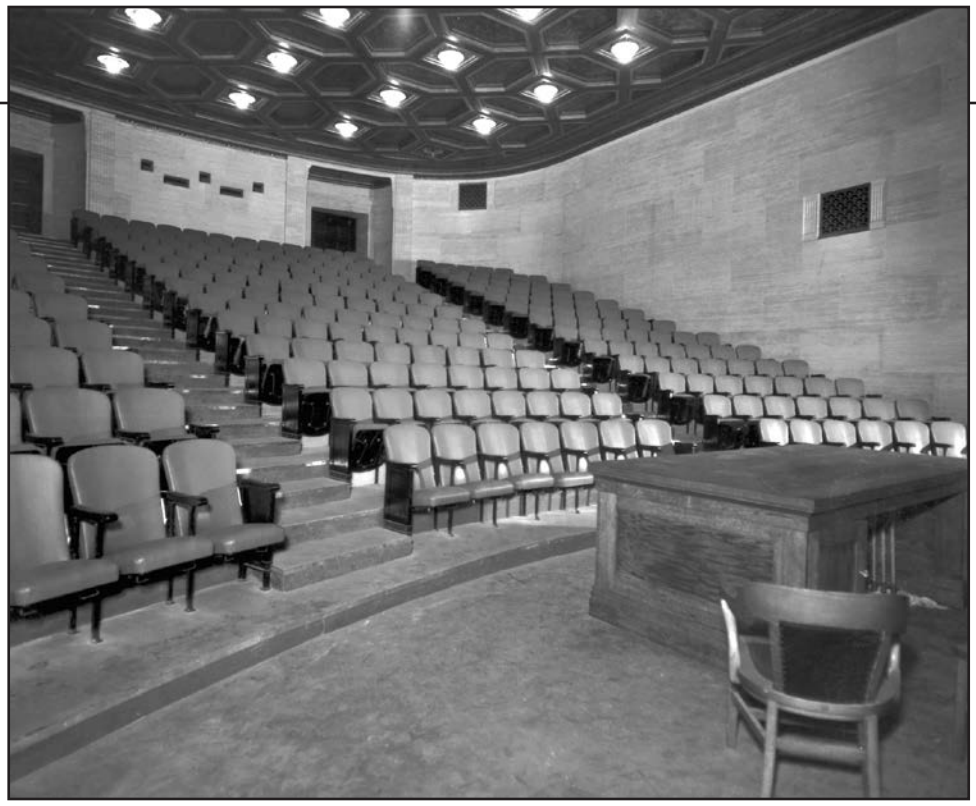


The main foyer looking towards the bronze entrance doors

years, into the '70s, this room was the only one in town for a 300 person meeting.

Now we go down into the Exhibition Halls, because that is where the cafeteria is now and it's coffee time. The other end has been converted into laboratory space. The entrance to these halls was set off by a set of brass gates which are not now used.

There is a bronze door across the hall. The general arched structure was continued even here in the sub-basement. These halls were designated to become a science museum. To this end, NRC collected quite a bit of original surveying equipment and some early airplane engines. However, when the second world war came along, space was at a premium, and these items were put into storage. I have heard that the wartime secret printing presses were in this space. Another casualty of the war effort — the inner courtyard gardens directly above the Exhibition Halls. These were replaced by temporary buildings. The original doors leading into the gardens at either end of the first



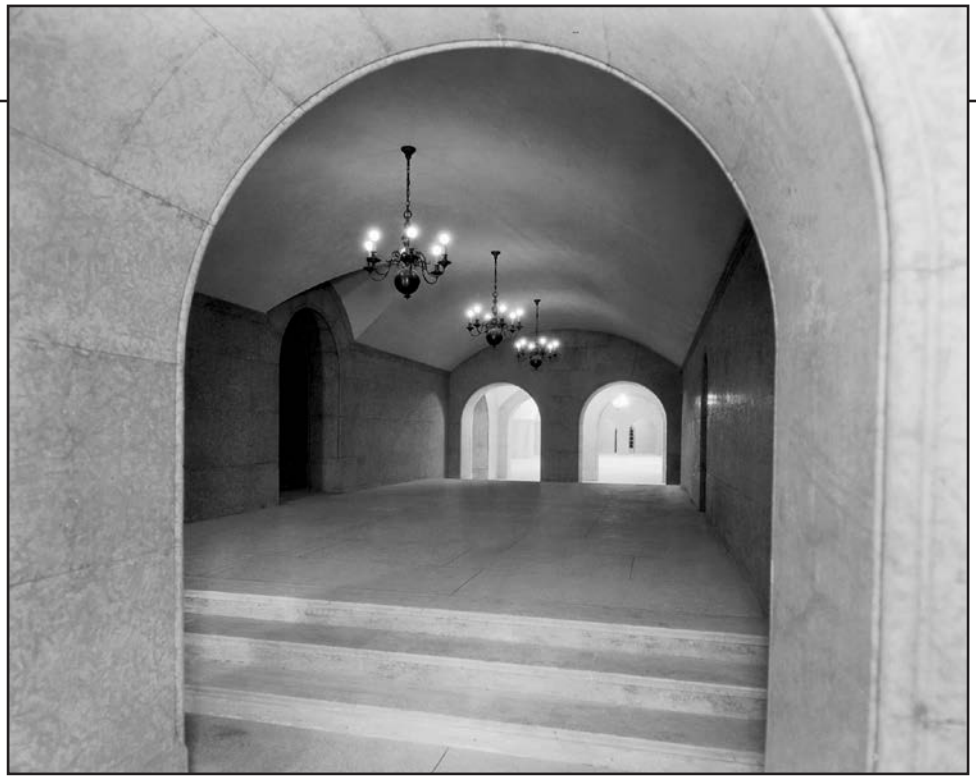
The auditorium with marble walls

The auditorium ceiling featuring painted panels recessed in decorated wood framing

floor, now lead into office and laboratory rooms.

The board room back on the main floor (Room 1147) was for many decades the meeting place for Council. lt is still a meeting place for less august bodies. The table and chairs are original. The wood panelled walls were refinished some time in the 70s and were put back into what is believed to be the original colour. Some of us are not so certain it is right. If the fluorescent lights installed later are turned off, the effect in the room is much more pleasing. I don't know when a fire was last lit in the fireplace. The ceiling in the anteroom is also worth looking at. This room opens into an inner corridor which goes past two or three spacious office spaces, intended for the Directors but now used for other purposes.

On the other side of the main lobby there is a similar inner corridor leading past another group of offices and into the President's Office. This office was returned to its original format so far as is known about 1980. For a number of years it had served as another meeting room. lt had been severely stripped for this purpose. The recessed bookcases were ripped out and the spaces plastered over. During restoration, a retired carpenter pointed out that during the rip out, he had saved the pieces because he could not throw out such craftsmanship and had put them in the wall cavity. Thus the recessed bookcases are on the original wood. It is my understanding that Presidents did not use this room as an office. Certainly C.J. MacKenzie's office was next door in a smaller room. The ceiling has four representational plaster sculptures for four branches of science. The room has an atmosphere which I do not find very attractive — too remote. The board room, however, has a much more restful atmosphere. The guest book in the President's Office has a number of famous signatures, starting with Lord Tweedsmuir.



The Exhibition Halls originally intended to house a science museum

The heavy equipment area is now the carpentry shops. It was originally a two-story space with two heavy duty travelling cranes. There was also a special room containing the large battery jars for the DC power system that ran through most of the laboratories. Most of the space in the building was devoted to laboratories. The rooms are numbered consecutively from 03 to 159 on all four floors. This suggests 156 rooms per floor. The basic unit was 12 feet (3.6 m) wide and about 23 feet (6.9 m) deep. Some were double bays. The exact number of rooms varies because walls were removed and installed as needed but there must be about 600 laboratories. The architects notes say that the research room floors were of magnesite (magnesium carbonate). This was picked up in all of the descriptions of the building but did not happen. All of the doors are concrete covered with linoleum.

The services in each room were cold water, distilled water, steam, gas and electricity, both AC and DC. Hot water was made by mixing steam and cold water, a noisy process. The room doors are steel-framed with glass panels. The frames were and still are painted black. lt is interesting that the outer doors in the "executive suites" on the first floor are similar in design but made of brass.

Dr. W.H. Cook was the first NRC staff member to work in the building. That was May 1932, while contractors were still very busy. The Tenth Colloid Symposium was held in the building in mid-June. It was an international affair and could not be delayed as the building opening had been delayed. The contractor cooperated. Temporary outside doors were installed and meeting rooms were made ready. Further staffing was greatly retarded by the Depression so other government agencies occupied space for the first several years.

The Board Room features the original table and chairs, restored panelling and a functional fireplace

At the end of the 1932 fiscal year, there were 57 professional staff, of whom 28 held doctorate degrees. The total staff list for July 1935 has 153 names, of whom 37 were temporary and seven prevailing rate. There was no growth during the Depression. The building was not filled to the dream level anticipated at its opening.

This building was designed to be both a show piece of artistry and a very practical research structure. It has continued in this mold for more than 50 years. The building has seen many research projects start here, then go out into the community either at a university or in industry. When the press reports of the opening ceremony in 1932 referred to the building as a “temple of science”, they were more correct than they knew.

While the building was under construction, two additional structures were being worked on.

The Heating Plant was built into the river bank to have a low surface profile. This would not detract from the main building's features. It is still used as a distribution centre, and no longer generates its own steam.

The Annex, or John Street labs, were refitted to contain a wind tunnel and a hydraulic ship testing basin. These buildings were along the north end of John Street between Sussex Drive and the river. They had been part of the Edwards paper mill. Most NRC staff members in 1932 worked out of these labs. Their use continued into the '50s.

The hydro generating station on the Rideau River was an integral part of the NRC lab functions. In fact it had a significant role in the "where to put the building" decision-making process. It provided most of the hydro needed to run the building for many years, at least into 1970. It was operated as a part of the Division of Mechanical Engineering.