

when in electrical contact with the earth still retain characteristic charges which are capable of inducing electric separations in other bodies brought near them.

That when two metals are brought near together, their induced free charges will escape to the earth or to any other conductor with which they may be in metallic contact.

Their bound charges remain in or on the metal. If after their free charges have escaped the metals be insulated and then separated, the bound charges become free, and are the so-called contact charges of Bennett and Cavallo.

The magnitude of the natural charge of a metal seems to be determined by its internal cohesion, and hence presumably by its specific inductive capacity. Whatever changes the specific inductive capacity of the metal, or even of its surface, will accordingly produce a change in the fixed charge of the metal.

This point of view consists merely in introducing the earth into the contact series. It seems certain that the same metal will hold different charges when in contact with different parts of the earth, as it will when in contact with the interiors of different hollow conductors.

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THE FIRE AND THE MUSEUM AT OTTAWA

THE Museum of the Geological Survey, Ottawa, Canada, is to Canada practically what the National Museum is to the United States and the British Museum to the United Kingdom. This museum has been greatly affected by the fire which, beginning about 9 p.m., Thursday, February 3, 1916, destroyed the Dominion Parliament building and caused the loss of several lives. Before 2 a.m., February 4, while the flames were still spreading, a member of the cabinet was considering the use of the large auditorium in the Victoria Memorial Museum building as possibly a suitable place for the meetings of the House of Commons, and members of the Geological Survey were holding themselves in readiness

to clear any of the other space necessary. It will be remembered that this museum building was the home of the Geological Survey of Canada and the temporary quarters of the National Gallery of Canada. It was open to the public from nine till five daily except Sundays, Christmas day and Good Friday, and from two till five on Sundays during the winter.

On the ground floor were the central hall, usually with special and timely exhibits, the main floor of the auditorium, the west hall with tentative mineralogical exhibits, the west wing for geology, but containing boxed specimens and camp equipment, the east hall with invertebrate paleontological exhibits, and the east wing with tentative exhibits of vertebrate paleontology.

On the first floor were the tower hall with some ethnological specimens, the lecture hall gallery, the west hall—three fourths devoted to tentative archeological exhibits and one fourth occupied by entomological exhibits—the west wing with permanent archeological and ethnological exhibits, and the east hall with zoological exhibits. On this same floor the east wing was occupied by Canadian pictures, and Greek, Roman and Italian renaissance sculpture, of the National Gallery. On the second floor were most of the offices and the library of the Geological Survey, and in the northeastern room of the east hall an office of the National Gallery. On the same floor the east wing was occupied by Medieval and French renaissance sculpture, Royal Canadian Academy Diploma Pictures and colored prints of the world's most famous pictures, of the National Gallery. On the third or top floor were offices, the much used though small and tentative museum lecture hall, the gallery of the library, the drafting room, study and storage rooms. On this floor the east wing was occupied by the oil and water colors, prints, etchings, drawings and bronzes of the National Gallery. In the basement were workshops, laboratories, distribution offices, photographic department, and half a hall devoted to a workshop of the National Gallery.

The Geological Survey, it may be seen, oc-

cupied practically all the building except the three and a half floors in the east wing and an office which were used by the National Gallery. Each hall and wing is practically one hundred and twenty feet long by sixty feet wide. The central hall was temporarily vacant and here the post office for the House of Commons, telephones, and two telegraph offices were installed before noon, or within less than fifteen hours after the fire started.

About ten A.M., February 4, the morning of the fire, the survey staff was informed of the intended use of the building as a temporary home for the Dominion Parliament. The large auditorium with its gallery, which was only partially furnished and had been but little used for lectures, was immediately released from museum uses and prepared by the Department of Public Works, so that the House of Commons was enabled to begin its session at 3 P.M. or in less than twenty hours after its deliberations had been disturbed by the fire. The throne, used by the Governor-General in the privy-council room, which was rescued from the fire, served for the speaker of the House of Commons. A press gallery was built back of the speaker.

The west hall was occupied by the tentative exhibit of minerals. This exhibit was packed and removed in six hours or by 4 P.M., Friday, which was less than twenty hours after the fire began. The costly cases in which these minerals were exhibited had meanwhile been taken apart and placed in storage. Rooms for the members of the Senate were made here.

The west wing, which was being prepared for geological and mineralogical exhibits, was cleared before Monday noon. The southern half of this hall was decorated, carpeted with the traditional scarlet carpet, and furnished with furniture, most of which had been saved from the Senate chamber. The walls were hung with portraits also rescued from the chamber, placed in order, King George III. and Queen Charlotte leading the others, which consist of the portraits of the speakers of the Senate, ranged in the order of precedence. The Senate met at 8 P.M. on Tuesday in this new chamber within seventy-five hours after it

became known that the Senate would meet in the museum. North of the aisle the Senate Post Office and other rooms for their convenience have been built.

The east hall with invertebrate paleontological exhibits, similar in size to the other exhibition halls, contained thousands of small and delicate specimens. These were all carefully wrapped, packed and taken away. The work of dismantling had progressed so far by midnight or within twenty-eight hours after the origin of the fire, that the Public Works carpenters were enabled to begin erecting the walls of the offices for the convenience of the members, and twelve hours later or forty hours after the beginning of the fire all the museum specimens and cases had been moved from this part of the building, which was made into offices for members of the House of Commons.

Of the east wing containing tentative vertebrate paleontological exhibits, three quarters were cleared and these exhibits were stored, with those of the other quarter, along the walls of the southern half of the hall. This clearing involved not only the moving of small exhibits in cases, but also of such heavy fragile specimens as the titanotherium and the skulls of dinosaurs and mammoths, yet it was all done within two hours after this notification, that is by noon, or in less than twenty hours from the time that the fire broke out.

The ethnological specimens were taken out of the tower hall, which was then fitted up and used before Friday noon as a newspaper library corresponding to the one where the fire originated.

Before noon, that is within less than two hours after notice, the tentative exhibit of Canadian archeology in seventeen cases, covering three quarters of the west hall, was cleared of specimens and cases, while the tables upon which the cases stood were left for the use of the members of parliament. The specimens were transferred to sixty-eight trays and stored in the archeological laboratory in the basement. Meanwhile the remaining quarter of the hall had been cleared of a tentative exhibit of entomology in four cases. In this hall a place for the press gallery staff

to work, various offices for members of the senate, and offices for the Hansard staff which records the deliberations of the house were made ready before Monday noon.

The exhibits in the permanent anthropological hall were left intact. Besides the exhibits the archeological specimens in storage under the exhibition cases were also undisturbed. The ethnological exhibits which are of specimens from the Eskimo, the Indians of the northwest coast of America and the Algonquian and Iroquoian Indians of the eastern woodlands, were undisturbed. The aisles in this hall, however, were used for storing furnishings and specimens from various other departments and for office space for the ethnologists.

The zoological hall, similar in size to the others, was cleared by Sunday noon. This necessitated the taking apart of splendid large group cases and the dismantling of groups of seals, mountain goat, mountain sheep, musk oxen and various other exhibits and the removal to storage in the aisles of the anthropological hall of the smaller cases containing exhibits of mammals, birds and reptiles. The space was divided up into offices for the members of the House of Commons.

The offices on the second floor were promptly vacated with the exception of two, that of the curator and mineralogist and that of the vertebrate paleontologist. The invertebrate paleontological offices were moved to the third floor. The archeological office was moved to smaller space in the entomological laboratory on the third floor, all specimens being taken to the laboratory. The known loss to archeological specimens caused by the move from both office and tentative exhibition is negligible, the damage being less than one dollar. Work on monographs will be hampered for lack of space to spread out the material for study, but every specimen is still available, on permanent exhibition, in storage under the exhibits, or in the laboratory where aisles allowing for the free passage of trays are maintained, though the storage reaches the ceiling in most of the remaining space. The ethnological office was moved into the south end of

the anthropological exhibition hall and the botanical office was moved into the botanical herbarium on the third floor. The library was not disturbed. The vacated rooms were at once occupied chiefly by the Cabinet and other members of the House of Commons.

The offices, drafting room, workshops and storage on the third floor, were mostly retained, but the little lecture hall was released. The lectures in course were postponed indefinitely. The zoological study material and the herbarium were undisturbed. The physical anthropological office was concentrated into about half its former space, and an ethnological storage room was vacated.

In the basement the workshops and laboratories were mostly retained, as were the taxidermist department, the laboratory of vertebrate paleontology, the photographic department, and half a hall devoted to the workshop of the National Gallery. Some work rooms were vacated, however, and the distribution offices with their vast store of publications and maps were moved to another part of the city.

Of about a hundred and forty members of the survey staff over seventy moved about a mile to a series of buildings recently taken over by the government on the north side of Wellington Street between Bank and Kent Streets, while some sixty of those most intimately connected with museum work retained room in the Victoria Memorial Museum building. In this work of moving, militia motor lorries were pressed into service, as well as sleighs and other transports, and the office furnishings and working specimens went out at the rate of sixty loads in one day.

The National Gallery of Canada turned over all its premises except two rooms, one on the first floor and one on the second, in which the art objects were compactly stored. It retained its offices and workshop. Thus it turned over about five sevenths of its space. The director of the gallery was called upon and he directed the hanging of pictures in the part of the building occupied by parliament and with his staff assisted in rescuing pictures from the parliament building. These activities afford an example of museum usefulness.

The Survey staff made space faster than it was required, always managing to keep ahead of the Public Works men. Under the direction of Hon. Robert Rogers, minister of public works, Mr. J. B. Hunter, deputy minister, Mr. John Shearer, superintendent of buildings, and their various assistants, the Public Works staff prepared the building for parliament by building walls, decorating, carpeting, installing telephones, two telegraph offices, two post offices and many other necessities and conveniences. They also provided facilities for those of the Survey staff remaining at the museum to carry on its work.

His Royal Highness, the Governor-General, inspected the House of Commons and the other parts of the Victoria Memorial Museum building turned over for the use of parliament at eleven A.M. on Monday, less than eighty-seven hours after the fire began or less than seventy-four hours after the museum authorities were notified of need for the space. He was apparently much pleased at the speed with which the survey staff had made room and with the facilities and comforts so hastily installed by the Public Works staff.

The museum retains intact only one and a quarter of the exhibition halls, namely, the anthropological hall and part of the hall of vertebrate paleontology. It is closed to the public, admission being by pass only.

A sample museum, by means of which to advance museum interests in the Dominion, has been begun in the anthropological hall. The archeological and ethnological exhibits are intact, some of the best zoological exhibition cases of birds, reptiles and insects, have been placed in the wider aisles where they may be viewed, while mounted mammals and skeletons of various animals have also been placed in the aisles and on top of the cases. In the unoccupied space of this character, and in such other space as may be made by storing all but a representative archeological series, still other exhibits may be placed.

On the whole the scientific work of the museum may go on practically unhampered. The lecture work is being carried on in other auditoriums. The exhibitions eventually may

be facilitated by the present apparent set back, as the museum staff is undiscouraged, and the members of parliament, who are now in daily proximity to the exhibits and constantly meeting museum workers, may become so interested that they will provide future facilities for museum work in the Victoria Memorial Museum building or in a building even better adapted for museum purposes. Besides this they may carry home to all parts of the Dominion inspiration to establish useful museums and to improve those already in existence.

HARLAN I. SMITH

MUSEUM OF THE GEOLOGICAL SURVEY,
OTTAWA, CANADA

ROBERT JAMES DAVIDSON

ROBERT JAMES DAVIDSON closed his earthly career suddenly December 19, 1915, leaving a beautiful and beneficent memory. Born at Armagh, Ireland, April 3, 1862, he attended schools near Liverpool, England, and came to this country as a youth. He was educated at South Carolina College and University, from which he received the degrees of Bachelor of Science and Master of Arts and in whose faculty he served for some six years. This preparation was to bear ripe fruit in the career which really commenced in 1891, when he was called to the chair of chemistry in the Virginia Polytechnic Institute at Blacksburg, Virginia. For nearly a quarter of a century he labored there teaching chemistry, administering the discipline of the college as professor and as dean, leading the farmers of the state with admonition and advice, and always ready to serve. One invariably thinks of the word *service* in remembering Davidson. It gives the keynote to the song of his life. Whether with his students, his colleagues, or his fellow-citizens, in fact with his neighbor wherever he met him, Davidson's first and main thought was to be of service and truly did he follow, far more closely than the average man, the example set by the Master nineteen hundred years ago. He was fearless in this service, never hesitating to state his objection to argument or his adverse opinion with the reasons