out any knowledge of their religious views. Three fourths of all the men of affairs approached signed and none expressed dissent, a few, however, preferring for political reasons not to join in the statement. Two thirds of the religious leaders who were interrogated signed, most of whom were of the more conservative groups. The response of the scientists is particularly significant and possibly has some bearing upon the breadth of view developed by scientific training. After this showing who is he who is asserting that science is materialistic and irreligious? There are a few scientists, it is true, but only a few, who forget the scientific method when they touch the field of religion and scoff at it without knowing anything about it, and these men, too, have their exact counterparts, perhaps in slightly larger numbers, in the field of religion where there is, I regret to say, a group of blind leaders of the blind, men who still follow the method of the jungle and are still imbued with its spirit of prejudice, preconception and intolerance. Yet there is here the best of evidence that the leadership in both science and religion is in the main imbued with both the spirit of intellectual honesty and objectiveness which is characteristic of science, and the spirit of altruism and service which is the glory of religion. *This combination is the only nostrum which there is for human ills, the only hope for a paradise on earth, and each of us has the opportunity to do his bit toward bringing it about.*

R. A. MILLIKAN

NORMAN BRIDGE LABORATORY OF PHYSICS,
CALIFORNIA INSTITUTE OF TECHNOLOGY,
PASADENA, CALIFORNIA

THE BUILDING OF THE NATIONAL ACADEMY OF SCIENCES[1]

THE architectural character of the building has been largely determined by its surroundings, being what Charles Moore calls the "Spirit of Washington." While classic in its appearance, it is not severely formal and lacks the rows of columns so familiar to the visitor to the National Capital.

The general character of the exterior is Greek even to the varying of the height of the masonry courses.

Across the doorway is a marble pseudo-pediment, wherein the sculptor has portrayed the elements with which science and scientific research deal—Earth and Cloud through the various forms of the Vegetable and Animal Kingdom to Man. At the apex is the Sun—the source of warmth and light.

[1] Abstract of a memorandum to the Carnegie Corporation of New York on the building designed by Bertram G. Goodhue for the National Academy of Sciences and the National Research Council, and the progress of its construction.

A great range of window openings two stories in height, three each side of the entrance, is filled between the upper and lower windows with low relief bronze panels figuring the outstanding Founders of Science from earliest times.

Within the main doorway lies a simple vestibule from which the great Foyer Hall is entered. At the beginning and end of this hall are elaborate grilled glass screens with panels of the Zodiacal signs set in an intricate framework of bronze. The ceiling is of cedar—colored and gilt. On either side of the hall are staircases and elevators. On the left beyond these is the library, and still further beyond, its attendant reading room occupying the very end of the building.

In the right wing of the building balancing the library is the small Lecture Hall, and beyond it the Meeting Room. The library takes the form of a central aisle with alcoves on either end. All here is of masonry and metal, even to the bookshelves.

The Reading Room is of more domestic appointment, panelled in walnut for about two thirds of its height, with a ceiling of walnut. The space between is now of plaster but may eventually be filled with a painted frieze.

The small Lecture Hall has been designed mainly with a view to its acoustic qualities. Above the high wainscoting of wood and panel, the wall is of acoustic tile. The ceiling and its heavy beams are of plaster.

The Meeting Room next to the Lecture Room is of the same size and proportion as its counterpart, the Reading Room at the extreme other end of the building, but it is less domestic in character on account of its purpose. As in the Library and Reading Room there is an ample fireplace.

The second screen in the Foyer Hall leads into the main Auditorium, which is cruciform in shape, the four arms being vaulted to support a central pendentive dome. The floor is of marble and green slate and three balcony fronts, each supported by two shafts of Verde antique marble, are of walnut with various inlays of other wood. The walls to the center of the arches are of acoustic tile and are as simple as possible in character and surface.

Above the spring, the arches and dome are genuinely vaulted and covered with acoustic tile, in its turn covered with elaborate decoration with panels of figures and emblems, the whole colored and gilt.

In the apex of the dome is an "eye," which is an accomplishment of scientific engineering. The roof of this "eye" swings upon itself in a way that permits the direct rays of the sun to enter at all periods of the year and day, and be projected to a spectrograph at the level of the floor under the dome. From this "eye" also depends a Foucault pendulum to demonstrate the rotation of the earth.

Both pendulum and spectrograph are removable

when occasion demands. The support of the spectrograph is bronze covered with figures of Sun gods in low relief. In this room under the dome, which constitutes the Main Auditorium, again there are motion picture booths with a screen provided behind the Speaker's Tribune.

Around the central auditorium lie seven exhibition rooms, three large and four small, to put promptly before the public important current discoveries and inventions in Science. These rooms are very simple in their character but each one has been carefully studied for the purpose to which it is to be put.

Besides the various workaday offices in the second and third floors for the National Academy of Sciences and the ten divisions of the National Research Council, the basement contains a large two-story stack room for the library, as well as certain public exhibition rooms from which daylight must be excluded.

The general contract was let on April 11, 1922, to Charles T. Wills, Inc.

Prior to the letting, the exploratory work encountered difficulties in the foundations, increasing the cost in the neighborhood of $50,000, due to an ancient stream bed covered up when the land—which is made land—was filled in many years ago.

The foundation walls rest on reinforced concrete girders, which in turn rest on 74 concrete piers five feet square to bed rock and the girders supporting the terrace rest upon 33 large steel tubes driven to bed rock, emptied and filled with cement.

The dome over the Rotunda is rapidly rising.

In general the project is about 75 per cent. completed. Nothing has been started on the grading of the site for carrying out the plans for the grounds, which involve a main approach with side approaches, reflecting pools and other landscape features.

Through the efforts of the National Academy of Sciences, Congress was induced to close Upper Water Street, adding the area of this street to the Academy-Research Council quadrangle, which because of this now comprises the whole area enclosed between B and C Streets, from 21st to 22nd Streets, and in effect becomes part of the park in which the Lincoln Memorial stands.

Out of the $1,350,000 appropriated for construction by the Carnegie Corporation, $713,128.37 has been spent. Prospective and actual over-runs in cost amounting to $55,656 beyond the original estimate, due to rising costs and unforeseen contingencies, have been encountered, but in an effort to compensate for these, prospective savings and reduction of scope amounting to $42,876 have been made.

The period has been one of rapidly rising costs produced by nation-wide congestion in the labor and material markets. The main contract could not be re-let now for less than $250,000 more.

The land purchased by the National Academy of Sciences through funds amounting to $185,000, raised by subscription, is in a most favorable location opposite one face of the Lincoln Memorial, with which the white marble Greek style of the Academy-Research Council building is in harmony.

The building is attracting unusual attention and its advent will signalize a very important step in the development of science in the United States.

GANO DUNN
Chairman, Joint Building Committee, National Academy of Sciences, National Research Council

CHARLES NEWTON LITTLE

PROFESSOR LITTLE, dean of the college of engineering in the University of Idaho, passed away suddenly from heart failure in Berkeley, California, on September 7.

He was born of missionary parentage at Madura, India, in 1865. He was a graduate of the University of Nebraska, where he took the A.B. degree in 1879 and the M.A. degree in 1884. He took his degree of Ph.D. at Yale in 1885 and afterward studied in Germany with Klein and Hilbert. His work in the theory of knots was of fundamental importance. By methods which he invented and perfected he succeeded in enumerating and classifying the different kinds of knots up to those of the tenth order. This work attracted the attention and interest of Professor Tait, of the University of Edinburgh. Professor Little's work was published in the *Proceedings* of the Connecticut Academy of Sciences and in the *Transactions* of the Royal Society of Edinburgh. In the last few weeks of his life, on being relieved of his duties as dean of the college of engineering, he turned again to these researches and under the inspiration of sympathetic associates he was laying his plans for another assault on this most difficult field of analysis situs. His untimely death is a very serious loss to mathematics.

As a teacher he may be known by his fruits. He was ever vigilant in the upholding of high standards of scholarship. Earnest and enthusiastic and inspiring, inflexibly following his own high ideals, he was a man to be reckoned with by those who would take the easy and popular roads in educational matters. As a man, he was entirely lovable. Loyal to his friends, with malice toward none of those who failed to understand his devotion to what he believed was right, he has left behind him an imperishable record of a well-spent life.

D. N. LEHMER