THE AUTOBIOGRAPHY OF

JOHN FRITZ

(SELECTED PAGES)
THE AUTOBIOGRAPHY
OF
JOHN FRITZ

(SELECTED PAGES)

FIRST EDITION
FIRST THOUSAND

NEW YORK
JOHN WILEY & SONS
LONDON: CHAPMAN & HALL, LIMITED
1912
THIS book is dear to men who so freely
To them all, in whom and I should like to
personally, from the assistance and for the
They deserve the power
blessings they have
mental and physical
changes and wonders
of the iron and steel
seventy years ago.
DEDICATION

THIS book is dedicated to the loyal, able, brave and fearless men who so faithfully stood by me throughout my career. To them all, in whatever capacity employed, I am ever grateful, and I should like to call each one by name and to thank them personally, from the depth of my heart, for their most valuable assistance and for the uniform kindness they have ever shown me. They deserve the plaudits of the country for the innumerable blessings they have conferred in performing the great amount of mental and physical labor necessary in accomplishing the marvelous changes and wonderful results that have marked the development of the iron and steel business from my first connection with it some seventy years ago.

John Fritz
THE FRITZ ENGINEERING LABORATORY.

A chapter in the long and active life of Mr. Fritz would remain unwritten if no reference were made to his relationship to Lehigh University. When that institution was established in 1866, the Founder, the Hon. Asa Packer, of Mauch Chunk, Pennsylvania, selected Mr. Fritz as one of the original trustees, well knowing that his practical experience would be of great value in directing the policy of the new college, which was to be devoted largely to instruction in the arts of Mechanical and Metallurgical Engineering.

Mr. Fritz has maintained his trusteeship from the founding of the University up to the present time, with the exception of a few years, during which, at his request, he was relieved of active participation in the affairs of the University. He has always discharged the duties of his trusteeship with the fidelity and devotion that are so characteristic of him, and he has contributed liberally to the support of the institution.

One day in the spring of 1909, in talking with Dr. Henry S. Drinker, President of the University, he said: "I want to tell you something. In my will I have left Lehigh University a certain sum of money, to be expended in your discretion. I now intend to revoke that bequest. Yes, I'm going to revoke that bequest, and instead of leaving money for you to spend after I am gone, I'm going to have the fun of spending it with you and Charley Taylor. I have long watched the careers of a number of Lehigh graduates, and I have been impressed by the value of the training..."
FIG. 13.—THE FRITZ ENGINEERING LABORATORY, LEHIGH UNIVERSITY, SOUTH BETHLEHEM, PA.
they have received at Lehigh. But you need an up-to-date engineering laboratory and I intend to build one for you.”

No sooner had Mr. Fritz announced his intention than with characteristic activity, in spite of his eighty-seven years, he set about making the plans for the new laboratory. Various suggestions and ideas as to the most suitable plans and arrangements of the building were considered, architects were consulted, but finally Mr. Fritz concluded that, for the purpose in view, he would be his own architect, and that the most appropriate structure would be a large oblong building with a high center and somewhat lower sides, substantially on the lines of the large shop he had some years before built at the Bethlehem Steel Works. The outline of the building can be seen in the accompanying picture. Such a building would provide the necessary essentials: adequate space, sufficient light, and the logical arrangement of having the larger machines for heavy work in the center of the building and the lighter and smaller machines at the sides.

Not only did Mr. Fritz furnish the design of the new laboratory, but whenever possible he was on the University campus to superintend its erection. He also personally selected the greater part of the equipment.

The Fritz Engineering Laboratory is of modern steel-frame mill construction, 94 feet wide and 115 feet long, with the main center section 65 feet in height and the two side sections of lesser height. The external walls which inclose the steel frame are of cement brick lined on the inside with red brick. A traveling crane, operated by electricity and of 10 tons’ capacity, commands the entire central portion of the building, in which the testing of large specimens is carried on. Ample light has been provided for by numerous windows in the side and end walls, in the clerestory, and by a skylight 84 feet long and
9 feet wide in the north roof. The main aisle of the building is 49 feet 2 inches between centers of crane columns, and has a clear height of 40 feet. The remainder of the width is taken up by two sides aisles, 20 feet in height.

The laboratory consists of four sections: (a) a general testing section containing the testing machinery, a small machine shop, and the office; (b) a cement testing room; (c) a room for making and storing concrete test specimens; (d) a hydraulic section.

The testing section occupies the larger part of the western end of the building and contains all of the testing machines except the briquette machines, which are in the cement section. For facility in handling the test specimens, a 10-ton crane, 47 feet 2 inches center to center of runway beams, operated by three direct-current motors, has been installed. A small machine shop, containing a drill press, lathe, milling machine, shaper, etc., operated by a 7.5 H.P. motor, is available for general repair work.

The principal equipment of the testing section proper is as follows:

<table>
<thead>
<tr>
<th>Type of Machine</th>
<th>Capacity in Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal</td>
<td>800,000</td>
</tr>
<tr>
<td>Wire tester</td>
<td>20,000</td>
</tr>
<tr>
<td>Cold bend</td>
<td>24,000 inch pounds</td>
</tr>
<tr>
<td>Tension and compression</td>
<td>20,000</td>
</tr>
<tr>
<td></td>
<td>1.5 inch diameter bar</td>
</tr>
</tbody>
</table>

The cement testing section occupies a separate room on the main-floor level. The equipment consists of tables for making cement specimens, storage tanks, briquette testing
Fig. 14.—The Fritz Engineering Laboratory, Interior. General Testing Section.
machines, and apparatus for making standard cement tests.

The concrete room is under the cement room and is used by the students for the construction of cubes, beams, and cylinders for testing; also for the construction of concrete columns, plain and reinforced, and concrete beams, of commercial size, which are tested for strength by the students. It is connected with the main testing room by a hatchway through which the heavy specimens may be hoisted into the main room by the crane. The equipment consists of bins for sand and stone, mixer, and moulds.

The hydraulic section occupies the northeastern portion of the building. The lower floor is 10 feet below the level of the testing room, the second floor or elevated platform is 10 feet above the testing-room level, giving 20 feet of clear height.

The equipment on the lower floor consists of:
1. DeLaval centrifugal pump, 2000 gallons per minute against 60 feet head.
2. Atlantic Hydraulic Machinery Co. centrifugal pump, 200 gallons per minute against 255 feet head.
3. Steel pressure tank, 63 inches in diameter by 34 feet 6 inches high.
4. Steel calibrating tanks, 8 feet in diameter by 12 feet high.
5. Steel weighing tanks, 4 feet in diameter by 3 feet high.
6. Steel weir tank, 4 feet by 4 feet by 21 feet long.
7. Trump turbine.
8. Pelton water wheel.

The upper platform carries:
1. Steel weir tank, 3 feet by 3 feet by 18 feet long.
2. Steel tank, 63 feet wide, 3 feet deep, 173 feet long.
The equipment also includes pressure, mercury, oil, and hook gauges, meters, scales, and so on.

All electricity for lighting and for power for the testing machines and for the pumps is 2-phase 60-cycle alternating current at 110 and 220 volts.

Instruction in testing of materials and hydraulics is given to students of Lehigh University. The equipment is used for thesis work in the Senior year, and is also used for making commercial tests of materials of construction for manufacturers.

FRANK P. MCKIBBEN,
Professor of Civil Engineering,
Lehigh University.
FIG. 15.—THE FRITZ ENGINEERING LABORATORY, INTERIOR. 800,000 POUND RIEHLE TESTING MACHINE.