

Franklin Institute.

[*Proceedings of the Annual Meeting, held Wednesday, January 18, 1888.*]

HALL OF THE INSTITUTE, PHILADELPHIA, January 18, 1888.

JOSEPH M. WILSON, President, in the Chair.

Present, eighty-seven members and eight visitors.

Additions to membership since the last report, nine.

The annual report of the Board of Managers was read, as follows :

ANNUAL REPORT OF THE BOARD OF MANAGERS FOR THE YEAR 1887.

The Board of Managers of the FRANKLIN INSTITUTE of the State of Pennsylvania for the Promotion of the Mechanic Arts, respectfully presents the following report of the operations of the INSTITUTE for the year 1887.

MEMBERS.

Membership at the close of 1887,	2,222	
Number of new members elected, who have paid their dues,	101	
	<u> </u>	2,323
Lost by death or resignation,	68	
Dropped for non-payment of dues,	100	
	<u> </u>	168
Total membership at close of 1887,		2,155

FINANCIAL STATEMENT.

Receipts.

Balance on hand January 1, 1887,		\$1,100 95
Contributions of members,	\$4,677 50	
Received from Guarantee Fund on account of loss incurred by Exhibition of 1885,	823 08	
Sales of property, Exhibition of 1885,	960 00	
Legacy of Henry Seybert (deceased),	2,000 00	
Certificates of second class stock,	70 00	
Fund for completion of serials,	1,130 00	
Interest on investments,	737 00	
Cash from Sale Allotment Pennsylvania Railroad Stock,	64 50	
Cash from other sources,	7,928 99	
	<u> </u>	18,391 07
		<u>\$19,492 02</u>

Payments.

Committee on Library,	\$1,524 87	
Committee on Instruction,	2,566 45	
Exhibition of 1885,	131 12	
Salaries and Wages,	4,423 93	
Maintenance and repairs to building,	1,686 18	
Insurance,	306 00	
Paid on account of temporary loan,	2,000 00	
Interest on temporary loan,	177 36	
Other expenditures,	5,483 62	
		18,293 53
Balance on hand December 31st, 1887,		\$1,198 49
Remaining to be paid on temporary loan,	\$3,000 00	

An examination of the financial statement will show that the deficiency for the year in expenditure over receipts is very considerable, although apparently the balance on hand remains nearly the same. This is owing to the fact, as may readily be seen, that some of the sources of income are casual for the present year only, and will not obtain in the future, also that moneys have been received for special purposes, such as for completion of serials, and not yet expended. Such funds cannot be applied to maintenance of the INSTITUTE.

The legacy of Henry Seybert (deceased) has been invested as a nucleus towards a "Building Fund."

LIBRARY.

The Library has been increased during the year 1887, by the acquisition of over 3,000 additional titles.

The designation of the Library of the FRANKLIN INSTITUTE by the Department of the Interior as a depository of the publications of the Government, will add to its importance as a library of reference.

For additional details respecting this branch of the work of the INSTITUTE the Board refers to the report of the Committee on Library,

THE JOURNAL.

The JOURNAL of the INSTITUTE has shown itself more than self-supporting during the past year, and its condition is very encouraging.

During the year, the Committee on Publications issued a circular-letter, announcing its intention to publish an index covering the first 110 volumes from 1826 to 1880, inclusive, and inviting subscriptions thereto. The responses to this invitation have been so numerous that the Committee can now undertake this important work without risk of financial loss. By the direction of the Board, the printing of the index will be proceeded with at once, and the work will shortly be ready for distribution to subscribers. This publication will add greatly to the usefulness of the JOURNAL as a work of reference.

The voluntary services of collaborators, which were secured for the JOURNAL last year by the Committee on Publications, have been of considerable advantage, and the thanks of the INSTITUTE are due for this valuable aid.

The Board desires again to call attention to the fact that the JOURNAL is not as generally sustained by the members of the INSTITUTE as it should be, and takes this opportunity to ask for it a more generous support at their hands.

LECTURES.

The following Lectures were delivered during the past year, viz.:—By Prof. C. Hanford Henderson, *one*, on "The Bessemer Steel Process and its Modifications," and *one* on "Glass Making;" by Prof. Chas. F. Himes, *one*, on "The Stereoscope and its Applications;" by Miss Helen C. DeS. Abbott, *one*, on "Plant Chemistry as an Applied Science," and *one* on "The Chemical Basis of Plant Forms;" by Mr. John M. Hartman, *one*, on "The Crucible of the Blast Furnace;" by Prof. Frances Emily White, *one*, on "Hygiene;" by Prof. Henry Trimble, *one*, on "Tannin and its Sources;" by Mr. John Birkinbine, *one*, on "Rainfall and Water Supply," and *one* on "Iron Smelting in the United States;" by Prof. J. Burkitt Webb, *one*, on "Mechanical Paradoxes;" by Mr. Carl Hering, *one*, on "Electricity," and *one* on "The Electrical Transmission of Energy;" by Mr. Wm. F. Durfee, *one*, on "Hero of Alexandria, and the Arts and Mechanism of his Time;" by Prof. Luigi D'Auria, *one*, on "Tidal Rivers;" by Mr. C. O. Mailloux, *one*, on "The Storage of Electrical Energy;" by Commander J. R. Bartlett, *one*, on "The Physical Geography of the Sea;" by Capt. O. E. Michaelis, *one*, on "The Army of Kukuanaaland;" by Dr. Persifer Frazer, *one*, "Introductory to the Course on Chemistry;" by Prof. Lewis M. Haupt, *one*, on "Rapid Transit in Cities;" by Prof. Wm. H. Greene, *one*, on "The Mechanics of Chemistry;" by Mr. Chas. E. Emery, *one*, on "Steam Heating in Cities;" by Prof. S. P. Sadtler, *one*, on "Russian and American Petroleum," *one*, on "Present and Prospective Sources of Sugar," and *one* on "The Manufacture of Artificial Dye Colors;" by Mr. C. J. Hexamer, *one*, on "The Yellowstone Park;" by Prof. Wm. A. Anthony, *one*, on "Electrical Measurements;" by Thomas Pray, Jr., *one*, on "The Cotton Fibre;" by Mr. John Birkinbine, *one*, on "The Iron Ores of the United States;" and by Prof. J. E. Denton, *one*, on "The Construction of the Great Croton Aqueduct."

The foregoing list embraces thirty-two lectures. The Professors of the INSTITUTE, with the co-operation and endorsement of the Committee on Instruction, have spared no efforts to maintain the high character for which the lectures of the past few years have been notable.

DRAWING SCHOOL.

The Drawing School has shown considerable increase over the attendance of the previous year, and its efficient management, together with the marked interest of the students in their work, gives the assurance that this valuable adjunct to the INSTITUTE will continue to be successful.

The attendance for the Spring Term of this year was, 192

And for the Fall Term, 224

416

Making an increase over the previous year of, 44

COMMITTEE ON SCIENCE AND THE ARTS.

The impending changes in the constitution of the Committee which were noted in last year's report, the most noteworthy of which was the making of the Committee an elected body with a fixed number of members (forty-five), in place of the voluntary association of former years, went into effect in January of the past year.

The reorganized Committee included in its membership a number of the most capable and active members of the INSTITUTE, and the Board feels warranted in congratulating the INSTITUTE on a change which gives promise of greatly increasing the usefulness of this Committee.

During the year, the Committee considered seventeen new applications and reported upon nine, and has nine cases under consideration at the present time. In two of these cases the Committee awarded Certificates of Merit; in one case the Elliot Cresson Medal, and in two cases recommended the award of the John Scott Legacy Premium and Medal.

REORGANIZATION AND FUTURE WORK.

The Committee on Reorganization having completed the revision of the By-Laws, and provided for the creation of a Board of Trustees, it remains that these Trustees be elected—a proceeding that it would be advisable the Board of Managers should carry out as soon as practicable.

It is within the province of this Committee on Reorganization to continue its work in the matter of formulating and reporting "what should be the future work of the INSTITUTE," and also to prepare plans for a suitable building in which the INSTITUTE can carry out that work, and it is of the utmost importance that the Committee should continue its labors to a conclusion.

The wants of the INSTITUTE are vital. It is a great and noble institution, worthy of the name it bears, and doing invaluable work for the City of Philadelphia and for the world.

Yet it is embarrassed in every direction; for want of room in its building, want of conveniences in its educational departments, and, above all, want of funds. Every year its accounts present a deficiency. This cannot go on forever. Unless some change takes place for the better, the day will surely arrive, although it is hoped it may be far off, when its doors will be closed. Cannot those who are interested in the promotion of educational privileges, and who have the means to make a practical application of their interest, have their eyes opened to the field here presented?

Under the reorganization, the system of the INSTITUTE is in the best shape possible for such aid. Its Managers, its Officers and its Professors are active, reliable, energetic and economical, doing all they can with the least possible expenditure; but, it may as well be plainly spoken, it is money that is wanted, money, properly and securely vested in the hands of its Trustees, the income to be rightly applied to the continuance and advancement of the INSTITUTE. From an examination of the expenditure account it will be evident to anyone that a decrease in these expenditures cannot readily be made without seriously crippling the efficiency of the INSTITUTE.

New and more extensive buildings are needed. The Library has far outgrown its quarters. Here is one of the most valuable purely scientific libraries of the country, proving its usefulness for consultation and reference every day, containing many volumes that, if destroyed, could never be replaced, and yet in a building not even fire-proof.

Cannot a systematic effort be made to improve this state of things? The INSTITUTE asks for aid. Shall its appeal be in vain?

By Order of the Board, JOS. M. WILSON, *President*.

The Committee on Library made the following report:

THE COMMITTEE ON THE LIBRARY respectfully report, that during the year 1887 there have been added to the Library:

Volumes, bound,	2,099
Volumes, unbound,	448
Pamphlets,	1,120
Total,	3,677
Maps and charts,	108

The above is exclusive of duplicates, of which a large number were acquired during the year, as follows:

Volumes, bound,	618
Volumes, unbound,	90
Pamphlets,	863
Total,	1,571

TOTAL NUMBER OF VOLUMES IN THE LIBRARY. Taking the statement of the Librarian at the close of the year 1886, as, 27,998 volumes, and adding the additions of 1887, 3,667 "

We have a total of 31,665 "

which is exclusive of a pamphlet collection of about 8,000, classified, catalogued and accessible for reference.

THE B. H. MOORE FUND.—There have been purchased during the year from the income of this fund 317 volumes, and one pamphlet and chart, at an expenditure of \$424.96, leaving an unexpended balance of \$75.04.

DUPLICATES.—During the past year duplicates have been disposed of to the value of, \$174.89
And books received in exchange to the value of, 141.10

Leaving to the credit of the account, \$33.79

SERIALS.—During the year the following important ones were completed:

The American Gas Light Journal.

"Proceedings of the American Gas Light Association."

"Proceedings of the Society for Psychical Research."

"Transactions of the American Institute of Electrical Engineers."

Through the liberality of the members and friends of the INSTITUTE, the sum of \$1,135 has been subscribed and deposited with the Treasurer to be applied to the completion of the more important serials in the library. The committee has been in correspondence with book dealers in Europe, and has now the invoices of the first shipment, amounting to about \$600, towards the furtherance of this important work.

GOVERNMENT PUBLICATIONS.—By the courtesy of the Moyamensing Literary Institute, of this city, there have been transferred to the Library of the FRANKLIN INSTITUTE the Government publications deposited with that institution, amounting to 1,629 volumes. Having relinquished in favor of the FRANKLIN INSTITUTE the designation as a public depository, the Hon. Sam'l J. Randall has directed the transfer to be made in the Department at Washington. The annual addition to the library from this source will be voluminous, and added to the collection of former years, will form a valuable library of Government publications, freely accessible to the public.

WANT OF ROOM AND PROPER PROTECTION for the most important library of scientific and technical publications in the United States continues to be a source of solicitude to your committee. The time has now arrived when the question will have to be considered, whether to check the increase of the library to accommodate it to its restricted quarters, or to provide a suitable building for its expansion and preservation, which shall afford ample space for its natural increase, and comfort and convenience to the members of the INSTITUTE and to the public, to whom the Library is accessible.

CHAS. BULLOCK,

Chairman of Committee on Library.

The Chemical and Electrical Sections likewise presented detailed reports of their operations during the year 1887.

The foregoing reports were severally accepted.

MR. W. U. WOODRUFF, of Hartford, described the advantages of a new system of keying for machinery, which he had devised and proposed as a standard, and illustrated the subject by the exhibition of a complete set of cutters and keys. The subject of Mr. Woodruff's communication has been referred to the Committee on Science and the Arts, for an investigation and report thereon.

PROF. EDWIN J. HOUSTON made an oral communication on the "Paillard Non-Magnetizable Watch," giving an account of a series of tests to which he had subjected it, and which fully confirmed the claims of the inventor.

The SECRETARY read his annual report, which appears elsewhere in the JOURNAL.

The following preamble and resolution were unanimously adopted, on the motion of PROF. LEWIS M. HAUPT, viz.:

WHEREAS, During this first century of our national existence, the public civil works conducted by the various departments of the General Government, have reached such magnitude and importance as to require a greater economy and efficiency of administration; and,

WHEREAS, The present promiscuous assignment of technical bureaus to departments for which they have no affinity; the reduplication of services; the frequent changes in the *personnel*; the failure in passing the appropriation bills and resulting disorganization of the employés, and the absence of personal responsibility, are not conducive to such economy and efficiency; and

WHEREAS, The FRANKLIN INSTITUTE of the State of Pennsylvania, for the promotion of the Mechanic Arts, has ever maintained a deep interest in the development of the mechanical and civil industries of our country, and desires to encourage and promote a more systematic organization of these important bureaus on the part of the General Government; therefore,

Resolved, That the FRANKLIN INSTITUTE respectfully but urgently requests the members of the Fiftieth Congress of the United States to enact such laws as will result in a more efficient and systematic organization of the numerous technical bureaus and greater economy of administration in the conduct of the Public Civil Works of the Government.

The result of the annual election for officers, managers and members of the Committee on Science and the Arts is given below:

President (to serve one year), JOSEPH M. WILSON.

Vice-President (to serve three years), W. P. TATHAM.

Secretary (to serve one year), WM. H. WAHL.

Treasurer (to serve one year), SAMUEL SARTAIN.

Managers (to serve three years): Hugo Bilgram, Cyrus Chambers, Jr., G. Morgan Eldridge, Henry R. Heyl, Chas. Hare Hutchinson, Samuel R. Marshall, Chas. E. Ronaldson, William Sellers.

Auditor (to serve three years), Lewis S. Ware.

Members of the Committee on Science and the Arts (to serve three years): J. M. Emanuel, Prof. L. B. Hall, John Haug, Henry R. Heyl, C. W. Howard, Fred. E. Ives, W. M. McAllister, H. Pemberton, Jr., Philip Pistor, Prof. S. P. Sadler, T. C. Search, Thomas Shaw, Louis H. Spellier, W. Rodman Wharton, Moses G. Wilder.

Adjourned.

WM. H. WAHL, *Secretary*.