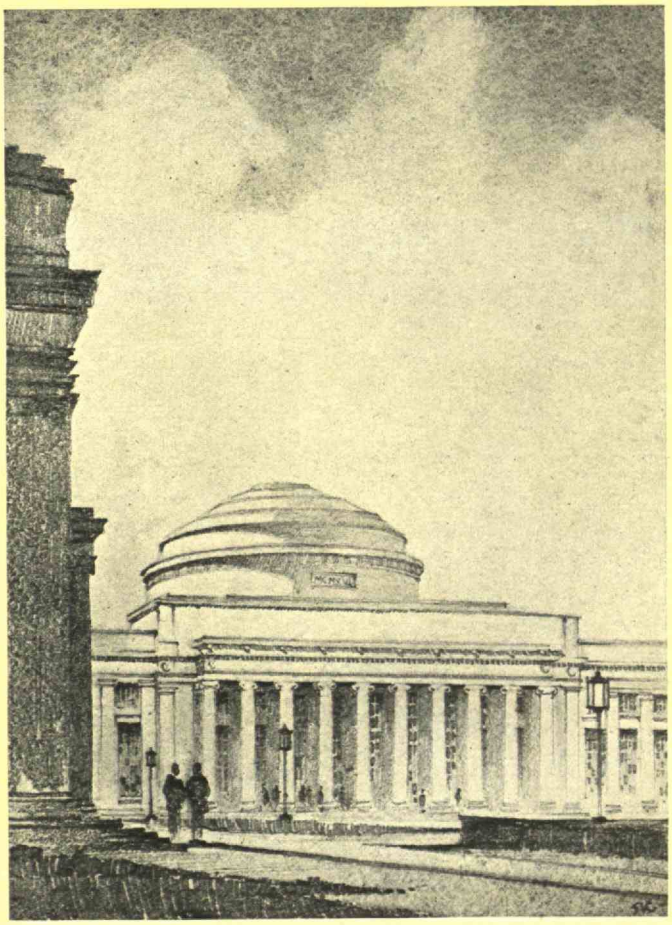
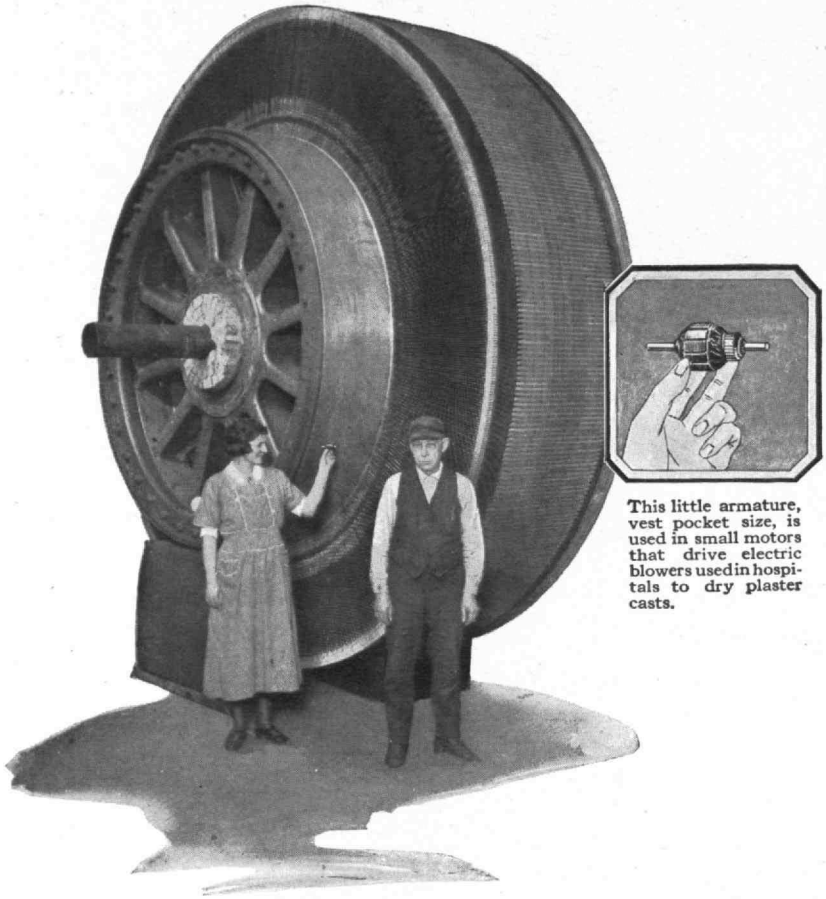
THE TECHNOLOGY REVIEW



NOVEMBER
1925

RELATING TO THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY



This little armature, vest pocket size, is used in small motors that drive electric blowers used in hospitals to dry plaster casts.

The Largest and the Smallest

Look carefully at any direct-current electric motor and you will see the "armature," which spins around inside the "field" and converts the electric current into power.

The girl holds a little armature. Behind it is the largest single unit we have built, for a direct-current motor of 4500 horse power, for use in Detroit to help make automobiles.

Between the largest and the smallest G-E motors are thousands, of many different sizes, including the small motors that you see on fans, sewing machines, washers, and vacuum cleaners. The General Electric Company is making motors for every kind of useful service.

GENERAL ELECTRIC

Nearly Six Billions Appraised ($6,000,000,000)

The value of public utility, manufacturing and other properties appraised by Stone & Webster is nearly six billions ($6,000,000,000)

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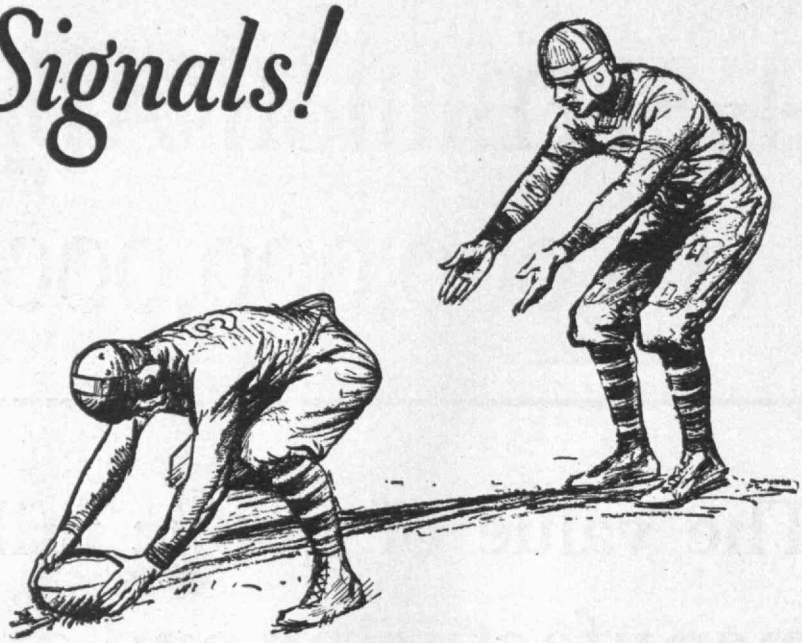
INCORPORATED

Signals!



—vital in electrical communication, too

"41-7-27-3," sings out the quarterback; and the football goes on towards a touchdown.

"Madison Square 32198," says a voice in San Francisco; and a message starts on its way across the continent.

But the similarity between football and the communication art doesn't stop there. In each case signals have unleashed a great force. Coordination has scored the goal.

And this was made possible only through years of preparation. In one instance, on the gridiron. In the other, in the college classroom and the laboratories of industry.

That, in short, is why men who've learned their fundamentals and how to apply them at the snap of a signal are qualifying for positions of leadership in the greatest field of signals known to man — the field of communication.

Published in the interest of Electrical Development by an Institution that will be helped by whatever helps the Industry.

Published for the Communication Industry by

Western Electric Company

Makers of the Nation's Telephones

One of a series of announcements appearing in student publications and aimed to interpret to undergraduates their present and future opportunities.

THE TECHNOLOGY REVIEW

RELATING TO THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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Contents for November, 1925

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The TECHNOLOGY REVIEW

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VOLUME XXVIII ,,, NOVEMBER, 1925 ,,, NUMBER 1

The Past Months

TECHNOLOGY is again operating on the semester system, which seems to please the majority of students and Faculty and to offer distinct advantages over the three-term plan which had been in effect since 1918. The discarded plan was adopted in some courses during the visitation of the Student Army Training Corps and, in 1918, was made effective in all courses. The vote of the Faculty to return to the semester arrangement is in accord with the action of a number of other colleges which, having tried the three-term system turned again, sooner than Technology, to the more orderly pre-war two-term arrangement.

The semester system means that the academic year is once more divided into two periods of ninety working days in which students and members of the Faculty are alike afforded the opportunity to become better acquainted. There will be less loss of time during the school year such as was consequent on three registration periods, with all their pains; three examination times, with all their anguish.

Because of the well-ordered system in the various departments of the Institute there was little or no confusion in returning to the old system. Minor adjustments only were necessary to synchronize the various units of the academic machinery and, once students had grasped the simple details of checking over the numbers of their subjects, things moved along smoothly. That *bête noire*, the repeater of subjects, was the fly in the ointment. If he flunked two terms on a three-term basis what, under a two-term basis, should be his expiation? The answers did not appear in the back of the book, much to the chagrin of several registration officers.

From a woodcut by Kenneth Reid, '18

CHARLES M. SPOFFORD, '93

Head of the Department of Civil and Sanitary Engineering and this year Chairman of the Faculty

REGISTRATION this year is again less than the year before. On October 11, 169 fewer students were recorded on the rolls than in fall of 1924. Now there are 2753; on October 11, 1924, there were 2922. All undergraduate classes number less except the seniors of whom there are 671. One year ago the class of 1925 had exactly this number. In spite of the drop of 5.8 per cent in the total registration, graduate students have increased 42 and now total 319, a gain of 15.2 per cent.

Two departments, Architecture and Electrical Engineering have made material gains. The former jumped 13.6 per cent by adding 26 students, all undergraduates. The regular course in Electrical Engineering increased 8.4 per cent by adding 36, half of whom are graduate students. The communications option, known as "Course VI-C" gained 11 juniors, lost 2 seniors, a net rise of forty-five per cent over last year. The coöperative courses under the Electrical Engineering Department did not fare so well. They dropped by 15 men, 6.6 per cent. Minor gains of two students are recorded in the courses in Sanitary Science and Biology and Public Health. The Department of Physics like the senior class remains unchanged. All other courses and departments decreased except the new Gas and Fuel course into which two pioneer registrants have ventured.

In detail the undergraduate classes are now: freshmen, 501; sophomores, 587; juniors, 648; seniors, 671;

FIFTY YEARS AFTER

The Class of 1875 celebrated its Golden Jubilee at South Orleans, Mass., last June. Here they are from left to right: standing; W. A. Prentiss, S. J. Mixter, George Bowers, W. E. Nickerson, J. W. Homer, John Cabot, E. A. W. Hammatt, Wilfred Lewis, E. H. Lincoln. Sitting; C. W. Goodale, Thomas Hibbard, G. W. Lewis, E. S. Dorr, Frank Lyman

unclassified 27. Last year the corresponding figures were respectively: 576, 644, 702, 671, 52. In point of registration the five leading departments are this year: 1. Electrical Engineering, 704; 2. Mechanical Engineering, 371; 3. Engineering Administration, 364; 4. Civil and Sanitary Engineering, 308; 5. Chemical Engineering, 286.

Foreign students are also less than last year. Forty-four countries are represented by 189 men and one woman. The Institute's first Chinese co-ed is Miss Fu Li Kuan of Canton, who thus holds the enviable position of pioneer among women students come to Technology from overseas.

"OF breath-taking unexpectedness and princely generosity, the gift of George Eastman, announced on the evening of December 8, will benefit Technology to the minimum amount of four and one-half million dollars." So said The Technology Review for January, 1925.

Said Mr. Eastman's statement printed in that issue: "I have sold certain stocks at less than their market value (the price being payable in installments during my life), with the intention of benefiting such institutions to the amount of at least $15,000,000."

At that time the conservatism of these statements and their true significance was not appreciated by others than Mr. Eastman, his associates, a few officials of Technology and the other institutions involved.

The annual report of Treasurer Everett Morss, '85, submitted at the October meeting of the Corporation sheds more light. All announcements heretofore spoke of the *minimum* amount expected. It now transpires that Technology has already benefited to the extent of $5,146,053.90 and it is decidedly probable that it may eventually receive a maximum amount of about nine million dollars.

Here is what took place. In December, 1924, Mr. Eastman entered into a contract with the Institute, under which he turned over to it cash and securities valued at $9,054,282.86. The agreement was that the Institute would purchase these securities from him for $4,500,000, paying for them in semi-annual installments spread over fifteen years. This gave Technology an immediate clear balance of $4,554,282.86. Between that time and June 30, 1925, the end of the fiscal year covered by the report of Mr. Morss, three things happened: (1) the Institute received an income from these investments of $244,532.32; (2) the Institute profited a net of $347,238.72 by selling some of the securities at figures above their book value; (3) the Institute paid Mr. Eastman $150,000 as the first installment. On June 30, therefore, Mr. Eastman was a creditor of Technology to the amount of $4,350,000 and the Institute had an

equity of $5,146,053.90 in the securities it bought from him.

Largely because of this contract with Mr. Eastman the endowment assets of Technology increased 59.85 per cent during the past year. They are now $27,477,773.19.

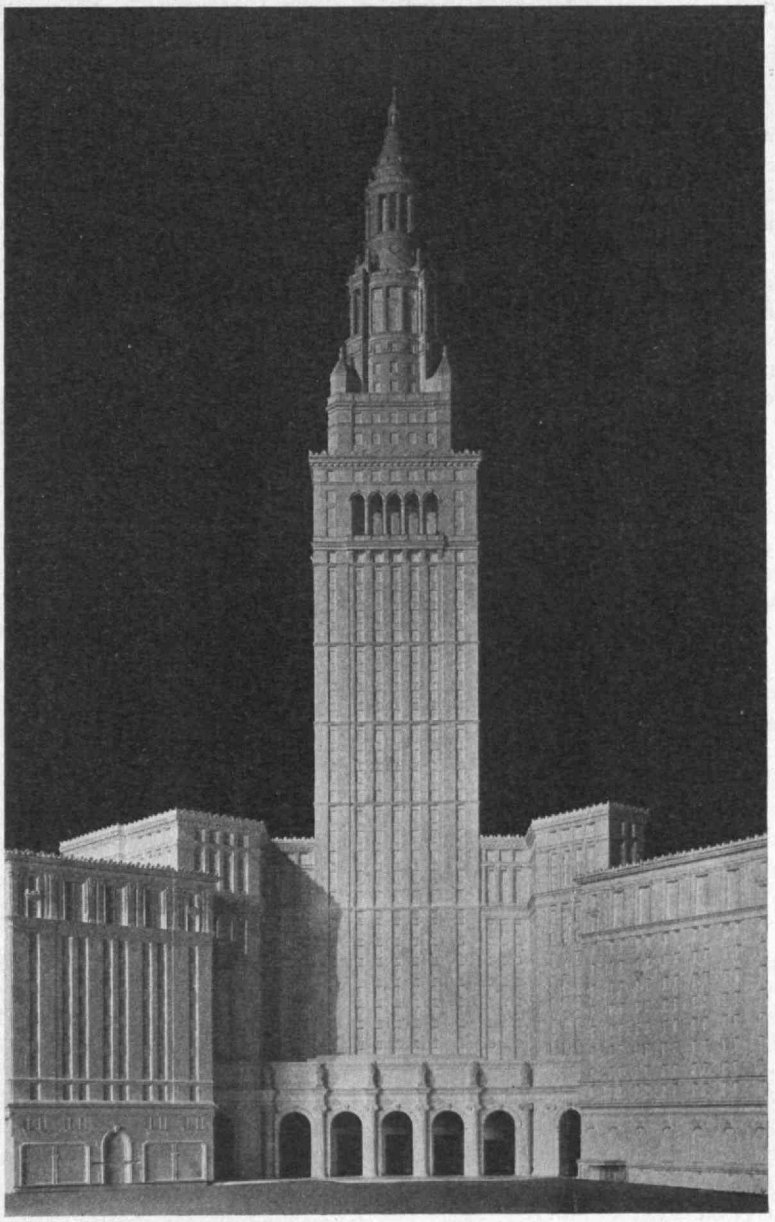
NOTWITHSTANDING this increase in prosperity the Institute spent but 1.4 per cent more than last year. It cost about $6800 per day to run Technology, total outgo being $2,481,015.62, roughly $845 per student. Ten years ago it was only $373. The bulk of the expense was for academic instruction, 48.5 per cent; plant operation required 15.2 per cent; administration swallowed up 9.9 per cent.

Distributing the amount spent for academic instruction which includes salaries of teachers and departmental expenses accessory to actual instruction, on a per student basis, gives $410 per annum. Similar figures for the amount contributed by each student in the shape of tuition and fees demonstrates that Technology receives from this source about $335 per student. Thus in order to pay fully for his instruction each of the 2938 undergraduates who were included in Registrar MacKinnon's nose-count of November 1, 1924, would have had to chip in $75. If any of them had wanted to pay enough to cover his whole cost, exclusive of depreciation on the plant, he would have been relieved of $510 besides his tuition.

Total income for the year was roughly two and a half millions; 38.9 per cent of it came from student fees and tuition, 55.3 per cent from invested funds, 0.9 per cent from U. S. government grants, 4.9 per cent from other sources. This is the first year, except for the abnormal war year 1917–18, that less than fifty per cent of the Institute's income came from students. Forty years ago eighty per cent came from that source.

Sixty-two pages comprise the report and sixty of these are statistical. A careful inspection gives some insight into the huge task of operating the Technology plant. Coal cost $81,783.50, on the average $224.64 for each day of the fiscal year. There are 80,000 square feet of window glass, most of it plate. For each registered student $2.80 was spent to scrub and polish it. Telephone service was expensive and cost $4.18 per student, ice water 32 cents. The former will come higher next year. The Civil Engineering Summer Camp operated at a net expense of $15,199.76 of which $5,306.10 went for new construction and repairs; the Mining Engineering Camp at Dover, N. J. took $3,861.56. The net income from the dormitories was nearly $10,000, and the labors of Superintendent A. H. Bridges enabled the Institute to stow away $7,710.29 more in the Walker Memorial Dining Service reserve fund.

Schedule H, pages 22 to 51 inclusive, lists in detail bonds, stocks, mortgages and other coffer content. Nearly eighty-four per cent of the twenty-seven odd million dollars is entrusted to five classes of investments: 28.6 per cent to public utility bonds, 19.2 per cent to railroad bonds, 16.4 per cent to industrial stocks, 10.4 per cent to government and municipal bonds, 9.3 per cent to industrial bonds.



THE NEW CLEVELAND TERMINAL BUILDING

A model of the new structure now being erected under the supervision of H. D. Jouett, '00, as Chief Engineer. Those who had ever occasion to travel to Cleveland in the old days will realize the magnitude of his good work. Associated with him are some six other Technology men. The tower above the public square entrance will rise for fifty stories, falling short of the Woolworth Building's height by barely eighty feet

THESE past months have witnessed more of the inevitable changes that mark the passing of time. There have been appointments and promotions, readjustments and retirements in the Faculty. Since previous recording there have

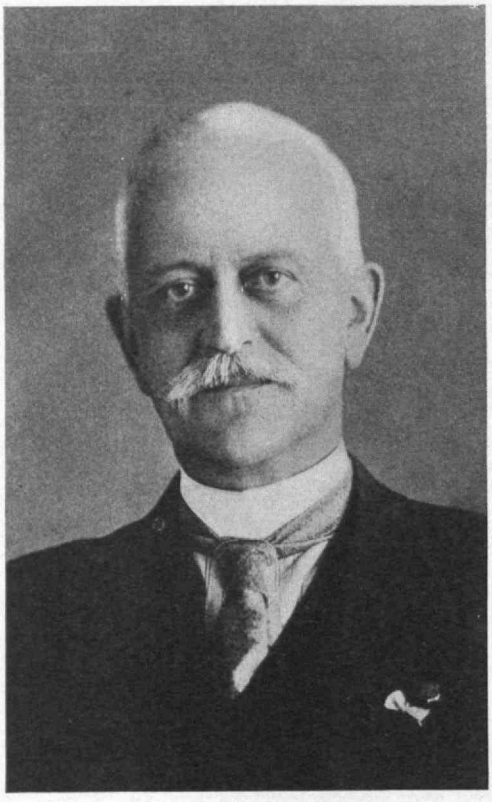
been goings and comings, new faces, and the passing of familiar figures into other fields, some to the well-earned rest of retirement.

F. Jewett Moore, Professor of Organic Chemistry, has retired from active teaching after 31 years of service to devote himself exclusively to research. His successor in the difficult task of undergraduate instruction is Samuel P. Mulliken, '87, Professor of Organic Chemical Research, who in the change becomes head of the division of organic chemistry.

Another change in the Department of Chemistry is the retirement from active duty of Henry Fay, Professor of Analytical Chemistry and Metallography, whose work will henceforth be carried on by his close associate in the department Dr. Robert S. Williams, '02, Professor of Analytical Chemistry and Metallography.

Professor Moore was graduated from Amherst and later went to Germany and received his doctorate at Heidelberg in 1883. He taught at Cornell upon his return from Europe and came to Technology after a brief stay there. He was appointed professor in 1912.

Lawrence B. Chapman, '10, comes from Lehigh University to the post of Associate Professor in the Department of Naval Architecture. There he will have an active part in the design of a new naval tank which is in prospect for construction next year. While plans for the tank are still in a nebulous stage of development, it is expected to have a length of at least 500 feet, with a probable width of twenty feet and a depth of ten feet. The tank will be used for original research in naval architecture and to test the floats of seaplanes. It is expected that it will be possible to attain a speed of thirty miles an hour with ship models in a tank of the proportions outlined.



CHARLES W. EATON, '85

Benefactor of Technology in death as well as life, Mr. Eaton left to the Institute a sum now estimated at $200,000. *See the story on page 11*

In addition to two years as Assistant Professor of Mechanical Engineering at the University of Maine and six years at Lehigh, Professor Chapman has had seven years of professional experience.

In its July issue The Review had the pleasure of announcing as an addition to the staff Herbert Bristol Dwight, formerly director of design of rotating machinery in the Canadian Westinghouse Company. He is now active in the Department of Electrical Engineering as Professor of Electrical Machinery.

Later news announcing the appointment of Dr. Charles Tertzaghi, until recently acting head of the Department of Civil Engineering in Roberts College, Constantinople, as a Special Lecturer and Research Associate in the Department of Civil Engineering. He is giving a course in earthworks engineering on which he is acknowledged to be a leading authority.

Dr. Tertzaghi is Czech engineer of long experience and a graduate of the University of Gratz. He was at one time Professor of Foundation Engineering in the Turkish Engineering University at Constantinople, a post he relinquished to go to Roberts College. He is the author of a volume on the subject of soil mechanics and has contributed numerous articles to engineering journals.

J. W. Barker, '16, who received his Master of Science Degree in Electrical Engineering last June, was recently appointed an Associate Professor in the Department of Electrical Engineering. He has been an officer in the United States Coast Artillery Corps for nine years and received his commission as a major while in foreign service in the World War. He was sometime Assistant Adjutant-General of the District of Paris and later stationed on the Rhine with the A. F. in G.

H. T. Mann has been appointed a special lecturer in the Department of Mining, Metallurgy and Geology to carry on the work of Professor W. Spencer Hutchinson, '92, who is on leave of absence.

PROFESSOR Th. de Donder of the University of Brussels, and Professor Max Born of University of Gottingen come to the Institute this year to give a series of lectures under the joint auspices of the Commission for the Relief of Belgium Educational Foundation and Technology.

The lectures by Professor Born will begin late this month, continuing for ten weeks. There will be two separate series, one on the subject of "Theory in Atomic Structure" and the other on the "Theory of Crystal Gratings."

Professor Born is one of the foremost theoretical physicists, his outstanding work being the development of quantum mechanics. He is also widely known for his theoretical work on crystal gratings.

"Theory of Relativity" and the "Mathematical Theory of Electricity" will be the subjects of Professor de Donder's lectures, which will come in the second semester. He is well known for his contributions on the Einstein Theory of Relativity, and his treatise on "*La Gravifique Einsteinienne*" represents the first attempt to develop the world's mechanics on the basis of the Einstein theory. Professor de Donder is also the author of a recent treatise on the mathematical theory of electricity, a work considered by several well-known physicists as an outstanding contribution in that field.