

# MACHINE METHODS OF ACCOUNTING

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## DEVELOPMENT OF INTERNATIONAL BUSINESS MACHINES CORPORATION

*For the benefit of those who may be interested in the origin and development of the company which has made this book possible, the following brief history, covering a period of approximately a half-century, is presented.*

**I**NDUSTRY in America, and for that matter throughout the civilized world passed, or indeed to a considerable degree is still passing, through three successive stages of operation, which are fairly well described as:

1. Individual operation
2. Corporation control
3. Merger of corporations.

This history of INTERNATIONAL BUSINESS MACHINES CORPORATION itself follows, in an extremely interesting and significant way, this same general sequence of business development. The company as we know it today has passed through just such successive stages.

The decade 1880-1890 was one of the most important in the whole process of transformation of American business from small individual enterprises into huge and complex organizations. This period marked the peak of the great era of railroad expansion. It was the time of most active growth of the early industrial giants, such as the Standard Oil Company, and of the first practical industrial application of electricity.

In those years between 1885 and 1890, Edison was developing the first successful electric generating and distributing system; Tesla was per-

fecting the alternating current motor; Sullivan and others were designing the first "skyscraper" buildings; and business everywhere was already beginning to feel the inadequacy of existing methods of organization and control when confronted by the vast expansion which these new developments were setting under way. Adequate organization for this new era required, first of all, better ways of weighing, measuring, recording, and organizing the essential facts with which business has to deal. When the need began to be felt acutely, men began to search for the remedy.

The moment a business grows beyond the point where one man can still carry all its essential facts in his head, a need begins for mechanical methods of organizing these facts so that the business can be effectively managed. With each successive increase in the size of that business, the demand for more speed, economy, and precision in dealing with the multiplying array of essential facts becomes more insistent.

It is extremely significant that all three of the pioneering developments of mechanical devices which became the three main foundations of INTERNATIONAL BUSINESS MACHINES CORPORATION took place almost simultaneously; and that this was in the latter half of the decade 1880-1890.

### The Period of Invention

In 1885, Julius E. Pitrat of Gallipolis, Ohio, secured a patent on an entirely new device which he called a computing scale. That invention was the earliest of the cornerstones of INTERNATIONAL BUSINESS MACHINES CORPORATION. From it, in great part, grew the entire business of what for many years was known as the Dayton Scale Division of the company; its influence is still felt in the manufacture of International industrial and computing scales.

While Mr. Pitrat, out in Ohio, was at work on his scale, Dr. Herman Hollerith, a distinguished statistician who had been employed by the U. S. Government in the compilation of the 10th Census, was wrestling in Washington, D. C., with what then seemed an entirely different problem, but what was in reality merely another approach to the same fundamental search for speed, efficiency, and precision in dealing with business facts.

From personal experience Dr. Hollerith was fully aware of the enormous difficulty the Census Bureau was having in reducing the mountains of facts gathered by the census takers into usable form. The facts had been collected, as the law provided, in 1880; but five years later the Bureau was still struggling to compile them. Considering the rate at which the country was growing, it was not hard to foresee a time when, with existing methods, it would be time to take the next census before the last one had been published. So Dr. Hollerith set to work to find a way by which all this recording, tabulating, and analyzing of facts would be done by machinery.

The 10th Census Report was finally completed in 1887, with the 11th Census only three years away. But by that time Dr. Hollerith had worked out the essential features of his mechanical system for recording, compiling, and tabulating census facts—a system which was to prove useful in far wider fields than those of the census, and to introduce unprecedented speed, efficiency, and precision into the organization of large masses of facts.

His system was fundamentally simple. It consisted essentially of a method of recording the facts of any given situation—for example, the census description of one person—by punching holes, according to a definite pattern, in a piece of paper. The original plan used strips of paper; but Dr. Hollerith soon found it was better to use a separate card, of standard size and shape, for each “unit situation.”

A pre-arranged code assigned a definite meaning to each separate position on the card. A hole punched in that position would then actuate electrically-operated mechanisms which dealt with the particular data which that position represented, functioning as counting or adding devices, either singly or in various combinations, as the result sought might require.

Dr. Hollerith's first customer, however, was not the U. S. Census, but the City of Baltimore, whose authorities he persuaded to let him try mechanical tabulation on the city's mortality statistics. Other early users of these machines were the Bureau of Vital Statistics of New Jersey, and the Board of Health of New York City. The results were successful; and the compilation of vital statistics is today, the world over, a recognized function of electric bookkeeping and accounting machines.

While, in these years of beginnings, the foun-

dations were thus being laid, in Washington for the Electric Bookkeeping and Accounting Machine Division and in Ohio for the scale business of IBM, in two other still more widely separated places work was simultaneously going forward which was to result in the development of the third major element in modern methods of business organization and control—the accurate and efficient recording of time.

Willard L. Bundy, a jeweler of Auburn, New York, had observed the cumbersome methods then in vogue, in what were then the most modern and progressive factories in the country, for measuring and recording the time spent on the job by each workman. Each man was given a brass identification check bearing the number assigned him, which he had to present to a time clerk each time he “checked in” or “checked out.” The system was slow; it required a force of clerks to do nothing else but record time; and it was of course productive of endless disputes between workmen and time clerks over the accuracy of entries.

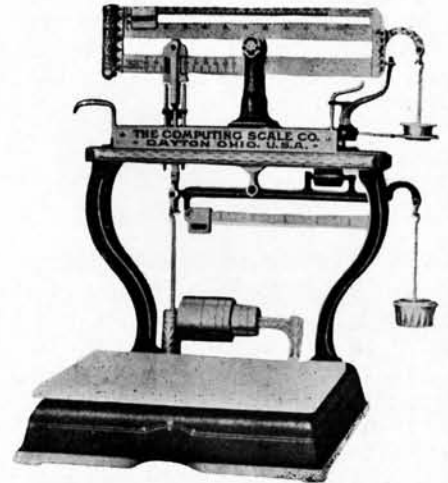
In the year 1888, Mr. Bundy devised a mechanism which at one stroke did away with both the disputes and the tedious manual recording. Instead of the brass check, each workman was given a key bearing his number. To check in or check out, he inserted this key in the mechanism and gave it a quarter-turn. This printed his number, and the time, on a roll of paper. The printing mechanism was of course actuated and controlled by a clock; and the roll of paper became the plant time-record.

At this very time, Dr. Alexander Dey, a Scottish physician who was also a distinguished mathematician, was studying the problem of time-recording. In this same year, 1888, he patented a time-recorder radically different from that of Mr. Bundy. Its principle was at once so sound and so simple that it is still in use, essentially unchanged, in the dial-type recorders of today; the only improvements so far have been merely refinements in detail and extensions of its application.

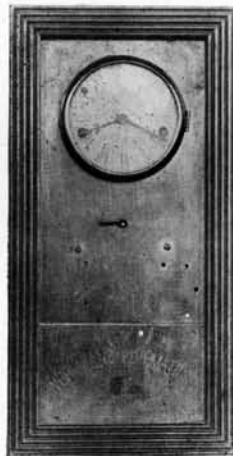
In the Dey Time Recorder neither check nor key was needed. Workmen's numbers appeared around the circumference of a large ring on the front of the machine. In order to record starting or stopping time, a workman had only to swing the pointer to his own number, push the punch in the hole; thereby the time record was printed opposite his number on a prepared sheet inside.



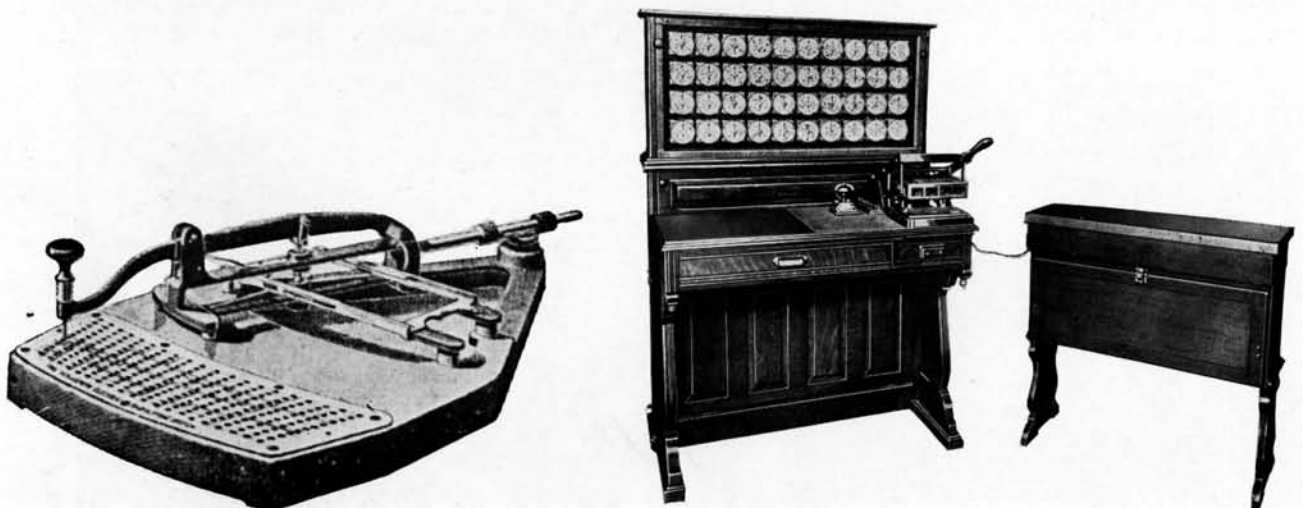
*The Dey Time Register*



*The First Computing Scale*



*Bundy Key Recorder*



*Early Models of Tabulating Machines*

## Pioneer Organizations

The year 1889 was one of important developments in each of the three major tasks of measuring materials, measuring the time and labor, and recording and tabulating the facts of both. It may be said, in fact, that with this year, which saw the first actual commercial development of the inventions perfected in the preceding years, the history of INTERNATIONAL BUSINESS MACHINES CORPORATION really begins.

### Bundy Manufacturing Company

Harlow E. Bundy, brother of Willard Bundy and a lawyer by profession, had become interested in the possibilities of the Bundy time-clock, and had enlisted the support of Senator George E. Green, of Binghamton, and William L. Ford, of Deposit, N. Y. On September 30, 1889, these three men, together with A. Ward Ford, William L. Ford's son, now a Director of IBM, incorporated the Bundy Manufacturing Company—the first to be incorporated of the parent organizations of INTERNATIONAL BUSINESS MACHINES CORPORATION, and the first time-recorder company in the world.

### Computing Scale Company

In this year, Orange O. Ozias, a Dayton, Ohio, business man, heard during a business trip to Detroit of a wonderful new invention—a computing scale—the patents to which had been bought from the inventor Julius E. Pitrat in 1888 by R. E. Hull, a Detroit scale salesman. When he returned home, he told Edward Canby, a Dayton manufacturer, about it. His enthusiasm was so great that he influenced Mr. Canby to go with him to Detroit at once, and after considerable negotiation they persuaded Mr. Hull to sell them the patents—the Pitrat patents. In that same summer, 1889, Mr. Canby and Mr. Ozias started, in a little frame shop in

Dayton, to manufacture the world's first computing scales.

In the year 1891 on March 20th the Computing Scale Company with a capital of \$160,000 was incorporated in Dayton, Ohio—the second of the parent IBM companies to take on corporate form, and the first computing scale company in the world.

### The Tabulating Machine Company

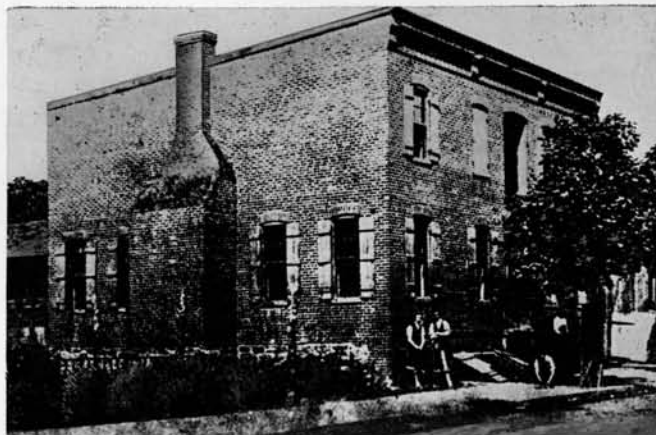
Again, during this same summer of 1889, down in Washington a commission of three experienced statisticians, appointed for that purpose by the Superintendent of the Census, was busy with a series of exhaustive practical tests of all then-known mechanical methods and systems for counting, adding, or tabulating data which might be practicable for use in the 11th Census to be taken the following year.

On November 30, 1889, this commission reported that the census records could be transcribed by the Hollerith method of card punching in not more than three-fourths of the time required by any other system; and that the data could be tabulated by Hollerith machines in not over one-eighth of the time required by any other available method. As a result of this report, the Hollerith system was officially adopted by the United States Government for compiling census returns.

The success of the Hollerith tabulating method in this census attracted widespread attention, not only in the United States but also in foreign countries, the method also being used at about this time in the compilation of the census of Austria-Hungary. In 1896, Dr. Hollerith incorporated his business under the name of the Tabulating Machine Company, with a New York charter. Shortly after its incor-



*The First Computing Scale Company Factory*



*The First Tabulating Machine Company Factory*

poration, the Tabulating Machine Company purchased a tract of land in Washington at the corner of Thirty-first Street and the C. & O. Canal, which still remains the site of the Washington plant of INTERNATIONAL BUSINESS MACHINES CORPORATION. A small brick building on this property had been used by Dr. Hollerith for several years as an experimental laboratory and workshop. The plant soon outgrew this building; another was erected, and still later more land had to be purchased and several other buildings added to the plant.

#### **Dey Time Register Company**

In 1893, the Dey Patents Company was incorporated at Syracuse, New York. (The name was soon after changed to the Dey Time Register Company.)

The advantages of the Dey recorder were so obvious that the new company threw, and within a few years moved into a building of its own. The dial recorder was simpler and easier to operate than the Bundy recorder; and it appealed to employers because of the clean and compact form of its records, and above all the fact that the time sheets, printed in advance, carried columns for the six registrations ("Morning In," "Noon Out," "Noon In," "Night Out," "Extra In" and "Extra Out") and the machine could be set to print each registration in its proper place so that it could at once be identified and posted; whereas there was no way to identify the registrations on the tape of the key recorder except by following the entire record through in order.

#### **Pioneer Sales Agency**

The second significant event of 1893 took place in Dayton, where Samuel M. Hastings, now a Director of IBM, and Walter K. Mills were appointed general sales agents for the Computing Scale Company in Illinois, Iowa, Wisconsin, and Minnesota. From this grew the first general, nation-wide sales organization for the Computing Scale Company.

#### **Willard and Frick Manufacturing Company**

In 1894, another important manufacturer entered the time-recorder field. Daniel M. Cooper of Rochester, N. Y., previously known as an inventor of laundry machinery, in this year patented the world's first card time-recorder; and J. L. Willard, a Rochester laundry operator, formed with F. A. Frick, an undertaker, the Willard and Frick Manufacturing Company to market Mr. Cooper's invention under the trade name "Rochester."

This was a great step forward in the time-recording mechanism. The Rochester recorder used a printed card, divided by heavy horizontal lines into seven equal spaces for the seven days of the week. Each day-space was subdivided by a light horizontal line into an upper space for morning, and a lower space for afternoon registrations; a vertical line divided all the horizontal spaces into an "in" space, on the left, and an "out" space, on the right.

#### **Stimpson Computing Scale Company**

In 1896, the Stimpson Computing Scale Company was organized in Detroit. This company was later to be included in the process of merger and consolidation which constitutes the third stage in the history of INTERNATIONAL BUSINESS MACHINES CORPORATION.

#### **The Moneyweight Scale Company**

On March 1, 1899, the Computing Scale Company organized the Moneyweight Scale Company, under Mr. Hastings' leadership, as its general selling agent for the United States and Canada.

#### **Conventions**

The year 1899, the tenth anniversary of the commercial beginnings of all three of the still-independent companies which were eventually to be merged in INTERNATIONAL BUSINESS MACHINES CORPORATION, was an especially eventful one in the time-recording field. In this year the Bundy Company signalized its tenth anniversary by calling in its entire field force—seven salesmen—to meet the fifty factory workers. Such excellent results followed, that these "get-together" meetings later became an annual custom.

#### **Expansion**

Finally, at about this time came the first steps in export business, eventually destined to grow into today's world-wide extension of IBM manufacturing and sales. The pioneer in this huge and far-flung organization was Mr. A. R. Jennings, who went to England shortly before the turn of the century as sales agent for the Bundy Manufacturing Company. American mechanical devices and methods were then all but unknown in England; yet he soon developed a substantial and steady flow of orders for Bundy time-recorders. Very few American business organizations have a longer, and none a more successful record in international business than IBM.

## Consolidations

As the 19th century drew to a close, the process of merger and consolidation in American business was well under way. The possibilities of combining related companies for increasing the efficiency and improving the control of business, were being explored. In 1900, Mr. George W. Fairchild organized the International Time Recording Company of New Jersey to take over the properties and business of the Bundy Manufacturing Company and its newly acquired subsidiary, the Standard Time Stamp Company, and the Willard and Frick Manufacturing Company.

In these same years, rapid growth was made in the time-recording field. Early in this period the Bundy Manufacturing Company outgrew its original plant—a leased space in an old grist mill on what is now Commercial Avenue, Binghamton—and moved into a four-story building, which it completely occupied, on Water Street, Binghamton, N. Y.

And in 1906, the company having out-grown its Binghamton plant, work was begun on a new factory building at Endicott, N. Y., the first unit of the huge IBM plant still located—and still growing—there today. All operations were transferred to the new plant in August, 1907.

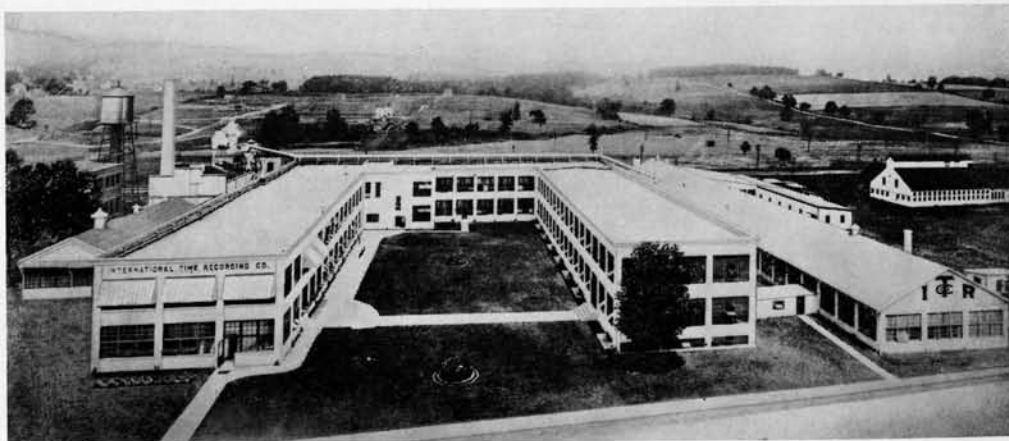
In 1907, occurred the final step in what might be termed the “ground-clearing” consolidations preceding the creation of INTERNATIONAL BUSINESS MACHINES CORPORATION: the purchase by the International Time Re-

ording Company of the Dey Time Register Company, and the transfer of the manufacture of dial recorders to Endicott.



*Bundy Factory, Water Street, Binghamton, N. Y.*

It was, from every point of view, a logical and completely successful step, beneficial to all concerned, and particularly to American business in its need for the most efficient time-control system. For it now became possible to incorporate in both the dial and



*Early view of the factory at Endicott, N. Y.*

the card recorder the best features formerly peculiar to each—to make the dial recorder fully automatic, and supply the card recorder with two-color registration—which the patent situation had previously made impossible.

The continued progress of the Computing Scale Company of America, the International Time Recording Company, and the Tabulating Machine Company, in the years after 1907, attracted the attention and aroused the interest of Mr. Charles R. Flint, who possessed one of the keenest constructive minds of that day in business and finance.

#### The Computing-Tabulating - Recording Company

He became convinced that a merger of these three companies, each of which was producing what was in effect a single essential part in what should be a complete service—the measurement of material, the measurement of working time, and the organization of the facts obtained by this measurement—was not only logical, but would result in a business institution entitled to rank among the foremost in the world. Around 1910, he approached all three companies with proposals for such a merger. After careful study of the plan from every angle, it was accepted; and on June 16, 1911, the Computing-Tabulating-Recording Company was incorporated as a holding company to take over ownership of the three parent concerns.

The task of bringing together three different and formerly distinct business organizations is

always a difficult one, however logical from every point of view the consolidation may be. There is a saying that “it takes three years to digest a merger.” The Board of Directors

of the new company fully realized this. They therefore sought an outstanding executive and leader, not previously identified with any of the component companies, to weld them impartially into a single harmonious unit.

In 1914, they found him in the person of Mr. Thos. J. Watson.

#### Thos. J. Watson called to Leadership

Mr. Watson had long, thorough, and successful experience as a salesman and executive in the field of specialty manufacturing and business service, dealing with problems not unlike those confronting the new company. He brought to it a vision of the possibilities of development of business machines far transcending that of any other person, not merely in his new company but in the entire country. Under his leadership the Computing - Tabulating - Recording Com-

pany became a unified institution animated by a single spirit; a spirit of mutual loyalty, enthusiasm, and above all “divine discontent.” Its rapid and steady progress since then has not only justified the vision of the men who had played their several parts in its creation, but has carried it forward to the point where, as Mr. Watson himself has repeatedly said:

“IBM is not merely an organization of men; it is an institution that will go on forever.”



Thos. J. Watson  
President

*International Business Machines Corporation*

## An Era of Progress

Under Mr. Watson's inspiring leadership, one of the first tasks to be undertaken—a task which continues to grow with each success—was the organization and extension of the business which the three parent companies had already independently developed outside of the United States. The first important step was the creation, November 29, 1917, of International Business Machines Company, Ltd., of Canada, to consolidate the Canadian business of the three original divisions.

In this same year the Computing-Tabulating-Recording Company took over the American Automatic Scale Company, of Chicago, Ill. This firm manufactured automatic heavy-capacity weighing devices. It was re-named the International Scale Company, and became a division of IBM to carry on all business in industrial scales.

An immediate sequel to Mr. Watson's election as President was the energizing and systematizing of engineering, research, and inventive work. From the first he impressed upon the whole organization the vital need of constant improvement and extension of IBM service at every point and in every detail from basic design to final application.

This has meant the continual development of new and better machines; new and better design of existing machines; new and better ways of using all machines; new, wider, and evermore varied fields of use; and constant extension and improvement of the sales organization, to make IBM service more thoroughly available to the constantly increasing number of organizations which need it.

The problems of depression years were solved successfully, not only by the all-round efficiency, energy, and resourcefulness with which Mr. Watson had imbued the organization, but especially by the success of the company's engineering and research staff in developing new and improved mechanisms to meet the wider field of post-war needs.

In 1919, for example, electric synchronization, for the control and regulation of complete time and programming systems, was carried to full success and began to win wide commercial adoption. In 1920, came the lock autograph recorder, and in the same year the first complete school time-control system was manufactured. In 1921, the company acquired the business of the Ticketograph Company, of Chicago, and certain patents and other property of the Peirce Accounting Machine Company,

further rounding out and strengthening the service facilities of the IBM line.

One of the most important, and at the same time thoroughly typical examples of the part played by purely engineering developments in the strength and continued growth of the company is to be found in the story of the development of the printing function of the Electric Accounting Machine. This was in itself one of the most remarkable extensions yet made of the fundamental principles of electric accounting; and it played and is still playing a great part in the constantly increasing use of machine methods throughout the world. It was first placed on the market late in the year 1920.

Prior to the introduction of this machine, the part played by the mechanism in tabulation ended with the appearance of the totals on the counters; they had to be transcribed to the record sheets by hand, which of course brought in human fallibility, manifesting itself sometimes in illegible entries and sometimes in outright errors, besides limiting the speed of the operation to the speed attainable in writing down the correct figures in the correct columns. The new device thus carried forward the principle of speed, economy, and precision only obtainable by purely mechanical operation, through the final stage of the accounting process.

All this growth and extension of the company's activities had rendered the old name of Computing-Tabulating-Recording Company too limited for an organization of such scope; and on February 14, 1924, the name was formally changed to INTERNATIONAL BUSINESS MACHINES CORPORATION.

It must be understood that the change from the Computing-Tabulating-Recording Company of 1911, and even of 1914, to the INTERNATIONAL BUSINESS MACHINES CORPORATION of 1924 far transcended the mere alteration of name. The 1924 company compared with that of 1914 as a ten-year-old oak tree compares with a year-old seedling. In mere physical size—in number of employees, size and capacity of factories, number of branch offices, and territorial scope of business—it had greatly increased and has continued to progress.

The company's business has expanded both geographically and functionally; it has entered one country after another until today it has customers in seventy-nine different countries; and it has increased the variety and the sheer volume of its services in all branches of indus-



try and commerce until there is today scarcely a recognized industry or a basic accounting, record-keeping, or management function within any important industry, in which IBM equipment is not used.

A few of the more significant dates in these processes of development will give something of a picture of them.

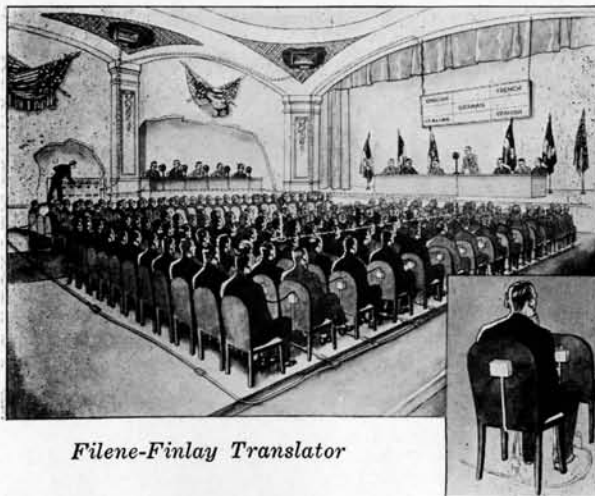
In 1924, in Europe, the plant of the German company was completed and commenced operations. In the same year, our French Company, the Cie. Electro-Comptable de France, was organized to carry on business in that country.

In 1925, operations commenced at the company's plant at Vincennes, France.

In 1929, the Compania Internacional de Maquinas Comerciales, S. A., was organized as the operating company for Mexico.

In 1931, the first permanent installation of the Filene-Finlay Translator was set up in the Hall of the League of Nations at Geneva.

Something has already been said regarding the consistent fostering by President Watson of engineering, research, and development work, which has kept IBM service far in the lead in its field. This policy culminated, in 1932, in the organization of a major division of the company to assume full charge of this work for the entire IBM line, and the comple-



*Filene-Finlay Translator*

tion at Endicott, N. Y., in 1933, of one of the finest and most completely-equipped modern laboratories of its type in the world, in which research and invention are carried on under the most favorable conditions possible.

Not so much has been said of another of the company's activities at least equally important in President Watson's eyes—its constant devel-

opment of an educational program for the benefit of its members. The slogan in this field has been, "If you want a business to grow, grow men"; and it has been consistently followed both in letter and in spirit. No business organization in the country offers a more complete and practical program for aiding its employees in self-betterment. The IBM Schoolhouse at Endicott, which was completed in 1933, is considered to be the finest modern structure of its type, devoted wholly to the education and training of company employees, in the world today.

#### Electric Writing Machine Division

The autumn of 1933 also saw the addition of an entirely new product division to IBM—the Electric Writing Machine Division, whose machines, no less than those of the pioneer divisions, embody the principle of speed, economy, and precision in the service of business.

#### Withdrawal from Retail Scale Business

The field of IBM was still further clarified by an important step taken in the summer of 1934. It had for some time been evident to Mr. Watson that there was a natural cleavage



*Electric Writing Machine*

in the scale business of the Company—between the scales and other equipment used only in retail stores, and the computing and other scales used in manufacturing and other business. His decision was to withdraw from the retail scale field and to concentrate along the natural lines of the Company's development, in service to industry generally. Accordingly, the business of the Dayton Scale Division was sold to the Hobart Manufacturing Company, while at the same time increased attention was given to the development of the business of the International Scale Division.



*Proof Machine*

This single distribution tabulator is in effect twenty-four adding machines synchronized with a similar number of sorting receptacles and controlled from two master keyboards. This machine, originally designed to facilitate and control the clearing of checks in banks, has since found new applications in other commercial and industrial accounting systems. Vouchers, invoices, and other commercial papers are proved and distributed with amazing speed and accuracy on the International Proof Machine.

#### Test Scoring Machine

In the educational field, IBM has made another great contribution in the form of the Test Scoring Machine announced in 1937. This remarkable machine scores a complete examination in less time than it takes to record the mark and is many times more accurate than the most efficient manual scorer. Its introduction has so reduced the cost of giving and scoring examinations and the scores are obtained so quickly, that educators hail this latest contribution as a great stride in the field of teaching and guidance.



*Test Scoring Machine*

#### Manufacturing Progress

While research and educational methods were undergoing steady development, with extension of markets and entries into new fields, manufacturing facilities and methods kept apace. Plants were enlarged and modernized. A new factory was opened in Berlin, Germany, in 1934, and the following year a new factory was established in Milan, Italy. The progressiveness of IBM manufacturing methods is attested by the recognition given by *Forbes Magazine* in its Modernization Award of 1936 to the Endicott plant, and by *American Machinist* in June, 1937, when it devoted its annual plant number to IBM. The Endicott plant is also a consistent winner of various safety awards.

#### Proof Machine

In 1935, a new field was opened by the introduction of the International Proof Machine.

#### The Company Today

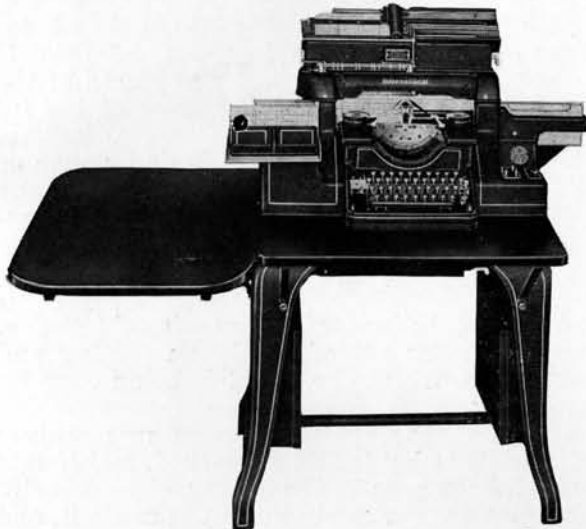
INTERNATIONAL BUSINESS MACHINES CORPORATION is an enterprise on which the sun literally never sets. Its products and its service reach to the world's farthest outposts of commerce and industry. Wherever men create and build, International machines are known, used, and trusted. They help to solve the

problems and lighten the tasks of business in every civilized country of the world—and in some in which civilization itself is still scarcely more than struggling for a foothold.

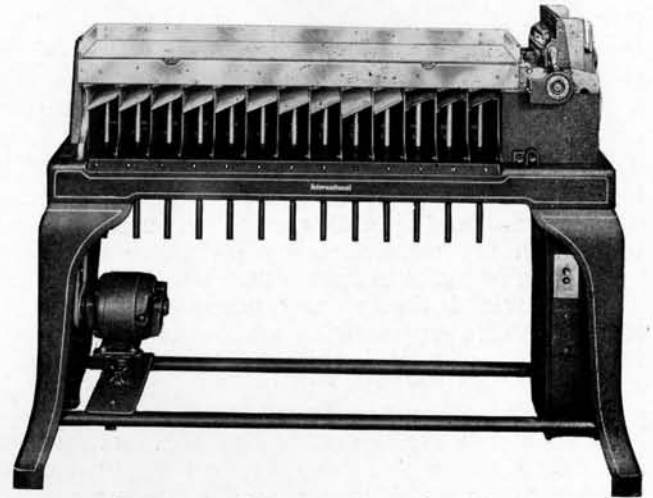
To serve this world-wide institution, the company owns and operates, directly or through its subsidiaries, factories in ten cities in six coun-

tries; four in the United States—its principal plant at Endicott, New York; a card-printing plant at Washington, D. C.; the Electric Writing Machine factory at Rochester, New York; and one plant at Dayton, Ohio; a factory at

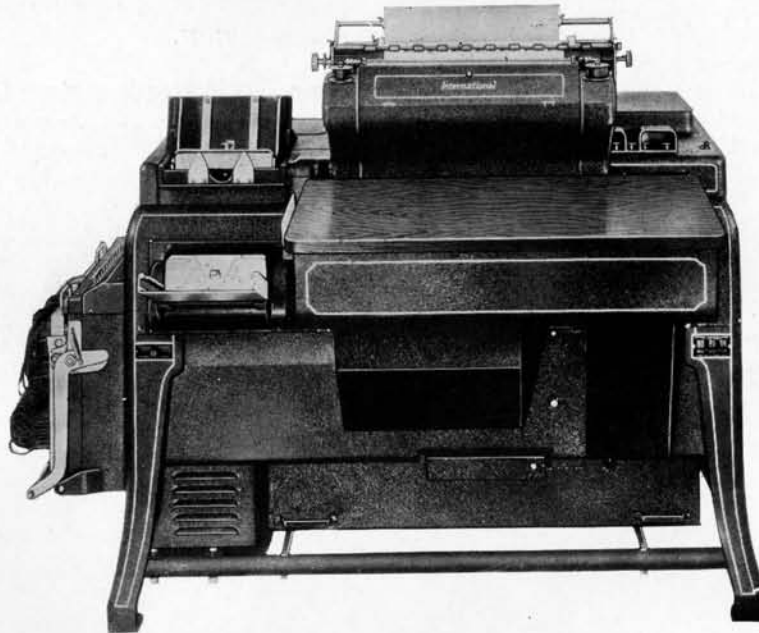
Its ramifications in virtually every field of industry and commerce could only be adequately described in several volumes—and its applications are being extended so rapidly and steadily that by the time an account of them could



*Alphabetical Duplicating Printing Punch*



*Electric Card-Operated Sorting Machine*



*Alphabetical Accounting Machine*

Toronto, Canada; one at Hammersmith, near London, England; the plant at Berlin, Germany; at Sindelfingen, Germany; at Vincennes, near Paris, France; and at Milan, Italy.

The world-wide scope of IBM service geographically is matched by its functional scope.

be printed, those volumes would already be out of date.

The company's market, and its task, is growing in three ways:

(a) The formation of new business, and the growth and merging of existing businesses,

all over the world are constantly creating entirely new situations calling for IBM services—actually bringing into existence needs for one or another form of IBM service (often for several at once).

(b) New fields of application are constantly developing new uses for present machines, new and better ways of applying them to some specific task, which immediately open wholly new fields of opportunity we either did not know existed, or thought out of our reach.

(c) Needs for the speedy, economical, and accurate organization of business facts along different lines from any with which we have had previous experience are constantly being discovered—needs highly specialized in character which are nevertheless common to whole industries of great proportions. But it is usually discovered that a new machine, or new attachment to or modification of an existing machine, can be devised to meet it. This, in turn, opens still another wholly new market—one that did not, in the literal sense, even exist before. It practically always happens, too, that this new machine or device immediately proves to have much wider uses than the specific one for which it was designed; so it in turn opens still other fields, sometimes actually greater than that which first inspired it.

Year after year, a constant improvement in Electric Accounting Machines and methods has taken place. The most outstanding of recent developments include the Automatic Reproducing Punches, Summary Card Punches, Multiplying Punches, the Direct Subtraction and Accounting Machines, and Alphabetical Equipment.

This last-mentioned type of machines is capable of transcribing descriptive data in alphabetical form, in addition to the customary numerical total printing or detail listing. Repre-

sentative units used in conjunction with alphabetical record-keeping are illustrated to show the contrast of modern machines with the original models which were heralded less than fifty years ago as great contributions to the advancement of accounting and statistical development.

A further step in the extension of the advantages of the use of the International Electric Accounting Machine Method was placed at the disposal of business by the creation of the International Business Machines Service Bureau. This division offers, on a fee basis by time or volume at the IBM branch offices, the use of any units of equipment in the wide line of International Electric Accounting Machines.

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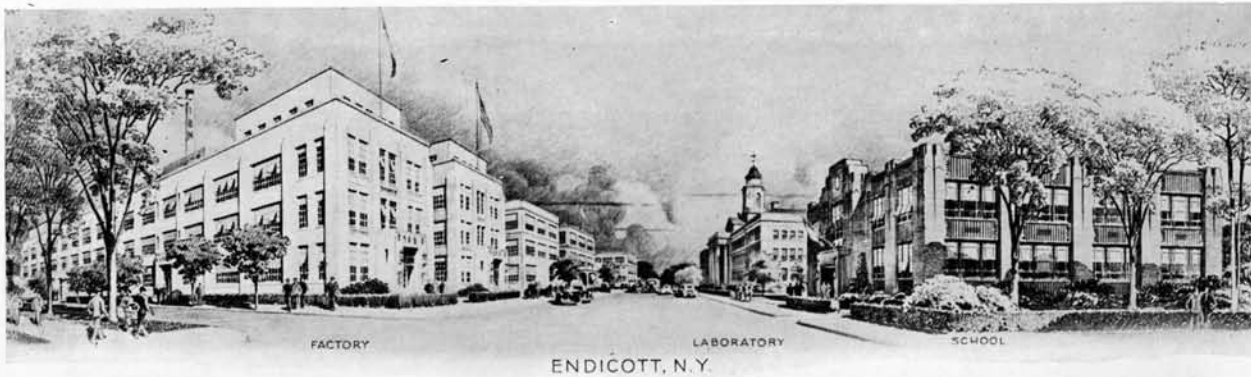
According to the best information obtainable, today not over 5% of all the accounting and recording work of the world is being done by machinery.

If 95% of the market for accounting machines as it exists today is still untouched, and if this market, huge as it is, is growing, often actually faster than our utmost efforts to pursue it, and *at an increasing rate*—every conservative estimate reveals the potent possibilities of future growth of INTERNATIONAL BUSINESS MACHINES CORPORATION.

#### **New World Headquarters Crowns Progress**

IBM's great era of progress from 1914 to 1938 was fittingly symbolized in the opening of its new World Headquarters Building at 590 Madison Avenue, New York, N. Y., on January 18, 1938, when President Watson, Dr. Nicholas Murray Butler, President of Columbia University, Mrs. August Belmont, and Dr. William Mather Lewis, President of Lafayette College, spoke at ceremonies dedicating the building to "World Peace Through World Trade."





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LABORATORY

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MILAN, ITALY



SINDELFINGEN, GERMANY

*In view of its past history, present active development and manufacture of new machines, and the extension of its service, IBM is approaching the coming years with every confidence in its ability to continue making effective contributions for meeting the increasing demands of progress.*

