

**History of
Early Watchmaking in America**

By E. A. Marsh

**Master Mechanic American Waltham Watch Company
of Waltham, Mass.**

Approved by
R. E. Robbins

Appended to by
D.F. Appleton

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“History of Early Watchmaking in America” by E. A. Marsh (pages 2 - 14). Internal evidence dates this document to 1889-90. This was printed in Chapter L of “History of Middlesex County, Massachusetts” by D.H. Hurd.

Note by D.F. Appleton (page 15).

Prefatory note (by D.F. Appleton, dated 1900) and letter by E. Tracy dated 1886 (pages 15 - 18). A slightly different version of the letter has been printed in the NAWCC Bulletin, April 1949, whole number 28.

Hand written note by C. Moore (?) dated 1938 (page 19).

The text has been changed to the extent that a small number of typing and spelling errors have been corrected. However there is one word in italics indicating a doubtful interpretation, and the author and date of the last, hand-written note is dubious.

Richard Watkins, 2006

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The projector of this enterprise of systematic watchmaking, was Aaron L. Dennison. He was a typical Yankee youth, born in Freeport, Maine, 1812. As he early evinced a taste for mechanical pursuits, he was apprenticed to a watchmaker. After serving in that capacity for about three years, in Brunswick, Maine, he went to Boston where he obtained a situation with Messrs. Currier & Trott, where he endeavored to perfect himself as a journeyman.

The varieties of style in the construction of Swiss and English watches, and the diversified jobs which come into the hands of the watch repairer, would tend to stimulate ingenuity and develop thought in one who was interested in his work. Mr. Dennison certainly seems to have been possessed of progressive tendencies, so that it very naturally occurred to him that there might possibly be some improvements in the methods of watchmaking, especially in the direction of a greater uniformity in sizes of corresponding parts in watches of the same make. Visiting the United States Armory, at Springfield Mass., he became greatly interested in the machinery used in the manufacture of muskets on the "interchangeable" plan, and very naturally the idea of applying the same system to the manufacture of watches presented itself to him; and the more he contemplated it the more firmly was he convinced that the general system or method which was evidently such a success in the making of firearms, might, and without doubt would in time be employed in the performance of the required operations on the smaller and more delicate parts of pocket timepieces. Having become possessed with this general idea, Mr. Dennison devoted many hours of his spare time to the study of the numerous details involved in the adaptation of such a scheme. His continued contemplation of the subject only served to convince him that the mechanical difficulties could be surmounted and that therefore the scheme of machine made watches was practicable, and, in time, was sure to be adopted.

With the earnest and very natural desire to see in tangible form some result of his long continued study, Mr. Dennison endeavored to impart to capitalists some of the enthusiasm which his long contemplation of the scheme had aroused in himself. It is quite probable however, that capital at that time was even more conservative than it is now; so that it is not surprising that several years should elapse before any one was found bold enough to risk his money in an enterprise the success of which was problematical.

But in 1849 Mr. Dennison had an interview with Mr. Edward Howard, who seems to have been filled with an enthusiasm equal to his own, but with quite a different scheme for its object. At that time Mr. Howard was, in company with Mr. D. P. Davis, engaged in the manufacture of clocks and scales, and also standard weights and measures, for which they had a contract from the State of Massachusetts. They had also done something in the way of making fire-engines; and at that time Mr. Howard was greatly interested in a scheme for building steam engines on an extensive scale.

Mr. Dennison succeeded not only in dissuading Mr. Howard from any attempt to engage in the locomotive business, but made him a convert to his own project for watchmaking. Having obtained an ally, who soon became quite as enthusiastic as himself, Mr. Dennison's own courage and confidence increased, and the two men began their search for a capitalist who would be able by the aid of their prophetic vision to discern a profitable return for an investment in their novel undertaking. This individual they found in the person of Mr. Samuel Curtis, of Boston, who consented to invest the sum of twenty thousand dollars in the enterprise. The undertaking having been definitely decided upon, the next thing to be determined was as to the nature of the first practical action.

Without doubt Mr. Dennison had long before planned in his own mind very many details, and was prepared to submit a definite course of procedure. His suggestion was that a personal visit of inspection and investigation be made to the watchmaking districts of England, and at the same time make arrangements for the purchase of needful supplies which could not be readily procured in American markets, such as enamels, jewels, etc.

This recommendation of Mr. Dennison's was adopted; and accordingly he soon went to England, where he spent several months in gathering information as to the system and methods in use by the English watchmakers; his observation only serving to confirm him in his belief that Americans could readily compete with them, especially in view of the fact of the extreme conservatism of the English, which prevented their ready adoption of new methods.

In a letter written by Mr. Dennison, while in Europe, he says, "I found that the party setting up as manufacturer of watches bought his Lancashire movements - a conglomeration of rough materials - and gave them out to A, B, C, and D, to have them finished; and that A, B, C and D, gave out the

different jobs of pivoting certain wheels of the train to E, certain other parts to F, and the fusee-cutting to G - dial-making, jewellery, gilding, motioning etc., to others, down almost the entire length of the alphabet. Finding things in this condition, as a matter of course, my theory of Americans not finding any difficulty in competing with the English, especially if the interchangeable system and manufacturing in large quantities was adopted, may be accepted as reasonable."

During the absence of Mr. Dennison, the other parties in the enterprise were not idle, so that after his return, work was commenced on a model watch, and some machinery and tools. Work was commenced on a factory building in October, 1850, and it was completed in the following January. It was located in Hamden Street, in Roxbury - now a part of the City of Boston - and designated as the highland district. At that time the business was conducted under the name of The American Horologe Company, and the capital invested consisted principally of the twenty thousand dollars furnished by Mr. Curtis, together with the practical manufacturing experience of Messrs. Howard & Davis, and the enthusiasm and confidence of Mr. Dennison. Of this combination, the dollars gradually but surely and forever disappeared; the manufacturing experience was considerably enlarged, and the enthusiasm probably remained unchanged.

Of course, in commencing the business of watchmaking, one of the primary matters to be decided was the form of a watch to be adopted, which involved the construction of a model from which to work in the building of the machines and tools required. A small room was partitioned off in the Howard & Davis Clock factory, and two men were detailed to begin this work. They were the brothers Oliver and David Marsh. They were soon joined by Mr. Charles S. Moseley, whose name is familiar in many of the watch factories of the country, and to whom is due the credit of designing many machines now in use in all American watch factories. Among others who were engaged on the original watches and machines, it is proper to mention here Mr. James Baker, who afterwards became a foreman of one of the departments of the Waltham Factory, which he left in 1874, to engage in mercantile business, returning, however, after a few years' absence, and is still industriously at work.

Mr. Nelson P. Stratton also became employed in the new enterprise, and very naturally, for he was a watchmaker by trade, having been engaged with the brothers James and Henry Pitkin, who, in 1838, attempted to establish a watch factory at Hartford Conn., and did, indeed, make about eight hundred movements, but, as their cost was greater than imported watches, the enterprise was abandoned.

Believing that Mr. Stratton's experience in the Pitkin's factory would be of great value, Mr. Dennison persuaded him to give up his position with Messrs. McKay, Spear & Brown, Jewelers, on Washington Street, Boston, and cast in his lot with the promoters of the new industry.

In taking this action, no mistake was made, for Mr. Stratton soon became prominent in the management of the business, but of him more will be said hereafter. Of the other workmen who were employed at an early date mention should be made of Mr. James T. Shepard, a brother-in-law of Mr. Stratton, who left the Springfield Armory to contribute his labor and skill to the new undertaking. He early became the head of one of the departments of the work, and still continues in the same position in the Waltham factory.

Among others who, early entering the service of the company, naturally came to occupy responsible positions, were Mr. John J. Lynch, who was foreman of the jewellery department, until his death in September, 1885, and Mr. Albert T. Bacon, who was for many years the general superintendent of the Waltham factory. Mr. David Marsh was adjuster of high-grade watches until he left the factory to enter mercantile business.

In the summer of the next year (1851) a model watch was completed. In size, it corresponded with the eighteen-size movement as made at the present time by all American factories, but it is said to have been radically different, however, in that it was designed to run eight days with one winding, instead of about thirty-six hours, as does the ordinary watch. But it was soon found that such a watch was impracticable, and it was abandoned for the one day watch.

Before any watches had been completed, the name of the company was changed to the Warren Manufacturing Co., and the first hundred movements produced bore this name. These were completed and placed in the market in 1853. The next few hundred were named Samuel Curtis. It was soon realized that the Company name was not suggestive enough of its business, and it was changed to Boston Watch Company.

The two or three years' experience at the Roxbury factory seemed to have convinced the managers that the location was in many respects an unfavorable one, inasmuch as it was extremely dusty in the summer months, and it was also felt that, in planning for the future growth of the business, no slight

regard should be had for the employees, and provisions should be made for their happiness and comfort in the direction of homes.

Influenced by this feeling, Mr. Dennison began to search for a new and more desirable location. In his explorations among the suburban towns within a reasonable distance from Boston, he found a most charming spot which seemed to possess all the required qualifications. This location was at Stony Brook, at the extreme eastern boundary of the town of Weston, and about eleven miles from Boston, on the line of the Fitchburg Railroad. But the owner of the desired land, Mr. N. L. Sibley, not having the enthusiastic faith in the future magnitude of the watchmaking industry which possessed Mr. Dennison, could not be made to realize the very great pecuniary advantage which would accrue to him from the establishment of such a factory.

Failing to agree with Mr. Sibley on terms of purchase, that location was given up, and search made for some available site, which was found in the "Bemis Farm", situated on the south side of the Charles River about three-quarters of a mile from the center of the village of Waltham, and only ten miles from the city of Boston.

Having found a satisfactory location for the factory, the next thing was to make it evident to the employees that country life was a thing to be greatly desired. Accordingly, Mr. Dennison used to plan excursions into the country, the objective point, of course, being a certain pasture on the south bank of the Charles River. And then he would endeavor to awaken in his companions a little of the enthusiasm which always seems to have possessed him by pointing out to them some of the very charming locations on which to build houses. It is related that on one of these outing days, Mr. Dennison mounted a stone wall, and waiving his long arms toward the adjoining field, he exclaimed to his companions, "Somewhere about there, gentlemen, there is going to be a watch factory." The factory was subsequently built on the spot then designated; and moreover some of the men actually located their houses on the very lots chosen for them.

The Waltham Improvement Company was incorporated in March, 1854, with a capital of one hundred thousand dollars. They purchased most of the land in the vicinity of the watch factory site, amounting to several hundred acres, and laid it out in building lots, with main thoroughfares and intersecting streets. Of the capital stock of the land corporation, the Boston Watch Company held thirty shares, at one hundred dollars each.

Work was commenced on the new factory buildings and prosecuted so vigorously that by October, 1854, they were ready for the reception of the machinery and tools. An engine and the needful boilers were put in place, shafting put up, and the machinery moved from the Roxbury factory and put in operation.

The factory was built in the form of two parallel wings, running toward the river, with a square building connecting the two in front, in which were located the various offices. The material used in the original construction of these was found on the spot, in the form of the gravel which constitutes the bulk of the soil in that region. This gravel was mixed with lime-mortar, and the compound poured into a mold of plank, which was constructed in the form of a section of the building. After a section of this "concrete" had stood sufficient time to become hardened, another section was built up on it in a similar manner, and so the process was continued until the desired height was attained. This method of construction was so successful that it was proposed to continue it, and one or two smaller buildings were made in the same manner; but when, after partly completing a building designed as a boarding-house, a rainstorm washed it nearly away, confidence in that form of construction seems to have suffered a fatal shock for it was not again attempted. Of these buildings the last one was demolished in 1879.

For some time after entering the new factory about fifty hands were employed, but few, if any, watches were produced. This necessitated a continual draft upon the very limited capital of the Company, relieved by little, if any, income, so that it was but a question of time when financial trouble would be inevitable; and in less than two years matters had become not only serious, but desperate. All the money which could be obtained had been absorbed, the product was small, and, with a natural prejudice against a new watch, the sales were slow; and by the spring of 1857 the end of the second stage was reached, and the company made an assignment. The property was offered for sale by the assignee, and, on a rainy day in May, there was a gathering in the open court room between the buildings, and in a short time the factory, with all its equipments, together with what unfinished product it contained, passed from the ownership of the men who had toiled so hopefully and faithfully for it.

Mr. Royal E. Robbins, of New York City, who had for some years been in the watch importing business, bid in the property for himself and the firm of Tracy & Baker, who were, to quite an amount,

creditors of the unfortunate Watch Company; the price being fifty-six thousand dollars. The new firm was Tracy, Baker & Co.; but as this factory was so far distant from the watch case business of Messrs. Tracy & Baker, which was located in Philadelphia, these men soon disposed of their interest to Mr. Robbins, who associated with him Mr. James Appleton and Mr. E. Tracy, and conducted the business, from September 1, 1857, under the firm name of Appleton, Tracy & Company.

Almost immediately the great commercial and financial crisis of that year occurred, and for about a year it was necessary to carry on the works without returns of sales. With the aid of the New York firm of Robbins & Appleton, and of some friendly bankers in Boston, means were found to keep the factory running until, in the autumn of 1858, better times appeared and a market for the product was gradually made. But it was a severe struggle, and a great trial to the faith and patience of Mr. Robbins. His capital being all involved, and his ability to carry through to success such a novel and risky enterprise being a good deal questioned, he was reduced to straights for money, which, in view of the subsequent history of the concern, presents a great contrast of conditions. Many a time Mr. Robbins deposited with his own hands in Boston banks large boxes of watches as collateral security for his notes discounted at eighteen per cent by capitalists to whom he had been introduced. The cooperation of the workmen was also secured, and many concessions on their part of both time and wages, were considerably contributed to the maintenance of operations throughout this disastrous period. It was difficult enough, as many business men will remember, for the best and longest established concerns to borrow in that year, and it may well be believed that the effort to revive a bankrupted watchmaking business found very little favor with the few who had money to lend, and who were at that time particularly conservative in this respect.

However, in 1858, the clouds began to break. The factory had, by hard experience, learned how to make watches by machinery, and to make them well, at a comparatively low cost. The future began to look very promising, but more capital was needed. In these circumstances Mr. Robbins proposed to the Waltham Improvement Company that inasmuch as the prosperity of that Company was in a great measure dependent upon the success of the watch firm, their mutual interests would be best promoted by a union of properties in one company, whose capital should be made large enough for their objects. This proposal was so evidently wise that it met with acceptance, and The Waltham Improvement Company, at a shareholders' meeting held August 26th, 1858, voted to buy the watch factory property, real and personal, excepting the stock of finished goods then owned by Royal E. Robbins, to the sum of one hundred thousand dollars and a bonus of twenty thousand dollars; and therefore voted to increase the capital stock of the company to two hundred thousand dollars. Mr. Robbins promptly subscribed the additional capital. Dr. Horatio Adams was president of the company, Mr. W. H. Keith was clerk, and Mr. Robbins was elected treasurer and general business manager, which position he has continuously held during the thirty-two succeeding years.

With this consolidation the firm name of Appleton, Tracy & Company disappeared, and the business was owned and conducted by the Waltham Improvement Company; but on February 8th, 1859, the name was, by Act of the Legislature, changed to the American Watch Company, and under that name its products achieved a world-wide reputation. On March 31, 1859, the officers of the Improvement Company were formally chosen to similar positions in the American Watch Company. Dr. Horatio Adams continued to hold the office of president until February 16, 1861, when he resigned on account of ill health, and was succeeded, on March 28th, by Mr. W. H. Keith.

Mr. Dennison continued to hold the position of superintendent until 1861, at which time he severed his connection with the company. Mr. Stratton also acted for a time as assistant superintendent.

Until 1860 nothing was realized from the business in the shape of dividends, but in that year a five percent dividend was declared - the first profitable return from watchmaking in America. The productive capacity of the factory was gradually increased by the duplication of existing machines and also by the designing and construction of new ones. Mention has already been made of Mr. Moseley as having been somewhat prominent in this line. Another mechanic of especial inventive ability was obtained in the person of Mr. Charles Vanderwoerd, of whom more will be said hereafter.

In further search for competent mechanics, Mr. Dennison seems to have had the United States Armory still in mind, and Mr. Ambrose Webster was brought on from Springfield and installed in the machine shop. Mr. Webster was able to contribute to the factory quite an essential element. He possessed either by nature or by virtue of the training and discipline of an apprenticeship in the United States Armory (then under military superintendence) an appreciation of the value of thorough system and his help in this direction was of very great service, especially at that time, when it seemed evident that the business was destined to live, and when it was important to so plan the methods of

manufacturing that the product should be reliable, both as to quantity and quality. Mr. Webster continued at the head of the machinery department until 1872, when he took the position of assistant superintendent; but during the six or more years immediately preceding that time his sphere of duties had so enlarged as to require an assistant, who had direct charge of the machine shop. The first person who acted in that capacity was Mr. Geo. Hunter, who later went to Elgin, Ill., and aided in starting the watch factory there. In that factory he took at first the position of machine shop foreman, but is now, and for the past fifteen years has been, the general superintendent.

On May 19th, 1860, the capital of American Watch Company was increased to three hundred thousand dollars. Hardly had the newly reorganized company a glimpse of daylight ahead, after the gloom of the failure and struggle, than the civil war broke out and all business came to a standstill. With little or no hope of being able to find a market for their product, unless that product should be so small as to be made at an actual loss, it was decided to reduce the expenses to the lowest point, but at the same time to keep the factory in operation so as to hold the leading operatives. To this end the machine shop was provided with work at building a few lathes, for which market was found; the hours of work were reduced, and most of the workmen who did not enlist in the army were discharged. A few hands were kept at work making machinery and in the production of movements and cases.

But the very events from which so much was feared were directly the means of great prosperity to this young industry, for almost immediately a demand for watches sprang up, which lasted throughout the war. This sudden and unlooked for demand for watches was, fortunately, not an exacting one, save for numbers. Had the demand been for watches of such a degree of excellence as is now required, for accuracy and finish, it could not have been met; for the simple reason that few trained and experienced workmen were then available. But, using such facilities as were obtainable in the way of workmen, machines and tools, vigorous efforts were put forth to supply the welcome demand.

In common with everything else at that period, the prices of all watches were high - perhaps relatively higher than at any other time in the history of the company. So that it is not a matter of surprise that the profits of the business at that time were very large indeed. A result of that season of prosperity, a large surplus was accumulated, and in 1865 the capital was increased to seven hundred and fifty thousand dollars, the stock being distributed among the stockholders in the form of a special dividend.

In 1862 the company bought out the plant and property of the Nashua Watch Company; and, as they were at once incorporated with the Waltham works, it may be interesting to give a brief sketch of the history of that establishment.

About 1857 or 1858, Mr. B. D. Bingham of Nashua, N.H., who had been a maker of clocks and regulators, entered the employ of the Waltham Company that he might learn the various processes by which watches were being made by machinery. At that time Mr. Stratton was assistant superintendent of the factory. He had invented an improved mainspring barrel and obtained a patent on it, and also a hairspring stud, both of which had been adopted by the Company. Both Mr. Stratton and Mr. Bingham were quite ambitious, and, in the belief that the problem of successful watchmaking had been practically solved, they began to lay plans for the establishment of a similar enterprise.

In the confidence that capitalists could be induced to invest in the undertaking, these two men visited Nashua, N. H., in 1859, and did succeed in the formulation of a company with a capital of one hundred thousand dollars. Returning to Waltham they enlisted the services of several of the best men employed by the old company, among whom were Mr. Moseley, Mr. Vanderwoerd and many others.

A building was secured in Nashua, and fitted up so as to adapt it to the requirements of the work to be done. Mr. Stratton's desire was to make a watch of a higher grade than the Waltham Company had at that time undertaken; and with that purpose, work was at once commenced on the required machinery and tools. Mr. Moseley served as the master-mechanic, and, in connection with Mr. Vanderwoerd, constructed a number of excellent machines.

But here the old story was quickly repeated, for in 1862 the money had all vanished; and, although about a thousand watches had been well advanced toward completion, the stockholders declined to put in any more money, and matters, of necessity, came to a standstill.

There being no hope for further money, the only thing remaining was to save as much as possible from the wreck - for such the enterprise begun with so much confidence had then become. It is not a matter of surprise that, with the knowledge of two failures in this industry, it was a difficult matter to find parties ready to invest in the purchase of this property; but Mr. Stratton finally succeeded in effecting a sale to the American Watch Company, the price paid being about one-half the original cost of the plant.

The Waltham Watch factory paid fifty-three thousand dollars for the entire property, which, in addition to the machinery, included the watches then approaching completion, which were made in what are known as sixteen and twenty sizes.

The Nashua factory was kept in operation while the addition of buildings needful for accommodating its machinery was being made to the Waltham factory, Mr. Charles W. Fogg being sent from Waltham to superintend the work, until the fall of 1862, when the property was removed to Waltham.

For several years these tools were kept by themselves, a new department being created and put under the general charge of Mr. Fogg, with Mr. Vanderwoerd in charge of the mechanical part of the work.

Mr. Fogg retained his position until about 1877, when he retired from active life. The "Nashua Department" was maintained until July, 1878, when portion of the work was consolidated with similar work of the original factory; and in 1884 the other parts of the work were distributed among the several departments where they appropriately belonged.

The Nashua watches were of the form of construction designated as "Three-quarter plate" and, by virtue of their form, and also the excellence of their workmanship as made at Waltham, took the highest rank among American watches, but were not for many years a source of profit to the Company.

Having very briefly reviewed the history of the Nashua Watch factory, and seen how in that instance, as in the case the original venture of Mr. Dennison, the fondest and most confident anticipations of success were doomed to disappointment, it may be appropriate to make mention of the peculiar fascination which has seemed to be connected with the enterprise of watchmaking in America.

When, on the sale of the property of the bankrupt Boston Watch Company to Mr. Robbins, in 1857, Mr. Howard retired, he took with him a confident assurance that watchmaking could be made profitable, and, attempting to demonstrate the fact, he again embarked in the business at the original place in Roxbury, where the business has since that time been conducted.

Not disheartened or intimidated by the failure of the Nashua enterprise, several of the prominent men of the Waltham factory (including some who were engaged in the Nashua scheme), believing that the rapidly growing part of the country in the West would prove favorable for the establishment of a factory patterned after the one at Waltham, visited Chicago, and so succeeded in interesting capitalists that the building of the Elgin, Ill., factory resulted.

It may here be safely asserted that there is no more typical instance on record of the irrepressibility of American enterprise and pluck than that furnished by the history of watch manufacturing during this trying period.

The fact that the principal owners of the Elgin factory were men of wealth, and thus able to replenish their frequently exhausted treasury, alone prevented the repetition there of the unfortunate experiences of the earlier Waltham and Nashua factories. But notwithstanding the fact that ten years passed before the Elgin Company began to realize anything in the way of dividends, and with the struggles and disasters of the New England companies well known, there has ever seemed to be a fascination in the idea of organizing watch factories, which has caused to be brought into existence a multitude of such establishments, to the financial truth of many a too-confident investor and the heavy losses of very many more.

From this digression we now return to the consideration of the fortune of the American Watch Company.

As has already been said, the original factory buildings were constructed of concrete, but when future enlargements took place another form of construction was adopted. Following the building of the additions made needful by the absorption of the Nashua concern, several new wings were added, the years 1864 and 1865 being particularly busy ones in this direction.

A short two-story wing had already been built in front, the lower story being devoted to the uses of the gilding department and the upper one to the work of fitting the "trains." Further additions were made by constructing other wings parallel with the street, the original two-story, flat-roof corridor building giving place to one of brick with an additional story, which was used as a finishing room. A second corridor building was built, also of brick. This was located about a hundred feet south of the first, and the two connected by a two-story workshop; another similar wing extended about eighty feet to the south of this second corridor, and in it was established a portion of the Nashua machinery. In addition to these the machine shop wing was extended toward the river, and two wings, parallel with the front but between it and the river, were built. Besides these, a second engine-house and

boiler-house were built and equipped. With the exception of the two corridor buildings, and the engine and boiler houses, all of these buildings were constructed of wooden frames filled in solid with brick.

This period of extensive building seems to mark an epoch in the history of the enterprise, which may, perhaps, be designated as the fourth stage. While the business was located in Roxbury, it may be said to have been in the ideal stage. After the removal to Waltham, up to the year 1857, came the period of experiment and failure. Following that, and lasting until 1861, came a period of suspense; succeeded by the four years which we have just considered, and which may properly be regarded as a period of achievement and firm establishment.

The fifth stage, commencing about 1866, and reaching to the present has been one of continued enlargement, of which more will be said hereafter. Still further additions are definitely planned, and will doubtless be completed in due time.

In conjunction with the renewal and enlargement of the factory buildings, the company was engaged in providing homes for its people.

A large number of dwellings were erected within a convenient distance of the factory. These were planned in a variety of styles and of varying sizes, so as to accommodate the operatives with larger or smaller families.

In many cases money was advanced to employees who desired to build houses for themselves. The streets were also adorned with young shade-trees, which at this time are assuming fine proportions.

The character, and consequent reputation, of the watches made by this company had been steadily gaining, and as a consequence were in demand and found ready sale. But the attempts of foreign makers to retain their market in America, and the competition resulting from the multiplication of watch factories, has had the effect of continually reducing the prices, and so compelling a corresponding reduction in the cost of manufacture, either at the sacrifice of quality, reduction of wages, or in greatly increased production.

Manifestly the first of these plans could not result in eventual failure; but even if it could be otherwise, a concern which had, by the labor of years, gained a high place in the estimation of the watch trade, would realize the value of what had cost them so much, and endeavor by all means to retain their good reputation by adhering to their high standard of quality.

The increased sales of watches also made necessary the corresponding increase of means for their production; and, while the tools which had been in use up to the period of which we are writing (1865) had probably never been equaled, it was by no means certain that great improvement might not be made, both in capability and accuracy. It was natural that in the beginning of the enterprise the idea should obtain that accuracy of operation would be secured by delicacy of construction; and therefore the machinery of those earlier years was made very light and with resulting sensitiveness, which involved a corresponding delicacy of manipulation on the part of the operative, which could only be acquired by a period of education, and with results depending largely upon individual ability.

But the experience of years had demonstrated that delicacy of machinery did not ensure uniformity of result; and from about this time the theory of machine building has been materially modified in the direction of increased strength and solidity. But while obtaining a very marked improvement in strength, and consequent uniformity of operation, no radical departure was made in the principles of the machines, the increase of factory capacity being insured by the multiplication of existing machines. There were occasional exceptions, however, in the direction of semi-automatic machines serving to fore shadow, what might be done when the proper time should come.

But without doubt the policy pursued in this matter was the wisest for that time. Moreover it may be doubted if the peculiar mechanical or inventive talent required for the production of automatic machines had then been developed to any considerable extent, although there was not lacking evidence of no mean ability in machine construction.

The era of automatic machine construction commenced a few years later, and Mr. Vanderwoerd was probably more prominent in his achievements in that direction than any other individual. The most interesting and valuable of his inventions was a machine for making the delicate screws which are most indispensable in the structure of watches. This machine is able to accomplish the work of three men, and is, moreover, so arranged that but little attention is required, so that one man can easily attend to six machines.

When the United States Government called for volunteer soldiers to aid in putting down the Rebellion, and all through the loyal North men were leaving their homes and business, and enrolling themselves in the ranks of the soldiery, the management of the watch factory were active and earnest

in the endeavors to raise the needed recruits. Men who were valuable to the company by reason of their skill and experience were not, on that account, dissuaded from offering their services to their country in its hour of peril and need, but were urged to enlist in the Army, with the promise of employment on their return.

Of the numbers who went to the front, some returned in safety, some were honorably discharged in consequence of wounds, others came home maimed, leaving, perhaps, some of their limbs to mingle with the sunny south; and some gave up their lives on the field of battle.

A stranger would be impressed in observing the employees as they leave the factory, by the number of persons walking with the aid of a cane, others needing crutches, and still others having but one arm; and it might seem that they were engaged in a business especially dangerous. Quite the contrary is the fact, however, for, among the tens of thousands of persons who have been employed during the existence of the company, there has not a single fatality occurred, the most serious accidents resulting in the loss of one or two fingers, in almost or quite every instance the result of individual carelessness.

The unusual number of lame and halt who are here gathered is explained by the fact that many veterans of the war are still employed, and that the nature of the work is such that bodily infirmities, which in many other industries would prove serious obstacles, do not prevent the performance of certain kinds of work which is essential. So, too, there are many individuals who are not in the enjoyment of vigorous health, and who are yet compelled to labor, who here find work which is within their ability.

But notwithstanding the fact that so many persons in delicate health, and a larger number by no means robust, are here employed, it has been a matter of surprise to those who have investigated the subject to find that the death rate is remarkably low.

In 1888 Mr. John Swinton spent some weeks in studying the social life of Waltham, as connected with the watch factory, and, in an article written by him, he says: "one of the facts which has surprised me most in studying the state of things in the watch factory, is the extraordinarily low rate of mortality among the operatives. I find by the carefully kept records of the departments that it is below a half of one per cent, per annum.

"This is, of course, owing partly to the healthfulness of the locality, partly to the absence of child-labor in the factory, and partly to the excellent sanitary conditions in which the buildings are kept at every season of the year. It is nevertheless proof of the wonderful measure of welfare in the lives of the 2,500 workers now under review. It would not be hard to mention factories in which the death rate runs as high as three or four per cent per annum."

But while the above statements are no doubt correct, it is not to be supposed that sickness is unknown. The established policy of the company has always been to make the most careful and generous provision for the comfort and health of its operatives; yet no provisions can insure against the visits of epidemics which occasionally come to various sections of the country (like "la grippe" which occasioned a more general and serious disturbance than anything of like character within the history of the Company.) To secure the advantages of mutual assistance in cases of need, the operatives in the year 1866, established the "Watch Factory Relief Association." Article 2 of its constitution stated that "the object of this association shall be to aid all members whose circumstances are such as to need relief in cases of sickness or injury while in the employ of the American Watch Company, or whose sickness or injury shall have been contracted while in the employ of said Company. None but members shall receive aid, except by concurrent action of the relief committee and the vote of the association. Persons working as learners shall be exempt from dues the first four months of their services with the American Watch Company." Other articles provided for the choice of officers among whom was a "relief committee, consisting of four gentlemen and three ladies, to whom all applications for relief must be made and whose duty it shall be to see that timely assistance is rendered to all in need." The dues prescribed were, from the foreman, sixty-cents per quarter; from all other men fifty cents; and from women, thirty cents. A further provision was that "no superintendent or foreman shall be eligible to any office in the Association."

A feeling of independence and disinclination to accept charity in any form, without doubt deterred many members from applying for aid when in sickness; and quite possibly occasional payments to some who were not in actual need served in time to create a demand for a change in the method of relief. So in 1881 the Association was reorganized on a strictly mutual basis; the assessments of dues was changed from quarterly to monthly intervals, and the amount of dues reduced to twenty-five cents, without distinction as to sex or position. The restriction as to holding office were also abolished. The amount of money allowed to applicants for relief is fixed by the constitution at four dollars per week,

after the first week (for which no appropriation allowed), and in no case is the benefit to cover a period exceeding ten weeks in any one year. It is further provided that in the case of the death of any member, the sum of fifty dollars shall be appropriated for funeral expenses.

The books of the treasurer show that since its organization in 1866 it has paid 103 such claims and that, up to the year 1889, there had been paid out a total of nearly \$45,000 in yearly amounts varying, from \$945 in 1866 to \$5814 in 1889.

Since the reorganization of the association in 1881, the condition of the treasury has allowed the omission of ten regular assessments, and never in its history has a special assessment been required until 1889, that being occasioned by the prevalence of the epidemic la grippe. The sympathy of the management of the Watch Company with the aims and object of this relief association has been manifested by its annual contribution of \$200 to its funds.

The years immediately following the close of the Civil War, while constituting a period of general business activity and apparent prosperity, were not without intervals of anxiety and depression in the watchmaking industry, It has, however, seemed a very remarkable thing that at times when business in general has been languishing, and many industries have been obliged to completely suspend operations, this factory has been almost uniformly kept busy. This is the more strange, because it would be expected that in times of dullness and scarcity of money, watches would naturally be a drug on the market. But with the exception of a few months in the fall and winter of 1873-4, when financial disturbance was so nearly universal, this factory has been kept steadily at work. And it is probable that it may be truthfully said that but few if any towns in our country suffered less during that period of business trouble than did Waltham.

Such a measure of prosperity as was shared by this whole community was, without doubt, due almost entirely to the exertions and the sagacity of the watch factory management and its selling agents, and cannot but be a matter of the greatest satisfaction.

The steady increase in the volume of business made necessary a corresponding increase of capital, and on August 3, 1870, half a million of dollars were added, making a total of \$1,250,000. But within three years even this amount was found insufficient; and on January 14, 1873, the capital was increased to \$1,500,000.

With the desire to secure, if possible, a more complete identification of interest in the business on the part of the employees and, at the same time, giving them an opportunity for a profitable investment of their accumulated savings, Mr. Robbins made a provision that the employees should be allowed to subscribe for a portion of the new issue of stock on terms much more favorable than could be obtained by other parties. This opportunity was embraced by many of the operatives, and while some of them have subsequently disposed of their shares, many others are still securing their semi-annual returns. And if they are desirous of disposing of their stock, they can do so at a large advance.

When the National Centennial Exhibition was determined upon, this Company entered heartily into the work of providing an exhibit which should be a fitting indication of the progress which America had made in this branch of industry. Besides exhibiting a very large number of finished watches, in various grades, in cases of silver and gold, a workshop was fitted up with a number of the most interesting automatic machines which had then been added to the equipment of the factory. These machines were kept in practical operation by a corps of operatives, who were in constant attendance during the entire season of the Philadelphia Exhibition.

This exhibit proved to be one of the most attractive of the whole fair, and was from morning to night surrounded by a dense crowd of eager and interested visitors. In addition to these objects of so much interest to the curious, the company entered a number of watches of various grades to be submitted to the most searching and exacting tests to demonstrate their accuracy as to timekeeping qualities.

It is a matter for congratulation and pardonable pride that, although in competition with the watches of the old and celebrated makers of the Old World, the watches entered by the American Watch Company secured the highest award for accuracy. As an indication of the wonderful accuracy which has been attained in timekeeping mechanism, it may be said that the three watches which gained the highest award showed a mean daily variation of only .23 of one second; and an average difference of but .44 of one second between the first and eleventh week of the official tests.

The result of this competitive test, together with the wonderfully attractive exhibition of watches and the machines employed in the manufacture was, as might naturally be expected, to bring into more favorable and extended notice the Waltham Company, and to create an increased demand for its

goods. It, moreover, forced from the European watchmakers the unwilling acknowledgement that America had taken the lead.

When Mr. Dennison severed his connection with this company in 1861, the position of superintendent was assumed by Mr. Albert T. Bacon, who has been mentioned as having early entered the service of the original company at Roxbury. At about the same time Mr. Stratton was sent to London, to serve the Company as its agent for the purchase of supplies. He remained there until 1878, when he retired from active life.

Mr. Bacon continued in the position of general superintendent until 1875, having as his assistant during the last two years Mr. Ambrose Webster, who was promoted to that position from his former one of master mechanic.

Mr. Woerd's abilities as an inventor of machinery having been recognized by Mr. Robbins, he was, in 1874, assigned to the position and duties of mechanical superintendent of the entire factory; and held that office until the resignation of Mr. Bacon, when he was appointed general superintendent of the factory, with Mr. G. H. Shirley as his assistant. Mr. Webster retired in 1876, shortly after Mr. Bacon resigned.

While Mr. Woerd unquestionably possessed the inventive faculty in a large measure, he was not so well equipped to act as manager, and his administration on the broader scale was not so successful. He retired in 1883.

Shortly after Mr. Robbins became identified with the factory, the commercial and manufacturing interests of the business were separated, and since that time the entire product of the factory has been marketed by the selling agents of the company, Messrs. Robbins & Appleton, who have evinced great business ability in creating and maintaining as well as supplying and increasing demand for the Waltham watches.

This has been accomplished by the employment of a corps of trained salesmen in their established offices in New York, Boston, Chicago and elsewhere; and also by sending out "missionaries", whose duties are to visit the numerous watch dealers, and ascertain their wants, listen to their suggestions or complaints, and rectify their mistakes.

Among those early employed in this capacity was Mr. Ezra C. Fitch, a young man who came from an apprentice's bench in the store of Bigelow & Kennard, Boston. After being in the Boston office of Robbins & Appleton for some time, he was sent out "on the road", visiting various districts, principally in New England. He was subsequently transferred to the New York Office; and while connected with that office he traveled over nearly every section of the United States, becoming acquainted with nearly all the leading watch dealers in the United States. Later he devoted his entire time to the business of the New York office, remaining there for several years, acquiring an experience and developing a business sagacity which naturally raised him to the head of the office, and later to a partnership in the firm of Robbins & Appleton.

During the latter part of Mr. Woerd's administration it had become evident that a change was demanded. It was decided to place Mr. Fitch in charge of the general management of the factory; and in March, 1883, he removed from New York City, and entered upon his new line of work and responsibility.

One great advantage obtained this appointment was the fact that Mr. Fitch was able, by reason of his commercial experience and his extensive acquaintance with the trade, to appreciate their wants, as they could not be felt by those whose entire experience had been in the direction of manufacturing.

About three months after the advent of Mr. Fitch, Mr. Woerd severed his connection with the factory, and the office and duties of general superintendent were assumed by Mr. Fitch. He was also chosen to a place on the board of directors; and in May, 1886, was elected president of the company, which position he now occupies.

At the time this factory was started, and for many years there after, all watches were made in the form now designated as "key-winding", in which the mainspring was wound by means of a key, which was entirely separate from the watch, and which was liable to be mislaid or lost, and to use which required the opening of the watch case, with the liability of the introduction of dust, to the injury of the delicate mechanism. After a time improved means were adopted for winding, in which the separate key was discarded, and the winding performed by means of an arbor extending through the case-pendant, upon the outer end of which was fastened a knob or "crown". By means of a lever concealed within the case, or a "pushpiece" projecting through its side, the mechanism could be disconnected from the winding, and made to engage with other wheels for the purpose of moving the

hands. This form of construction is known as "stem-winding" or "keyless" watch, and has to a great extent superceded the old form of winding.

Desiring to still further improve their watches, both in quality of workmanship and mechanical devices, the company, in 1882, secured the services of Mr. D. H. Church, of Chicago, who was known as a thorough watchmaker, and possessed of unusual skill and ingenuity. One, of the first results of Mr. Church's endeavors was production of a device for still further improving stem-winding watches, so as to do away with the "hand setting lever", which involved the necessity of opening the case during the operation of setting the hands. This new form of constructions was soon adopted and became very popular, being technically known as the "pendant-set".

In giving the history of an enterprise such as we have been considering, it would be of interest to dwell to some extent upon the careers of the individuals who have been prominent in its development; but it has been the endeavor of the writer to subordinate individuals so far as possible, in the simple story of the origin, trials and growth of this world-renowned industry. And it remains in closing to make mention of a few things which are of interest, and may well become matter of permanent record.

In 1885, by an act of the Massachusetts Legislature, this company was authorized to increase its capital to \$4,000,000, and also to change its corporate name by the insertion into it of the word "Waltham", and under that authority it has, since March of that year, existed under the name of the American Waltham Watch Company.

In the same month it was voted by the stockholders to increase the capital from \$1,500,000 to \$2,000,000; in March, 1889, it was voted to still further increase it, so as to make the amount \$3,000,000.

On that occasion Mr. Robbins made his thirtieth annual report as treasurer; and in its close gave a brief review of its thirty years' work. Among other interesting items, he stated that up to February 1st, 1879, 1,112,133 watch movements had been made; and at the close of the year 1888, the number had reached 3,800,496, showing that the production of those last ten years had been more than double that of the preceding twenty years; also that the sales since he became treasurer had reached nearly \$48,000,000.

While it is a matter of congratulation that this vast sum without question indicates a large total return to the stockholders, it is also no less a fact that the employees have shared in the prosperity of the business, which, to say the least, is by no means common.

It has been a matter of no small pride with the management that the scale of wages has been a liberal one. It is a matter of almost universal comment with the visitors to the factory, as they are shown through the various departments or observe the two thousand eight hundred operatives as they pass out at the close of the work, to note their appearance of superior intelligence and refinement.

It would be difficult to find another manufacturing concern, the ranks of whose workman have produced so many persons who have entered professional life, or adopted other forms of business as employers. Among the graduates from this factory there are several editors, lawyers, physicians, dentists and artists. Others have become merchants and manufacturers. Many are holding honorable positions in municipal affairs. One is mayor of the City, another is postmaster, and another is a member of the State Legislature.

The high character and superior intelligence of the people who here find employment, together with the liberal wages paid, will, in great measure account for the absence of labor troubles, which have become so common in many industries. But much is also due to the governing desire on the part of the officers of the company to be just and fair in the consideration of all matters involving differences of opinion and an apparent conflict of interests.

The introduction of improved methods of work and the employment of labor saving machines, will, without doubt, occasion temporary individual hardships, but thoughtful men realize that such things are to be expected, and are, in fact, inevitable; but will also realize that the permanent prosperity of the individual operatives is dependent upon the financial prosperity of their employers.

The decay of the watch industry England, consequent upon their loss of American market, and the fact that a large number of Waltham watches are sold abroad, has compelled the English to acknowledge that in certain respects, at least, the American system possesses a superiority. Several attempts have been made within the last few years to inaugurate the same general plan in some English establishments, but, it is understood, with only a partial degree of success.

Within recent months articles have been published in English horological journals, in which the attempt has been made to rob Mr. Dennison of the credit of having originated the system of interchangeability of parts, made possible by the employment of a series of special machines.

Nevertheless, the fact remains that such a scheme, if ever conceived in England, was never carried out, nor practically demonstrated until Mr. Dennison accomplished it. So that whatever of honor or credit such an accomplishment can claim is certainly due to Mr. Dennison and his co-workers in originating this factory.

A person unacquainted with the almost infinite details involved in the conduct of a complete and extensive watch factory can have little appreciation of the difficulties and perplexities which are continually arising. Nor can he comprehend the extremely wearing nature of the duties involved in the judicious management of such an immense business.

For these reasons it has often been felt that the safe and profitable limit of production could not be very greatly in excess of that already attained. But the invention and use of improved machines continues to make possible an increase of product without greatly complicating details; so that it is to be expected that with in a short time at least two thousand movements per day will be produced.

The completion of watch No. 2,000,000 in January, 1883, was made the occasion of a slight celebration which took the form of a banquet. It was given by the foremen of the various departments of the factory, they having as invited guests Mr. R. E. Robbins, the treasurer; Mr. C.V. Woerd, the superintendent; Mr. G.H. Shirley, assistant superintendent; and representatives from the offices of the selling agents. The most interesting feature of the occasion was the address of Mr. Robbins who, after expressing his pleasure at meeting his captains and lieutenants in that social way, gave a most interesting narrative of some of the early difficulties and struggles of the Watch Company, some of which have been recorded in the foregoing pages. That occasion was so thoroughly enjoyed by all present, that as one result the Watch Factory Foremen's Association was organized, holding regular meetings for the discussion of matters pertaining to the interests of the factory. Similar banquets have been held each succeeding year, the officers of the Company, the selling agents, and the foremen successively being the hosts.

On the completion of watch movement No. 3,000,000, the Company fitted it with a handsome gold case and presented it to the Foremen's Association; and it has been carried by different members, no one being allowed to possess it for a longer period than six months.

As in the natural world there seems to be a peculiar pest, or enemy, to the various forms of vegetation, so there has been, within a few years, developed to a marked degree an influence which has been the cause of a very serious disturbance in the time rate of watches. The endeavor to discover a remedy for this difficulty has taken the time and taxed the ingenuity of the management of this company and some of its prominent assistants for many months, and the problem has been successfully solved by the discovery of certain alloys which possess the properties of elasticity and sufficient expansion under the influence of heat, and also the non-magnetic property. So that watches are now made that can be safely exposed to strong magnetic influences without fear or injury.

Allusion has been made to the great amount of detail involved in the manufacture of watches, as conducted at this factory. The statement of a few facts will make this evident to the ordinary reader.

This Company, at the present time, is manufacturing watch movements in five different sizes, and of each size several different grades are made. While the grades of any one size may and do possess the same general appearance, yet in certain details there are radical differences, and in others there are required modifications in the operations which enter into their construction and finish.

An ordinary watch movement is composed of upwards of one hundred and fifty distinct pieces, and a careful list of the distinct operations required to complete them all show the number to be over 3,700 or an average of twenty-five operations for each piece. Some of them, are of course, quite simple; but others are complicated and involve the employment of special machines, many of which are, from their character, very expensive.

It will doubtless be evident that a business involving so much detail, and demanding such a degree of accuracy in workmanship, can be successfully conducted only by the most careful attention to all the details of it, and that thorough system is indispensable.

To attain these ends, the work of the factory is divided into twenty-two departments, each under the direct care of a foreman, some of whom have one or more assistants. The departments are as follows:

Full plate, Leonard Greene, foreman; three-quarter plate, Lorenzo Noble; pinion cutting and staff turning, C. H. Hill; Escapement, C. C. Byam; flat steel, J. W. Burckes; jewel making, W. R. Willis; Jewelling, R. Speir; engraving Wm. Murray; balance, J. L. Keyser; mainspring, M. H. Stevens; hairspring, E. R. Lyle; screw making, C. H. Mann; dial making, F. W. Weatherbee; dial painting, L. Hull; punch and hand, N. P. Molloy; machine, W. H. Wrenn; gilding, A. P. Williams; finishing, Thomas

Gill; packing, Miss A. Clark; repairing, J. N. Hammond; carpentering, C. W. H. Boulton; janitor and supplies, C. J. Olney.

Aside from the foregoing, who have specific duties, there is a corps of what may be called executive officers, whose duties and cares are more general, but not less exacting and wearing. The nature of their duties as suggested by the several titles, viz.: General Superintendent, E. C. Fitch; assistant superintendent, G. H. Shirley; master-mechanic, E. A. Marsh; master watchmaker, D. H. Church.

The officers of the corporation have been as follows:

- 1858. Horatio Adams, M.D. Waltham Imp^t Co. president; R.E. Robbins, treasurer; W.H. Keith, clerk.
- 1859. Horatio Adams (Am. Watch Co.) president; R.E. Robins, treasurer; W.H. Keith, clerk.
- 1861. W.H. Keith (Am. Watch Co.) president; R.E. Robbins, treasurer; Henry Martyn, clerk.
- 1867. I.W. Mullikin (Am. Watch Co.) president; R.E. Robbins, Treasurer; Henry Martyn, clerk.
- 1871. I.W. Mullikin (Am. Watch Co.) President, R.E. Robbins, treasurer; W.W. Whitcomb, clerk.
- 1874. F.M. Stone (Am. Watch Co.) president; R.E. Robbins, treasurer; W.W. Whitcomb, clerk.
- 1878. Horatio Moore (Am. Watch Co.) president; R.E. Robbins, treasurer; W.W. Whitcomb, clerk.
- 1883. Horatio Moore (Am. Watch Co.) president; R.E. Robbins, treasurer; P.W. Carter, clerk.
- 1885. Horatio Moore (Am. Waltham Watch Co.) president; R.E. Robbins, treasurer; P.W. Carter, clerk.
- 1888. Ezra C. Fitch (Am. Waltham Watch Co.) president; R.E. Robbins, treasurer; P.W. Carter, clerk.

The same officers last mentioned have just been reelected for the present year.

In closing this imperfect and somewhat fragmentary sketch of the origin, trials and triumphs of this pioneer in the watchmaking industry in America, it may be said that while many other enterprises are much more easily conducted, and may yield returns to their stockholders far exceeding this, it may well be doubted if in the whole country, or indeed, in the world, there can be found an enterprise more widely and favorably known or one which has been able to promote such a general diffusion of sound prosperity, as has resulted, directly and indirectly, from the establishment and management of the manufacturing industry now conducted under the name of

“The American Waltham Watch Company.”

Mr. D. F. Appleton states that after A L. Dennison left the employ of Curtis &. Trott he was in business on his own account in Boston for about ten years.

In this interesting and valuable sketch of the history of the American Waltham Watch Company by Mr. E. Tracy, there appears an important omission of an incident which Mr. Tracy did not mention because he had not personally known of it, as Mr. Baker had carried on the negotiations up to that time.

The circumstances to which I refer are as follows:-

(Signed D. F. Appleton

April 30, 1900

Copy of letter from Mr. E. Tracy to Mr. C.N. Thorpe

Bryn Mawr, November 25, 1886.

The manufacture of American watches was commenced about the year 1850 or 1851 at Roxbury, near Boston, by Dennison, Howard & Davis. Mr. A. L. Dennison was a watchmaker in Boston; Messrs Howard & Davis were clockmakers in Roxbury, having served their apprenticeship with Willard, who made the clock of that name years ago. Howard & Davis also made fine scales, also brass and steel articles of a fine class. Mr. Dennison was the author and maker, so to speak, of the American watch. A Mr. Curtis of Boston, who had been successful, as a manufacturer and dealer in looking glasses and picture frames, and was Mr. Howard's father-in-law, furnished them with money until his means were exhausted. It was currently said that from seventy to eighty thousand dollars was thus expended. This source having been exhausted, the firm of Dennison, Howard & Davis obtained aid from sundry watch and jewelry jobbers in New York and elsewhere, and about 1855 or 1856 Messrs Lewis H. Fellows & Shell of Maiden Lane, New York, make arrangements with Dennison, Howard & Davis to furnish money to them and they were to have the agency and sale of all of the watches produced by Dennison, Howard & Davis. My firm of Tracy & Baker at this time sold to most of the large watch and jewelry jobbers, and about 1856 Mr. Dennison applied to us to make gold cases for their movements on four months' credit. They gave us very liberal orders and when their first notes became due we had to assist them by renewals, they paying a small amount on account. This condition continued for about one year, when they owed us eight thousand dollars or more. Upon investigation it was found that Dennison, Howard & Davis were pledging our gold cases (mostly 18K., fine) to a Boston Bank for not more than the value of the gold contained in them. We thereupon concluded to discontinue business with them. At that time we had large orders from them booked and a large quantity of cases in process of manufacture. Mr. Dennison was always sanguine and could make more figures showing results than any other man I ever met. This step on our part, and investigation of the true inwardness of the situation brought Dennison and our firm together, I going to Boston, he coming to Philadelphia. I will mention here that among other things brought out by this investigation was the fact that Dennison, Howard & Davis instead of confining themselves to clock and watch making, engaged in a variety of other manufacturing lines, such as patent *sad* irons, leather splitting machines and sewing machines. It is said they spent \$50,000 on a sewing machine, and how much on the other undertakings, I do not know. It was certainly no wonder the watch was a failure. In the fall of 1856, Dennison, with the knowledge of his firm, began looking around to get someone to put some money into his enterprise of watchmaking, and early in the Fall of 1855, or Spring of 1856, Mr. Charles Rice, a shoemaker of Boston, loaned the money, which Dennison, Howard & Davis secured by chattel mortgage on all the material, tools, machinery, etc in the watch factory. Nearly all of this stock was removed from the factory (now at Waltham) before the sale under the assignment in bankruptcy under the Massachusetts law. This law was much like the United States Bankruptcy Law which opened and rendered null all judgments or preferred claim not more than one year or perhaps six months old. Who the assignee was I do not remember; it may have been Mr. Rice. However, all creditors were pro rated. Before the assignment Dennison & Howard had differences as to how or in what manner they should proceed. Howard wanted Rice to get possession, but this Dennison strenuously opposed and he came to Baker and me to become purchasers. I did not see how we could buy the property, for at least one good reason, which was the lack of the required capital, which Dennison had carefully figured out and placed at about thirty thousand dollars, - certainly not over \$35,000, subject to a \$10,000 mortgage on the grounds and factory building and real estate, due in about one year. Baker worked himself into a fever to go into the enterprise, in consequence of the favorable showing by Dennison: so I submitted,

saying that I would go in provided he could get someone to join us and supply a liberal part of the capital. With this in view I went to see L. H. Fellows & Shell, who I have before said were the sole agents for the movements only, and had been for about one year. They said they would think the matter over, but in view of their past experience and for other reasons not explained, they declined to undertake the enterprise. Dennison, like the man in the scriptures, kept writing and coming to Philadelphia, importuning us and multiplying figures on the greatness of the American watch.

As I was preparing to go home one afternoon, Mr. Baker, of Tracy & Baker, came into our office, No. 15 Maiden Lane, and appearing to be much troubled, I asked him what was the matter. He replied that he had been going up and down through the street trying to find somebody who would buy the Waltham watch works which were to be sold at auction by the Sheriff in a few days. I said to him "Come and spend the night with me at my home on Staten Island; - we have just time to reach the last boat,- and we will talk the matter over." I had not before heard of the coming sale but had for some time had in mind that my firm should get control of that business whenever there should come an opportunity. The business of our firm had theretofore been exclusively that of importing watches.

Accordingly, Mr. Baker went home with me and told me about the situation and the plans of his firm. The next morning I saw Mr. R.E. Robbins and urged him to look into the matter, and if he should find it practicable to acquire the property, (for I felt sure that they were then making a good watch movement, and that we could certainly make the business of manufacturing and selling them profitable.)

Mr. Robbins, after talking the matter over with Mr. Baker, consented to go to Waltham and become a bidder on the property. I am not able to recall that he had before this time given any attention to the matter, or had ever contemplated buying the property. My recollection is that the above occurrences were only two or three days before the sale at Waltham. I have always entertained the opinion that but for my interference with Mr. Baker, Mr. Robbins would not have acquired the Waltham property.

All the above transpired in the summer of the year 1857. I received the impression at the time that if the sale had happened to occur in the month of September, following, Mr. Robbins would not have cared to attend, for in that month occurred the Panic of 1857.

Then I went to see R. E. Robbins, who had just retired from the firm of Robbins Bros. & Co. in New York, and my interview with him resulted in an agreement to go in with us, he to furnish two-thirds of the capital, and Baker and I the other third. I also made this stipulation, that Baker and I should go into the firm as individuals and not as the firm of Tracy & Baker. Furthermore, that Baker should go to Waltham to represent his and my interests, he being a bachelor and I having a wife and family. This he agreed to. At this time (the winter of 1856 and Spring of 1857) no special articles of agreement had been written out, and Dennison, Howard & Davis had not yet made an assignment, but expected to do so soon. Robbins had withdrawn from business on account of poor health, and was said to be worth in the neighborhood of \$150,000. No details or special agreement had been made as we intended to wait and see if we became the purchasers. When the assignment and sale under it were announced, we had only some ten days' notice before the date of sale. However, we were ready with what we hoped would be sufficient cash, and Baker went to Waltham four or five days before the sale to arrange with Dennison in our interests, as against Howard and Rice, who we knew would be our competitors. Robbins and I arrived in Boston the evening before the sale. Mr. Robbins was not known to anyone there, but Dennison, and it was understood that I should at the beginning do the bidding up to a limited sum, and the purchase if made was to be in the name of Tracy, Baker & Co. The terms of the sale were that the purchasers of the real estate, tools and machinery were to deposit \$56,000 until the title for its conveyance could be made, when all of the balance was to be paid in cash, less \$10,000 mortgage. As before stated, Robbins was not known and while the bidding was going on, we kept apart as if we were strangers. When I reached the sum agreed upon, Robbins came in, and I again after Rice with a moderate advance, Robbins having discretionary power to go as high as he chose. Under his bidding the whole was purchased in two items. The entire purchase was about \$56,000, subject to the mortgage of \$10,000; so we had to raise from \$10,000 to \$15,000 more before we could take title, which we did without trouble. The sale being over, the next thing was to open the factory and begin work. Rice had taken all, or nearly all of the stock in the factory. This left from twelve to twenty finished movements, material, silver, and sundry articles in the silver case department, which items we purchased for \$2500 to \$3000, all of which were left in the factory under care of the Sheriff's watchman, to remain so until the papers could be made out. Before this was done, however, all of the finished movements were spirited away by whom we did not know, although we had strong suspicions. It was supposed that if Rice purchased he would bring his property (removed under chattel

mortgage) back, and continue at Waltham. But not doing so, what should he do with his watch materials, mostly unfinished? So Robbins opened negotiations with a view to the purchase of the same. I believe that after examination and several days' talk, Robbins, under Dennison's advice, offered only \$10,000 or perhaps \$12,000, although Rice wanted \$15,000. So the matter fell through and I know that it was something like two or more weeks before Dennison left for Europe (and not the next day after the sale) that Robbins, Baker and I were in Boston arranging to get possession and have our partnership papers drawn up and send Dennison abroad, that we made a beginning, with Stratton and Mosley as leading men in the factory and Dennison as general superintendent. We had gotten Dennison off and our articles of agreement written out before mutual counsel, agreed upon substantially as we had previously all talked and understood, Robbins to represent his interest in person, or by anyone he should choose, and Baker his and mine. Baker came home to get his traps to return at once, and our partnership articles were made in triplicate to be signed. But instead, I received a letter from him demanding a change in our articles of co-partnership. I was much surprised and taken aback at his request, and showed the letter to Robbins. I wrote Baker that I considered myself bound by the paper as written, which was substantially what we had previously agreed upon. We were all in equal interest, pro rata to our cash paid in, and there seemed nothing further to demand. After a brief correspondence Baker would not do anything, and never again came to Waltham. The watch firm was to be Tracy, Baker & Co., Robbins not caring to have his name appear. (Bear in mind here that Baker was only a clerical man, a fine writer and bookkeeper and had opened the books of our firm, giving each partner credit for the sum paid in by him So the matter was fixed beyond cavil or doubt. However, in this dilemma Robbins wanted me to buy Baker out, to which proposition I said "No, if I do that I will have to give up my business in Philadelphia, which I have worked hard and long to establish, and the American watch is as yet a new and by no means sure thing. Baker as above stated never returned to Waltham, and Robbins bought Baker's interest of \$7500 for \$5,000, payable in one or two years without interest. I agreed to remain until such time as we could get into working shape. Robbins had engaged Mr. James Appleton to come to Waltham, and the watch firm was changed to Appleton, Tracy & Co., yet Mr. Appleton never put any money in nor had interest as a partner. A short time before this Dennison had left for Europe and had ordered some three thousand hard dials, which in due time came out with Tracy, Baker Co. on them, not one of which was ever used. At that time there was no cable by which the order could be countermanded. I remained at Waltham consequent upon Baker's refusal to remain in and return, and I remained at Waltham until the Fall of 1857, when I returned to Philadelphia to look after my interest with Baker, who thought he could put me out of the case business. The story of this would be long and has nothing to do with the watch factory; but I will say in brief that he utterly failed in this and came to grief. I, however, remained in the Appleton, Tracy & Co. firm until it was incorporated into the American Watch Co., and took stock for my interest in said company. (Thus you will see that there was not a grain of truth in the Jewelers' Circular article which states that "Neither Mr. Tracy nor Mr. Baker had any faith in the enterprise and after two or three months they withdrew, etc."), and that my name was temporarily used at his special desire and he retained no real interest. In the Jewelers' Circular there is some error, I think, in regard to the Improvement Company, which was a land company, something like the building association that Mr. Keith and others took interest in with Robbins and others in the American Watch Co., which was the immediate successor of Appleton, Tracy & Co.

The trade-marks "Parker" and "Ellery" were the names of employees in the factory. These names were secured at a trifling cost, - perhaps not more than the honor which their use gave. These marks were applied to cheaper grades than the A.T. & Co. "R. E. Robbins", which was a higher grade, did not come out for some time afterward. The "P. S. Bartlett" trade-mark was used about the same time as "Ellery" but the "Parker" not until much later. It took several months from the date of purchase and possession to get the factory reorganized, inasmuch as we had to begin anew, from the fact that the stock of material had been removed. It was not until some time in or near the end of the year that any movements could be finished, and the panic of 1857 gave a very gloomy outlook. However, Mr. Robbins was a man of nerve and on him alone depended the result. The L. H. Fellows & Shell house still had a good supply of the original watch and were not willing to take hold or buy. So Robbins made sales at auction by way of introducing the movements and for the purpose of keeping the men together and at work. He agreed to pay them half pay for about 3/4 time; that was not to light up the factory at night. In this way the men did better than not to work at all and the reorganization was retained, so that when trade improved there was a supply to put out. I think it is a mistake to suppose that Robbins ever entertained an idea of removing the watch factory to Newark. If he ever had such an idea I never heard of it, and I saw him often for a few years after the purchase, and held my stock in the factory some six or seven years, until about the close of the war, when I sold it to a young man who was a

salesman with Robbins & Appleton in New York. The company during the war made very large sales, also large profits, the company raising the prices at pleasure and often without notice, or rather, without filling all former orders at prices current when the orders were taken. The war was the real cause of the rapid success of the American watch, and as you know, it is the best watch for the money. The increase of the capital stock from \$300,000, mostly from earnings, is correct; but the various trade marks, as stated, are not literally so. Some years since I had a statement of their capital with the various dividends, etc, which was very interesting. The original parties, Messrs Dennison, Howard & Davis, from their beginning to the time of purchase by us never finished 5,000 movements.

A few words again as to the change from Appleton Tracy & Co. to the American Watch Company. R.E. Robbins obtained the largest amount of subscriptions to the American Watch Co. from his personal friends and business acquaintances in New York, the members of the Improvement Company taking a very limited amount of the same and for purposes of convenience were in the Board as officers, etc. (The Improvement Co. had no money as a Company and loaned to members only as do our building associations). But R.E. Robbins was all the time, as now, the controlling head and power of the entire undertaking. The system of manufacture, however, was started mainly by Dennison, for it was his ideas put into practice that revolutionized the making of watches, so that many other companies have taken up the same.

Mr. Tracy appears to be in error in regard to the C.J. Parker trade mark. It occurs in the company's accounts for 1858, priced at \$36.75 more or less according to specifications and quantity.

The Ellery model priced at \$9.50 - \$13 appears in the books of 1865 and presumably was brought out during the war. Date uncertain at the moment.

C Moore (*uncertain*)

Aug 29, 1938