The art and science of watch repairing. Monograph 2 1967

Ehlert, Edward

Manitowoc, Wisconsin: Manitowoc County Historical Society, 1967

https://digital.library.wisc.edu/1711.dl/UUOZR5T56AP228Y

MANITOWOC COUNTY HISTORICAL SOCIETY

OCCUPATIONAL MONOGRAPH 2

1967 SERIES

THE ART AND SCIENCE OF WATCH REPAIRING

by EDWARD EHLERT

In any discussion of a topic such as this one, the service trade of watch repairing, one must become involved with people. Two men presently in Manitowoc qualify as a source of information for this treatise. No doubt, there would be others whom we might have consulted. Perhaps there might be others who might even be older, experience wise, than these men. For the purposes that we have as we write this paper, it is doubtful whether a broader inquiry into the topic could have added much, therefore the decision to limit the treatment of this trade to the experience of two men.

The men who were sources of information for this essay are Albert H. Schneider, a long time employee at Rummele's, Inc., and Joseph A. Boelter, who for many years has had a jewelry store on Washington Street, Manitowoc, Wisconsin.

Joseph Boelter was born in Watertown, Wisconsin, and Albert Schneider at Algoma, Wisconsin. (Henceforth we shall call them Joe and Al, the names by which they are better known by friends and acquaintances.) Both men were born in about the same year, with Al being the older of the two men by a few months. Their lives were similar through the first fourteen years, for both attended the common school in their community and were graduated from the eighth grade.

This was a time when at the age of fourteen years it was customary that a major decision be made as to one's life work, trade or profession. In Joe's case, the parents felt that there was a greater future for a man if he learned a trade. Close attention was given to the help wanted column of the daily newspaper to see if some tradesman might be looking for an apprentice. One day that kind of ad appeared . . . the local jeweler was looking for a boy who could be taught the trade of watch repairing. Joe looked to him as a likely candidate. The weekly wage was $2.00 with the working day beginning at 7:00 A.M. and ending at 6:00 P.M. The store was open on Wednesday and Saturday night until 9 o'clock, which meant that during most weeks one had a 67-hour work week. (There was one-half hour off during the noon hour.) A little arithmetic indicates that the hourly wage amounted to about three cents.

Most business establishments were closed on the Fourth of July and Labor Day, but in Joe's case it was an even longer day for the jeweler had a profitable side line, namely that of selling fire crackers and fire works. Thus the day began at 5:00 A.M. and ended at 8:00 P.M. On Labor Day the store remained open from 7:00 A.M. until 1:00 P.M. For the extra hours of labor on the 4th of July, Joe's weekly pay envelope that week contained an extra dime. An increase in salary, amounting to 50¢ a week, was given an apprentice every six months, which meant that during the third year of apprenticeship the salary was $4.00 a week.

In those days an apprentice did just about anything that needed doing around a store. There were sidewalks to shovel in winter, windows to wash, floors to sweep, fuel to be brought in for the furnace or stove which heated the establishment, display cases to wash and polish, merchandise to dust, and errands to run. One was taught the art of waiting on customers, and when the store had no customers, then there were lessons in watch repairing.

Joe told of a barber who was desirous of having an apprentice in his shop, with the starting salary considerably larger than that paid to an apprentice watch repairman. The extra money seemed very attractive and there was a bit of determination to change vocations. However, Joe's mother felt that the future was brighter in watch repairing and the jewelry business, and for the determined attitude of his mother in this matter, he has been forever grateful.

Al Schneider was born on a farm near Algoma, Wisconsin, and in those days the boys usually were needed to help with the farm work. Thus not much thought was given to the choice of a vocation; the boys usually became farmers. In Al's case, however, the circumstance of illness intervened at just the moment when this important decision was to be made. He contracted a contagious disease which resulted in the entire family being quarantined for a month. Following release from quarantine the father felt that this one of his sons perhaps was a bit too frail to become a good farmer.

Like Joe, the weekly newspaper became the source for job or trade opportunities. When an ad appeared that a jeweler in Algoma was looking for an apprentice to learn the trade of watch repairing, it was the father who made application for his son. On acceptance of the application, Al began his apprenticeship. The circumstances as to job expectations, demands, and salary were very similar to those that existed in Watertown.

Al states that Mr. Melcher, the master watch repairman for whom he served his apprenticeship, had one maxim: "one learns by doing." That this was sound philosophy one would discover if one read a book relating

to educational methods and techniques even today. The first assignment that Al received was to dismantle a clock and to clean the various parts. Then came the replacement of broken springs, and perhaps simple repair or replacement of worn-out parts. After clock repairing came watch repairing, and the more complicated skills involved in the trade.

Al came to Manitowoc to work for Rummele's in 1915. Joe Boelter arrived in 1917 and was employed by Koehler's Jewelry store for the next ten years. Incidentally, Al's starting salary at Rummele's was $40 a month which at the time seemed like a small fortune. The store at that time was located in the block in which Kresge's store now stands. The Rummele s managed the store until about 1945 when Henry Spiegel became the owner. As for Joe Boelter, in 1927 he decided that he would go into business for himself. Ever since he has been one of Washington Street's successfulmerchants.

In the early days of the century much watch and clock repairing was done in the homes of people by persons having little in the way of skill. Some even attempted to go into business for themselves, without having had the benefit of training at the hands of a master craftsman. To protect the public from persons whose only qualification for the trade was the desire to be in it, a license was required of every person who set up such a shop. The license cost five dollars.

One of the requirements for getting a license was an apprenticeship served under a master craftsman for at least a year. Certain performance tests were required also, with the person having to demonstrate ability to make a balance staff, fit a jewel, and make a stem. Presently a written examination is required of all applicants for a watch repairing license.

During the period following World War I there were about a dozen or more companies which made watches. Today there are only three American companies: Elgin, Hamilton and Waltham. Many watches today are of foreign design and workmanship with Switzerland, Germany, France and Japan leading the way. The Bulova watch company has plants in both Switzerland and the U.S.A.

Watches could be bought for as little as a dollar in the early years of this century. One company, Ingersol, specialized in cheap watches. The story is told of a young boy, owner of his first Ingersol, who decided to wind the watch on a Sunday morning during a church service. The pastor was in the midst of his sermon. Winding an Ingersol was such a noisy operation that the pastor paused to inquire, "Is that your object for being in church?" Ingersol watches in 1910 could be bought for $1.00, $1.50 and $2.00.

Today the Timex watch is in the category of the old time Ingersol, with the price range from $6.95 to about $45.00. The Waltham and Elgin watch companies also have made a 7-jewel watch which sold for $5.50. While these watches may have been in the cheaper price range, they were good watches, and with good care rendered many years of good service.

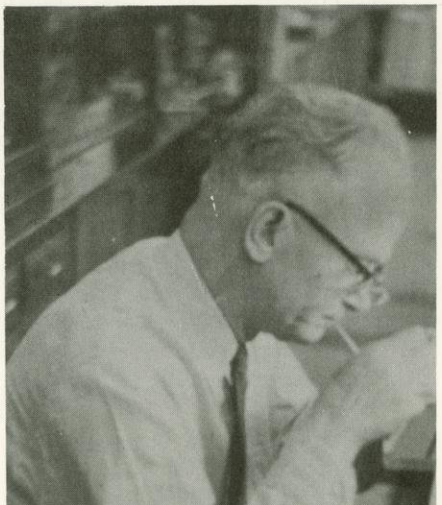
The size of watches has varied. In the early years most watches were much larger than they are today. An 18-0 watch was the largest. The sizes ranged downward with 16-0 12-0 and 0-5 sizes the predominan ones.

There were chain wind watches in which the chain took the place the main spring. There were ke wind watches as well as the ste wind type. Then there were th closed case watches, and the ope face kind. The more expensive tim pieces had solid gold cases wit solid gold watch chains. The case usually were either 14 or 18 karc gold.

Watch chains were rather heav in design and were made so that on end of the chain was fastened with bar. This was placed in the butto hole of the vest. The watch wa attached to the other end of th chain with a swivel snap and it wa then carried in the vest pocket.

Five decades ago clocks wer much bigger and heavier in desig than they are today. There were th 8-day wind clocks, and there wer clocks that needed to be woun daily. The larger clocks were piece of furniture, some as high as si feet in height. Then there wer clocks only a foot or two in heigh which usually were kept on a she on the wall.

There were cuckoo clocks tha announced the hour by sounds re sembling the call of a cuckoo. An there were grandfather clocks whic permitted winding of the clock b means of a system of weights. Inci dentally this was a design whic was once patented by Thomas Jeffer son. At his mansion at Monticello Virginia, is the original clock de signed by the third president of the United States. It was at the same time a kind of calendar clock, fo when the weight reached a certain point on the wall, the day was Monday, with another mark indicating the day of each of the other days of the week.



Albert H. Schneider at his desk in Rummele's Jewelry Store.

The tools of a watch repairman were few and simple. They consisted primarily of a magnifyingglass which fitted over his eye, some small pliers, a number of small screw drivers, staking tools, a caliper, and pairs of tweezers. The shop usually had a lathe, and other of the mo intricate machines and tools.

Although the tools were simple, the operations in which one needed

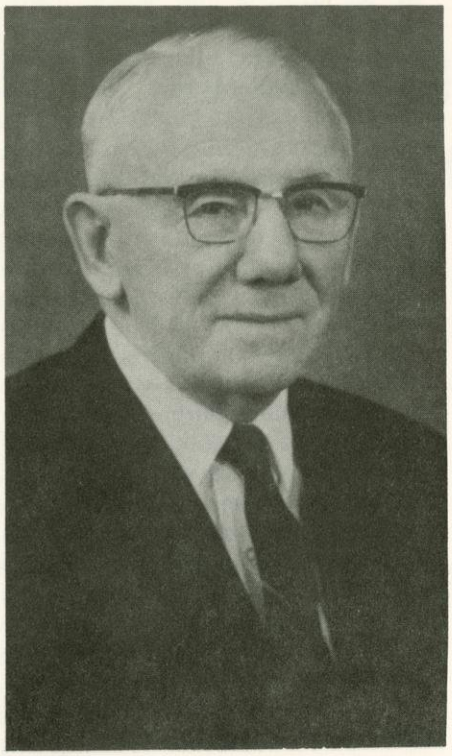
to acquire skill were intricate and involved. As a watch was dismantled and it was discovered that a part was badly worn and needed replacing, the usual procedure was to make a new part. There was always a supply of steel on hand, a piece of which was fastened to the lathe, and this then was ground, turned, and polished to size.

Mr. Boelter states that his instructor told him that the most important thing to remember as one worked on a part was "You cannot replace the metal that you have taken off." In other words, one had to be very careful to take off just enough metal so that the piece was exactly the right size. There was only one acceptable way to make a part . . . the workmanship had to be absolutely perfect. Obviously making the parts took time, for the price that was charged for watch repairing labor had to be comparatively cheap. Thus it was possible to do watch repairing in this period in history at a price which customers were willing to pay.

Today it is different. Materials are comparatively cheap: labor is the expensive item. It is cheaper to replace rusty or worn out parts with units which are made by the watch manufacturing companies. While the watch repairman today may have the skill to make these parts, it just is not economically feasible to take the time to do it.

Watch and clock cleaning has always been a much more involved type of operation than most people may realize. The time piece must be completely taken apart. As this is being done, the pieces are placed on small wires. This is done to avoid losing a part and to aid in the cleaning operation.

At one time the parts were washed with soap, water, cyanide and and grain alcohol. The purpose of the cyanide is to cut the grit that may have formed on the individual parts. The purpose of the grain alcohol is to aid the drying process. Following this, the parts are dried in a special kind of sawdust. Of course, if the mechanism of the watch is to operate as it should the individual pieces must be completely devoid of moisture and dust. The minutest speck of dust must be removed.



Joseph A. Boelter, Manitowoc jeweler

Today the watch cleaning operation is greatly improved by the fact that a special cleaning fluid is available. The fluid is placed in a special container, into which the individual parts are placed. The container is then electrically operated, and after several minutes of operation, all film, grit, tarnish and foreign substance have been removed. Otherwise the cleaning operation is very similar to methods used in the past.

After the watch has been assembled and the parts seem to be working freely, it is necessary to regulate it so that it keeps perfect time. Perfect time means that there must not be a gain or loss of more than thirty seconds in a week. In the old days, this was a hand operation through a process of trial and error. Today the repairman is aided by a "watch timer."

It has often been said that "experience is the best teacher." That is a truism which every watch repairman will admit to. Mr. Boelter tells of a certain customer who insisted that his watch keep as perfect time as if it were owned by a railroad man. A railroad employee had to own a watch that kept perfect time . . . allowing a deviation of no more than thirty seconds a week.

This man brought his watch to be cleaned and repaired. It was known when the job was begun that the man's expectations were high, and so unusual care was taken in each operation. Joe stated that when he finished the job he felt that he had done as fine a job as he had ever done. However, the customer had not used the watch more than a week before it was returned with the complaint that the watch had deviated several minutes from perfect time. The watch was then taken apart again. Nothing could be found, however, which should have caused the time piece to operate in a faulty or irregular manner. Nevertheless, the second assembly job produced no better results.

Just about the time when both master craftsman and apprentice were most exasperated and perplexed, a salesman came by who had a "demagnetizer" with him. This was before the time when it was known that a time piece could be affected by electrical charges. The salesman mentioned that if metal had been affected by an electrical charge a compass would react rather violently to the metal. When the compass was placed near this watch there was violent reaction. The watch was then placed in the "demagnetizer" and the electric current in the metal was removed. From that time on the time piece functioned perfectly. It developed that this man was a hardware merchant who handled instruments that were electrically operated. Frequently an electric charge passed through his body. This affected the time piece.

Nowadays every watch repairman knows this, and in his work he takes care that the time piece is "demagnetized." Also from time to time he checks on his tools, for they, too, can become magnetized and affect the metal with which they come in contact. By mere contact with a magnetized piece of metal, or by means of simple concussion, metal can become magnetized. Failure to observe these simple precautions can lead to perplexing problems.

Watch repairmen no longer serve an apprenticeship. There are few places where one could work in this

capacity. Most watch repair shops do not want to be bothered with training a person. Thus, today there are schools where persons are trained to do watch repairing. Until a few years ago the major watch companies conducted these schools with a training period of from a year to eighteen months. However, all of these have now been closed, and most training is now given in the larger Vocational and Technical Institutes. The school nearest to Manitowoc where one can learn watch repairing is at the Milwaukee Vocational School.

Earlier we mentioned that the watch repairmen had to make all replacement parts. That these were not simple operations can be seen as one takes note of the number of operations and skills necessary to make, let us say, a balance staff or a stem. First of all, the repairman has to be sure that the steel which he uses is of proper hardness. The hardness of steel is determined by the amount of carbon in it. When there is too much carbon in the hardening process, it is likely that the steel may become crystallized. The tiny crystals have to some extent the same abrasive properties as a diamond, and consequently such a piece of steel can sometimes damage the parts in which they move.

There are eight different parts in a balance staff, each of which must be made to precise size. The operations that must be performed are intricate and require great skill. In addition to proper shaping of each piece there are holes to be drilled, grooves to be cut, and threads to be cut, with each operation requiring skill of a kind associated only with the finest of precision instruments.

The watch repairman has little tolerance of error. It is easy to force a replacement part into a setting, with even the part operating with a certain degree of smoothness. However, even a very small deviation from a perfect fitting is sufficient to cause future difficulty, perhaps even of a serious nature. Thus, every apprentice was taught that only careful, painstaking, and completely accurate workmanship was acceptable.

The parts of a watch have remained much the same through the years. The only difference has been in the size of the watch. Wrist watches have become smaller in size. In recent years the self-wind watches have appeared. The movement of the wrist tends to wind the watch automatically. With the coming of the Accutron and similar type watches, the time piece is operated with a small battery. (The battery is about the size of a dime, only a little thicker.) Each battery lasts about a year, then must be replaced.

It requires no argument to convince the watch maker of the advantage of jeweled bearings in a watch. They lessen the danger of abrasion, reduce the retarding effect of thickening oil and increase both the wearing quality and the time keeping efficiency to a very great extent. The purpose of the jewel in a watch is to permit all bearings to operate in "jewel holes" which are so designed that the smoothest possible operation is secured. Thus, as the jeweler makes his "sales pitch" concerning a watch, he always emphasizes the number of jewels which the particular time piece has.

Some of the cheaper watches sold today have seven jewels. The better watches have 15, 17, 19, 21 and 23 jewels. Some wrist watches have up to 39 jewels.

Four kinds of precious stones are in use as jewels for watches. They are the diamond, sapphire, ruby, and garnet. The diamond is used very little, since it is very expensive, and the advantages are not sufficient to make the extra expense justifiable. The jewel next in hardness to the diamond is the sapphire. The ruby is a little softer than the sapphire, yet is is a hard stone suitable for bearings in watches. It is the chief stone that is used in jeweled watches.

There are different colors of rubies that are used; however, the color of the stone has no significance so far as the efficiency of the operation of the time piece is concerned. In so small a piece as a watch jewel it is sometimes very difficult to distinguish between ruby and garnet. However, when the jewels are held side by side over a piece of white paper it will be noticed that the colors are quite different. The ordinary ruby is lighter in color than the garnet. Garnets are used in some of the cheape watches. It is a somewhat softe stone. It is possible to use garnet in some bearings; however, there ar others where garnets should nev be used.

As for clocks, the first electri clock appeared about 1920. Th mechanism of these clocks is simple having a small motor and a coil. A electric clock remains an efficien time piece so long as the moto functions as it should.

Most alarm clocks still are o the spring wind type. Their con struction is similar to that of watches however, the bearings have no jewel Instead the bearings operate in bush ings. Some of these are made o glass, some of rubies. The more ex pensive alarm clocks have jewels today.

Manitowoc's jewelry stores, where watch repairing has been done, are among the oldest business establishments of the city. Ever since the early 1900's Manitowoc has had the Koehler Jewelry store, Rummele's, Fehr's, Herman Kohls, and the Boelter Jewelry store. Later the Hansen, Kurtz, Kaufmann, Grimm, and Williamson stores were opened. In Manitowoc today, there are six merchants who employ watch repairmen. Several employ more than one repairman.

Charles Esslinger was one of the first jewelers and watch makers to settle in Manitowoc. He bought two lots in Block 239 which is where Napp Office and School Supply Company now stands. Esslinger came to Manitowoc, May 20, 1850, from Amerbach, Bavaria, in 1839. He was appointed Post Master in 1861 and held the job until 1885.

Soon after, C. Liebenow came to Manitowoc and started a jewelry store on the north side on the corner of 8th and Commercial Streets or where the Koehler Jewelry Store now stands. He operated under the name of C. Liebenow and Sons. This is the oldest jewelry store in the city doing business at the same place. A picture of the old store is hanging at Koehler's behind the door.

(Note added by Joe Zaborik.)