

The H·I·A Journal

OFFICIAL PUBLICATION OF THE HOROLOGICAL INSTITUTE OF AMERICA.



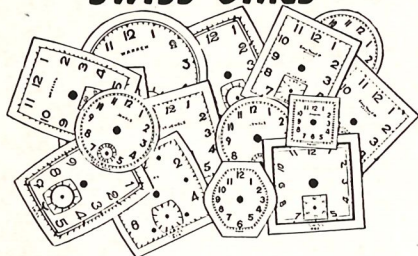
PP. 46

September, 1949

SUMMER SPECIALS

FROM THE HOUSE OF FRIENDLY SERVICE

SWISS DIALS



24 new dials — black and gilt figures including many older patterns such as 6½ ligne oval, 6¾ rectangular, etc. for 5 ligne to 11 ligne Swiss bracelet watches.

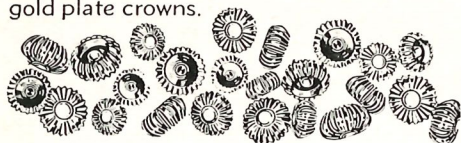
Order No. C117L\$1.95

New Late Model dials — assorted openings with black or gilt figures — no 2 alike — 6 ea. for AS976 — FF120 — AS970 — AS984.

No. C200L — 24 dials\$5.75

YOU CAN FIT:

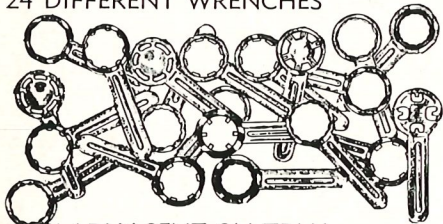
almost any pocket watch case needing an antique crown with this assortment of 12 each of 12, 16, 18 size, acid test yellow gold plate crowns.



No. C185 — 36 crowns\$5.75

YOU CAN OPEN:

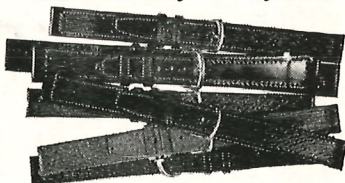
A WIDE VARIETY OF WATERPROOF CASES WITH THIS ASSORTMENT OF 24 DIFFERENT WRENCHES



—GLADLY SENT ON TRIAL.

No. C138L\$5.95

LEATHER STRAPS

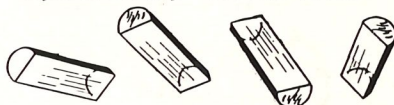


— accumulated from broken lots including assorted lengths, colors and widths. Mounted on fresh display cards.

No. C140L — 3 dz. . . \$9.75

No. C141L — 1 dz. . . \$3.50

ROLLER JEWELS



1 gross package each bracelet and pocket sizes — assorted lengths to fit both Swiss and American models.

288 JEWELS!

Order No. C 221\$4.95

BURTON M. REID SONS INC.

"The House of Friendly Service"

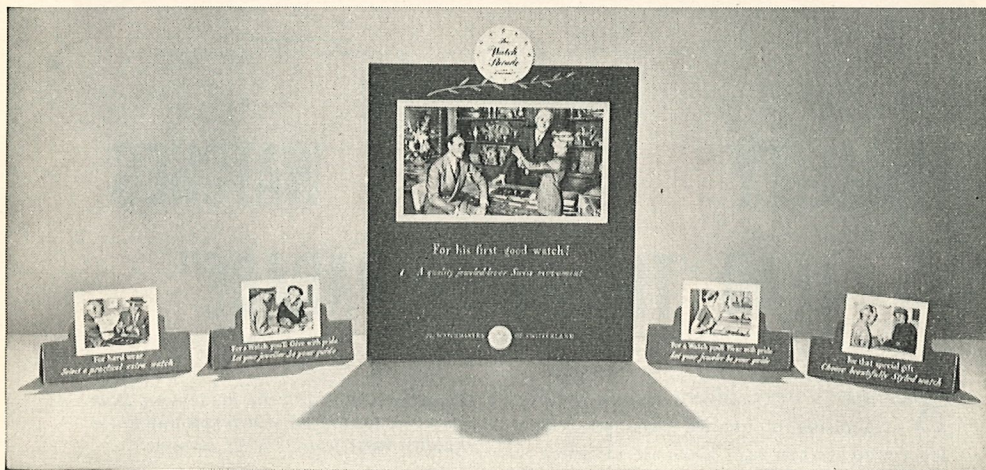
1st and Washington

Springfield, Illinois

GET READY FOR "THE WATCH PARADE"

(October 24 — November 7)

Send for FREE MERCHANDISING KIT Now!



Free, full-color, 5-piece display! It's a sure stopper in your window—a sure sales booster in your store. Each piece colorfully portrays different watch purchasing scenes, giving you an opportunity to use the display in your window, or on your store counters. Be sure to display quality watches with Swiss jeweled-lever movements.

Free merchandising booklet! Jam-packed

with good window-display suggestions, merchandising ideas, and plans to help you sell your customers a second watch. In addition, this booklet lets you in on some sales-stimulating ideas that really work!

"The Watch Parade" is your promotion — and you should make the most of it. It's sponsored by the Jewelry Industry Council, to boost the business of your store. The Watchmakers of Switzerland are happy to put the power of their advertising and merchandising behind it — to further increase your quality watch sales. So, be sure to tie in and make full use of *all* promotional material.

Send for this **FREE Kit Today!** Offered by the Watchmakers of Switzerland to help you sell Quality Watches as Gifts — or as Second Watches.

TO: THE WATCHMAKERS OF SWITZERLAND
c/o Dept. 5, 325 East 44th St., New York 17, N. Y.

Gentlemen: Please send me your Merchandising Kit

Name of store _____

Address of store _____

Name: _____

My position is _____

The WATCHMAKERS OF



SWITZERLAND

AND THAT'S NOT ALL!
SEE NEXT THREE PAGES
FOR MORE NEWS!

Here's the ad that will be run during "The Watch Parade" by The Watchmakers of Switzerland. It will make 95,269,000 reader-impressions in LIFE, LOOK, SATURDAY EVENING POST, TIME, NATIONAL GEOGRAPHIC, COUNTRY GENTLEMAN AND FARM JOURNAL.

QUALITY JEWEL-LEVER WATCHES LEAD "THE WATCH PARADE"

AND WHAT'S MORE, advertising and merchandising of quality Swiss jeweled-lever watches can lead a parade of watch buyers right into your stores.

To help you sell *more* watches at *more* profit, The Watchmakers of Switzerland continue to emphasize—in advertising and merchandising—the technical advantages and special features of watches with quality jeweled-lever Swiss movements. Ads like the one on the opposite page carry this quality story to millions of potential customers every month in the year.

Such vital quality features as the jeweled-lever, balance wheels, hairsprings, gears and pivots are explained and used to emphasize the difference between quality jeweled-lever watches and cheap watches.

Each month, these four cardinal points are stressed again and again:

1. *In every watch it's the movement that counts—be sure the watch you buy has a quality Swiss jeweled-lever movement.*
2. *Don't be fooled by so-called "watch bargains"—you usually get just about what you pay for.*
3. *A smart Swiss watch is a treasure of lasting pride—for you—or the fortunate one who receives it from you.*
4. *When you buy a new watch, rely on a jeweler in whom you have confidence—he'll show you the best jeweled-lever Swiss movements in your price range.*

If you want to get that *extra* business by selling your customers gift watches—and *second* watches—follow up on these quality sales points. Take advantage of the pre-selling that advertising and merchandising prepared by The Watchmakers of Switzerland does for you.

TURN NEXT PAGE FOR REPAIR NEWS

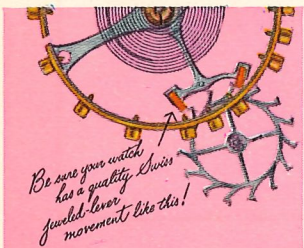


1. By the age of twelve, the average boy and girl are mature enough to recognize the value of precious time, to plan the days thoughtfully, to handle a precision instrument with care. When you buy a

watch, make sure it has a quality Swiss jeweled-lever movement. This feature is your best assurance of accuracy, dependability, and value. See the newest in watches during "The Watch Parade," Oct. 24—Nov. 7.



2. Practical watches include water- and shock-resistant, self-winding and calendar watches, chronographs, chronometers and other Swiss developments. Always, it's the movement that counts—be sure your watch has a quality Swiss jeweled-lever movement.



3. The mechanical "heart" of a quality watch movement is the jeweled-lever that keeps your watch running accurately with a minimum of wear. Don't be fooled by so-called "watch bargains"—you usually get just about what you pay for.

How old should a youngster be before he gets his first good watch?



4. The Swiss were first to use jewels in watch movements. Today, the Swiss jeweled-lever movement is the standard of quality. That's why a smart Swiss watch is a treasure of lasting pride—for you—or for the fortunate one who receives it from you.



5. With the new Swiss Repair Program, your jeweler can service quality Swiss watches economically and promptly. When you buy, rely on a jeweler in whom you have confidence—he'll show you the best jeweled-lever Swiss movements in your price range.

For the gifts you'll give with pride—let your jeweler be your guide

The WATCHMAKERS OF SWITZERLAND



© 1949 Swiss Federation of Watch Manufacturers

HERE'S PART TWO OF THE OFFICIAL CATALOGUE OF SWISS WATCH REPAIR PARTS

IT'S FREE!

IT'S BEING MAILED THIS MONTH TO EVERYONE WHO HAS PART ONE!



Part Two of the catalogue is designed to simplify the ordering and identification of repair parts for Swiss jeweled-lever movements other than Ebauches.

It contains:

1. An index of Swiss manufacturers covered, including firm name, brand name, and symbols generally used.
2. A complete listing of the parts for Swiss lever movements other than Ebauches. Each part is illustrated, numbered, and described in English, French, Spanish and German.
3. Directions that tell you how to identify unmarked movements.
4. A special section for each Swiss manufacturer that gives the firm name, brand name, symbol, and name and address of the sales organization. In addition, each of the manufacturers' movements are illustrated, and the movement size and caliber number are given.

Here's your complete Swiss Watch Repair Parts Program

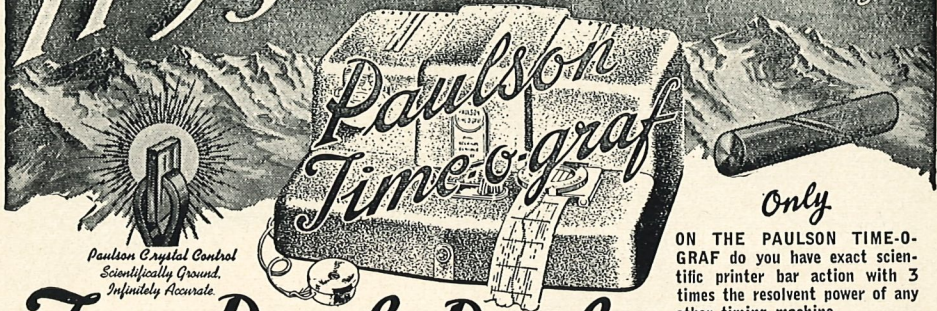
1. The Official Swiss Watch Repair Parts Information Bureau. Located at 730 Fifth Avenue, New York 19, N. Y. to answer repair questions.
2. The Official Catalogue of Swiss Watch Repair Parts (Parts I & II). A complete and standardized listing of materials for almost every current type of movement manufactured in Switzerland.
3. The Official Dictionary of Watch Parts. Recommended for large watch repair departments and highly skilled watchmakers.
4. The Official Package for Swiss Watch Repair Parts. Now being used for staffs and stems of the most widely used Ebauches movements.
5. The Official Cabinet for Swiss Watch Repair Parts. New, efficient design that holds both packaged and unpackaged parts. Order from your supplier.
6. A Speaker's Kit—for talks on the Repair Program—includes display materials, slides and instructions.

The WATCHMAKERS OF



SWITZERLAND

119 Swiss Watch Factories
can't be wrong



Paulson Crystal Control
Scientifically Ground.
Infinitely Accurate.

Only

ON THE PAULSON TIME-O-
GRAF do you have exact scientific printer bar action with 3 times the resolvent power of any other timing machine.

For Peak Performance

THE TIME-O-GRAF

USED IN THOUSANDS OF JEWELRY STORES AND AMERICAN FACTORIES

is the Choice of 119 Swiss
Watch Manufacturers

BECAUSE

Only

ON THE PAULSON TIME-O-GRAF with continuous tape record, it is possible to get all the answers including the train, pallet stone, roller jewel, etc., on one complete record.

Only

ON THE PAULSON TIME-O-GRAF can you regulate your watch and see exactly what it is doing as you move the regulator. Wonderful for hairspring work, too.

Only

ON THE PAULSON TIME-O-GRAF is it possible to reveal a continuous record of all positions on one tape without stopping the machine.

Only

The PAULSON TIME-O-GRAF gives you superior scanning speed and also unparalleled scientific accuracy.

**PROVE IT YOURSELF WITH A
NO RISK TRIAL**

Only **\$490⁰⁰**

LESS 2% FOR CASH

PAYMENT PLAN AS LOW AS

\$24²⁷ PER MONTH

Henry PAULSON & Co.
131 S. Wabash Ave., Chicago 3, Ill.

USE THIS HANDY COUPON

HENRY PAULSON & CO., 131 S. Wabash, Chicago 3

- Please send information on no risk trial on Paulson Time-O-Graf.
- Please send Paulson Time-O-Graph at \$490 less 2% for Cash.
- Please enter order for Time-O-Graph—\$100.00 with contract. Balance \$24.27 per month for 18 months.

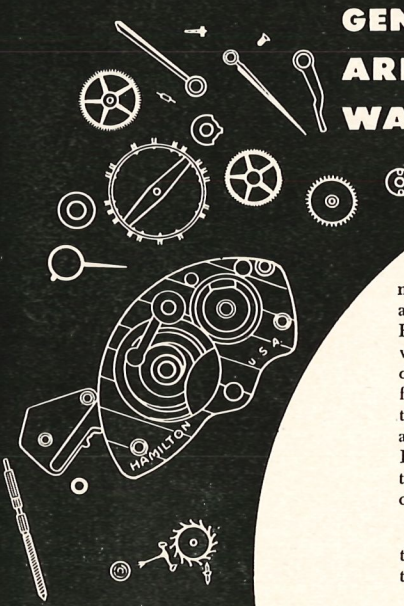
Name.....

Address.....

City.....State.....

This has always been true with Hamilton...

**GENUINE REPAIR PARTS
ARE AVAILABLE FOR EVERY
WATCH WE EVER MADE!**



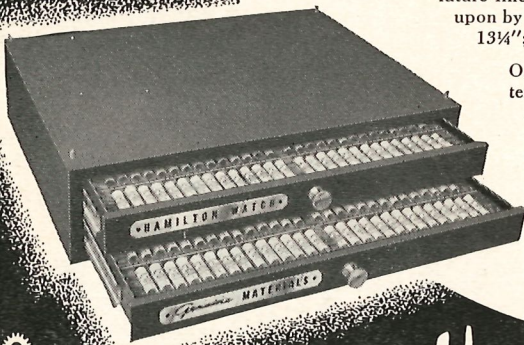
No Hamilton movement is ever out-of-date... none need ever be obsolete. Since 1892 there has always been a supply of genuine Hamilton parts — not just for some Hamiltons, but for every Hamilton ever made except in a few wartime instances when all Hamilton materials and production were reserved for our country's armed services. This fact is important to you. It means that you can sell Hamilton, the fine American watch, knowing full well that you will always be able to service it. And your customers can buy a Hamilton with the same feeling of confidence and trust. But this is nothing new; it's standard Hamilton practice—it's part of the Hamilton tradition.

And now, to make your servicing of Hamiltons even easier, this new Hamilton Material Assortment Cabinet is available through your material wholesaler. You'll find at your fingertips genuine parts for even the most recent Hamiltons—the 747 and 748 movements. Extra parts bottles are included for future lines. This is a standard size cabinet as agreed upon by material wholesalers. Height—3¼"; width—13¼"; depth—10¼".

Order yours now through your Hamilton material wholesaler. Be ready for the repair business that will be stimulated by the Jewelry Industry Council's "Watch Inspection Time", September 12-17.

HAMILTON WATCH COMPANY
LANCASTER, PENNSYLVANIA

Member, Jewelry Industry Council



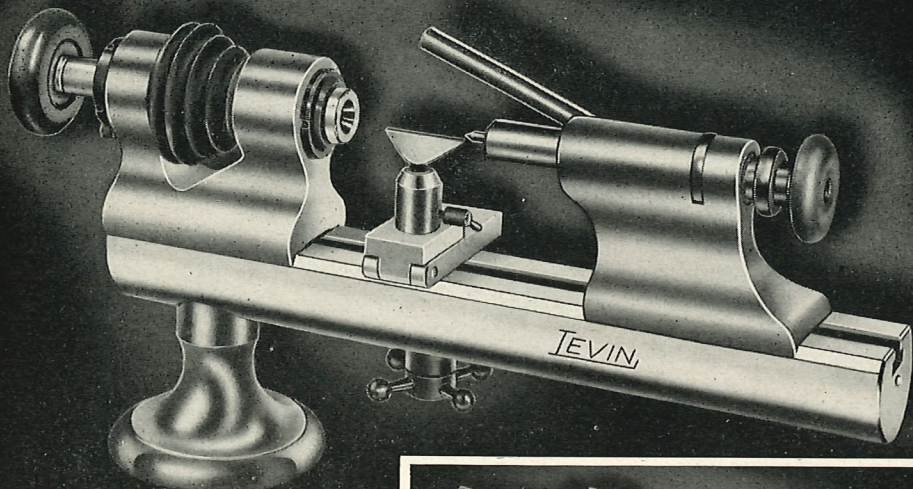
Hamilton
THE FINE AMERICAN WATCH

NOW

Case replacement parts for Hamilton's new line of *old* (sealed) models can be obtained through Hamilton material wholesalers.

LEVIN *Introduces* **A NEW Lathe**
not just another ball bearing lathe but...

A PRE-LOADED BALL BEARING LATHE



MODEL D LATHE, CAT. No. ABBT

**ANOTHER ADDITION TO THE
LEVIN LINE OF LATHES**

HIGH PRECISION

The new **PRE-LOADED BALL BEARING** spindle has resulted in the highest degree of rigidity and precision obtainable.

EVEN SPEED ASSURED

Low friction of bearings enables lathe to make heavy cuts without slowing down, making it also ideal for light manufacturing.

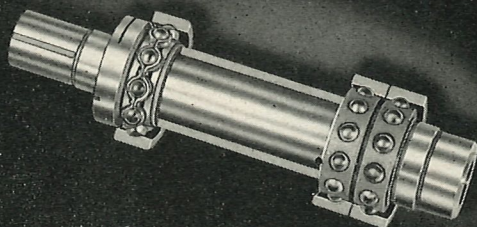
NO OILING NECESSARY

Lubricant is sealed in and is sufficient to last the life of the bearing.

GENUINE **LEVIN** TOOLS

CARRY THIS TRADEMARK

ASK YOUR DEALER FOR 1949 CATALOG "E"



BALL BEARING SPINDLE ASSEMBLY

AFTER a long period of research, we are proud to offer two new lathes equipped with high precision, **PRE-LOADED BALL BEARINGS**. Model C, using standard WW wire chucks (5 mm capacity). Model D, using larger chuck with 8 mm capacity. Both models have same center height as all WW type lathes.

LOUIS LEVIN & SON, INC.
782 E. PICO BLVD., LOS ANGELES

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Let's Look at the Records

Washington Tech graduates are 100% Employed!

WATCHMAKING AND ENGRAVING

One of the country's largest and fastest growing industries. Washington Tech men undergo a course of deep-down training that qualifies them as first class craftsmen in the field. Many of our graduates are holding responsible, top salaried positions.



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*Approved
for Veterans!*

- Good Salaries
- Tools Supplied
- Individual Instruction
- Dignified Profession
- Experienced Teachers
- Day and Night Classes

*Special Engraving
Class for Jewelers
and Watchmakers*



Washington
Technical School
Incorporated



WATCHMAKING & ENGRAVING

S & M BLDG.

9TH AND D STS., N.W.

WASHINGTON, D. C.

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Write today
for Booklet.
No obligation

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Levin Tools

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you should too because . . .

SPEIDEL . . . GEMEX
J. B.
WATCH BANDS

They're Trademarks of Quality

QUICK FIT
BEST FIT
NEWALL SYSTEMS

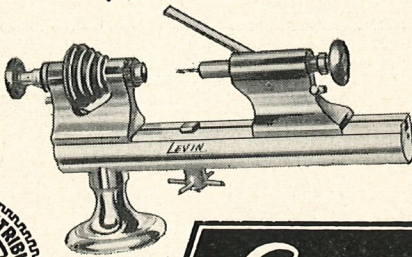
The Pledge of Responsibility

GENUINE WATCH
MATERIALS

The Guarantee of Satisfaction

Today when your dollars can't be squandered on unknown, take-a-chance, maybe-it's-good and maybe-it-isn't merchandise, we're proud to have you buy at SOBEL'S. We protect you by buying the best merchandise from the most reputable manufacturers. Yes, we cling to our standards of quality—for we know that dependability will continue to bring you to our doors.

**THE BEST YOU CAN BUY IS THE BEST BUY!
... AND, IT ACTUALLY COSTS LESS**



Levin Watchmaker's Lathe

\$139.10

Model B with plain chuck holding tail stock. Specially designed for modern watchmakers. Fully nickel plated.



Eugene Sobel Co.

610 9th St. N. W

WASHINGTON I, D.C

**SAME DAY
MAIL SERVICE!**

WHOLESALE DISTRIBUTORS • JEWELRY • WATCH MATERIALS • TOOLS

THERE'S A WORLD OF DIFFERENCE

in **L&R** Accessories
 Known the World Over for Finer
EXCLUSIVE Features



L&R COMBINATION ANVIL

EXCLUSIVE: The Only One of its Kind
 16 graduated hole sizes, 4 milled slots and one 'V' slot plus a removable horn anvil distinguish this amazingly functional new combination anvil. Made of hardened, ground tool steel, this necessity will prove its worth every working day. **\$3.75**

L&R MALLET & HAMMERS

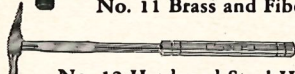
EXCLUSIVE: Unsurpassed L&R Quality



No. 10 Brass Head Aluminum Mallet **\$1.00**



No. 11 Brass and Fiber Mallet **\$1.25**



No. 12 Hardened Steel Head, Aluminum Handle Peening Hammer **\$1.50**

L&R RAPID SPREAD RUST REMOVER

EXCLUSIVE:

Rapid Spread Action

"A Little Removes a Lot of Corrosion". Special dropper bottle.

50c



L&R SOLDERZIT

EXCLUSIVE: Superior Formula

"Ready to Use with Iron, Torch or Match Flame". Packed in a convenient tube, an all-purpose, high-strength metal solder containing its own flux.



50c

L&R PLASTIC WATCH CRYSTAL CEMENT

EXCLUSIVE: Pin-point tubes with Rubber Seal Caps.

"For a Perfect Seal without Flaking or Cracking". Also available: Generous Bottle.

35c



WATCHWORD OF THE WATCHMAKER

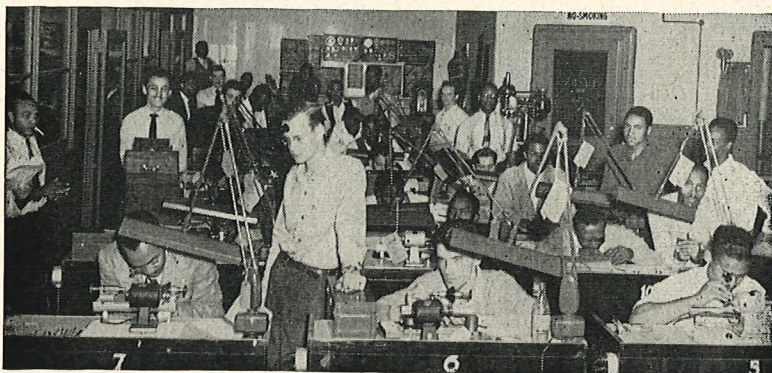
L&R

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BALTIMORE, MD. and RIDGELEY, W. VA.

"Certified Schools for Certified Watchmakers"



School at Baltimore, Maryland



School at Ridgeley, W. Va.

Courses offered in
Horology, Precision, Mathematics, Machine Work and Mechanical Drawing

P. K. MORGAN, Owner of the Schools

4 DIRECT BENEFITS *from* BUYING DIRECT—

RETAIL JEWELERS



DIRECT BUYING

DIRECT SERVICE

DIRECT SHIPPING

**DIRECT DISTRIBUTION
CONTROL BY THE MAKER**

WATCH BRACELETS
LADIES' JEWELRY
BABY JEWELRY
CHAINS • KNIVES

These are just four of the many advantages of maintaining the straight-line manufacturer-retailer relationship . . . advantages that pay off for you in better quality, increased customer satisfaction, and lower operating costs.

The A & Z line of quality gold and gold filled jewelry has been sold direct to the retail trade since 1905. Our salesman in your territory is your direct contact with the factory; you are invited to write to have him call.

MANUFACTURER



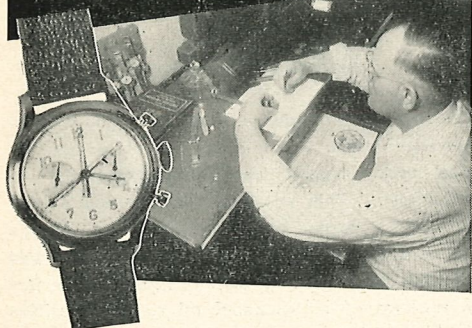
A & Z CHAIN COMPANY

ESTABLISHED 1905

116 CHESTNUT STREET PROVIDENCE 3, R. I.

REPRESENTATIVES FROM COAST TO COAST TO THE RETAIL TRADE ONLY

Earn profits NOW
on Chronograph watch repair



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ESEMBL-O-GRAF WORKING LIBRARY
WITHIN REACH OF EVERY
WATCHMAKER**

Now without further delay . . . without prolonged study or heavy expense, you can open a profitable new avenue of watch repair business. Order the revolutionary new 22-volume ESEMBL-O-GRAF working library from your local material dealer today: pay just \$7.00 down and have immediate access to complete step-by-step procedure for servicing every chronograph on the market. You pay only \$7.00 per month for 21 months thereafter. Not just the product of a publishing house, the ESEMBL-O-GRAF library is backed by an active research organization of chronograph technicians . . . ready to advise you on specific difficult problems.

ESEMBL-O-GRAF PROCEDURE IS SIMPLE!

Merely open the appropriate volume in your bench tray and disassemble each part according to the brief instructions and diagrams shown on the page devoted to that part. There is a page for every part. Assembly of the chronograph movement simply reverses the procedure.

ESEMBL-O-GRAF PROCEDURE IS THOROUGH!

Every screw, every intricate adjustment and oiling procedure is described in short, clear instructions. Nothing is left to guesswork or memory.

ESEMBL-O-GRAF PROCEDURE IS FAST!

Following the ESEMBL-O-GRAF guides cuts two-thirds from repair time. The ESEMBL-O-GRAF is not a textbook, but a tool, serving when needed, like any other tool on your bench.

**IF YOUR WATCH MATERIAL DEALER
CANNOT SUPPLY YOU, WRITE TO US
DIRECT GIVING NAME OF DEALER.**

A VOLUME FOR EVERY MOVEMENT
A PAGE FOR EVERY PART

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RESEARCH LABORATORIES

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Is There a Difference



in Loupes?

Of course, there is. A loupe is only as good as the materials and workmanship that go into it. Bausch & Lomb products are noted the world over for high quality workmanship and fine optical glass. That's why a B&L loupe can be worn for hours with perfect comfort.

WATCHMAKER'S LOUPES

MAGNIFICATION	FOCUS IN INCHES	PRICE
10x	1	\$2.25
7x	1 1/2	1.65
5x	2	1.25
4x	2 1/2	1.25
3.3x	3	1.05
3x	3 1/2	1.05
2.5x	4	1.05
2x	5	1.05
8 and 18x	1/2 and 1 1/4	5.25
4 and 7x	1 1/2 and 2 1/2	2.25

LOUPES WITH HEADBAND

10x	1	2.75
7x	1 1/2	2.15
5x	2	1.75
4x	2 1/2	1.75
3.3x	3	1.75
3x	3 1/2	1.55
2.5x	4	1.55
2x	5	1.55

ACHROMATIC WATCHMAKER'S LOUPE

5x	2	5.00
3.3x	3	5.00

TRIPLE APLANATIC LOUPE

10x	1	12.00
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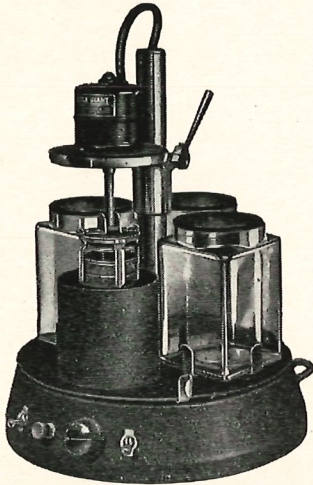
BAUSCH & LOMB
Loupes

PEERLESS
REG. U.S. PATENT OFFICE

AND

LITTLE GIANT
REG. U.S. PATENT OFFICE NO. 349883

WATCH CLEANING MACHINES



PEERLESS
REG. U.S. PATENT OFFICE

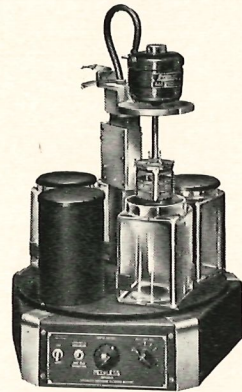
The Peerless is equipped with an automatic reversing operation which is controlled by a heavy duty Universal motor wound for both forward and reverse operation. This automatic action plus square jars prevents a vortex from forming in the solution and creates complete agitation of the solution over and through the basket at all times. Four square jars insure removal of all gummed oil or dirt particles commonly found on movement parts. No brushing necessary. Does complete thorough job. No. 36118

A "LEADER IN ITS FIELD" WITH
AUTOMATIC REVERSING OPERATION

BASKET FEATURES FOR BOTH MACHINES

The basket features more improvements. Made of stainless steel, or Monel Metal, it is so constructed that the various sections fit together in one frame. Thus the solution passes straight to the parts to be cleaned. The various sections of the basket are held in a new type of frame that can be removed or attached to the basket holder instantly. Finger-tip locking device at any height, no screws or knobs to turn.

FOR
BEST
RESULTS,
USE
ONLY
PEERLESS
CLEANING
SOLUTIONS



LITTLE GIANT
REG. U.S. PATENT OFFICE NO. 349883

- Push Button Reversing . . . Simply push a button to make basket turn in reverse.
- Metal Shielded Heating Unit . . . Prevents oxidation of heating coil and gives uniform heat to all watch parts.
- Black wrinkle finish . . . Designed to last and is attractive as well.
- Turntable keeps work in front at all times.

No. 36119\$67.50

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DEDICATED TO THE PROGRESS
AND DEVELOPMENT OF
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Number 6

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before the 5th of the month of publica-
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A METHOD OF PRECISION ISOCHRONISM MEASUREMENTS

By HORACE A. BOWMAN

EDITOR'S NOTE: The following is an address given by Mr. Bowman to the members attending the 28th Annual Convention of the Horological Institute of America, Washington, D. C., May 10, 1949. Mr. Bowman is assistant technical research expert in the Time Division, National Bureau of Standards, Washington, D. C. The Time Division of the National Bureau of Standards is under the supervision of Dr. Ralph E. Gould, executive secretary of the Horological Institute of America, Inc.

One of the most informative investigations which can be made on a timepiece is a properly conducted run-down or isochronism test, from which a curve of the dial error may be plotted as a function of the interval from winding. This test is particularly valuable when an opinion on the merits of a timepiece is requested by the various judicial and quasi-judicial agencies of the government.

Opinions such as those requested by the Post Office Department in connection with cases involving fraudulent use of the mails, or by the Federal Trade Commission, in cases involving mis-branding and mis-labeling of time-pieces are rendered after a very searching and thorough examination of the timepiece. Occasionally such opinions are followed by oral testimony before a Court or trial board. When confronted by aggressive defense, testimony may be vulnerable to impeachment before a jury of laymen if the watch has been disassembled or changed in any respect in the course of the examination. Certain investigations require disassembly of the watch and often a very careful microscopic or chemical examination, but whenever possible, the merits of the watch are judged upon performance without mechanical disassembly. Positional and temperature effects, obviously, are easily investigated without opening the watch.

For the isochronism curve to be more than a crude indicator of variations of rate as the mainspring runs down, it must be

based upon thousands of observations, each observation being accurate to a small fraction of a second. Obviously, factors of human fatigue and personal error limit the precision of a curve constructed manually even with the assistance of a chronograph and a high precision standard of time.

The Time Section of the National Bureau of Standards has developed a device (see fig. 1) which plots the isochronism curve automatically. It records the correction for the watch every 0.4 second and each observation is accurate to approximately 0.01 second. Thus for a modern size 16 watch which may run for 60 hours, there are over one-half million observations. The run-down curves generated by this device are sufficiently precise to permit accurate mathematical analysis of the varying forces within the watch as a function of time.

This device, as is true of all devices for the calibration and testing of timepieces, requires a standard of time which must be more accurate than the timepiece under observation. The standard of time used in this device is the national standard of frequency, accurate to one part in 50,000,000, which is generated by the Central Radio Propagation Laboratory and transmitted to the Time Section. This frequency is received at 60 cycles per second, at a very low level of power. After amplification, this alternating voltage is passed through an autosyn continuous phase shift network. Without going into a technical discussion of the operation of a phase shifter, it will be sufficient to state that it is a device which will add cycles or subtract cycles from an alternating voltage passing through it. For example, if a 60 cycle alternating voltage is applied to the input of the phase shifter and its armature is manually turned one revolution per second in a clockwise direction, the output

from the phase shifter will be 61 cycles; conversely, if the armature is turned 1 r.p.s. counterclockwise the output will be 59 cycles. When the armature is motionless the frequency is unchanged and nearly distortion free.

From the phase shifter the alternating voltage is passed into a dividing device which performs two functions. First, it divides the frequency of the input alternating voltage by 24. Second, it converts the alternating voltage from the usual sinusoidal pattern to pulses of electricity. For example, if a 60-cycle sinusoidal voltage is applied to the input of the dividing net, there will appear a pulsating voltage at the output, the frequency of which is $1/24$ of the input frequency, or 2.5 cycles per second. If the input is greater or less than 60 cycles the output will be correspondingly greater or less than 2.5 cycles per second.

The next stage is a frequency comparator which is, as the name suggests, a circuit which compares two frequencies and indicates which of the two frequencies is greater. The voltage from the dividing device is passed into one of the two inputs of the frequency comparator. To the other input is applied an alternating voltage, the frequency of which is determined by the frequency of oscillations of the balance assembly of the watch being tested, as picked up by a microphone and amplifier. Thus there are fed into the frequency comparator two alternating voltages, one of which is controlled by the standard input signal and the other by the frequency of the watch balance oscillations. This frequency comparator discloses extremely minute differences in frequency between the voltages applied to its two inputs.

The frequency comparator controls a small reversible electric motor. When the frequency of balance oscillations of the watch is greater than the frequency emitted by the dividing circuit, the motor is caused to rotate in a clockwise direction. When the frequency from the watch is less, the

electric motor is caused to rotate in a counterclockwise direction. When the two input frequencies to the frequency comparator are equal the reversible motor is motionless.

A mechanical coupling between the armature of the reversible motor and the phase shifter forces the phase shifter to rotate whenever the electric motor rotates, and in the same direction.

Let us consider an example of a test on a watch. A watch is placed on the microphone which, through an amplifier, is generating an alternating voltage whose frequency equals the frequency of oscillations of the balance wheel of the watch. Assuming that the watch is keeping "perfect" time, then this frequency is 2.5 cycles per second, and (with the rotor of the phase shifter motionless) the frequency from the dividing net into the comparator is also equal to 2.5 cycles per second. The system will remain static because the two frequencies entering the comparator are equal. If the frequency of the watch decreases, perhaps due to a minute speck of dust, the comparator circuit, because of this drop below the standard frequency, causes the motor to rotate in a counterclockwise direction. The mechanical coupling between the motor and autosyn rotates the phase shifter in a counterclockwise direction. This, it will be recalled, subtracts cycles from the standard frequency passing through the phase shifter, which results in a drop in frequency at the output of the dividing network. The reverse of this train of actions would have occurred if the balance frequency of the watch had increased, thus resulting in a higher frequency appearing at the output of the divider. In short, with this arrangement, the standard frequency is being continuously altered, so that its magnitude, divided by 24, always equals the frequency of the watch balance oscillations. Obviously it is possible to record these changes through a recording device.

The run-down curve is generated by a

recording mechanism which is attached through a selsyn system to the coupling between the reversible motor and the phase shifter. What is actually plotted is the amount of phase shift necessary in any given interval of time which must be introduced in order to make the two frequencies entering the comparator equal. By the use of proper grids on the graph paper passing under the printing mechanism stylus, this phase shift may easily be converted into the corrections of the watch in hundredths of a second. The amount of phase shift introduced may not be exactly equal to the amount required, but is always introduced in the proper direction. Hence the phase shifter may require several impulses to correct for the large error or it may overshoot its mark and on the next pulse reverse itself. Thus the phase shifter is constantly moving to and fro across the zero mark within limits of about three milli-seconds. The operation is continuously indicated by two neon bulbs, one of which flashes when the watch is "ahead" of the standard, and the other when it is "behind." The motion of the motor, con-

stantly reversing in direction, is clearly visible.

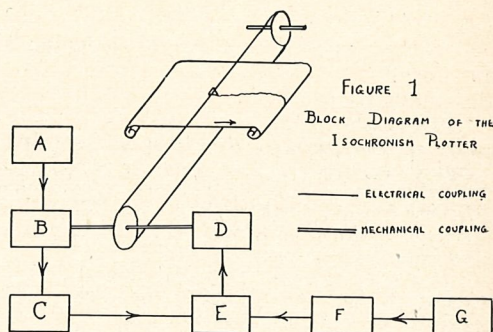


FIGURE 1

BLOCK DIAGRAM OF THE ISOCHRONISM PLOTTER

— ELECTRICAL COUPLING
 == MECHANICAL COUPLING

- A. Source of standard 60 cycle frequency is the Central Radio Propagation Laboratory, National Bureau of Standards.
- B. Autosyn continuous phase shifter.
- C. Dividing device.
- D. Reversible motor controlled by the frequency comparator.
- E. Frequency comparator.
- F. Microphone amplifier.
- G. Watch and microphone pick-up.

NOTE: The Selsyn System which transmits the mechanical motion of the phase shifter to the recorder is eliminated for simplicity, and for purposes of illustration only, a belt and pulley drive is substituted.

"Watch Inspection Time" To Be Observed Sept. 12-17

Arrangements for observing the first "It's Watch Inspection Time," Sept. 12-17, sponsored by the Jewelry Industry Council, have been completed, according to an announcement by Albert E. Haase, director executive.

Planned to stimulate watch repairing throughout America, selling of watch attachments as well as other items in the average American jewelry store, the promotional arrangements will feature free watch inspection. The campaign slogan will be: "Check Up—Then Dress-up Your Watch."

Watchmakers and jewelers will be provided an "idea book," newspaper mats and window display material for use during the "It's Watch Inspection Time" period.

Suggestions on "How to Make Watch Inspection Time Pay Dividends" featured in the "idea book" stress the importance of "dressing up" the watch repair department, instructing repair clerks to take an interest in the customer's watch, keeping in mind that satisfied customers are open for suggestions of sales "on the spot," proper display of watch attachments, assuring speedy service and effective identification of repair departments.

DEVELOPMENT OF TIMEPIECES

By

EDWARD H. HUFNAGEL

EDITOR'S NOTE: *The Horological Institute of America, Inc., the oldest national horological association, now numbers over 5,500 members and subscribers, the largest percentage having become members since 1946. These new members will be interested in the early history and development of the H. I. A.*

It is with our most profound respect and admiration that we REPRINT the article "DEVELOPMENT OF TIMEPIECES" by the late Edward H. Hufnagel, which was published in the A. N. R. J. A. (1922) YEAR BOOK.

No man, identified with the retail jewelry business, and its allied branches, did more to promote the welfare and prosperity of our industry than Mr. Hufnagel.

He was chosen four times president of the A. N. R. J. A. and fourteen times served as president of the H. I. A. which he, as a member of the original group, called to Washington by the National Security Council, helped to organize.

At the time of his death, October 2, 1948, Mr. Hufnagel was serving his eleventh consecutive term as H. I. A. treasurer.

"For the establishment of the Horological Institute of America, the profession is indebted to Mr. Geo. W. Spier, custodian of watches at the National Museum at Washington, D. C., and president of the Horological Institute of America.

"Mr. Spier, and other well known scientists of America have worked hard for a number of years to establish a watch institute as they have had in Europe for many years. During the war, when the government found an unprecedented shortage of scientific men to repair scientific timing instruments, it became very evident that something would have to be done to interest more young people in learning this vitally necessary profession. Watchmaking has passed through a process of evolution, the same as any other line of work. The government became fully cognizant of the fact of the essentialness of the watchmakers profession. Think what correct timing meant at the moment set for a barrage! Every phase of modern civilization is governed by correct timing and yet



EDWARD H. HUFNAGEL

there is a terrible dearth of good watchmakers. At the time of the war the government went to Mr. Spier for watchmakers, and found that there were only about 30 experts in the city of Washington. Today there are 4,000 empty benches on account of the shortage of skilled help. A prominent watch manufacturer said that the average watch becomes useless in three years, for the reason that there are so many butchers instead of watchmakers. Mr. Spier could not furnish the necessary number of men from Washington and had to draw from all over the country. Watchmakers with vision do not stop at watchmaking but are inventors of some of the

finest pieces of machinery. I am told that the designers of several machines that have brought fortunes were watchmaker inventors.

"The watchmaking profession is at present underpaid. It takes as long to learn this profession as to go through college. There are over 50,000 dentists in America. They have elevated the profession to heights unthought of years ago. Most wealthy jewelers today have not made their money in the jewelry business but in outside investments. We cannot expect to get people into the watchmaking business unless we give them adequate compensation for their work.

"Andrew Carnegie left an endowment of five million dollars, the interest of which was to be used in establishing a National Research Council. This council has been functioning for a number of years. Mr. Spier went before this council and told them how the government was losing greatly by the shortage of trained watchmakers. He said that the government could not afford to be placed in a similar position as it was during the recent war, neither did the officials of the War and Navy Departments, hence the establishment of the Horological Institute of America became a possibility.

"There are four different kinds of membership in the Horological Institute, which makes it possible for everybody to become a member and certificates of membership will be given accordingly. They are the active, sustaining, life and patron at \$5, \$10, \$100 and \$1,000 respectively. Offices of headquarters are in the National Research Council Building in Washington. The problems of watchmaking are studied and it is one of the purposes of the council to interest young men to learn the profession. We found that the New England Institute as a vocational training school is training about 30 or 40 men to become watchmakers, but that there were no facilities to admit all those who desired to enroll. It was also brought to light that

many young men had no means to pay for their tuition, should they be fortunate enough to be admitted.

It is our place to make the watchmaking profession attractive to young men. The work affords steady employment the year around, and when we get it to a basis where a man has reasonable hours of work, it will be more alluring than at the present time. A watchmaker should never work more than 8 hours a day. There is no trade except that of engraving that requires such concentration of effort or enforces such a severe strain on the nervous system, especially when it comes to poising a balance, or other similarly delicate operations. With adequate and better working conditions we can get more boys interested in the profession. It is just as possible for women as for men to become good watchmakers. In some places in Rochester women do very well at this work. I believe that the watchmaker is entitled to 50% of the amount of the job, and that this will pay him well for his work. After the overhead is paid this leaves the jeweler a profit of about 15%, which is fair.

"Three different kinds of certificates are awarded to students of the Horological Institute. The first is that of JUNIOR WATCHMAKER. The student must send a 16 size watch in perfect condition which is broken up and returned to be repaired. The repair work must be vouched for by a monitor, who must swear before a notary public that the work was done honestly. Within the very near future arrangements can be made for such examinations on the Pacific Coast.

"SKILLED WATCHMAKER is the next degree. The head watchmaker at TIFFANY'S, who has made a life study of watchmaking and is a graduate of one of the finest schools in Germany, has, in his own home, a complete library of reference works. He is now preparing collection of books, the names of which will be ready for the asking, in a short time. The one who passes examination of Skilled

Watchmaker must answer theoretically many questions, including geometry, information leading to which will be found in these books.

"Some of the best watchmakers are self-made. They know all about tempering, and everything else that has to do with the profession. However, very few can handle a hairspring right. Many don't know where they can get information on the subject. Some of the schools are giving extension courses so that experienced men can go for one or two months and specialize.

"The third certificate will be awarded to CERTIFIED HOROLOGISTS. Of these I don't believe there are more than about 25 in the entire country. They will learn the higher branches of the profession

that will make it possible for them to qualify as shop superintendents in large firms. For instance, Tiffany's have 30 watchmakers; they need a highly qualified superintendent. The Institute will certify watchmakers, elevate the trade and interest people in learning the profession. In addition the public will receive protection when they bring their watches for repair work.

"The jewelry business today is in a position where it has gone to make itself felt as a leading power of the nation. Once we are properly organized and work cooperatively towards the interests and betterment of every phase of the profession, there is no doubt at all but what we will again be on a safe, sound, and profitable basis. In no other way can we hope to escape inevitable failure."

DATING AMERICAN CLOCKS

By BROOKS PALMER

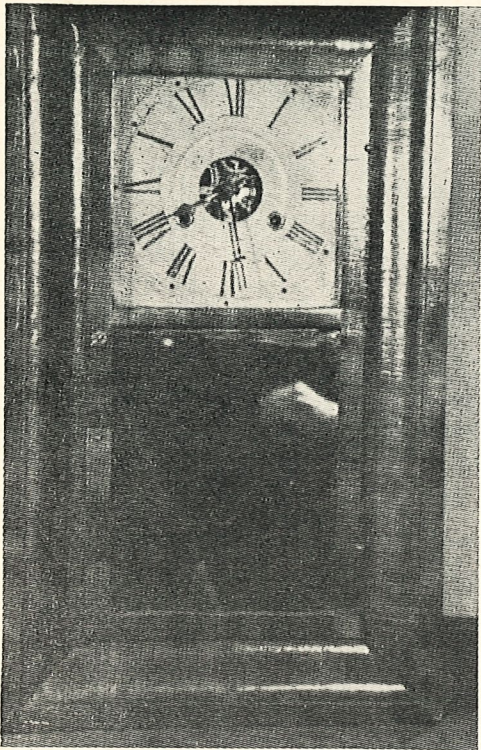
(Editor's Note—Mr. Brooks Palmer, a member of the National Association of Watch and Clock Collectors, is a specialist in American clocks. He is well known for his articles on clocks and has contributed to several well known magazines. He has recently completed the section on clocks and watches for the new Collier Encyclopedia. Horologists and collectors will be interested in his history and description of acorn clocks. We wish to acknowledge our gratitude to the AMERICAN ANTIQUES JOURNAL for their permission to reprint Mr. Palmer's article.)

The old family clock that has been passed down to you from generation to generation, or the one that you now have because it smiled at you in the shop until you finally bought it,—just how old is it? There is one fairly sure way to find out; check the maker's name against a clockmaker's list. That should provide some indication as to its age. If the name is not recorded, then someone will have to do a piece of research to find out any hoped for facts. If the town name is on the clock further help can be secured from such recorded data as is available. For some unknown reason the clockmakers failed to leave much in the way of statistics; records still consultable are all too

few. However, one can always try and such digging can be fun.

That is how I got started on my American Clockmakers' list ten years ago. The first two clocks that started my modest collection bore names not on any then existing list. Full data was painstakingly secured. The work (or better, pleasant hobby), went on until now this list numbers over 5,000 names with data. The purpose of this article is to provide a few hints to those who develop an interest in a clock as to when it was made and something about the man or men who made it.

Where on a clock are these makers' names and town names found? Dial markings are



An "OG" clock from the author's collection, made according to its paper by George Marsh, Winchester, Conn. Photograph by Elliott Russell.

most common. It should be pointed out that in some cases these names can be added later. There was the further quaint custom of the clockmaker placing the customer's name on the dials of certain older tall American clocks to add to the confusion of trying to make up a clock list. Most of the Connecticut shelf clocks had papers stuck inside, possibly as dust blocks, which were imprinted with the maker's name and town along with some instructions about how to set the clock running. Much praise is due the now unknown makers of the adhesive that has caused the papers to stick so well after in some cases one hundred and thirty years! Latterly some of these paper markings were applied to the back of the clock. It is unusual to find a paper in a tall clock.

One question which comes up most frequently concerns the maker of tall clocks

which have no name anywhere on the clock. There are many such excellent timepieces in existence today; such a clock is not unique. There may have been many reasons for this absence of name—too long a subject for discussion here. Today we regret that the makers did not think enough of their fine craftsmanship to enscribe it. Suggestions as to probable date of making will follow, but there is now no known way to identify these completely.

Tall, floor or hall, now nicknamed "grandfather" clocks, were generally the first made in America for the home. From as early as 1702, or perhaps earlier, they were built in fair numbers until as late as 1860. Since then a few more have been added each year, but not in large numbers. They were made in almost every section of the country where clockmaking was engaged in. Pennsylvania and the sections around it was the most prolific area for the tall clock. This business was badly hurt in the middle 1820's to 30's by the aggressively sold, less expensive, Connecticut shelf clock. The Connecticut tall clock with wooden works, an adaptation of the wood movement "hang-up," still existent in fair numbers, dated from after 1800 to the middle 1820's.

For the metal works clock the case provides hints as to the age of the clock. The earliest were generally quite plain; later the cabinet maker would often follow the period of furniture styling. Very frequently the man who constructed the case was not the one who made the movement. Glass—in those earlier days of this country a very scarce article—was not used in the case itself on the sides or for the door, except on the hood. At least as far as Philadelphia tall clocks are concerned the domed top case was made by 1720; earlier ones were flat-topped.

Dials of tall clocks are another sign of approximate age. First is the size; the earliest were approximately $10\frac{1}{2}$ inches square, gradually they grew larger. The arched dial came to be used by 1720 with the semi-

circular arch on the top first being used for the maker's name and about ten years later for the subsidiary moon dial. The earliest were of metal, engraved; the painted iron type is believed to have been in use by 1790. The names Osborne, Wilson, Walker, Hughes, E. Owen, Price are all believed to have been English dial makers and do not refer to the maker of the clock.

Then there is the matter of the number of hands. In Europe the minute hand was added about 1680 and the second hand some ten years later. In Pennsylvania tall clocks carried only the hour hand until about 1705 or 1710, when the minute and second hand were added. This testimony causes upset to many traditions that "our family clock is 300 years old." Mentioning this then brings forth the answer that "some one has since added the minute hand." The dial ring markings reply to that. On the one-handed clock between the numbers were either no space markings, some single embellishment, or *four* sections between the numbers; with the minute hand on the face there are *five* spaces between each number. Count those on your own clock. If only four then there is the possibility that the minute hand has been added, or that the original works have been replaced, although this instance would be rare to find.

Before discussing other types of clocks, one must pause to give credit to those designers of the tall clock whose mechanism exists almost unchanged for about 260 years. What other man-made machine had such excellence of development in the Seventeenth Century? New tall clocks made today would follow the pattern of the earliest. Although the metals might be more plentiful and easier worked with modern machinery, it would be difficult to improve the timekeeping qualities. The variations came because of the expansion and contraction of the pendulum rods with changes in temperature. A rod made of the new metal invar or a similar alloy would correct most of that small error.

Of those called *wall* clocks (because they

hang on the wall), the "wag-on-wall" and wooden and metal "hang-ups" were earliest. Some of these are now reposing in splendid cases of the grandfather variety. Willard's Patent Timepiece, now called the "banjo," he invented in 1802. There are many banjo clocks still owned and admired for their appearance and their timekeeping qualities as well. For many of them there is no means of identification of their makers. Simon Willard is supposed to have used construction details of his own which have been thoroughly studied and known to but a few. There were two variations of the banjo, the lyre and the girondolle, rare and beautiful clocks proudly owned.

Shelf clocks came to be made in America because of a desire for a smaller, less expensive clock than the grandfather. There were limited numbers of the "Massachusetts Half Clock"; Connecticut captured and held the shelf clock market. Eli Terry, after long and hard experiment, devised a successful weight driven wood movement which would run with a 20-inch weight fall by 1814. Box cased at first, it was transformed into the superb Pillar and Scroll, possible as early as 1816, although probably most of them were made in the 1820's and some even in the early 1830's. A variant was later powered with an 8-day brass movement. The "Mirror" clock came into favor about 1820, less costly to make than the Pillar & Scroll. Other case designs followed using wood movements, and some of brass with cast plates. The use of roman or arabic numbers on the wood dials is without significance in the matter of dating.

As rolled brass became available to the clockmaker in the late 1830's, Chauncey Jerome devised an inexpensive 30-hour weight-driven brass movement, probably cased in what is called "O.G." (see illustration). Weight-driven OG's continued to be made through the 19th century and appeared in Clock Company catalogues as late as 1915.

American made coiled springs began to be

used by the Connecticut clockmakers after 1845, allowing the case maker to devise new shapes of his cases, like the "acorn." The clocks controlled by a balance wheel began to be made in the latter 1840's by Charles Kirk and others in Connecticut, beginning to sound the knell for the pendulum clock. Now, in 1949, very, very few new pendulum clocks are made.

The round metal lever escape alarm clock began to be known by 1875, the electric alternating current powered clock by 1914. These two types provide the bulk of new clock production.

Perhaps there should be a few words about American watches and their dating. Mass production of American watches lagged some thirty odd years after the principles were in full use in the clockmaking industry of Connecticut. The first watch factory was in Roxbury, Massachusetts, by 1850. Until then hand work was the rule. Such earlier watches could have been either all made here, or imported either in part or

as a whole. As to the maker of a particular watch the name on the dial could well be a jeweler or dealer. The name, if any, on the movement might give a better indication. Your own trusted watch repairman has considerable expert knowledge on such subjects and can be helpful on identification of a piece.

Early watches were wound with a separate key. Stem winding was developed in the 1870's and, as a general conclusion, by between 1880 and 1895 American watch factories abandoned the separate key wind. Wrist watches were popularized in the First World War.

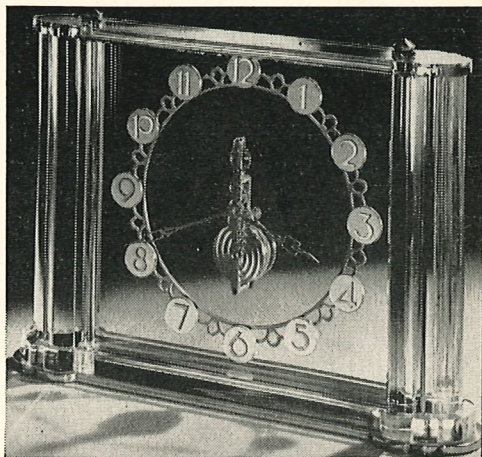
It is hoped that these bare outlines may provide helpful information about clock dating. The Clock List is the surest method. My American Makers' list is still building and I would be grateful for any information about American Clock and Watch makers which would improve this list. Send information to Brooks Palmer, 1235 Park Avenue, New York 28, N. Y.

H.I.A. and C.H.A. Officials To Hold Joint Conference

A joint conference of the members of the executive committees of the Horological Institute of America and the Canadian Jewelers and Watchmakers Association has been scheduled for November 4 in the General Brock Hotel in Niagara Falls, Ontario.

The holding of such a conference by leaders of both countries will result in a clearer understanding of their problems and should result in closer cooperation in the future to improve standards of skill and efficiency of watchmakers in this country and Canada, A. S. Rowe of Indianapolis, president of the H. I. A., pointed out in a statement regarding the conference.

SWISS PLASTIC-CASE CLOCK FEATURES JEWEL-LEVER WATCH MOVEMENT



Swiss designers combine a visible quality jeweled lever watch movement with transparent plastic in one of the new high-fashion clocks introduced in Switzerland.

V. P. Barkley Headliner at NACJ Convention

Alben W. Barkley, Vice-President of the United States, the outstanding speaker at the banquet meeting of the National Association of Credit Jewelers, held at the Palmer House, July 28, predicted "an upturn in business and employment before the turn of the year."

Vice-President Barkley insisted that the upswing in business "will lead to a balanced budget and sound government economy." He declared emphatically that he believed a watch was a necessity, not a luxury, but said he could not state when luxury taxes would be reduced or eliminated.

"Everyone, from the President down, is watching the situation in hope of reaching sound decisions on taxes," asserted Mr. Barkley.

Arde Bulova, chairman of the board of Bulova Watch Company, was given a plaque honoring him as "Jewelry Man of the Year," the presentation being made by Leo Weisfield, past president and chairman of the board of directors of the Association. Mr. Bulova became the first person in "The Jewelry Hall of Fame."

Practically every state in the Union was represented at the Chicago meeting. More than 200 manufacturers and distributors displayed their goods at the convention.

The National Jewelry Fair was held in the Hotel Stevens from July 24 through July 28.

The convention program was limited to one day, July 26, with President H. A. Goldberg presiding. Dean Charles M. Edwards of New York University's School of Retailing, was the first speaker.

Also featured on the program were three representatives of the Horological Institute of America, Alfred S. Rowe, president, Howard L. Beehler and George J. Wild, who conducted a forum on watchmaking. Mr. Rowe emphasized the importance of certification of watchmakers to aid the jeweler in selecting competent employees to do important watch repairing work in the shops

of jewelers, and giving better watch repair service to customers.

"By employing certified men, a jeweler will be able to give better work and protect the public from untrained botchers who frequently prey upon the ignorant," declared Mr. Rowe. "It will add prestige to the store, as well as the entire trade."

Mr. Wild said that the watch repair department of a jewelry store was "the spark plug and builder of any retail jewelry business." He also stressed the H. I. A. objective to achieve better cooperation between the retail jeweler and the watchmaker. He reviewed the importance of proper training of watchmakers.

Mr. Beehler declared that the advancement of horology depended on pride in workmanship, greater skill and knowledge, proper ethical standards of workmanship and business practices and quality of service rendered the public.

Other speakers at the convention were: David J. Field, Leonard N. Simons of Detroit, Ken Matsumoto of Cincinnati, Philip R. Kahn of New York, Edwin Freed of New York, Leon S. Wayburn of Detroit, R. M. Severa of New York, and Martha Percilla, fashion director of JIC.

Washington Horologists Held August Meeting

The Horological Guild of Greater Washington, D. C., held an interesting meeting on Aug. 10 in the Natural History Building. Featured on the program were Sody Solabes of Baltimore, Md., who spoke on clock gear trains; Eugene Sobel of Washington, D. C., who discussed the new District of Columbia sales tax; and Vice-President L. W. Morris, who presented the second of his series of lectures on the new method of identifying and ordering Swiss watch repair parts. The Elgin National Watch Company provided one of its "Time" films for the meeting.

CHICAGO INSTITUTE WOMAN GRADUATE HONORED



At the recent National Jewelry Fair in Chicago, Col. Harry D. Henshel, vice-president of the Bulova Watch Company, New York, and Alfred S. Rowe, president of the Horological Institute of America, Indianapolis, Ind., awarded Mrs. Frederick Toenniges, of the Chicago Institute of Watchmaking, 7 South Pulaski Rd., Chicago, a Bulova watch in honor of her achieving her ambition to become one of the few women watchmakers in the country.

Mrs. Toenniges is the wife of Dr. Frederick Toenniges, instructor at the Chicago Institute of Watchmaking, and she holds a diploma from that institution. She and her husband own and operate a watch repairing and jewelry shop, The Tic Toc Shop, in Naperville, Ill., a suburb of Chicago.

Shown in picture above, left to right, are Col. Harry D. Henshel, New York, vice-president of the Bulova Watch Co., Mrs. Frederick Toenniges and Alfred S. Rowe, President, H. I. A.

BEEHLER SCHOOL OF WATCHMAKING CHEBEAGUE ISLAND, MAINE

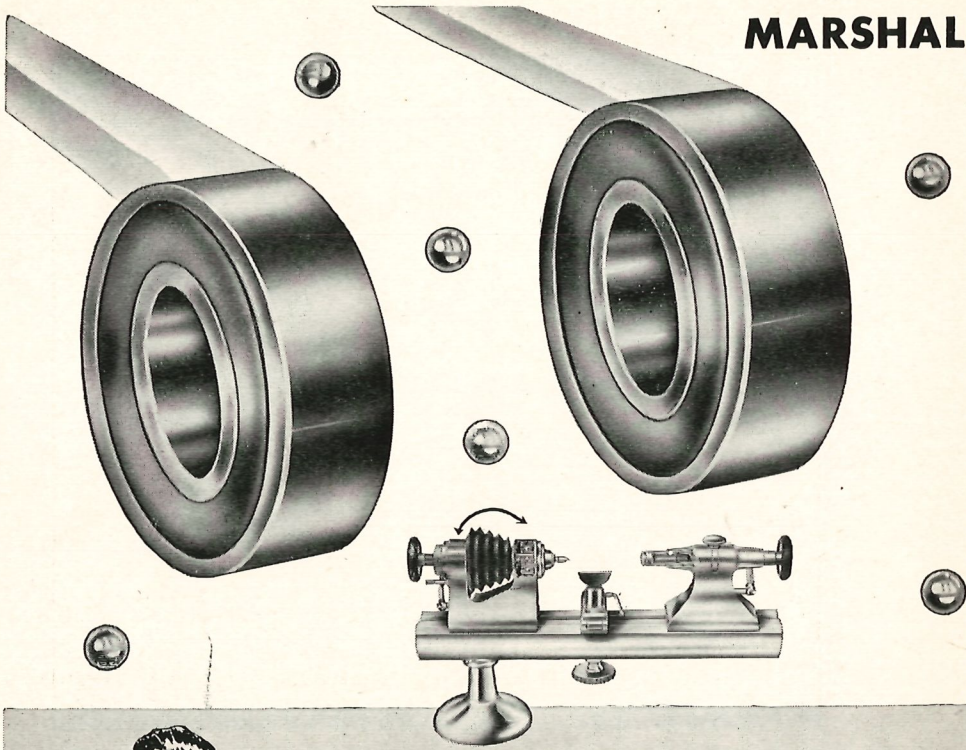
Now has a few vacancies in their Watch Repairing and Advanced Watchmaking Courses. Serious students will find the Beehler School of Watchmaking ideally situated for successful study.

Bulova School of Watchmaking. Training Manuals and Training Films Used

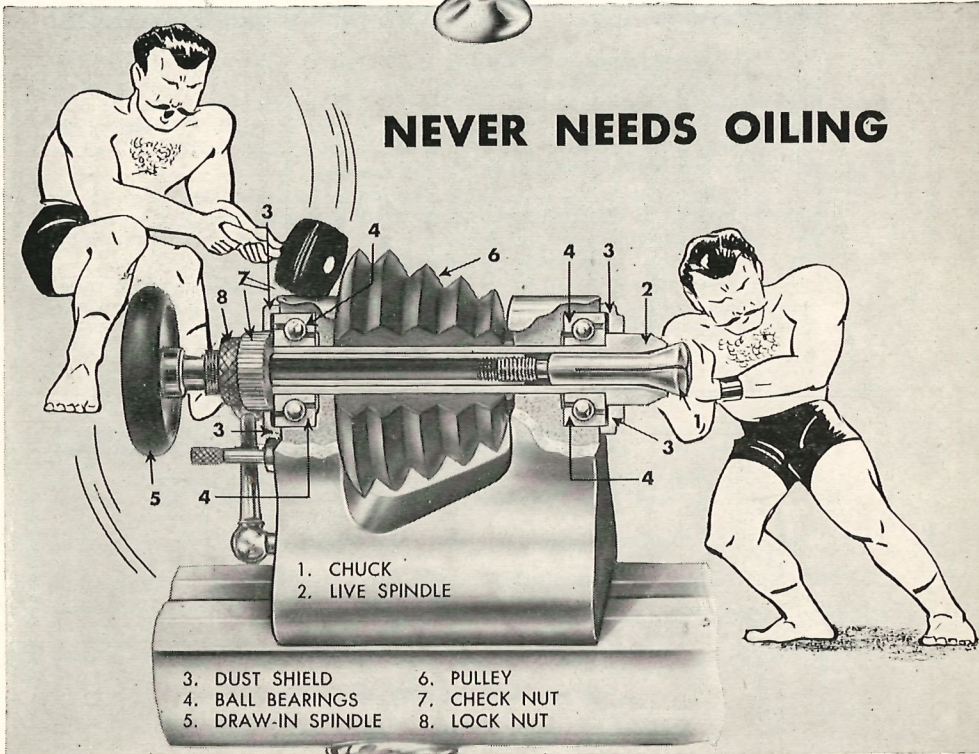
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4. BALL BEARINGS 7. CHECK NUT
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Ball Bearing Lathe



Many watchmakers have asked us, "How can you produce a quality ball bearing lathe priced so far under other manufacturers' prices?"

The answer is . . . **KNOW-HOW AND HIGH PRODUCTION.** The Marshall factory has produced, and is producing thousands of lathes, more than all other companies by far. This high rate of production makes the amazingly low price possible. And you have the guarantee of America's largest manufacturer of watchmaker's lathes. . . .

NO LATHE, REGARDLESS OF PRICE, CAN BE MANUFACTURED WITH MORE ACCURACY AND PRECISION THAN A MARSHALL LATHE, BALL BEARING OR STEEL BEARING.

The Marshall Ball Bearing Lathe is made of the same high quality materials as Moseley and Peerless Lathes, which have been manufactured for many years. It is made by the same skilled workmen and is the result of more than 5 years of experimentation and development. Only the best Instrument Type Ball Bearings are used and they are sealed in oil for life—no oiling is necessary—ever. These Ball Bearings are Pre-Loaded to eliminate all possibility of side shake or end shake in the spindles. The Marshall Ball Bearing Lathe has 2 Pre-Loaded Ball Bearings to bring the possibility of friction to an absolute minimum. Takes all Peerless and WW Style chucks and attachments.

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HOW TO ORDER SWISS WATCH REPLACEMENT PARTS

By PAUL TSCHUDIN

EDITOR'S NOTE—*Dr. Tschudin, Director of the Swiss Watch Repair Parts Information Bureau, The Watchmakers of Switzerland, 730 Fifth Avenue, New York City, gave this interesting talk before the members and guests at the 28th Annual Convention of the Horological Institute of America, Inc., May 10th, Washington, D. C.*



DR. PAUL TSCHUDIN

Mr. President, members of the H. I. A., gentlemen, "I wish to thank you very much for the opportunity of talking to you today and to represent the Watchmakers of Switzerland at this 28th annual meeting of the H. I. A., the oldest watchmaking organization of the United States. The program we are sponsoring in this country has one objective: to try to help the watchmakers of America in their everyday work, and if it has taken quite a time, several months, perhaps years, to get this program established, it is because of numerous questions raised during the surveys that we made.

"I would like to make a little historical report of what has been done. After making surveys throughout the world, the Watchmakers of Switzerland were conscious of the fact that the repair of their products was far from being perfect and that many problems were raised every day

in the minds of the watchmakers who were servicing and selling their products. This survey was carried through by watchmakers or organizations throughout the world and a patent was set to help as much as possible the repair of watches. One of our great problems was the supply of material and lack of parts, especially during the six years of war. It was very hard for us to catch up. We are beginning now to see the results of what we have done, but I don't want to be happy too quick; it will take several more months, eventually years, until the thing is set up as we would like it to be. We believe that our program will help solve some of the problems you have, and I will ask you for permission to explain to you what has been done up to now.

"First of all, a catalog, which I hope some of you have received, was distributed; in fact, 30,000 were supplied all over the country and about 15,000 are going to be supplied within the next two or three months covering 45,000 watchmakers in the United States. Frankly, after the surveys that I made in 1946 and 1947, I never expected that we would receive calls for more than 20,000 to 22,000 of our catalogs. And it is my fault that some of you have not received these catalogs, because the order I placed with the printers did not exceed the amount of 45,000.

Following the distribution of the catalog Part I, which covers the movements manufactured by Ebausché — which symbol is known to all of you, is Catalog Part II, of the same character, and it will cover the remaining brands of Swiss watches. This catalog is about to come off the press; in fact, one 'dummy' of that catalog has already arrived, and I am happy to announce

to you today that we will distribute it early in August to all persons who have received Catalog Part I, and which I hope will include all of you at that time.

"The Dictionary of Watch Parts," which is now on sale through the jewelry magazines and watch associations, has been given a lot of praise, and we are planning to reprint a second edition of that book. Another point of our program and I think it is the most important part of all our set-up—is to standardize the way of ordering parts. We had quite a lot of trouble with the existing systems used by the material importers, and, if we change those systems and ask for those importers to use only our system, it is because we were under the impression that, for commercial reasons in five or ten years, instead of using seven systems to order parts, you will use twenty or twenty-five. So we have tried, and we are still trying, to have these stocks and the orders placed with one basic system which the Watchmakers of Switzerland have used for years and which has been used throughout the world. In two or three weeks, the official package of parts will be introduced on the market. In fact, the material importers are now advertising those packages and the cabinets in which the packages will be classified.

"The reason for introducing the packaged parts is, as you know, to give you assurance that the parts which you are using are genuine manufactured parts. There is one survey which has been used by the Watchmakers of America quite a lot and still has to be known better; it is the Information Bureau, located at 730 Fifth Avenue, New York City. This Bureau has received within the last four months about 60,000 letters from the watchmakers of America — questions of technical matters, and about sales of watches, etc., and I want to tell you members of the H. I. A. that it is a pleasure for us to answer any question on any problem that you may have concerning the Swiss watches. Please do not hesitate to write us for any information or

to inform us as to what is happening in your area, stating what your troubles are, and we will do our utmost to help you.

"Our program also deals with many educational problems. We have two groups of people we are trying to help and, therefore, we have to start by educating them. We are going to do our best to help the junior watchmakers and especially the watchmakers in the schools, giving them the material they need and the information they need for their education. We will gladly cooperate with all the American Watchmaking schools and supply them with the material that they need. Up to now, we didn't do much maybe, but we have one speaker's kit with slide films, which will be made available to you; in fact, it is already available at the association headquarters and more of those speaker kits and sound slide films will be available to the guilds and schools.

"We are also planning to produce books for distribution to American watchmakers, in which they will find basic answers to the basic questions they may have, and it will also enable them to tell customers the difference of a quality watch and a cheap watch.

"You have certainly seen our program of advertising, and any comments you may have about the way we advertise our products in this country will be welcome. We are trying to stress to the public that a good watch is bought in a jewelry store and the material we will make available to you in the future will stress more and more the buying of a quality watch.

"We also plan to print a little bulletin that we will send to the watchmakers using our catalogs throughout the country, in which we will give brief information about the new models of Swiss watches. The other phase of the education we are starting now is the education of the consumer. We believe that the consumer has to know the difference between a watch that he buys in a cigar store for \$5.95 and a watch that he

buys in one of your stores. Ours is a challenging publicity and advertising campaign, but, with the help of the watchmakers of America, we are going to succeed. This advertising will consist mostly of the consumer window displays, and films for the local clubs. It will probably be ready by fall,

and we have other material that will be made available to you during next year. Anytime you have a question or need advice, or you would give us your advice, which will be very valuable to us, we will be very happy and we will be very thankful for it. Thank you."

RETIRED TOLEDO MAN MAKES COMPLEX CLOCK



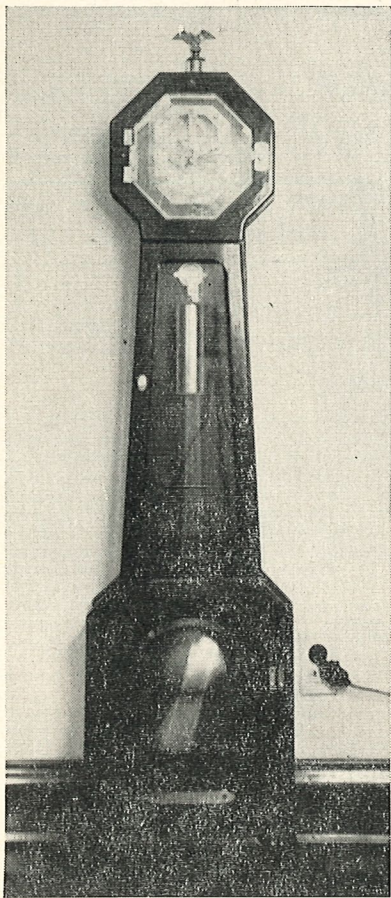
DR. HALVOR O. HEM EXPLAINS THE WORKINGS OF HIS MARVELOUS CLOCK

Dr. Halvor O. Hem of Toledo, 85 years old, retired engineer and inventor, who has patented and designed many machines, has completed one of the most complicated clocks ever made.

One dial on his clock shows sidereal, or "star," time, while other dials tell the day, month and year. A gear that turns only once every four years takes care of "leap-years."

Spheres representing the sun and moon reveal their relative position to the earth, along with phases of the moon. One dial shows solar time, which varies from "star" time only four minutes a day.

Dr. Hem decided to use his "spare" time after he had retired as chief engineer of the Toledo Scale Company two years ago to



HALL CLOCK BUILT BY DR. HEM

creating his complicated clock. He worked only week ends over a four-month period to produce it. He made every part in it in his home-workshop. He built each unit separately without a "master plan."

Should the clock ever stop for any reason, Dr. Hem is able to turn a "master-key," which re-synchronizes the clock's mechanism.

He wears a self-winding wrist-watch, he says, because so many of his 200-odd various timepieces need "winding-up" regularly.

Dr. Hem began his mechanical career at the age of 8 years, when he built a steam turbine. When he was 12 years old, he made a sewing machine.

A native of Norway, Dr. Hem used to "tinker" with watches and "gadgets" while he was watching his widowed mother's sheep, in order to add to the meager family income. His formal education stopped when he was 14 years old, and most of his information has come from books.

Dr. Hem holds only one degree, an honorary one from the University of Toledo. He is doing special work for the University of Detroit.

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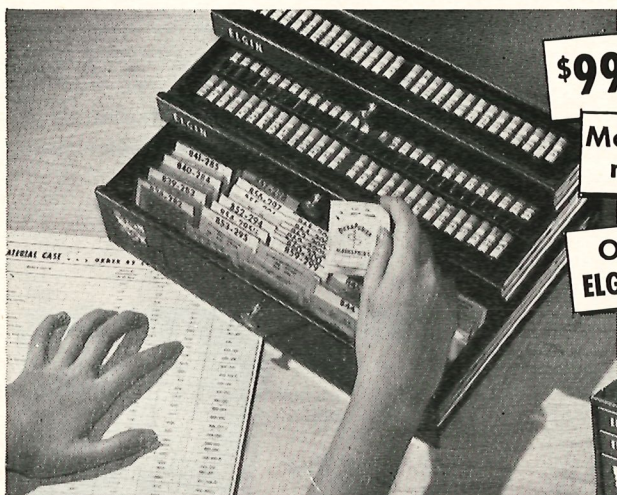
ORDER FROM YOUR JOBBER

NEW TIMEPIECE STYLE-LEADER



Rich in its simplicity, this square-dial, 18-karat yellow gold jeweled-lever watch was one of the new fashion leaders exhibited at the Watch Pavilion of the Swiss Industries Fair in Basle. The matching gold band is of double serpentine design with a clip-like attachment.

Now! give faster repair service
 ...save money on parts with
ELGIN'S NEW MATERIAL CABINET



\$99⁵⁰ complete with index cards and materials

Material alone worth **\$135⁰⁰**; makes the cabinet **FREE**

Order **NOW** from your **ELGIN** material wholesaler



**MOST COMPLETE, BEST ARRANGED
 CABINET OF ITS KIND!**

Here's what you have been waiting for! This new Elgin material cabinet is a system for making your Elgin watch repair work speedier and easier. And you save substantially on the material and parts when you buy them in this complete convenient unit.

Has three easy-operating drawers; 29 compartments for mainsprings alone, holding 61 mainsprings. Stock-expansion room.

Following material comes in cabinet: *Winding Arbors, Clicks, Winding & Setting Clutches, Hour and Minute Hands, Second Hands, Balance Hole Jewels, Balance Cap Jewels, Roller Jewels, Setting Levers, Bevel Pinions, Cannon Pinions, Case Screws, Balance Staffs, and Mainsprings, totaling over 400 parts.*

Cabinet is in size approved by the Watch Material Distributor Association.



"Remember—no other watch ... only **ELGIN** has this winning combination."

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- Fashion Academy award-winning style
- The DuraPower Mainspring*

ELGIN'S 85th anniversary values backed by big advertising campaign.

*Made of "Elgitoy" metal. Patent pending



ELGIN NATIONAL WATCH COMPANY
 Elgin, Ill.

Your Questions Answered Here

By "THE PROFESSOR"

EDITOR'S NOTE: *A nationally renowned professor—who prefers to remain anonymous—has consented to answer questions from our readers pertaining to the science of horology and its various practical applications in the field of watch repair. Simply address your questions to the editor, H. I. A. Journal, 921 State Life Building, Indianapolis 4, Indiana. It will be our pleasant duty to forward all questions received to "The Professor" for a prompt reply and publishing in these columns every month.*

Dear "Professor":

I am repairing an old clock which seems to have an interesting history. I wonder if you can give me some information regarding this history.

The clock is housed in a porcelain case about thirteen inches high and rather ornate. This case has stamped on the back "Royal 1755 Bonn" with a crown between these words. On the bottom of the case is a number 6019 followed by "De 4643" and also number 118. The works of this clock has the old anchor or recoil escapement in the face and on the back plate appears the number 899 and in smaller numerals on the bottom of the plate is number 441. The cog wheel which adjusts the up and down motion of the pendulum has the inscription "L. Brocot B. ^{te} S.G.D.G."

I might mention that the inside of the case has a made paper label stating "Made in Germany" but the inscription mentioned above on the works sounds French. Any help you can give me about this clock's history will be appreciated. C. O. L.

Answer: Your description given of the old clock has in it no mention of the maker's name. The pendulum regulator-block bears the name of the maker of that part only, L. Brocot, who patented what is generally called the "Brocot suspension"; or the reference in French stamped on the block may mean that the clock manufacturer paid license-fees or "royalty" to the patentee Brocot, for the privilege of using his invention. But this gives us no clue to the identity of the maker of the MOVE-

MENT, nor to its age or to its origin otherwise. The words "Royal — 1755 — Bonn" on the case, indicate that it was made by the great porcelain factory of Wesels', at Bonn, on the Rhine river near the city of Cologne, Germany. This factory has been in business since 1755, and at least up to the time of the last world war; whether it came through the war in shape to continue business we do not know. But the trade-mark doesn't indicate how long ago the clock case was made.

"THE PROFESSOR"

Dear "Professor":

I have in my possession an 18-Ligne size pocket watch with the inscription "James Nardin, Locle," movement No. 12285. The regulator has on the left side "fast 321," and on the slow side it has "slow 123."

I would like to know if this watch is imported into this country, and, if so, would like to have their address. A pallet fork is broken in this watch, and we would like to bring it up to first-class condition, provided we can secure the material. F. E. W.

Answer: The Nardin firm of Switzerland has been in the hands of generations of that family for more than a century. The present firm's American address is: Ulyssee Nardin Watch & Chronometer Corporation of America, 12 East 46th St., New York 17, N. Y. We cannot say whether they would have parts for as old a watch as yours; probably not, in which case you could have a fork made for it, if the owner

of the watch would be willing to pay the high cost of such work. We could give you addresses, if needed, of shops that make parts for fine watches.

“THE PROFESSOR”

Dear “Professor”:

I should greatly appreciate receiving information relative to Swiss watch screw threads. Specifically, I would like to know the following:

1. Is there a standard system of screw threads used in Switzerland or does each company have a thread system of its own as in this country?

2. What are the major diameters, pitches and profile shapes of these systems?

3. What type of thread and what are the dimensions of the threads corresponding to the numbered sizes used in the Swiss screw plates marked, “Martin Fils”?

4. What companies use the Muller-Schweizer thread?

5. Are crowns currently stocked by material dealers and sold by tap sizes standardized, and what system or systems are used?

Thanking you in advance for your courtesy.

R. W. S.

Answer: The matter of your list of questions, applicable to the watch industry in both manufacturing and repairing watches, no doubt arises from a world-wide condition prevailing for many years in the trade. This was a lack of standardization of these small screw threads and the fact that threads in use had an empiric origin. The disadvantages of this were especially brought out during the two world wars, in which the use of timekeeping and other small instruments became so important, that the governments of countries allied in war efforts, set up organized efforts to study the threads variously used, and to try to agree on standardization. We believe that you could learn what has been accomplished so far in this, by writing to the National Bureau of Standards, Washington, D. C. Probably the Bureau could supply you with the data on the principal systems of threads in current use, which they have collected for study, besides saying how far the standardization discussions have progressed. This would have the great labor of making separate inquiries of many manufacturers of timepieces, instruments, and tools, who use different systems of screw-threads now.

“THE PROFESSOR”

Bowman Technical School

Lancaster, Pennsylvania



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Sixty-two years' experience
in training successful Watchmakers, Engravers, Jewelers.

Graduates pass Certified Master Watchmaker tests, H. I. of A. or any state Board examination.

Write for catalog.

Temporarily, applicants are on waiting list, until “Jam” lessens, which we hope will be soon.

Dear "Professor":

We wish you would please answer four questions for our shop:

(1) Are steel escape wheels ground truer than brass?

(2) Do olive hole jewels eliminate friction?

(3) What are the advantages of steel escape wheels over brass?

(4) What are the advantages of olive hole jewels over curved, straight hole jewels?

F. L.

Answer: (1) The final operation of lapping (fine grinding) of the teeth escape wheels, compared with the milling operation used in cutting teeth on brass wheels, is under more exact control; so it may be said that the steel wheels can be made truer than brass wheels, assuming even that in each case the best possible equipment and skill is used.

(2) Olive hole jewels act with less friction than straight-hole jewels, when the oil thickens and adds "liquid friction" to the problem.

(3) Steel escape wheels are lighter than brass, because they may be made of thinner stock; this means that they require less force to move them; the lifting-planes on steel teeth are beveled so as to have less acting-area, so the liquid friction of thickened oil is less than on the greater area that has to be given brass teeth to afford sufficient stability with the softer metal; the steel

wheels may be made more accurately in form, than brass wheels.

(4) Olive hole jewels have the advantage referred to in (2) above; and, in addition, with any unavoidable "out-of-upright" slant of axis of the hole, however slight, this has practically no effect on pivot-action; whereas, in a straight-hole jewel, it would tend to cause a faulty bearing, as the pivot would bear on opposite sides at top and bottom of the hole.

"THE PROFESSOR"

TEXANS AGREE TO STOP MISREPRESENTATION

The Federal Trade Commission has accepted a stipulation-agreement from three men of Houston, Texas, to refrain from misrepresentation in watch repairing correspondence courses. Richard C. Smalley and Willis W. Dent, trading as Houston Chronometer & Watch Company, and Houston Clock Shop, Houston, Texas, have formally agreed to stop representing in their promotional advertising that persons completing their courses are qualified to repair watches, clocks and typewriters, or to set up their repair shops; and to refrain from incorrectly representing possible earnings of their students, and also to stop giving students "letter of merit" that may mislead the public.

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Serving the trade for over 50 years with a complete stock of GENUINE AMERICAN and SWISS MATERIALS, also JEWELS FITTED, DIALS REFINISHED, guaranteed ELECTRO-SEAL glasses inserted. We carry a full stock of tools, findings and Dennison Goods, BB glasses, KK glasses, Fulton glasses, G.S. unbreakables, L & R Products, all makes watch bracelets and jewelry of the following brands, HADLEY, JACOBY-BENDER, GEMEX, SPEIDEL, STURDY, VAN DELL and BLISS BROTHERS and many other brands.

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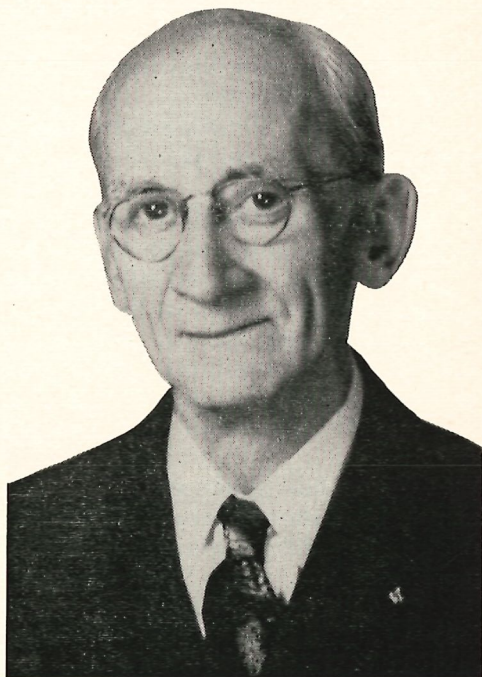
"The Half-Century Club"

William "Uncle Billy" H. Samelius, "the grand old man of American watchmakers, was born in Ireland, but he came to the United States at an early age and completed his three-year apprenticeship. He went back to England to continue his study of horology.

Upon his return to the United States, he was employed as manager of C. H. Knights & Company watch repair department. He served as chief inspector with the Ordnance Department at the Willys Overland plant during World War I.

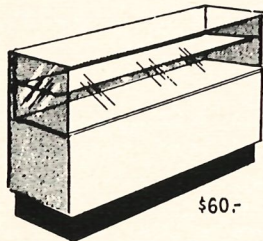
In 1919, he became an instructor of horology at the Washburn Vocational School. He became assistant director of the Elgin Watchmakers' College at Elgin, Ill., in 1921, but six months later was named as dean of the college.

He is one of the best known and loved watchmakers in the nation, holding honorary life memberships in the watchmakers guilds throughout the United States. He is



WILLIAM ("BILL") H. SAMELIUS

a member of the educational committee of the Horological Institute of America.



\$60.-

No. 50
Half Panel Show Case. Length 70";
Height 39"; Depth 18". 16" glass front
and sides, mirror back sliding doors, 1 glass
shelf, open storage space in back.
Also available in 12" front and side glass.

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Immediate Delivery

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COMPANY**

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No. 401A
Watchmaker's Bench. (back view). Length
40"; Height 39"; Depth 20"; with 9 drawers
and pull-out frame for catch-all. \$60.-

No. 401B
Also available with 24" high glass enclo-
sure around upper front and sides. \$75.-

ESEMBL-O-GRAF IS WATCHMAKER'S BOON

The Esembl-O-Graf method of servicing chronographs has opened up a new revolutionary feature for all watchmakers to expand business. With popular demands for complicated movements, watchmakers are called upon to service chronographs.

Repairing of chronographs by the new Esembl-O-Graf method enables the watchmaker to complete the work in only a fraction of the time formerly required and assures a greater profit. Many watchmakers who formerly were not able to take on chronograph repair work are finding it possible to do so with the Esembl-O-Graf method.

The Essemble-O-Graf method of chronograph repairing is currently taught at Western Pennsylvania Horological Institute, Pittsburgh, Pa.

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DEAN'S WATCH MATERIALS AND TOOLS

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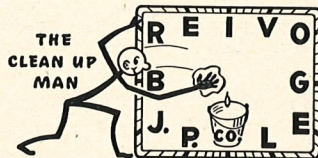
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Meet "Little Dan"



Dan's been making new dials out of old ones at our place for 30 years or more. We keep him on because he has a habit of making friends—thousands of them—who'd swear on a stack of pocket watches that Dan consistently turns out the finest dial-refinishing jobs they ever saw. Every dial that Dan refinishes gets our exclusive PERM-ENAM treatment, the original dial-enameling process. Every dial job is guaranteed against tarnishing for ONE YEAR.

If you're the kind of fellow who insists on fine work and prompt service, drop Dan a line today and receive his price list and free mailing envelopes by return mail.

P. J. Breivogel Co.

65 Nassau Street, New York 7, N. Y.

APPROVED U.H.A.A.

Hamilton Offers a New Watchmakers' Cabinet



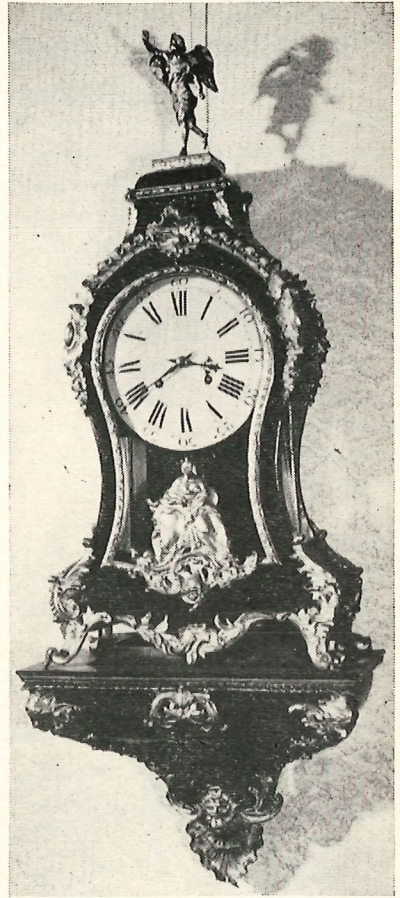
Faster, easier repairs of Hamilton watches are possible with this materials assortment cabinet of genuine Hamilton parts. Part numbers on the guide chart in each drawer of the cabinet correspond with the numbers on the bottles and with the part listing in the Hamilton Materials Catalog, simplifying reordering as bottles are emptied.

The Hamilton Watch Company is offering a new cabinet for replacement parts for watchmakers and repairmen. The cabinet is of mahogany enameled steel and contains two drawers. It is $3\frac{1}{2}$ inches high, $13\frac{1}{4}$ inches wide and $10\frac{1}{4}$ inches in depth and is designed to fit in a stack of standard size cabinets.

The drawers are lined with red velour, and each contains 140 labeled bottles and 10 clear plastic boxes. The bottles are filled with parts from earliest to the latest Hamilton movements, with extra bottles for future lines. In each drawer is a guide-chart, showing part names and numbers corresponding with the labels on the bottles and with part listing in the Hamilton Materials Catalog.

Case replacement parts for the CLD watches are now available to watchmakers through wholesale materials dealers and are listed on Hamilton Service Bulletin 201-B.

Hamilton's dealer service department is offering its dealers specially prepared newspaper mats to tie-in during "Watch Inspection Time."



Louix XVI clock, red plated case, gilded bronze, with musical chimes. It is signed: "B. Vuilliamy, London."

(NOTE: Also the work of Vuillemier.)

YOUR MAIL ORDERS For Genuine American-Swiss WATCH REPAIR PARTS TOOLS AND JEWELERS' SUPPLIES

Will Be Promptly and Accurately
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One-Day Service on Odd-Shaped Crystals.

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Indiana's Largest Watch Material and
Jewelers' Supply House.

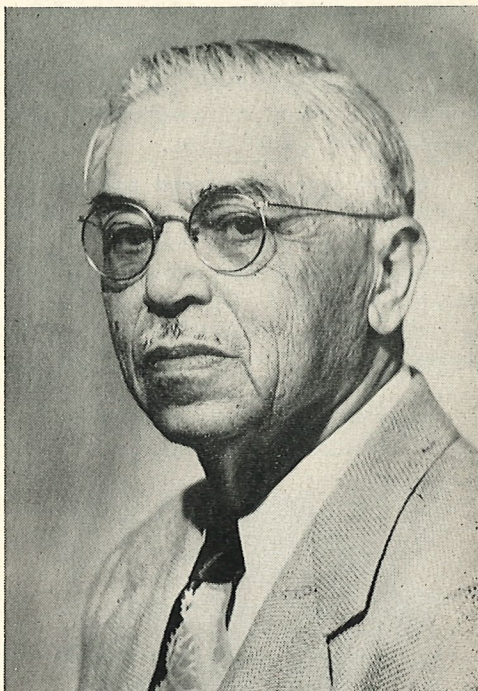
DRESS UP YOUR WINDOWS

Jewelers should take advantage of the perked-up interest passerbys will show when stimulated by effective window displays.

Pictured in the Swartchild advertisement on Page 12, is a lustrous twill display fabric, which drapes, gathers or puffs and stays in place. A rich, lovely fabric, vital as a background to the successful display of jewelry, is now available at the lowest cost in many years, due to timely direct mill purchases, obtainable in the season's two most popular colors, turquoise or burgundy.

Swartchild & Company, known nationally for display fabrics, feature "Lustre Twill" in their advertisement. Established in 1870, Swartchild serves jewelers from branch offices in New York, Dallas, Atlanta, Boston, Buffalo and Denver.

SEGAL HEADS ASSOCIATION



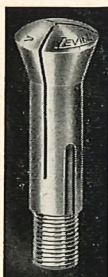
M. M. SEGAL

Orlando received more than one honor at the fourth annual Florida Watchmakers' Association convention held in Jacksonville recently.

A well-known Orlando watchmaker, M. M. Segal, was named president, in the annual election of officers, held Tuesday, July 12. Other officers are W. L. Wood of Tallahassee, first vice-president; W. H. Clark of Orlando, second vice-president; and W. R. Grundman of Jacksonville, secretary-treasurer.

Segal, who has been a watchmaker here for 30 years, will preside at the 1950 convention, to be held in Orlando sometime in September of next year.

Cock: A part of the framework of a time-piece holding a bearing for a pivot, with a base at only one end where fastened to another part of the framework.



TYPE WW

ENJOY USING THE FINEST

Type WW Wire Chucks 5 mm capacity always in stock at leading material dealers.

No. 1	.....	\$7.80
No. 1½	.....	7.20
No. 2	.....	6.60
No. 2½	.....	5.10
No. 3-64	.....	3.60

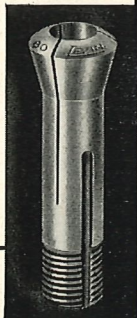
GENUINE **JEVIN** TOOLS
CARRY THIS TRADEMARK

TYPE D

Type D Wire Chucks 8 mm capacity.

No. 1	.....	\$9.00
No. 1½	.....	8.10
No. 2	.....	7.20
No. 2½	.....	6.00
No. 3-80	.....	4.80

ASK YOUR DEALER FOR
1949 LEVIN CATALOG "E"

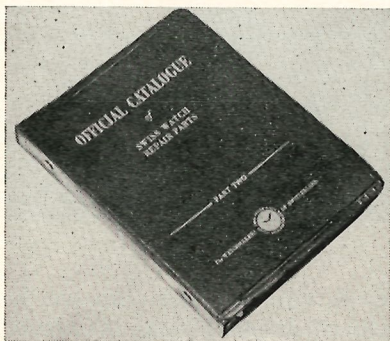


Part II of Swiss Watch Repair Parts Catalogue to Be Mailed

Part two of the Official Catalogue of Swiss Watch Repair Parts is scheduled for mailing this month to watchmakers and jewelers in the United States.

This catalogue, the second part of the standard guide for ordering genuine Swiss watch repair parts, will automatically be mailed to all persons who received Part one, according to Paul A. Tschudin, director of the Swiss Watch Repair Parts Information Bureau.

PART TWO OF SWISS CATALOGUE SCHEDULED FOR MAILING



Part Two of the Official Catalogue of Swiss Watch Repair Parts, which is to be mailed this month to watchmakers and jewelers in the United States.

Part two, Mr. Tschudin explained, will permit the watchmaker to identify lever movements produced exclusively by Swiss factories (manufacturers), as opposed to Part one, which includes Ebauches movements. The latest publication, unlike Part one which is broken down by size and shape of movement, is classified by manufacturer's name. He recommended that the two parts of the catalogue be used to supplement each other.

"First check Part two by brand name," he advised. "If you cannot find the movement for which you are looking, turn to Part one, and check by size. Practically every Swiss movement can, in this way, be identified, and proper parts ordered for it.

Instructions for use are included in both French and English, and a basic four-language materials list given.

Watchmakers and jewelers receiving their Part two of the Catalogue will find that a number of manufacturers have not included all of their movements in the pages set aside for them because of lack of time, Mr. Tschudin noted, but pointed out that additional pages will be mailed to catalogue holders from time to time, bringing the publication up to date with both missing and new models.

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OUR UNCONDITIONAL GUARANTEE: **FREE** New Spring **FREE** if you spoil the one we previously supplied!

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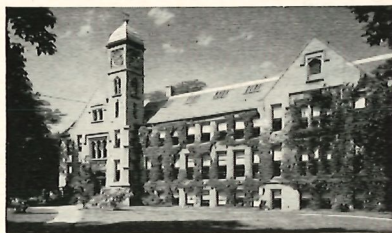
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Pathway to Success



**WATCHWORK
JEWELRY
STONESETTING
ENGRAVING**

BRADLEY UNIVERSITY

Horology Division

Department I, Peoria, Illinois

Hamilton Greets Air Travelers

Greenville, S. C. Vets'

Training Progresses

Veterans enrolled in the Greenville, S. C. watchmaking class are receiving excellent training and are making excellent progress. The first evening class was opened May 1, 1947 and, by May 11, seventy-five men were receiving training in watchmaking.

Early in 1946, H. A. Ehmig, director of Veterans' Training School, sought to establish a school of watchmaking in Greenville. He conferred with Bulova officials, who agreed to cooperate. Materials were not then available and the opening of the school was delayed.

Eugene B. Dorroh, a graduate of the Bulova School of Watchmaking, was employed as instructor. Equipment needed was purchased through the Veterans' program, although some of it was donated by the Bulova School of Watchmaking.

Five other instructors now assist Mr. Dorroh, including two graduates from the Bulova School of Watchmaking. The curriculum of the course was designed by Bulova engineers and U. S. Department of Education.

Three graduates have completed the course of study, including three months training in the New York Bulova school. They are: Sanford H. Baird of Greer, S. C., Edgar L. Pace of Greenville, and James R. Waters, also of Greer, S. C.



AIRPORT, LANCASTER, PA.

Air travelers arriving at the Lancaster Municipal Airport, Lancaster, Pa., are greeted by a correct time clock and the message "Lancaster, Pennsylvania, Home of Hamilton Watches."

Hamilton installed the neon clock and sign, at the request of the Airport Commission, as part of an extensive remodeling and enlarging program that brought regularly scheduled airline service to the Lancaster airfield. The clock is situated over the entrance to the administration building and is clearly visible to pilots and passengers of all planes using the landing field.

More than 12,000 people attended the dedication ceremonies at the airport June 18 and 19 when two major airlines made inaugural flights from Lancaster. The two airlines, All American Airways and Transcontinental and Western Airlines, now furnish Lancaster with freight and passenger air service to important cities in any part of the world.

SWARTCHILD IN NEW DALLAS QUARTERS

The "World's Largest Watchmakers' & Jewelers' Supply House" who for many years has served the southwest in Dallas, has recently moved from the Construction Building to 305½ Akard Street. Their new quarters are air-conditioned, more spacious, and ideally located for the convenience of out-of-town and Dallas customers. Jewelers and watchmakers are cordially invited to stop in for a visit.

SWISS EXHIBIT DRAWS LARGE CROWDS AT NATIONAL JEWELRY FAIR



RETAILERS GET POINTERS ABOUT LARGE SWISS JEWEL-LEVER ESCAPEMENT

Jean-Pierre Savary, technician at the Swiss Watch Repair Parts Information Bureau, explains the workings of a plastic-contained working model jeweled-lever escapement to Mr. and Mrs. Carl Hirsen, of Pierre Jewelry Store, Chicago. The escapement was shown for the first time in the exhibit of The Watchmakers of Switzerland, at the National Jewelry Fair, Chicago.

More than 1,000 members of the jewelry and horological trade visited the exhibit of The Watchmakers of Switzerland, at the National Jewelry Fair, in Chicago.

Center of attraction at the large exhibit was a "king-size" working model of a jeweled-lever escapement. Continuously moving, the plastic-contained escapement, built

in perfect proportion, provided interest for watchmakers and retail jewelers from all parts of the United States.

The Swiss exhibit also contained a full report on the advertising and merchandising program of The Watchmakers of Switzerland, as well as that of the Swiss Watch Repair Parts Information Bureau. A large replica of the Norman Rockwell painting, "The Watchmaker," which will be featured in the Watch Inspection Time advertising by The Watchmakers of Switzerland, was also on display. One of the four Neuchatel clocks which will be given by the Swiss as prizes in their forthcoming Watch Inspection Time Contest was included as one of the items in the exhibit.

9C3 #74

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"THE BESTFIT"
 Genuine
 STEM REFILLS

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IN
 SEALED ENVELOPES

- FOR PROTECTED QUALITY
- FOR EASY INTERCHANGEABILITY
- FOR MOST COMPLETE RANGE

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It's Time to Learn!

MARINE CHRONOMETER MAKING

The Only School in the U. S. Teaching This Course.

Classes available only to qualified watchmakers or graduate students of any recognized school of watchmaking. For full particulars fill in coupon and mail.

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 Approved by the H. I. A.

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ADDRESS

District 4223 817 14th St. N.W. Wash., D. C.

"Eterna-matic" Watches Captivate Watchmakers

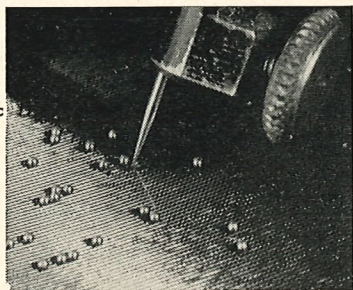


The deluxe Eterna-Matic (Style No. 326) has an 18K gold case and gold markers instead of numerals. Like all the new Eterna-Matics for men, it has a sweep second hand. This style also will be manufactured with a stainless steel case.

Pierre Behy, vice-president of the Eterna Watch Company of America, Inc., has returned from an European business trip, and reports that the new, square, self-winding "Eterna-Matic" watches have created widespread interest among American and European watchmakers.

He attributes this reaction because it is the first normal-sized square self-winding watch for men ever made and meets the strictest requirements for international good taste in watches. He says it is the greatest advance in watchmaking since the invention of the self-winding watch twenty years ago.

Shown right are the ball-bearings of Eterna-Matic enlarged many times, compared in size with phonograph recording grooves.



The new men's "Eterna-matic" watch was launched on the American market Sept. 1. It is the first men's automatic winding watch to operate on a ball bearing method, Mr. Behy pointed out. The face of the

new watch, which is about the size of a quarter, appeals to the average American man who dislikes over-sized wrist watches, he said.

A unique, unbreakable automatic winder is mounted on a ball bearing, with five miniature steel balls which allow the oscillating weight to wind the mainspring at every rotation, either clockwise or counterclockwise, Mr. Behy explained.

Men's as well as ladies' "Eterna-matics" are protected from dust, shock and magnetism by patented devices, and have a 40-hour power reserve.

PAULSON REDUCES PRICE ON HAIRSPRING UNRAVELER

This splendid instrument not only saves time in unraveling hairsprings, but saves the loss caused by replacement of a hairspring and the extra cost for vibrating. It also saves the time of mailing the hairspring and balance and the possibility of loss in doing so. Users of this splendid instrument have found it profitable, time saving and provides better service to customers.

With the increased production and use of the hairspring unraveler, which formerly sold at \$25.00, Henry Paulson and Company are now offering this precision instrument for \$14.95. Anyone who has purchased it from them at the \$25.00 price will be refunded the difference.

Roy Von Neida, Hartford, Conn., has written:

"After using this tool on both breguet and flat hairsprings, I must say it does a wonderful job with ease. It is a precision-built tool; saves time, and, in many cases, eliminates the expense of vibrating new hairsprings."

For further information, write to Henry Paulson and Company, 131 South Wabash Avenue, Chicago 3, Illinois.

SWISS WATCH HEADQUARTERS DEDICATED IN BIENNE

The new headquarters building of the Watchmakers of Switzerland in Bienne, Switzerland, has been formally dedicated. At the dedicatory ceremony, Maurice Vaucher, president of the Watchmakers of Switzerland, unveiled a plaque on which are mounted the four largest synthetic rubies in the world.

The largest of the four rubies is five inches long and weighs 700 carats. The stones—identical with the most perfect natural ruby—are giant replicas of the tiny jewels found in quality Swiss jeweled-lever movements.

President Vaucher, in a statement read

NEW HEADQUARTERS OF THE WATCHMAKERS OF SWITZERLAND



The striking new world administrative center for The Watchmakers of Switzerland in Bienne, Switzerland, is one of Europe's latest and most modern buildings. A unique feature of the structure can be seen in this photograph—the ground floor with its facade of dark artificial stone, is smaller than the top of the building, giving a dynamic and "suspended" impression, as well as making the most of available space. The gentle curving design of the building, in addition to its architectural harmony, exposes the offices—with their 350 windows—to the maximum of sunlight.

"A Government Approved Watchmakers' School"

Terre Haute School of Watchmaking gives individualized instruction in a government approved training program for 200 students. Master watch and clock craftsmen make up the faculty. In an 18-months' course, YOU can pass the state examinations.

Write for information folder

Terre Haute School of Watchmaking
Terre Haute, Ind.

at the dedicatory ceremony, which commemorated the twenty-fifth anniversary of the federation, pointed out that the building was "a symbol of a unique achievement."

"Whereas other nations have prided themselves on what they have done with great national resources, with the powerful machines they have created for construction or destruction, we Swiss, and, especially we watchmakers, have made ourselves known to the world through a tiny, though precious, machine that tells only time," President Vaucher stated.

"We have created it through 400 years of effort and experimentation as something

nearly perfect, not only in its performance, but in the fact it is truly a democratic instrument for man's improvement."

Mr. Vaucher declared that the Swiss watch industry helps Switzerland buy more than twice as much from the United States as she sells to the United States. He said that the watchmaking industry represents 25 per cent of Swiss export trade. He urged the world's leading horologists to continue their production "in full confidence" despite growing barriers to Swiss exports. He said that the watch industry in Switzerland had provided its 50,000 workers with the highest standard of living in Europe.

SWISS AD FEATURES ROCKWELL PAINTING

The consumer advertising of The Watchmakers of Switzerland during September will feature a full-color Norman Rockwell

painting of a veteran watchmaker at his bench. The advertisement is scheduled to appear during a period which will help the jewelry industry promote Watch Inspection Time, Sept. 12-17.

LOOK!

At last here is a tool every watchmaker is looking for.

A roller jewel setter that really sets roller jewels. Note the close up view of this tool. So easy to do the job specially on small double rollers in less time, more perfect, without loss of jewels, without strain on nerves and eyes.

No matter how good you can set jewels you will find this tool more accurate and faster than your skill.

This tool will take place of all tools now used and called roller jewel setters, which are not jewel setters at all.

This is the only roller jewel setter ever made to do a complete job and set pallet stones too for only \$2.25 at your dealer.

Why pay more for other tools which only give you more work and worry?

This tool is positively guaranteed to do as we say.

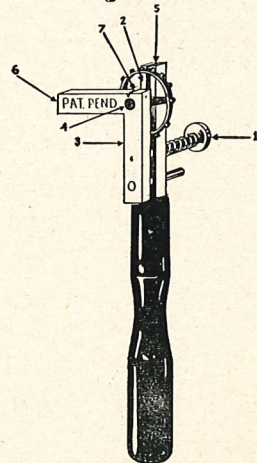
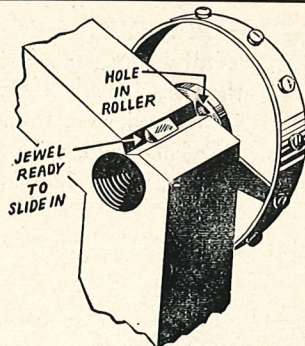
MAIL YOUR ORDER NOW!

From your dealer or if your dealer does not have this tool in stock yet order direct from

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4210 CANAL STREET HOUSTON 3, TEXAS

No C. O. D. Orders Filled



HOOSIER POET WROTE WATCHMAKER'S AD



JAMES WHITCOMB RILEY

EDITOR'S NOTE: On October 7 the Riley Memorial Association will celebrate the 100th anniversary of the birth of the beloved Hoosier poet, James Whitcomb Riley.

The late James Whitcomb Riley, "The Hoosier Poet," wrote a poem in 1877 advertising the watchmaker's skill of William S. Shirk of Anderson, Ind., an uncle of Earl Shirk Collins, who, with H. B. Couden, now operates the shop in Anderson, Ind.

Mr. Riley's poem follows:

"Who but he

Could read a watch's pedigree?
A chieftain to the Highland bound
Who missed the Accommodation:
Pulled out his watch and took it round
To Shirk for reparation.
And Shirk squints sharply through the glass;
He took a pair of pinchers,
And raised a little wheel of brass
And nipped it with his clinchers
And put it back and oiled the works
And cleaned the graven border.
And watch and man went out of Shirks
In perfect running order."

In the Anderson shop today, a large, double, three-legged gravity escapement clock, designed and built by the late William S. Shirk, who died in 1935, is now used as the "master clock" for timing and regulating timepieces.

The late Mr. Shirk was a descendant of

Ulrick Shirk of Berne, Switzerland, who was undoubtedly a watchmaker of the 17th century, who emigrated to Lancaster, Pa., in 1728. His father, Christian Shirk, brought his family to Henry County, Ind., in about 1858. William S. Shirk was born in 1852 near Waynesboro, Pa., and was six years old when he came to Indiana.

In 1873, William S. Shirk went to Anderson, serving three years apprenticeship under John Awalt, and then started in business for himself in 1876 in a shop on the north side of the public square. It was here that James Whitcomb Riley, who worked for The Anderson Democrat, wrote the advertising poem, published above. It was in the Shirk watchmaker's shop that Riley "loafed," too, the nephew asserts.

In 1931, Mr. Shirk retired from business and sold out the shop to the nephew and Messrs. Stalker and Mether. He died at the age of 83 years. Mr. Earl Shirk Collins and Mr. Couden bought the present shop in 1938.

New L & R Combination Anvil Is the Only One of Its Kind

The L & R Manufacturing Company has announced a new combination anvil. This unique watchmaker's tool is the only one of its kind that features a removable horn anvil.

The base anvil has sixteen graduated hole sizes, four milled slots, and one V slot. The combination is made of hardened, ground, tool steel and will prove its worth every working day. The V slot is useful in removing pinions from wheels. The milled slots are helpful for removing

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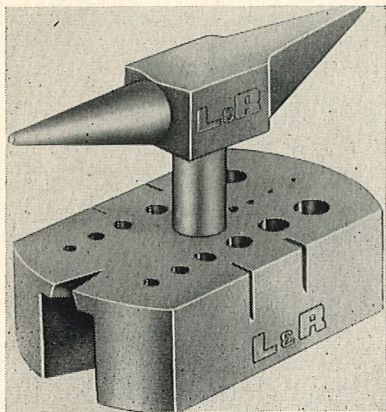
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Write for Complete Information



rivets from joints. Surfaces are ground smooth and flat.

The L & R combination anvil lists for only \$3.75. It is available through watch materials jobbers. For further information, contact your jobber or write to L & R Manufacturing Company, 577 Elm Street, Arlington, New Jersey, or their branch offices: 355 South Broadway, Los Angeles, Calif., and 55 East Washington Street, Chicago, Ill.

Chicago Institute of Watchmaking

is pleased to announce a six months' course in Jewelry and Advanced Watch Repair.



A few benches are available in our regular course in watch repair.



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48 YEARS OF EXPERIENCE

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in the Mid-Central States with

Genuine American-Swiss WATCH MATERIALS — TOOLS JEWELERS' SUPPLIES

Is your guarantee of prompt
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One-Day Service on Odd-Shaped Crystals.

HOFFMAN AND CO., INC.

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FINE WATCH REPAIRING To the Trade

Complicated and Antique Watches
and all fine timepieces serviced.

Parts made if necessary.
Very careful workmanship.
ESTIMATES given on all jobs.

Please WRITE before sending work.

RALPH L. TOMER

CERTIFIED MASTER WATCHMAKER
P. O. Box 92, Clovis, New Mexico

LOST AND FOUND

LOST—The sale of a watch repair because you were unable to obtain the necessary part. Found, a complete supply house that specializes in "Hard-to-Get" watch parts. If you are having difficulty in obtaining a Swiss or American watch part, try JOHN A. POLTOCK & CO., 15 Maiden Lane, New York 7, N. Y. Write for FREE catalogue, ligne gauge and stationery.

COMPENSATION: Provision for making the timekeeping of balances or pendulums uniform during changes of atmospheric temperature in heat and cold.

The September Cover Story

Many 20th century watchmakers have contended that Swiss watchmakers of the 17th century did not make "Latin cross" watches, due to regulations issued forbidding such, but many such timepieces have been found to refute such conclusions.

One watch, shown enlarged on our Cover-Page, now in the Metropolitan Museum of Art, signed, "J. Cusin," a master watchmaker of Geneva, 1585-1656, is evidence that Swiss watchmakers did produce "Latin cross" watches during that period. It is a 36 millimeter watch, exquisitely engraved. The mountain crystal case has been lifted.

Other timepieces have been found, made by Antoine Arland, Charles Bobinet, Jean Rousseau, Pierre Duhamel, D. Oltramare, Abraham Bobi-

net, Etienne Bordier and David Rousseau, all of whom were watchmakers of the 17th century.

Dials were usually engraved with scenes from the life of Christ. Mountain crystal cases were Geneva specialties.

The Geneva Council did seek in 1566 to keep goldsmiths from making "crosses, chalices or other instruments in the service of the Papacy" and forbade women to wear jewels and men to wear laced coats.

(This is the third of a series of cover illustrations of Antique Watches. The historical data was supplied by Prof. Eugene Jaquet, one of the world's outstanding horologists. Professor Jaquet is curator of the Geneva Watch Museum; President of the Swiss Chronometer Society; director and professor at the Geneva Watchmaking School for 30 years and professor of the renowned Bienne Technicum for five years.)

Expert Watch Repairing for the Trade

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PRESIDENT VAUCHER ARRIVES AT DEDICATION CEREMONIES



Maurice Vaucher, president of The Watchmakers of Switzerland, arrives for the dedication of the federation's new modern headquarters building, in Bienne.

JOURNAL SUISSE D'HORLOGERIE ET DE BIJOUTERIE

(Swiss Watch and Jewelry Journal)

Now that the world-renowned Swiss Watch and Jewelry Journal is available in an All-English language edition, American watch repairers, rebuilders, distributors, and importers consider it an ideal source of information on watch and clock manufacturing, assembling, rebuilding, repairing, and selling.

Official Bulletin of the Swiss Watch Fair at Basle.
Review of the Swiss Society of Chronometry.

Published bi-monthly

One year, \$5.00; two years, \$9.00.

Agents for U.S.A. and Canada

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ILLINOIS BUNN SPECIAL

21-J., 16-S., 60-Hr. and Elinvar Like New, \$35;
Waltham 21-J., 16-S., Adjusted, \$22;
Adjusted to 5 positions, \$27.

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RAILROAD WATCHES

Bargains in Wrist Watches

MORRIS FREY WATCH CO.

915-16 Holland Bldg., St. Louis 1, Mo.

Classified Advertising

CLASSIFIED—Payable in advance. Rates under all headings, except "Positions Wanted," \$1.50 for first 25 words, five cents for each additional word. "Positions Wanted," 75 cents for first 25 words, five cents for each additional word. Bold face type five cents additional per word; capitals, also five cents additional per word. Box numbers for "Blind" advertisements, 50 cents additional for postage and handling.

● SPECIAL SERVICES

WIRE CHUCKS to fit W. W. & Moseley No. 2—No. 1 to 80, \$1.50 Ea. Special chucks—No. 1-3, \$3.50 Ea. No. 4-9, \$2.50 Ea. Also ½ sizes. Special Wheel cutting and Lathe Repairing our Specialty. Jess I. Hansen, 202 Denver Theatre Bldg., Denver, Colo.

KNOW YOUR VIBRATOR! Mail direct. Same day service. Flat \$1.75, Breguet \$2.50. FREE SERVICES!—Restud, Recollet. Write for free envelope and containers. HAIRSPRING VIBRATING COMPANY, P. O. Box 330, 406 - 32nd Street, Union City, New Jersey.

Assorted staffs for American Watches: Elgin, Waltham, Hampden, Howard, etc., 50 for \$2.95; 100 for \$4.95. Mainsprings, assorted, same—\$1 per doz.; 100 for \$5.95. MORRIS FREY WATCH CO., 915 Holland Bldg., St. Louis 1, Mo.

WATCHES USED:

5—Swiss Wrist Watches in Y.R.G.P. and G.F. cases, needing minor repairs.....\$20.00
10—Swiss Wrist Watches needing repairs.....\$20.00
5—Assorted Wrist and Pocket Watches.....\$ 6.00

B. LOWE

2nd Floor Holland Bldg., St. Louis 1, Missouri

BALANCE STAFFS made for unusual or obsolete watches. Send sample staff only—prompt service. C. R. CHAPMAN, Box 268, Laramie, WY-OMING.

● FOR SALE

If you MUST MAINTAIN QUALITY and still REDUCE YOUR COSTS, then these offerings should interest you. No risk, remember—Your money instantly refunded if you aren't pleased.

Th. Dumont Tweezers No. 3—3C—5.....Each 1.50
Screws Ass't—Dial—Bal—Jewel.....Gross .90
Bracelet Screw Assortment.....Gross .45
Click Springs Ass't.....Gross .70
Crowns G/F .60—Waterproof.....Dozen 1.50
Hand Sec. .60—Min & Hr. 12 ea.....Dozen 1.00
Sands Sweep Sec. or Radium.....Card 1.95
Spring Bars Ass't ½-¾.....100 for 1.50
Spring Rings G/F.....Dozen 1.00
Spring Rings 14 Kt. Gold.....Dozen 3.25
Swivels G/F.....Dozen 2.95
Stems Swiss or American.....Dozen .50
Complete Balances Flat Hairspring for F120-AS 970—AS 976-AS 1012-AS 984—Popular Calibres Individually Boxed in Switzerland—Ready to Install

Staffs Guaranteed to Fit (Swiss).....Each 1.50
Staffs Guaranteed to Fit (American).....Dozen .90
Screw Ass't over 1000 for Dial—Cases—Bal—Jewels—Detents—Etc.—Etc.Complete 2.50
Crown Asst. Ladies & Gents Gold Filled Wh. Yl. Pk.....100 for 2.95
Jump Ring Ass't.....500 for .50
Wrist Watches New Swiss Movements Ultra Modern 10K GRP Cases Hidome Crystals Gents 8¾ L. Pigskin Straps Ladies' 6x8 L. Silk Cord Embossed Dials—Your choice.....Each 10.95
Rhinestone Dials Your Choice.....Each 11.95
Neck Chains—Sterling, Rodium—Carded 18 inches long—Spring Ring Flat Curb or Rope Link—Sterling or Gold Filled.....Each .50
Neck Chain 14 Kt. Gold 18 in.....Each 1.95
Crown Cabinet G/F Yellow 72 Bottles 2 Each—With Chart Gross Crowns—Complete 12.95
Stem Cabinet 36 Bottles—4 each With Chart Over 75 Popular Models One Gross Stems.....Complete 7.50
Staff Cabinets One Gross with Charts for Pinlever Watches for Bracelet Swiss Watches for American Watches—Your Choice Each \$14.95
Bargains like these will be scooped up fast. You can avoid disappointment by getting your order in the mail at once.

WILSON IMPORTERS

811 Hunts Point

New York 59, N. Y.

Expert Watch Repairing

We Specialize in Fine Watch Repairing
to the Trade.



Prompt Service

Curtis V. Haskins

1215 W. 32nd St., Indianapolis, Ind.
(Indiana License No. 319)

FOR SALE—WATCH MOVEMENTS for sale. For practice, hobby, or material. Sold 'as is.' Hundreds listed. Send 25 cents in stamps. LEO KHALIF, P. O. Box 2441, New Orleans, La.

FOR SALE—Old Established Jewelry and Optical Business. Will reduce present stock to suit buyer. Terms if required. Tom Scott, Jeweler and Optometrist, Bridgeport, Illinois.

FOR SALE—For health reasons, my jewelry business, established 45 years. City 6,500 population. Best Indiana coal mining region. Reasonable rent and lease. \$6,000 stock, fixtures, tools and materials. Immediate possession. Albert G. Craig, Bicknell, Indiana.

FOR SALE—WATCH MOVEMENTS for sale. For practice, hobby, or material. Sold 'as is.' Hundreds listed. Send 25 cents in stamps. LEO KHALIF, P. O. Box 2441, New Orleans, La.

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