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PERFORMANCE OF WRIST WATCHES

The popularity of the wrist watch and the uncertainty on the part of the purchaser regarding timekeeping accuracy which may reasonably be expected of watches of this type have led the Time Section of the National Bureau of Standards to make an investigation of a large number of wrist watches of different sizes, styles and makes. Excellent cooperation was received from several watch manufacturers, who furnished new watches for study.

It is known that all watches are affected by changes in position and in temperature. Most high grade watches are so constructed that they can be adjusted to give nearly uniform performance under these changed conditions. Watches of lower quality usually are not so constructed and vary greatly in daily performance.

Wrist watches having 15 or more jewels in the movement are usually adjusted to two positions and for temperature. Such watches should give reasonably constant rates from day to day. Non-jeweled watches and watches having less than 15 jewels, as a rule, do not perform the same each day and the rate may vary considerably with position and temperature changes.

The watches tested had either 15 or 17 jewels and ranged in size from about $3/8$ inch diameter to 1 inch diameter. They were put through a series of position and temperature tests over a period of several weeks. The results showed that watches of this type may vary as much as 60 seconds a day when positions and temperatures are not kept constant. In use these watches are frequently subject to sudden changes in position and temperature, to shocks and bumps, and to other rough treatment. For the larger of these watches 60 seconds a day may be considered reasonable error but, for the very small watches, such as baguettes, even greater errors may be expected. In ordinary gold cases, watches of these types usually sell at from \$40 to \$100. More expensive and fancy cases are often available, but the timekeeping qualities of the watch movement are usually the same.

Watches having few or no jewels and usually selling up to about \$25, are often more sturdily built but are seldom good timekeepers, since they have no adjustment for position and temperature change, and may vary 5 or more minutes a day. The non-jeweled watches, especially, should not be expected on the average to keep correct time to better than 5 minutes a day, despite many glowing advertisements representing them as precision timepieces. If the purchaser will keep these facts in mind, he will not be misled into expecting the impossible, and the reputable dealer will not be required to explain why he cannot make the watch do all that the purchaser may expect.

All watches should be treated as delicate instruments; they should be wound regularly each day and be given reasonable treatment.

