

# Goodbye GMT, Hello UTC!

by D. K. deNeuf, WA1SPM

GMT will soon pass from the scene; Great Britain has decided that it can no longer afford the upkeep of "Greenwich Mean Time." GMT was inaugurated in 1844 through international agreement that the meridian of Greenwich, England, would be adopted as the starting point for reckoning longitude and that the world would be divided into 24 standard time zones.

The Royal Greenwich Observatory began time-keeping in 1675 to provide a standard by which sailors could set their clocks before starting out on voyages that led to the conquest of much of the world. With the advent of radio and aircraft the system became invaluable. A schedule of, say, 2130GMT was understood in any part of the world, irrespective of "local" time--no manipulation was required because of time differences or occasional departures into "daylight saving time" in some places.

Two decades ago atomic clocks began to replace the much-less-accurate mechanical clocks. Today, what is known as Greenwich Mean Time to the public is Coordinated Universal Time, or "UTC" to the time-keeping cognoscenti (The letter "Z" is sometimes used, especially in military operations, to designate UTC). UTC is based on read-

ings from 150 atomic clocks around the world under the auspices of the International Organization of Legal Metrology, or Weights and Measures, in Paris.

It costs Great Britain about \$100,000 a year to keep the Royal Greenwich Observatory's six atomic clocks running. Every few years the vacuum tubes containing the element cesium have to be replaced. Cesium is the most electro-positive of all known elements, meaning that it has a tendency to release electrons. It is by tracking this "electron shower" that atomic clocks are accurate to one millionth of a second.

The old Time Ball signal atop the Royal Greenwich Observatory is the world's first time signal, and the ball has been dropped daily at 1:00pm ever since it was erected in 1833 (see photo).

Observations of star transits made at astronomical observatories first furnish UT in a form known as UTO; small variations are corrected by international agreement. UTO is changed to UT1 by correcting for a small variation in longitude caused by polar motion; correcting for seasonal variations in speed of the earth in its orbit changes UT1 to UT2.

In fact, the differences between UTO, UT1 and

that you "crossed" the IDL (X and Y). Therefore, it is "tomorrow" in Auckland. That is, while it is just after eight in the evening in Los Angeles, it past four in the afternoon of the next day in New Zealand. Of course, if you are a New Zealander looking for the time in Los Angeles, it will be "yesterday" in L.A. from your viewpoint.

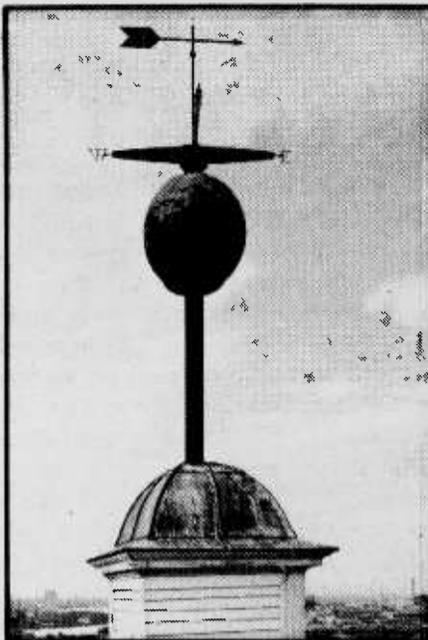
Note that all times are considered as Standard Time --add or subtract as required for Daylight Saving Time differences (or "summer time" as it is called in some countries).

#### References:

World Encyclopedia 1985  
Hammond World Atlas,  
Classics Edition

(NOTE: A computer program, written for the TRS-80 series computers but adaptable to other machines as well, is available from the author for one dollar plus a self-addressed stamped envelope: Arch Wicks, 30646 Rigger Road, Agoura, CA (91301).

The Time Ball Signal, Old Royal Observatory.



UT2 are small, generally less than 0.05 second. UTC itself is obtained from the atomic clocks which are adjusted in epoch so as to remain close to UT2. For the next few years clocks on UTC will be retarded about once a year.

When the clocks at the Royal Greenwich Observatory stop, the Observatory will become a user of international time instead of being a contributor.

Tempus Fugit.

## NEED A CLOCK?

From time to time (pardon the pun) we have been requested to supply addresses for sources of 24 hour clocks. Would our readers be interested in Grove Enterprises providing a quality, quartz-movement, 24-hour wall clock?

We need to know if there is interest and what size (6" or 9" diameter) would be desirable. We can include local time and daylight savings time on the dial as well as 24-hour UTC. Cost should be in the neighborhood of \$30-\$40.

Do you want round studio style? Square wood? Black or red numerals (or a combination for local/24-hour)? Or would you prefer a small, digital 24-hour clock --perhaps a combination of two LCD movements for 24 hour and local time?

Let us know and we will give it serious consideration. We already have our sources lined up for supplies.

## PIRATE RADIO



by  
**John Santosuosso**  
P.O. Box 1116  
Highland City, FL 33846

WAQI MIAMI: Last month we reported on this medium wave station on 710 kHz. Its Spanish language programs continue to be beamed to Cuba and the Caribbean as well as South Florida. However, Castro's response to the station has been somewhat modified. Although there have been occasional exceptions, use of conventional jammers against WAQI Radio Mambi appears to have stopped for the most part. Instead, Castro seems content to use his powerful Radio Rebelde relay to block reception.

In Hawaii Chuck Boehnke reports that much of the time Radio Rebelde dominates the frequency even that far away from Cuba. Chuck notes that the Rebelde frequency

may be shifting from time to time between 710 and 713. He says Dr. Richard Wood, who is also hearing the relay in Hawaii, believes it is using at least two transmitters.

Chuck did hear WGBS several months ago before the station was "converted" into WAQI and has also logged WOR New York. So it is always possible that WAQI Radio Mambi might make it to the mid-Pacific despite the interference on 710 kHz.

Here, in Central Florida at present, WAQI dominates during daylight hours, but Radio Rebelde can usually be heard in the background. During darkness the frequency usually belongs exclusively to Radio Rebelde.

Interestingly enough, for about three nights when hurricane Kate was in our vicinity, WOR was the dominant station during evening hours. It has not been heard since.

In Pennsylvania John Demmitt managed to log Radio Mambi in the clear, on November 17. He says there was no sign of jamming and the station was transmitting a long comedy program.

RADIO TAINO: A new Cuban medium wave station on 1160 kHz also is worth watching. Broadcasting in both Spanish and English, it identifies as Radio Taino and also as "Tour Radio from Havana." The broadcasting

#### IT'S ABOUT TIME cont'd

IDL. The time is the same in both zones; however, on the east (left) side of the zone it will be one day of the week, while on the other side (right) it will be the following day. Keep this in mind when determining if the day has changed in the location you are checking. Technically, for an infinitesimally short moment in time, the same day will occur all over the globe as midnight occurs at the IDL.

Let's look at one more example. In this one we will cross the IDL. The current time in Los Angeles (or San Francisco, etc.) is 2010. That's 8:10 p.m. if you haven't yet caught on to the 24-hour system. We want to know what the time is in Auckland, New Zealand. Los Angeles is in column U and Auckland is under column M, and shows 16 directly across from the Los Angeles time of 20. So the time in Auckland will be 1610.

You may have noticed that as you scanned across from column U to column M

