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Swiss regain upper hand in time measurement

A new atomic clock developed by scientists in Neuchâtel could bring Switzerland back to the forefront of time measurement. The unique timepiece measures seconds with extreme precision, using lasers, and is so accurate it will gain or lose no more than a second every 30 million years.

Its creators – a group of physicists at Neuchâtel's cantonal observatory – say the clock will act as a reference point for measuring international time and play a crucial role in satellite positioning and particle research. The new timepiece was built in conjunction with the Swiss National Science Foundation. It is due to be handed over to the Federal Office of Metrology and Accreditation (Metas) at the end of March. Gregor Duddle of the Metas time and frequency lab said the atomic clock was important for Switzerland and for international time measurement and would be used to calibrate other timepieces.

"It is quite an important thing in the sense that Switzerland has a long tradition in clock making and we're trying to build on that," he said.

"The purpose of our clock will be to increase the contribution of Switzerland to the international timescale."

"The clock has an accuracy which is far beyond what a wristwatch can produce." The Swiss invention belongs to a new generation of timepieces operating on the principle of laser atom cooling. Atoms of Cesium-133 are decelerated, or cooled, using a laser. The atoms are then shot into a magnetic field, where they begin to oscillate rapidly.

"In a mechanical clock you have a pendulum which oscillates and that is used to divide time into equal intervals," project leader Pierre Thomann said.

"The principle in an atomic clock is very similar. It's just that we replaced the mechanical pendulum by oscillations that take place inside atoms," he explained.

The new generation clocks are around ten times more precise than the atomic clocks used up until now. Three are already in operation - in the USA, France and Germany.

source: swissinfo.org

Brainwave technology offers new hope for disabled

Paralysis sufferers might one day be able to complete simple tasks, such as writing a letter, using brainpower alone.

Researchers in Switzerland are developing cutting-edge technology that uses human brainwaves to tell computers what to do.

Last autumn, scientists at the Dalle Molle Institute for Perceptual Artificial Intelligence (Idiap) in canton Valais began experimenting with ways of harnessing brainwaves via electrodes to send simple commands to a computer.

According to director Jean-Albert Ferrez, the institute has developed technology that can roughly identify what a person is thinking about, based on his or her mental activity.

"The computer can detect whether you are thinking about a calculation, a place, a colour or even what you want to eat for dinner," he said.

"But it's not good enough yet to detect exactly what colour you're thinking of."

The process works by attaching electrodes to a patient's scalp, which record the electromagnetic activity of the brain.

These electrical signals are sent to a "neuro-classifier" which is trained to recognise specific patterns of brain activity.

The computer then matches this activity to a corresponding task such as turning on a light or even writing a letter using an on-screen "virtual keyboard".

"Through mental activity alone, a subject can select letters and write messages," explained José Millan, a senior researcher at the institute.

The project is still in its experimental phase and, according to Ferrez, it could take years before practical applications are developed for the technology.

However, he believes the research might someday offer an unprecedented degree of autonomy to hundreds of thousands of severely disabled people, such as quadriplegics.

source: swissinfo.org

Eleanor Roosevelt wrote :

Many people will walk in and out of your life, But only true friends will leave footprints in your heart.

To handle yourself, use your head;
To handle others, use your heart.

Anger is only one letter short
of danger.

If someone betrays you once,
it is his fault;
If he betrays you twice, it is your fault.

Great minds discuss ideas;
Average minds discuss events;
Small minds discuss people.

He who loses money, loses much;
He who loses a friend,
loses much more;
He who loses faith, loses all.

Beautiful young people are
accidents of nature,
But beautiful old people are
works of art.

Learn from the mistakes of others.
You can't live long enough to make
them all yourself.