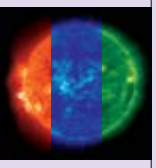

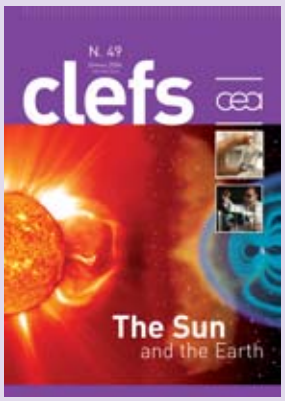

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Background pictures:
Coronal mass ejections from the Sun (representation composed from a number of views gathered by two instruments mounted on the SOHO satellite). The "cloud" of particles bound for the Earth is deflected, for the most part, by the Earth's magnetosphere.
SOHO/LASCO/EIT (ESA & NASA)

Inset:
Microtarget for an inertial-confinement fusion experiment being prepared at CEA/CESTA.
G. Rolle/REA/CEA
Preparing a laser-flash illumination experiment (at a 532-nm wavelength) with a photosynthetic membrane sample, for the purposes of an electronic paramagnetic resonance investigation.
A. Gonin/CEA

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Éditorial

Whichever way life on Earth is considered, the pervasive presence of the Sun is apparent. All, or nearly all, of what determines the conditions of the denizens of the Earth, from the very existence of this planet to the emergence of life on its surface, through its energy supplies, must be ascribed to the Sun.

CEA has many reasons to concern itself with the Sun. Our star is, first and foremost, a prodigious piece of nuclear machinery, which, by turning its hydrogen into helium, provides us, directly or otherwise, with light, heat and energy. For a long time, scientists - including the research workers in the Physical Sciences and Military Applications Divisions - have dreamt of reproducing, here on Earth, thermonuclear reactions comparable to those in the chain of reactions in the Sun's core: the century now beginning should witness their achieving this goal, making a reality of the hope of commanding, with controlled fusion, a near-inexhaustible source of energy.

Knowledge of the Sun owes much of its recent advances to research programs in which CEA stands as a major protagonist. Understanding of climate mechanisms, the vital impact of which is now apparent to all, would in turn not be as advanced as it is if CEA research workers had not contributed a number of significant building blocks to the development of isotopic methods, or use of radioactive tags.

Other research workers, in the Technological Research Division, are equally in the lead as regards development of systems for the conversion of solar radiation into electricity, along other "new energy technologies." Finally, the interaction of radiation and living matter is an essential thrust of the research being carried out by the Life Sciences Division.

The various aspects of the influence, on Earth denizens, of the star that lights our days form the theme of the exhibition *Soleil, mythes et réalités (The Sun, myths and realities)*, being held at the Cité des sciences et de l'industrie in Paris-La Villette, until 30 January 2005, for which CEA acts as major partner. It behoved to *Clefs CEA* to work in concert with this exhibition. The magazine thus brings together a selection of these topics, organized into three chapters. The first deals with knowledge of the Sun itself; the second, with various ways of domesticating, on Earth, thermonuclear fusion; and the third considers various aspects of the interaction of our star with the life of Earth denizens.

> Bernard Bouquin