CANS OF JAM²

From the editors

Hello there!

I bet you did not expect us back so soon, after the hard time we had publishing issue 8; but the pupils are back on track, hopefully, and we are confident once more...

This issue is both red and grey : you will learn everything you have always wanted to ask about red, the colour, or red, the planet, but also about fog and smoke; we hope you will enjoy it, and since the exam season is approaching fast now, we wish you all the best for whatever exam you are taking!

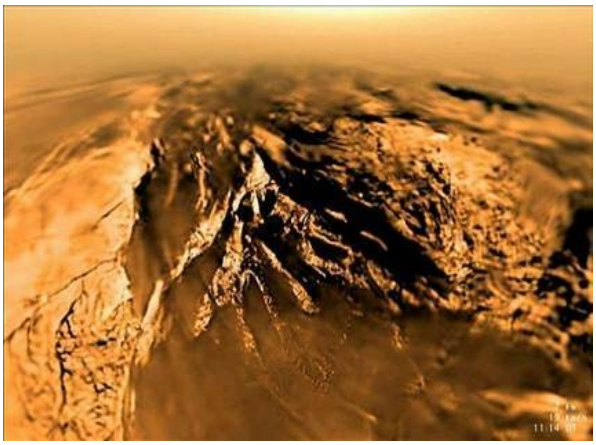
X-Rays, censorship, questions and Titan

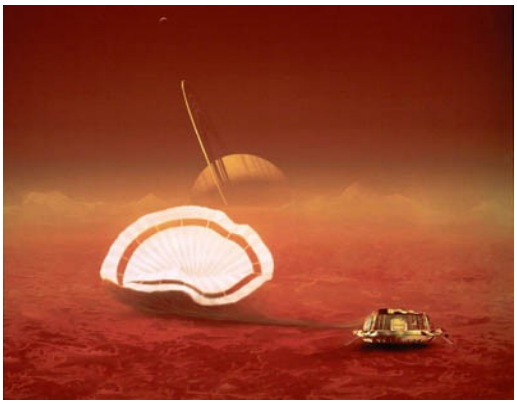
Here, there should have been an article on X-rays, but we discovered that the article in question was simply pasted from a famous on-line encyclopedia, so we decided **not** to publish it and to have a quiet talk with some of our reporters... All nice and friendly-like, of course, do not worry for them!

And since this leaves a rather large, empty place in the magazine, we would like to take the opportunity to ask you, readers, for your opinion : what would you like to see in *cans of jam²*? Did any one of you, science teachers, use part of the magazine with your classes? And how did it go?

Do not hesitate to send us an email, we will be glad to have some feed-back!

Now, as we really liked the video about Titan sent by Gerald in the last issue, and no pupil wrote anything about it, we will give you some photos of it, just for pleasure, and to fill the empty space...





The perfect red

Wherever we go, red surrounds us, on flowers, insects, blood, embers... Depending on cultures it can symbolize danger, love, bravery, passion, violence or beauty. Nevertheless, this colour so common to our eyes gave much trouble to be copied.

For many centuries, Europeans artists and dyers tried to reproduce the «perfect red ».

Until the XVIth century, the brightest reds came from an insect, the kermes. Some French cave paintings, the Dead Sea scrolls, or Egyptians mummies clothes were tainted with kermes. But these colours remained drab.

However, in the XIVth century, Incas and Mexican Aztecs started to exploit a minuscule insect, called the scale insect, which allowed them to produce an extraordinary red dye as precious as gold.

The scale insect is a small insect of tropical and subtropical areas of Mexico and South America which lives on cactus. To stop other insects eating it, the scale insect secretes an acid, which, when it is extracted, gives a carmine red pigment.

About 1520, Spanish conquistadors saw this wonderful color on Aztec makets.

After a long search, they found the secret of the Indians and started exporting enough insects to Europe to produce a red dye, the brightest red ever seen. It was an immediate success!

Red became the colour of kings' and aristocrats' clothes and the Spanish got rich selling carmine around the world. They jealously kept their secret.

Most Europeans thought this dye came from a fruit or some new cereals, because the dried insects looked like wheat grains. The entries to the farms were closely watched and many Spanish dryers were killed to keep the secret.

(continued on page 3)

The perfect red (*continued from page 2*)

Then one day, a French naturalist brought back some cactus plants covered with scale insects. Farms were soon created in other countries than Spain and the scale insect remained the main source of red dye until the invention of synthetic products at the end of the XIXth century.

Nowadays, this pigment is used as food colouring and is more appreciated than artificial dye, considered dangerous.

Mars

Mars is the fourth planet of our solar system, 2.27939100×10^8 km from the sun on average, and the second in weight, at 6.4185×10^{23} kg. It is a terrestrial planet like Mercury or Venus.

Today, Mars has lost the totality of its geologic activity and only sometimes some little events can happen on the surface. Mars's rotational period is the same as Earth. The average temperature on the surface is -63° C.

Mars is about ten times less massive than Earth but ten times more massive than the Moon, and its surface has similarities with both. There are lots of areas riddled with impact craters resembling those of the Moon, but also traces of tectonic and climate activities as on Earth, including volcanoes, rifts, valleys, mesas, dune fields and polar caps.

Reader's e-mails (partly translated and edited by the editors)

Thank you for this new issue; I am going to put it on the site right now.
Happy birthday to *cans of jam ²* !

Christiane, from Amiens, 80

Well, as always, Madam, we thank you for your enthusiastic support to cans of jam²*; il would not really be the same if you were not involved.*

Hi !!
I hope you're fine first, and I'm really sorry for the 12th of March (*editors' note* : our school's open doors day this year), I had to stay in my engineering school.
I read the new issue, and if I remember correctly, last year, Florine and I had written an article about the project to go to the moon, too ! =D
If you want, I can suggest some ideas for the next issues, 'cause I know what a brain teaser it is tochoose a subject !
So, I'll be really happy to read an article about Japan, 'cause it's the news, or the spring and flowers (but I see they're only boys, or there is just the one girl, am I right ?), or what else... Something about the futur of solar and wind energy (life expectancy of 15years, more CO_2 emissions on production, compared to benefits, etc.).
Or if you want, you can send your pupils this link : http://www.techno-science.net/
It's about sciences' news and it's very simple…
You told me you would like to have an article about Women and Sciences, but, I haven't got the time, I'm lost between Mechanics & Electromagnetism! :)
I hope to see you in the coming months ! And can you tell Ms Dubuc I don't forget her !
See you later :)

Aurélie, from Beauvais, 60

Thank you Aurélie for your ideas; we passed them on to our reporters; now we'll just have to wait and see what they do with them... As for your personal message to Ms Dubuc, well, now every reader will know that you are a faithful fan club all by yourself! (=D*, as young people write!)*
And since it is the first of May, and we are talking about emoticons, we editors wish to give all our female readers the following :

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Editors' note

if you found this magazine through a site and want to subscribe, please send an email entitled 'cans of jam² subscription' to didier.galard@ac-amiens.fr. You will be added to our mailing list!

What is fog?

Fog is very embarrassing when you want to drive or when you are walking in the street ! But do we really know what fog is ?

Fog is a meteorological phenomenon; it consists in fine droplets of water, fine particles or fine crystals of ice, often microscopic in size, and this reduces the visibility on the ground. Fog has the same composition as clouds, but it forms at ground level.

Meteorologists define fog according to visibility : when visibility is more than one kilometre, it is only haze, and when it is less than one kilometre, this is fog.

Sometimes if the temperature is lower than 0° C, fog becomes freezing and this is very dangerous. Fog clears only when it is warmed up by the sun. So be careful when there is fog!

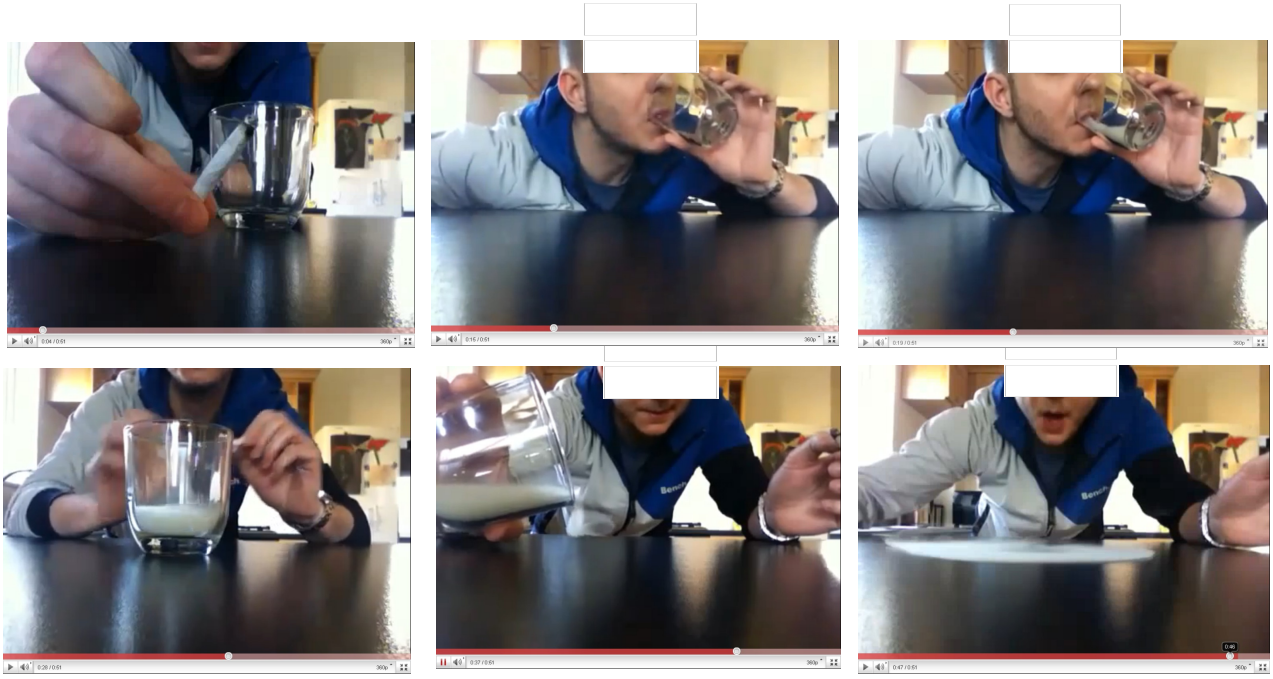
An experiment that *does not go up* in smoke

For this article, Corentin, Alexandre and I realized an experiment with a cigarette and a cold glass (picture 1).

We took some smoke in our mouths and blew it into a cold glass (pictures 2 and 3); then we waited for about 30 seconds (picture 4), and we emptied the glass onto the table (picture 5).

Smoke is denser than air, so it stayed on the surface of the table (picture 6). This is really fascinating !

We would like to thank the man on the photos for his help (we are not smokers, of course, contrary to what we said at the start).



If you want to watch the whole video :
http://www.youtube.com/watch?v=Zk3bwlltWxk