

CANS OF JAM²

Issue 5, back to school 2010

page 1

From the editors

We are back to work! This year, *cans of jam*² will be written by younger pupils, from 2nde, which may explain that this first issue took a little longer to prepare; but we hope they will improve as the year goes on, and that the next issues will be bigger and better...

For the moment, enjoy their first production ever... And welcome back to school!

The physics of an electric guitar

Did you know that the electric guitar used magnetism to produce tunes ?

When the guitar-player hits a string, the string vibrates more than one thousand times a second.

As the string is made of steel and there is a magnet in the microphone, this microphone changes the vibration into an electric impulse.



The amplifier receives this electric impulse and sends it to the speakers; then the speakers turn the impulse into air vibration, so into a melody.

Water on the Moon?

On November 2009, NASA announced that they had detected large amounts of frozen water in a crater at the South pole of the Moon.



Thanks to the LCROSS spacecraft, sent to our satellite on October 9th, 2009, at a speed of 9,000 km/h, the water was discovered in a crater called Cabeus near the South pole, where temperatures are around -20° C. This is a major discovery.

CANS OF JAM²

Issue 5, back to school 2010

page 2

A really long travel



Many animals migrate when winter arrives, but some insects avoid the cold seasons too, like butterflies. When the first Autumn leaves fall down, thousands of *Danaus plexippus*, better known as Monarchs, meet in Southern Canada, or other regions of North America, to migrate together to the south. Some cover more than 3,000 kilometers to find the mild weather of California, Mexico or Cuba.



But the most fantastic is their sense of direction because, like elephants when they are going to die, they know where they have to go to migrate without ancestors showing them the way!



When they arrive, they hibernate for 5 to 7 months. In February or March, they return to the north to lay their eggs and then die.



CANS OF JAM ²

Issue 5, back to school 2010

page 3

The great word search game

Find the following words in the grid :

burette, flask heater, beaker, spatula, test tube, scales, graduated cylinder, pipette, funnel, erlenmeyer, and flea.

P	B	A	X	Y	T	H	E	A	L	N	R	O	N	U	F	C	N	E
I	N	U	P	I	B	U	L	I	F	U	K	T	I	M	U	X	H	G
P	E	G	R	A	D	U	A	T	E	D	C	Y	L	I	N	D	E	R
E	M	L	Y	E	R	L	E	N	M	E	Y	E	R	R	N	S	Q	A
T	I	P	L	I	T	E	B	I	M	G	R	Q	V	U	E	V	C	A
T	A	F	L	P	A	T	D	I	T	X	I	S	C	A	L	E	S	X
E	F	L	A	S	K	H	E	A	T	E	R	E	I	M	F	N	E	D
R	I	E	R	U	I	R	P	O	R	B	S	D	K	C	A	W	X	V
O	X	A	Y	M	N	P	C	G	W	I	O	T	A	Y	N	E	T	S
R	B	E	A	K	E	R	U	F	S	P	A	T	U	L	A	Q	C	P
W	Z	I	A	M	L	T	B	E	N	D	P	G	C	B	Y	S	O	U
H	O	E	P	F	I	C	P	L	U	N	R	A	K	S	E	B	D	T

!! Readers' letters!!

Even on holiday! Impressive!

I agree with the reader who would like a short article on maths. It is after all a fundamental science! And not necessarily something amusing... Why should we play with maths when we write serious articles about other sciences? But you do not have to, of course. I also like physics and other sciences in general!

Guillaume, from Faverges, 74

Hello everyone!

Thanks a lot for taking my remarks into account in your paper, I hope it will help for the year to come. I am ready to give you more opinion next year.

Michael, from Beauvais, 60

Hello editors; so, are you still not on the beach, or already back? Thank you for your answers to my questions in issue 4.

Florence, from Sweden

CANS OF JAM ²

Issue 5, back to school 2010

page 4

Our first chemistry experiment in English!

I am going to explain a funny experiment. Our first ever in English!

To start with, we put our lab clothes and protection equipment (goggles, gloves and white coat); it was important!



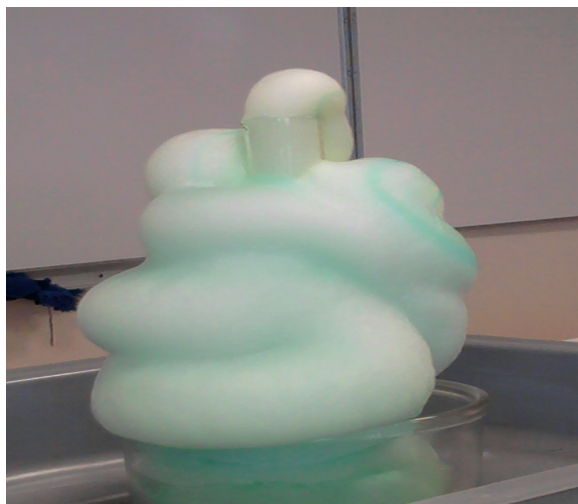
We took a graduated cylinder and poured 50 mL of hydrogen peroxide (H_2O_2), then we added 10 mL of dish soap and we stirred. Then we poured four drops of food colouring on the inner sides of the tube, and finally, we added 5mL of catalyst (potassium

iodide, ($\text{K}^+(\text{aq}) + \text{I}^-(\text{aq})$).



The result was funny and nice : a lot of coloured foam got out of the graduated cylinder very quickly, and the cylinder became hot. It is called 'elephant toothpaste'.

Then one of the teachers lit a match, blew it off, and put the end of it in the foam, and the flame came back; so we concluded that the foam was full of oxygen.



The Chorea of Huntington

Chorea of Huntington, also known under the name of illness of Huntington, is an incurable hereditary inexorable illness of evolution towards death.

This illness develops, most often, only with people from 40 to 50 years old. Nevertheless it is possible that symptoms appear in younger patients: with certain individuals, the first symptoms appear between 15 and 25 years.

This illness is a neural degeneration affecting driving and cognitive functions leading to insanity. Its psychiatric symptoms are accompanied by neurological symptoms, such as abnormal and incoherent gestures (choreic movements) independent of the patient's will, disturbances of equilibrium and lethargy.

The Huntington gene usually provides the information to synthesize a protein, "Huntingtine". The mutation of the gene causes the synthesis of another form of protein, the presence of which progressively causes damage in specific zones of the cerebrum. The genetic tests can be performed at any stage of development, even before the

appearance of symptoms, giving rise to ethical debates.

The precise way the illness affects an individual is variable and can even change between members of the same family, but symptoms advance in a foreseeable manner for most individuals. The first symptoms are a general lack of coordination and a changeable step. As the illness advances, uncoordinated, jerky movements become more and more visible, with a decline in mental and behaviour aptitude and psychiatric problems. Physical aptitude is progressively diminished until a coordinated movement becomes very difficult, and the mental capacities evolve in general towards insanity.

Although the illness is not fatal in itself, complications such as pneumonia, heart diseases, and wounds owed to falls reduce life expectancy to about twenty years after the appearance of the symptoms. There is no cure against this illness and full-time care is necessary in the last stages of the illness, but there are new treatments to relieve some of these symptoms...