

Volume 1



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SPECTRUM

The Assam valley science Journal



The Assam Valley School Publication

Editor's Note

Amidst the great global pandemic, I am delighted to introduce 'Spectrum', the very first science journal of The AVS. While the entire world is caged within the four walls of their houses, deprived of opportunity and resources, the students and teachers of AVS have come up with this creative initiative to make science fun loving for everyone. In today's modern era, where the role of science is indispensable, covering every aspect of existence, 'Spectrum' provides a very enthralling platform for students to explore the world of science, to be curious, observant and to be updated with the latest comprehensive science facts. Our primary goal is to encourage students to develop a growth mindset, to be creative and imaginative while learning and change their stereotypical mindset of studies being boring and tough.

Magdolina R. S. Lepcha

What's Inside

The AVS Cycle

The Magic World of Albert Ray

Mr. Rutherford - Alpha is ready

Migration - the necessity of life

Magic Handwriting

Sandwich Battery

The Fertilizer that Exploded

Humour in Science

Test Yourself

Did You Know ?

Kids' Corner

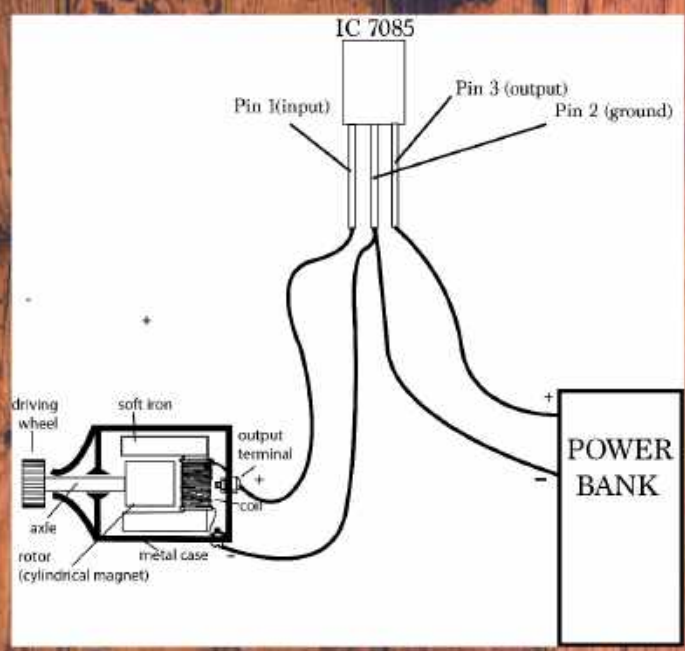
Science and Spirituality

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Necessity is the mother of invention

THE AVS CYCLE

Krish Agarwal, 12C, Vedansh Jindal, 12S & Anushcka Joshi, 11S



Eco-friendly, pocket friendly mobility that provides efficient sanitization in a sustainable manner. The AVS Cycles uses a 6V dynamo that converts rotational energy into electrical energy when the cycle is pedalled. The dynamo is accompanied by an IC 707 chip which stabilizes the current generated and passes it on to a power bank for energy accumulation with an idea of using it when needed.

The stored energy can be used for two purposes -

1. To Spray liquid sanitizer that is kept in a small tank fitted with a water pump that is the same as the one used in cars.
2. To charge mobile.

Any cycle body can be modified using following items-

6V Dynamo, Electrical wires, IC707 chip, a power bank, 6V water pump, headlight, USB Charger, water nozzle and pipe

The Magic World Of Albert Ray

A Science Fiction Story by Magdolina R.S. Lepcha, 12 S

'Please! teacher don't pick me!' is the plea which races inside the minds of most students when a teacher is picking random pupils to answer their question. However, the case would be reversed for the teachers of 'The Alpine School' where they'd be left speechless by the curiosity of Albert Ray. Albert having seen the world for 12 years of his existence was quite fascinated by everything that his senses could possibly catch, and his senses were probably the sharpest among all his classmates. Every day, in every class he would never fail to intimidate the teachers with his rapid-fire questioning rounds. It was a huge struggle for a teacher to ever complete their day's lesson, with having to answer to Albert's every query.

Albert loved birds, since he was six when his father had brought him a tiny nightingale whose voice had soothed Albert's heart. One summer afternoon a sweet fragrance engulfed the whole classroom, Albert traced the calming fragrance to the colony of bright pink, red and purple flowers outside his classroom. At first glimpse itself, he could figure out that the flower was Monarda, he had read about it in his botany encyclopedia. Suddenly, his eyes caught sight of a bluish-green bird, it was the size of his thumb and the smallest bird he had ever seen. Albert closely observed the swift flight of the bird, it flapped its wings in such a rapid motion that it blurred. The bird hovered like a helicopter over the front of the flower retrieving nectar with its long proboscis and then in a swift moment flew backwards. Albert in his entire life had never seen such a marvelous flight, even his own nightingale couldn't do what this tiny bird could.

After class, Albert explained to his friends what a spectacular piece of beauty he had witnessed. Albert was very keen and wouldn't stay calm until he had figured out the identity of the thumb-sized bird. One of his friends suggested it must have been a sunbird because of its color. However, Albert was smart; he had seen a sunbird before and knew that as swift of a bird sunbird were, they never hover over their food, they always preached while

feeding. Another suggested kingfisher, but Albert was no fool. He knew that kingfishers had long beaks to catch fishes on which they fed; they wouldn't suck on nectar let alone hover over it. Then came a bizarre suggestion of cuckoo. Albert knew it was the laziest bird ever. It was so lazy that it would not even build its own nest and would leave its eggs in other birds' nests to be nurtured by them. Also, cuckoo was comparatively huge and there's no way it could have been the bird Albert was looking for. Albert was dejected to see the 'zero' progress of his bird hunt. However, Albert was a persistent guy and would fulfil his curiosity in any manner.

After the last bell had rung, Albert scampered down the pebbled street towards Mr Worth house. Mr Worth was a man of patience and great understanding. He understood Albert's needs to ask questions and would always have answers to everything. When Albert told him about the little bird, Mr Worth could see the growing curiosity twinkling in his hawk eye. 'A Bee-Humming Bird', Mr Worth answered. Albert listened with amazement, as his teacher told him about the lightest and smallest bird in the world (even smaller than a penny), who could do wonders like no other birds could. He was amazed at the fact that the humming bird could fly backward, beating their wings sixty to eighty beats per second and two hundred times per second during a courtship dive. Albert now had a new bird added to his list of favourites along with: The Peregrine Falcon; a bird of prey, the fastest bird in the world and his pet nightingale, a small passerine bird, with the most beautiful song.

That night Albert lay on his bed as his nightingale sang him lullaby to sleep. Albert dreamt he were a humming bird small yet so powerful, he sailed through the sky, touched the clouds and performed the biggest summersault of all time. Albert Ray was a gifted child with visions higher than the sun.

Mr. Rutherford - Alpha is Ready

Kaustav B. Arya, 11SB

Mr. Rutherford, direct the mission;
The squad would work with your vision!
Two times the proton's charge, four times the proton's
mass.
Ascertain the task to be a venture of class.

"We're associating with Marsden and Geiger,
To study the atom's structure.
Hey! your beam's to be pointed there, you see that?
That thin gold foil; be ready to create the impact."

"Listen, whoever goes through, just keep going.
If someone can't remember, you too will be
epoch-making.
We are a team; our ambition for the greater community;
Set yourself to seize it with integrity."

1, 2 and 3-They go.....

Oh! Staggering! Most of us have passed through;
Few didn't divert, and few deflected too!
They're gone; we now have severe pain.
Why not? From hitting, we didn't refrain.

Mr. Rutherford, we saw something remarkable.
Others went, but we collided with something very small.
Only this number could return; somehow, we did handle
To return by making a straight angle.

Decisions made.....

"The mass of an atom, forms a cluster.
With positive charge, resides in the nucleus, the centre.
Atom's volume is empty space mostly,
Wish that it'd strengthen the progress smoothly."

Rutherford's gold foil experiment led to discovery of atomic nucleus

Migration - The Necessity of Life

Shabahat Sabir Ansari, 5A

Migration is marked by its annual seasonality,
Non-migratory birds are said to be sedentary.
Waiting for the winter to come,
To make flock of about a ton.
Birds may fly from 15 to 600 miles,
Ohh! How far they have to go miles and miles.
Imagine the conditions they face, from one place to another place!
I wonder if they are not afraid....
The Siberian crane, they are found in north western lakes.
They are endangered!! we got to save,
It has a dark and really reddish type face.
Though they migrate in search of food and shelter,
which allows them to adapt as a happy creature!!



Magic Handwriting

Anvita Dey, 9A

Make a solution of any detergent powder or soap, dip a brush and write on white paper, let it dry. This is your secret letter with magic hand writing. Now make a solution of turmeric, wet a cotton piece and rub on the paper; The magic handwriting would reappear in red colour.

The science behind - Turmeric is natural indicator that turns red in soap(alkali/base).



BEFORE



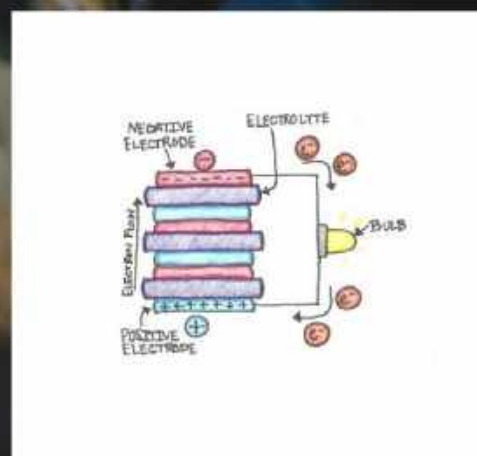
AFTER

Sandwich Battery

Abhay Kejriwal, 12SB

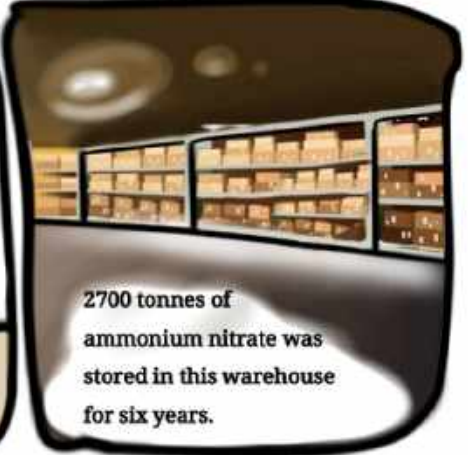
Cut a small circle out of the aluminum foil in the shape of a coin. Carefully wet a small amount of cotton with vinegar making sure that the fluid is not dripping out. Now, spread the cotton on one side of the coin evenly. Make sure there are no air spaces. Place the cut-out aluminum foil on top of the cotton and make sure it does not touch the coin. Now, your sandwich battery is ready. Test it out with an LED. If you want to make a stronger battery make another battery like this and join them together, with the copper coin above the aluminum foil.

Working Principle- The principle here used is that of an electrochemical cell or battery. It works by converting chemical energy stored in the metals (copper coin and aluminium) into electrical energy. The copper coin and aluminium foil act as electrodes the cotton-dipped vinegar acts as an electrolyte. When a wire is connected to it along with a bulb, the circuit is closed and complete. Now, the electrons flow as it is shown in the diagram. Thus, the energy supplied by the current lights up the bulb/ LED



THE FERTILIZER THAT EXPLODED

Mrs. Shalu Sharma, Illustration by Adrija Das, 11S



Humour in Science

Prakriti Sharma, 10B

Why can't you trust an atom?
Answer: They make up everything.

A Neutron walks into a bar and asks how much for a beer. Bartender replies- "for you - no charge"

How do you know that Saturn was married more than once..... because he has many rings.

A photon checks into a hotel. The bellhop asks, "Can I help you with your luggage?" The photon replies, "I don't have any. I'm traveling light!"

Brain Gym

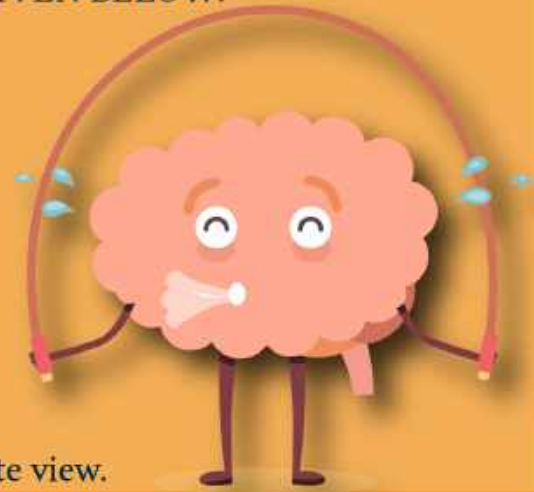
Let's Think of some Latest Inventions

Christine S. Houmai, 11H

I have a friend called 1, she is the smartest person I have ever met. Anytime I'm in doubt I can always run to her and she always has the answer to all of my questions. She is always updated with all the latest technological advancements. The other day both of us had gone for a drive out of town for a little fresh air and we got stuck in traffic. Looking around I saw this car which looked like any other but as I looked closer I noticed it wasn't emitting any smoke like the others. So, I turned to ask my friend 1 about it and she explained to me that it was a 2 which does not run on fossil fuels and is therefore environment friendly. Unfortunately on our way back home we lost our way but thankfully for 3 we reached home safely.

ENCIRCLE THE CORRECT ANSWERS TO THE QUESTIONS GIVEN BELOW:

AYJUIK LJHGBGTUOU
 LURTYJNMJKLMJIWZ
 EZEGBATTERYCARSP
 XYBKBHJGBOJKLMUI
 A USPAMELGOOGIXIJ
 HUIKLG BNMJKLJIPI



HINTS:

1. Our virtual assistant which was developed by amazon.
2. Only uses chemical energy to move from one place to another.
3. Launched in 2005, helps us reach our destination with a satellite view.

W CROSS R D

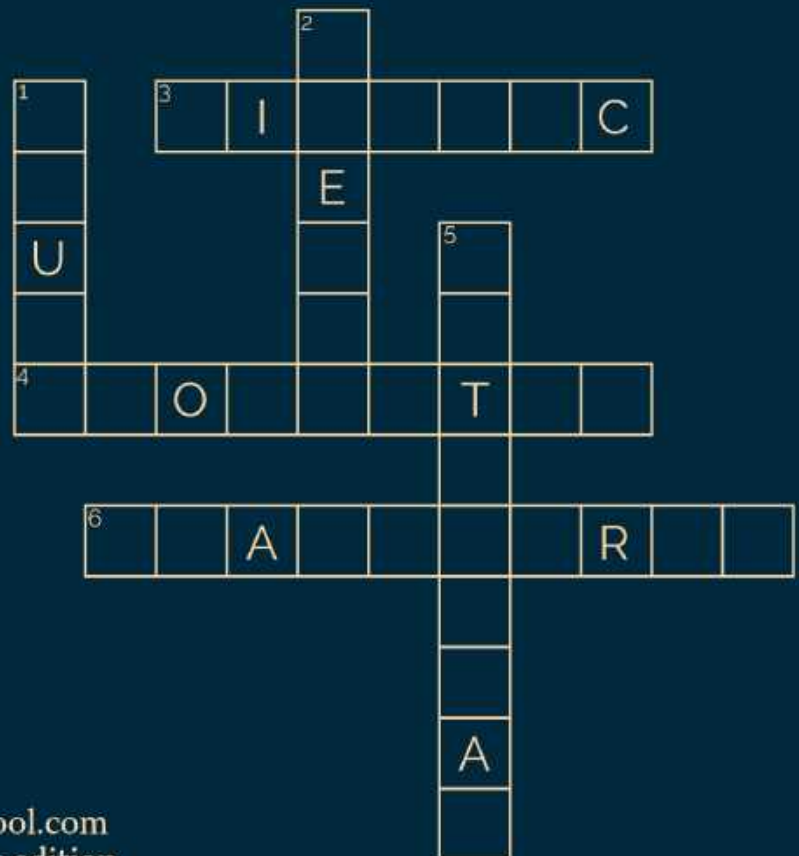
Reyaan Alam, 9B

Down:

1. S.I. unit of energy
2. The capacity to do work
5. Stored energy

Across:

4. A community of living creatures (plants, animals (including humans), and microorganisms) in a certain region.
3. Energy possessed due to motion
6. Energy which causes hotness of a body



Send your answers to coptm@assamvalleyschool.com
 Names of winners will be published in the next edition.

Did You Know ?

Neha Swabnam, 11H

Pneumonoultramicroscopicsilicovolcanoconiosis

It is the longest word in English, consisting of 45 letters. This is the scientific name for a disease that causes inflammation in the lungs, owing to the inhalation of very fine silica dust. It's an inflated version of silicosis



BREATHING TO RELAX

Lungs are vital organs
keep it healthy



Kids' Corner

Creativity and imagination of kids during lockdown

Unscramble

Adrika Dey, 5A

1. A virus that has made everyone stay in home – roncao risuv
2. A liquid gel to disinfect our hands – anizziret
3. A germs protection cover for our nose and mouth – skam
4. This pandemic has put everyone inside – kclowndo
5. God who has come in form of people to save our lives from this pandemic and are working day and night - trocod

Send your answers to
coptm@assamvalleyschool.com
Names of winners will be published
in the next edition.

Earth was dying then...

Priyanka Nazary, 5A



Science And Spirituality

Nilay Dhakal, 12S

Though science and spirituality don't appear to be similar, I would say all we require is a change in perspective, some of which I have developed over the past years. Today I write to exhibit that very perspective. Before we delve deeper, we must understand what science truly means. The very feeling, the very 'wanting to know' is science. The burst of curiosity in a child's mind when he sees a leaf or the stars in the vast sky is science. That very gift of curiosity which we have received is science. Sadly, if the curious child knowing about the stars or the leaf cannot be put to commercial use or to make money, nobody will invest in that curiosity. That is what we call technology, the commercialized version of science. Here, I intend to talk about science and spirituality, not technology and the latter. Moving on, the easiest definition of spirituality is "you close your eyes, you find peace within and after you open your eyes, you ask what can I do for you?" This has also become the opposite in today's times as when man looks within, he finds all disturbing thoughts and when he looks without, he asks "what can you do for me?" What a world this would be, if only, people followed the former instead of the latter. Science in physical terms is about finding the truth, in physical terms again. With every invention, with every equation, with every discovery a scientist strives to reach the truth of all existence whereas the spiritual process too is about seeking the truth, not in physical terms but in terms of deep consciousness, that which is beyond our minds, what famous psychiatric Carl Jung calls as the 'superconscious'. Physical science stems from our mind, every invention is first materialized in the mind and then manifested, hence we can conclude that physical science is a product of the mind and the senses which are limited entities. They are limited because they are not perfect. Physical science too has its flaws. Few months ago in my biology class, we were asked to discard an evolutionary explanation and adopt a newer theory backed by

better research whereas the former had even yielded us marks and grades, two years ago in our board examinations! Hence, we can say, that which springs from the imperfect, cannot be perfect. Spirituality is about shedding the skin of the limited senses and travelling to the core of one's very being. At one point, even rising above the mind and the intellect. In this state of superconsciousness, one experiences the unimaginable, the unfathomable. This was the state in which Aryabhatta discovered 'zero', the state in which many ancient sages sat for hours and days in deep meditation. All equations which the famous Indian mathematician, Srinivas Ramanujan received were in his sleep, given to him by his deity. He never had a quality mathematical education yet was an exemplary genius. This is what happens when science and spirituality meet. All forms of spirituality and its paths realize that there is something beyond the physical observable universe and a living organism is not just made of some chemicals but in its essential nature is an infinite energy which is the seed of consciousness. This energy can neither be created nor destroyed and it continuously changes forms, implying that you and I have existed since the beginning of time. The famous psychiatrist Dr. Brein Weiss too confirms this and writes about how he could treat his patients in deep hypnosis therapy where he was shocked to find that they remembered many of their past lives! Numerous of such instances have been recorded and verified and one of them was my very own teacher! Numerous instances of near death experiences stand as proof where patients from all religious and non religious backgrounds have confirmed that they could watch their physical bodies from an elevated view as if the gross body and the real self were distinct entities. There have been many baffling instances where Tibetans practicing a form of meditation called tummo have been able to raise their body temperatures to a fever by just meditating. The University of Harvard has found

that a regular spiritual practice like meditation when done consistently can have a positive change in 172 genes that control inflammation, sleep-wake rhythms in the body and how sugar processes in the body. We must be open to the possibility that there is much more to this existence which instruments in a lab are incapable of finding. Regardless of these examples, the true essence of spirituality is one, a lifestyle which can transform your very being, from a primordial monkey instinct to a Buddha like, Christlike, Krishna like being. I leave it up to you to ponder and make the choice of living a life rich in both, where you are fully aware of the chemical constituents of water and food, but at

the same time, you don't waste them. Where you are aware that certain practices like smoking destroy your lungs and you refrain from them because you treat your sacred body like a temple, a church or a mosque. Where we don't look at animals we consume as protein products, but as beings who deserve love and compassion. A lifestyle where we know the formulae of astronomy but at the same time value the sun's rays on our skin. A lifestyle where even after studying and knowing the science behind everything we don't pollute the earth and treat it like a sacred mother. The choice is yours to make, I have made mine.



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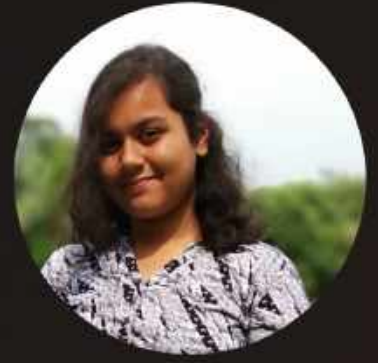
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