Dr. Sarvepalli Radhakrishnan, a scholar extraordinary and a teacher par excellence, was born on 5th September and the day is celebrated as “Teacher’s Day” all over India. In 1948 Dr. Radhakrishnan had submitted the first report on Higher Education in free India which is relevant even today. Some of his thoughts expressed in the report merit recapitulation.

“The purpose of all education,” he says, “is to provide a coherent picture of the universe and an integrated way of life. A university is meant to be an institution for acquisition and dissemination of knowledge and for fostering free and responsible thinking.” There is an ancient saying: ‘yā vidya sā vimuktayā’ which means ‘that is knowledge which liberates’. Education must free one from the shackles of ignorance, prejudice and unfounded belief. It should lead one from darkness to light and bring about total release from every kind of domination except that of reason.

Education actually is training of the mind and not stuffing of the brain. A student may be able to store a great deal of information in the mind but that will not bring about enlightenment. Plato distinguishes between factual information and understanding. No amount of factual information would make anyone an educated or virtuous person. A trained mind will be able to discern between right and wrong and will be able to express dissent. But this when done, might not be a popular and welcome thing. Dr. Radhakrishnan says that since education is both a training of minds and training of souls, it should give both knowledge and wisdom. Lord Reading, Governor General of India from...
1921 to 1925, expressed this function of a university thus, “We shall welcome knowledge with open arms when she comes to our portals – but let us not make the mistake of forgetting her more bashful sister, wisdom. For knowledge and learning alone will not make the sum total that our alumni should take away with them at the close of their studies. They should come out of the university not only armed with learning and replete with knowledge, but possessing those less easily acquired and more intangible qualities of the cultured mind, good judgement, wise tolerance and strong character.”

Radhakrishnan’s report highlights the need for improvement in national character and discipline. Swami Vivekanand spoke of character building much earlier and said: “The education that does not help the common mass of the people to equip themselves for the struggle for life, which does not bring out strength of character, a spirit of philanthropy and the courage of a lion – is it worth the name? We want that education by which character is formed, strength of mind is increased, the intellect expanded and by which one can stand on one’s own feet. The end and aim of all education should be man-making. The end and aim of all training is to make man grow. The training by which the current and expression of will are brought under control and become fruitful is called education.”

One of the serious flaws of our system of education has been that it neglected India’s past and did not provide the Indian students with a knowledge of their own culture. Education must necessarily impart to the students their cultural heritage. In Dr. Radhakrishnan’s words, “Nations are not made chiefly by traders and politicians. They are made by artists and thinkers, saints and philosophers. National unity and progress require a deeper foundation than political and economic arrangements. It is the life of spirit that has shaped and unified our collective existence and has been the real bond of oneness among the Indian people.”

Universities must also teach the democratic way of life. It required of its adherents a jealous regard not only for their own rights but equally for the similar rights of others. Education is the great instrument of social emancipation by which a democracy establishes, maintains and protects the spirit of equality among its members. In the words of Professor Krishna Kumar, noted educationist and former director of NCERT, “Education plays a vital role in strengthening a rational and liberal outlook that implies acceptance of differences. Our democratic order urgently needs the support of a universally accessible and sensibly organized system of education. The fruits of democracy and modernity will remain elusive if education is not structurally adjusted to the needs of the rural poor.”

Swami Ranganathan beautifully sums up the objectives of education:

- Training of India’s youth to an appreciation of India’s cultural heritage.
- Training of India’s youth in talents and capacities by which they become productive units of society and a source of its economic strength.
- Training of India’s youth in character building so that they may have the qualities of courage and vision to protect the country’s freedom and its democratic structure and the training of India’s youth in virtues and graces that will make them emotionally stable individuals and enable them to live in peace, harmony and cooperation with their fellow citizens.

What Nehru said....

If our children today are denied education, what is our India of tomorrow going to be. It is the duty of the State to provide good education for every child in the country. And I would add that it is the duty of the State to provide free education to every child in the country. Whatever pattern of society we are looking forward to must contain trained human beings, not people who have just learned to read and write, but trained people whose character has been developed, whose mind has aspirations and some elements of culture about it and who can do something with their hands.

Address at the Avadi Session of the Indian National Congress, January 23, 1955
This month that year

Discovery of Neptune

On the night of 13 March 1781, English astronomer William Herschel came across an unexpected object in the sky. Initially he thought that it was a comet. Prolonged observations revealed that it was actually another planet orbiting beyond Saturn. This was sensational, because it was the first time that such a discovery had been made ever since mankind started understanding astronomy. The planet was named Uranus after the Greek God of the sky, Ouranos.

By this time, the mathematics of planetary orbits based on Newton's laws of motion and gravitation was well established. Observations of the motion of Uranus showed discrepancies between the observed position and the predicted, theoretical position. Many suggestions and theories were put forward to explain these discrepancies. Some astronomers even suggested that there were errors in the actual observation of the planet. They were wrong. Another suggestion was that there could be another planet orbiting beyond Uranus, whose gravity could influence Uranus by just the right amount to explain the discrepancies.

John Couch Adams, a brilliant young English mathematician, decided to explore the suggestion about a planet orbiting beyond Uranus. He had received his B.A degree as Senior Wrangler in 1843. He used reverse mathematics to pinpoint the theoretical object beyond Uranus. By mid-September 1845, he had computed the position of such a planet. However, his work was not taken seriously either by James Challis, Director of the Cambridge Observatory, or by the Astronomer Royal in the Greenwich Observatory.

At the same time, Urbain Le Verrier, a French mathematician, was working on the same problem, unaware about John Adams’ work. He too computed the position of a possible planet beyond Uranus, and was ignored by his countrymen. He sent his results to Johann Gottfried Galle at the Berlin Observatory. Galle received Le Verrier’s results on 23 September 1846. That same night he, along with his student Heinrich Louis d’Arrest, examined the indicated area in the sky through a telescope. The new planet was found less than a degree away from its predicted position. Galle continued observing this new planet for two more nights, and then confirmed his finding to Le Verrier: "The new planet whose place you have [computed] really exists."

The new planet was named Neptune. This discovery is considered to be a grand confirmation of Newton's laws of motion and gravitation.

The discovery also highlights many shades of human nature. Both Adams and Le Verrier were relatively unknown, and ignored by their own countrymen. When Astronomer Royal George Airy learned about the work of Le Verrier, he secretly organised a search to be the first to find the planet beyond Uranus. His team actually saw the planet twice, but failed to recognise it.

At that time, the French were determined not to give credit to John Couch Adams. But as time marched on and the heat subsided, scientists recognised the work of Adams and he is given due credit for his work. Along with James Challis, George Airy was strongly criticised for ignoring Adams' work.
**Planetarium Events**

**Science Lab activity**

**Fleming’s left hand rule**

In late 19th century, John Ambrose Fleming discovered that when a current carrying wire is placed in an external magnetic field, the conducting wire experiences a force which is perpendicular both to magnetic field and to the direction of the current flow (i.e. they are mutually perpendicular). Fleming’s left-hand rule is basically a visual mnemonics which gives direction of force in electric motors.

Fleming’s left-hand rule mnemonic: Stretch the forefinger, the central finger and the thumb of your left hand mutually perpendicular to each other. If the forefinger shows the direction of magnetic field and the middle finger shows direction of current then the thumb will point towards the direction of the motion of the conductor (the current carrying wire).

This simple apparatus is built in the science lab for school students to effectively demonstrate the rule. This do-it-yourself apparatus cost about Rs. 100.

![Fleming's left hand rule diagram](image)

**Neptune at opposition**

A planet is said to be at opposition when the sun, earth and the planet (in this order) come nearly exactly on a straight line. On this day the planet would rise as the sun sets, giving us an opportunity to observe the planet all through the night.

Neptune, which was discovered using mathematical calculation (see page 2 of this newsletter) will be at opposition on 7th Sept. 2018. This is a good time to spot Neptune with a pair of binoculars. Using a telescope with primary mirror or lens of diameter 100 mm or more, one can observe the bluish hue of Neptune’s disk.

The map given here can be used to locate the planet.

![Neptune map](image)
India’s rich and varied cultural heritage is depicted in theatre, an art form that is performed in the entire country. Nehru Centre is proud to present its 22nd Theatre Festival with 8 plays in different languages.

Monday, 3rd September, 2018
AURAT! AURAT!! AURAT!!!
ISMAT APA KE NAAM - 3 (Urdu)
Written by Ismat Chughtai
Directed by Naseeruddin Shah
Produced by Motley
Duration: 2 hrs. with interval

Tuesday, 4th September, 2018
DEAR AAJO (Marathi)
Written by Mayuri Deshmukh
Directed by Ajit Bhure
Produced by Aseem Entertainment, 3 Jain Production
Duration: 2 hrs. with interval

Wednesday, 5th September, 2018
EK CHATUR NAAR BHAARE HOSHIYAAR (Gujarati)
Written by Nimesh Shah
Directed by Arvind Vaidya
Produced by Devindra Arts
Duration: 2 hrs. 30 minutes with interval

Thursday, 6th September, 2018
SANGEET SANYAST KHADGA (Marathi Sangeet Natak)
Written by Swatantryaveer Vinayak Damodar Savarkar
Directed by Pramod Pawar
Produced by Mumbai Marathi Sahitya Sangh
Duration: 3 hrs. with interval

Friday, 7th September, 2018
CHALONA AA JAO (Hindi)
Written & directed by Nadira Zaheer Babbar
Produced by Ekjute Theatre Group
Duration: 90 minutes without interval

Saturday, 8th September, 2018
ONE ON ONE Special
(19 solo acts - English)
Produced by Rage Productions
Duration: 10 to 15 minutes each

Sunday, 9th September, 2018
THE CLASS ACT (English)
Written & directed by Meherzad Patel
Produced by Silly Point Prod. LLP
Duration: 2 hrs.

Monday, 10th September, 2018
ANANYA (Marathi)
Written & directed by Pratap Phad
Produced by Suyog Productions
Duration: 2 hours 10 minutes

Nehru Centre celebrates the 26th edition of its annual Marathi Sangeet Natak Mahotsav with two of its own Marathi Sangeet Natak productions. The Mahotsav was well attended and appreciated by sangeet natak lovers. Below are some glimpses of the Mahotsav.

3rd September to 10th September 2018, 6.30 p.m. daily
Nehru Centre Auditorium
Entry: Passes will be available on 31st August 2018 from 10.30 a.m. onwards until availability after which the booking window will be closed.
Programmes for September 2018

DIGAMBER GAVALI

Prof. Gavali secured B.F.A. from Aurangabad, M.F.A. in Graphic Arts from Sir J. J. School of Art and Dip. A.Ed. from Vashi, Navi Mumbai. Presently he is Principal of Vasai Vikasini College of Visual Arts, Vasai. He has exhibited his lino-graph paintings and won many awards in India. His paintings are in acrylic on canvas.

Tuesday 4th September 2018 to Monday 10th September 2018 (AC Gallery)

SURAJ HOWALE

Suraj has completed A.T.D. and Diploma in 2D animation from Solapur. He does portraits in colour pencils and acrylics on canvas.

Tuesday 4th September 2018 to Monday 10th September 2018 (Circular Gallery)

DHAMMAVIJAY TAMBE

Dhammavijay has a B.F.A. in Visual Arts from Sir J. J. Institute of Applied Art. His works are figurative, nature forms and conceptual themes in acrylic on paper and canvas.

RAVINDRA LOLE

Ravindra has a G.D.A. and A.T.D. in painting. His abstract paintings are in acrylic on canvas.

VIJAY LOKARE

Vijay is a B.F.A. in Applied Art from Sir J. J. Institute of Applied Art. His paintings are in oils on canvas.

UDDHAV DESHPANDE

Uddhav has a B.F.A. degree from Sir J. J. Institute of Applied Art. He is a freelance illustrator in advertising agencies in Mumbai. His art works are in ball point pen on canvasses.

MANGESH SALVE

Mangesh is an Art Director in an advertising agency. He has a B.F.A. from Sir J. J. Institute of Applied Art. His specialization is in illustrations. His paintings are in oils and water proof inks on canvas.

Tuesday 11th September 2018 to Monday 17th September 2018 (AC Gallery)

SUNITA NAİK

Sunita is a self-taught artist. Her Buddha paintings are in acrylic.

Tuesday 11th September 2018 to Monday 17th September 2018 (Circular Gallery)
BHARAT SINGH

Bharat is a self-taught artist from Nepal. He does portraits of well-known personalities. In this exhibition, he will showcase the portraits of Shri Sharad Pawar in various moods in oils on canvas.

Tuesday 18th September 2018 to Monday 24th September 2018 (AC Gallery)

MITALI SULE

Mitali is a self-taught artist. She works in various mediums. She has an M.B.A. in Marketing with 7 years of work in the corporate field. Now she devotes her time to art. She works in pencil sketches.

Tuesday 18th September 2018 to Monday 24th September 2018 (Circular Gallery)

AMBARAYA CHINMALLI VEERESH RATKAL NAGRAJ KUMBAR DEEPIKA KANDPAL MANJULA BAI I.T.

Ambaraya has a M.F.A. in Painting from Gulbarga. He has exhibited his abstract compositions in acrylic on canvas.

Veeresh has received M.F.A. in Painting from Gulbarga. He has exhibited his abstract compositions on canvas in India.

Nagraj obtained B.F.A. and M.V.A from Gulbarga. He has many exhibitions to his credit. He has won many prizes. His paintings are in acrylic on canvas.

Deepika has received B.F.A. and M.F.A. from Uttarakhand. Her thematic paintings are in acrylic on canvas.

Manjula has obtained M.V.A. and M.Phil in painting from Karnataka. She has many shows to her credit and attended art camps. Her paintings have a touch of tribal art.

Tuesday 25th September 2018 to Monday 1st October 2018 (AC Gallery)

DHIRAJ PATIL JAIWANT WAGHERE

Dhiraj has A.T.D., A.M. and G.D.A. in fine art. His figurative compositions are in acrylic on canvas.

Jaiwant has G.D.A. and A.T.D. in painting. He does landscapes in water colours. He has won many awards.

Tuesday 25th September 2018 to Monday 1st October 2018 (Circular Gallery)
India will always remember it's three young heroes Bhagat Singh, Sukhdev and Rajguru who were sentenced to death in the Lahore Conspiracy case. Bhagat Singh was a student of National College, Lahore.

Only 23 years old when he was hanged to death, Shaheed Bhagat Singh inspired hundreds of young Indians to take up the cause of the freedom movement.

To read more about him, please visit the library

Bhagat Singh: The prince of martyrs
Call No: 923.254/Sin/Mat
Barcode: 12827

Shaheed Bhagat Singh: A biography
Call No: 923.254/Sin/Deo
Barcode: 9291

Under the shadow of gallows
Call No: 923.254/Sin
Barcode: 64