NEWS LETTER

All you need to know about the botanical world

DEPARTMENT OF BOTANY,
DURGAPUR GOVERNMENT COLLEGE

BOTANY
NEWSLETTER

INSIDE THIS ISSUE

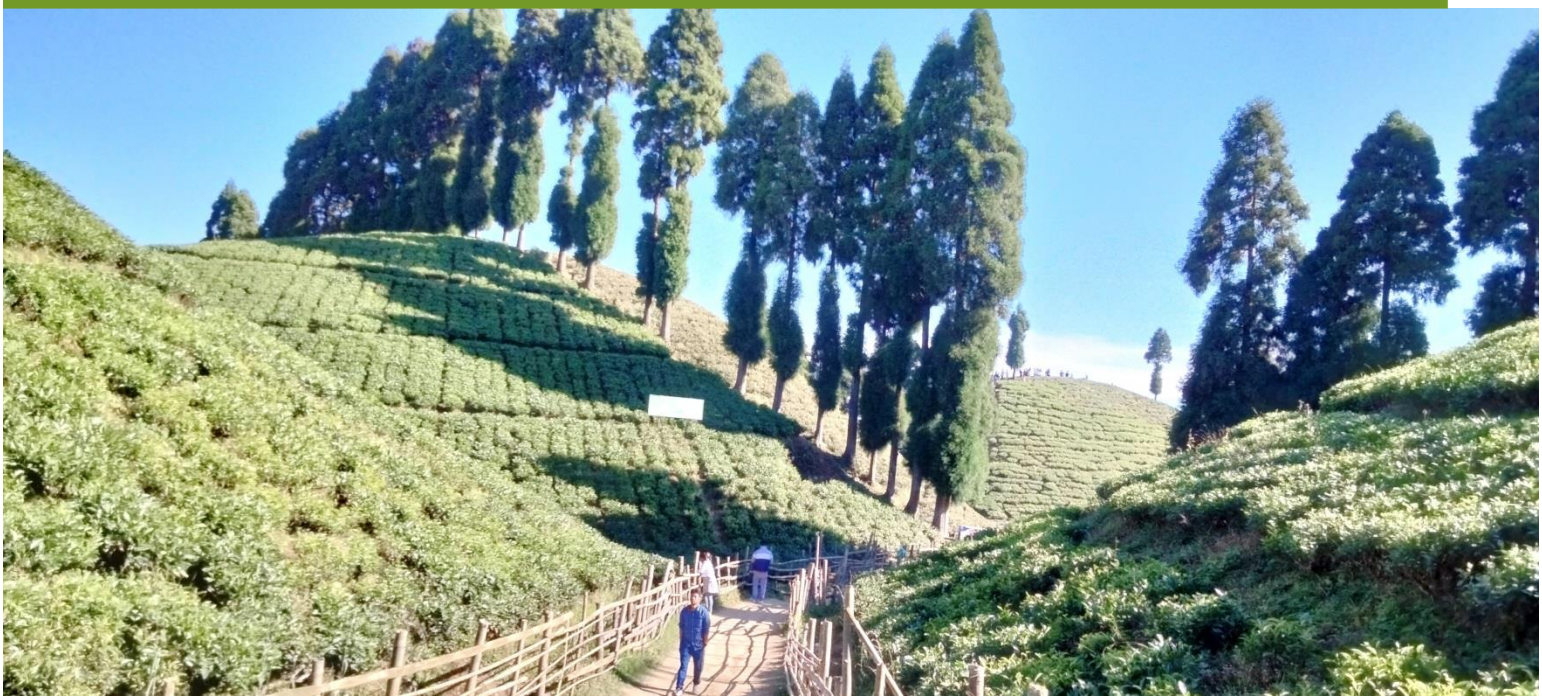
Over the hills and far away – cover story

ISSUE 1 (2022)

Learning is a continuous process from the minute we are born, until we die. This newsletter provides an excellent platform to show case the achievement of the department of botany, Durgapur Government college and the excellent journey of the young mind of our department nurturing the nature.

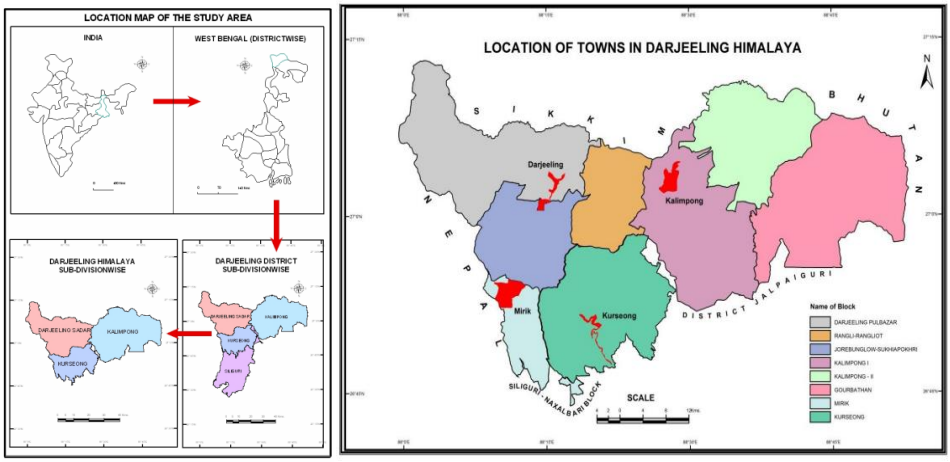
Our mission should be to develop a dais of excellence that is committed to attracting and retaining diverse talent; creating a collaborative environment open to the free exchange of ideas, where learning, creativity, innovation can flourish

Window to the QUEEN OF HILLS



DBT STAR COLLEGE SCHEME SPONSORED EDUCATIONAL TOUR 2022

Close to the cloud in the sky lies the queen in pure serenity, Darjeeling. Situated in the laps of Sivalik range of Himalaya in the lashes of green, Darjeeling is the northernmost district of the frontiers state of West Bengal and it lies between 26º 31` N and 27º 13` N latitude and between 87º 59`E to 88º 53`E longitude, the total area is about 3,149 km^2 at an altitude of 2134 mts. Mountains provide a superb geographical area for in-depth study due to their diverse geology, physiographic, climatic, and other environmental factors



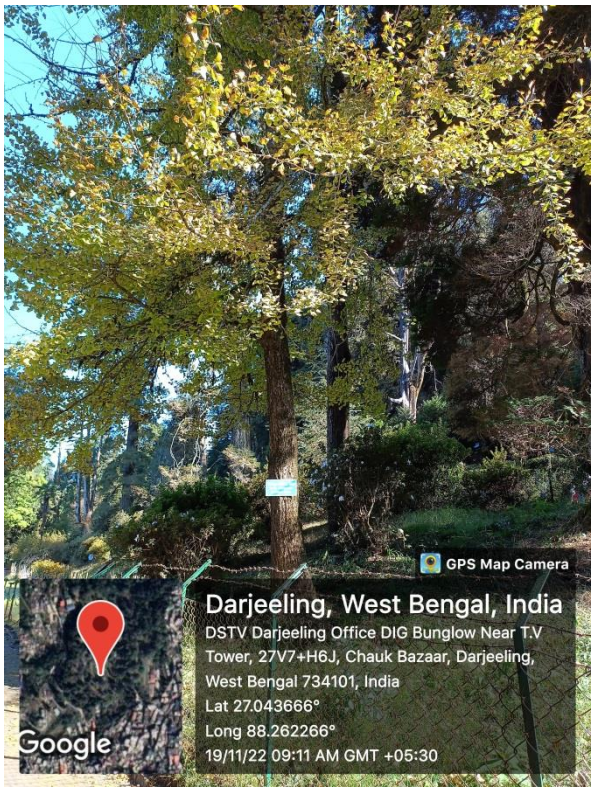
Addapted from: A Spatio-Temporal Study on Urbanization in the Darjeeling Himalaya: A Demographic Perspective. Bhutia S. IOSR Journal Of Humanities And Social Science. 2015. 20 (4), 10 - 18

The journey begins with the with the participants from Durgapur Government College which includes semester V students for both honours (botany, zoology) and program (botany, zoology, chemistry), research scholars accompanied by faculties, Dr. Ashoke Bhattacharya, Dr. Subhojit Ojha, Dr. Sandipan Ray, Prof. Anish Bhattacharya, Dr. Roli Shukla Ray, Dr. Sumana Dutta and laboratory attendant Baishnab Kr Sadhu. It was a trip of memorable 6 days with all the hustle and at the same time a melancholy tune of pure bliss constantly playing in

everyone`s mind. We boarded a joy ride on 16.11.2022 and reached to the lap of nature the nest day. We took a short breakfast break on the way to the mountain at Rohini and enjoyed the morning tea. Our main goal was to nurture the nature through natural studies so we have planned our exploration through trekking and visit to botanical garden and zoological garden.

As a plan for interdisciplinary studies our plan for this was to visit Padmaja Naidu Himalayan Zoological Park, Himalayan Mountaineering Institute and Darjeeling Government College. In the way to the destination we found some cryptogams

plants like algae; e.g. *Trentepohlia* sp., bryophytes like *Marchantia* sp. and pteridophytes like *Dryopteris* sp., *Microlepia* sp. , *Equisetum* sp. Those plants were described and demonstrated by Prof. Anish Bhattacharya and phenerogams like gymnosperms; e.g. *Biota* sp. *Aurocaria* sp., *Cedrus deodara*. Etc.



and many angiospemrs, the gymnosperms were demonstrated by Dr. Sandipan Ray and the angiosperms were identified such as *Erigeron* sp., *Calophyllum* sp., *Calceolaria* sp., *Urtica* sp., *Rumex* sp., *Fuchsia* sp., *Rhododendron* sp, *Datura* sp., *Cestrum nocturnum*, *Fagopyrum dibotrys*, *Smilax* sp., *Centella japonica*, *Sechium edule* was demonstrated by Dr. Ashoke Bhattacharya. We also found 2-3 lichen species those were demonstrated by Dr. Sandipan Ray. The samples were collected by the students. Inside the zoo, all the animals, their behaviours and their other important details were minutely described by Dr. Roli Shukla Roy and the conservation and breeding procedures of the animals specially the Himalayan Red Panda were given by Dr. Sumana Dutta. We completed our visit of the zoo at 1:30

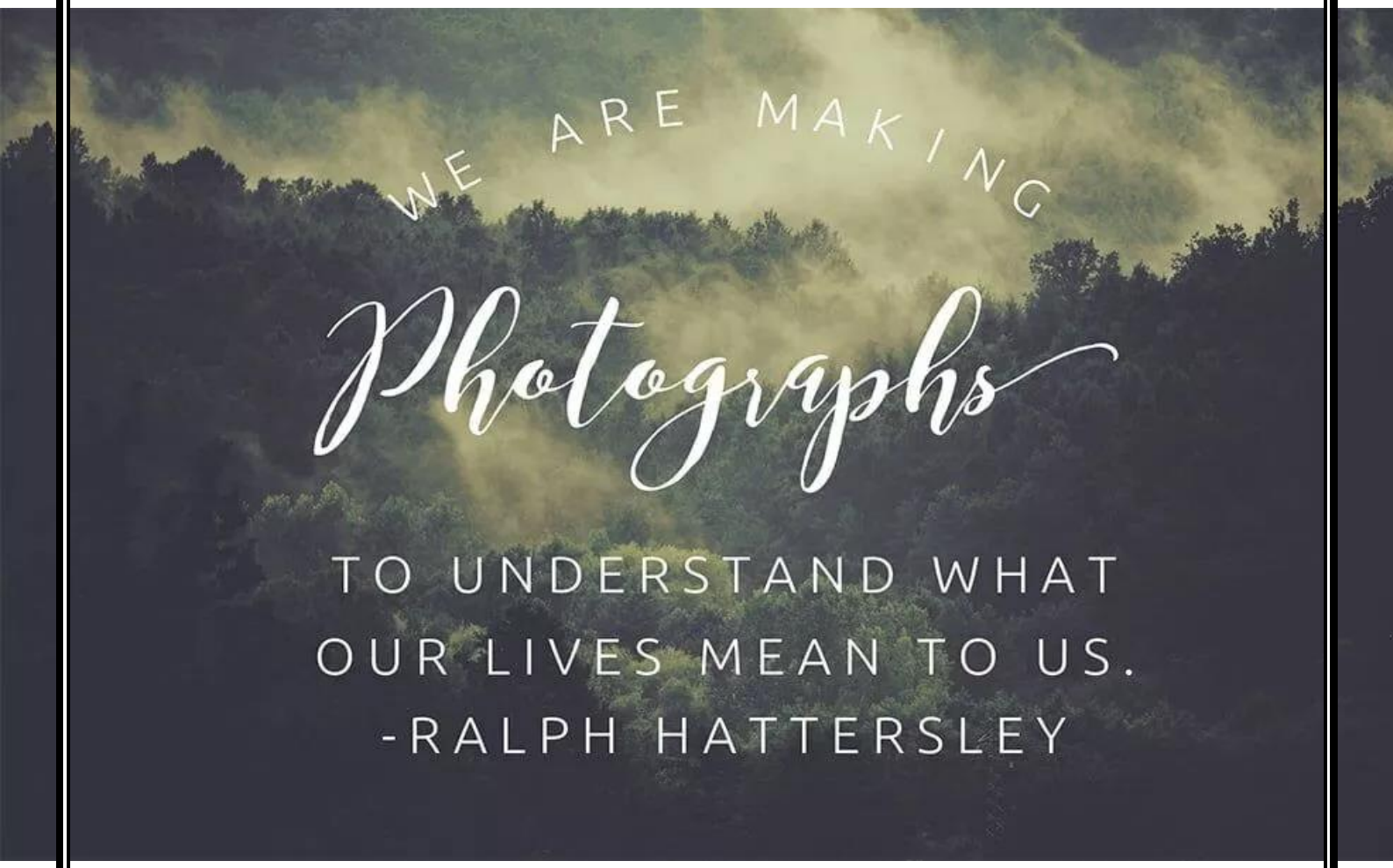
p.m. and reached the next destination, i.e. The Himalayan Mountaineering Institute and their we visited the HMI museum and learned about various types of mountaineering experiences, saw many thrilling journeys those were preserved in sequential pattern. After that we moved towards Darjeeling Government College and interacted with the UG and PG

students. 3rd day was a special day for all the Botany hons. as well as plant loving students because our destiny was Lloyd Botanical Garden. There we visited various kinds of rare, endangered plants as well many plants those are treated as living fossils e.g. *Metasequoia* sp. and *Ginkgo biloba*. Dr. Subhojit Ojha and Dr. Ashoke

Bhattacharya explained about all the phenerogams and Prof. Anish Bhattacharya explained about the cryptogams those were found there. We moved towards next destination, i.e. Lamahata. The students were guided and taught the process of collecting and fixing planktons by Dr.Roli Shukla Roy. Many plants (living fossils like *Metasequoia* sp. and *Ginkgo biloba*) were observed as planted. In the evening, an interactive session was organized by the faculties at 7:30 p.m. and every student explained their experiences and learning's of the whole excursions. Finally the day came where we had to wrap up our journey. In the way we visited two places- Lepcha jagat and Gopal dhara tea garden.

CROSS OVER DIGEST

It gives great pleasure in bringing out the first E-magazine 'Crossover Digest' by Department of Botany, Durgapur Government College. The world is developing faster than we think and a developing world always needs a mass of efficient people with innovative ideas. Innovation starts from very beginning of our academic days and continues in every aspect of our academic phases. Our department provides the space to let our students think, visualize and work on regular concepts in different and innovative ways. We are really glad to receive many creative ideas like Photography, Poetry and expressing concepts through Biological Memes and Fun facts. It is our request to everyone to go through the magazine and get the taste of the beautiful creativities of the upcoming Botanists


WE ARE MAKING
Photographs
TO UNDERSTAND WHAT
OUR LIVES MEAN TO US.
-RALPH HATTERSLEY

Photograph taken by: ANCHAL YADAV

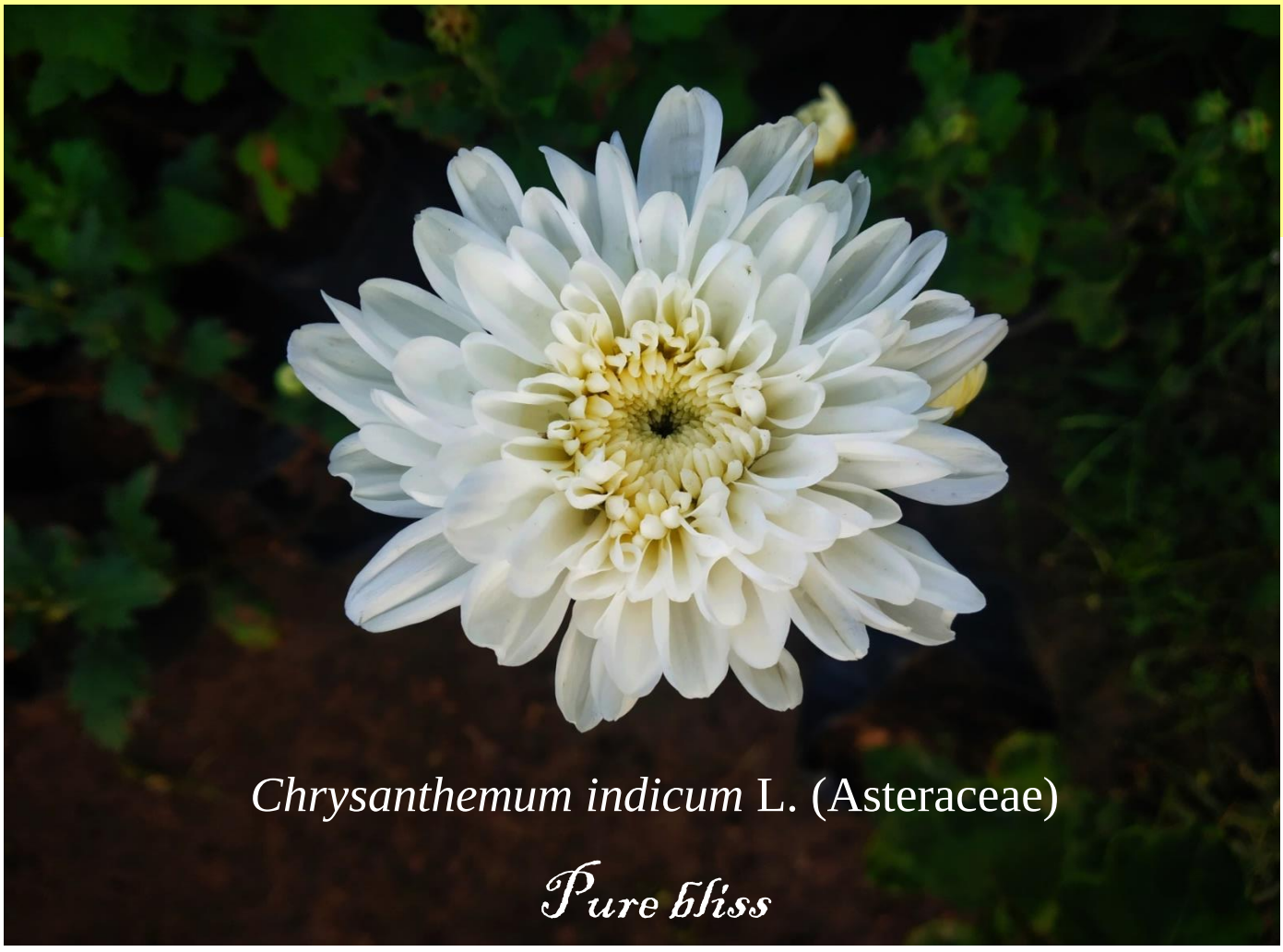
EX STUDENT (2022) (BOTANY HONOURS)

The mesh of life

Cosmos bipinnatus Cav.

(Asteraceae)

Life as we know it



Chrysanthemum indicum L. (Asteraceae)

Pure bliss

Balsamorhiza deltoidea Nutt.

(Asteraceae)

Little miss sunshine

Ixora javanica (Blume) DC.

(Rubiaceae)

All about red

Photograph taken by: LABANI MONDAL

5RD SEMESTER (BOTANY HONOURS)

Gazania rigens (L.) Gaertn. (Asteraceae)

Flock of colors

Photograph taken by: SAYAN GOPE

5RD SEMESTER (BOTANY HONOURS)

Gazania rigens (L.) Gaertn.
(Asteraceae)
Nature's engineers

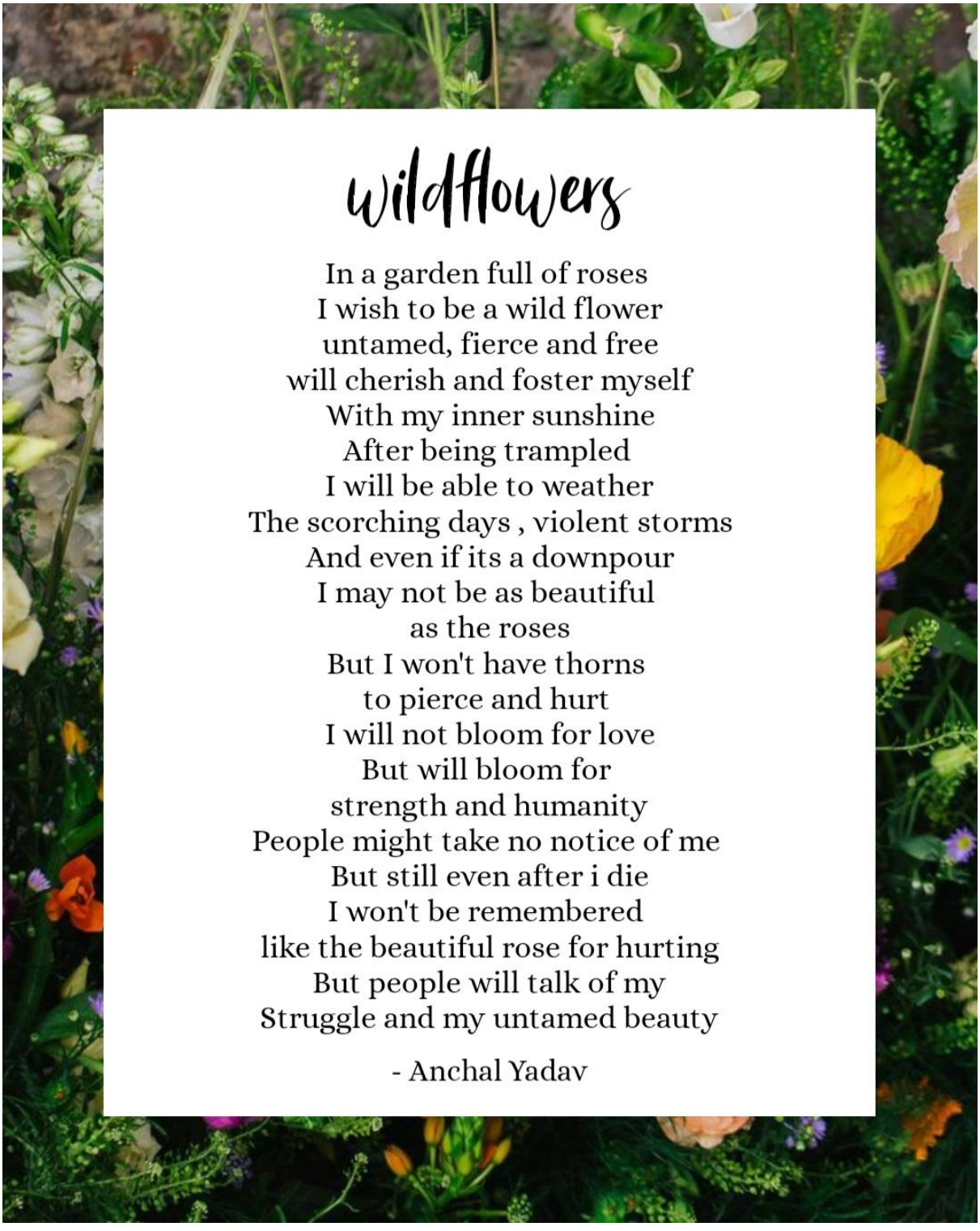
Calliandra tergemina
(Mimosaceae)
Messy bun

Hibiscus rosa-sinensis L. (Malvaceae)
Solitary reaper

WRITING

Written by: ANCHAL YADAV

EX STUDENT (2022) (BOTANY HONOURS)



BLACK DIAMOND APPLE

ANUSHKA CHAKRABORTY

5RD SEMESTER (BOTANY HONOURS)

Malus domestica "Black Diamond" is a very rare apple species in the world.

It is a very rare breed from the family **HUANIU** apples (also known as Chinese red delicious apple originating from China. It is named after Huaniu town). These black diamond species are cultivated in the Tibetan region of Nyingchi.

Its growing region is on the high altitudes over 3,500m. In that region, the temperature fluctuates wildly between day and night. **During the days these apples exposed to high UV rays which results in their dark outer covering tone.**

The skin of the apple is almost dark violet to black in colour whereas the pulp is completely whitish inside. It takes 5 to 8 years for maturity to get this fruit which lasts only 2 months. It is a very expensive fruit which costs around 7-20 US Dollar (almost 530-1500 INR)

These apples taste sweet and crunchy, but in terms of nutritional value they are less in comparison to regular apples.

References:

https://en.wikipedia.org/wiki/Black_Diamond_Apple

Fungi that glow in the Dark

MAYNA KUNDU

5RD SEMESTER (HONOURS)

Nature has its own magic. It never ceases to amaze us. One of its magic is bioluminescent shown by mushrooms. Sometime it feels so fascinating that the dull shaped yellow beige during the day become transform into dazzling decoration after dark.

Images of *Panellus stipticus*

Bioluminescence refers to the ability of certain living things in environment which produce light by the action of enzyme. **The oxidation enzyme Luciferas produce a pigment called luciferin**. During this process several unstable intermediate products are released as energy that make the fungus visible as light. Genetic analysis has shown that luminescence is controlled by a single dominant allel. **Luminous fungi are found growing in decaying wood and glow in dark, so it is called 'Foxfire' or 'Glow wood'**. Different species may glow for different reasons depending the part of fungus that glows. Glowing helps the fungus to disseminate spore by Arthropods as the light attracts them or to deter frugivorous animals from consuming them.

Images of *Panellus stipticus*

Out of 120,000 species of described fungi, about 100 are known to be bioluminescent. *Panellus stipticus*, bitter oyster (Family: Mycenaceae) is one of them. It is found in Asia, Australia, Europe, North America. It grows in group or dense overlapping clusters on the logs, tree trunks etc. **The luminescence of these fungus is localized at the edges of the gills**.

'Scattered Report' on bioluminescent fungi from India shows that in **Western Ghats, Eastern Ghats, Kerala, Goa these fungi are found**. Recently a new species of bioluminescence fungus from the bamboo forests of West Jaintia Hill, Meghalaya – ***Roridomyces phyllostachydis***, the first mushroom in the *Roridomyces* genus to be found in India. The members of the genus are very fragile and they love

Images of *Roridomyces phyllostachydis*

moist and humid condition. In the midst of the darkness a green glow emerged from dead bamboosticks. **This fungus is unique because it's light emitting part is the stipe / stalk**. The beige colour pileus part is not bioluminescent. Why only the stipe is bioluminescent is still a mystery.

The function of this bioluminescent fungi are very vast. We can use them as an alternative of torch light. Bioluminescent based biosensors are used to test the toxicity of polluted soil.

CITATION

Karunarathna S. C., Mortimer P. E., Tibpromma S., Dutta A. K., Paloi S., Hu Y., Baurah G., Axford S., Marciniak C., Luangharn T., Madawala S., Lin C., Chen J. Z., Acharya K., Kobmoo N., Samarakoon M. C., Karunarathna A., Gao S., Xu J., Lumyong, S. (2020). *Roridomyces phyllostachydis* (Agaricales, Mycenaceae), a new bioluminescent fungus from Northeast India. *Phytotaxa*, 459(2), 155-167.

Vinodkumar K. & Sarita H. (2016). A Review on Bioluminescent fungi: A Torch of Curiosity. *International Journal of Life Sciences (Special Issue) A: 7*, 107-110.

Image source: Google

SCI-FUN FACTS

ANUSHKA CHAKRABORTY

5RD SEMESTER (BOTANY HONOURS)

- Magnesium sulphate (MgSO4) powder is used to reduce imflammation. It relaxes the nerve function and reduce the swelling of the sprained anklet
- Plastic bottles are used for making clothes as well as jeans also. These plastic bottles are transformed into fabric by advanced technology and those fabrics are used for making clothes.

- *Welwitschia mirabilis* is the longest lived in the plant kingdom found only in deserts. These are the **only gymnosperm which show CAM PHOTOSYNTHESIS**. This desert lived plant have high transpiration rate but during night it collects water from dew but spreading its broad leaves.

BIOLOGICAL MEMES

MAYNA KUNDU

5RD SEMESTER (HONOURS)

Someone: What is unity???

Me: See Monadelphous stamens 😜 (numerous stamens are united by the filaments to form 1 bundle)

Dry fruits which I thought ☺

Which Book 🕮 reveals:

Formula for memorizing the Hierarchy Order:

Keep Pot Clean Or Family Get Sick 😁

Kingdom

P**h**ylum

Class

Order

Family

Genus

Species

ANUSHKA CHAKRABORTY

5RD SEMESTER (BOTANY HONOURS)

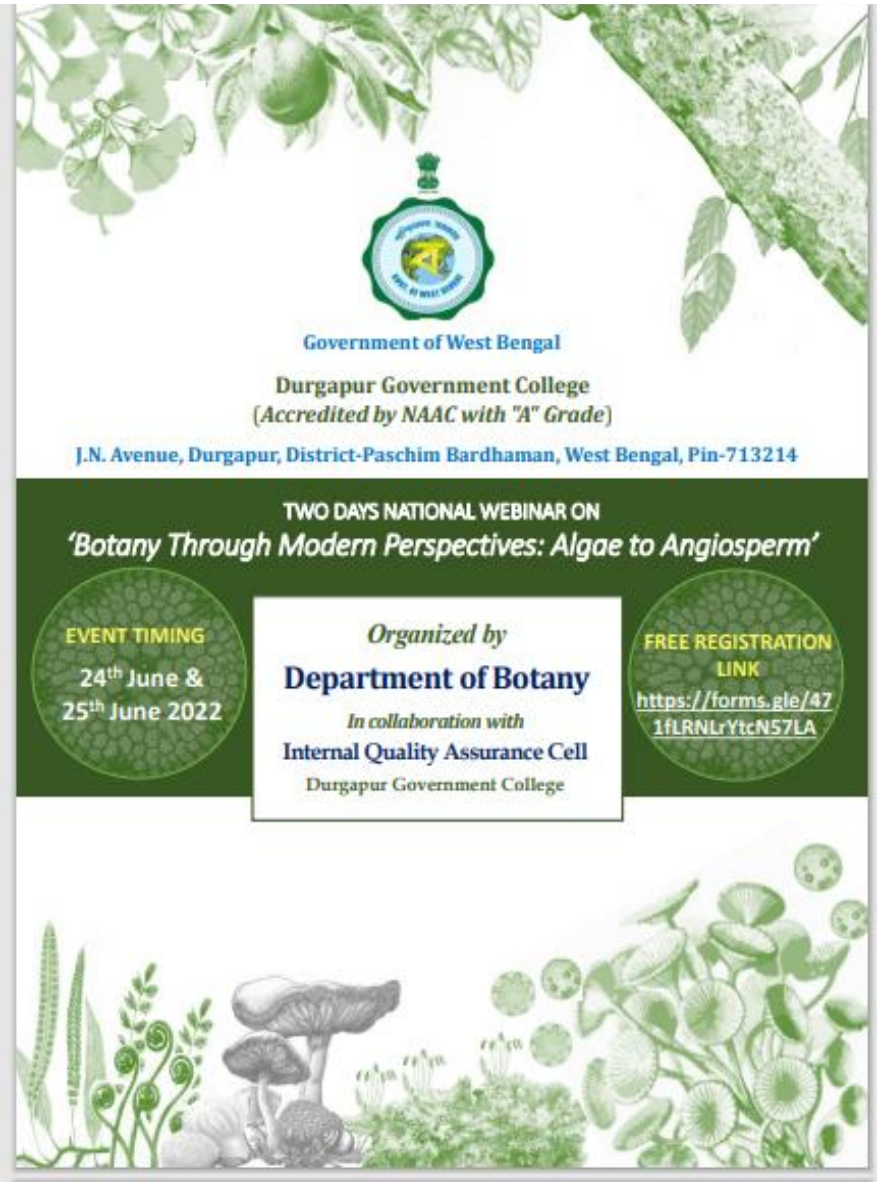
HI I'M YOUR DENTAL Dr. GUAJAVA.

I CAN GIVE U STRONG TEETH AND GUMS WITH FRESH BREATH.

TOOTHPASTE OWNERS BE LIKE:

knowledge exchange

TWO DAYS NATIONAL WEBINAR ON 'BOTANY THROUGH MODERN PERSPECTIVES: ALGAE TO ANGIOSPERM'



The Department of Botany in Durgapur Government College offers undergraduate courses in Botany Honours and Programme of CBCS-LOCF pattern affiliated under Kazi Nazrul University. Teaching of Botany had started in this college as General course in 1997 and Honours course in Botany was introduced in the year 2003. The Department of Botany of Durgapur Government College in collaboration with Internal Quality Assurance Cell has organized Two Days National Webinar on 'Botany Through Modern Perspectives: Algae to Angiosperm' on 24th and 25th June, 2022 for the students and faculty of Botany throughout India to create a platform for refreshing their knowledge on recent holistic development of Botany as a whole and its vibrant dimensions in concern with the present prospectives. A large number of participants registered from different colleges, institutes and universities across India and a total of 26 poster presenters actively participated in poster presentation competition

OBJECTIVES OF THE WEBINAR

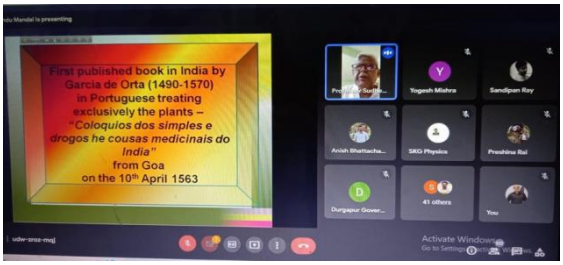
The webinar encompassed the broad discipline of Botany, from algae to angiosperms. Focussing on some key aspects relevant to the study of Botany in the present day, the objectives of the webinar can be broadly classified under:

- A holistic overview of the study of Botany and its prospects: The great diversity of flora can be studied only after proper identification, characterization and documentation of the specimens. Thus, proper description of plant forms through such webinar proves beneficial for students and young researchers.
- Modern horizons of Botany in the areas of research: Focus on plant-based products and their appropriate utilization for betterment of mankind, is the need of the hour. Hence, discussions on modern research developments on diverse disciplines under Botany, broadens the horizon of budding researchers and gives directionality to future research benefitting mankind.
- Applications of the study of Botany and entrepreneurship: Discussions on the applications of knowledge on the subject from a commercial angle and encouraging involvement of researchers for entrepreneurship would benefit the farmers on one hand and would be job-generating on the other hand.
- Providing a platform to young researchers to present and discuss their research: An interactive-session of poster presentation by budding researchers to discuss their findings, would allow them to gain knowledge about the present

developments across various disciplines in the subject and provide direction for future research.

The Department of Botany and the Internal Quality assurance cell, Durgapur Government College organized a two days webinar on 'Botany through Modern Perspectives: Algae to Angiosperm' on June 24 and 25, 2022. The program started at 10:00 am on 24.06.2022 with the welcome address by Dr. Debnath Palit, Principal, Durgapur Government College. This was followed by the inaugural speech and the note of greetings by Dr. Avijit Mandal, Co-ordinator IQAC, and Dr. Swapan Kumar Ghosh, Secretary, Teachers' Council, Durgapur Government College, respectively.

Subsequently, the keynote address was delivered by Professor Dr. Sudhendu Mandal, UGC Professor of Botany, Visva-Bharati. In an enlightening lecture, Professor Mandal shed light on Indian scientific heritage, emphasizing on the utility of medicinal plants. He highlighted how the ancient scripts on Ayurveda like Charaka and Sushruta Samhitas were the foundations on which modern day herbal medicine is developed. Professor Mandal also mentioned that alongside a thorough knowledge on the morpho-physiology, anatomy and pharmacology of the medicinal plants, application of plant tissue culture and similar modern biotechnological techniques would prove to be useful for propagation of the medicinal plants and obtaining their active principle without endangering the natural resources



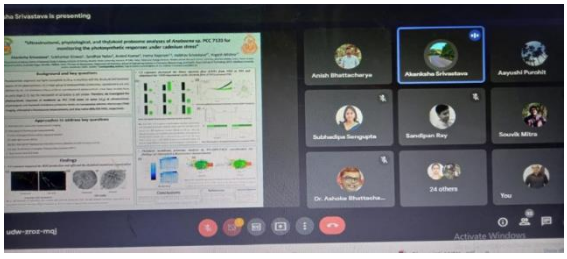
Following the keynote address, the plenary session commenced. On this day, the plenary session had two eminent speakers, Dr Yogesh Mishra, from Department of Botany,Banaras Hindu University and Professor Krishnendu Acharya from Department of Botany, University of Calcutta. Dr. Yogesh Mishra highlighted how the ancient cyanobacteria Anabaena sp. combats cadmium stress.Through a series of morpho-physiological, biochemical and molecular biological studies, it was inferred that Anabaena responded to ACdS and recovered by increasing cellular CO2 access, activating cyclic electron flow around PSI; and stimulating chelators/transporters.

Professsor Acharya emphasized upon the ill-effects of using chemical fertilizers and advocated organic farming as a high

revenue generating alternative for indigenous farmers. Besides, he emphasized on the utility of novel techniques by the farmers, by the effect of which, they are self-sufficiently producing enriched compost, phosphate solubilizers, plant growth-promoting rhizobacteria and microbial biopesticides.

Next, there was a lunch break of 30 mins, after which the Poster session started from 02:30 pm. Posters were presented by the researchers from several parts of India. On this day 19 participants presented their work in the form of posters, which encompassed various topics from classical to applied biology. The session continued till 5:30 pm

Summarization of first day of the conference was done by Dr. Ashoke Bhattacharya, Associate Professor & Head, Department of Botany, Durgapur Government College.



The second day of the conference on 25.06.2022, commenced with the poster session from 10:00 am. On this day seven participants presented their work. The two days' poster session witnessed discussions on various disciplines of Botany. The sessions were judged by faculties of Botany from different colleges and Universities -

Dr. Mousumi Mukhopadhyay, Associate Professor, Bidhannagar College

Dr. Subhadipa Sengupta, Assistant Professor, Bidhannagar College

Dr. Souvik Mitra, Assistant Professor, Taki Government College

Dr. Mahasin Ali Khan, Assistant Professor, Sidho-Kanho-Birsha University

Dr. Gunjan Biswas, Assistant Professor, Vidyasagar University

Subsequently, the plenary session of 2nd day of the conference began from 11:30 am. This day, the first speaker was Dr. Ashalata D'Rozario, from the Department of Botany, Narasinha Dutt College. Dr. Rozario delivered her lecture on Gymnosperms and Palaeobotany. In a fascinating lecture, she emphasized upon the several groups of gymnosperms and their economic utility. She continued her lecture mentioning the importance of palaeobotanical studies.

The next plenary speaker for the day was Professor Sobhan Kumar Mukherjee, Retd. Professor, Department of Botany, University of Kalyani. Professor Mukherjee lectured on the diversity of angiosperms in India. He mentioned that the floristic diversity in India is concentrated in four biodiversity hotspots - Eastern Himalayas, Western Ghats, Northeast India and Andaman Islands and Nicobar Island.

The plenary session of the conference resumed on 26.06.2022 from 10:00am with the lecture of Dr. Sandip Kumar Behera, Senior Scientist, CSIR-NBRI, Lucknow. Dr. Behera gave lecture on the significance of pteridophytes in modern day. He mentioned that Pteridophytes are significant because they have ornamental value, medicinal value, edibility, and some

are hyperaccumulator of heavy metals, and some are bio-fertilizers. He pointed out the antimicrobial properties of pteridophytes and mentioned about bioprospecting.

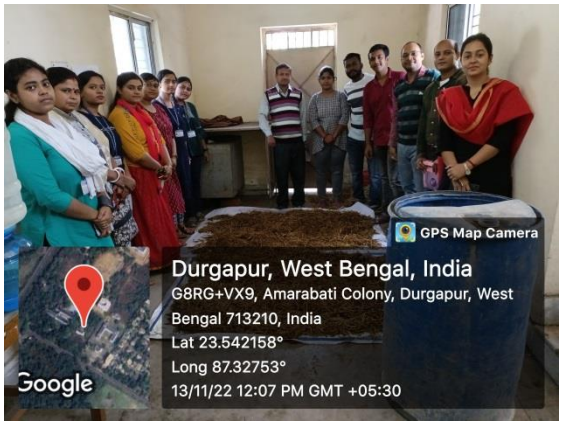
Summarization of second day of the conference was done by Dr. Ashoke Bhattacharya, Associate Professor & Head, Department of Botany, Durgapur Government College.

Following Dr. Behera's lecture, the valedictory session began with the prize distribution for the poster presentations. Based upon the evaluation by the judges, the poster competition had joint winners Dr. Somanjana Khatua and Ms. Sampa Kundu, who presented their work in the field of mycology and palaeobotany, respectively. The first runner up was Ms. Sudeshna Nandi for her presentation on mycology discipline. There were joint second runners up, Ms. Tanushree Agarwal for her presentation on moss stress tolerance and Ms. Akanksha Srivastava for her work on cyanobacteria. A special award was presented to Ms. Presina Rai for her work on vascular epiphytes of temperate forests. Certificates were issued to all registered participants after taking feedback online and awards as well as certificates were issued to all winners for poster competition.

At the conclusion, the vote of thanks was delivered by Dr. Prosanta Saha, Assistant Professor, Department of Botany, Durgapur Government College

TWO DAYS WORKSHOP ON MUSHROOM CULTIVATION AND ENTREPRENEURSHIP AN OUTREACH HANDS – ON TRAINING PROGRAM FOR FARMERS AND STUDENTS

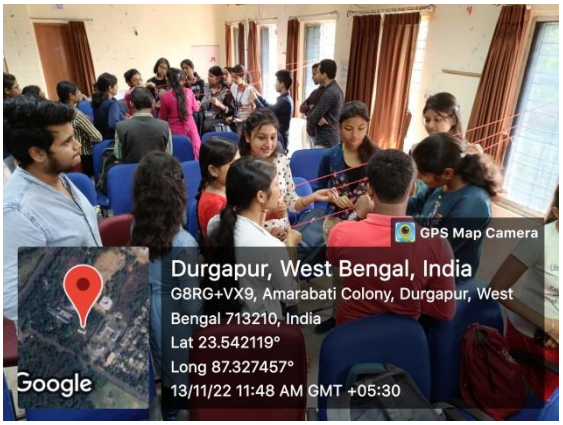
A two days Workshop on Mushroom Cultivation and Entrepreneurship- a hands-on training program for members of the farming community and students, was organized by the Career Counseling and Placement Cell in collaboration with the



Department of Botany, Durgapur Government College on 12th and 13th November, 2022. The resource person of the said workshop was Professor Krishnendu Acharya, Professor, Department of Botany, University of Calcutta. The workshop was graced by the

presence of our Honorable Principal Dr Debnath Palit and Dr Avijit Mandal, IQAC

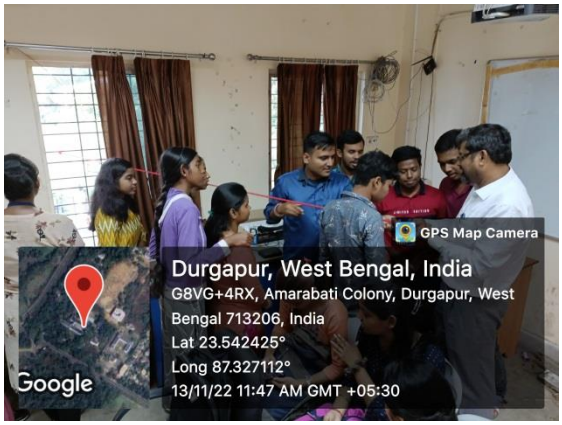
Coordinator, Durgapur Government College. In their august presence the event was inaugurated by igniting the lamp and sharing a few words of motivation. Following successful registration by all participants which included largely students of 1st, 3rd and 5th Semester and



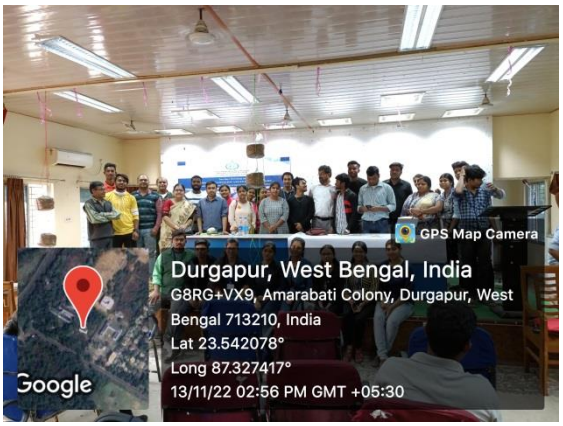
local farmers, the workshop began with the aim to disseminate practical knowledge about mushroom cultivation as well as its marketing. Professor Krishnendu Acharya began his lecture by emphasizing on the spirit of entrepreneurship the core of which was new ideas, innovations and self – reliance. Sharing the success stories of innumerable individual entrepreneurs in the field of mushroom cultivation, he highlighted not only the commercial benefits of cultivating mushroom but also the nutritional values of mushroom which contains more protein than fruits and vegetables. The first phase of the workshop involved a power point

presentation encompassing all the stages of cultivation and various theoretical aspects with regards to the basic understanding of the process

The training session held on 13.11.2022 (Day 2 of the workshop) involved live demonstration of mushroom cultivation wherein Professor Acharya gave a brief introduction of the basic requirements as well as all the procedure to be followed at all stages of mushroom cultivation such as preparing compost, soaking of wheat straw, laying of mushroom spawn and harvesting. The farmers as well as the students enthusiastically participated in the entire process under the guidance of the resource person. The session was attended by over 90 students and 24 farmers from local villages



Following the successful completion of the final stages of training for cultivation of mushroom, Prof. Acharya emphasized on the harvesting process and the marketing of the product. The feedback responses of all participants were registered to seek their valuable suggestions. The workshop ended with distribution of certificate to all the participants. The event ended with a vote of thanks speech which was delivered



by Dr. Roli Shukla Ray, Joint Convenor, Career Counselling and Placement Cell, Durgapur Government College