



GOLDEN JUBILEE YEAR
2010-2011

The Days We Cannot Forget



**CSIR-North East Institute of Science & Technology
Jorhat**

(Formerly Regional Research Laboratory)

Connecting Science & Technology for a brighter tomorrow



Conquering Newer Horizons

With a legacy traversing three centuries from the successful commercial discovery of crude oil at Digboi in 1889 and independent India's first oil field in Naharkatiya - all in the north eastern state of Assam - Oil India Limited was born on 18th February, 1959 to increase the pace of exploration in Northeast India.

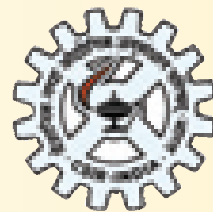
Dogged determination of some of the finest oil & gas explorers and a committed workforce has enabled OIL to expand its pan India presence and spread its wings overseas with footprints in countries such as Libya, Egypt, Gabon, Iran, Nigeria, Sudan, Yemen, East Timor and Venezuela.

Today, as a Navratna PSU, Oil India Limited is fully committed to achieve the co-created vision of becoming "the fastest growing energy company with Global Presence" with special emphasis on carrying out its duties as a responsible corporate citizen.

Setting the right pace globally



ऑइल इंडिया लिमिटेड
(INCORPORATED IN INDIA)
Oil India Limited
A MEMBER OF PSU GROUP



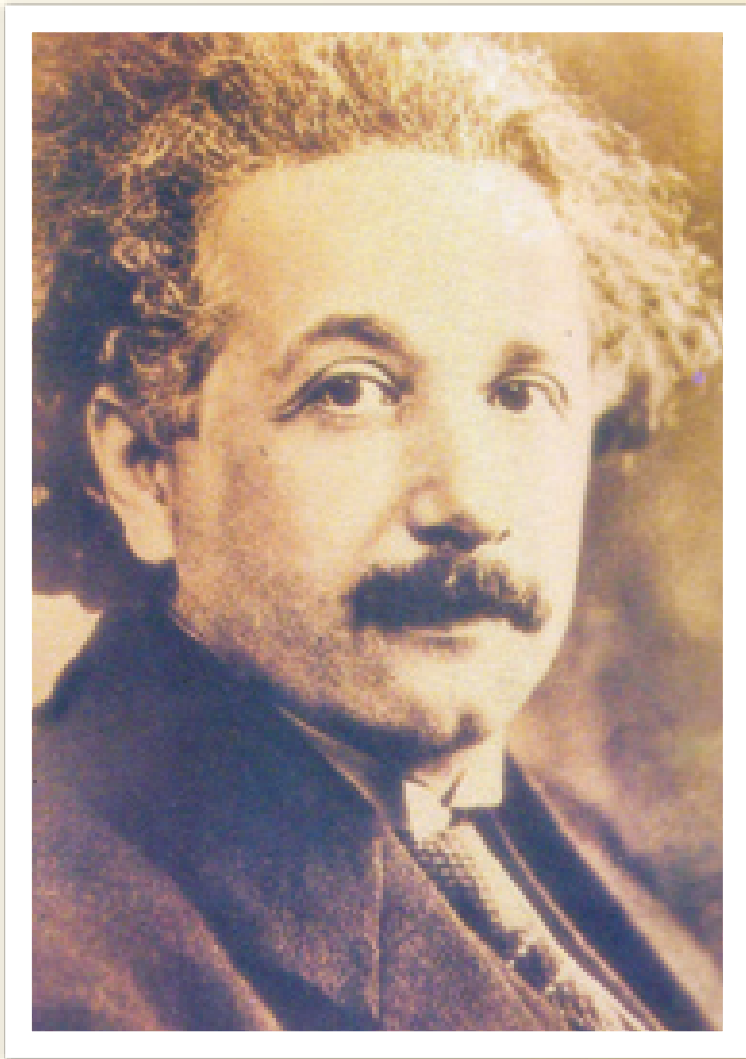
Golden Jubilee Year 2010-2011
Unforgettable Past

The Days

We

Cannot Forget

CSIR-North East Institute of Science & Technology
(Formerly Regional Research Laboratory)
Jorhat



*“Imagination
is more important
than knowledge”*

- Albert Einstein

I have great pleasure in dedicating
this publication to all the retired
staff of this Institute who served,
and served it well.

P G Rao
Director, CSIR-NEIST

QUALITY POLICY

North-East Institute of Science & Technology, Jorhat is committed to achieve excellence and with quality outputs in R&D in frontier areas, professional consultancy and contract services in Chemical, Bio and Allied Sciences to be offered to customers in public and private domains at national and international levels.

● VISION

Economic development & industrialization of the country

● MISSION

To generate and develop knowledge products, which meet high international standards in terms of quality, cost & efficiency.

● MANDATE

To put to effective use the immense material resources of the North Eastern region and to provide R&D inputs for developing the economy of the NE region in particular and the country in general.

● GOAL

To design, develop and deliver knowledgebases and technologies for gainful application based on natural resources available in the North Eastern region of India and to improve the quality of life in rural areas

PROLOGUE

Successfully completing 50 years (1961-2011) of its glorious existence, CSIR- North East Institute of Science & Technology, formerly known as Regional Research Laboratory Jorhat has celebrated 2010-2011 as its Golden Jubilee Year by organizing various events.

While celebrating our Golden Jubilee Year with a sense of joy and justifiable pride, I thought, it would be rather imperative to bring to the fore your remembrances of the past while serving in this beloved Institute of ours. I am sure your reminiscences will bring forth many untold stories linked to the history, growth and development of NEIST. The information in this book will be value added information to the new generation of NEIST family to carry forward the legacy/ message of the development of the institute in the first 50 years.

Thank you all.



P G Rao
Director

Date: September, 2011

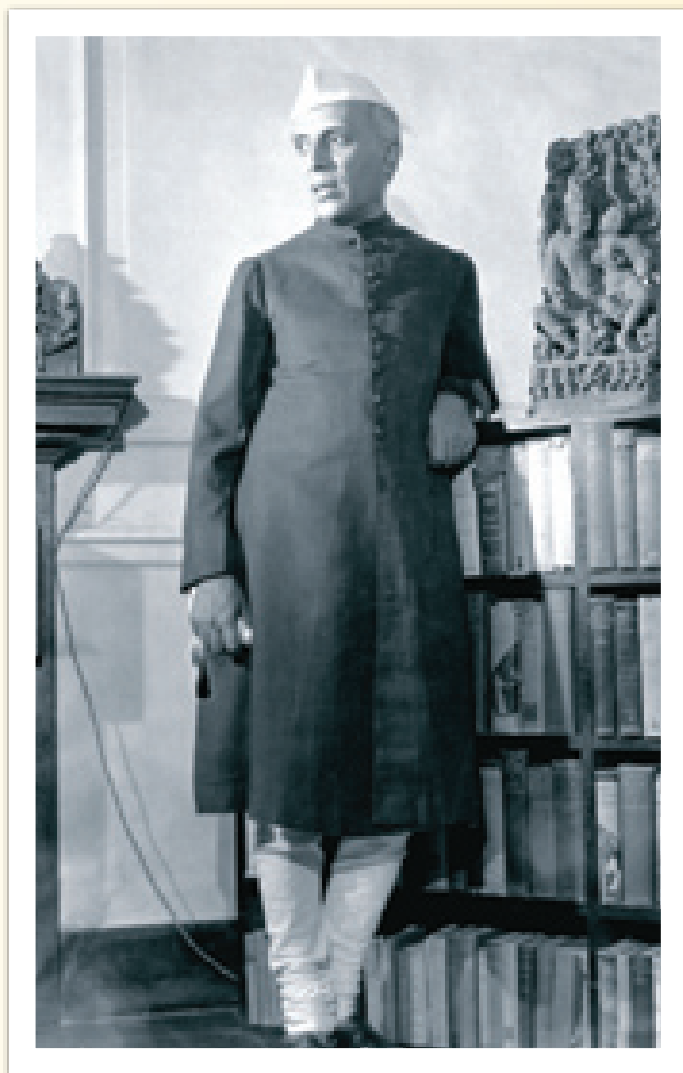


CSIR - NEIST

A note

We are profoundly indebted and grateful to our former Prime Minister of India Pt. Jawaharlal Nehru, Prof Humayun Kabir, former Union Minister of Scientific Research and Cultural Affairs and Lokanayak Debeswar Sarma, the renowned politician of Assam of the yesteryears but for whose visionary zeals this premier research institute in this remote corner of the country would not have come into existence. This colourful book “The Days We Cannot Forget” of the CSIR-NEIST Golden Jubilee Year Celebration is a modest attempt to remember and record the memories and reminiscences of some of the retired senior colleagues of this great institute, well-wishers of NEIST. We would like to thank all the past and present staff of the institute and all those who directly or indirectly associated themselves for this commemorative volume brought out on this auspicious occasion. We are particularly indebted to the contributors for their priceless memoirs and precious accounts which give luster to the publication. Our special thanks are due to Mr. A K Hazarika, former Head, Information & Liaison for helping in compilation and editing of the unforgettable past. We are very grateful to our Director Dr P G Rao for his constant inspiration, direction and guidance. Omissions and Commissions, if any, are totally unintentional and the editors beg to be pardoned.

- Editors



The Great Visionary

PT. JAWAHARLAL NEHRU

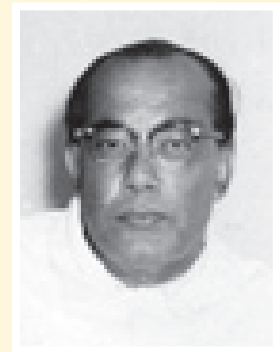
The first Prime Minister of Independent India.

CSIR is his brainchild

“
*Science &
Technology
determine the
strength and
growth of a nation.*
”



Dr Manmohan Singh
Prime Minister of India and President of CSIR



The Foundation

The Foundation stone of the Laboratory was laid by Prof. Humayun Kabir, the then Minister of Scientific Research & Cultural Affairs on 18 March, 1961 in the presence of Shri Bimala Prasad Chaliha, the former Chief Minister of Assam

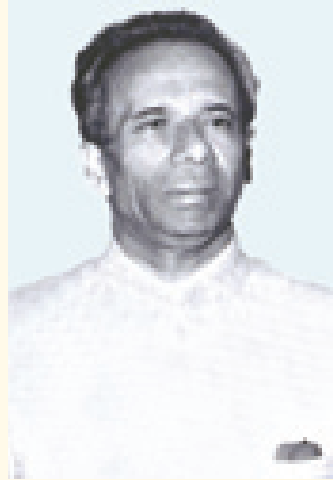
Sri B P Chaliha
Former Chief Minister of Assam
1967-1970

The higher the proportion of creative leaders in a nation, higher the potential of success of visions like “Developed India.”

Visionaries... whose dreams came true



Pt. Jawaharlal Nehru
The First Prime Minister
of Independent India



Prof. Humayun Kabir
The then Union Minister for
Scientific Research and
Cultural Affairs



Jananayak Debeswar Sarmah
Former MP and Former Minister of Assam

*You will be remembered
for creating
a page in the history
of the nation.*

The Foundation

The Construction work of the laboratory started in 1963. it was only in March 1963, the nuclear staff recruited earlier sent for training at other CSIR labs were called back to work at the Jorhat laboratory.



The initiation of the construction of laboratory Administrative building



The construction is in full swing



Completed ground floor of the administrative building



Front view of the Administrative building (then)



Completed Engineering Block

Before laying of Foundation Stone, the laboratory was functioning at several places elsewhere both outside and inside its present premises for brief periods.



The Laboratory in the isolation ward of the erstwhile Civil Hospital of Jorhat during 1959-60



The Laboratory in Dhiren Kutir at Dahabara Chuk, Jorhat during 1961



The Laboratory housed in present day Director's Bunglow during 1961-62



The Laboratory during 1963

The laboratory started functioning in its own building at its present premises since 1st September, 1964



RRL (CSIR-NEIST) then



CSIR-NEIST (RRL) now



Branch Lab, Itanagar, Arunachal Pradesh



CSIR-NEIST Sub Station, Imphal, Manipur

CSIR-NEIST Golden Jubilee Celebration

● **PATRON** : Prof SK Brahmachari, DG, CSIR

● **ADVISORS** :

- ◆ Prof HK Gupta
- ◆ Dr G Thyagarajan
- ◆ Dr DVS Jain
- ◆ Dr RK Mathur
- ◆ Dr JS Sandhu
- ◆ Dr KV Raghavan
- ◆ Dr HD Singh
- ◆ Sri BP Chaliha

● **ORGANIZING COMMITTEE:**

➤ **Chairman** : Dr P G Rao, Director, CSIR-NEIST

➤ **Coordinators:**

- | | |
|--------------------------------|--------------------|
| ● Programme Planning: | Dr RC Baruah |
| ● Publications: | Dr NC Boruah |
| ● Infrastructure Arrangements: | Dr JCS Kotoky |
| ● Food & Refreshments: | Dr D Prajapati |
| ● Technical Sessions: | Dr B G Unni |
| ● Accommodation: | Dr NN Dutta |
| ● Transport: | Dr R Duarah |
| ● Reception: | Dr Pinaki Sengupta |
| ● Organizing Secretary: | Dr L Nath |

Reminiscences of Late Debeswar Sarmah



Jananayak Debeswar Sarmah
Ex MP and Ex Minister of Assam

It was about the year 1953 or 1954, when I was a member of the first Lok Sabha. One day I came out of the Lok Sabha chamber and found a small group of three or four members of Lok-Sabha standing and talking in the lobby. While passing by this small group, I overheard the word “Regional Research Laboratory”. I then stopped and asked what about it. One of the group said that the Govt. of India was going to start another Regional Research Institute but the location was not finalized. I kept quiet, showed no interest and went away. But I made up my mind immediately to try by all means for getting the proposed Regional Research Laboratory established in Assam.

I then made discreet enquiries as to which of the Ministers was to finalise the site of the proposed RRL and learnt that Prof. Humayun Kabir was in charge of the department and he was the authority to select the State and site for the Govt. of India as to where the New Research Laboratory would be established.

This information heartened me and I made up my mind to lose no time. The same afternoon I called at Prof. Kabir’s official residence. He was having afternoon tea with his wife under a mango tree in the lawn behind his bungalow. Seeing me entering his compound, he beamed me to join them. Prof. Kabir was friendly with me for many years.

While sipping tea, I told him that I learnt that the Government of India was going to set up another Regional Research Laboratory but the State where it would be established had not yet been considered and finalized. I requested him to give the Laboratory to Assam, pleading earnestly to help the cause of the state. He was silently sipping tea and thinking deeply, while Mrs. Kabir was looking at her husband’s face, and my heart was beating a little faster as to what he would say. This was a crucial moment. After about 2 or 3 minutes Prof. Kabir smiled and said firmly “Mr. Sarmah, you will have it”. “Soon after the Lok Sabha adjourns, I will send an officer to select a site locally, where the Laboratory and office buildings will be built up. See that we have sufficient land for expansion.” I thanked him heartily and said, “I would see about the land, and assure you that the people of Assam will ever be grateful to you”.

Late lamented Prof. H Kabir was an all India figure. He had a kind heart and noble character. About a year before our talk about the laboratory, one day in course of conversation with the Prime Minister late lamented Jawaharlal Nehru, I suggested, “Why not make Prof. Kabir a full-fledged Minister (he was a Minister of State) to which Jawaharlalji replied “I have made him a Minister of state for education purposely because he will be able to devote his whole time to improve education in India. A full fledged Minister has to look after and take care of many other matters”- I kept quiet.

After about a week of the adjournment of the Lok-Sabha, one day a British Officer of Govt. of India, (probably Mr. Whittaker) called on me at my home at Jorhat saying that he was deputed by Hon’ble Minister of State for Education, Prof. Humayun Kabir, to select a site for the Regional Research Laboratory, which was going to be established at Jorhat. I took him

and showed the site of the present Jorhat Engineering College, which was an unused fallow land at that time. After seeing the land he said “No, this is not suitable, it is low land”, although the area was not really low land but of a higher level than that of Jorhat Town. Perhaps the narrow, uneven village path

leading to this place discouraged him. Then, I took him to the present site of RRL. Seeing it from the Trunk Road (NH-37) he immediately said this would be suitable for the purpose. Then he left by the next flight.

At that time there was residential houses of 3 different families on the site selected. I went to them the same evening. At first they did not agree to vacate the land parting with their ancestral home and lands, but after long and persuasive talk detailing how they would be gainful in every respect, they agreed and value of the land and houses were paid off to them without usual official delay.

When the next session of the Lok-Sabha began, I went to Delhi and on enquiry learnt that Prof. Kabir was already getting preliminary paper work done by Dr B N Mitra of his department. Again I approached Prof. Kabir and pleaded that the temporary office may be shifted to Jorhat to expedite the work and also asked for the services of Dr Mitra to give a start of the work at Jorhat. Prof. Kabir told me a joke that having got the Laboratory I sought to cut his right arm, for Dr Mitra was the his right hand man. Anyway, he agreed and Dr Mitra started his office at first in Delhi in 1959 and thereafter at Jorhat, at the Coal Survey Office, then Civil Hospital, Dhiren Kutir at Dahabora Chuk and finally at the present building. The foundation stone of RRL was laid by Prof. Humayun Kabir on 18th March, 1961 at the present site at Jorhat. Prof. Humayun Kabir was a great scholar with all India fame and a kind and noble hearted person in every respect. May his soul rest in peace!

Dr Mitra was the first Director of RRL Jorhat. After him came Iyenger, and then came Dr G Thyagarajan. Dr Thyagarajan is an eminent scientist. He is now at Madras as Director, Central Leather Research Institute. The present Director Dr J N Baruah who is not only an eminent scientist with good work to his credit but also a gentlemen par-excellence.

I conclude praying to God that by His blessings the Laboratory may turn out useful for enrichment of our country.

*(Reproduced from the pages of
Silver Jubilee Souvenir of RRL)*

An abstract of my life in RRL, Jorhat



Dr B K Saikia
Former Scientist F

I joined RRL Jorhat family on 20th Oct, 1964 under the Directorship of Dr M S Iyenger. He called me next day, pointed out a couple of vacant rooms. He told me straight to open an Analytical Chemistry department according to my choice. After a couple of months he asked me to go to Calcutta along with a group of scientists to select and purchase equipments to establish the department. In Calcutta I was in a room selecting an electronic balance, and at that time without my knowledge Director General CSIR, Dr Hussain Zaheer was standing nearby without my knowledge. He congratulated me the way I had tested the weighing balance. We had purchased Flame photometer, spectrometer and a varieties of glasswares. Slowly it was a fullfledged department.

Initially we were three people, S B Chowdhury, R C Das and myself. In 1967, my name was recommended for UNESCO Post graduate fellowship in Chemical research. Indeed it was a pleasant surprise for me as I was selected for the Course in Prague, Czeco-Slovakia.

Bhatnagar tournament is organized by each laboratory in turn under the guidance of CSIR New Delhi. In 1965 it was organized by Hydrabad. Our team from Jorhat RRL participated with Sri B P Chaliha, Dr D Mahanta, Sri Pradip Dutta, Sri Phunu Bhatta and myself. In 1979 Dr G Tyagarajan invited the tournament to be held at Jorhat RRL. Accordingly he had a long discussion with me about the tournament. I was the organizing secretary for the said tournament. Just before tournament we made two gravel lawn tennis courts in front of our Guest house. I had participated from our laboratory side. Altogether I had participated in seven Bhatnagar tournaments for the laboratory.

Mr. A K Hazarika and myself had to work during lunch break for conversion of six days of working days to five days in a week and put the proposal in Executive Council of the laboratory which was granted accordingly.

Analytical Chemistry department had to have good rapport with other departments for different projects, as for example we had a very good rapport with Chemical Engineering department where Dr P G Rao, Dr K V Raghavan were working in that department, specially for the material balance. I was also Secretary of the executive Committee of the laboratory for one term, and Dr K V Raghavan used to help me in drawing out the proceedings of the Committee.

Let the Flag of NEIST (RRL Jorhat) fly for ever.

KALA-AMB

The very word Kala-amb reminds me of our exceptional experiences encountered while transferring VSK-Mini Cement Plant technology from Laboratory to commercial production. Kala-amb is a small growing-up industrial area on the foot hills of Himalaya ranges near to hill station Nahan in Himachal Pradesh. The area is rich in lime stone of various grades. As such a number of small and medium scale cement plants were coming up.



U C Borah
Former Sc. G

In the year 1985, an entrepreneur Mr. Bhutoria took a licence from NRDC to establish a 20 TPD VSK-Mini cement plant developed at RRL-Jorhat (now NEIST). He engaged a Delhi based machinery fabricator M/S UAL on turn-key basis. On 9th October '85, Mr. Bhutoria came to RRL and expressed that he was in much distress that his machinery supplier cum consultant had failed to commission the Plant inspite of several attempts. He was almost weeping that he had been incurring heavy financial loss due to delay in commissioning of the Plant. As such he requested the then Director RRL Dr. J N Barua with folded hands to help him by deputing experts to assist in commissioning of the Plant. Further, he agreed to bear all expenses including travel, stay and other incidentals. Director agreed to his proposal.

On 14th October '85, myself with my scientist colleagues Sri D. K. Dutta and Sri P Borkakoty arrived at Delhi airport, where Mr. Bhutoria received us and we spent the night at the Hotel Ranjit.

Next day we met at NRDC and discussed with Director Dr. R A Rao & Scientist Dr. D P Bhat-tacharyya in presence of Mr. Bhutoria & Mr. Bajaj of M/S UAL. In spite of strong opposition by Mr. Bajaj on our involvement in commissioning the Plant, NRDC desired that we should visit the Plant, inspect the machinery and report back to NRDC for further action. As such we proceeded to Ambala by bus and stayed overnight in a PWD guest house. Next morning by a hired Taxi we arrived at KALA-amb, the site of Mr. Bhutoria's VSK-Mini Cement Plant. We con-

ducted a thorough inspection of each and every piece of machines and noted a number of deviations made by the fabricator-supplier-consultant.

Next day we came back to Delhi and reported our findings to NRDC. Mr. Bhutoria also followed us and held discussions. It was finally decided that we should put our hands on the task and guide Mr. Bhutoria's people in commissioning the Plant without allowing M/S UAL's personnel. We went back to Kala-amb and engaged technicians for running the machines individually to check their performance. We found the roller mills for raw meal grinding and cement clinker grinding were very much undersized and not matching the capacity of the kiln. The grate plates of the kiln were wrongly assembled resulting in blockage of combustion air and heavy leakage of dust through air-lock gates.

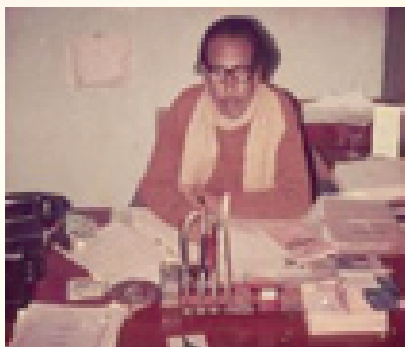
We guided in re-assembling the grate plates in correct manner. As a result the combustion air could flow freely to the combustion zone of the kiln, without any leakage through the grate. The raw meal composition was also checked and corrected by our chemical engineer Mr. Borkakoty. Within less than twenty four hours the plant commissioning work had been completed and quality cement started flowing – of course in reduced quantity due to under capacity of the mills. To achieve rated capacity we suggested procuring a suitable ball mill for cement clinker grinding and put two roller mills together for raw meal grinding besides removing certain small modifications done in the kiln, restoring our original design.

Next day, to commemorate our achievement Mr. Bhutoria took us to Shimla and introduced us to Director HPMIDC who financed the Plant substantially. Next day we returned to Nahan and found that our KALA-AMB VSK-MCP was running in full swing, establishing glory of CSIR-RRL Jorhat technology. The job which could not be done by a consultant in months together had been accomplished by experienced experts of NEIST within a day.



An inside-sectional view of the first VSK Cement Plant installed at Kutck, Gujarat by Katch Cement Pvt. Ltd. based on the technology offered by RRL in 1979

A letter from a death-bed



Late Shri S N Dutta, Former Scientist

Late Shri S N Dutta, Scientist and Head of the Inorganic Chemistry division (presently known as Materials Science division) was the heart, and late Dr M S Iyengar, former Director RRL Jorhat was the soul while the rest of the team made the flesh and blood of the Vertical Shaft Kiln Cement Plant, one of the pride possessions of CSIR-NEIST. Due to the pioneering efforts of these two dedicated and untiring Scientists of the then RRL Jorhat, the V S K Cement Plant technology could strike its roots in the Industrial soil of our country. With great pleasure mixed with pangs of sadness we are citing a letter from the Late Shri S N Dutta to one of his former colleagues in the Cement plant work Shi Pranab Barkakati, Scientist F & In-charge Applied Civil Engineering of CSIR-NEIST. The letter was written a few days prior to his death and speaks volumes of his attachment to the V S K Technology and his love towards the Institute.

Barragan
7-11-92

Dear Mr Barkakati,

I got your letter of 27th Sept. only a week back. Hence the delay in replying. your letter took roughly about a month to reach me. This is the efficiency of our postal system. Anyway the finally finds its destination.

Any letter from my previous colleague gives me immense pleasure even though I had to take promotion retirement from the organization I loved and did it is very kind of ~~you~~ you that just to remember me and wished by least ~~to~~ my early recovery from the delayed disease. I could I have been suffering.

So far my treatment is concerned I have been availing the best medical treatment available in Calcutta. Radio therapy had been completed without any perceptible improvement. Now I have been undergoing about 8 days the last known treatment for lung which I will have no other alternative but to believe for the final possibility to come. I am too weakly confined in my bed unable to move about. That all about me. My family members are doing fine and hope they will remain so even when I may not be living. That my consolation.



Dear Mr Barkakoti,

I got your letter of 29th Sept only a week back. Hence the delay in replying. Your letter took roughly about a month to reach me. This is the efficiency of our postal system. Anyway the (letter) finally finds its destination.

Any letter from my previous colleagues give me immense pleasure even through I had to take premature retirements from the organization I loved most. But it is very kind of you that you still remember me and wished by heart my early recovery from the dreaded disease 'Cancer' I have been suffering (from). So far my treatment is concerned I have been availing the best medical treatment available in Calcutta. Radio therapy had been completed without any perceptible improvement. Now I have been undergoing Chemotherapy, the best known treatment failing which I will have no other alternative but to retire for the

final eventuality to come. I am now virtually confined to in my room unable to move about. That's all about me. My family members are doing fine and hope they will remain so even when I may not be living. That's my consolation.

It is good that RRL J (CSIR-NEIST) Cement Plant has its base established in India. My heartiest congratulation to you and all those connected with its developments work.

Except the pollution aspect of Vertical Shaft technology I do not think further R&D work towards its developments is needed. Shaft Kiln will work smoothly only with non-reactive coal r Coke Breeze. Lot of work has already been done on fluidized bed reactor. It has its own limitations. No more (for) today. With all the best wishes,

Yours,
S N Dutta

My ties with RRL



Dr Balamani Bezbaruah
Former Scientist F

50 years, my, my! That is the beginning of old age or is it a thriving, throbbing, enthusiastic, happy, successful organization? But I do wish the old name Regional Research Laboratory had stayed! When I joined RRL as it was known then, little did I realize that my entire career would be spent in that place which gave me so much of freedom to do Research in my own way and gave me also excellent colleagues and friends to work with.

When I came to RRL, jobs were scarce and working women were even more scarce. Oh! Women worked alright, in fields, roads, house construction, perhaps also in front of typewriters. But as scientists there were very few. The very first Director of RRL Jorhat Dr B N Mitra was an armyman and he was very affectionate towards me, a lost girl from South India who had made an impulsive marriage to a young innocent country Assamese boy. He retired just a few months after my arrival and by the time the dynamic Dr M S Iyengar came, I had woken up to the reality of my situation. It was during his tenure that I was deputed to Germany and Bez, my husband joined the Tea Research Association, which at that time gave a better salary and perks. But my ties with RRL held, and gave me several more wonderful years until I retired in 1999. My colleagues write sometimes and tell me that they are getting a lot of funds for research. I am sure they will utilize the funds to do honest work. For the microbiology team in particular the most important question today is waste disposal especially in growing cities. Untreated sewage was being let into the Brahmaputra River. I hope this problem has been solved now and the scientists can also offer some advice to cities of India which are growing in all directions everywhere. My good wishes to those who are working there and also to those retired persons who might remember me still.



Facilities: Bioinformatics Information Centre, Biochemical analysis, Isolation, identification, screening and bio-profiling of soil microbes for new drug antibiotics, preservation and documentation, database on microbes, etc.

Most memorable events of my life at Jorhat



Dr V S Bhaskar Rao
Former Scientist

Who is interested in listening to events of some one's life however interesting they may be. In case of life at Jorhat that's wrong. I joined Jorhat relatively at a young age of 31 years and the experiences I had were the most memorable and intricately linked with my own growth and that of the Regional Research Laboratory at Jorhat. It was the year 1970. When for the first time I landed in Jorhat, it was like a paradise. Jorhat was enchanting. Air was pure and heavy as though it was enriched with some extra Ozone. There was greenery all-round with distant Blue Mountains. People were simple, honest and contented. There were virtually no beggars anywhere and you leave your things un-secured in open market and you don't lose anything.

In those days Jorhat could be divided into four sectors: Science sector (RRLJ), Aviation sector (AIRFORCE), Agri sector (TOCKLAI) and lastly civil sector. People from all sectors were intimately connected with each other and helpful both in good and bad periods. Our Director at that time was Dr.M.S.Iyengar, a great visionary but handicapped by various reasons. The kind of projects we were embarking was of International level and was topical world over. For example I was encouraged to take-up the process development of Caprolactam an intermediate for manufacture of Nylon-66. The technologies that were existing at that time were not economical due to disproportionate Byproduct that arises during the process which far outweighs the main product formation. We were successful in developing a superior technology, albeit on a very small scale. Due to the novelty of the project, we covered the process by patent in several countries. To scale up this process we neither had a competent Chemical Engineer nor the scale-up facilities. But the publicity we got was so high, Government of India refused to allow the import of this Technology by Gujarat State Fertilizer Corporation, Baroda. The CMD of this company was distraught; and he came all the way to Jorhat to plead with us to allow the import. The point I was trying to make was, there was neither anything wrong with the selection of the project nor was any lack of interest but necessary inputs could not be managed at the right time. There were many other projects of this nature at that time and lack of adequate funds, restriction of imports, and lack of infrastructure compounded the problems during this period.

The Petroleum and Natural Gas Division, of which I was the Head, had a good rapport with the Oil Industry in the North East. This was due to good contributions made by my predecessors. Typically, all the crudes produced in this region are, waxy in nature and pose serious problem in their transportation through pipeline. Somehow, they were managing its transportation by adopting a complicated and expensive method of controlled heating-cooling known as Conditioning. They were also using an imported additive in small quantities. Although, the additive treatment is more economical but severe Foreign exchange crunch prompted them to look for indigenous alternatives. The task of development of this additive was given to RRL, Jorhat and a small sample of one of the imported additives was provided to us for comparison. The instrument which was available to us was an obsolete Infrared Spectrophotometer, We did run our analysis on this instrument and could establish that the product in question was an ester, and one part of this molecule was a long chain fatty alcohol. As the source of this alcohol was purely from natural sources, we immediately rather erroneously concluded that any plant wax could be a possible candidate. We zeroed on Sugar Cane wax and a small order was placed on Ravalgoan Sugar factory that produce this material as a byproduct. The material arrived at Jorhat after 3-4 months. Bingo! The product worked but at a very high dose. When we supplied this material to OIL, we labeled it as SWAT. Now you know

how the name “SWAT” came into use. SWAT stands for “Sugarcane Wax Acetone Treated”. But many thought it stands for Strength, Weakness, Aspiration and Threat as, all these factors were present and likely to affect the development of this product. But we knew, neither this product was economically viable nor volumes required could be met... Later of course we could develop several synthetic variations successfully establishing a milestone for Jorhat that brought both National and International recognition.

On the lighter side we had very hilarious incidents. Once, I don't remember now the year, both His Excellency the Governor B.K. Nehru and the Chief Minister of Assam were expected on the same day and almost at the same time at our Laboratory. Dr. M.S. Iyengar was the Director. Governor was coming by Helicopter and the chief Minister was expected by car. We had meetings for almost two days, explaining protocols, assigning duties and responsibilities and timing to each Scientist prior to their arrival. Protocol demanded that our Director received them both. On the eventful day, the CM arrived first by the car and was promptly received by the Director but nature willed it differently and our Director had to accompany him to the bath room. Exactly at that moment Helicopter landed on our lawn and H.E. B.K. Nehru alighted from the helicopter. There was no one to receive him although several of us were on the lawn and simply we stood looking at the Governor. We overcame the initial shock after some time, and some of us ran forward to receive him notwithstanding the strict protocols established by the Director.

Among the towns of upper Assam, Jorhat is a very important town. Almost all the VIPs and VVIPs are used to visit Jorhat and Regional Research Laboratory had the unique distinction of hosting them. Once, I remember, during emergency, a delegation of parliamentarians, nearly twenty five of them visited the laboratory. This was the Hindi Implementation Committee. We were all waiting for them at the entrance of the administrative building to receive them, but the bus carrying them for some reason was stopped at the main gate and all the MP's got down and started looking at the name plate of our laboratory. We could not understand what they were up to. Ultimately, they came to the administrative building with a serious look on their face. One of the M.P. immediately started shouting, why our Board was not in Hindi. Dr. Thyagarajan was our Director and somehow he was trying to pacify the M.P. and ultimately they were persuaded to take their seats in our conference room. Thyagarajan cleared his throat and started welcoming them in the only language he knew well after Tamil. Immediately after, another M.P. started shouting “Hindi may Vartalap kijiye” (speak in Hindi). I am sure he would have been more comfortable with Greek, Latin or Chinese language. But we managed the show.

Not all are such embarrassing situations. We also had the pleasant visit of Dr. Manmohan Singh in his capacity as the Chairman of the Planning Commission. All the Heads of the Department were asked to speak on their work. When my turn came, I delivered a controversial lecture on how the configuration of these two refineries, Gauhati and Bongaigon is wrong. How the wax and aromatic potential of the Assam Crudes is not fully utilized. At the end of the meeting, Dr. Manmohan Singh told the Director to send me to Gauhati refinery which he was visiting next. I followed him to Gauhati refinery. Before the GM could start his lecture, Dr. Manmohan Singh directed me to say what I said at Jorhat. I repeated the same. Both the Chiefs of Gauhati and Bongaigon Refineries were angry with my observation and pointed out that how we were talking from different time zones. But nevertheless agreed at the time of planning the refineries, the product demand pattern was different. Thus, I escaped with little loss of face.

Another most memorable visit was that of a different VIP from Delhi. Dr. Thyagarajan entrusted me of the responsibility of receiving him at Calcutta Airport and accompany him to Jorhat. Simple as it sounds, but I had the toughest time of my life. The following were his minimum requirements for the visit.

1. An imported sedan had to receive him on the Tarmac at Calcutta Airport. Where do RRLJ get an imported car at Calcutta? One of our Clients had a BENZ car. Borrow it! Fair enough, but how do you manage to take it to the Tarmac? He is not a VVIP. He is only VIP. In those days, I was a frequent Flier and one of the Air Hostesses was friendly with me. Through a circuitous recommendation route, the Air port Manager was influenced and ultimately could get a pass to allow the car to the Tarmac.
2. When the VIP was travelling in the lift, he did not like anybody else in the same lift. I arranged his stay in Centaur Hotel at Calcutta and there were only two lifts in the lobby. That means, one lift should be left for his exclusive use that which the hotel management was not willing to do. I started to plead with them and the Lobby manager asked who the VIP was actually. I straight away told him that he was going to be our future Vice-President of the Country. My prophesy did not come true, but any way he became the Governor of West-Bengal and I am vindicated. He kept a lift for exclusive use of the VIP.
3. Protocol demands his Secretary cannot stay in the same hotel where the VIP is staying, but as a scientist I can stay. Is it a matter to gloat about? No sir, because, his secretary gave me an ornate box containing 36 medicines to be given to him at various intervals between 7.00 pm to 3 am in the night. Why God ordained me to have such duties I do not understand.
4. The VIP did not like anybody to sit on the next seat in an Aircraft. His favorite seat is 2B. But which Airline agrees to keep the next seat vacant without payment? I am happy to inform you we did manage that with the good offices of Airlines staff at no cost to the exchequer. That's the kind of rapport we develop with people which was not possible in any other place.

If I start recalling like this, there are many more interesting and memorable events. The point I was trying to make was, we, in those days had not only the unique privilege of receiving and entertaining luminaries like Ministers, Governors, Army, Air force top brass and many others but also could discuss with them many matters without any inhibitions. On the whole, Jorhat was part of 25% of my 70 years of life and forms the golden period of my life.

There were several other such memorable incidents during my life at Jorhat, but I should give an opportunity to others to narrate their experiences.

Bygone days at CSIR-NEIST

IT IS HAPPINESS AND REMORSEFULNESS THAT ENGULFED ME WHEN I RECOLLECT THE BYGONE DAYS AT NEIST, FORMERLY REGIONAL RESEARCH LABORATORY JORHAT. AFTER JOINING THE INSTITUTE MY POSTING WAS AT RRL SUBSTATION, YAONGYIMSEN, NAGALAND.



Dr P B Kanjilal
Former Scientist G

THIS tiny remote hilly village was a learning place for me in many aspects of my life. The people around me were linguistically and culturally different but were simple and honest. Adopting their mode of life, language (Nagamese), joining in their community activities viz. Christmas celebration, fishing in the Dikhow River, repair of village roads, building houses and other activities, it became easier for me to disseminate the message of application of Science and Technology to improve the quality of life of the villagers. I spent seven years in this hilly hamlet with a successful mission to uplift the socio-economic conditions of the rural people by transferring sustainable technologies developed by RRL. The most successful technology that was adopted by the villagers is the cultivation and processing of aromatic plants particularly Java Citronella, the technology, which later extended to all parts of Nagaland with

scientific inputs provided by the institute. Appreciation of this developmental work was done by many dignitaries who visited during 1975 to 1982 and encouragement by the then Directors Dr G Thyagarajan and Dr J N Baruah and other senior scientists who helped me to accomplish our Laboratory's mission in this respect. But this accomplishment was restricted up to a certain level and could not progress due to lack of proper R&D infrastructure and poor communication facilities. Planning for R&D was also hindered due to mental agony which sometimes cropped up for lack of entertainment we were acquainted to, remoteness and restricted sharing of ideas.

This stint ended when I joined the institute headquarters at Jorhat Assam. Here the life ran in full swing having a lot of R&D works, involvement in many committees related to the institute's development and welfare activities, besides meeting social obligations. A peaceful environment, suitable infrastructure and helping attitude of all the senior and junior colleagues in each and every activity let it be R&D works or it may be SSBMT Tournament or for celebration of Bihu and Kali Puja, made the life happier. But of course we have to change the mode of working plan according to new ideas brought by the Directores posted from time to time. I worked with five Directors Viz Dr G Thyagarajan, Dr J N Baruah, Dr Anil C Gosh, Dr J S Sandhu and Dr P G Rao. The relation with them was very cordial and the inspiration I had received in every sphere of R&D works and management matters were noteworthy. However there were many incidents, many ups and downs during my tenure, the feelings of which cannot be summarized in a few paragraphs. Smooth sailing is not possible in any ones life. There are a lot of hitches but still it is very difficult to forget those memorable days.

Working in Medicinal Aromatic & Economic Plants Division was also a additional blessing for me, as we received many appreciations from different quarters within and outside for our works. The colleagues with whom I worked were helpful and co-operative. I was also very fond of spending longer time in our experimental farm and herbal garden where many medicinal and aromatic plant species were introduced and cultivated. Lush green diverse herbs, shrubs and trees are always in my mind and float in my eyes. But today in the city of concrete jungle I run after a greenery nowhere to see. It was indeed a fascinating life that I had been associated with NEIST for 34 years which is unforgettable.

Down the Memory Lane

‘Memories are like story books’ -Janina Gomes.



Dr C N Saikia
Former, Scientist G & Head
Cellulose, Pulp and Paper Div

Walking down the memory lane, one can throw up many things of the past that were pleasant or unpleasant, positive or negative, rich or poor in accomplishments, because such memories complete us and add the missing dimensions in each of us. Many memories with varied contents—good and bad combined, have come out from the mind’s storehouse and I am at a fix, which one to pick up for this write up. However, a few of my experiences (memories), I am going to record, which I preserved from my long 37 years and more of service in former Regional Research Laboratory (now CSIR-NEIST), Jorhat. I was fresh from university, when I joined the Laboratory on 1st August, 1966. Though I did B.Sc. Tech. in Textile Chemistry from UDCT, Mumbai, after B.Sc. (Hons) in Chemistry, I had to work in Paper and Board Division (later on named Cellulose, Pulp and Paper Division). I was first assigned to a project on development of technology for manufacture of Matrix Board—a very special type of paper board used mainly in printing and power loom industries. During seventy’s, the entire requirement of this item in our country was imported and as such, development of indigenous technology for manufacturing this item had become imperative. Collecting available literatures on the subject, I started working on making the paper board utilizing the facilities and equipments available in the Division. Small samples were prepared in the paper making equipment available and necessary testing as per BSI standard were carried out. Later on, a stage has come to prepare large-sized samples for commercial testing and trials in a reputed printing press. Ultimately, I had gone to Kolkata for testing of a few laboratory hand made samples of matrix board at the famous The Statesman Press. It was to the entire satisfaction of the Lab that a few samples (out of 20 or so) came out workable at The Statesman Press. As a working scientist, this positive result had aroused faith, and the confidence level was raised to take up more challenging work in later years. In this particular project work, though later on, one more junior scientist was associated, we were able to commercialize the technology and a Delhi firm commercially produced the item. I must also mention that throughout the entire project work, the encouragement and guidance of Shri B.P. Chaliha, Senior Scientist, at that time was instrumental in achieving the success.

Dr. M.S. Iyenger, was the Director, during the seventy’s and whenever he visited a foreign country, he used to bring with him samples of products, which had scope for development and also commercialization in our country. Such a brand of products—Correction paper, Correction fluid, used mainly for correcting type - writing errors, were once brought by Dr. Iyenger and the product samples were given to our department for examination and development. I was assigned to work on the products and the situation was such that Dr. Iyenger used to visit our department almost everyday, to enquire how far we were able to do the work. Our Lab-prepared samples, were found to be better in many respect than that of the imported ones. So also, white and colored correction fluids formulations were developed, vigorously tested, and ultimately, both the products were licensed to 4 (four) parties for commercial production and were in the Indian market for a long time.

The work on development of technologies for Carbonless Copy Paper, Direct Copy Paper and Thermal Papers were, though, initiated during Dr. Iyenger’s time, but could be completed during the Directorship of Dr. G. Thyagarajan only. I had come in close contact with Dr. Thyagarajan and he encouraged me very much not only in R & D works, but also in many of the social activities of RRL community. His encouragements to take leadership in arranging seminars and symposiums, apart from taking part in administrative activities paved a way for me in later years to take such charges. I tried my level best to build up, keeping my thoughts centered mainly on R & D achievements.

I very vividly remember an incident that occurred while demonstrating the production of Carbonless Copy Paper Technology in the commercial plant installed by one of our licencees M/S Strobel Industries, Nizamabad, Andhra Pradesh. During preparation of the chemicals, an important step involved was the microencapsulation of the dye intermediates used for coating on paper. As we took the technology, specially the microencapsulation part, only from 2-3 kg/batch scale, while making one of the batches of 100 kg in the plant, we were not able to keep up all the parameters intact and as such, in that batch, we were not able to get proper encapsulation and I was not in a position to divulge to the entrepreneur. On that particular trip, I was alone and to save our face, I had to work overnight to correct the batch and by the grace of God, I was able to rectify the defect and ultimately, could get a very good encapsulated product. The project of course was commercially successful and the party is still producing the paper in 2-3 tons/day/capacity.

During Dr. J.N. Baruah's tenure as Director, we were awarded National Research Development Corporation's Invention Promotion Awards for meritorious inventions for development and commercialization of process technologies for manufacture of Carbonless Copy Paper and Direct Copy Paper during 1985 and 1986 respectively. Dr. Baruah, once called me to his chamber and told me "Saikia, you are now established as a scientist, but you lack something, which you must try to fulfill if you desire further progress in your career". I am at a loss, but he immediately opened up my mind by advising me to work for Ph.D. degree. He, even talked to the then Vice-Chancellor of Dibrugarh University for my immediate registration. At that time in 1987, I was scientist EII with more than 47 publications and a number of patents to my credit. I, till today, remember the 'most valuable advice' of a 'true well wisher and true Mentor' (May his soul rest in peace in heaven) and I could complete Ph.D. work as well as get the degree in less than 3 (three) years of time, with substantial publications in Indian and international journals of repute.

During Dr. A.K. Ghosh's period as Director, I was associated with many of the management works of the laboratory. Though, it was a period of a little turmoil, I believed in doing justice to the institute and as such, worked sincerely for the interest of the laboratory.

As a whole, I tried my best to keep up the interest of the laboratory on first priority and took part in a number of meetings, seminars and workshops, students' science motivation programs etc., besides being President and Secretary of a number of social and cultural activities of RRL community, starting from celebration of Sri Sri Sankardeva's Birth Anniversary annually and was also associated with RRL staff club, RRL officers' Club, Co-operative societies, besides actively associated with children's programs for their intellectual developments by way of guiding different competitions, games and sports and numerous other functions in RRL and its residential campus.

It is also worth mentioning that the work culture, the discipline, the fellow-feelings at NEIST are incomparable and I feel, proud to be an ex-employee of this great Institute. Last, but not the least, I must also mention that the present Director, Dr. P.G. Rao, under whose tenure I superannuated is one of the most dynamic persons, and the name and fame of the laboratory has though already been raised, but I feel, it should still continue to flourish under his able leadership.

Many more reminiscences can be included, but I dare not to add further. To conclude, I take the help of one of the greatest minds of the 20th century, Carl Gustav Jung, who told us to let our reminiscences tap all the wisdom and goodness by allowing what is not good to move away. Long live NEIST, Jorhat.

**"For all your days prepare
And meet them ever alike
When you are the anvil, bear
When you are the hammer, strike"**

—APJ Abdul Kalam (Wings of Fire)

Acknowledgements and Tribute



Dr Prakash Chandra Borthakur
Former. Scientist G & Head
Material Science Div.

I spent more than 37 years in this August institute, North East Institute of Science and Technology (known earlier as Regional Research Laboratory) Jorhat, initially as a guest research worker from the later part of 1969 and then as a regular employee (scientist) from 1st January 1975 till my superannuation on 31st August 2006 as scientist G. During this long period, I was associated with a large number of interesting and inspiring persons, encountered several amusing incidents. Some of these, particularly of the earlier days have made indelible impression on me. I often cherish these memories.

During late sixties, some news, particularly of various achievements of this institute were often flashed in the media. At that time I worked as a lecturer at J.B.College, Jorhat. These news and the annual reports of this institute were collected from Mr. A.K. Hazarika, in-charge Information Division (who happened to be the brother of one of my colleagues in the college) encouraged me and my colleague, Kesav Chandra Misra also of Inorganic Chemistry background like me to utilize our spare time in doing research for Ph.D. in this institute. But we could not ourselves find persons showing interest to guide us in this institute. In the mean time, another colleague, Pradip Kr. Mahanta of Organic chemistry background joined this institute as a guest research worker under late Dr. K.W. Gopinath. Mahanta advised us to directly contact the then Director late Dr. M.S. Iyenger for the purpose. We heard, Dr. Iyenger as a very strict person, ardent follower of discipline, hardworking, knowledgeable (also dis-information like angry person, doesn't like local people) etc. With apprehension, we approached him in the later part of 1969. He was a tall, fair complexioned, well built person with bright eyes, smiling face and very positive minded. He told, "Welcome to this institute, but come with some industry relevant problems". We spent a few days searching such problems but failed and therefore we again approached him to suggest some work which may be undertaken in the institute. He then advised us to contact late S.N. Dutta (Samarendra Nath Dutta), the Head of Cement division for the purpose. Dutta could be located near the receptionist's desk. He was a modest, unassuming person. While sitting in the nearby sofa he continuously narrated one after another industry relevant problems from about 2-30 P. M. to 5 P.M. and asked us to choose amongst those problems. I decided to work on synthesis of zeolite for using as molecular sieve. At that time R & D work on production of protein from petroleum was pursued in the Biochemistry division and zeolite was promising for separation of normal and iso paraffins. Dr. Iyenger took us as his scholar and we were attached to Dutta in the Cement division (which was later changed to Silicates, Inorganic chemistry and finally to Material Sciences).

Late S.N. Dutta accommodated us in his room. He was very friendly and helpful to us. He called us as "Maharaja" as we were not regular like the regular employees and we also addressed him as "Dada". He was B.Sc. AIC, and had enormous knowledge on cement, coal, silicates etc. He could work tirelessly, possesses excellent memory, rich in innovative ideas and was a very good leader. A large number of activities were pursued under him. Dutta also had interest in Geochemistry. Late Dr. M.M.Saikia the then head of Geo-science division and a good friend of him once predicted earthquake of high magnitude in the north eastern region based on seismological data. Late Dutta once conceived an idea of predicting earthquake by a chemical method.

Dr. Iyenger frequently visited the various R & D departments. He used to initiate discussion by asking, what is happening or what is the progress. He used to scan almost all the journals subscribed at that

time and identify some publications with new ideas and asked us to go through the same and discuss with him. The discussion in his room continued for hours. His method of working/interaction motivated and encouraged us to work harder to achieve the objective. He was a futurologist, a visionary with innovative ideas. Many of the works/areas conceived by him are still pursued in the laboratory.

Unfortunately, Dr. Iyenger had to leave this laboratory on voluntary retirement in 1973. He had enormous love and attachment to this institute. My colleagues, Mr. P. Sengupta and Dr. S. Mahiuddin while attending International Seminar on Mineral Processing Technology (MPT 2003) held at Goa in 2003 to present a paper on Demineralization of Assam coal met Dr. Iyenger for the first time. The latter enthusiastically met them and discussed on the works pursued in the division. His last visit to this institute was in August 2006 in connection with the National Seminar on Materials and Minerals, organized by the laboratory on 30th/31st August 2006, where he delivered a talk on Past, Present and Future of Coal, Oil and Natural Gas. He also visited our division and applauded the works carried in the division. He showed keen interest on high strength proppant work done by Dr. D.K. Dutta and others. This work later on bagged CSIR Technology award. His presence and speech at my fare-well meeting held on the second half of 31-08-2006 will be ever remembered. He also delivered Dr. J.N. Baruah memorial lecture on 2nd Sept. 2006. He had enormous mental strength. We together went to Majuli on 1st Sept. 2006 and visited many Satras. I thought he was tired after the hectic tour since early morning and would prefer taking rest for a few minutes after lanch but he was ready for the next part of the journey.

He breathed his last on 16th Oct. 2008. Till death he was the Managing Director of the consulting firm M/S Iyenger and Associates, which he set-up after retirement.

Late S.N. Dutta was an ardent follower of Dr. Iyenger. He was also an advocator for R&D work related to industry, process development/ improvement, development of new products etc. A large number of processes, products like VSK technology for cement making, oil well cement additive, cold bonded pelletization of iron ore fines, chemicals for beneficiation of iron ore fines, silica based chemicals etc are to his credit. He often compared the performance of his division (cement/silicate/inorganic chemistry) with those of paper and pulp division under Mr. B.P. Chaliha, who also laid emphasis on R&D works related to industry. Dutta had the ability to motivate and train persons. It was really astonishing to note how with a few persons he could develop the cement making process by adopting the VSK technology and commission the same. One of the persons trained by him, Mr. B.C. Jana (not even a graduate), was associated with him in developing the shaft kiln technology and commissioning the first cement plant, Kutch Cement Pvt. Ltd. at Kutch, Gujarat, in 1978. He was later retained as the manager of the plant. Late Muhiram Gogoi (died after retirement in Oct. 2009), a technician, was so trained and motivated that he could handle processing of tonnage of feed materials and undertake trouble free operation of cement kiln. Mr. Dipak Bordoloi was so trained in chemical analysis of cement and its raw materials that he could be entrusted with any short of inorganic chemical analysis. Mr. Jibeswar Kalita, a junior technician was made expert in maintaining files, documents, store materials etc.

Prior to commercialization of the shaft kiln technology of cement making in mini and tiny scale, late George Fernandez, the then industry minister of Janata government at the centre, once visited this laboratory as an ordinary visitor (without maintaining any protocol), and collected first hand information about the working of the plant.

Late S.N. Dutta was a man with high self respect. During his tenure, there was an advertisement for Assistant Director (Scientist E-1) which suited Mr. Dutta very much but he declined to apply for the same. He thought, in case, he gets the job people may say otherwise. During the tenure of Dr. G. Thyagarajan as the Director (joined during last part of 1974) again an advertisement for the post was there. Dutta initially did not consider applying for the same. But after great persuasion, particularly by Dr. J.N. Baruah, the then Deputy Director and Head Biochemistry division and later on Director (whose room was almost opposite to that of Dutta), ultimately he applied. As far as I remember, no one was

selected in the interview. Mr. Dutta was very much perturbed and became emotional. The post was advertised again. He did not apply, but to our utter pleasure he was promoted to the post on merit basis based on the recommendation of Dr. G. Thyagarajan.

Late S.N. Dutta, like Dr. Iyenger also left this laboratory on voluntary retirement in 1983. The day S. N. Dutta handed over the charge of the division (inorganic) to me was very touchy. It was Friday, 30th Dec 1983. The previous day the laboratory lost a very young energetic hardworking welder, Sova Ram Borah. The institute was closed after the condolence meeting. Dutta handed me the files and other documents followed by a number of envelopes addressed to Director (Dr. J.N.Barua) and marked confidential. He asked me to go through the contents in the envelopes. He narrated his opinion about capability, limitations etc. of each member of the division including me. He also justified why I should be given the responsibility of the division. He then vacated his chair and asked me to sit there. I was hesitant but Dutta persuaded me. His steno, Mohendra Sharma, a disciplined, sincere person (died while on service in Dec.1990) also requested me to respond to his desire.

Dutta wrote me that his heart would dance with the good news of the laboratory, particularly of the division and asked me to continue conveying the same. After retirement, he served as a consultant of Research and Development Center for Iron and Steel, Steel Authority of India Ltd. in the area of beneficiation of iron ore fines using chemical additive. He visited this laboratory at that capacity and offered constructive suggestion on the beneficiation work undertaken by the laboratory in iron ore washery of Barsua iron ore mines of Rourkela Steel plant. Work on beneficiation of iron ore fines using chemical additive at this laboratory was started by Dutta himself. He suffered from lung cancer and expired in 1995. The additive, required in bulk for trial at Barsua was prepared using the facilities of M/S Allied Resin and Chemicals, Kolkata. A team comprising of persons of our division and Chemical Engineering prepared the chemical. Late Ajay Pratap Barua, the then head of chemical Engineering division, in spite of being a heart patient participated in the preparation with the same enthusiasm as of the other members. Barua died while on service some years later.

At the time of joining as a guest worker, I had two acquaintances in the division, late Tarun Ch. Saikia and Mr. Pradip Chandra Saikia. All of us were alumni of the same college. The former was senior and the latter was junior to me. Both of them made me and Misra homely in the division and helped us to get the required equipments, chemicals etc. T.C. Saikia was very witty. Due to his humorous nature he was loved by a large section of the employees. Many person used to come to him during their leisure time. At that time he was engaged in development of a process for oil well cement additive along with Dr. Seshadri (later he left for Germany). The process was commercialized by two parties a few years later. Mr. P.C. Saikia was engaged in development of a novel process for producing Silica Gel, at the time of my joining as a guest worker, which was later commercialized to a number of parties

Thanks to the present Director, Dr. P.G.Rao for constructing the first floor over the Fuel and many other Blocks with C.I. sheet roofing and permanently eliminating the roof leaking problem which had been bothering us all the time. ♦



Sri S N Dutta (middle), the Scientist path finder of the CSIR-NEIST VSK Cement technology in deep consultation with Prof Y Nayudumma, DGCSIR (left) and Dr MS Iyengar, Director (right) in front of the infantile VSK Cement plant of NEIST in 1972

Yaongyimsen - a good example of REZ for Citronella Oil Industry



Dr Prakash Chandra Borthakur
Former. Scientist G & Head
Material Science Div.

THE PRESENT day concept of REZ- Rural Economic Zone was adopted by RRL, Jorhat at Yaongyimsen, a remote village of Nagaland for Citronella oil industry at a time when no body thought of it. The village Yaongyimsen is about 100 km. from Jorhat at Amguri Mokokchung Road. The village is very very backward in education, micro/mini/tiny industries and general communication. RRL, Jorhat, during 1973, adopted this village to help the people through some technologies developed at the laboratory. Experimental performance indicated the good growth of Citronella (*Cymbopogon-winterianus* Jowitt) at that area having elevation of 1200 metre above mean sea level. We were very successful of adopting Citronella and the people of that area were also cooperating in our venture.

As per REZ, the Rural Economy is based on: $E=R+T+M$, where Economy(E) is the result of Resource(R) + Technology(T) + Market(M). RRL, Jorhat has taken up Citronella as a mission and was successful for sustainable development of the area. As per the REZ, in the village Yaongyimsen, sustainable Raw material(R) was the Citronella produced by the growers, proven Technology (T) was given by RRL, Jorhat and the Market (M) was the concern of Industries Department, Government of Nagaland. These concerted efforts gave 100% success for developing Citronella oil Industry in that area during 1973 to 1980. RRL, Jorhat initially supplied a 200 Kg capacity distillation plant to distill the grass produced by the villagers. As it was not sufficient enough, another 200 Kg capacity plant was provided by our laboratory. The cultivation of Citronella was taking a deep root in that area and it was not possible to cater to the need of consuming Citronella leaves produced in the village by 400 Kg capacity distillation plants. It was the request of RRL on authority, Dept. of Industries, Govt. of Nagaland provided fund to establish 1000 kg capacity distillation plant on turn – key basis. After 1 year it was also not sufficient enough to meet the demand of processing Citronella leaf. Ultimately, Govt. of Nagaland established 1000 kg x 4 nos. distillation plant at the village. On the other hand, a few villagers who had bigger area of Citronella plantation had their own distillation plant for production of Citronella oil.

This was a success story of REZ, in this rural area. The Sub-station at Yaongyimsen was playing a pivotal role for disseminating RRL technology and extension activities on Medicinal & Aromatic Plants. I was there at that time as the In-charge of the station. RRL, Jorhat & Industry Dept. Govt. of Nagaland jointly fixed the price of Citronella leaf at 50 paisa per kg of grass. Payment was made to the producer by the Nagaland Industry Dept. who purchased the grass at the spot of distillation plant. I still remember, during 1974 due to draught the harvest of paddy was very lean and people were to depend upon the sale proceeds of Citronella leaves to buy rice and other commodities for their day to day livelihood. The same story was narrated by the village people in front of Prof. Y. Nayudamma, the then Secretary to the Govt. of India & D.G., SIR, New Delhi, who visited the village on 29th April, 1975.

I am always nostalgic about the sojourn at Yaongyimsen during 1973 to 1976. I have to recollect only a few momentary feelings of the days spent in the village. The day was the shortest day. It was the 22nd December 1972, I started my carrier at RRL (presently NEIST), Jorhat as Senior Scientific Assistant. I retired on super annuation on 31st January 2010 as Scientist-G. At the time of my joining, Dr. M S Iyanger was the Director- a very dynamic man of vision & mission. I was in need of a residential quarter as I had to come from Jorhat town to RRL- 6 km. distance. I met Dr. Iyanger while he was coming from the guest house to the office and requested for a residential quarter. He told me to meet him at 3 P.M. It was to my astonishment that I got the allotment order of a single room apartment at about 2 P.M. on the same day. He was a man of action.

RRL, Jorhat is the only CSIR laboratory in whole of NE India. During 1972, CSIR decided to establish 5

Sub-stations at 5 sister states of NE India. We were recruited for Sub-stations. Initially I was to serve at Yaongyimsen, Nagaland; Dr. R.K. Sharma at Barapani, Meghalaya and Dr. B.N. Saha at Mantri Pukhuri, Imphal, Manipur as In-charge of respective Sub-stations. I still remember the day, when I started for Yaongyimsen along with Dr. DN Upadhyay on official Jeep. It was Buddhapurnima day of May 1973. I was very young and not knowing anything about the place – Yaongyimsen. The village is situated 1200 metre above MSL. A hilly place, green with small and big trees, forest having diverse biota and predominantly inhabited by Ao tribe of Naga people. It was on the 3rd day of our arrival at Yaongyimsen, Dr. Upadhyay was to leave me for Jorhat. I was looking at his Jeep waving him, but neither of us could speak. I held his hand, tears trickling down from both of our cheeks. He was moving through the serpentine road going down towards Assam. Quiet, I stood there on the slope of the hill looking at the Jeep carrying Dr. Upadhyay and moving towards Merangkong (a nearby village towards Tuli). I was like a dead man being alone in an unknown place. I was awakened when I heard the peculiar tone “Sahib” from Mr. Nokdang (Mr. S Y Nokdang Ao was our Field Assistant at Nagaland Sub-station) and returned back to the reality. It was the same feeling when I left the village on transfer to Jorhat accompanied by Dr. D. N. Bordoloi and Mr. B P Chaliha in an official car and could not keep my tears coming down my cheeks. I had to leave the village people, those fatherly Village Elders, good neighbors, the beautiful belles and my dear village Yaongyimsen. The people are so simple, straight forward, helping and caring. Nature has given them everything in a natural way.

Days were going on at the village – Yaongyimsen. I was feeling as a part and parcel of the village with mind and soul. “Be Roman when you are in Rome”. I was like Naga people sharing their pleasures and sadness. I mingled with them. The Village Elders, Gaon Burahs and Bariks were very loveable and they treat me like their son. They always stood by me during my odd days like the death of my Father in 1974 and death of my mother in 1975. I still remember those days of Fishing festival at Dikhou river, tiger hunting, their religious festival like Moatsu and Sermung, Christmas days, and other celebrations of the village. The village wooden drum, the burial ground, the peak of the village from where the ribbon like mighty Brahmaputra can be seen, the reign of underground and the torture of Indian Army, the surrendering festival of underground VIP personalities are some of the memories still nostalgic to me.

I was not only engaged in R&D activities but busy with the problems of the village people. I being one of the literate people and closely related to the Village Elders, I was acting like a catalyst in bringing water supply through CPWD, a sub-post office through P&T, a guest house through DC Mokokchung, a Pucca road from Amguri-Mokokchung to the village and a primary medical health center revived through the intervention of DC, Mokokchung at the village Yaongyimsen. The sub-station was running very well in translating the technology to action. Dr. Y Nayudamma, the then DG, SIR along with many dignitaries visited the place on 29th April 1975 and appreciated my work. DG-CSIR Prof Y Nayudamma and Director of RRL Dr. G. Thyagarajan wrote to me expressing their satisfaction.

The NEIST, Jorhat is celebrating “Golden Jubilee Year”. This institute is very dear to me. It has given me an identity, bread-butter and security. I had seen dynamic Directors like Dr. M S Iyenger, Dr. G. Thyagarajan, Dr. J N Baruah, Dr. A. C. Ghosh – who tried to fulfill their mission during their stay at this institution. I have seen a very hard working man in Dr. PG Rao-the present Director of NEIST, Jorhat. He tried his level best to streamline the administration and seemed to be successful. There are many dedicated scientists, because of whom many laurels have come to this institute.

I wish every success of this institute – NEIST in all spheres and good wishes to my former colleagues.



Massive cultivation of Citronella grass in Yaongyimsen village with NEIST efforts in 1970's

In Retrospect



D K Dutta
Former Scientist G,

LIFE MOVED SO FAST. I remember the morning of June 1975, when, I joined Regional Research Laboratory along with other 13 members. The environment, and my seniors of that time moulded me and helped me to grow and have confidence at my profession.

Like everybody, I, too have many sweet and sour memories in 33 years of tenure in R.R.L. Those memories are like a perennial spring with colorful flowers. I am empty without.

Master Patel a Gujarati Boy left home at 12 from Mandvi, an Arabian sea beach in Gujarat, hiding in a outbound cargo ship. Worked many years as mason in Africa. Accumulated money to take up civil contract work in Europe. Coming back he selected a plot of barren land in the outskirts of Ahmadabad. He converted the place to green and constructed an Open theater to accommodate 900 vehicles with family and friends, first of this kind in India known as **Drive In**. This gentle man Mr. Patel came to R. R. L. towards later part of 1970 to take our Mini cement plant technology. While with him, he related the above story. During that time our VSK plant was not commercially tried. Mr. Patel agreed to take the technology on AS- IS- WHERE -IS basis with a condition, that R. R. L have to support him with scientists and engineers Mr. B.C Jana and me were deputed. At that time we had problems in uniform burning of the nodules. The green nodules fed at top conical zone of the Kiln never got required residence time for formation of quality clinker.

Mr. Patel's plant site was in Kutch, Buhl, bordering Pakistan. At night Pakistan city lights were visible from plant site. We have erected the 10 TPD Vertical Shaft Kiln for trial. Mr. Jena and me along with valuable advice of Late S.N Dutta and Mr. U P chaudhury, at last, could control the gravitational flow so as to obtain desired residence time for clinkerization at VSK. After that we had many success stories in V.S.K

As such Mr. Patel also deserves the credit of success of VSK.

“All reasonable men adapt themselves to the world. Only a few unreasonable ones persist in trying to adapt the world to themselves. All progress in the world depends on these unreasonable men and their innovative and often non-conformist actions”

- APJ Abdul Kalam

(A gist of a quotation from George Bernard Shaw)

My Golden Days at NEIST Jorhat



Dr Nawab Md Dilawar Hassan
Former-CMO

Reminiscing the sweet and cherished past, that was entirely mine some eighteen years ago, I still feel proud and honoured to retrace the sacred path that I had, once, traversed along the course of my life. Treasured moments come alive, with sound and colour, thrills and emotions drowning me with nostalgic sentiments. Perhaps, the physical separation intensifies the emotional connect, sharpens the feelings and deepens the subtle and sublime bonding at a higher level.

Had it not been for my mother's emergency kidney surgery at the Assam Medical College in 1976 and the subsequent need for my presence at home, I would have been an ICMR Scientist at NIN, Hyderabad, having earned a fellowship for PhD through an interview with none other than Late Dr. C. Gopalan, the then D.G, ICMR, in New Delhi. Around the same time, a not so close, junior doctor colleague of mine urged me to apply for the post of a medical officer at NEIST Jorhat lying vacant for some time. Hence, a doctor's son, destined (?) as I was, happened to be interviewed by Dr. G Thyagarajan, the then Director of the laboratory. The majestic ambience with his touch of cordiality amidst serious business and commanding respectful affection at the same time was instantly fascinating. And, thus, I joined as a SRF in Bio-Chemistry—albeit as a part time physician with Rs. 650 a month. The stepping stone—the first aid centre, manned, till then, by a part time physician, a pharmacist, a nursing sister, a dresser and a helper, somehow attracted me and became part of my life for the next sixteen years. Initially, though, I had a trying time for the first ten months cycling around three kilometers from Lichubari, my home, to the Doss and co, every morning to avail the staff bus and, then, back from the same spot, the same way, every evening. Tiffins packed early morning became cold, dull and drab, somehow finding their destined place inside, thus saving me from the “luxury” of a canteen lunch. I had to work in the morning shift only, leaving my room for the senior physician in the next half. Roaming around till the afternoon's return trip was, at times, monotonous and frustrating. In one such moment of despair, Dr. Thyagarajan appeared as a fairy god-mother with her magic wand and advised me to try to convert my disadvantages into advantages. That was indeed, an eye opener and, has, till date, remained the most significant motivator of my life. I plunged into pesticide toxicity studies in the afternoon as a team member of a research project. The pathological laboratory came up a little later, the same year. I finally joined as a full time medical officer on 3-1-77 and succeeded in converting the first-aid centre to its present physical shape with fourteen colleagues including three full time medical officers, two nursing sisters, two pharmacists, two laboratory technicians, one helper, one receptionist, one office assistant, a sweeper and an ambulance driver by 1992. We created facilities for round the clock emergency care, ECG, physiotherapy, minor surgery, occupational and preventive health programs, research activities, a small library, a dispensing unit with medicines, well classified and systematic records of patients' medical histories. Dr. Thyagarajan and subsequently late Dr. J N Barua along with Mr. B P Chaliha were the backbones supporting my initiative throughout this journey. I feel proud to recollect that even my drawing was taken up for the final blue print for the extension. An excellent and co-operative team of colleagues with support, help and guidance from all corners and from all levels helped build up the centre. I take this opportunity to express my gratitude to all of them.

During my formative years, I was fascinated by Dr. Dodgeson of Jorhat Christian Mission Hospital for his dexterity in performing right from tonsillectomy to Caesarean section, cholecystectomy, orthopaedic and plastic surgery, learnt ECG from Wing Commander Dr. B M Prasad MD, DM (AIIMS) of no 5 AF hospital through regular morning sessions and gained valuable help from others at Jorhat and AMC, Dibrugarh.

During those years, I came close to many families from both inside and outside the colony whose warmth, feelings and hospitality enriched my sensitivity, sentiments and happiness to a great extent. Mrs. Niva Barua, the nursing sister's innate virtues of kindness, sympathy and concern, Dr P K Barua's polite endurance, Dr P G Rao's tenacity and hard work coupled with mild manners and a cool exterior, Dr Thyagarajan's masterly craft in problem solving, Dr. Thyagarajan. Mr. A K Hazarika and Dr. Venkataraman's choice of words, Mr. B P Chalihas' prompt reassurance and encouragement through his trademark, 'No Problem', Mr. Pradip Saikia's on field seriousness in our cricket matches were some of the virtues that come to my mind which I appreciated and tried to learn from. In fact, the association with scientists of proven talents from all over the country was highly rewarding for my academic pursuits as well. Dr K R Pillai, Dr H D Singh, Dr K V Raghavan, Late B R Bhuyan, Mr T K Dutta and Dr N C Barua were some of such persons I came across. There was no dearth of people with dedication, simplicity, cheerfulness and a helping attitude—that not only brought accolades to the laboratory but also helped the social life blossom with peace, harmony and happiness. The laboratory's work ethics with strict adherence to punctuality, discipline and orderliness, scope for pursuing and enhancing competence, interdisciplinary team effort, the human reservoir of knowledge and ideas, sophistication in tools application stood out, right after my joining, as a source of constant inspiration and motivation.

Besides, the mini-India' that we had with diverse culture with 'Dhoklas', 'Dosas', 'Idlis' and 'Sambars' to hot and spicy fish curries, Bihu Dances and Dandiyas, Kashmiri folk songs and Rabindra Sangeets entertained all of us during the fetes and especially enthralled the annual club evenings with a packed audience. I used to sing on those occasions and remember the rousing applause I received for my "EK DIN BEEK JAYEGA MAATI KE MOL ..." (a Mukesh number). Veena, my wife, was the cultural secretary of the ladies' club for two terms and enjoyed organizing the events immensely. Both of us, once, sang an old Rafi and Lata's duet to the delight of the crowd. Our children grew up, learnt and performed equally, standing beside this sea of great Indian humanity ("Aei Bharater Mahamanaber Sagar Tire"—Tagore). They had this chance to imbibe the spirit of the multicultural and multihued Indian culture and tradition since childhood. We fondly remember their enterprising cultural evenings arranged in our verandah with benches and chairs on the field for their invited uncles and aunties. They presented colourful and varied items taught by their seniors and aunties drawing loud cheers. We definitely owe a lot to the ambience prevailing during those days. Sports competition for gents, ladies and children in the huge playground on the 26th of January, Late Dr J N Barua's childlike attempt at running in a walking race, a roaring 'Bhim' alias Amal Phukan's accidental and spontaneous 'yes sir' to a bemused late Dr J N Barua, sitting in the front row of a "Bhaona" (traditional Assamese open theatre founded by Sankardeva) audience, Late S K Paik's flute recitals and the comic remarks that kept us in splits, Mr. L Dev Goswami, Mr. Dulal Goswami and Mr. Ganesh Sarma's strokes on the tabla, Mr. Ajoy Borkotoky's soothing notes on the guitar, Mr. Sunti Sarma's exciting beats on the 'Dholak', Late Sunil Kotoky's flowing tunes on the harmonium, Dr R K Adhikari's 'BIMURTA MOR NIKHATI JEN' (composed and tuned by the legendary Dr Bhupen Hazarika) and many more still reverberate in my ears with the same decibels. Our accompanying guest artists, singers from the ladies' club, the gents' club and the child artists assembled in our quarter in the evening for rehearsals. There was a pre-celebration fever that gripped us all. We remember seeing off the guest artists around early midnight on many such occasions.

Although I played cricket regularly in the cricket team, my maiden venture at Swanti Swaroop Bhatnagar Memorial Tournament held in Mysore in 1977 was truly memorable. Besides playing, each laboratory had to present its cultural items in their allotted slots of about forty five minutes. With encouragement and support from everybody, including Dr B K Saikia and Mr J Borgohai, our team leader and team manager, respectively, I penned a panorama of Assamese musical tradition in English, overnight. It started with my Borgeet (a noble number composed and tuned by Sankardeva) followed by Bihu Songs, Zikir (devotional songs composed and tuned by Azan Peer) 'Jhumur' (tea tribes' dances with songs composed in their distinctive dialect), 'Jyoti Sangeet' (Composed and tuned by late Jyoti Prasad Agarwala) and ended with the famous 'SAGAR SANGAMAT...' ('in the confluence of

the seas...’ composed and tuned by Mr Bhupen Hazarika). These were interspersed with translations and commentaries on Borgeets, Deh Bicharar Geet’ (classical philosophical songs) “Ainaam” and “Biyanaam” (sung at marriages), Bihu dance, saint Azan Peer (or ‘Fakir’ from Iran who settled in Assam and preached Islam), the revolutionary Jyotiprasad and Bishnu Rabha and Bhupen Hazarika’s immortal creations. Most of us, including Mr. B B Chaliha, Mr Pradip Saikia, Mr. Basanta Barua, Dr Naren Dutta, Mr Sunti Sarma and myself sang either in front or from behind. Mr. Kartik Dutta roared with his thunderous drum beats and someone played the cymbals. Mr. Ikram, Mr. Sunit Sarma, Mr. Amal Phukan, Mr. Aswinta Bhuyan, Mr Jogen Gogoi and perhaps a few others excelled in their attractive, colourful and quick shifts as village youths with Dhoti and Gamocha for Bihu dances, short, saree (bed covers, to be true!) clad damsels dancing rhythmically to the tunes of ‘Jhumur’ and, then, wearing caps, churidar and kurta for singing Zikir. The entire presentation was simply scintillating and captivating. Many from the audience came running to the stage, at the end, to virtually lift us up with joy. Praise and adulations poured on us from all quarters even long after the tournament. There were several occasions and requests to enact the same at our laboratory’s auditorium. However, it was difficult as no one was willing to pull out all the stops in front of the home crowd.

As a vice president of the club, I remember arranging talks like “Child health and nutrition”, “building designs and precautions, “dental health” etc. in a few club evenings, a music competition, games and sports, fancy dress competition etc during the year. Added to these were the regular inter-departmental cricket matches where we participated with great enthusiasm and excitement during lunch breaks.

Dwelling on the cultural front brings me another remarkable incident. Besides meeting stalwarts like Late Prof. Nurul Hasan, Late K R Narayanan and Mr. Shivraj Patil among others, I had the privilege of listening to Late Dr. Raja Ramanna’s exquisite and mind blowing presentation of classical European concerts on the Piano, in his truly amazing and absorbing style, in the local gymkhana club, sometime in the eighties. Some one, then, proposed my name for Hindi songs. As I started an old Mukesh number, Dr Ramanna came closer and joined me in singing with his arm around my neck! I still shiver with joy and satisfaction whenever it flashes across my mind.

The harsh reality that the golden period, where I spent the prime of my youth, got married, had children and saw them grow up, grew personality and professionally, much like the beloved clinical centre, my dream project, is slowly drifting away from me, never to the fullest—satisfies me beyond worldly gains.

Thank you, Late Dr Chow Suklengmung Gogoi, my dear junior Colleague for that timely information of yours - about the vacancy! The institute and its people shall always be with me - till I am alive.

Research laboratory, as i first saw it...

I spent the best part of my life (from 1963 to 2001), about 38 years, in RRL Jorhat. It was on 6/6/'63 that I boarded the train from Cannanore (now Kannur) in North Kerala on my way to Jorhat without actually knowing where Jorhat was situated. I only knew that it is in Assam. My interview for the post of civil overseer was held in CFTRI, Mysore. In those days there was no direct train from Howrah to Assam. I took half- a -dozen trains before reaching Jorhat on 12/6/'63 evening. My route was something like this: Cannanore-Madras-Howrah-Barauni Jn-Gauhati-Mariani Jn-Jorhat Jn. Till reaching Mariani, I did not know where Jorhat was. It was some army men who directed me to Jorhat. I took a cycle rickshaw and asked the rickshaw-wallah to take me to Research Laboratory. He did not know where it was. He instead took me to the labour office, mistaking it to be "laboratory". Someone in the labour office directed the rickshaw-wallah to Dr. DN.Bordoloi who was a staff at RRLJ. He then took me to the RRL truck which was parked near Doss & Co which was the staff bus during that time with some benches placed inside. There I met Sri. PP. Bhattacharjee, Sri GP. Borah and Sri. Kamaluddin Ahmed, who was the driver and they took me to the present RRL colony and arranged my stay with Sri IP. Jauhari, Senior Draftsman, in Qr no. G-17. Before moving to this colony RRL J was functioning from the Civil Hospital campus. In the colony there were a few single-storied quarters, viz, 'A-B' type (presently Director's Bungalow), 'C II' type (opposite to the lawn tennis court, near the Guest House), 'D' type (present E type near gate no.4), 'E' type (present 'D' type which is in front of RRL clinic, 'G' type (present 'B' type) and 'H' type (present 'A' type). The roads were still under construction. However, water supply and electricity were available. The whole laboratory campus, the administrative building, present clinical centre and co-operative stores had not come-up.



MKC Nambiar
Former Scientist

The next day i.e. 13/6/'63 I reported for duty before Sri AC. Khazanchi, who was the Head of Construction. His designation was 'clerk of works'. In fact there were two engineers in charge of construction, one for staff quarters (Sri .AC. Khazanchi) and the other for laboratory building (Sri Moolchandani,a civil engineer). Our first director was Dr. Col. BN. Mitra. Our first administrative officer (AO) was Sri AW. D'souza, who left just before my joining. The first accounts officer was Sri JC. Bhattacharjee and section officer was Sri PR. Shilpkar. Dr. Mitra was staying in a single quarter 'E-2' the present 'D-2'. Lalmoni Sharma (Lallu) a Nepali used to cook food for him. I think there was less than 30 staff when I joined. My colleagues in the construction department were Sri AC Khazanchi (Head), Sri MV. Krishnappa of Mandya, Mysore, Lekhraj Dua of Delhi (both civil overseer), Sri MP Kalwar, who later became the SO of RRL Jorhat, Sri M Dasgupta (electrical overseer) and Dhanbahadur Sonar (Khalasi). Other staff who joined the department later were Sri UN Sinha as Senior Scientific Assistant (SSA), Sri NK Johri, SSA and Sri Kameswar Saikia as civil overseer. We had started building up a strong team and the director even refused to accept my resignation when I got a position at IIT, Kharagpur. Sri TR. Mahendru, New Delhi, was the architect of RRL Jorhat and the main contractors were M/s Bridge and Roof Co, Kolkatta, Balmer & Laurie, Kolkata, Bhagavan Singh and Co, New Delhi and Ganesh Electricals, Gauhati. It was Dr. Mitra who instructed our contractors, M/s Bridge and Roof Co, Kolkata to construct the Shiva temple in front of the Laboratory

After Dr. Mitra moved to Lucknow in 1964, Mr. E Ehsanullah was deputed as Assistant Director in-charge of the laboratory. I think he was working in Nigeria as civil engineer and had a Danish wife. Once somebody typed an anonymous letter to him and he wanted to find out the person behind that. He used to roam at night with Sri NG Gaur, the photographer. Once, around midnight, he saw light in the civil engineering office and came to investigate. I was doing some office work and he asked me what I was doing at this hour. I replied that I am the civil overseer and I am busy with the supervising work during the day, so I am updating the measurement book now. Next came the question "are you the contractor's man?" I replied "no sir, I am your man". He wanted to find out if I could type and asked me to do so.

But fortunately I did not know how to type. I don't recall whether he finally succeeded in cornering the culprit. In those days, the work load was too much as the measurements of buildings were recorded in feet and inches and not in metric system. Further, using calculators was not a common practice.

After completion of the Engineering Block, a separate division (Applied Civil Engineering Division) was formed for R&D work and testing of building materials. The division was headed by Sri YC. Gokhale, Senior Scientific Officer, Grade I (now equivalent to Scientist C). Later, I also became part and parcel of the department along with Sri KL. Arora, Sri UN Sinha, Sri BL. Parasher, Sri BR. Biswas, Sri TV Ganapathy etc. All of them left RRLJ after a few years. I was the only civil overseer who remained at RRLJ since its inception and till my retirement. I was fortunate to visit all the seven NE states and Sikkim as part of my official assignment. I was in Sairang, an interior village in Mizo Hills district (now Mizoram state) for three months in connection with field demonstration of artificial stone aggregates, a patented process of our department, to engineers of Border Roads Organization (BRO). I had also been to Arunachal Pradesh at the originating spot of the great Brahmaputra River in Lohit district, under the tunnel of Loktak hydroelectric project, Manipur, inside coal mines of Assam and in the oil fields. The Applied Civil Engineering Division developed many other processes also such as light weight aggregates, water filter candles, ferrocement roofing elements, paddy husk and hollow bricks, low cost housing (bamboo Crete) etc. The department had undertaken lot of consultation work throughout NE region and our major clients included MES, IOC, Numaligarh refineries Ltd (NRL), ONGC, Oil India and BRO, just to name a few.

My superannuation was in April 2001 as Scientist EII. I still get frequent calls from my friends and their families. The knowledge and experience my family and I got from Assam were so invaluable that no college or university could impart. Once, a poet wrote on Kashmir that paradise is there. Likewise I would love to put on record about Assam and the NE that the paradise is here and it is here-with pristine nature and with very loving people and culture. To sum up, I went to Assam as a Keralite but returned as an Assamese (as I spoke in my farewell speech in 2001).

The secret of Success is to do
common things uncommonly well

Sweet memories of the past



Dr Robindra Nath Baruah
Former Scientist F,

I joined RRL-Jorhat on 5th January, 1970. In the very day of my joining RRL, I was called by the then Director Dr MS Iyanger and asked me where I would work. I told I wanted to work in Organic Chemistry Division. Then he asked me what type of work was going on in Organic Chemistry Division? Since my interview was held in Calcutta and this was my first visit to RRL, so I could not answer. He told me to see the divisions. Next day I met the Director and told him about the works of the divisions. Then he again asked me, did you see the pilot plant and what type of work going on in the plant? I could not answer. Then he again asked me to come in the next day. Then I got angry and frustrated and decided to resign. Knowing this, one member of organic chemistry division insisted me not to resign. So in the next day with great dissatisfaction I met the Director and told him about the work going on in the pilot plant. Then only he allowed me to work in Organic Chemistry Division. After sometime when I got cool then I thought myself that whatever Director Dr. MS Iyanger did with me was right. My anger disappeared and my heart was filled with regards to him. I had sweet memories of working with seven directors (Dr MS Iyanger to Dr PG Rao) and many scientists such as Dr KW Gopinath, Dr A Ghanim, Dr RK Mathur, Dr. BK Paul, Dr RC Rostogi, Dr RP Sharma and others in my own Divisions and with several employees of Chemical Engineering Division in process developmental works. Very memorable were those days. After Dr G Thyagarajan joined as Director of the laboratory, the then Organic Chemistry division was divided into three. Dr RP Sharma and I started the Natural Product Chemistry Division, and thereafter other members started joining this Division for doing their Ph.D. Under the supervision of both Dr G Thyagarajan and Dr RP Sharma I carried out my Ph.D. work and obtained my Ph.D. degree from G.U under the guidance of Dr G Thyagarajan. I earned good experiences working with them. A homely feeling among the employees was prevailing in the laboratory. Various games like volley ball, foot ball, cricket, etc. were played in the laboratory. Every year inter block competitions were held and trophies were distributed. I also played some games and enjoyed a lot. All employees including Director witnessed the games and enjoyed a lot. Very sweet were those days. God said “among students I am time”. Really time is very powerful and cruel which has separated us from each other but I become nostalgic to those sweet memories. Long live our sweet memories of the past and long live our RRL (NEIST) Jorhat. Let fragrance of success of our NEIST spread all over the world.

“The future belongs to Science and to
those who make friends with Science”

- Jawaharlal Nehru

Statement of experience



H P Pathak
Former Administrative
Officer

I WAS an U.D. clerk of customs + CE department which released me to join RRL-Jorhat as cashier in 1962. After joining I observed that a very few persons in different categories were in existence there and the office was set up in a building of the Jorhat Civil Hospital, which was under construction. After some months the office was shifted to a building in Dohabora Chuk in Jorhat Town. The name of the building was “Dhiren Kutir”. The construction of the buildings meant for office, Laboratory, quarter etc. in the present site was going on with full swing. The main contractor was M/S Bridge and Roof Company. After some months, the office was shifted from “Dhiren Kutir” to a building in RRL till the construction of the office building was completed.

At the time of my joining, the Director was Dr. B N Mitra and A O was Mr. A W D Souza. Before shifting the office to RRL site Dr B N Mitra and Mr. Souza left the Laboratory. Then Mr. E Ashanullah as Asstt Ditector and Mr. A P Jain as A O Joined. Mr. Ashanullah left after some months. After some months of gap Dr. M S Iyenger joined as Director. He was in my opinion very social, and motivated the Scientists of different disciplines to research and development.

After some years Dr. Iyenger left and Dr. G Tyagarajan joined here as Director. In my opinion he was social and dynamic in monitoring the research and development works done by the scientists. Many of the processes found to have commercialized. During his period I was sent to Itanagar to take over 20 acres of land from NEFA (presently Arunachal Pradesh) Govt. for construction of a Branch Laboratory. Accordingly I did it and handed over a cheque of one lakh rupees to the Ex. Engr. of CPWD for construction of a barbed wire fencing around the plot.

Now I would like to state that in different disciplines of research works different group of staff are engaged. Success depends on the devoted services of all the workers including Scientists, Technicians, Sweepers etc. So, credit goes to all the members of staff of that group.

I retired in February 1987, when Dr. J N Barua was Director. The staff members were coming from all the States of India, so I could automatically mix up with each one and know the customs and manners of people of India coming from different states.

Presently, Dr. P G Rao is holding the charge of Director. During his period the name of this Laboratory is changed from RRL-Jorhat to North East Institute of Science & Technology, Jorhat. It was done for welfare of this organization. Further, he helped the CSIR Pensioners Welfare Association, Jorhat in all possible way. He loved the retired persons who rendered their services to the Laboratory. I am personally grateful to him and wish him a long life to serve the people.

Now, I wish successful performance of the Golden Jubilee Celebration organized by the present Director of NEIST—Jorhat.

OH! RRL (NEIST)!

A Glimpse at treasure of reminiscences



P P Bhattacharjee
Former Controller of
Administration/Deputy
Secretary

The most eventful and ever memorable days that led my way to RRL. It came so suddenly—waves of rude shock engulfed the entire nation. The top politicians were flabbergasted. It came like a cyclonic storm from the far eastern corner of our border which washed away the trust and belief from the heart of the politicians, the policy makers. The whole nation and top leaders in particular were in fact stunned. The serenity of the nature, the calm and quiet peaceful flora and fauna were severely jolted.

The snowcapped mountain melted at the smell of gun powder and its tears dropped on the blood-soaked ground. Thousands of petrified colourful birds made their way towards the sky flapping their wings even at night. Unprepared and underarmed Border Guards and the Indian Army were caught by surprise.

Atrocious Red Army advanced, killing mercilessly the stunned Indian Army. Tawang, Bomdila fell. Brave Indian Officers and Jawans even fought hand to hand. There was no supply – no reinforcement – no strategy to continue the resistance. No Commands to lead. Hapless, surviving demoralized Indian Jawans left their post throwing their obsolete .303 rifles and retreated only to be killed by the advancing enemy. The enemy came upto Chakko. A truckload of Assam Rifles, newly recruited young Jawans that was sent as reinforcement from Tezpur were killed in the truck itself by shooting from all corners from the occupied strategic hilltops. Ultimately bowing to the world leaders’ vehement protest and report of inflow of America’s modern weapons including 155 cm caliber mountain guns, the enemy retreated to the border displaying a big banner written in bold red letters—Peoples Republic of China.

October 1962. A black chapter in Indo-China relationship, Hindi Chini Bhai Bhai, the bond of relationship slogan that was trumpeted was replaced with Hindi Chini Bye Bye. The mantras of “Panchaseel” was chilled and buried deep in the Himalays.

While the enemy advanced towards Chakko unchallenged, there came the announcement from the district administration to evacuate Tezpur. There was only one way of escape route—by crossing the Brahmaputra. There was no bridge over Brahmaputra. Thousands of panick - stricken people thronged the Tezpur Jahaj Ghat with minimum belongings. One old ferry was pressed into service. People jostled to board the ferry. There was near stampede. Some people crossed the river with country boat taking great risk. The previous night while I was standing on the road in order to get some latest information from the elders, I almost collided with a fleeing Jawan in bicycle at utmost speed in the darkness with a strapped .303 riffle on his back shouting “Bhago Bhago”. Like other people, myself with my elder brother also crossed the Brahmaputra.

I had a two months old appointment letter from RRL in my pocket. I discussed it with my brother and decided to come to RRL. During my journey to RRL I noticed that the concrete “mile posts” were defaced ostensibly for the advancing enemy’s disadvantage.

My journey to RRL began and there was no looking back. In a pensive mood whenever I visit down the memory lane I recollect those bygone days, how my destiny to RRL emerged and became a core member of RRL family right from its spade work as a result of Chinese aggression and consequence upon evacuation of my home town Tezpur that set my road map to RRL, Jorhat.

If I sieve my reminiscences, this event is the sweetest and ever memorable.

Whenever I happen to cross this temple, mystic aura of nostalgic feelings fills my heart and my mind, travels at a rapid speed to catch those thrilling moments. Every event of that day appear in my eyes and I feel chanting of “Jai Jai Mahadev, Jai Siv Shankar” ringing in my ear.

1963-64. Col Mitra left and E Ehsanulla with engineering back ground took over charge.

He was interested in playing cricket. One day he came to the field with his Belgium wife and wanted to bat. The new ball with its glaze still was in my hand. He did not wear pad. I was bowling slow googly. He told me to bowl fast. The third ball hit him on his abdomen. He massaged the area as I observed pain reflected on his face. I was quick to apologize. He was bent upon to bat. I threw a few deliveries at slow medium pace. He did not want to show that he was scared against fast delivery and urged me to bowl fast although I was very contractile. The first delivery he blocked with straight bat. The second one was blocked not by the bat but by the toe of his heavy leather shoe and the ball almost touched his chin on its rebound. The third one was a bouncer that whistled past his shoulder. The sixth one hit him hard on the upper chest and collar bone. He threw the bat and sat down on the ground in agony. Dr. Vadalkar (the then Information Officer) looked at me perplexed. His bemused Belgium wife looked at me whether with veiled antipathy or with a Monalisa smile I failed to surmise. He was rushed to the hospital and came back with bandage strapped on the injury area. My colleagues commented “tomara naukri gaya”. For the next 15 days I avoided facing him. B N Borgohain who was behind the stamp with gloves was also hit on the nose by one of the flying bails and was bleeding profusely.

Oh! What a cricket..! Whenever I looked behind my heydays at RRL I can still feel the crooning of the few spectators present there at the time of this cricketing episode. What a memorable piece of funny incident in my treasure of reminiscences that gives me simple pleasure!

Meantime, Dr M S Iyengar was appointed as Director. I wrote a personal welcome letter to him emphasizing the urgency to assume the charge as early as possible. A week after his arrival, I organized a public ovation to him in Dhapkata Primary School, adjacent to RRL

campus where Deveswar Sarmah presided. Needles to say that Deveswar Sarmah who was finance minister in Assam Cabinet was instrumental in establishing RRL at Jorhat. I remember discussing many issues even by sitting together on the concrete bank of the pond at RRL Guest House. We organized a picnic party. He travelled with us in the same bus. During our sojourn through the jungle of Saraidew, the picnic spot, a few of us stumbled upon a make shift country liquor factory ostensibly hidden from the Excise officials, with a request not to reveal, the person manning the liquor business gave us two bottles of country liquor made out of sugarcane juice. I offered Dr. Iyengar also a peg and he enjoyed and applauded the various kinds of songs sung by S C Chatterjee (Glass Blower Section) and others. Sometime he used to play table tennis with me hours together to my discomfiture. Playing chess with him was a great fun. For the first time when he invited me to play with him in the club he lost within approximately 12 moves. He felt so embarrassed that he quickly left the club without a word. Since then I was careful enough to see he wins. “A pragmatic ploy”, commented some of my friends.

Dr Iyengar entrusted me to organize cultural show on the occasion of important meetings and on visit of prominent dignitaries. For the first time a Directors Conference was held at RRL. As usual Dr Iyengar called me to his chamber and apprised me about organizing a cultural show of one and half hour duration. He also emphasized to bring reputed and professional artists to present before the Directors of 38 National Laboratories/Institutes and other august personalities. Subhalaxmi Baruah’s name, the great exponent of Bharat Natyam struck my mind. Myself and Dr R K Mathur went to Sibsagar to meet Phunu Baruah and Prafulla Baruah for this purpose. I could convince Subhalaxmi Baruah and Prafulla Baruah and accordingly they came and arrived at my quarter

G-24. Subhalaxmi's elder sister who came from Germany also accompanied her. Along with other variety of program, Subhalaxmi exhibited a stunning solo dance recital in Bharat Natyam style with great applause from the audience. After a month or so I met Prafulla Baruah at Rowrah Airport who came there to receive Sarod Maestro Pandit Amjad Ali Khan and told me about their engagement. I was so excited to meet Pandit Amjad Ali Khan.

Presentation of Bharat Natyam dance recital by Puspa Bora the other great exponent with her daughter gave a performance of Kuchipudi dance in other occasions also impressed the audience spellbound. On two or three occasions troupe from Songs and Drama Division from Guwahati could mesmerize one and all. Once I could also bring Parveen Sultana, the great vocalist and "Tansen" awardee and introduced to Dr Iyengar for a proposed cultural function. But the show was cancelled.

I would like to mention below some of the correspondence between me and Dr Iyengar by e-mail while I was in Kolkata. July, 02, 2008 with a caption Reminiscences of down the memory lane. I wrote-

"It was nice to talk to you over telephone. I paid a visit to RRL on 9th June, 08 after a gap a three years. During my course of interaction with my former colleagues I expressed my delight at noticeable progress being made after taking over charge by Dr P G Rao, my former colleague with whom I had had good report. I must say that your dynamic leadership and vision invigorated the work culture and could infuse enthusiasm... I must appreciate your approach that you were always eager to discuss some of the issues relating to progress and development even with like minded junior staff. I was lucky enough to be one of such guys. Your effort could bring RRL's exposure to national and international arena etc. etc..."

In reply Dr Iyengar wrote in his e-mail dated July 07, 2008 before his sad demise. Here are some of the excerpts.

"I was delighted and deeply touched to read your e-mail. I remember vividly the feed back that you use to provide that helped me greatly. You were the person to whom I assigned the task to arrange cultural shows on important occasions. I was able to make some contribution to the building up of RRL and bring its work to national and international attention—it is because of unstinting help and support that people like you gave me. The talent and innovative skills were all there, I only provided the necessary direction for those skill to take root" etc. etc.

After Dr Iyengar, Dr G Thyagarajan assumed charge. Both of them were deadly committed for progress and development and could instill scientific temperament. Like Dr Iyengar, Dr Thyagarajan, a great elocutionist in any topic, also gave me responsibility of arranging cultural show on important occasions. I could feel both of them had sense of artistic feeling. The big cultural show that I arranged on the occasion of Bhatnagar Tournament held at RRL during Dr Thyagarajan's tenure was very memorable to me. Besides managing the stage, I was the announcer of all the cultural shows. At that time the word "Anchoring" was not introduced. Besides other galaxy of dignitaries, many Directors from other Labs were also present. After concluding my vote of thanks, I heard the thumping sound from the august audience. A K Hazarika was the first to congratulate me for organizing the show very successfully with a comment "the show was very impressive including yours"

These events associated in organizing the cultural functions were the sweetest reminiscences during my tenure at RRL that reverberates in my film of remembrance glued in my heart that I wish to cherish till the end.

In came Dr J N Baruah as Director and latter Dr A C Ghosh. Flurry of development activities with major contribution on scientific field continued that was pioneered initially during the tenure of Dr

M S Iyengar, Dr Thyagarajan as I could see.

When I last visited NEIST (RRL) during December, 2010 I was so impressed to note the elite transformation in all round progress and development with incredible scientific contribution that created its name and fame globally. Thanks to Dr P G Rao, the Director, for his bold, audacious, aggressive and dynamic leadership with a vision and innovation, a rare quality akin to other greatest leaders in big and internationally reputed scientific institutions.

When I noted the changes and its transformation to my greatest delight, I remembered those:-
“Change is the law of life. And those who look only to the past or present are certain to miss the future” JFK

“Not everything that is faced can be changed, but nothing can be changed until it is faced” James Baldwin.

Dr Rao faced it and changed it with a different mindset. An aggressive attitudinal and diverse meticulous planning with probity that invigorated the work culture!

NEIST has already stepped into a golden era during its Golden Jubilee Celebration. The cogent, pragmatic and vignette manifestation laid down by NEIST would definitely result to a fruitful accretion.

I want to conclude with a few excerpts written by Dr Mashelkar, the then DGCSIR which was published in the Economic Times sometime during 2008.

“21st century is the century of knowledge. However, knowledge without innovation is of no value. It is through innovation alone that knowledge can be created. It is innovation which converts knowledge into wealth and social good.

We need change of mindset. Innovation refuse status-quo, they convert inspiration into solution and ideas into products. Building such innovations will require an all pervasive attitudinal change towards life and work—a shift from culture of drift to culture of dynamism, from a culture of idle prattle to a culture of thoughts and works from difference to confidence, from despair to hope.”...

What I believe with conviction I can add that element of inquisitiveness is allied and inseparable to scientific thoughts and temperament. It works as a catalyst in the process of scientific discoveries.

“The higher the proportion of creative leaders in a nation, higher the potential of success of visions like “Developed India”

Random Memories



N K Barbaruah
Former Administrative Officer

While writing this reminiscence, I was just trying to recollect as to when I wrote something last, and as I could just faintly remember, I wrote, in all probability, a story. This particular thought kept my mind so occupied those days that it gradually took me back to the past and I became nostalgic to my days of early 80's. Those were the days when my creative adrenaline used to have its unprecedented boost.

I'm talking about an era when the NEIST campus (the then RRL campus) had witnessed some of the most culturally rich societies. Those were the days of good music, drama, dance and fun... there was no TV and the only source of fun and amusement were our Community Centre and the Recreation club. Besides the games like bridge and housey, we used to enact dramas frequently. That was the time when I used to write scripts for dramas... stories full of emotion and fun. At that time I also used to act in the dramas. My friends came to join the drama teams. We used to enjoy every moment of the then RRL campus. Drama would always give us creative satisfaction as well as fun. It would also give us the opportunity to share each other's happiness and sorrows and also made us stay connected.

Time had gone by. There's been a lot of reminiscing of late. For those old enough to remember, memories of drama rehearsals, playing dramas, winning competitions and enjoying the win by playing bridge with friends will be forever etched in our minds.

I remember once I was playing the role of a lead character of one of my self written drama (one Act Play) named "**Chanda Patan**". It was a summer evening of 1985. The drama competition was organized by the then RRL staff club in the RRL auditorium. The first play was ours. Everything went well till I appeared in the play. I appeared unusually, from behind the audience and ran towards the stage to join the other actors. People were confused and they didn't have any clue what was going on. They didn't realise that my appearance among the crowd was a part of the drama script. I heard someone saying "who is that spoilt sport... throw him out?". I felt like laughing, but I kept mum and carried on my performances. That was one of the wonderful performances that I ever did in a drama and that to a drama that I had written. It was a story about the relationship between two brothers. A story which stroked the core of the hearts of every audience and I saw tears in the eyes of many people.

Now I wonder, I could bring tears to many eyes ... my stories would bring smiles in many... why can't I write something now. My sons and friends always encourage me to write again. But I hardly care to write now a days.

I pretty much gave up writing altogether. If you'd've asked me, I'd've said I "didn't have time." And I'd've been lying – to you, and to myself. What I didn't have was the necessary courage and drive. I became one of those people who spend much more time thinking about those golden days than actually writing. Actually I miss my old group members, of which some are no longer alive. For whatever reason, every writer or dramatist takes a break sometimes. But I know from my own experience and from my friend's testimonies, that the longer the break, the harder it is to start writing again. I know it will be harder for me to write again but this is an attempt... an attempt to tell an old story. This is an attempt to revive my old passion – play writing... and this is an attempt to address my friends to help revive the dying art—live drama... come on friends... let's do it once more time. ♦

My Golden Days at RRL



G P Borah
Former Documentation
Officer

I was looking for a better job in a good environment for a long time. I served with a British for sometime and I learnt a lot from him about style of working, punctuality and discipline. Before joining RRL Jorhat on 08.01.1962, I served in D.C's office at Tezpur for more than 2 years. There I had an opportunity to work with an ICS Officer. When Dalai Lama took refuge in India, he came directly to Tezpur. Mr G L Nanda came there as Officer-on-Special Duty (OSD) to take care of the refugees settled in Missamari and I was attached to him. I was not happy with the atmosphere or the work environment.

I was delighted much to join here because it was a society of learned people. I was given here dual responsibility, working in the office and the library. I was not having any idea or knowledge about the subject. Jorhat Civil Hospital's TB ward building was office of the laboratory and adjacent to it was an Isolation ward packed with bundles of old journals collected from sister laboratories. But within two months time I could arrange them title wise and then volume or date wise. While doing my job, I learnt every issue has its Vol. number, Issue number or Date of issue for weeklies.

With my practical life - I came to conclusion that "One can learn working with hand and brain together". When Shri T N Pathak joined the RRL Jorhat as Librarian, accession of books on Standard register began with stamping and numbering. I learnt Cataloguing from him.

The office and staff members were asked to vacate immediately during Chinese aggression. In December, 1962, we shifted to "Dhiren Kutir" at Dohabora lane. Again in March, 1963 the laboratory was shifted to RRL campus. Office, stores, library were housed in residential quarters and laboratory started in Director's Bungalow.

A vicious circle hatched a conspiracy to shift the laboratory to outside Assam on the plea of proximity to China and vibrational disturbances caused by Mig fighters in seismic surveillance. An important Inland letter was intercepted with the help of Shri Akan Sarmah who used to carry Daks to and from Head Post Office. That letter which was a proof, handed over to Late Jana Nayak Debeswar Sarmah, the person responsible to bring the laboratory to Jorhat. He took up the matter with Bimala Prasad Chaliha, the then Chief Minister of Assam and Chairman, Executive Committee, RRL Jorhat. The dream was "Nip and Tuck". Dr B N Mitra, the then Director had confidence and loved me because I used to dress smartly and sincere to my work. One day he came to the library house in E-Type quarter near Gate No. 4 along with Shri T K Dutta, Head, Geoscience and asked my Incharge whether the book "Geology of India" by Wadia is available or not, My boss replied in a confused manner..... Yes sir, No sir. Director told him "don't talk like a civilized s....., say yes or no". Then he (Director) looked at me and said "Can you find it out". I took hardly two minutes to find out the book. Dr Mitra, Director was very happy at my promptness and thanked me. I hardly completed two years, I was promoted as Senior cataloguer in 1964 just before his departure. Though the laboratory shifted to the present campus in March 1963, the quarters were not ready and all the staff members were ferried by a 'Bedford' truck in the morning, again for lunch and afternoon from town to laboratory. The truck had tarpaulin on the top but no sitting facility. The Bedford truck had given us enormous services which cannot be forgotten. This truck was used for carrying materials from the town, railway station, taking staff to different places for picnic every year. Dr M S Iyenger, the new Director joined the Institute in the late 1964. The activities had begun only after his joining, in true sense the Institute derived momentum. R&D work began. Dr Iyenger was definitely an able planner, administrator with vision. One must admit that the laboratory came to life during his tenure.

Dr Iyenger was not only devoted to R&D activities but also took interest in social activities. The Staff club, the Recreation club, Co-operative stores, Staff Club Library, Credit & Thrift Society came up during his tenure. He also took interest in sports and games. Interdepartmental Football, Volley ball, Cricket competitions began apart from Badminton. I served in the Co-operative stores from 1964 to 1973 with a token remuneration. After closing the Co-operative stores at 9.30 pm or so, hurriedly prepared food and ate, then went to club housed in the Co-operative building and play carrom upto the midnight or so. We never used to lock the doors of our quaters but there was no case of theft, etc. During the period of Dr Iyenger, I had to face two confrontations with him. The first one was when Tilak Ch Saikia suddenly became ill on his return from the laboratory in 1966 and took him to Jorhat Civil Hospital immediately where he was declared dead. We had to wait in the hospital as well as at his residence upto the late night till his relatives arrived from Nagaon. Before the dawn Saikia's body was taken for cremation by the same 'Bedford' truck. On return from the cremation ground, I saw that the laboratory was running as usual. Immediately, I met Director at his office and requested him to close the laboratory for the day as a mark of respect to the departed soul of Tilak Ch Saikia. Director banged me "don't come with such proposal, I cannot stop work." I sharply replied "You don't have humane feelings, you don't want to respect a departed soul of a scientist who worked for the laboratory sincerely." Then he became calm and told me "Let me see." And as a result, for the first time a condolence meeting was held at 11.45 am.

In the second instance during 1970, I took initiative to form an Employees Association and distributed Membership Entry forms among our staff members. One day Dr Iyenger called me to his office and asked "Who had circulated these forms?" Dr J N Baruah was also present at that moment. "I distributed the forms", I replied with a self confidence. "Do you know what action I can take against you for using office stationery?" I got frightened but replied "Who told you that I had used the office stationery, I did it outside." Then again he questioned "Why you want to form Association?" I elaborated how in cases of promotion, favouritism and discrimination being done. Dr Iyenger fired at me - "Set fire to your laboratory, the Newspaper is looking for headlines, the doors are open for politics, but I have come here with a purpose, leaving my family, I am not appointing any of my family members". I politely said "Sir, I am in a humble position, you are Director, today you are here but tomorrow you may not be here, I as a local person I will be here till my retirement and I have much more responsibilities - affection for this institute." Thereafter, Director formed a committee and promoted more than 50 staff members in a lot. I am fortunate to get a promotion after long nine years. Shri A K Hazarika helped me in this promotion. Shri Hazarika was also my boss, taught me well because of which I could stand on my feet.

Though, I have much more to reminisce, I don't want to make it more lengthy. Apart from serving long 10 years in Co-operative stores, I was asked by Dr J N Baruah to take charge as Secretary of the Co-operative Stores when it was in a bad shape in 1979. I served two terms 1979-1980 and 1980-1981 respectively. During my tenure I made substantial profit and I was awarded Rs 500/- each year. I was omnipresent in all matters of staff like medical need, accident, death and in other distresses.

During the time of Assam Agitation against foreigners, I was President of Employees Association and came in contact with the organizers, took a part in meetings and programmes. I took lot of care so that our staff members were not humiliated during the agitation.

On the night of March 07, 1983, the Police and BSF personnel cordoned off both East & West boundary walls of the laboratory, then entered campus, took me to their custody, then Dr J N Baruah, Dr Dinesh Ch Goswami, P C Tamuly, Sada Borah, Debeswar Borah, Manik Borah, R K Saikia along with his two sons all were put in a bus and took to Jorhat Police Station just before dawn. Mr Tamuly, all the three Borahs, Saikia's two sons and myself were put in the Lockup. The rest three were allowed to sit. Around 3 pm, we were taken to CJM court. The court was packed with our staff members. After half an hour the order came out that our bail petitions were rejected and we were

immediately taken to jail. All of us were hungry. Our colleagues, relatives carried food for us and we shared, had our lunch inside the jail. By the time an order came for release of Dr Baruah, Dr Goswami, Shri P C Tamuly and Shri R K Saikia. After taking our food the rest of us were taken inside. On March 09, 1983 Mr I Ikram joined us in the jail. On March 21, 1983, the District Judge came to the jail campus and called me to the office of the Jail Supdt. There, he talked to me for more than half an hour and next day all of us were released on bail. By the time our suspension orders were issued. However, in the second week of April, 1984 the cases were quashed and we were allowed to join our respective duties. While in jail I had to come across some youths who were indulging in terrorist activities. They also became very friendly with us. This has helped a lot. There was no extortion, abduction in the campus when there was disturbances everywhere but our campus remained peaceful.

While I was under suspension, the serpentine lake was full of jungle. I requested our Director to provide me some causal labours to clean the lake. I got it and started cleaning the jungle, dewatering the lake by pump, removing mud, etc. It took about 6 months to complete and convert it to a Fishery. A society was also formed to maintain this fishery. After my retirement this fishery gradually died down.

I have forgotten to mention about the “Shiv Temple” situated opposite to the laboratory. One day Dr B N Mitra, the then Director asked me to call Shri Indra Baruah and Shri Padma Kanta Bezbaruah who were living opposite to the laboratory. I took them to Director’s office. Director asked both Baruah and Bezbaruah if they could provide 2 katha of land, then he would build a ‘Pucca’ Temple. Shri Padma Kanta Bezbaruah gladly agreed to the proposal. Dr Mitra asked me to collect money from the staff members and to purchase all the materials from the market required for the ‘Puja’ performance. Shri P P Bhattejee and myself collected a total of Rs 550/- and spent Rs 405/-, the remaining balance of rs 145/- was handed over to Temple Management Committee. The construction company M/s Bridge & Roof Co. constructed a RCC Room for the “Shiv Temple”.

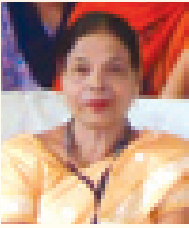
I enjoyed my life, gave my entire youth in serving this institution and RRL family. I got lot of self exposure through this institution, specially met President of India and then met Rajib Gandhi, the then Prime Minister of India in 1988 at Jorhat and at New Delhi in 1989 in connection with Special Duty Allowance which was denied and finally able to get it.

We were so happy that RRL Library has been recognized as one of the best library not only in the N E Region but also in the country as a whole. I got appreciation letters from several prominent Professors from IIT, Kanpur, Jadavpur University, Director of Chemistry Department, German University, a Post graduate student from Sweden.

I feel very proud and fortunate to work in NEIST, Jorhat.

LONG LIVE NEIST

Recollections of my Golden Service Period



Dilara Begum
Ex Incharge, Knowledge
Resource Centre

During my schooling, while I visited RRL (NEIST), the historical prestigious institution of CSIR established in North East Region of India, I was overwhelmed as I dreamed of doing service in this institution in future. After completing my graduation I appeared in an interview in this institution and was selected. Subsequently, I joined as JLA in the department of Library and Information in 1972. I was gaining many experiences in different stages of my service life and also learned many new things. RRL is not only a service institution, but also a big education institution. Because it provides opportunities to gain experiences, education and what not. Fortunately I and my colleagues got opportunities to learn computer application course training and Rajbhasha Hindi application in working environment in the institution. Moreover I got Lib & Inf. Science Degree from Gauhati University

and got Associateship in Information Science Degree from INSDOC, New Delhi. After that I also completed MLIS degree from IGNOU, New Delhi. I am very much grateful to this institution as I got the opportunities to acquire my degree in the midst of my service life. Higher qualifications helped me to pass the difficulties that I faced in service life.

The disciplined rules & regulations, punctualities and work cultures of NEIST helped each employee to be punctual for his or her service career. Each year institution organized different types of competitions to celebrate the days such as Hindi Day, Vigilance Day, International Women's Day, National Science Day, National Technology Day, etc. In those competitions I also joined and fortunately received several prizes. In 2003-04 knowledge Recourse Centre was awarded appreciation prize for application of Hindi languages in different activities of the department. At the same time I and Mr. Rajan Sarma of KRC also awarded the best worker award. My heart was filled remembering those days. I was selected as secretary for International Women's Day meeting for two consecutive years. In this regard I remembered the advices of Director Dr P G Rao with thanks and gratitude. I went to Chennai and New Delhi as manager of our NEIST sport teams. From both the places we returned with flying colours securing championship in Carrom competitions. Mrs. Protima Bora of my own department became the champion in both times. Moreover, I was enlightened in participating in different seminars, conferences, lectures, trainings etc in different parts of the country by exchanging thoughts and ideas and paper publications. I was inspired by the Director, Scientists and colleagues for writing science articles, popular articles and poems for publishing in different newspapers, magazines, journals, seminar proceedings, etc. I got inspiration from the honourable Director for writing a poem 'RRL—Science Temple'.

In the first part of my service life, the institute had organized dramas, sports and other functions where I took part. At that time some top grade Assamese dramas such as 'Bhogjora', 'Piyali Phukon', 'Harku', etc. were successfully staged by the institute's employees. Now I feel pleasure remembering the dedicated co-operation of those artists. Still I cherish those positive days in my butter cups of memory.

I gained a number of experiences in the capacity of member of various technical committees of NEIST. I also served as convener of LAP Committee of KRC. I offered sincere services to KRC as Incharge till my retirement in June 2009. The efficient Director Dr Rao sir provided me advices and co-operation in rendering the KRC services. NEIST provides me completeness. This institute is my heart's temple. I will never forget its green environment, disciplined rules and regulations and work culture. Let us hope NEIST too take part continuously in the development of science and technology of the North east in particular and the rest of the country in general. Amen!

Retrospection of NEIST (RRL)



Prafulla Chandra Borah
FormerTech II 4,

I learned the art of a little elocution in my mother tongue Assamese and gradually in English from my school and college days but there is no significant instance of writing any articles, stories etc. in my by gone days. So, to day I have a little hesitation to write a few words or express my deep sense of feelings in writing, remembering my nostalgic memories at RRL Jorhat since 1980 to 2007. However, it gives me immense pleasure knowing that if I could write a few lines it may be accepted for publication in the proposed booklet in the ensuring Golden Jubilee Celebration in 2010-2011.

In the first instance, I remember that day, the 1st October, 1980, the day, I joined RRL Jorhat. The admirable atmosphere in the RRL complex at that time was beyond my expectation. There was every reason to feel happy and proud to be an employee of this esteemed institute. No doubt, I really enjoyed 26 1/2 years of long service life at RRL as a Refrigeration Technician. On successful completion of each assigned work I was always acknowledged with a thanks by the person concerned and at certain special occasion by the head of the Institution. So it always gave me full inspiration to work more and more. Particularly in extreme summer season the activities of refrigeration section increase to a great extent. There were two technicians in Refrigeration section, myself and Late S.K Paik. After the retirement on superannuation by Late S. K Paik in February 1997, the complete responsibility of our section fell on my shoulder and at that time the work load also increased considerably over the last few years. Naturally, I had to work hard on those days. Due to imposition of Central Govt. new recruitment policy and restriction of new appointment, I knew it was not at all possible to have another technician in our section. This worried me but I was never so serious with this matter. At that time RRL (NG) Association was functioning in full swing. Incidentally, I myself was the President of that Association. Therefore, I had to co-operate with the management for all the official matters and it was one of the reasons that I had to console myself for not getting the help of an additional technician for such a long time till my retirement. My prime objective was to somehow manage the work without giving any opportunity to any adverse remark by anyone against my section. The work of Refrigeration section did go on likewise for long 10 years. Today, I really feel surprised how I could manage such a volume of overloaded work, repairing and maintenance of about 200 ACs, about other 100 domestic and scientific low temperature units and more specifically the maintenance and operation of Central Air Conditioning plant. The running of Central AC plant of the Auditorium was the most difficult task for me as it did not have any definite time and period. Whenever situation demands the AC plant need to run even at very short notice, of course prior intimation was also received in some special occasions. The NEIST auditorium is fully air conditioned and there is no substitute arrangement to control humidity and temperature in summer so that the AC must remain in operative condition during summer season. Today, if I recollect, it comes to my mind in a fraction of a second that there were many occasions, functions when I had to operate the Central AC plant right from morning 8 am to night 10 pm with just ½ an hour break at lunch time. The work of this nature was always challenging to me. I had never complained or had any objection in any manner or had claimed extra remuneration for my additional work. I always enjoyed my work because working for my people and to the institute was my greatest pleasure. I knew, there is no alternative to hard work and hard work certainly gives its return a little later or sooner. In my case, in recognition to my hard work the institution finally had conferred on me a Certificate of Appreciation on 10th April, 2006 by honourable Director Dr PG Rao in the NEIST foundation day celebration. I understand, nothing in any other term can compensate this type of recognition, appreciation and honour. By saying this, I am not at all trying to propagate my creditability, rather I would prefer to emphasise to my young brothers and sisters those who are presently working at NEIST to fully dedicate themselves in their respective field of work in the interest of this great institute foregoing any or more personal benefits all the time.

As I remember today and shall continue to remember till I survive “THE NEIST” is certainly one of the most beautiful places to work considering the magnitude of role the NEIST undertakes for the advancement of science and technology and for the immense benefit it generates for our people and to the human society at large. I wish NEIST more flourishing and glorious years ahead.

Fond Memory



Ms Gulena Khatoon
Former-Receptionist,

In my past days, while travelling on the AT road, whenever I used to pass by the Regional Research Laboratory, (now NEIST) I used to throw an intense stare at the institute with great admiration and esteem and used to have the ecstasy of extra-ordinary feeling of pride that such a great institution belongs to our Jorhat. That time I never even imagined that someday I too would become an employee of the institute. Because my impression about the institute was that as because this has been the Scientific institution, so only scientists can work over there. But later on I was proved wrong. One fine morning I came across an advertisement that appeared in a local daily in which applications were invited from eligible candidates for a post of Receptionist which was lying vacant at the institute. I made up my mind to apply for the job and without wasting my time I did apply. Interestingly enough, I was selected also. I joined the institute on 26 September, 1978 and that is how I became an employee of that august Institute from that day onwards till my retirement. Initially I was a little bit shaky and hesitant in my dealings with so many highly qualified people. But gradually my attitude changed and I became comfortable with all of them. As my fellow colleagues, they all were always good to me. I must make a special mention about my colleagues of I & L division who had been so helpful to me. It was the I & L staff who actually taught me how to work and how to deal with others. I shall never forget the helping hands I used to receive from them at the time of need for maintaining my work environment.

During my entire service life from 26 September, 1978 to 30 April, 2007, I encountered a countless number of memorable events. To begin with, soon after I joined, I came to know that the authority had selected me for a very prestigious assignment – I was supposed to lead and command the inaugural parade of March Past of the participating teams of the Shanti Swarup Bhatnagar Tournament that was held at RRL subsequently. I was so thrilled with joy (I had an NCC background). Participants of various CSIR laboratories coming from all over India converged at the event. Also, I was offered the job of Lady Announcer of that great national event. Both these specific jobs, I did quite professionally and successfully. Oh! How can I forget those days which provided me the opportunity to make friendship with the people coming from the laboratories of the other parts of India. Memories of quite a few of them are still fresh in my mind.

I could meet many a high dignitaries of India & abroad and that became possible only because of being the Receptionist of this August Institution. Being the receptionist I could make personal approach to them to take those valuable signatures and comments for our VIP Register Book or some other works which were entrusted to me by the authority. If I could have been an employee of any other office or institution, I would not have the chances for those memorable events. Like this there are so many other memorable events in my service life which gave me enough satisfaction and pleasure. Thanks to almighty God—he who blessed me to work in such a great institution. Although I am now retired physically from my service but mentally I am still working in NEIST. Salute to my NEIST.

Long Live NEIST

A Journey of Life through the Medical Centre



R D Nayak
Former Tech II 4
Medical Centre,

Col. Dr. B.N. Mitra was the first Director of RRL. At first the Director's bungalow of today was the main office. In January, 1964 I joined as a Junior Laboratory Assistant at Medical Centre. The shifting of divisions to the Main Building was started in Dr. Mitra Sir's time. The usual work began after shifting of all the divisions.

The goodwill of RRL began when some projects of cement plant sold in the days of Dr. M.S. Iyengar who was the second director of RRL. For this success, of course, the staff of the division worked with full capability. At this initial stage of RRL, one of the staff car driver Late Budhu Hazarika was infected with dangerous disease and he died of this disease. He was an expert driver. He didn't hesitate to drive vehicles like truck to cold and hilly places like Cherapunji for official work. When he was ailing Dr. Iyengar often visited him and gave advice for cure. Dr. S.K. Mazumdar, Medical Officer was also consulted to cure Late Hazarika. Dr. Iyengar was very sad on the day of Mr. Hazarika's death, as his children were too small. Dr. Iyengar communicated with CSIR and gave a small job for livelihood to Late Hazarika's wife.



Dr. G Thyagarajan with Medical and other staff



Acting Director Sri B.P. Chaliha with Medical Staff

After Dr. Iyengar, Dr. D.Ganguly became the Scientist-in Charge. Dr. G.Thyagarajan as Director came to this institute after Dr. Ganguly. The auditorium was also built completely and also some of staff quarters in the time of Dr. Thyagarajan.

The Medical Centre initially started in a small quarter. Dr. S.K. Mazumdar worked as a part time Doctor. By his effort, the Medical Centre shifted to the position where it is now. There was no supply of medicine to the centre on those days. Dr. Mazumdar had succeeded to give indent for medicines. A permanent doctor namely Dr.N.M.D. Hassan was appointed. Now all preliminary facilities are available in this Medical Centre.

After retirement of Dr. J.N. Baruah, the next Director was Dr. A C Ghose. He established the North East Ecology Park, he also built two storey scientist compartments in the campus. Tiles were also fitted to the Library, Main Office building and also in Medical Centre.

After retirement of Dr. J.S. Sandhu, the new Director appointed was Dr. P.G.Rao. Dr. Rao was a Junior Scientist in this laboratory 20 years ago. The name RRL Jorhat changed to NEIST in his time. Dr. P.G. Rao built a wide and open house in the place for the community and named it as 'Social Activity Centre'.

The Medical Centre got valuable equipments and the data computerised. Beside this, one pharmaceutical shop is arranged in the Centre for all the employees and pensioners. Dr. P.K.Baruah, Dr. T. Borah, Dr. B.G. Unni and also myself with auxillary staff got chances for Medical Camps in some rural and remote areas of Assam with the help of the Director Dr. P.G. Rao. The director himself was also present in the functions and inspired several social activities. So, many works left done, we have many milestones to cross, God may help us to acquire the goal. Long Live CSIR!!! Long Live NEIST!!!

NEIST Golden Jubilee Year Events



Prof S K Brahmachari, Director General, CSIR, inaugurating the Golden Jubilee Year by lighting the lamp on 5th April, 2010 at NEIST auditorium in the presence of invited guests, dignitaries, Directors of other CSIR labs, prominent personalities of the town, students, teachers, member of press & media, member of NEIST fraternity (old & new) NEIST entrepreneurs and others.



Prof S K Brahmachari, DG CSIR, delivering the inaugural speech



Dr P G Rao, Director, CSIR-NEIST welcoming the audience of Golden Jubilee function and made a slide presentation on 5 decades of journey of the institute.



CSIR Song presented by CSIR-NEIST staff members in the function for celebration of Golden Jubilee Year



A section of the audience in the Golden Jubilee Year celebration function



Prof S K Brahmachari, DG CSIR, launching the Golden Jubilee Logo of CSIR-NEIST.



Prof S K Brahmachari, DG CSIR releasing the CSIR-NEIST Golden Jubilee Calendar of Events flanked by Dr P G Rao, Director, CSIR-NEIST



DG-CSIR felicitating a few NEIST entrepreneurs



Launching of herbal products by Chief Guest Prof S K Brahmachari, DG CSIR and Dr P G Rao, Director, CSIR-NEIST



Prof S K Brahmachari, DG CSIR offering a memento to Dr P G Rao, Director, CSIR-NEIST



DG-CSIR, inaugurating the State of Art Analytical Facility Laboratory at CSIR-NEIST



Cultural programme arranged on the occasion

Golden Jubilee Lecture Series



Prof Kasturi Datta, DBT Distinguished Biotechnology Professor, School of Environmental Science and Adjunct Professor, Special Center for Molecular Medicine, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi delivered the first CSIR-NEIST Golden Jubilee Lecture Series on 2nd September, 2010 on the topic "Multifaceted regulation of Hyaluronan Binding Protein 1 on cancer progression and cell migration."



Prof Alcides Lopes Leao, Professor of Sao Paulo State University, Brazil delivered the 2nd CSIR-NEIST Golden Jubilee lecture series on "Agri-waste for new materials and energy" on 21 September, 2010



Dr USN Murthy, Sc G & Head, Biology Division, IICT, Hyderabad, delivering the 4th CSIR-NEIST Golden Jubilee lecture series on "Information System in Integrated Vector Management—A Cardinal restorer for cutthroat diseases of North-East India" on 22nd October, 2010



Prof Klencz Hans Peter, Head of Microbiology, DSMZ German Collection of Microorganisms and Cell Cultures, Braunschweig, Germany delivering the 5th CSIR-NEIST Golden Jubilee lecture series on "Encyclopedia of Bacteria and Archaea: Recent status report and extension to microbial earth and earth microbiome projects" on 13 December, 2010.



Prof V G Gaikar, FNAE, FASc, Head, Chemical Engineering Department, ICT (formerly UDCT), Mumbai delivering the 6th CSIR-NEIST Golden Jubilee lecture series on "New strategies for extraction of active products from natural resources" on 14th February, 2011



Prof Paramesh Banerjee, Chief Seismologist, Earth Science Observatory, Nanyang Technological University, Singapore delivering the 3rd CSIR-NEIST Golden Jubilee lecture series on "The Tectonics of the Indian Plate from GPS based space geodetic studies" on 28 September, 2010



Prof Bandana Chatterjee, professor in Department of Molecular Medicine/ Institute of Biotechnology, The University of Texas Health Science Center at San Antonio, Texas, USA delivering the 7th CSIR-NEIST Golden Jubilee lecture series on "Androgen receptor in prostate cancer—An update on treatment" on 15 February, 2011



Dr. Ms. Mitali Mukerji, Senior Scientist in Institute of Genomics and Integrative Biology, Delhi delivering the 8th CSIR-NEIST Golden Jubilee lecture series on "Ayurgenomics: A novel approach towards personalized medicine" on 8th March 2011.



Dr. Naibedya Chattopadhyay, Scientist F and Head in Endocrinology Division, CSIR-Central Drug Research Institute, Lucknow delivering the 9th CSIR-NEIST Golden Jubilee lecture series on "Constituents of medicinal plants positively impact bone metabolism more than those derived from the dietary sources: Evidence from in vitro and pharmacokinetic studies" on 18 March, 2011



Dr. (Ms) Sanghamitra Bandyopadhyay, Scientist C in Developmental Toxicology, CSIR-Indian Institute of Toxicological Research, Lucknow delivering the 10th CSIR-NEIST Golden Jubilee lecture series on "Metals, neuroinflammation and therapeutics in Alzheimer's disease pharmacokinetic studies" on 18th March, 2011.



Dr. P. V. Subba Rao, Deputy Director & Scientist F (retired) from CSIR- Central Salt & Marine Chemicals Research Institute, Bhavnagar, Gujarat delivered the 11th Golden Jubilee lecture on "Seaweed resources and societal benefits" in the NEIST Auditorium on 23rd March, 2011



Dr Sailesh Nayak, Secretary, Ministry of Earth Sciences (MOES) Govt. of India delivering the 12th Golden Jubilee Lecture Series on "Societal Benefits of Earth System Science" on 3rd June, 2011.

Workshop Organized



As a part of the NEIST Golden Jubilee Celebration programme and also to make the occasion of World Intellectual Property Day, CSIR-NEIST organized a one day work shop on "Management of Intellectual Property through Patents with special emphasis on hands on training on Patent Search and analysis. The training was concluded by M/S Merit India Consultants Pvt. Ltd., New Delhi on 10 May, 2010



A DBT sponsored DNA club for promoting science among the school students of Manipur was inaugurated at CSIR-NEIST Substation Lamphepat, Manipur on 17th July, 2010



(Left) As a part of the on-going DNA clubs activities (DBT-TERI Mentoring the schools of Northeast) under the sponsorship of DBT, New Delhi, CSIR-NEIST, Substation, Imphal organized the first orientation programme during 24-25 January, 2011 for the students of Std.VI-X from 14 schools of Manipur out of the targeted 57 schools (hill and valley districts) slated under DNA club of Manipur.

CSIR-NEIST Golden Jubilee Interactive Meet



An interactive meeting between Shri Arun Kumar, Secretary, Oil Industries Development Board (OIDB) & Addl. Secy., to the Govt. of India and NEIST Scientists was held on 16 December, 2010 at MS Iyengar hall, NEIST.



As a part of the Golden Jubilee year celebration of CSIR-NEIST, an interactive meet between CSIR-NEIST Scientists and officials of National Bank for Agriculture and Rural Development (NABARD) was organized at Dr MS Iyengar Conference Hall, CSIR-NEIST on 11 February, 2011.



(Left) An interactive meet between the CSIR-NEIST, Scientists and a few NEIST Technology Industrial Partners was organized on 3 March, 2011 along side the RC Meeting. A total of 10 industrial partners namely Mr Mayur Bora, AGM, NABARD, Mr H Dubey, GM (R & D), OIL, Mr Chitrabhanu Bose, Dy. GM & Head (S&E), OIL, Mr Bikash Borgohain, MD and Mr Jyotish Gogoi from Response Real Estate and Constructions, Mr Parthasarathi Saikia, Director, Viva Pharma (P) Ltd., Jorhat, Dr SJ Khound, Manager (Q.C.), APL, Namrup, Mr LW Khongwir, Dy. Gen Manager (Tech.), IOL, Digboi, Dr LS Pfoze, Intouch Naturals (P) Ltd., Manipur, Dr Subir Kumar, ONGC, Jorhat attended.

Training of the Trainers at NEIST Branch, Itanagar



(Left) A 40 members team comprising of local farmers, entrepreneurs, students and rural health practitioners led by Member Secretary of Arunachal Pradesh State Medicinal Plant Board, Mr T Gopak and Dr Abdul Kareem, Assistant Director, Foundation for Revitalization of Local Health Tradition (FRLHT), Bangalore, Karnataka paid of visit to Branch Laboratory at Itanagar on 12 May, 2011 and had interactions with the scientists. The group was provided the training & demonstration on cultivation of Mushroom and Vermicompost with the idea that these trainees in turn will train other prospective entrepreneurs of their respective locations who aspire to take up such cultivations.

CSIR-NEIST Golden Jubilee Competitions for school students

a) CSIR-NEIST Golden Jubilee Fellowship for best scoring students:



Dr. L Nath, Scientist G & Head, HRD, CSIR-NEIST took part in the function organized by Guidance to confer the CSIR-NEIST Golden Jubilee fellowship as Director's nominee. Photo shows Dr Nath being felicitated by Guidance on 21 Nov, 2010.

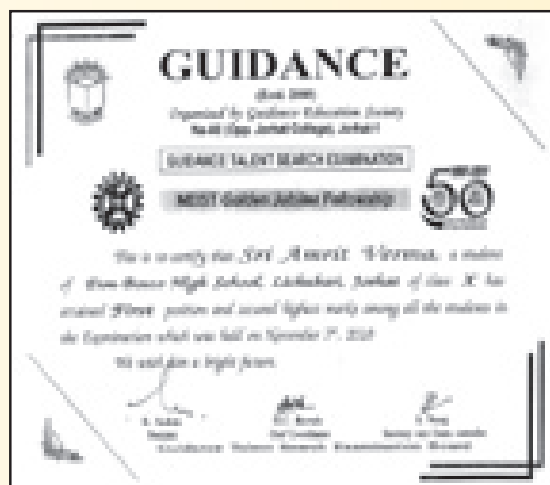
“GUIDANCE”—an NGO situated at Na –Ali, Jorhat has been engaged for promoting academic interest among the school students. They have been regularly conducting Talent Search Examination among the students of class IV to X every year since 2000 and also they have been offering scholarship to the who secure 1st and 2nd position among the participating students in each of the classes. During the year 2010, they insti-



Sri Amrit Verma receiving the CSIR-NEIST Golden Jubilee Fellowship

During the year 2010, they insti-

tuted a special fellowship worth Rs. 10,000.00/- to be offered to the best competitor which will be repeated every year and for this they approached Director, CSIR-NEIST for financial assistance to which Director, CSIR-NEIST agreed in principle. Since the fellowship will be launched during the CSIR-NEIST Golden Jubilee Year celebration, the Director desired that the fellowship be named as “CSIR-NEIST Golden Jubilee Fellowship”. Accordingly, the GUIDANCE Conducted Talent Search Examination on 7 November, 2010 and selected Sri Amrit Verma, a class X student of Don Bosco High School Lichubari, Jorhat who attained First position and secured highest marks among all the students sit for the examination. The fellowship was formally handed over to the said student at a special function held for the occasion at Na-ali, Jorhat on 21 Nov, 2010.



The certificate of Fellowship

b) CSIR-NEIST Golden Jubilee Project competition for students of NE



GJ Project being screened by panel of judges

(Left) As a part of the Golden Jubilee year celebration, CSIR-NEIST organized Golden Jubilee Project Completion among the students of NE schools and colleges in two categories viz., **group A** comprising of students of class IV to X (Age between 12-16 years) and **group B** comprising of students of class XI to degree level (Age between 17 to 21 years) for “Investigatory Project Competition” on the themes such as : (a) Biodiversity of your locality (b) Traditional knowledge in healthcare and medicine (c) Water (d) Ethnic/traditional food (e) Land/river erosion (f) Traditional construction material and (g) Superstition and its eradication.

A total of 95 groups of students from different North Eastern States participated in the competition and the result of the competition will be decided by panel of judges which will be announced in due course.

c) Painting and Essay writing competition at NEIST Imphal Sub-station



CSIR-NEIST at its Substation at Imphal, Manipur organized a one day (1) Essay Writing & (2) Painting Competition among the students at its premises on 19 April, 2011.



Spot painting competition

Dedication of newly innovated CSIR-NEIST auditorium to Late Dr J N Baruah, former Director:

As a part of the programme of CSIR-NEIST Golden Jubilee year celebration, the Director and the staff of CSIR-NEIST dedicated the Auditorium of CSIR-NEIST in the name of former Director, Lt. Dr J N Baruah who was one of the past leaders of yester years. At a short dedication ceremony held on 1 September, 2011 at the Auditorium, Dr G Thyagarajan, former UNIDO National Consultant & Former Director, CSIR-NEIST and other CSIR labs dedicated the Auditorium in presence of Dr P G Rao, Director, CSIR-NEIST, family members of Lt. Dr J N Baruah, CSIR-NEIST fraternity and members from the CSIR Pensioners' Welfare Association (NE chapter). The ceremony begun with a tribute paid to the portrait of Late Dr J N Baruah by Dr G Thyagarajan, Dr P G Rao and other distinguished personalities from the CSIR Pensioners' Welfare Association (NE chapter) after which the dedication plaque was unveiled by Dr Thyagarajan in the front side of the Auditorium. This was followed by addressing the gathering by Dr P G Rao and Dr G Thyagarajan inside the auditorium. The auditorium, thereafter, came to be known as Dr J N Baruah auditorium.



Dr G Thyagarajan, former UNIDO National Consultant & former Director, NEIST (RRL) paying tribute to the portrait of Late Dr J N Baruah.



Dr G Thyagarajan unveiling the dedication plaque as Dr P G Rao (Right), Director, CSIR-NEIST looks on.



Dr G Thyagarajan speaking on the occasion.



Mrs Manasi Sharma Baruah, daughter of Late Dr J N Baruah addressing the gathering on behalf of Dr J N Baruah's family.

CSIR-NEIST Golden Jubilee International Conference

International Symposium on Frontier Areas (ISOFA-II)



The Logo of the International Symposium on Frontier Areas (ISOFA-II), 2011

As a part of its Golden Jubilee celebration, the CSIR-North East Institute of Science & Technology, Jorhat organized a one-day 'International Symposium on Frontier Areas-II (ISOFA-II)' on 6 September, 2011 at its premises.

The Symposium was organized with a view to giving the scientists, academicians and researchers of various organizations of North East India, an expo-

sure to the frontier areas of research and application. The inaugural function of the Symposium was held at Dr J N Baruah Auditorium. Dr K M Bujarbaruah, Vice Chancellor, Assam Agricultural University, Jorhat, graced the function as the Chief Guest and inaugurated the Symposium which was attended by a galaxy of scientists coming from India and abroad, distinguished personalities of the town, faculties and students from different Universities, Institutes and Colleges, invitees and CSIR-NEIST fraternity. Among others present included Dr Mridul Hazarika, Director, TRA, Jorhat. The day-long Seminar comprised of 5 (five) plenary lectures delivered by distinguished speakers from the countries like China, Canada, Thailand and India. The speakers included Prof. Wenhao Hu from the Department of Chemistry, East China Normal University, China; Prof Gopinadhan Paliyath, Department of Plant Agriculture, University of Guelph, Canada; Prof G N Jadhav, Department of Earth Science, Indian Institute of Technology, Mumbai; Ms Chatnapa Khomarwut, Agricultural Research Officer, Chiang Mai Royal Agri Research Centre, Ministry of Agri & Cooperative, Thailand and Prof G D Yadav, Vice Chancellor, Institute of Chemical Technology, Mumbai who spoke on, 'Novel Multi Component Reactions via an active Onium Ylide Trapping Process', 'Fruits, Vegetables and disease prevention', 'Application of ore Petrography in Mineral Processing and Materials Science', 'Arabic Coffee improvement for Highland area of Thailand, ARDA' and 'Confluence of the Chemical and Biological Sciences and Engineering for better future' respectively. Later in the evening, Dr R C Boruah, Outstanding Scientist, CSIR-NEIST, gave the concluding remarks and the Symposium came to an end with vote of thanks offered by Dr B G Unni, Chief Scientist, CSIR-NEIST. The Symposium was attended by more than 300 participants comprising of delegates from India and abroad, renowned scientists of national and international repute, faculties, students and research scholars of different Universities, Colleges, Institutes and Organization in and around Jorhat, CSIR-NEIST fraternity and others.



Dr P G Rao, Director, CSIR-NEIST welcoming the audience



Dr K M Bujarbaruah, Vice-Chancellor, Assam Agricultural University delivering the Inaugural Address



Professor Wenhao Hu, Department of Chemistry, East China Normal University, China giving his plenary lecture on "Novel Multi Component Reactions Via an active Onium Ylide Trapping Process"



Professor Gopinadhan Paliyath, Department of Plant Agriculture, University of Guelph, Canada delivering his plenary lecture on "Fruits, Vegetables and disease prevention"



Discussion and interactions with the speakers.



Dr P G Rao (right), Director, CSIR-NEIST presenting memento to Prof G N Jadhav, Department of Earth Science, Indian Institute of Technology, Mumbai after his plenary lecture on "Application of ore Petrography in Mineral Processing and Material Sciences"



Ms Chatnapa Khomarwut, Agricultural Research Officer, Chiang Mai Royal Agri.Res.Centre, Ministry of Agri & Cooperative, Thailand addressing the audience after her plenary lecture on "Arabica coffee improvement for Highland area of Thailand, ARDA"



Prof G D Yadav, Vice Chancellor, Institute of Chemical Technology, Mumbai delivering his plenary lecture on "Confluence of the Chemical, Biological and Engineering Sciences for better future"



Dr R C Boruah, Outstanding Sc, CSIR-NEIST delivering the concluding remarks.



Dr B G Unni, Chief Sc, CSIR-NEIST proposing the vote of thanks at the end of the symposium.

CSIR-NEIST Golden Jubilee Popular talk:

On the occasion of CSIR-NEIST Golden Jubilee Year celebration, the CSIR Pensioner's Welfare Association (NER Branch), Jorhat organized a Popular talk on "Geriatric Problems and its Prevention" in collaboration with CSIR-NEIST on 4 September, 2011 (Sunday) at Dr J N Baruah auditorium of NEIST. Dr Sanjib Kakoti, Professor of Medicine, Assam Medical College & Hospital, Dibrugarh delivered this invited mind-blowing talk to a packed house which held the audience spell bound. Dr P G Rao, Director, CSIR-NEIST graced the occasion as the Chief Guest.



Dr P G Rao, Director, CSIR-NEIST welcoming the audience.



Dr Sanjib Kakoti, Professor of Medicine, AMCH delivering the talk.

CSIR-NEIST Golden Jubilee Exhibition

a) 18th District level NCSC, 2010 exhibition



Inside NEIST stall



Shri Bhairab Chandra Handique, Ex-President, Assam Science Society, Jorhat branch, inaugurating the exhibition

On the occasion of 18th District level National Children's Science Congress, 2010 held at Marijanji Sessasatra High School, Bhogamukh, Jorhat on 2 October, 2010, CSIR-NEIST participated in the scientific exhibition organized jointly by Jorhat District Children's Science Academy and Assam Science Society, Jorhat branch. In the exhibition, NEIST showcased and demonstrated its activities in scientific frontier through display of posters, banners, exhibits, publication materials, etc. The exhibition was inaugurated by Shri Bhairab Chandra Handique, Ex-President, Assam Science Society, Jorhat branch, where a large number of students, teachers, professors and other scientific personnels visited NEIST stall.

b) CSIR-NEIST Participated in the Assam Theme Pavilion of IITF-2010 held at Pragati Maidan

At the request of the Commissioner of Industries & Commerce, Govt. of Assam to represent Assam in the theme pavilion “Clean and Energy Efficient Technology Products & Services” organized by the Govt. of Assam in the India International Trade Fair 2010” during 14-27 November, 2010, the CSIR-NEIST put up an independent exhibition stall at Pragati Maidan on behalf of the Govt. of Assam to showcase its technologies. The Assam pavilion was inaugurated by Shri Pradyut Bordoloi, Hon’ble Minister for Power, Govt. of Assam.

The exhibition stall received tremendous response from science fans, students and entrepreneurs.



Shri Pradyut Bordoloi, Hon'ble Minister for Power, Govt. of Assam, visited the NEIST stall



View of NEIST Stall India International trade Fair

c) S&T exhibition at the 72nd Annual Convention of Assam Sahitya Sabha



Front view of CSIR-NEIST exhibition stall

CSIR-NEIST participated in the S&T exhibition held at Dergaon during 1-4 February, 2011 on the occasion of 72nd Annual Convention of Assam Sahitya Sabha. CSIR-NEIST showcased its activities through banners, posters and sample exhibits. The exhibition was inaugurated by Sri Paresh Khound, Former ONGC Executive, New Delhi where a large number of students, teachers, professors, science-fans and general public visited CSIR-NEIST stall and interacted with the staff.

CSIR-NEIST Golden Jubilee S&T Exhibition for Students and Entrepreneurs held at Jorhat during 24-27 May, 2011 Inaugural Function



Students of Jyoti Bidyapith, Teok presenting the inaugural song



A section of audience in the inaugural function



In the dais of inaugural function (R-L) : Dr P C Neog, Coordinator, Dr D J Bora, Principal JMCH, Dr R C Boruah, Scientist H/ Outstanding scientist, CSIR-NEIST, Dr S K Choudhury, Director, ASTEC, Sri R C Jain, Deputy Commissioner, Jorhat, Dr B K Dutta, Director, JIST, Jorhat and Sri Biman Baruah, Scientific officer, ASTEC.



Dr R C Boruah, Scientist H/Outstanding Scientist, CSIR-NEIST welcoming the gathering in the inaugural function.



Sri R C Jain, Deputy Commissioner, Jorhat lighting the lamp to inaugurate the exhibition.



Dr D J Bora, Principal, JMCH inaugurating the exhibition publication.



Extempore speech competition was held among the school students.



Dr S K Choudhury delivering the Presidential remarks in the inaugural function.



Sri R C Jain, Deputy Commissioner, Jorhat addressing the gathering.



An interactive session with entrepreneurs was held.



Art competition was held among the school students.



A view of the students participating in the programme "Face with Scientists"



Stalls for demonstration of scientific models by students under Aryabhata Science Centre.



Students crowding in front of CSIR-NEIST Exhibition stall



Students inside the CSIR-NEIST Exhibition stall

Valedictory function



In the dais (R-L): Dr P C Neog, Coordinator, Dr J C S Katakya, President, ASS, Dr R C Goswami, Retd. Professor, Darang College, Tezpur, Dr P G Rao, Director, CSIR-NEIST, Dr(Mrs.) Sanjukta Parashar, SP, Jorhat, Dr Bijoy Sarma, Principal, JB College, Jorhat, Mr Jaideep Barma, Sr. Scientific Officer, ASTEC and Dr B P Sharma, President, AAC, Jorhat.



Dr R C Goswami (third from left) releasing the Information Pamphlet of the Exhibition.



Dr (Mrs.) Sanjukta Parashar, SP, Jorhat giving away the prizes to the winners of the competition.



Dr Bijoy Sarma, Principal, JB College giving away the certificates to the participating institutes/ individuals.

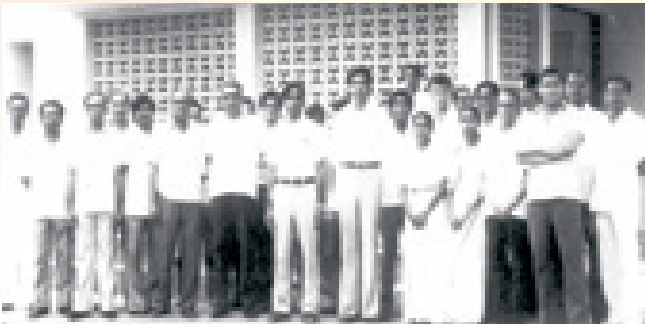


Dr P G Rao, Director, CSIR-NEIST presented mementos to the dignitaries in the dais at the end of the function. Photograph shows Dr Rao presenting memento to Dr. S Parashar, Superintendent of Police, Jorhat, the Chief Guest



Dr P G Rao, Director, CSIR-NEIST delivering the Presidential remarks.

Staff Welfare facilities and recreational



Clinical Centre then



Clinical Centre now



NEIST Community Centre



NEIST Social Activity Centre



NEIST Kinder Garten School



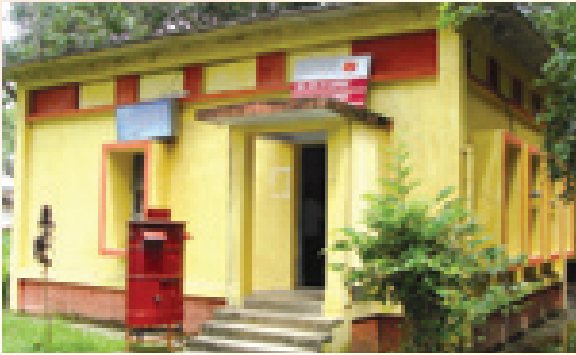
An English medium kinder garten school was started in the Laboratory Campus in 1964 with more than 20 enrolment of students.



NEIST Kendriya Vidyalaya (KV)



SBI NEIST Branch



NEIST Post Office



JRL Employees' Cooperative Consumer Stores



Tennis Ground



Play ground



Table tennis



Indoor games



Gym



Children Park

CSIR-NEIST Expertises

Agrotechnology

Cultivation and processing techniques, extraction of oils, distillation units, Mushroom spawns and laboratory, introduction of agro practices for utilization of waste and fallow lands, vermin-culture and economic vermicompost bins, entomology laboratory for insect testing for herbal pesticides and plant molecular biology laboratory.

Biological Sciences

Plant molecular biology, plant growth promoters, microbial conversion of steroids, fermentation technology, β -lactum antibodies, soil microbiology, bacterial biocides, microbial and anti-termite products, microbial desulphurization of coal and petroleum, silkworm biochemistry and molecular biology related to isolation and identification of a few insect neuropeptides from the insect brains and studies on its functional properties with respect to juvenile hormone and silk protein biosynthesis in silkworms, anaerobic fermentation studies, geomicrobiology, petroleum microbiology, microbial diversity and bio-profiling for biotransformation and antibiotic screening, microbial diversity and bio-profiling for biotransformation and antibiotic screening.

Chemical Sciences

New drug development, asymmetric synthesis, green chemistry (microwave and solid state chemistry), cycloaddition chemistry, development of new reagent/methods with applied potential and multi component reactions, chemical investigation of traditional medicinal plants, herbal drugs, steroidal drugs and drug intermediates, polymeric additives for crude oil transportation, petroleum microbiology, deoilers and emulsifiers, polymer chemistry, geomicrobiology.

Geosciences

On-line/real-time seismic monitoring and event location, site specific seismic investigation, neotectonics, source characterization, seismic microzonation, GIS & land-use planning, seismic hazard risk assessment, soil-water ecosystem and geoenvironment, characterization of metals and minerals, evaluation of building materials, optical mineralogy and standard reference materials.

Engineering Sciences

Geotechnical investigation of soil, low-cost building materials, foundation design and evaluation of building materials, membrane technology applications, soil and foundation analysis, conductive polymer and related optoelectronics, conducting Welder's Performance Qualification (WPQ) test, formulation of Welding Procedure Specification (WPS), shop-floor training to technical trade certificate holders, imparting skill training to technical trade certificate holders and industry sponsored technicians. Scale up and techno-economic feasibility studies, inplant studies, managing footwear training centres, development of prototypes etc.

Environmental Sciences

Microbial enhanced oil recovery, bioremediation of contaminated soil and pesticide, demineralization and desulphurization of coals, environmental pollution, waste disposal, plant conservation, assessment of toxic elements, environmental impact assessment, hazard and risk analysis.

Materials Science

Beneficiation, characterization and utilization of ores/minerals/coal, petroleum and oil field chemicals, crude oil transportation chemicals, deoilers, polymer chemistry, speciality papers, paper and paper boards, roofing sheets, natural fibre based products, agri based composite boards, etc.

Branch Laboratory: Itanagar, Arunachal Pradesh

NEIST Branch Laboratory was established in 1981 in a 30 acre land at Naharlagun, Itanagar, Arunachal Pradesh with the prime objective to assess the scope of R&D activities in consultation with concerned state government bodies of Arunachal Pradesh to established academic linkages and to develop S&T consciousness amongst students and entrepreneurs. The branch laboratory has contributed immensely to the regional rural upliftment through indigenously developed knowhow and has organized more than 49 exhibitions, awareness, motivation and training programmes on cultivation of essential oil like citronella, patchouli, lemon grass, geranium in 40 places covering 79 villages in eight districts of Arunachal Pradesh. 1355 people including 30 government officials participated in these programmes. The branch has also rendered consultancies for trouble shooting in the areas such as land slide studies, soil investigation for mini-hydel projects, evaluation of properties of construction materials, evaluation of building materials, geochemical investigation for evaluation of design parameters, etc.

Substation: Imphal, Manipur

Spread over 30 acres of land at Imphal, NEIST substation was established in the year 1972 as an experimental cum demonstration unit. Well equipped with analytical and infrastructural facilities it has over the years successfully pursued its aims and objectives. The station has expertise in the area of economic botany, natural resource management, hydro-ecology, wetland study, agricultural entomology, plant protection and footwear designing and training facilities.

Training centres of CSIR-NEIST



(Left) Non-Leather Footwear Training cum Production Centres at Udaipur, Tripura and Lamphelpet, Imphal, Manipur (jointly with CLRI, Chennai & respective State Govts) and one coming up at Tezpur (Assam)

Objectives

To generate trained man-power suitable for footwear industry, entrepreneurship, to cater the demand for non leader footwear in the region & to run the centre on self sustainability basis. Several batches of entrepreneurs were imparted training in both the centres.

Facilities available at the centres

Single Needle Post Bed Sewing Machine, Double Needle Post Bed Sewing Machine, Single Needle Flat Bed Zig-Zag type Sewing Machine, Single Needle Cylinder Bed Type Binding Machine, Universal Type Pneumatic Sole Attaching Machine, Hydraulic Forepart Lasting Machine, Hydraulic Clicking Machine, Skiving Machine, Counter Moulding Machine.



Demonstration of muga reeling machine at NEIST TePP Centre

TePP Outreach Centre

Department of Science & Technology, Govt. of India, New Delhi has identified NEIST as a Technopreneur Promotion Programe (TePP) Outreach Centre. Inaugurated on 29 May, 2009 the objective of the centre is to encourage and extend all possible help to the young technopreneurs who may or may not have formal education but have creative ideas to convert them into technology of value to the society by applying their technical/scientific zeals. This will also indirectly help broaden the technical base of our country.



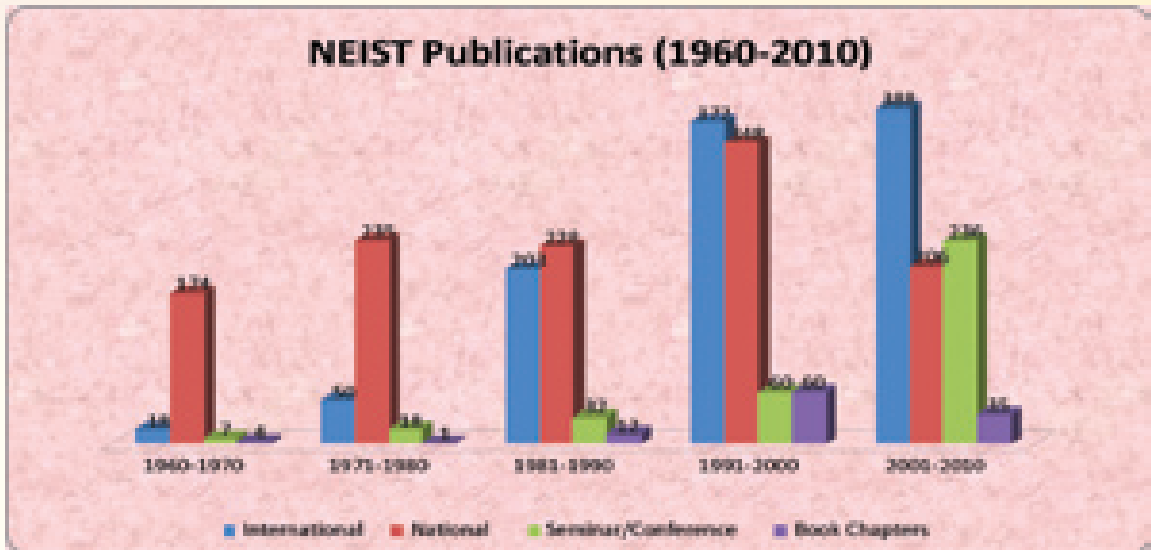
Survey of water harvesting in NE rural areas

CSTRI Centre

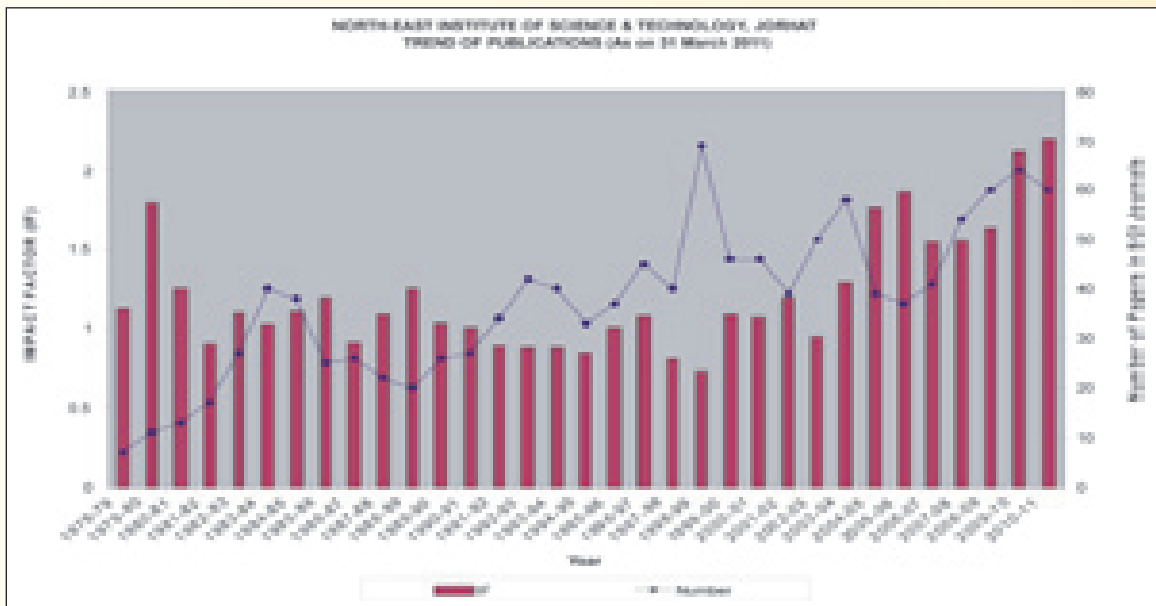
Under the aegis of DST, GOI a Centre for Science & Technology for Rural India (CSTRI) was established at CSIR-NEIST to address the problems of rural population through proper S&T intervention with special focus on NE. the centre surveyed many rural areas for implementation of existing proven technologies.

Performance at a glance

NEIST Publications (1960-2010)



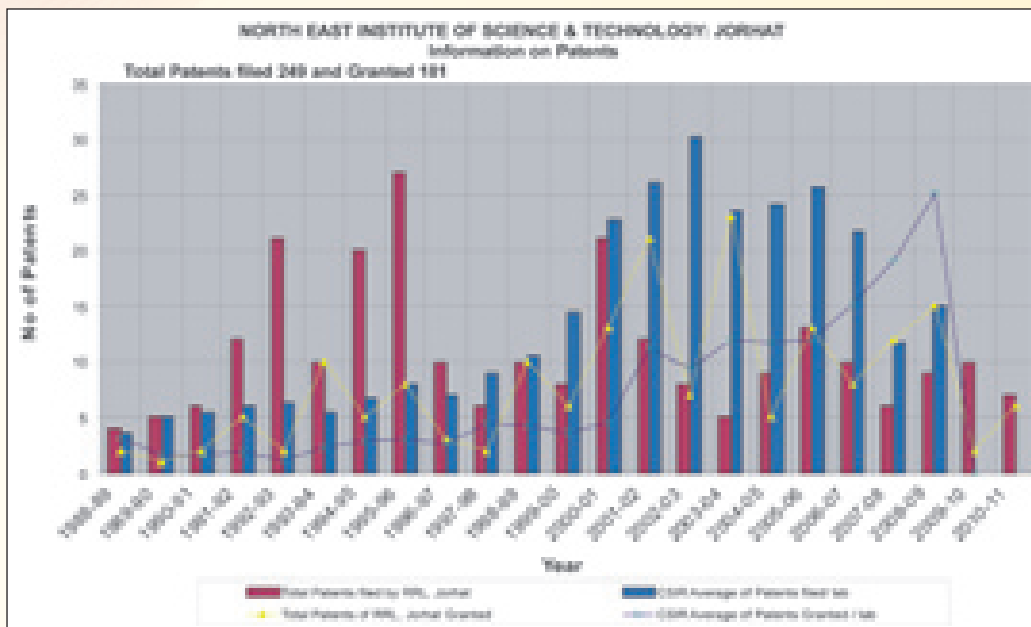
Trend of NEIST Publications



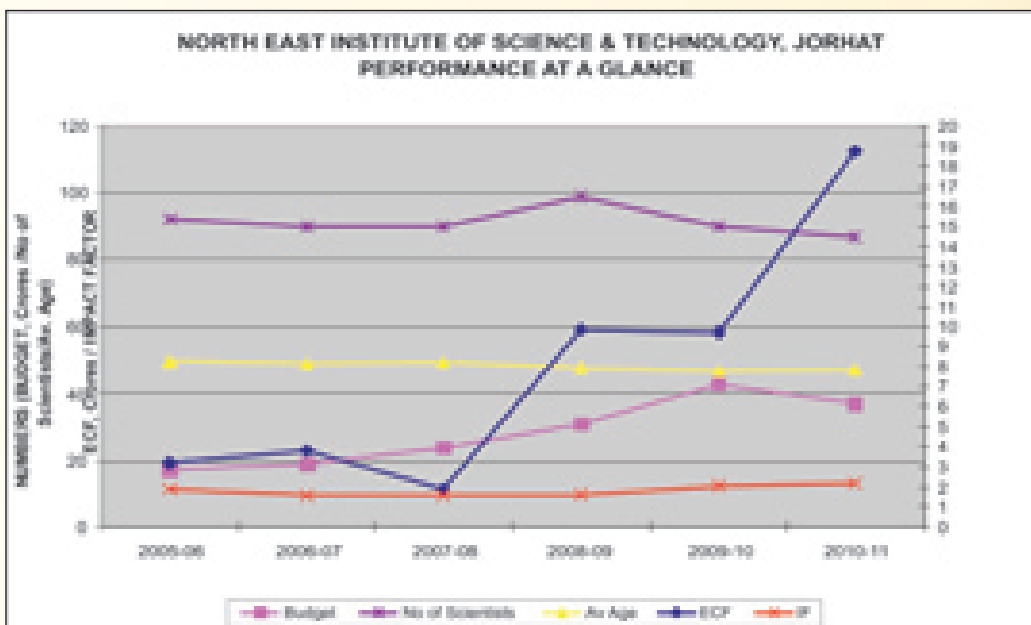
Achievements at a glance

Technologies Developed	114 nos
Technologies Released	63 technologies to 419 parties
Research papers published	2798 nos
India/International Journal	1691/1107
Patents acquired (Indian/Foreign)	292/22
Ph D thesis guided (Awarded)	275

Trend of Patents



Budget from 2002-03 to 2010-11



Commercial product samples based on CSIR-NEIST technology



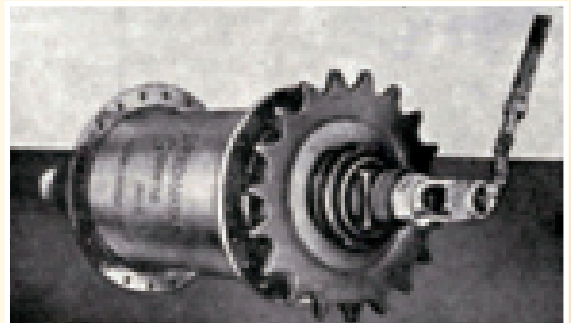
Bi-ti-sa Udyog, Nalbari and Priyam Products, Dibrugarh started commercial production and marketing of Liquid Deodorant cleaner based on RRL formulation under the brand names, LIDECLE and ODOCLEAN.



Commercial perfumed liquid deodorant and cleaner manufactured under the trade man "Odinol" manufactured by M/S Odin Industries, Jorhat



An inside sectional view of the VSK Cement plant installed at Kutch, Gujarat by Kutch Cement Pvt. Ltd Finished cement product being bagged by the workers.



Commercial sample of the Multi speed hub for Bicycle gear manufactured by M/s Multispeed Hubs Ltd., Mysore.



Gummed paper tape manufactured by M/S Chorus Enterprise, Guwahati

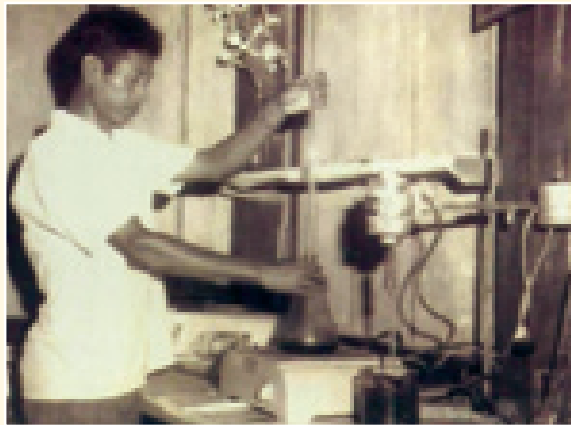
Printing ink manufactured by Luit Udyog, Guwahati



Plastic slates manufactured by Mariappa Enterprise, Tamilnadu



Domestic water filter candle for pure drinking water manufactured by Bijoy Chemical Industries, Jorhat



A 100 slates/per day capacity commercial unit manufactured Paper slates at Yaongyimsen village of Nagaland



Paper slates
manufactured by K K
Industries,
Dergaon , Assam



Specialty
papers
manufactured
by Eastern
Paper
Industries,
Sabuwa,
Dibrugarh



Direct Copy papers manufactured by Strobal Industries, Nizamabad.



Thermographic paper manufactured by Strobal Industries, Nizamabad.



Carbon paper and others product manufactured by Polyproducts Ltd, Guwahati



Carbonless Copping paper manufactured by Strobal Industries, Nizamabad



Citronella oil based Clean Angel manufactured by Aroma India Pvt. Ltd. Kamrup, Guwahati

Commercial manufacture of correction papers for correcting typographical mistakes manufactured by Strobal Industries, Nizamabad



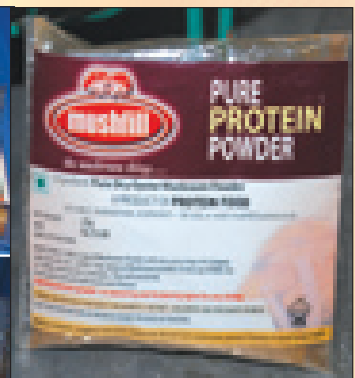
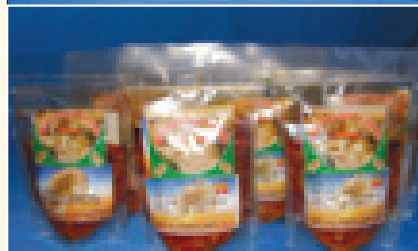
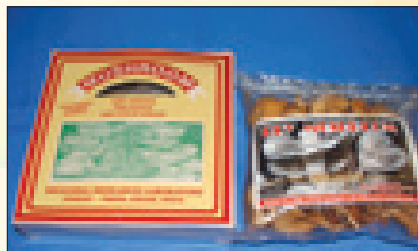
Roofing sheet for cheap housing manufactured by a govt. sector Roofing sheet unit at Pasighat, Arunachal Pradesh



Commercial Flow improver SWAT for crude oil transportation through pipe lines manufactured by Hindustan Insecticides Ltd, New Delhi



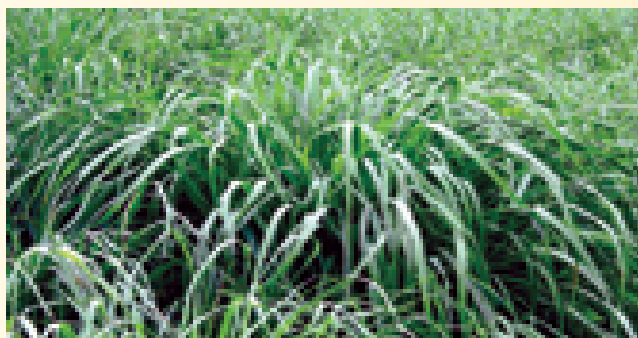
Commercial Mushroom production by a women entrepreneur in Arunachal Pradesh



Mushroom products manufactured by Shanti Sadhana Ashram, Guwahati



Law Dust Chalk Pencil manufactured by School World.
(Mr Pranjal Pratim Barua)



Commercial cultivation of improved strain of Lemon grass BLI-ARUN by Nyimi Extraction Pvt. Ltd., Itanagar, Arunachal Pradesh.



Citronella based Bio-clean manufactured by Aroma Health Care, Manipur



Bacterial formulation for soil fertility Kissan manufactured by Axom Agro Chemicals, Moran, Assam



Bio-Organic Fertilizer manufactured by Amrit Organic, Duliajan, Assam



I) Bacterial formulation being sprayed in crude oil contaminated soil of an ONGC drilling site II) Growth of vegetation in the remediate soil of the drilling site.



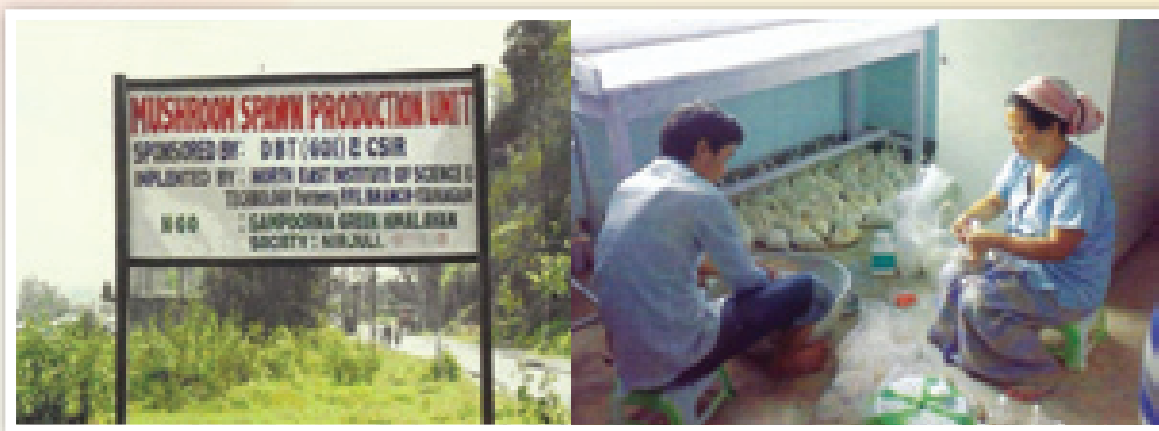
Citronella based Glaze manufactured by S M Industry, Jorhat, Assam



Wax crayons manufactured by Parsha Bordoloi, Tinsukia, Assam



I) Commercial Vermicompost unit at Sonajuli, Arunachal Pradesh.
II) Packaging of finished Vermicompost.



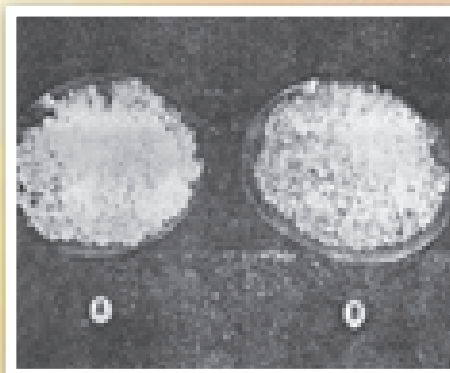
Commercial mushroom production unit at Sanpoorna Green Himalayan Society, Nirjuli, Arunachal Pradesh



Commercial aromatic oil extraction plant setup by Mr Bito Luhu of Chumukedima, Dimapur, Nagaland which is manufacturing various aromatic oils like citronella, lemon grass, patchuli etc.



Particle board from Sal leaf being commercially manufactured by M/s Sabitridevi Enterprise, Orissa.



Silica gel manufactured by M/S Beechams Kanpur, M/S Patalia Chemical Industries, Jam nagar and M/S Garg Chemicals, Guwalior

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Phukans Mushroom

A unit of Oyster Mushroom production with Spawn

CSIR NEIST Technology Based



**Basanta Chiring Phukan
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