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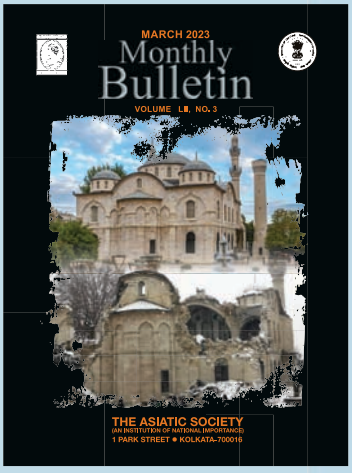
Monthly Bulletin

VOLUME LII, NO. 3

THE ASIATIC SOCIETY
(AN INSTITUTION OF NATIONAL IMPORTANCE)
1 PARK STREET ● KOLKATA-700016



Cover Description: The historic Yeni Cami mosque in the Turkish city of Malatya before and after the earthquake (7.8 in magnitude) struck on 6 February 2023.

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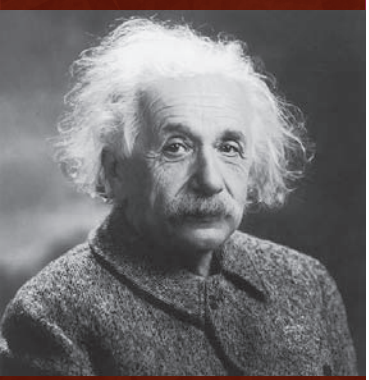
From the Desk of the General Secretary

Dear Members and Well-wishers,

Let me share with you one important event which took place on 6th of March, 1915. On this day Mahatma Gandhi and Rabindranath Tagore met at Jorasanko Thakur Bari for the first time. I have chosen to single out this event for a very special reason. Both Gandhiji and Tagore had felt a serious concern regarding the development of education in this country. Both of them had conceived of two very special models of approach for initiating the core of an institution of learning from the ground level. The endeavour was to build up a real mass of informed people. Philosophically speaking, Gandhiji made the conscious effort for the mass 'Sudra-isation' of our people in general by involving them in the productive labour. Tagore on the other hand envisioned to prepare the mass at large in transforming them as a 'Brahmin' by imparting preliminary education for all. Rabindranath had also a very positive role in establishing the National Council of Education which was formed in 1906.

March 14th is important to remember for the birthday of Albert Einstein (1879) who proposed the general theory of relativity on 20th March, 1916. The 22nd March of 1793 was a turning point when the Act of Permanent Settlement was announced.



Albert Einstein

Friends, we feel happy to announce that The Asiatic Society has received great appreciation for organizing an exhibition in the International Kolkata Book Fair (31.01.2023 – 12.02.2023). The exhibition depicted photocopies of selected, rare and valuable manuscripts in the possession of the Society. We also had a book stall which attracted huge number of scholars & visitors and the sale proceeds were very satisfactory. During the Book Fair the Society released five of its new publications on 7th February, 2023. In the meanwhile Dr. Panchanan Mitra Memorial Lecture was delivered by Professor Rajat Kanti Das, formerly of the Department of Anthropology, Vidyasagar University on 22nd February, 2023. Dr. Bimanbehari Memorial Lecture was delivered by Professor Satyabati Giri, former Professor of Bengali, Jadavpur University on 20th February, 2023. The Society also organized 201st Birth Anniversary of Raja Rajendralala Mitra on 16th February, 2023 at Salt Lake premises (Dr. Rajendralala Mitra Bhavan). Professor Tapati Mukherjee and Dr. Sunandan Kumar Sen spoke on the occasion. The Society participated in a collaborative exhibition programme with Arun-Rekha Chitram between 22nd and 28th February, 2023 at the Salt Lake premises. I participated in an International Seminar on Indo-Bangladesh Relations organized by the Kolkata Society for Asian Studies on 16th February, 2023. Raja Rajendralala Mitra Memorial Lecture, 2021 is scheduled to be delivered by Professor Gaya Charan Tripathi, an eminent Indologist and a Sanskrit Scholar, on 10th March, 2023.

Two papers among four presented in the International Webinar on 'Cultural Significance of the Studies on the Ancient Cities in Poland and India: Emerging Perspectives' on 02.02.2022 organised in collaboration with International Cultural Centre, Kraków (Poland); Honorary Consulate of Poland in Kolkata and The Asiatic Society are published in the present issue of the Bulletin. Remaining two will be published in the next issue of the Bulletin along with brief notes by the Ambassador of the Republic of Poland to India and the General Secretary of the Society.

I request all the members including the new members to kindly attend the regular Monthly General Meetings and other programmes. Kindly feel free to forward your suggestions and advices for the development of the Society.

Please keep well and safe.

(S. B. Chakrabarti)
General Secretary

AN ORDINARY MONTHLY GENERAL MEETING OF THE ASIATIC SOCIETY WILL BE HELD ON MONDAY, 6TH MARCH 2023 AT 5 P.M. AT THE VIDYASAGAR HALL OF THE SOCIETY

MEMBERS ARE REQUESTED TO KINDLY ATTEND THE MEETING

AGENDA

1. Confirmation of the Minutes of the last Ordinary Monthly General Meeting held on 6th February, 2023.
2. Exhibition of presents made to the Society in February, 2023.
3. Notice of Intended Motion, if any, under Regulation 49(d).
4. Matters of current business and routine matters for disposal under Regulation 49(f).
5. Consideration of reports and communications from the Council as per Regulation 49(g).
6. The following paper will be read by Dr. Bhabatosh Biswas :
   "Good Bye : 'Heart Attack'"

1 Park Street, Kolkata-700016
Dated : 23.02.2023

(S B Chakrabarti)
General Secretary

PAPER
TO BE READ

Good Bye: 'Heart Attack'

Dr Bhabatosh Biswas
Former Vice-Chancellor, West Bengal University of Health Sciences

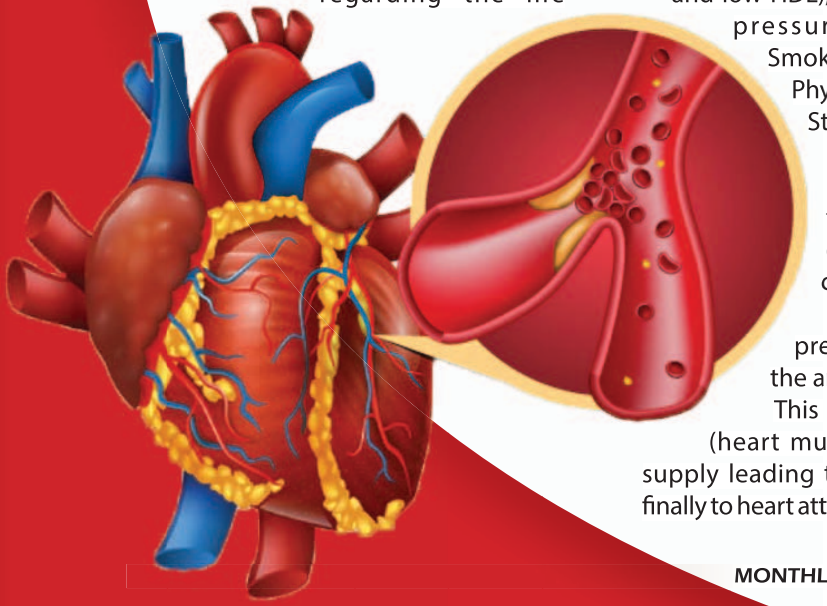
World Heart Day is observed every year on September 29.

'Coronary Artery Diseases' belong to the category of CVD.

CVD (Cerebro Vascular Diseases) include 'Coronary artery disease', 'Cerebrovascular disease' and 'Peripheral arterial disease'.

These diseases are caused by reduced arterial blood supply to Heart, Brain as well as Limbs (both upper and lower limbs).

This discussion will include some details regarding 'Coronary artery diseases' specially to make you alert regarding the life threatening enemy knocking at the door.



The incidences of CAD have risen from 1.6 per cent to 7.4 per cent in rural people and from 1 per cent to 13.2 per cent in urban populations.

A total of 19,744 people aged 30 to 60 years and 2,541 people aged 18 to 30 years died due to heart attacks in 2021.

During last 10 years (from 2012 to 2021), heart attack deaths have increased by 54 %.

Poor lifestyle is one of the primary factors that can make people vulnerable to CVD including the risk of heart diseases.

'Poor Lifestyle' means deranged Lipids (high LDL, high Cholesterol, high Triglyceride and low HDL), Hypertension (high blood pressure), Diabetes, Obesity, Smoking, Tobacco, Alcohol, less Physical activity,Junk food,high Stress etc.

Unhealthy dietary habits and lifestyle lead to the development of fatty deposits in the walls of the coronary arteries.

It leads to blockage, preventing entry of blood in the arteries of the heart muscle.

This results in cardiac ischemia, (heart muscle is deprived of blood supply leading to oxygen deficiency) and finally to heart attack, or myocardial infarction.

Symptoms of Heart Attack:

Most important symptom is – Chest pain feeling like tightness or squeezing pain that spreads to the shoulder, arm, back, neck, jaw, teeth, and sometimes the upper belly.

Other symptoms are cold sweat, fatigue, heartburn, indigestion, light-headedness, sudden dizziness, nausea, shortness of breath etc.

Sudden 'Cardiac Arrest' and 'Death' may sometimes be the first sign of 'Heart Attack'.

Management of CAD:

Life style modification as well as appropriate medicines according to the advice of physicians are the mainstay of therapy.

In cases of emergency, reaching an equipped hospital in time is essential and lifesaving.

Angiography, Angioplasty or Bypass Surgery may be required to save the lives of established CAD victims.

How to Prevent Heart attack:

Major ways –

Maintaining a healthy lifestyle, consuming a healthy and balanced diet, quitting smoking, losing weight, exercising regularly, reducing alcohol consumption, managing stress, monitoring blood pressure and blood sugar levels, and incorporating low-fat, high-fibre foods in the diet.

Every year 'World Heart Day', reminds you to watch out and keep yourself safe as the 'silent killer' is lurking in the shadows of your sedentary lifestyle, unhealthy habits, and poor eating patterns.

President's Column

Freebies in Politics

The term 'freebies' has become a bone of contention in the political scenario of India – some passionately arguing for its continuation, while some others being of the opinion that it is a wasteful public expenditure introduced with the motivation of purchasing the votes of the people by placating them with goods or services free of cost. The dictionary meaning of 'freebies' is 'something that is given to you without you having to pay for it, especially as a way of attracting your support for or interest in something'. Mostly, it indicates support for a political party which has promised you to get something free of cost, if it is elected to power. But given the extreme inequality of income and the poor capacity of a large number of people for resource mobilization, governmental initiative to help the people or a promise to help if elected to power, may well be interpreted as a strategy for ensuring inclusive growth.

These freebies may be of various types, each having different implications. These may be pre-poll promises, mostly made in the manifestos of different political parties in order to attract the support of the voters. These may be on the periods surrounding the day of voting in the form of 'gifts' given to voters – either in cash or kind, mostly in clandestine manner. Crores of rupees which are confiscated in 'raids' made by investigating agencies around the election time, give us only an indication of this type of clandestine money circulation among some designated sections of the electorate. Some argue that the money thus confiscated, may be just the tip of the iceberg, actual amount being spent is much more than that. The third type of such freebies may be in the form of the schemes undertaken or projects sanctioned by the party in power in order to impress upon the voters or 'woo' them for garnering their support.

In any one of these forms, the distribution of freebies, either real or prospective, is a danger to democracy. It gives an inherent advantage to the party in power because it can use the administrative machinery to 'woo' the voters. The party in power being more resourceful than all other parties, enjoy an inherent advantage in this field. Thus this contravenes the principle of 'level playing field' and is derogatory to the concept of 'free and fair election'.

The economic aspect of freebies is to look into the fact of how sustainable it is for the state to provide freebies at state expenses. The recent Sri Lankan crisis itself is an example of the collapse of the economy brought about by the lavish expenditure on freebies. Admittedly, this was not the single reason behind the economic crisis in Sri Lanka but one among many. The populist

agenda of imposing tax cuts at the time of the 2019 Presidential election and the subsequent 2020 Parliamentary election took a heavy toll on Government revenues. These, and many others, resulted in a spiraling fiscal imbalance and financial catastrophe, which the Sri Lankan Government could not escape. Again, Venezuela, was a Patro state, where the Government income was highly dependent on fossil fuel income. With the boom in oil price, Venezuela prospered immensely and these resources were largely spent on 'populist' and 'socialist' measures like free electricity, free water, free medicine, free education and the like. But with the dramatic fall in oil prices since 2014, the entire economy almost collapsed. The added factor was wide spread corruption. The Government failed as a result.

There are serious political, economic and moral aspects associated with the issue of freebies. As the freebies are public welfare measures – goods or services, either actual or promised, there is the question of how ethical the practice is, as it is analogous to giving bribes to one's own electorate. From the economic point of view, it has been argued that the basic frameworks of macro economics are fiscal discipline and stability. Freebies undercut this framework as the subsidy offered will have an impact on the state's fiscal situation. It has further been argued that freebies culture potentially undermined the credit culture and distorts the state's fiscal balance. The Supreme Court in a recent observation stated that freebies are extended using tax payer's money and push the state towards 'imminent bankruptcy'. Promises of irrational freebies by the political parties are for wrongful gain by the parties. Prime Minister, Narendra Modi called out for the stoppage of 'Revady culture' and said that it is dangerous for the country and could lead to far-reaching economic consequences. But, as we shall see later, his party, namely the BJP, has similarly made electoral promises in a number of situations which are nothing but freebies.

But the impact of the freebies may not be totally negative. Depending upon the orientation of the Government in power, it can help people and can act as a booster for equitable growth provided it is planned rationally and selectively. In that sense we can make a distinction between freebies and welfare schemes. We have to remember that the economy of a nation is made up of different people with different standards of living. To ward off the difficulties faced by the depressed sections, the Government in power can run/introduce welfare scheme for the economically weaker sections of society.

Freebies Culture in India

As we have seen, freebies culture indicates the making of a series of promises in election manifestos of political parties. Such promises may be providing of free electricity, free public transport, free water or waivering of pending bills or loans etc. if these parties are elected to power. The freebies culture has reached such alarming proportion that most of the election agenda of some political parties are based only on offers of privies, sending messages to the electorate that they shall get loads of privies if the political party wins. It started in South India in the 1960s when some political parties started offering free or heavily subsidized rice. In 1967, the DMK founder Annadurai promised 4.5 kg. of rice for Re. 1/- if he were to be elected. The AAP, led by Arvind Kejariwal stormed to power in Punjab and Delhi on the promise of providing round the clock free electricity. He similarly promised free electricity and Re. 1000/- per month for women for Gujrat, if his party were to be elected there, though this trick did not have success there. The Trinomool Congress while participating in the election to Goa, and latest in Tripura had also offered substantial freebies though, again, here also people could not be moved very much. Now, even open bribery, in the form of cash

or kind is offered at the time of pre-election campaigning. These types of promises multiplied with the passage of time, e.g. colour TV to voters, Laptops, Gas Stoves, Cash handouts, Pieces of land and even maturity assistance. All these are taking place in spite of the fact that the Representation of People's Act, 1951 stipulates that corrupt practices by political candidates and consequently bribing voters to influence voting are illegal and punishable.

The power of the Election Commission to fight freebies has remained somewhat vague . There have only been a few instances where the EC exercised its power. In 2016, for instance, it censured AIADMK and advised DMK to be more circumspect. In 2013, the EC invited representatives of all recognized political parties to frame guidelines on freebies announced in the manifestos. But leaders of the political parties reacted sharply in the meeting arguing that it would be an infringement on their rights. However, backed by the Supreme Court directives in S. Balaji vs. Government of Tamil Nadu, the EC went ahead and added a new Chapter to its Model Code of Conduct which empowered the Commission to censure a party if its Manifesto could not give a rationale for a particular promise or failed to explain how the resources would be mobilized for it. The EC further opined that empty poll promises have far-reaching ramifications, adding that it cannot overlook the undesirable impact of inadequate disclosures which the election promises have on financial sustainability.

The legality of the question of the freebies has been examined by the court a number of times. The issue has not been resolved as yet and it is still within the ambit of the court's jurisdiction. In 2013, the Supreme Court had said, "Budget for freebies are going above regular budget. This disturbs the level playing field. Freebies undoubtedly influenced all people. It shakes the root of free and fair election to a large degree". But the Supreme Court has further remarked, whether the state should frame "schemes which directly give benefit to raise the living standards or indirectly by increasing the means of livelihood is for the state to decide". That indicates that there is no watertight compartment differentiating a freebie from a welfare scheme. In other words every type of freebie can be identified as an welfare measure to citizens for their socio-economic upliftment. And taking advantage of this loophole, every party is doing that. The ruling BJP has offered free or subsidized housing, gas cylinders, toilets and sanitation facilities to people. In Bihar and West Bengal, government provides cash incentives to girl students for completing school education. In Tamil Nadu and West Bengal, at the time of the last election, government provided subsidized meals to the people. In order to woo voters in Himachal Pradesh and Gujrat Assembly Elections, both BJP and AAP had promised voters lucrative gifts. The AAP promised in Gujrat 300 units of electricity at every home, a monthly allowance of Rs. 1000/- for women, a monthly jobless benefit of Rs. 3000/-, a debt waiver scheme of upto Rs. 2 lakh. In Himachal, the BJP promised three LPG cylinders for low income women, bicycles or scooters for female students, financial aid of Rs. 25,000/-for all pregnant women and so on. Being the inhabitants of West Bengal, we all know how many such freebies are offered by TMC Government : every aspect of human activity from cradle to grave, are offered almost free. It is hard to say which of these offerings are legitimate welfare measures and which are freebies. Synchronizing with the pending election 2021, the West Bengal Government introduced monthly doles to all unemployed women (nick name as Lakshmir Bhandar) which according to poll analysts, turned the swing decisively in favour of the Government at the time of the last election.

So, the crucial question is to look into the motivation to introduce freebies. In a petition before the Supreme Court in 2022, the petitioner sought the Court's intervention

to direct the EC to deregister political parties that promised 'irrational freebies', financed with public money before election. It was argued that it was a threat to 'democratic values' and is akin to bribing voters. But the court found it difficult to identify the criteria to be adopted. O.P. Rawat, the former Chief Election Commissioner, attempted a guideline when he said "Except the subsidies given to promote food production, direct benefits for employability, educational attainments, sports, cultural activities, free medical care for the poor, free food for those who are destitute and affirmative action for weaker sections including women, everything else is a freebie and should be so recognized". As we will all agree, this definition is too vague and too wide to come to a definite conclusion. In contrast the RBI's guidelines are more specific when it says that the provision of free electricity, free water, free public transportation, waiver of pending utility bills and farm loan waivers can be classified as freebies as "they potentially undermine credit culture, distort prices through cross subsidization eroding incentive for private investments and disincentivize work at the current wage rate leading to drop in labour force participation". But these are all pious wishes – there is no law in this respect. The Supreme Court is entitled to form guidelines under article 32 of the Constitution. But the Supreme Court is seized of the issue and is treading cautiously.

The complexity of the issue can be judged by the fact that the ruling DMK in Tamil Nadu recently moved the Supreme Court seeking to be a party in the PIL questioning political parties announcing various freebies as election promises. It argued that various regions have their own socio-economic uniqueness and that their welfare measures taken by the various states could not be bracketed under the single phraseology 'freebies'. For example, free electricity can have a multi-dimensional effect on a poor family. The cascading effect arising from it cannot be defined in a restrictive meaning as a freebie. The basic argument is that these measures help the Government in 'social capital formation'.

Politicization of Poverty

No doubt, poverty is a rampant phenomenon affecting a vast section of the population. In view of the economically weaker condition of a sizable section of population, the Government is entitled to provide some basic goods and services to this section at a subsidized or discounted price. It has been said that freebies can result in a boon for the citizen but a curse for the Government in the long run if these are not restrained or properly planned. While providing free quality education can be a good investment in the long run, free bus ride or free electricity or cash dole can make people lazy and unproductive. MNREGA is good provided the work done through it is utilized as a capital expenditure and the selection of beneficiaries is not based on political patronage or on the basis of the recommendation of the local political satraps. In an address delivered at the Delhi School of Economics, a few months back, N.K. Singh, the Chairman of the 15th Finance Commission warned about how the race to provide freebies to voters could be "a quick path to fiscal disaster". In a situation characterized by gross inequality among the states, this may lead to sub-national bankruptcy if states continue to dole out their scarce resources through freebies to influence the electorate. N.K. Singh further said in that address "Governments across the political spectrum are increasingly attracted by the new lure of freebies politics. The broader issues troubling me for sometime is whether the politics and economics of freebies compels us to now think of what we can loosely call sub-national bankruptcy."

While subsidies can legitimately be provided for merit and public goods that

have larger benefits, one has to distinguish these from other sops that are part of the contemporary political narrative. It is in this sense that we have termed the situation as politicization of poverty. The poverty situation of the people is being exploited by the aspiring political parties by luring them into freebies and through that by ensuring their support to come to power. The crucial question is will these sops enable them to come out of their present situation of poverty? A Rs. 500/- doll per month is nothing to create any infrastructure for coming out of their present situation. These are at the best some temporary measures for a temporary period of time. These are likely to continue for an indefinite period of time with increased demands for such sops. Election will turn out to be a competitive arena for dole distribution promises having no effect on the basic issue of removal of poverty. Freebies culture is a good politics but bad economics.

Swapan Kumar Pramanick
President

Dr Panchanan Mitra Memorial Lecture 2021

On the topic "A Critical Analysis of Strategies Adopted and Approaches Followed in Tribal Development: How is Anthropology Significant Here?" was delivered by Professor Rajat Kanti Das, Former Professor and UGC Emeritus Fellow, Vidyasagar University, West Bengal on 2nd February 2023.

L to R : Professor Ranjana Ray, Professor Swapan Kumar Pramanick, Professor Rajat Kanti Das, Dr. Satyabrata Chakrabarti and Dr. Sujit Kumar Das.

Professor Arun Kumar Choudhury : The Pioneer of Computers in India

Shyamal Kumar Mukhopadhyay
Former General Manager, Webel, Kolkata

This year, University of Calcutta is observing the Birth Centenary of a technologist, who made wonders in Calcutta by fabricating first analogue computer of India, in Rajabazar Science College in 1956, within a decade of Independence. People did not ever see the TV at that time, Radio was rarely available. So thinking about building a computer, that too with our own, was beyond imagination for common people. In that era, the father figure of switching theory, Professor Arun Kumar Choudhury conceptualised and fabricated the first analogue computer in the newly established Institute of Radio Physics & Electronics under University of Calcutta.

The Institute of Radio Physics and Electronics (INRAPHEL) was established within two years of Independence, on 21st April, 1949. In this nascent stage of an institute, there were hurdles in every step regarding lack of ready-made sophisticated laboratory in one hand and on the other hand lack of resources like availability of suitable electronic components in the market, fund allocation etc.

Professor A. K. Choudhury with the able cooperation of his colleagues like Professor B. R. Nag & Professor J. N. Bhar, made it happen using discrete components from the war disposal and this computer became a computing tool of many researchers for years. Simultaneously, he laid the foundation stone of digital computer in India. He supervised Professor Amar Mukherjee, the first Ph.D in digital logic in India (1962) who became an internationally acclaimed professor in many universities in USA.

Born on 6 January 1923 in Purnia, Bihar, Professor Choudhury stood first in the district in matriculation from Purnia District School. From there he came to Patna University for studying Physics and stood first in B. Sc in the university. Then he was admitted to the Department of Applied Physics in Calcutta University and obtained his M. Sc degree from there in 1946. He joined the Institute of Radio Physics & Electronics in 1949 as a lecturer.

At that time, there was a big challenge to set up modern labs where the students can judge their knowledge about the emerging subjects and can perform their research-oriented experiments. Transistor, the basic building block of electronic circuits, was invented in 1947, just two years back and was not commercially available as in today. Electronic valves were in operation with all its short comings. Professor Choudhury with his innovative team successfully met the

challenges and set the electronics labs one after another. His profound knowledge and deep insights made others amazed with this unabetted success.

He published more than two hundred pioneering works in the field of analogue computer, circuit theory, control engineering, switching theory, logic design and graph theory in leading international journals which paved the way to design modern highspeed computers, which we see today. In early 80's of last century, he was among the very few researchers in the country, who initiated research on Very Large-Scale Integration (VLSI) design which would make it possible to bundle billions of transistors, in a single chip.

Can we imagine a man thinking day and night about technical matters and even forgetting taking food at proper time? The students and researchers of Institute of Radio Physics and Electronics have seen him and realised this in practice. Professor A. K. Choudhury, completely immersed in his subject, used to come to the institute very early (8 A.M) and often without having food from home. An attender used to go to his house at 81, Vivekananda Road to bring food for him many a times. His research scholars also worked hard and often stayed up to late evening along with him. Thus, the subject, 'Computer Science' was initiated in this country. The products of this endeavour were more than thousand brilliant engineers and teachers in India and abroad who advanced the subject further in their institutions and earned national as well as international fame.

Later, in 1980, a separate department named, 'Computer Science and Engineering' was opened in the university and he became the Head of the Department to exclusively shape the emerging subject. His seminal work on switching circuit optimisation, threshold logic, unate-cascade realizability and fault-tolerant synthesis of sequential machines thus gained momentum.

A scientist must be a humanist. He proved this in every step of his teaching life. Such deep love and affection towards his students and scholars motivated them to continue their study and contribute to develop the Computer Science and Engineering. As for example, when he saw a student not coming regularly to his classes due to financial stringent condition, he called him to his house next morning, and took him to a bank. He requested the bank manager to sanction a study loan to that student for which he would be the guarantor.

He used to give shelter to many needy students in the top floor of his house and provide food to them till they could manage a suitable accommodation in Calcutta. He persuaded many students to come back to academia leaving administrative job. All these he has done for the sake of development of science and technology by the next generation. There are examples, when students after joining IES and worked for 2 to 3 months there, knocked the door of AKC's house at 81, Vivekananda Road, Calcutta-6, early morning urging him to take them back in academia.

He, during his teaching used to motivate his students in such a way that they earned an inbuilt researcher's mindset may not be compatible to industry. So, even if they join in administrative services, they felt an attraction to came back to research. These facts are revealed in the memoirs of ex-students who are now prominent figures in reputed institutions around the world.

His teaching methodology was very new to common students. He used to give impetus to self-learning and so never answered any question directly. Instead, he asked return questions after questions to the student to make him understand the subject more deeply and able to answer his own question finally.

He never liked spoon-feeding and therefore placing a complex problem in the blackboard, he used to give some hints only and helped the class to arrive at a solution.

"Come to the blackboard" was a common call to his students. So, every student remained very serious about the deep learning of the subject.

Interestingly, he was so involved in innovation of new technology and engrossed in teaching and research, that he could not find any time to bother about any recognition and awards. Unfortunately, government departments or academic institutions overlooked such a pioneering personality to offer any formal recognition through awards or fellowship in his lifetime.

After his death (6 September, 1987), INRAPHEL dedicated its most equipped lecture hall to his memory, University of Calcutta established Institute of Information Technology after his name and Department of Computer Science and Engineering arranges Professor A. K. Choudhury memorial lecture every year. This year, on 8 and 9 January, Department of Computer Science and Engineering jointly with AKC Institute of Information Technology organised the inauguration of the year-long AKC's birth centenary programmes at Salt Lake campus of University of Calcutta in presence of internationally famous technologists.

His dedication towards the development of computers and love as well as affection to his more than sixty brilliant Ph.D scholars and more than thousand students, made him alive in the computer world today.

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Personal communication with Dr. Tinku Acharya, Fellow IEEE

Personal communication with Dr. Tarun Choudhury, son of AKC.

A Note on the February 6th, 2023 Gaziantep Earthquake Turkey-Syria

Bapi Goswami
Department of Geology, University of Calcutta

On February 6th, 2023, an extremely powerful 7.8-magnitude earthquake struck Turkey and neighbouring Syria, causing widespread devastation. It happened at 4:17 a.m. local time, 32.4 kilometers west-northwest of Gaziantep, with a Mercalli intensity of XI (extreme). Nine hours later, an M7.7 earthquake struck Kahramanmaraş Province, 95 kilometers to the north-northeast. In the first 11 hours after the first quake, 13 significant aftershocks (with a magnitude of at least 5) were felt. So far, over 45,000 people have been confirmed dead. The death toll is expected to rise significantly in the coming days.

A sudden slip on a fault causes an earthquake. A fault is a planar fracture in a volume of rock across which there has been significant displacement due to rock-mass movements. We know that tectonic plates move slowly, but they become stuck at their edges due to friction. When the stress on the fault plane overcomes the friction, an earthquake occurs, releasing energy in the form of waves that travel through the earth's crust and cause the shaking we experience. Strong ground motion, surface faulting, tectonic deformation, landslides and rockfalls, liquefaction, tsunamis, and seiches are all effects of fault movement. However, faults can move slowly due to aseismic creep.

Geologists commonly consider faults to be active if movement or evidence of seismic activity has been observed within the last 10,000 years. An active fault will almost certainly be the source of another earthquake in the future. Again, the strength of shaking from an earthquake decreases with increasing distance from the source, so the strength of shaking at the surface from an earthquake at 100 km depth is significantly less than if the same earthquake occurred at 10 km depth. Deep earthquakes happen within the cores of subducting slabs, which are oceanic plates that descend into the Earth's mantle from convergent plate boundaries, where a dense oceanic plate collides with a less dense continental plate and sinks beneath the latter. The plate boundary contact between two such plates causes very large, shallow subduction zone earthquakes, such as the Sumatra 2004 M9.1 event and the Japan 2011 M9.0 earthquake, and it is only active at relatively shallow depths (approximately 60 km). The latter resulted in a major disaster at the Fukushima nuclear power plant on the coast. The largest recorded earthquake was M9.5, which occurred in Chile in 1960.

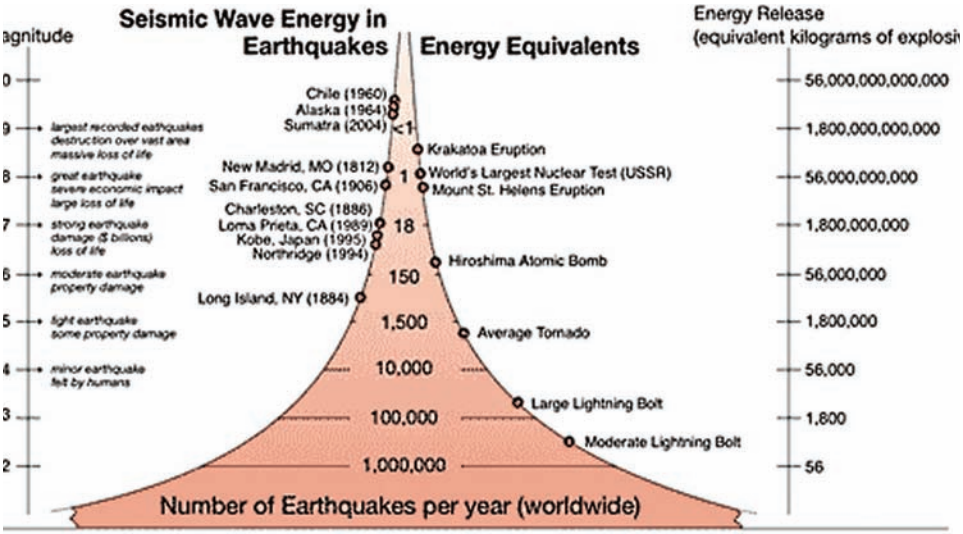
In this context, it is appropriate to state that the Richter Scale (ML) is what most people are familiar with, but it is no longer widely used in practice. The moment magnitude scale is now used to calculate the magnitude of an earthquake. The situation is understandable. The moment is a physical quantity that is proportional to the slip on the fault multiplied by the area of the slipping fault surface; it is related to the total energy released in the earthquake. Seismograms can be used to estimate the moment (and also from geodetic

measurements). A standard formula is then used to convert the moment into a number comparable to other earthquake magnitudes. The magnitude of the moment is the result (M). The moment magnitude (M) scale provides an estimate of earthquake size that is valid across the entire range of magnitudes, which was previously lacking in the Richter magnitude scales.

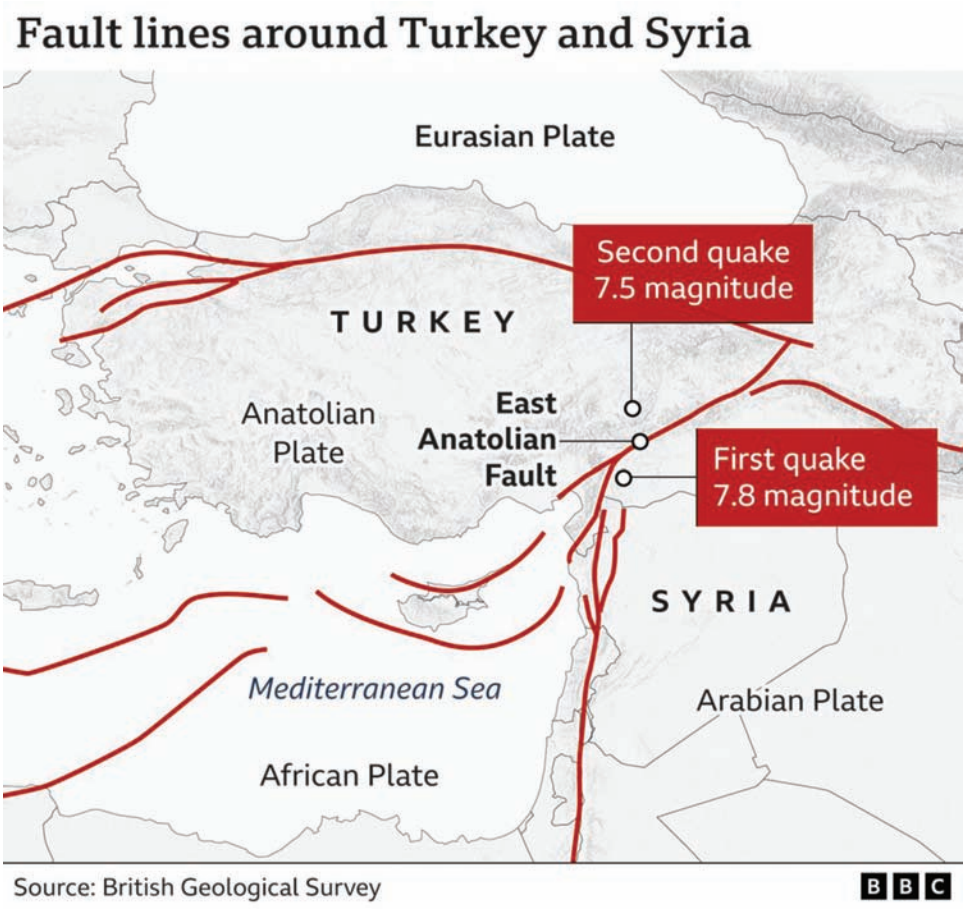
An earthquake has a single magnitude but multiple intensities. The intensity of shaking decreases as one moves away from the hypocenter. The underlying material has a significant impact on the intensity of the shaking as well. Soft sediments are more prone to shaking than hard rock. The magnitude of an earthquake is a quantitative and exact measurement of its size. It is expressed numerically; intensity is more qualitative and subjective, and it is a measurement of the earthquake's effects. It is written in Roman numerals. In many countries, the Modified Mercalli Intensity Scale is widely used. The following table depicts the relationship between earthquake magnitude, energy levels, and shaking intensity.

A strike-slip fault caused the recent earthquake of Turkey and Syria. A strike-slip fault occurs when two tectonic plates slide past each other sideways rather than up and down. As the plates push against each other on a vertical fault line, stress builds up until one of the plates slips horizontally. In this case, the Arabian plate was moving northward and colliding with the Anatolian plate. The epicenters of the earthquake were located at a depth of 18 kilometers. The earthquake's epicenter is known to be seismically active. The East Anatolian Fault Zone (EAFZ) is the name given to this area. The EAFZ is approximately 550 kilometers long, stretching from Karlova in the northeast to the Mediterranean Sea in the southwest. It has experienced numerous devastating earthquakes in the past. As recently as January 2020, Turkey experienced a major earthquake. An M6.7 caused extensive damage. As such, the area suffered several earthquakes, while the society was unprepared to face an earthquake.

The fact that even some of the most recent apartment buildings have crumbled



Source: United States Geological Survey.



Tectonic plates and fault lines around Turkey and Syria. Source: British Geological Survey.

to dust has raised serious concerns about building safety standards. Because of modern construction techniques, buildings should be able to withstand quakes of this magnitude. And regulations enacted in the aftermath of previous disasters in the country were supposed to ensure that these safeguards were in place. According to BBC photographs, several newly built apartment blocks in the port city of Iskenderun were largely destroyed. The side and back of the 16-story building completely collapsed, leaving only a sliver of the block standing. Following previous disasters, such as the 1999 earthquake that devastated the city of Izmit in Turkey's northwestern region, construction regulations have been tightened. However, the laws, including the most recent standards established in 2018, have been poorly enforced.

Countries such as Japan, where millions of people live in densely populated high-rise buildings despite the country's history of severe earthquakes, demonstrate how building regulations can aid in disaster preparedness. Construction safety requirements vary depending on a building's use and proximity to earthquake-prone

Collapsed building in Iskenderun, Turkey. Source Google, Getty.

areas : from simple strengthening to installing motion dampers throughout the structure to placing the entire structure on top of a massive shock absorber to isolate it from ground movement.

Let us learn from this earthquake in Turkey and Syria. India is a densely populated country. The Himalayas, northern India, and the Ganga-Brahmaputra valley region are extremely vulnerable to earthquakes. So we need very modern construction regulations. More than that, there is a need for enforcing regulations regarding construction work.

A very strong earthquake could turn 30-year-old houses in Kolkata city into a pile of dust.

Kraków Cultural Heritage

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Kraków is among the cities with the largest and most valuable ensembles of tangible cultural heritage in Poland. This trove is on many levels a reflection of intricate and dramatic Central European histories in the part of the continent where the West clashed with the East, engendering a particular, original, and variegated mixture of cultures, religions, and traditions (Davies 2005). The oldest material traces of human presence in Kraków come from the prehistoric times, and those of permanent settlements from before the "migration of peoples" period and the influx of Slavic population into Central Europe. As the Slavs settled in the region and the Polish state crystallised, since the 11th century the castle on Wawel Hill in the city centre served as the residence of Poland's rulers, while the local church was built as the bishops' seat. When Poland adopted Christianity in 966, the country as a whole and the city in particular became the place where civilisational paradigms would flow in mostly from the West. The nearby Kievan Rus was the opposite, as in a similar time-frame it adopted Christianity from Byzantium. Both countries functioned as part of a single state since the late 14th century, with Kraków as its capital for the following 200 years. It bears remembering, since the city was for a long time the nexus of a clash between two disparate visions of Christianity, and the concomitant cultures and social models.

During the late Middle Ages, Kraków's spectacular growth made it one of the largest and most dominant hubs in the region, member of the Hanseatic trading league, an important salt exporter and broker in lead and copper trading. At the dawn of the 16th century, around 25 thousand people lived there. To this day, the criss-crossing street pattern, remnants of fortifications, an awe-inspiring plethora of Gothic churches, and the mediaeval seat of the oldest Polish University, Kraków Academy, currently Jagiellonian University, founded in 1364, are all reminders of this era. The city went from strength to strength until at least mid-17th century, as proven by abundant city palaces and sacred buildings dating back to the Renaissance and Baroque, when the Commonwealth of the Two Nations, a vast state comprising the lands of modern-day Poland, Lithuania, Belarus, and Ukraine, had its architecture decided by the artists from Italy.

The middle of the 17th century is the time after the state's capital had moved to Warsaw. But also the start of many wars lingering on for decades, which had a devastating impact on the state of the Commonwealth and contributed to its fall as the 18th century drew to a close. Kraków went through its period of dilapidation and degradation then. Its renaissance came at the end of the 19th century, when the city was under the control of the Habsburg monarchy. On the one hand it was an important military centre on the border of Austria-Hungary and Russia at the time. At the same time, it came to

be the core of rebirth for Polish art, a vital centre for art and architecture in the age of historicism and Secession. The new halcyon era lasted until the Second World War broke out. Once Poland regained Independence in 1918, Kraków went through rapid spatial development and metamorphosis into a regional metropolis, whose outcome is rich architectural fabric in the form of monumental public buildings (Purchla 2016). Nazi occupation of Kraków from 1939 to 1945 meant the Holocaust and death of nearly 25% among the city's 250 thousand pre-war residents, who were part of the Kraków Jewish community (Bednarek et al., 2010). Unlike for many Polish cities, the war did not entail the physical destruction of Kraków urban space, however. After it ended, under the Communist system instigated following the USSR patterns the city once again experienced a period of accelerated growth, symbolised until this day by Nowa Huta, an industrial district built from the ground up in the Stalinist times on the eastern side of the city (Bieniarzówna & Malecki 1979-2004).

This history of Kraków development, sketched in the broadest of strokes, is currently constructing its residents' identity and sense of belonging. Nowadays, Kraków inhabitants number over 770 thousand, with over 1.1 million living in the metropolis (Firlet, 2007). Since the 2000s, it has been the second biggest city in Poland, behind Warsaw. Likewise, it is a key higher-education hub and a chief centre of new branches in the post-industrial economy. Today's Kraków is strong economy-wise, furnished with brand-new infrastructure, and—since almost two decades after Poland's accession to the EU—bustling with fresh investment and teeming with fast-growing architectural fabric.

Its rock-solid identity, expressed by the history stretching for over a thousand years and etched into the buildings and streets, overflowing with the cultural heritage sites to an extent unheard-of across Poland, remains an important pledge for modern-day Kraków. The extensive inherited urban complex is still strongly influencing the contemporary city as a whole and continues to be a frame of reference in its planning. Its meaning is best evidenced by the fact that as early as 1978 the historic Kraków city centre was entered on the UNESCO World Heritage List (Siwek 2011). It was among the first 11 locations distinguished in this way all over the world. The feat stemmed from the international community's painstaking efforts to preserve the state of historical buildings in a leading ensemble in the Eastern Bloc then, as they went through the lightning-quick growth and industrialisation in the post-war period. In the conditions prevailing across the communist Poland, the UNESCO List inscription was a breakthrough event, spearheading the changes in the approach to heritage management and paving way for the complex revitalisation whose scale grew frantically after 1989 and the accompanying shift in Poland's political system. The UNESCO List inscription makes Kraków currently a hotbed of heritage thinking. It is worth-noting here that a dozen other such places are located in the Kraków vicinity, inscribed on the UNESCO World Heritage List in five separate entries. These are Wieliczka and Bochnia salt mines, their excavation traditions dating back to the Middle Ages, the 17th century Mannerist Bernardine monastery in KalwariaZebrzydowska, the wooden Catholic and Greek Catholic church ensemble, mostly from the modern era; last but not least, the German Nazi concentration and extermination camp in Auschwitz. Recalling these places helps understand the knotty context in which city development and the historical events which left their mark on it unfolded (World Heritage 84 2017; Dziedzictzvo zv Polsce / Heritage in Poland 2017).

Situated in the city are also three Monuments of History, special zones

considered places of memory by the decree of Polish President. In 1994, the historic centre of Kraków was designated a Monument of History. In 2017, both the nearly one-thousand-year-old Benedictine monastery in Tyniec, west of Kraków, and the nineteenth-century Kościuszko Mound, a crucial monument and memory site from the Romanticism era on the Polish soil (Pomniki Historii, 2022).

In addition, Kraków, whose area stretches for almost 237 square km, includes two culture parks, that is zones of strict monument preservation regulated by City Office; one covers the historic downtown, the other the post-war buildings of Nowa Huta (Parki Kulturowe w Krakówie, 2022). It is worth-adding that throughout the city space over 1200 objects were entered on the monument registry as ensembles or single structures (Rejestr Zabytków, 2022). The municipality's monument registry, the lowest and most common form of protection, comprises over 6300 objects, which translates into over five thousand additional buildings and sites that are legally protected and considered monuments under the Polish law. Against the background of the whole country, with ca. 70,000 objects on the monument registry, Kraków remains the sole cluster of such size, value, and authenticity. A vast majority of the largest Polish metropolises—Warsaw, Gdańsk, Szczecin, or Poznań, to name a few—were demolished during the Second World War, even though their histories had started in the Middle Ages as well. Nowadays, especially Warsaw enjoys the particular distinction of the city where the historic centre was reconstructed (Szulińska 2011). Unlike them, Kraków is the only large Polish city where monuments are genuine instead of regenerated.

The city's break-neck pace of development after the Second World War, along with its rapid economic development currently and high mobility in the community of those living and working here, make it at present the place where the need to preserve the cultural heritage is at loggerheads with the pressure to invest and a number of other contemporary challenges. Especially in the historic centre, but likewise in other districts, the frequent and liberal use of tangible heritage, e.g. for tourism purposes, turns Kraków into a perfect spot for researching the shifts in preservation and conversation methodology.

Similar interactions and very often clashes tend to take place in the area put on the UNESCO World Heritage List. The key element of this zone resembles a pear in its shape and is encircled by the Planty, the first city park, established in early 19th century where the former moat had been often (Wiśniewski 2017). Inside it is a dense urban fabric, criss-crossed by the street grid whose history stretches back to the charter using the Magdeburg Law and enacted by Prince Boleslaus V the Chaste in 1257 (Lichończak-Nurek 2007). Besides the historic city centre in Kraków, the UNESCO List features Wawel, the mediaeval castle which is situated on a hill bordering the Vistula River and whose current look results from extensive Renaissance revamping done in the 16th century (Fabiański & Fischinger 2013); a Gothic cathedral with its garland of Renaissance and Baroque chapels neighbours the castle (Crossley 1985). Apart from the city and the castle, what the UNESCO List covers is the erstwhile settlement south of the hill (Stradom) and another historic city ensemble, the district of Kazimierz, the previously separate town founded in mediaeval times, more precisely in 1335, as Kraków was briskly developing in the late Middle Ages (Krasnowolski 2007).

In public consciousness, the area sketched above is the focus and the essence of what defines Kraków, its identity and cultural

landscape. This zone only comprises less than 1.5 km^2, though—less than 0.5% of the whole current territory that the city has, which is worth-remembering. The second area in Kraków that is most densely packed with cultural heritage objects is the space between the Planty park and the second ring road, which up until 1910 was a hard border of the city, then fortified. Few people know that a mere 110 years ago, Kraków area amounted to less than 6 km^2 (Klimas & Lesiak-Przybyl & Sokól, 2010).

This locality, alongside the historic centre of Podgórze—an industrial town located on the other side of the Vistula, which had been a separate entity until 1915—is now mostly filled with building structures erected in the 19th century. Currently, the space of over 9 km^2 remains a buffer zone surrounding the UNESCO List of World Cultural and Natural Heritage (Siwek 2011).

The inside of the second ring road is the space where for many decades the activities related to the preservation and conservation of Kraków monuments were focused. Once the fairly degraded historic city centre made it to the UNESCO World Heritage List, it witnessed numerous wide-ranging conservation efforts. The inception of the Social Committee for the Renovation of Kraków's Monuments in 1978, bringing together professionals and specialists from NGOs and the establishment of the National Fund for the Revalorisation of Kraków's Monuments in 1985 allowed an effective mechanism, unique throughout Poland, to be created, by which public funds, without leaving the community oversight, are directed into conservation and restoration of cultural heritage (Spoleczny Komitet Odnowy Zabytków Krakówa 2022).

All the while, the word *heritage* remains the key for understanding the processes under discussion. Since at least the 1970s and the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage being adopted in 1972, the shift away from focusing on the need to preserve the artistic value of building and towards putting stress on the values stemming from tradition and identity has been present. The turn was driven by 20th-century history, wartime damage, or the changes which industrialisation and urbanisation underlie, and they all lead to reinforcing the need to preserve not so much the monuments as heritage writ large (Graham & Ashworth &Tunbridge 2000)—and with it, the tangible testimony of historical events and processes as well as memory sites. Over time, younger buildings—dating from the 19th and 20th centuries—started to attract increased interest. In Poland the discussion whether it is sensible to protect 19th-century heritage was ongoing as late as the 1980s. As a result of the processes outlined earlier, in the 21st century the legacy that this period left is taken to be the material heritage of the past, whose preservation is a must. Over the last two decades, the preservation debate has begun to devote more and more space to the inter-war architecture, and lately post-war architecture, too (Cymer 2019).

For an attempt to paint a picture of what Kraków's cultural heritage is, these shifts are notable because a predominant part of the city's territory were only subject to urbanistic processes after 1910. Between the world wars, Kraków comprised nearly 50 km^2, and in 1941 Nazi administration increased its area to 168 km^2. Further changes occurred once the war ended, with another 62 km^2 to the east being incorporated into its extent in 1951, in relation to building the Nowa Huta industrial estate. The last big outward push of the city borders happened in 1972, leading to the city area more or less achieving its current state (Firlet 2007). Each of the changes listed led to the inclusion of many historical countryside settlements, plentiful mansions and manor parks, monasteries and fortifications within

the borders. In the first half of the 20th century, the Renaissance Villa Decius and the Baroque Camaldolese Monastery in Bielany became part of Kraków tangible heritage resources. After the war ended and the NowaHuta construction began, the city encompassed such venues as the prehistoric Wanda Mound, the mediaeval Cistercian Abbey in Mogila along with the nearby building ensemble of this historical village, the Mannerist manor house in Branice, the Gothic church in Ruszcza, and the Classical church in Pleszów (Salwiński & Siliba 2008).

Another quantitative change occurred as the 20th century drew to a close and related to the ever more numerous inscriptions in the monument registry for buildings erected in the inter-war period. Some of the first registration of this type took place in 1994 and involved the Jagiellonian Library and the Jagiellonian University Professors' House at Juliusz Slowacki Alley 15. Post-2000, the preservation started to encompass the post-war buildings. The area-wide inclusion of NowaHuta's oldest part in monument registry in 2004 was a breakthrough in this regard, as in Poland it spearheaded drawing attention to the need to preserve the heritage of socialist realism. In the last decade, the debate on protecting the post-war modernist architecture became a phenomenon of note, and entering the modernist Cracovia hotel and Kijów cinema in 2016 on the monument registry were particularly important events (Karpińska & Leśniak-Rychlak & Wiśniewski 2015).

This short catalogue of administrative and heritage-related changes within the city shows both how in a short span its space radically broadened, and how multivarious and complex its legally protected heritage resources are. It also shows how this treasure trove is evolving and re-evaluated currently. Its evaluation is provoking pointed questions about which layers in the city's cultural heritage continue to be unseen in the image that is presented the most often and zeroes in on the historic city centre. It also sparks questions about the tools to be leveraged in order to protect it. In 2011, UNESCO—the world's largest organisation focused on culture and science, for many decades the beacon of standards regarding the universal principles for protection and evaluation of cultural heritage—adopted a recommendation on historic urban landscape, whose goal is to supplement the rules set forth in the canonical texts on tangible heritage protection. The basic aim of the recommendation is to prepare common tools regarding the protection of cultural landscape across historic cities against the backdrop of the further growth. The role of protection achieved through active governance, residents' active participation, and the participatory urban regeneration model is only set to increase. Only in this way and with abiding by the rules of sustainable development can the integrity and authenticity of cityscape be preserved, and the recommendation intends to move them to the forefront (The Historic Urban Landscape 2022).

Much like many historic sites in Poland and around the world, Kraków is now facing the task of pursuing the preservation policy which takes into account not only particular, even if outstanding, works of architecture but also makes it possible to read their presence in the wider urbanism context. Heritage protection through governance and regeneration is available only with respect to larger areas that constitute standalone cultural landscapes. A question worth-posing here is what the city's resources in this respect are. What should be protected and preserved in the first place?

The jumping off point for such an analysis is Wawel and the Old Town. The hill is the predominant element in the city's panorama,

a symbolic place which through its very history tells the tale of Poland and her culture. Over the last three decades, the hill was at the core of numerous conservation efforts that covered both the Royal Castle and the Wawel Cathedral. The basilica of Saints Stanislaus and Wenceslaus is actually the most valuable structure on the hill. The first Romanesque-style church was built there in early 11th c. As that century was nearing a close, another one—Romanesque as well—replaced it. Some elements of these structures are extant in the underground and lower part of the present cathedral. The city and the state went on growing in the 14th c., when King Wladyslaw tokietek from the Piast dynasty decided to refurbish the cathedral, this time in a Gothic fashion. The chancel in the new temple was ready for the king's coronation in 1320. The construction works took several more decades (Crossley 1985). Over the next centuries, a number of chapels were erected around the basilica. Of the highest value is the Renaissance chapel of Sigismund, built by the Italian architect Bartolomeo Berecci from 1519 to 1533 (Mossakowski, 2021). A gilded dome crowns this mausoleum of the last rulers from the Jagiellonian dynasty, which joined Poland and Lithuania in a union. Concurrently with the chapel construction, the castle was being rebuilt after the fire which rampaged through the royal residence in early 16th century. Its arcaded courtyard is particularly impressive, in its shape alluding to Italian residence of the late 15th and early 16th centuries.

At present, Wawel is a space where mass tourism meets the cultural and religious needs of Kraków residents. Currently, the hill and its concomitant aspects remain a major conservation challenge as every year over eight million people visit the site. Over one million tourists come inside into the castle. The challenges facing the Old Town nowadays are very much similar. As has been noted, since it was included in the UNESCO List of World Natural and Cultural Heritage, the city centre has been the locus of one of the largest conservation programmes that Poland has seen in the last few decades. The inner Planty area is among the best-preserved examples of a Magdeburg Rights-chartered mediaeval town that still survives across Poland and Central Europe. In keeping with late-mediaeval urbanistic precepts, the extent of the city was divided into regular squares, their sizes about 100x100 m. Initially, they would be split into eight parts; over time, the sections would blur, the buildings would spill over, and the street level would rise. At present, the historic centre is a rich architectural mosaic, composed by buildings put up from the late Middle Ages to the early 20th century. It stands as a living guidebook of the Western architecture history (Purchla & Ziętkiewicz-Kotz 2018).

The kernel of the city is the vast Main Square, covering four quarters of land. An oblong mediaeval building, rebuilt in the Renaissance style, fills its centre—the Cloth Hall (Sukiennice), Kraków's oldest shopping mall and since the end of the 19th century the seat of the national museum, first throughout Poland (Dobrowolski 1978). To the west of the Cloth Hall, a Gothic town-hall tower soars majestically over the Main Square. The building it used to be a part of was demolished in early 19th century; the tower is a reminder of the city's early years and its legal system. On the other side of the Square, the eye is drawn to the edifice of St Mary's Church. The largest Gothic church in Kraków, it was built by stages between the late 13th and the late 15th centuries. Inside, one can marvel at the masterpiece of late mediaeval art, St Mary's High Altar created by Nuremberg-raised VeitStoss, an architect and sculptor (Lichończak 1983).

Several other monumental Gothic basilicas grace the streets of Kraków and

Kazimierz. Built in 14th and 15th c., they form a distinct group of mediaeval sacred buildings. The second phase of development for this sort of architecture in the city took place in the counter-reformation period and in early 17th c. The church of Saints Peter and Paul is singularly important in the broad group of Baroque-era Kraków churches. Constructed for the Jesuits, it was prepared as a carbon copy of Il Gesù, Roman mother church of the order (Malkiewicz 1985). Another tremendously valuable example of architecture from mature Baroque is the late 17th c. university church of St Anne. All told, nearly thirty sacred buildings from the modern era are spread throughout Kraków (Kliś &Węclawowicz 2009).

The city's regular grid pattern is filled with houses, churches, and fortifications that represent all the periods and styles in art history from the 11th-c. till the present day. Remnants of Kraków and Kazimierz city walls remain well-preserved in the city. So are three defensive towers, two city gates, and barbican. 14th-c. St Florian's Gate and late-15th-c. Barbican remain unique examples of late mediaeval military architecture developments (Firlet & Zaitz & Mistal 2006).

In central Kraków, a separate instance of cultural cityscape worth including are the Planty—the oldest city park, dating to the 19th c., along with the surrounding buildings, most of them remembering the times of Austrian governance in the city (Wiśniewski 2017). Among the most valuable sections of urban fabric around the Planty is by the Matejko Square, which was a fragment of the former mediaeval urban design called Kleparski Square. A multi-layered place, it amalgamates remainders of the 14th-c. chartered-town planning composition on the one hand, valuable structures from the turn of the 19th and 20th c. on the other, such as the whereabouts of the Jan Matejko Academy of Fine Arts or seat for the National Bank of Poland. The space presents itself as an interesting example of changes which Kraków and its suburb were subject to when being modernised in late 19th and early 20th centuries; it also showcases how the vision of growth and modernisation referring to Vienna's Ringstrasse was pursued in the space of the city (Blau & Platzer, 2000).

What is worth-noting is that there are more similar compositions and interiors, located inside the second ring road and within the buffer zone for the UNESCO entry and in its immediate vicinity. The architecture of NowyKleparz and the nearby neo-Renaissance Ludwik and AnnaHelcels Residential Care Home as well as the former Archduke Rudolf Army Barracks (nowadays the campus for the university of technology) close by are all highly interesting. Another similar arrangement is the Aleksander Lubomirski Shelter plus the historical military barracks stretching along the Rakowicka Street (Purchla 1990).

A further important example of cultural landscape in the part of the city that was shaped in the late 19th-c. seems to be the Wesola district, then transformed into Kraków's main medical hub. Previously, a few convents and manors had been built here, one of which was the origin of a botanical garden. At the turn of the 19th and 20th-c., a group of hospitals was erected in the area, a high tower of the new Jesuit basilica, Sacred Heart, soaring above them since the 1910s.

A separate urbanistic design situated in the UNESCO List area is Kazimierz. With Magdeburg-Rights town privileges since 1335, it largely kept its initial spatial arrangement to this day, its dominant elements being the massive mediaeval and modern monasteries, including the town's main temple, the Corpus Christi Church and the nearby St Katherine Church, both firmly in the Gothic tradition. A Paulinite church and monastery, from the Baroque times, can also

be found there, and their presence is related to the veneration of St Stanislaus, a Kraków bishop, martyr, and patron saint of Poland living in the 11th century (Firlet & Zaitz & Mistal 2006). Kazimierz tangible heritage does include major centres and symbols of Polish Catholicism. At the same time, it remains a site of memory about the Jewish community, which used to live in Kraków since the Middle Ages to the tragic years of World War Two and the Holocaust (Bednarek et al. 2010). At least since the late 15th-c., Jews were an indispensable part of Kraków cultural landscape. In the 16th and 17th-c., Kazimierz was one of the key centres for the Ashkenazi culture in Europe, a thriving meeting spot for Jewish thinkers and philosophers who laid down the groundwork for Hasidism (Galas & Polonsky 2011). Synagogue buildings still testify to the richness of Kazimierz's Jewish culture, the Old Synagogue especially, a unique Renaissance building. After the war which annihilated the community which had been fostering the place for centuries, the district was among the least tended to in Kraków, with the state of its building deteriorating steadily until the 1990s. Over the last three decades, the tangible heritage of Kazimierz went through a pivotal shift. The local synagogues and many other buildings used by the Jewish community have been renovated (Murzyn 2005).

The cultural heritage of Kazimierz also means industrial works : a former power plant, gas plant, and tram depot. At the start of the 20th-c., Kazimierz and neighbouring Podgórze were the first industrial hotspots of the modernising Kraków. The buildings of historical tram depot are particularly interesting. As late as 2000s, many of its car barns were in disrepair and nearly crumbling. A wide-ranging conservation programme made it possible to not only preserve them but also transform the facilities into a living space of the Urban Engineering Museum. This was among the first large-scale conservation projects focused on post-industrial heritage in the city (Wiśniewski 2018).

On the other bank of the Vistula is Podgórze, another historical town space designed by the Austrians after the first partition of Poland. Between the river and the limestone cliff towering over this part of the city, along the streets Limanowskiego and Kalwaryjska, the distinctive structures and lines of a small Austrian town started to sprout there in the late 18th-c. Since the 1900s, the spires of two neo-Gothic churches have been towering over the settlements, and the Bednarski park in a former quarry with its nearby villas complement the whole (Laskowski 2016). At present, a vital part of the Podgórze space is the Ghetto Heroes Square. The district's eastern part served as the ghetto for Jews in occupied Kraków from 1941 to 1943 and was the site of suffering and death for thousands of them. After the Second World War the memory of atrocities in the area was all but erased. The monument construction in 2005, consisting of oversized bronze chairs placed orderly on an expanse of setts, inaugurated the redevelopment of Podgórze (New Zgody Square—Remodelling of the Bohaterow Getta Square 2021). Commemorating the most painful and long absent past initiated an overhaul of tangible heritage and refashioning the identity of the place.

Another memory site and a huge challenge related to protecting the tangible heritage is the area of former concentration camp in Plaszów (Plaszow): the grounds of two Jewish cemeteries were turned into a forced labour camp, then a concentration camp, during the war. After 1945, the area was left as an open space of greenery, nowadays reminding a viewer of its tragic history only with a few scattered relics and a monumental 1964 sculpture of fascism's victims (Bednarek et al. 2010).

Moving slightly north, the Krakus Mound, the oldest among Kraków mounds, stands tall as a high point in Podgórze heritage. Tomb structures were built in Central Europe from the Bronze Age onwards; two of them are extant in the city: Krakus Mound and Wanda Mound (in NowaHuta). Both exceptional prehistoric barrows are the oldest immense traces of human activity in Kraków and the oldest such big and well-preserved examples of this type of material heritage on Polish soil. The construction of Krakus Mound is placed around 6th century CE (Slupecki 1999). The tradition of Kraków barrows made a big comeback with the works to set up Kościuszko Mound in the western side of the city, on St Bronislawa Hill (GetkaKenig 2017). The round earthwork dating to 1823 is one more inestimable landmark in the cultural landscape in Kraków with its surroundings—fortifications erected in 1850s to accommodate the Austrian troops in the Kraków Fortress they built. To the west of this spot, the biggest stretch of vegetation in the city, going all the way to Wolski Woods, can be seen. In the latter, a zoo was established between the wars and the highest artificial hill in the city, Pilsudski Mound, was piled up in the 1930s (Krasnowolski 2011).

Kraków fortifications are another component typical of the city's heritage. As was noted before, fragments of mediaeval city walls and the Barbican survive. Other sections of city walls are present in Kazimierz. Yet, the largest military construction is a set of forts put up by Austrians since the 1850s to the 1900s. From the mid-19th c., monumental fortification constructions that remain in a relatively good condition are in Kleparz (north of the city centre), near Kościuszko Mound, and on Lasoty Hill in Podgórze (Fort 31 Benedict). Despite the demolition of many forts, what seems worth stressing is that several dozen structures built for these purposes still survive across the city (Mikulski et al. 2007). Their majority are forts built at the turn of the 20th century. They were built mostly near the present borders of Kraków. Before the First World War, a network of defences and roads used to connect them, with carefully selected vegetation for concealment. Although the objects and infrastructure related to the Kraków Fortress development were lost in many places, the Austrian-era strongholds and citadels and the accompanying greenery have not ceased to be a visible and remarkably precious element of the local legacy.

As the introduction made clear, the bulk of Kraków space was met with the pressures of urbanisation only after 1910 and the expansion of city borders, related to establishing the so-called Great Kraków (Klimas & Lesiak-Przybyl & Sokól 2010). It is worth-noting here that in the lead up to this extraordinarily ambitious project a city redesign competition was launched. The urban planners who took part envisioned Kraków's transformation into a garden city. Following the then-popular concept of the British planner Ebenezer Howard, setting up many villa districts across the city was the aim at the time. A model settlement of this kind remains the cluster of city clerks' houses in Salwator, built not long before the First World War broke out. Before 1914, works began on a garden part of the Józef Babiński Clinical Hospital in Kobierzyn to the South-West. In the inter-war years, works on professors' quarters near Mlynówka Królewska were finished, and in the eastern part of the city the ensemble of officers' villas, the largest in Kraków, was put up. Another spatial arrangement of a partly villa-like character is Dębniki; situated not far from Wawel, across the river, it still bears a lot of the original buildings of the erstwhile suburb. The centre of the Dębniki district boasts the majestic modernist silhouette of the inter-war St StanislawKostka Church.

The chief city planning project pursued between the world wars was intended to be the pride and joy—Three Bards' Alley. In the short span of two decades, the city deployed an ambitious programme to build new residential districts and a district of imposing public edifices. In the 1920s and 1930s, the quarters of Pólwsie Zwierzynieckie located near the Zygmunt Krasiński Alley and similar quarters on the grounds of former Nowa Wieś, Czarna Wieś, and tobzów situated near the Juliusz Slowacki Alley were both dotted with mostly modernist tenement houses, usually of high architectural value and creative decoration. A special place that shows the nature of this area is still the site of Square of the Disabled and the surrounding houses and public buildings. On the national scale, the Three Bards' Alley should be regarded as one of the foremost successes of the Polish city planning at the time (Wiśniewski 2019).

The buildings adjacent to the Adam Mickiewicz Alley are remarkable in this design, as the most important public buildings in Kraków in the inter-war period were grouped there : the immense seat of the Mining Academy, the Jagiellonian Library, the National Museum. From one world war until another, Kraków saw a metamorphosis from a small city fortress on the frontier of Austria-Hungary to a new regional centre in the Second Polish Republic.

A peculiar layer in the local tangible heritage and perhaps the greatest challenge in terms of evaluating the cultural landscape is brought by Kraków's post-war fabric. Recently, the city had the second area on its territory acquire the culture park status: the oldest part of Nowa Huta. With works undertaken from 1949 to 1960, the structures in this district allude in their shape and character to the key achievements of USSR city planning (Loebow 2013). The radially arranged Nowa Huta streets remind one of Saint Petersburg's historical plan and the patterns in Magnitogorsk, the flagship instance of city planning in Russia under Joseph Stalin (Biedrzycka & Chyb & Fryźlewicz 2006).

Nowa Huta designs can be counted among the most valuable and best-preserved urban and architectural projects of socialist realism throughout Central Europe. The high quality of the architecture it contains and the outstanding cohesion the ensemble exhibits were the determinants in creating a culture park in 2019 and in first entries of particular buildings in the monument registry, e.g. large residential houses near the Plac Centralny (Central Square).

Speaking of Nowa Huta heritage, we should remember that the culture park also features twin Administrative Centre buildings for the Lenin Steelworks, one of the most captivating and best-preserved architectural ensembles erected in the 1950s in Poland. The two "Doges' Palaces" form a gate to the giant, still operating steel plant whose size in the city limits is bigger than whole Kraków used to be prior to 1910 (Smaga 2017). This vast area contains many industrial buildings which remember the early part of Lenin Steelworks construction. As the plant production is being halted, it should be assumed that Kraków is about to face the daunting task of looking after the extensive area and of putting its industrial legacy to good use.

Nowa Huta is also an ensemble of modernist architecture emerging hereafter the 1956 political thaw. Smack down in the middle of Nowa Huta, blocks of flats called Helicopter, French, and Swedish, come from the late 1950s to exhibit the wish manifested by Polish artists to steer clear of socialist realism and return to modernist forms. Alongside a few other buildings—including the expressive and Corbusier—styled outline of Lord's Ark, that is Our Lady Queen of Poland Church, built in the nearby Bieńczyce district—the blocks shine together as a sort

of architecture showcase for the post-war era, which in fact all of Nowa Huta is (Klaś 2018).

Over the last decade, the growing interest in this part of the city sparked increased understanding of the urbanistic and architectural value of residential housing put up across Kraków in the 1960s and 1970s. Regarded as dead weight and design duds for the longest time, they are now stirring up interest and coming to be the basis for regeneration projects. Notably, from the city planning point of view the post-war modernist housing districts show how intricate a process their construction was. They also exhibit many types of spatial arrangements, thus giving the lie to prevailing opinion of their homogeneity and monotony that supposedly went overboard. In Nowa Huta alone, we can see a few radically different urban designs. "Built from the onset of the 1960s, Bieńczyce estates testify to the fascination that modernist city planning, which then ruled the Western Europe, held. Along the lines of the Athens Charter, imposing ten-storey housing blocks dominate the space there. The spatial makeup of nearby Mistrzejowice is much different, with tiered building height and segments of greenery separating the estates. Post-war block complexes from precast concrete have become part and parcel of Kraków space, are a piece of it for better or worse and a worthwhile element of its urban fabric. Whoever gets to know them better is about to wrestle free of the "uniform concrete space" stereotype. To understand the significance and to make readable such estates as those of Nowa Huta remains an ongoing challenge for our times. The period of post-war modernism left numerous valuable results as its legacy all over Kraków.

As a resource of cultural heritage, Kraków retains its role as a never-ending story. Each era, each decade produces new projects and accomplishments whose value only time can tell. Nowadays, the issue is no longer the condition of historical buildings. The biggest challenges are tied up with the investment pressures and urban sprawl which lead to original spatial arrangements being rendered invisible and to green areas being devastated. Unprofessional redevelopment of many facilities, e.g. post-war housing estates, remains a problem as well. The future of historical buildings in the city centre, exploited beyond their capacity, is also an open question. Only with city planning that stays sensitive to cultural values and with residents' engagement in governance over the legacy of the past. Will it be possible to preserve for the future generations the wealth of tangible heritage that is Kraków?

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Ujjain : The Grand City Eternal

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Ujjayini or Ujjain—the city eternal, has been attracting centuries of civilized worlds towards its ever beaming halo reflective of not only religious-philosophical light but also academic, cultural and economic glow. Could it be—this sustained glory of a city from times immemorial through all the vicissitudes of human civilization and vagaries of nature and kings, just by human endeavour? Perhaps the secret lies in its existence at the centre of the universe represented by the existence of Lord Mahakala—the embodiment of cosmic time, at this place. The yogis of yore by their transcendental knowledge had discovered—

आज्ञाचक्रं स्मृता काशी या बाला श्रुतिमूर्धनि
स्वाधिष्ठानं स्मृता कांची मणिपूरमवन्तिका
नाभिदेशे महाकाल स्तन्नाम्ना तत्र वै हर:

(वराहपुराण)

When this world is compared with the human body with its eight *chakras* (nerve-centres) as per yoga-system, its Ajna chakra (situated in the forehead between eye-brows) is Kashi or Varanasi; its Svadhisthan centre (situated in the throat) is Kanchi and Manipura-centre (situated in the naval) is Avantika or Ujjayini where lord Mahadeva is situated on the naval-position by the name Mahakala (the cosmic time). Later on this was vouchsafed by physical astronomical facts.

Surya Siddhanta (S.S.)—the celebrated treatise on Indian astronomy declares—

राक्षसालयदैवोक: शैलयोर्मध्य सूत्रगा:
रोहीतकमवन्ती च यथा सन्निहितं सर:

(*S.S.* 1/62)

Situated upon the (central) line which passes through the abode of demons (i.e. Lanka) and the mountain which is the seat of gods (i.e. Sumeru or north pole) are Rohataka, Avanti, as also the Kuruksetra.

Thus Ujjain was located on the prime meridian when human beings opened their eyes to the civilized world—this status is now given to the Greenwich-line. Not only Ujjain was at the centre of East-West of the globe, it was at the centre of the North-South globe also inasmuch as the sun in its northerly course, came upto Ujjain and then returned to south for it southerly course.

But Ujjain was a central place to the then civilized world not only astronomically and spiritually but culturally and economically also. Rev. E. Burgess in his famous translation of *Surya Siddhanta* has nicely summed this up—

"But the circumstance which actually fixes the position of the prime meridian is the situation of the city of Ujjayani... It is the capital of the rich and populous province of Malwa... and from old time a chief seat of Hindu literature science and arts. Of all the centres of Hindu culture, it lay nearest to the Great Ocean-route by which during the first three centuries of our era, so important a commerce was carried on between Alexandria as the mart

of Rome, and India and the countries lying still farther east. That the prime meridian was made to pass through this city proves it to have been the cradle of the Hindu science of astronomy or principal seat during its early history."

When we glance through the history of this holy city, we find its mention in the *Valmiki Ramayana* (IV 42-14)—the first epic of the world and in *Mahabharata*, it is present with all its glory.

With *Mahabharata*, we are on the solid ground of history. This great epoch-making event has been now dated with fair amout of certainty by modern scholars in 2000 BC on the strength of geo-hydrological findings about river Saraswati the sub-oceanic archaeological findings near Dwaraka and the archaeo-astronomical evidence.

Coming to Puranas, they are replete with the all-round glory of this immortal city. *Skandapurana* devotes one whole section (Avanti Khanda) in describing every nook and corner of this city as sacred. But it is *Brahmanda Purana* which gives a picturesque view of the city from secular angle and brings home its magnificence as described by the great poet Kalidasa—

स्वल्पीभूते सुचरितफले स्वर्गिणां गां गतानां
शेषैः पुण्यैर्हृतमिव दिवः कान्तिमत् खण्डमेकम्
(*Meghaduta* 1/30)

A florescent piece of paradise brought on earth by the inhabitants of Heaven whose virtuous deeds are but little in balance.

Due to this great prosperity and its multifaceted religio-cultural existence, this city was called by various names—each one representing some prominent spiritual, cultural or economic aspect. 'Designated as Avanti, it is seen as the goddess who protects and preserves the living beings in their germinal form'; as pratikalpa, it springs up again and again, ever renewing itself from Kalpa (Aeon) to Kalpa, a fact substantiated by many stratigraphic layers of the city and its pervasive benign presence in the mythological, literary and historical imagination. It is Kanakashringa and Padmavati full of palaces with golden pinnacles, dear to the goddess of wealth. But it is Kushasthali also, the place of sacrifice spread with Kusha grass by lord Brahma himself.

The Mahakal Temple and Sacred River Shipra

The Hindu trinity of Gods viz. the Vishnu, the Brahma and the Mahesha represent three basic elemental forces of creation. While Vishnu, embodies the ultimate macro energy, the basis of all creation, Brahma who sprang from the naval (nucleus) of Vishnu in a lotus represents the matter created through the excessive heat in the energy by the big bang. The matter requires for his existence a substrata—the time and space. Lord Maheshwar represents cosmic existence of the universe and Lord Mahakala is another of his form representing the eternal time.

No wonder that people from all over the country in crores are drawn towards this shrine particularly, on the occasion of Simhastha festival.

For this same region of locational sacredness river Kshipra has been extolled as the vary pious river comparable to the Ganga, the Narmada and the Godavari. The *Skanda Purana* says :—

नास्ति वत्स महीपष्ठे शिप्रायाः सदृशी नदी।
यस्थास्तीरे क्षणान्मुक्तिः सकृदासेवितेन वै।।

Oh child! there is no river on the surface of this earth like Kshipra on whose banks there is instantaneous salvation by just one dip in it.

Though archaeologically the existence of this old city goes as back as chalcolithic period, because by excavation near garh-kalika, the painted grey-ware and other supporting material has been found and sufficient literary evidence of its existence as a fully civilized city is available in *Mahabharata*

& Puranas, its actual history starts with sixth century B.C. with the well known king Chanda-Pradyota. Puranas tell us that the last king of Vitihotra dynasty was assassinated by Punik who enthroned his son Pradyota. His daughter Vasavadatta's love for Udayana, the king of Vatsa and their elopement from Ujjain has been the subject of many a literary creations in Sanskrit. Ujjayini acuired great power and prosperity during his times which is reflected in the archaeological remains of that time specially a large most 80' wide and 20' deep round the town of about two mile square. During the great Mauryas, Bindusar was the governor of this province when Chandragupta Maurya was the emperor and when Bindusar had acquired power, his son Ashok had become provincial governor. His son Mahendra and daughter Sanghamitra were brought up and educated in Ujjayini and it is from here that they went to Lanka for the spread of Buddhism. Agnimitra of Shunga dynasty is the hero of the famous play of Kalidasa's *Malavikagnimitram* clearly indicating Shunga power in this area. Weak Shungas fell into the trap of Gardabhilla who earned the wrath of a Buddha monk due to his infatuation for the monk's sister Saraswati. The monk invited Sakas from near the Sindhu and they ravished Malwa. These Sakas were vanquished by Vikramaditya, Gardabhilla's son in 1st century B.C. whose stories of velour, wit, justice and super-human feats are afloat not only in the Malwa region but in entire north India and whose Vikram Samvata started in 57 B.C. is still being used in major part of this country. He was brother of famous Bhartrhari who had renounced the world to become an ascetic. He was followed by such illustrious kings as Rudradama, Yashodharma who had defeated Mihirkula—the powerful Huna king and later by Harsha-Vikramaditya whose purohita Hariswami has written the famous Vritti commentary of *Satapatha Brahmana* and who is author of Natyavartika.

But bad days for Ujjayini came with the advent of thirteenth century when in 1234 lltutimish, the sultan of Slave dynasty invaded it and destroyed the Mahakal temple. He had taken away the idol of Vikramaditya to Delhi. During his time many temples of this pilgrim town were ravished and many mosques sprang up on their remains which scene can be seen even now on the banks of Sipra river.

In early 18th century, Savai Jaisingh was the governor of this Malwa province under the Mughals. He is known for his love for astronomical sciences. He had constructed four observatories at Ujjain, Jaipur, Mathura and Delhi of which only the observatory at Ujjain is functional.

With the treaty of 1732 between the Mughals and Marathas, this area came under the suzerainty of Marathas and with this started the era of reconstrunction and renewal of Ujjain. Baba Ramchandra Sukhatankar, the prime minister of Ranoji Scindia constructed many temples here and had done extensive repairs to Mahakal temple. He also constructed the famous Ramghat on Sipra river.

The present city of Ujjain is situated on Bhopal-Ratlam portion of Western Railway at a latitude 23^0-11' and longitude 75^0-46' on Malwa plateau. It enjoys a salubrious climate and is well connected on all sides by rail and road links. Nearest airport is at Indore, a distance of only 56 kms. wherefrom daily flights can be had for Mumbai and Delhi. It is a divisional headquarter of Madhya Pradesh with a population over five lacs. It is rich black-cotton belt with Soyabean as its main produce. Inspite of all modern facilities available here, the town retains its basic pilgrim character and is still a principal seat of learning and cultural spiritual activities. Mahakal temple, sacred river Sipra, Hara Siddhi Peeth, Chintamana Ganesh, Mangalnath, Sandipani Peeth and the seat of Mahaprabhu Vallabhacharya, Kala Bhairava, Kalidasa Academy, Vikram University, Jiwaji observatory and a host of other cultural, religious institutions still draw lacs of people towards this holy town every year.

Nuclear Medicine—A Historical Sketch

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When a doctor suspects tumour in patients body, he or she is usually diagnosed by either of the two methods (i) SPECT - Single Photon Emission Computerised Tomography or (ii) PET - Positron Emission Tomography. In both the cases, radioactive isotope is administered into the human body, which in turn images shape, size, spread of the tumour. If the tumours are diagnosed as malignant, patients are advised to take "rays", which is nothing but gamma rays emitted from particular radioactive isotopes, e.g., ^{60}Co. In some cases, alpha or beta emitting radioisotopes are injected into the human body; these radioisotopes are targeted towards a particular site for example, to liver or gall bladder or to the thyroid, wherein alpha or beta particles release energy and kill the cancerous cells. Talking about another kind of ray is X- ray, a common prescription by the doctors to image any kind of injuries and wounds. All the examples are in the purview of a common discipline of medicine, called "Nuclear Medicine," which exploits X-rays or the decay properties of radioactive isotopes, all of which are commonly termed as "ionizing radiation".

The use of ionizing radiation for the betterment of life started about 125 years back, just after the discovery of X-ray by Wilhelm Conrad Röntgen in 1895. Since then, the discipline was evolved by the celebrity physicists, chemists, biologists, and physicians. The discipline is a history of painstaking research, sacrifice of the scholarly personalities, and showcasing of highest level of humanity, hard to realize in modern-day environment. The glimpse of the realization comes when one imagine the war fields of France during World War I. A differently designed vehicle driven by one middle aged woman was running through one battlefield to the another. The other passenger in the vehicle was her assistant, another young lady. Amidst the uneven roads, rough terrains, or even through "no-road" patches, breakdown occurred frequently, the tires had to be changed and all these were managed by these two ladies. The unique car could generate electricity through a dynamo and most importantly the car was equipped with a portable X-ray machine, by which the imaging of the wounds of the soldiers were taken, which helped the surgeons to operate the patients in an war-zone. The middle-aged lady herself did the designing of the car and the portable X-ray machine. She motivated the Union of Women of France to bear the expenditure of the costly car. Not only that, the French women contributed to build 20 such cars, equipped with electricity generator and portable X-ray machine. Even after all these, the training became the most important part. The middle-aged lady trained the young lady, the singular assistant on how to repair mechanical faults of the car, how to operate the X-ray machine in a remote site. Slowly, a bunch of nurses was equally trained to join this not-so-natural medical service in the war- zone of World War I. Well,

this middle-aged lady-driver, medical set-up designer, was none other than Madame Curie, winner of two Nobel Prizes and the young aged assistant was her beloved younger daughter Irene Curie, who also won the Nobel Prize, about 20 years later.

Travelling a bit upstream, to the year 1901, the Nobel Committee received 30 nominations for the first Nobel Prize in Physics, of which 16 nominations were for a single candidate, Wilhelm Röntgen, Professor of Physics, University of Munich. The other nominees were also renowned physicists like Pieter Zeeman (Nobel Prize in 1902), Henri Becquerel (1903), Arrhenius (Nobel Prize in Chemistry 1903), Anton von Lenard (1905), Gabriel Lippmann (1908), Guglielmo Marconi (1909) and van der Waals (1910). All other physicists were awarded Nobel Prizes, but they had to wait for subsequent years. Priority was given to Wilhelm Röntgen for his discovery of Röntgen rays or, X-rays, which has extensive use in medical practice, important in practical surgery. According to the Nobel Committee "Röntgen's discovery has already brought so much benefit to mankind that to reward it with the Nobel Prize fulfils the intention of the testator to a very high degree." The testator, Alfred Nobel had dictated in his will that his entire remaining estate should be used to endow "prizes to those who have conferred *the greatest benefit to humankind*."

The 1903 Nobel Physics Prize was shared by Henri Becquerel, Pierre Curie and Marie Curie for the discovery of spontaneous radioactivity and discovery of radium. The Nobel Committee expected that their research "will give rise to the very highest value in physics and in chemistry", without realizing (until 1911, when they bestowed second Nobel Prize to Madame Curie) that the discovery of radioactivity and radium would be equally comparable with the discovery of X-rays with respect to the beneficial service to humankind. The 1911 Nobel prize was awarded to Madame Marie Curie, for the first time upon a previous Nobel prize winner, in recognition of the discovery of two chemical elements, radium and polonium; and also for the isolation of radium in its pure metallic state. Even after a century, these three Nobel Prizes are considered as *the* discoveries that made *greatest benefit to humankind.* In the presentation speech of 1911 Nobel prize to Madame Curie, the Nobel committee commented that the research on radium led to the birth of a new branch of science, 'radiology'. The very word "radiotherapy" was also used by the Nobel Committee and expected it to be promising in the treatment of cancerous growths. What they speculated more than hundred years before, now became a vibrant branch of science known as "Nuclear Medicine".

The evolution of nuclear medicine was ensued through series of "growth phases". In the first growth phase, soon after the discovery of radium, it was used in the treatment of arthritis. Sometime, radium was mixed with air and was allowed to inhale to treat lung cancer. It was postulated that the radium emanation (radon) was actually responsible for reduction in cell division and regeneration. It was also observed that radium emanation affected embryonic growth. None other than Pierre Curie along with Henri Danlos had projected the applications of radioisotopes for medicinal usage. In the early 19th century, radium therapy was utilized for cancer treatment. In 1903, use of radium for tumour therapy was suggested by Alexander Graham Bell. In fact, the usage of alpha-emitters ^{223}Ra and ^{224}Ra in treatment of Lupus disease dates back a long ago.

The next 'growth phase' is marked by its evolvement as diagnostic tool. The use of radioisotopes for diagnostic purposes, got its real momentum, in 1913, after the discovery of radiotracer technique by George de Hevesy, for which he was conferred the Nobel prize 30 years later, in 1943. Discovery of Hevesy also brought *greatest benefit to humankind.* Hevesy and his co-workers,

in 1923, demonstrated that radionuclides in nano- to pico-mole quantities might be used as non-invasive radiotracers to track the bio-distribution and biological functioning in plants or animals. In 1927, H.L. Blumgart and S. Weiss employed RaC (^{214}Bi) for measuring arm-to-arm blood circulation time in patients. This development was regarded as the birth of clinical nuclear medicine. Next few years witnessed the path-making inventions, which altogether had an incredible impact on human civilisation. Year 1929 marked the development of cyclotron by E.O. Lawrence with the working model being prepared together with M.S. Livingston in 1930. C.D. Anderson discovered positron in the year 1932. In 1934, a half-page paper was published in Nature by Irene Curie and Frederic Joliot that shook the world; proof on production of artificial radionuclide. The Italian navigator landed on 1942, when the first sustained chain reaction took place under the supervision of Enrico Fermi and paved way for nuclear reactors. Since 1950s, radioisotopes produced in reactors dominated the branch of nuclear medicine. All the above path-making discoveries contributed towards the *greatest benefit to humankind* and eventually, received Nobel Prizes (except Enrico Fermi's discovery of reactor or slow neutron, who however was given Nobel Prize for some other reason). In fact today's nuclear medicine is a combined gift to the society by the laureates of many decades, Röntgen, Becquerel, Marie Curie, Pierre Curie, George de Hevesy, Lawrence, Livingston, Anderson, Irene Curie, Frederic Joliot, Enrico Fermi and many more.

The Pioneers: We relay and live on their discoveries - photograph taken from Curie Museum, Paris

(Photo Courtesy: Susanta Lahiri)

Once the stage was equipped with cyclotron and artificial radioactivity, the third "growth phase" accelerated at a faster pace. It started with the therapeutic recognition of nuclear medicine. Gradually, small amounts of radio-sodium, radio-phosphorus and radioiodine were produced for medical purpose. The first therapeutic trials were reported by Hamilton and Stone in 1936, when they introduced ^{24}Na in patients with leukaemia. Shortly, J.H. Lawrence used ^{32}P as therapeutic radioisotope against leukaemia and polycythaemia vera. ^{131}I was produced and identified in 1938 and for the first time its uptake by human thyroid gland was reported by J.G. Hamilton and M.H. Soley.

Parallel to the therapeutic development, the medical community also explored the use of radionuclides as diagnostic tool. Hertz and his group administered ^{128}I to rabbit in 1938 and reported the use of radioiodine to study thyroid physiology. In 1937, Emilo Segrè

discovered and radiochemically separated the first artificial element, technetium, from a proton irradiated molybdenum foil. Later along with Glenn T. Seaborg, he discovered ^{99m}Tc. Harper and his group had proposed ^{99m}Tc as a diagnostic radionuclide in nuclear medicine in the year 1962. Since then, ^{99m}Tc is considered as the magical radioisotope in nuclear medicine and till date, serving mankind enormously. Another brilliant invention, radioimmunoassay (RIA) began its journey in 1950s, when S. Berson and Rosalyn Yalow investigated the metabolism of ^{131}I- insulin in diabetes based on the principle of competitive binding of labelled and unlabelled insulin by antibody. Later in the year 1977, Rosalyn was awarded Nobel Prize in physiology or medicine for discovery of RIA. Along the time-machine, ^{45}Ca, ^{47}Ca, ^{60}Co, ^{67}Ga, ^{85}Sr, ^{86}Rb, ^{89}Sr, ^{90}Y, ^{131}Cs, ^{140}Ba, ^{198}Au, ^{201}Tl, etc., were used as radiotracers to understand various biological phenomena both in animals and humans. Origin of SPECT dates back to 1963 and the prototype of modern SPECT was built in 1977. Around 1974, the modern PET for human studies was developed. Just few years back in 1970, the molecule of the millennium ^{18}FDG (Fluorodeoxyglucose, a glucose molecule with the positron emitting radioisotope ^{18}F substituted for the hydroxyl group at C-2 position) was discovered.

More than 100 years have passed after the discovery of X-rays, radioactivity, radium. At present, detailed knowledge on ionizing radiations, alpha and beta-particles, radioisotopes, applications of radioisotopes in human, successful trials in treatment, etc., are available. However, even hundred years after, the philosophy of nuclear medicine remains unchanged. The low LET (linear energy transfer) ionizing radiations are mainly used as diagnostic tool (X-ray or low energy -rays emitted from *in vivo* administered radionuclides like ^{99m}Tc) while high LET ionizing radiations (like, emitting radionuclides) are used in therapy.

Which radioisotopes are useful for nuclear medicine?

Till date about 3000 artificial radioisotopes have been discovered. However, All the radionuclides are not useful for *in vivo* applications. The criteria for a radionuclide to be clinically important has been summarized below.

i. Moderate physical and biological half-life ($T_{1/2}$): Both radiological and biological half- lives should be long enough so that majority of the dose gets delivered to the targeted site. At the same time, the radiological half-life should not be too long that the patient or the surrounding environment is continuously exposed. Again, shorter biological half-life is appreciable so that the radioisotope readily gets eliminated through excretion without causing extra radiation hazard. Optimum $T_{1/2}$ should preferably be within the order of hours to few days.
ii. The radionuclide should be isotopically and radiochemically pure.
iii. It should preferably decay to stable isotope without any intermediate decay schemes.
iv. Cheap, regular and easy availability of the isotope.
v. The therapeutic radionuclide should have appreciable energy so as to deliver a sterilizing dose of radiation (500 - 2000 rads), which is sufficient to cleave cellular DNA.

Radioimmunotherapy (RIT): Radioimmunotherapy is more effective as compared to chemotherapy. RIT can be achieved by both α- and β-emitting radioisotopes. α-emitting or β-emitting radioisotopes have distinct properties, which determine their candidature for RIT. α-particles have high energy (~4-9 MeV), high LET, short pathlength (40-100 μm; approx. 1 to 3 cell diameter) and possess cytotoxicity 5-100 times more as compared to β-particles. α-particles are suitable for treatment of small tumours and are capable

of highly localized irreparable multiple DNA double strand breaks. Because of higher cytotoxicity and large number of ionizations, effective cell killing may be achieved with less dose. Some of the α- emitters are ^{149}Tb, ^{211}At, ^{212}Bi, ^{213}Bi, ^{225}Ac, ^{212}Pb, ^{223}Ra, which can form radioimmuno-conjugates for *in-vivo* therapeutic administration.

β-particles have medium to high energy (0.05-2.3 MeV), low LET, longer pathlength (μm to few cm; approx. 5 to 150 cell diameter). These are effective for tissue-level range, hence, suitable for large tumours or macro-clusters. Beta-emitting radioisotopes like ^{131}I, ^{90}Y, ^{153}Sm provided encouraging response rates but to some extend were unsuccessful in complete eradication of cancer. Examples of other beta emitting radioisotopes useful for therapeutic purpose are ^{32}P, ^{47}Sc, ^{67}Cu, ^{76}As, ^{89}Sr, ^{90}Y, ^{105}Rh, ^{109}Pd, ^{111}Ag, ^{131}I, ^{142}Pr, ^{153}Sm, ^{161}Tb, ^{165}Dy, ^{166}Ho, ^{177}Lu, ^{186}Re, ^{199}Au, etc.

Clinically, choice of α- or β-emitting radioisotope for RIT is dependent on several factors like size, morphology and location of the tumour/cancer/lesion, radiation sensitivity of the target, radiation dose towards bystander non-targeted regions, etc. In any sense the aim of radiotherapy is complete death or sterilization of cancer or tumour cells via irreversible DNA damage. However, the phenomenon is different for α-RIT and β-RIT. In case of β- radiation, approx. 200 double strands need to be broken to ensure ~99% cell death. In turn, α-particle requires breaking of only few double strands to achieve the same result. Alpha particles are capable of creating dense ionization tracks on DNA double strands that results in clusters of DNA damage. Such complex damage results in chromosome aberration, impairment in reproductive integrity of any cell, resistant to normal repair, hence high probability of cell death [Fig. 1].

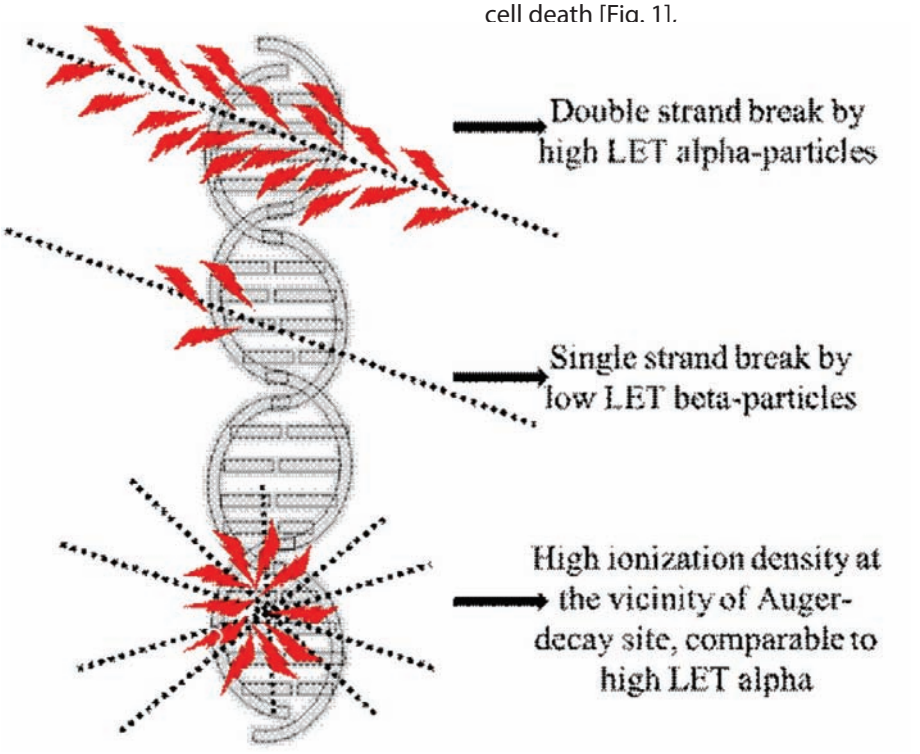

Fig. 1 : Strand breaks by alpha-, beta-particles and Auger electrons

Nuclear Medicine: Status at present

The "growth phase" of nuclear medicine, at present, acknowledges it's appealing progress in the direction of theranostics (theranostics = therapeutic + diagnostic). The term "theranostics" is comparatively new and was coined in 1998. It is a holistic approach of pharmacotherapy enhances the therapeutic effects with efforts to reduce treatment toxicities. Theranostics refer to the pairing of therapeutic-diagnostic radioisotopes chelated to a vector/carrier and targeted towards any particular clinical condition. Therapeutic radioisotopes decay by releasing alpha or beta particle, which are capable of ionization or bond-breakage. Whereas diagnostic radioisotopes decay by releasing a photon, which is utilized to image the specific organ. Theoretically, a theranostic pair should have a composition of radioisotopes derived from the same element, one serving as the therapeutic radioisotope and another aiding in diagnosis. Practically, such conjugation has to pass stringent and rigorous scrutiny to be called as a suitable theranostic radiopharmaceutical.

The theranostic isotopes are sometime described as "twins in spirit" for a pair. The theranostic pair may or may not be chemically or biologically identical, however the diagnostic counterpart can predict the bio-distribution of the therapeutic radioisotope. Few examples would be helpful to visualize the concept of "matched pair". ^{86}Y–^{90}Y was the first matched pair being used as a theranostic pair. In this conjugation, ^{86}Y provides the positron (β^+) useful in diagnosis and ^{90}Y is the β^- emitter, acting as the therapeutic part. Another important pair is ^{124}I–^{131}I, belonging to the halogen group. Not only both the candidates in this matched-pair have their individual applications in thyroid-related conditions, but are also utilized as a theranostic pair. ^{124}I is the positron (β^+) emitter, whereas ^{131}I, a beta-emitter is serving mankind for more than half-a-century. Few more examples of so-called matched pair or theranostic pair includes combination of β^+–β^- like, ^{203}Pb–^{212}Pb, ^{83}Sr–^{89}Sr, ^{64}Cu–^{67}Cu, $^{43/44}Sc$–^{47}Sc, etc.

The exhaustive research mainly initiated by CERN, in and around Geneva gave a sudden momentum to the concept of theranostic pair of radioisotopes. CERN is best known for research in high energy physics, discovery of God's particle and so on. But in 2013, CERN entered into the field of medical isotope production through its much-ambitious programme, CERN-MEDICIS. Meanwhile, the radioisotope, ^{149}Tb, an -emitting radioisotope came under the limelight of discussion. ^{149}Tb with the half-life ($T_{1/2}$) of 4.1 h and 4 MeV -particle, seemed beneficial for targeted alpha particle therapy. However, the real hurdle lies on its method of production. Production of sufficient quantity of ^{149}Tb required for administration in human body is not possible by common accelerators. The only way out is spallation reaction, i.e., bombardment of a stable target by very high energy proton beams, of the order of giga electron volt. This high end technology is available only in few accelerator centres of the world, CERN is the leader of them. Not only ^{149}Tb, but three other isotopes of terbium, ^{152}Tb, ^{155}Tb and ^{161}Tb also possess worthy properties for diagnosis and therapy. ^{152}Tb being a positron emitter is an excellent candidate for PET, ^{155}Tb is a SPECT isotope, and ^{161}Tb being a emitter, can be used in therapy. Therefore combination of these four potential radioisotopes can work in synchronisation and also can provide a good matched pair for theranostic activities. This quadruplet terbium isotopes are popularly known as Swiss knife. In past few years, CERN-MEDICIS have been producing Tb radioisotopes and implementing them for medicinal usage. Following CERN's success, many mega-facilities like Isotope Separator and Accelerator (ISAC) at TRIUMF, Canada; Petersburg Nuclear Physics Institute (PNPI, Russia); Belgium Nuclear Research Centre's ISOL facility (ISOL@MYRRHA, Mol, Belgium);

Japan Proton Accelerator Research Complex (J-PARC ISOL, Tokai, Japan), etc., also became interested in production of clinically important radioisotopes. Though matched pairs hold a brighter prospect and some combinations have been through in the preclinical or trial phase, but broad level administration is still a constraint and requires more practical knowledge, hands-on-experiments, and easy availability of the concerned radioisotopes.

After the discovery of artificial radioactivity in 1935, the radioactive isotopes are playing pivotal role in the betterment of human life. They search the routes of deadly disease, increase the points of contact with society, and work in trans-discipline areas. In fact, advanced research, technology and development in the field of nuclear medicine would serve the humanity in future for long time.

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Report on 201st Birth Anniversary Celebration of Raja Rajendralala Mitra

The Asiatic Society, Kolkata celebrated the 201st Birth Anniversary of Raja Rajendralala Mitra, the first Indian President of the Asiatic Society, on 16th February, 2023 at Rajendralala Mitra Bhavan of the Society at Salt Lake. Professor Tapati Mukherjee, the Vice President of the Asiatic Society and Dr. Sunandan Kumar Sen presented various aspects of the life and work of Rajendralala Mitra through their informative speech. Professor Swapan Kumar Pramanick, President of the Society presided over the programme and offered his Presidential remarks. Dr. Satyabrata Chakrabarti, General Secretary of the Society delivered the Welcome Address. The formal Vote of Thanks was given by Dr. Sujit Kumar Das, Treasurer of the Society. The entire programme was moderated by Smt. Shakti Mukherjee, Research Officer-in-Charge. A large number of members, scholars and academicians were present in this programme.

L to R : Dr. Sunandan Kumar Sen, Dr. Satyabrata Chakrabarti, Professor Swapan Kumar Pramanick and Professor Tapati Mukherjee.

Some Cultural Practices of Bengal Related to Conservation of Biodiversity—A Glimpse

Soumen Basu
West Bengal Biodiversity Board

It is an age-old practice by the residents, especially among the womenfolk of our state, particularly the indigenous community & villagers, to worship certain trees and animals as a tradition of preservation of enviornment.

Some of us may have seen our grandmothers used to perform certain rituals on some auspicious days e.g. Bhoot Chaturdoshi, Bipad Tarini, Aranya Sasthi Broto, Kului Chandi Vrata, Itu Pujo, Jamai Sasthi to name a few. These traditions passed on from one generation to another, the sources of which are unknown.

Some of these rituals involve the bio-resources of the area. These reflect the attitude of the local people towards biodiversity which directly or indirectly inculcate the idea of *live with the nature*. Some of these customs help in managing the population of the species, also.

Some Age Old Rituals of Rural Bengal Worth Mentioning

Bhoot Chaturdoshi Vrata : This ritual is a Bengali version of Halloween day and is observed on the day before Kali Puja. This ritual traditionally involved the collection of fourteen uncultivated leafy vegetables by women from their homestead gardens or home surrounding areas like roadsides, ditches, ponds or canal banks, field bunds. It ensures that while focusing on agricultural fields on a few types of crops the enormous variety of uncultivated foods in our surroundings is not lost or loses importance.

Ancient ayurveda verse explains the ritual *"Patrang pushpong folong nalong kondong songswedjong totha. Sakong shorobidhmuddishtong gurung bidyad jothottorom."*

Yampukur Vrata : This ritual used to be celebrated by Bengali unmarried girls throughout mid-October to mid-November. A small square shaped pond like structure is made. The bunds of the pond is planted with Kochu, Turmeric, Kalmi, Sushni, and Hinche, along with rice seedlings are planted in the middle. While watering the pond the girls used to chant

"Sushni-Kalmi lo lo kore
Rajar beta pakkhi mare...
Kalo kochu, sada kochu lo lo kore,
Rajar beta pakkhi mare."

In the current scenario of climate change imposed agricultural risks, when food and nutritional insecurity may be directly related to the degradation of public health, these ancient rituals should be treated with additional importance. All of these plants are a significant source of several micronutrients. Over-reliance on very few crops has been gradually unleashing the terrors of micronutrient deficiency throughout the world.

Suo Duor Vrata : This ritual is observed in the winter months. Seven boat like models are made with banana plant skins. The boats are decorated with flowers, beetle leaves, beetle

nuts, cowri (uniform and hardy glossy brightly marked marine shell), kathali kala (Yellaki banana). The boats are floated in a stream after observing some rituals. The womenfolk maintain fasting till the boats are floated for the welfare of their family members.

Jamai Sasthi : This traditional ritual is meant for son-in-laws, particularly the new ones. This ritual is performed under a Banyan Tree by a priest. The ingredients used for this rituals are green bamboo leaves, mango, guava, custard apple, ridged gourd, date palm, sprouted grams, sugar cake etc. Son-in-Laws are adorned with new clothes & are served with special new dishes prepared by in-laws for the occasion.

Ghat / Makhano Sasthi : Traditional ritual is performed at the bathing-place by the side of a pond. Ingredients used for the ritual are green bamboo leaves, custard apple, ridged gourd, vermin, turmeric, sesame, sugar cake, sprouted grams, boiled rice etc.

Then there are other popular festivals of Bengal e.g. Durga Puja, Biswakarma Puja, Janmastami and many more, observed round the year. In all these festivals different locally available biodiversity materials like tree leaves, fruits, roots, twigs, flowers etc. are used since time immemorial.

Apart from the above rituals numerous area specific divergent rituals are observed throughout the state.

Some Traditional Rituals Still Practised by Tribal Communities of Bengal

Frog Dancing : Rural muslim communities hold frog dancing rituals during sparse rainy period creating draught like situations in rural Bengal. The muslim youth and seniors visit every household of the village irrespective of caste & creed. Waters collected from ponds are poured on the clay courtyards and the youths' rollover the muddy floor with waters poured on them intermittently. A frog is tied in a jute rope and dangled on the muddy floor accompanied with a traditional rustic song.

Salui Festival : There is no cast system prevailing among the tribals. The role of Brahmin, barber etc. are determined and entrusted over amicable discussion among the community.

The ingredients of this ceremony are clay models of elephant & horse, earthen pots, coils of thread etc. A ritual is performed under a *Shorea robusta* tree with the ingredients. Then they serve themselves with *Haria* (a local brew made from fermented rice) and indulge in group dancing accompanied with the beatings of traditional musical instruments e.g. Dhamsa & Madals etc.

Marai Ceremony : Traditionally this ceremony begins by sacrificing a black-coloured hen at the alter, which is followed by community drinking of *Haria* & group dancing accompanied with the bearings of Dhamsa, Madal etc.

Morre Ceremony : This ceremony is held in the Bengali month of *Chaitra* which features sacrificing of a hen at the alter of the local deity. After the traditional rituals the tribals indulge in dancing and singing after having a community meal cooked for the purpose.

Kodalia Ber : *Ber* is a traditional hunting expedition of Kodali village. It is held on the 5th day of Bengali month *Baisakh* in the adjacent village forest which is akin to the village. The hunted animals are skinned and cooked in the evening for the community. Tribals indulge in dancing and singing after the meal.

Bet at Vedera Forest : It is held on the 7th day of Bengali month *Baisakh*. Tribals explore the forest in search of prey. If they manage to get any prey they come back to the village with the kill and prepare a community meal with that. Tribal dancing and singings are performed over the meal.

Soulia Ber : It is observed on the 16th day of *Baisakh*. Tribals explore the forest of Soulia

for hunting and bring back the hunted animals which are used to prepare a community meal. Traditional tribal dance and songs are performed on the occasion.

Tusu Festival : This festival is celebrated every year usually on the last day of *Poush* month (Bengali year calendar) or the day before 'Sankranti' (usually in January month). An idol of Tusu is brought for worshipping. Tusu is the biggest festival among the tribal community for which preparation begins much earlier with the shopping of new attrires from the market. The previous night of the Tusu festival is spent in singing Tusu song and dancing by the tribal youth. From the next day morning Tusu festival is celebrated in each and every village. As per the tradition people take a dip into the pond before taking part in the festival which is called *Maker* Dub. A special sweet is prepared for the occasion which is called *Pithe-Puli* (special kind of pie made from grounded rice grains), a variety of which is available e.g. Nak Pithe, Pradip Pithe, Gere Gere Pithe etc. A fair is held in the village which is participated by people in and around the village. Devotional song on Lord Bishnu is performed in the fair. The 'Tusu Song' which is sung by the women of the villages, usually describes some bio-resources in its rhythm like garlands, *Til, Shol, Mokor*.

Bhadu Festival : This festival is held in *Bhadra* month (Bengali year calender) or in between August and September month. People from tribal communities, especially women, take part in it by singing '*Bhadu*' song and dance. Most of the songs depict elements of bio-diversity like a song narrates how a sudden guest who drops by in the month of *Vadra* will be offered a leafy vegetable that was sown in the piece of land replacing the granary.

Marriage of Cow : This festival is celebrated by the tribal villagers in the Bengali month of *Kartik* (between October and November). Rituals begin in the evening with the offerings placed in a platter known as *Uttam Thala* and the ingredients which are offered for the purpose are beetle leaves, beetle nuts, sesame, vermin, oil, amla methi, satash kati, job, aswatha leave, heur paddy, durba grass, leaves of jackfruit tree etc. An earthen lamp is lit and a garland is made from a wild climber known as *Saoulata*. Then the cow is decorated with different colours and the garland is placed around its neck. Wedding rituals are performed and the cow is welcomed into the house like a newlywed bride.

Worshipping of Cow Shed : It is observed in the month of *Bhadra* (Bengali year calender) or in between month of August and September & on the auspicious day of 'Radha Ashtami'. The priest initiates the rituals. The short bamboo post to which the cow is tied is worshipped and offered with various ingredients e.g., *chire, khoi, sugar cake, monad, rice, potato, ridged gourd, water lily flower, mother or castered apple, flower and bel pata*. A bell metal-made water vessel is decorated and readied by the priest for the purpose. After the ritual is over the young children take along the vessel to the pond for bathing and immerse it into the pond. A special kind of fried round pie made by mixing grounded rice and molasses are prepared which is enjoyed by the members of the households in the village.

Conservation Practices by Communities

Sacred Groves : The tradition of nature conservation is traditional Indian societies has its roots to the pre-agricultural hunting-gathering stage (Gadgil & Vartak). One of the valuable outcome of such practices is the prevalence of numerous sacred groves in different geographical terrain of India. Most of these groves are originated from the primary forest, which after gradual erosion due to human habitation, with expansion of agricultural lands protected as remnant of those forest on the ground of religious belief (Anthwal etal.). These are the refuge for several

locally endagered species and haven for wild biodiversity with veritable gene pool.

Tribal communities are full of different knowledge systems, rituals for the protection and conservation of biodiversity. In different places, different deities are believed to live on different sacred plants. Tribals consider such plants as sacred as they provide food and drinks in times of crisis. Some plants are also considered sacred by people for certain reasons, such as medicinal usefulness. These groves are considered as the living place of the souls of their ancestors. Different species of plants and animals take refuge in these places which are otherwise not sighted outside these groves due to human intervention.

However, the biggest problem in the conservation of biodiversity at present is that with the increase in the rate of education among the young generation and owing to the fast pace of life these traditional rituals are gradually becoming obliterated which is having a passive impact on the conservation of the biodiversity.

Reference:

1 Gadgil M., Vartak V.D. : Sacred groves of India—A plea for continued conservation, Maharashtra Association for the cultivation of Sciences, Poona 1974.

2 Anthwal A., Gupta N., Sharma A., Anthwal S., Kim K.H. : Conserving biodiversity through traditional beliefs in sacred groves in Uttarakhand Himaylaya, India. Resources, conservation and recycling 54 (2010)962-971.

Report on Dr. Bimanbehari Memorial Lecture, 2021

Professor Satyabati Giri, Retired Professor of Bengali, Jadavpur University was awarded Dr. Bimanbehari Memorial Lectureship for the year 2021 for her notable contribution in the field of Bengali Language and Literature. Professor Giri delivered Dr. Bimanbehari Memorial Lecture, 2021 on 20th February, 2023 in the Humayun Kabir Hall of the Society. The lecture titled "চৈতন্য ব্যক্তিত্বের নানাদিক: এক অর্বাচীনের পর্যবেক্ষণ" captivated the audience. Professor Swapan Kumar Pramanick, President of the Society presided over the function. Dr. Asok Kanti Sanyal, Biological Science Secretary of the Society gave the Vote of Thanks to wrap up the programme.

L to R : Professor Swapan Kumar Pramanick, Professor Satyabati Giri and Dr. Asok Kanti Sanyal.

A Brief Note on the Urdu Manuscripts Collection Preserved in the Asiatic Society Museum, Kolkata

Farhin Saba
Cataloguer (Museum), The Asiatic Society

The Society has unique collection of Urdu manuscripts. Mostly came from the Fort William College as a gift. The Urdu manuscripts in the Museum of the Asiatic Society, Kolkata is approx. no. 168, bearing various subjects like prose, poetry, science, astrology, theosophy and metaphysical doctrines, ethics, rule of warfare, mathnawi, mystism, theology, history, drama, fiction(tale), epic, music, recipe of food and grammar etc.

The Urdu collection of the Asiatic Society is one of the best in the country. Some of the manuscripts came from the Tipu Sultan's Library and The Fort William College, Calcutta. Some of them are indeed very rare, rich and varied in their textual contents and contain beautiful specimens of calligraphy. The manuscripts have exquisite miniature illustrations. The Fort William College decided to award prizes, at the instruction of J. B. Gilchist, for standard original and translated works in the Hindustani language which were produced in the college. This gave an impetus to the writers and translators and some of their work were of high quality. The society's collection started with these manuscripts as gifts.

A brief summary of the more uncommon work listed is provided here:

Numerous Urdu works cover a wide range of topic, depending on the varied perspectives, and equally be fascinating or even crucial. Such work be mentioned more than once in the current review in various contexts.

The manuscript were written by renowned poets and authors of their ages. Here mention may be made of some poets and authors who are famous for their milestone work are Mir Taqi Mir,MIrza Rafi Sauda, Tulsi Das, Malchand, Raja Jaswant Singh, Mirza Muhammad, Munshi, Mir Hasan Malik MuhammedJaisi etc.

Some significant manuscripts written in Urdu language from the Asiatic Society Museum's collection are given below:-

Qasida Jubilee (Acc.no.1085 Urdu III collection)

This beautifully calligraphic ode, composed of 78 couplets, was addressed to Queen Victoria on the occasion of the celebration of the 50th year of her rule as is evident from the couple of the manuscripts.

Qasida-i-Khusrawi Ajam (Acc.no.425 Urdu III collection)

There is fragments of Shah Nama in Urdu. It was composed during the reign of Akber Shah II (1806-1837)

Bhog Bal (Acc.no.69 Urdu Society collection)

The knowledge of sexual intercourses and the same was translated into Persian during the time of Mahmud ShahiQuraish; completed to Bhogbal in the Dakhini Urdu under the patronage of Mahum Shah, a noble of Bedur, in the year(1023A.H/1614).

Fiaras Nama-i-Rangir (Acc.no.73 Urdu Society collection)

Fiaras Nam-i-Rangir by Saadatyar Khan Rangir a masnawi which gives a description of the species of horse, their breed, their disease and cure. The Mathnawi describes in details utility of the breeding of horses. The author tells how diseased horses are to be treated and cured if they are abnormal.

Tarjuma-i-Bhagwat Gita (Acc.no. Urdu III collection)

Author's name is not mentioned in the manuscript. The treatise is a translation of *Bhagwat Gita* and used *Brajbhasa* mixed with *Khadiboli*.

The Asiatic Society Museum has no verifiable records or papers pertaining to the manuscripts and places of origin. In the preface to the Persian Society Collection, Walidimir Ivanow also made reference to it. As per Ivanow,

"Very unfortunately no accession lists or other records have ever been kept in the Asiatic Society of Bengal of the Mss. or other Muhammadan books. It is therefore collections bearing the names of the donors as practiced in other libraries also does not exist here"(Ivanow-1924 April, Kolkata).

Some of the important manuscripts are the following.

USC-59

Title	:	Diwan-i-Mir-Taqi
Author	:	Mir Taqi Mir
Subject	:	Poetry
Folios	:	107
Date	:	Not mentioned
Complete/Incomplete	:	Complete
Short description	:	Mir Taqi Mir renowned poet of Mughal period and Diwan consists of Ghazal.

USC-67

Title	:	Diwan-i-Sauda
Author	:	Mirza Rafi Sauda
Subject	:	Poetry
Folios	:	42
Date	:	Late 19th century
Complete/Incomplete	:	Complete
Short description	:	Mirza Rafi Sauda, the Poet of this manuscripts in one of the famous poet of Urdu world. It mainly consists of Qasida and Ghazal and few Mukharams, Masnawi and Miscellaneous.

USC-116

Title	:	Akhlaq-i-Hind
Author	:	Mir Bahadur Ali Hussain
Subject	:	Ethics (Indian code of Ethics)
Folios	:	1a-31b
Date	:	1801
Complete/Incomplete	:	Slightlu incomplete
Short description	:	The book is composed on 4 chapters --- (1) Friendship (2)Separation of friendship (3)How to win battle and defeat enemies (4)Reconciliation and reunion after or Before fighting.

USC-94

Title	:	Padamawat
Author	:	Malik Muhammad Jaisi
Subject	:	Poetry
Folios	:	168
Date	:	Not mentioned
Complete/Incomplete	:	Complete
Short description	:	The Padmawat is regarded as the first of the Hindi (Brajbhasha) romances.

USC-9

Title	:	Sharh-i-Gulshan-i-Raz
Author	:	Muhammad Yehha Bin Ali-al-Jeelari
Subject	:	Muslim Theosophy and metaphysical doctrines
Folios	:	1a-6b
Date	:	18th century
Complete/Incomplete	:	Incomplete

USC-128

Title	:	Sukantala
Author	:	Kazim Ali poetical NamaJawan
Subject	:	Prose, Drama
Folios	:	48
Date	:	1801
Complete/Incomplete	:	Complete
Short description	:	Lallujilal was officially directed by John Gilchrist to supervise the Kazim Ali Jawan completed.

USC-130

Title	:	Tarjuma-i-BaitalPachisi
Author	:	Mazhar Ali Khan Wila
Subject	:	Fiction (Tales)
Folios	:	98
Date	:	1802
Complete/Incomplete	:	Complete
Short description	:	BaitalPachsisi translated in Urdu to Braj Bhasha which was originally written in Sanskrit, twenty five tales selected by a Vampire to Vikramaditya, versions of these tales, exist in almost every Avyan Vernacular of India.

USC-103

Title	:	Bhagwat
Author	:	Anonymous
Subject	:	Poetry (Religious)
Folios	:	270
Date	:	1165 A.H/1752 A.D.
Complete/Incomplete	:	Complete
Short description	:	Translation of Shai Bhagwat in verses Brajbhasha in the Persian script transcribed by Shambhu Nath Saksina, son of Dodhray.

USC-101

Title	:	Ramayana
Author	:	Tulsi Das
Subject	:	Poetry
Folios	:	67
Complete/Incomplete	:	Incomplete

Urdu III Coll. 125

Title	:	Dhikrus Shahdatayn
Author	:	Ahmed Khan Sufi
Subject	:	History of the tragedy of Karbala
Folios	:	75
Date	:	1802
Complete/Incomplete	:	Complete
Short description	:	The treatise consists of the history of the Assassination of Hussain the grandson of the prophet Muhammad. The tragedy occurred at Karbala in which Hussain, the member of his family and his companions were assassinated.

Urdu III Coll. 425

Title	:	Qissa-i-Khusrawni Ajam
Author	:	MulchandMunshi
Subject	:	Poetry (Equivalent to Shahnama in Urdu)
Folios	:	45
Date	:	1251 A.H./1835 A.D.
Complete/Incomplete	:	Incomplete
Short description	:	Qissa-i-Khusrawni-Ajam is an Urdu Masnavi by Munshi Shahnama of Firdaus. It was composed during the reign of Akbar Shah II (1806-1837), the emperor of India.

Urdu Catalogue is under process. It will be published soon.

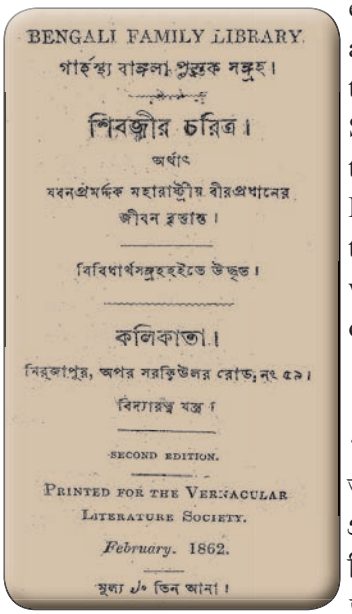
Sources:

- W. Ivanow ; *Concise Descriptive Catalogue of the Persian Manuscripts* in the collection of the Asiatic Society of Bengal (Work no. 240), first published in 1924, Kolkata-700016
- *Time Past and Time Present: Two hundred and twenty five years of the Asiatic Society*, first published in 2008, Kolkata-700016

রাজেন্দ্রলাল মিত্র ও 'শিবজীর চরিত্র'

সৃজন দে সরকার
গবেষণা সহকারী, দি এশিয়াটিক সোসাইটি

সময়টা সিপাহী মহাযুদ্ধের। রাজেন্দ্রলাল মিত্র সম্পাদিত *বিবিধার্থ সংগ্রহ*-এ প্রকাশিত হচ্ছে *শিবাজীর চরিত্র* শীর্ষক একটি প্রস্তাব। রচনারীতি বলে এটি স্বয়ং সম্পাদক রাজেন্দ্রলাল মিত্রের। এরপরে, শীর্ষকভেদে ধারাবাহিক প্রকাশের পরে ১৮৬০-এ বঙ্গভাষানুবাদক সমাজের *গার্হস্থ্য বাঙ্গালা পুস্তক সংগ্রহ* সিরিজে প্রকাশিত হল *'শিবজীর চরিত্র'* লেখকের নামহীন অবস্থায়। বঙ্গভাষানুবাদক সমাজের এই প্রয়াসে পূর্বার্জিত *লার্ড ক্লাইভ* (১৮৫২), *রাজা প্রতাপাদিত্য চরিত্র* (১৮৫৩), *জাহানিরার চরিত্র* (১৮৫৪), *নূরজাহান রাজ্ঞীর জীবনচরিত* (১৮৫৭) কিংবা, *এলিজিবেথ* (১৮৫৭)। তবে সেক্ষেত্রে প্রতিটির অনুবাদক-লেখকের নাম জানা যায়। এই সিরিজের গ্রন্থ *'শিবজীর চরিত্র'* (১৮৬০)। তবে, এত পরে এই গ্রন্থ প্রকাশের কথা ছিল না। বঙ্গভাষানুবাদক সমাজের প্রথম জনসমক্ষে প্রকাশিত সংবাদপত্রের বিজ্ঞাপনে তাঁরা নিজেদের প্রকাশনা ও প্রকাশিতব্য গ্রন্থের বিবরণী প্রকাশ করেন। সেখানে জানানো হয়েছিল—


BENGALI FAMILY LIBRARY.
গার্হস্থ্য বাঙ্গলা পুস্তক সঙ্গ্রহ।
শিবজীর চরিত্র।
অর্থাৎ
যবনপ্রমর্দ্দক মহারাষ্ট্রীয় বীরপ্রধানের
জীবন বৃত্তান্ত।
বিবিধার্থসঙ্গ্রহহইতে উদ্ধৃত।
কলিকাতা।
নিমুলাপুর, অপর সরকিউলর রোড, নং ৫৯।
বিদ্যারত্ন যন্ত্র।
SECOND EDITION.
PRINTED FOR THE VERNACULAR
LITERATURE SOCIETY.
February. 1862.
মূল্য ১০ তিন আনা।

> "The Committee propose to publish translation of such popular and standard English works as are not included in the design of the Tract or Christian Knowledge Societies on the one hand, or of the School Book And Asiatic Societies on the other.
>
> In order to give effect to the main design of the Committee, they will endeavour to adapt, as well as translate, the books which they propose to publish.
>
> So soon as they have raised the sum of Five Thousand Rupees, they will undertake to publish the following works during the first year of their labours-..."
>
> 'Life of Sivajee'.[১]

১৮৫১তে সমাজ স্থাপনের সময়েই তাঁরা মনস্থ করেছিলেন এই অনূদিত গ্রন্থ প্রকাশের কথা। এ'কথা তাঁরা নিজেদের প্রথম রিপোর্টেও[২] জানিয়েছিলেন। যদিও, অনেক পরে *বিবিধার্থ* সম্পাদক হিসেবে রাজেন্দ্রলাল মিত্রের ওপরে ভার পড়েছিল এই গ্রন্থ অনুবাদের। আমরা *Life of Sivajee*-র মূল গ্রন্থের সন্ধান পাইনি। ১৭৭৯ নাগাদ রবার্ট ওর্মী শিবাজী বিষয়ক গবেষণার নানা উপাদানাবলী সংগ্রহ শুরু করেছিলেন[৩]। সম্ভবত (কারণ, ওর্মীর সংগৃহীত নানা তথ্যাবলীর সঙ্গে *'শিবজীর চরিত্র'*র সাদৃশ্য), সেই বিষয়টিকে কেন্দ্র

করে লিখিত কোন ইংরেজি গ্রন্থ অনুবাদ ও অনুকৃতির ভার তুলে নিয়েছিলেন রাজেন্দ্রলাল মিত্র।

শিবজীর চরিত্র প্রকাশের পরে আজ পর্যন্ত এই গ্রন্থ প্রণয়নে মেলে রাজেন্দ্রলাল মিত্রের নাম। সে তাঁর মৃত্যুর পরে *হিন্দু পেট্রিয়ট* এ দীর্ঘ স্মরণলেখ[৪] থেকে আজও। তবে, কেন *শিবজীর চরিত্র*-র গ্রন্থে উল্লেখ নেই রাজেন্দ্রলাল মিত্রের নাম! আমাদের দেখা *শিবজীর চরিত্র*-র দ্বিতীয় সংস্করণের আখ্যাপত্রটি এমন—

> "Bengali Family Library/গার্হস্থ্য বাঙ্গলা পুস্তক সংগ্রহ/শিবজীর চরিত্র অর্থাৎ যবনপ্রমর্দ্দক মহারাষ্ট্রীয় বীরপ্রধানের জীবন বৃত্তান্ত/ বিবিধার্থ সংগ্রহ হইতে উদ্ধৃত/কলিকাতা।/ মির্‌জাপুর, আপর সারকিউলর রোড, নং ৫৯।/বিদ্যারত্ন যন্ত্র/Second Edition/Printed for the Vernacular Literature Society/ February, 1862 /মূল্য তিন আনা।"[৫]

গ্রন্থ নামের ক্ষেত্রেও একটি সমস্যা দেখা যায়। *বিবিধার্থ*-এর পাতায় প্রস্তাবটি প্রথম প্রকাশিত হয়েছিল, *শিবাজীর চরিত্র* শীর্ষক। সেখানে প্রকাশের বিন্যাসটি ছিল—

১) *শিবজীর চরিত্র* (জ্যৈষ্ঠ ১৭৭৯ শকাব্দ, পৃষ্ঠা-৩০-৩৪)
২) *শিবজীর চরিত্র* (অগ্রহায়ণ ১৭৮০ শকাব্দ, পৃষ্ঠা-১৭২-১৮৭)
৩) *শিবজীর জীবনবৃত্তান্ত* (ফাল্গুন, ১৭৮০ শকাব্দ, পৃষ্ঠা-২৪৩-২৪৭)
৪) *শিবজীর জীবন চরিত* (কার্ত্তিক ১৭৮১ শকাব্দ, পৃষ্ঠা-১৪৮-১৫৫)
৫) *শিবজীর জীবন-বৃত্তান্ত* (মাঘ ১৮৭১ শকাব্দ, পৃষ্ঠা-২২৭-২৩৪)

অর্থাৎ, প্রায়-প্রতিটি প্রস্তাবের সঙ্গে সঙ্গেই শিরোনামের পরিবর্তন। ইংরেজি 'Sivajee'র বঙ্গীয় রূপ 'শিবাজী'র বদলে মারাঠি 'শিউজী' বা 'শিবজী' দ্বিতীয় প্রস্তাব হতে ও গ্রন্থ নামেও গৃহীত হল। 'অনুষ্ঠান পত্র' মিলিয়ে মোট আটটি অধ্যায়ে সমগ্র গ্রন্থটি বিভক্ত। সেখানে, সঠিক অর্থে রাজেন্দ্রলাল মিত্রের নিজের রচনা 'অনুষ্ঠান পত্র' ও 'প্রথম অধ্যায়'টি। এই দু'টি অংশে প্রথমে গ্রন্থটির তৎকালীন প্রাসঙ্গিকতা ও শিবাজীর সমকালীন অবস্থানকে চিনতে 'দক্ষিণ দেশের বিবরণ', 'গোন্ডবন দেশের বিবরণ', 'তৈলঙ্গ দেশের বিবরণ', 'দ্রাবিড় দেশের বিবরণ', 'কর্ণাট দেশের বিবরণ', 'মহারাষ্ট্র দেশের বিবরণ' লিখিত হয়েছে। দ্বিতীয় অধ্যায় হতে 'শিবাজীর বংশ ও জন্মাদির বিবরণ' (গ্রন্থ অনুসারে) হয়ে প্রস্তাব এগিয়ে চলেছে।

গ্রন্থটি প্রকাশের পরবর্তীতে মধুসূদন মুখোপাধ্যায় বঙ্গভাষানুবাদক সমাজের 'সহকারী সম্পাদক' হিসেবে সমাজের এহেন গ্রন্থ-প্রকাশনার দিকটিকে নির্দেশ করলেও উক্ত গ্রন্থের লেখক কে সেই বিষয়ে নীরব থেকেছেন। বরং, একটি রচয়িতাহীন একটি অতিরিক্ত 'ভূমিকা' অংশে রাজেন্দ্রলাল মিত্রের নাম উল্লেখ না করে সঙ্গে সহলেখকের অবস্থানে গ্রন্থ প্রণয়নের ক্ষীণ আভাস দেওয়া হয়। সেখানে বলা হয়েছে—

> 'বঙ্গভাষানুবাদক সমাজকর্ত্তৃক যে সকল পুস্তকের মুদ্রাঙ্কণ করা প্রথম সঙ্কল্পিত হয়, তন্মধ্যে শিবাজীর চরিত্র লিখিত ছিল। তৎকালে বিবিধার্থ সংগ্রহ পত্রের সম্পাদক ঐ পুস্তক প্রণয়নের ভার লইয়াছিলেন, কিন্তু অবকাশাভাবে-প্রযুক্ত তিনি অতি অল্পমাত্র লিখিয়াই বিরত হন। পরে কতিপয় সল্লেখকের সাহায্যে তাহার অবশিষ্ট লিখিত হইয়া বিবিধার্থ সংগ্রহে ক্রমশঃ প্রকটিত হইয়াছে। অধুনা সেই আদর্শ হইতে এই ক্ষুদ্র পুস্তক মুদ্রিত হইল।
> ইহাতে যে বীর পুরুষের আখ্যান আছে তাঁহার নাম এই ভারতবর্ষে কাহার অবিদিত নাই। সেই নামমাহাত্ম্যে এতৎ কতিপয় পত্র সর্ব্বত্র সমাদৃত হইতে পারে। পরন্তু আমাদের এইমাত্র আক্ষেপ আছে যে ইহা সেই নামের উপযুক্ত গ্রন্থ হইল না।'[৬]

অর্থাৎ স্পষ্টতই রাজেন্দ্রলাল মিত্র 'দ্বিতীয় অধ্যায়'এর পরে একা এগোননি। 'কতিপয় সল্লেখকের কথা না এলেও' তিনি নিজেই স্বীকৃতি দিয়েছেন তাঁর 'শিবজীর চরিত্র'র অন্তত একজন সহলেখককে। ১৯৮০র অগ্রহায়ণে *'বিবিধার্থ'*তে তিনি 'তৃতীয় অধ্যায়' বা পত্রিকা-অনুসারে দ্বিতীয় কিস্তি প্রকাশের পূর্বে প্রথমেই সম্পাদক জানিয়েছেন—

'বিবিধার্থে ৩৮ খণ্ডে আমরা শিবাজীর চরিত্র প্রসঙ্গে মহারাষ্ট্র দেশের বর্ণন করিয়া অবকাশভাবে প্রযুক্ত প্রকৃত প্রস্তাবের আরম্ভ করিতে পারি নাই। এইক্ষণে সংস্কৃত কালেজের অধ্যাপক শ্রীযুক্ত হরিনাথ তর্কালঙ্কারের সাহায্যে সে অভীষ্ট সিদ্ধ করিতে প্রবৃত্ত হইলাম।'[৭]

সম্পাদক ছাড়া অন্য কেউ এই বক্তব্য পেশ করতে পারেন না। এবং, লক্ষণীয় উক্ত প্রস্তাবের শীর্ষকটিই (*শিবজীর চরিত্র*) গৃহীত হয়েছিল গ্রন্থ-শীর্ষক হিসেবে।

বঙ্গভাষানুবাদক সমাজ হতে *শিবজীর চরিত্র*-র প্রকাশের সময়ে রহস্যজনক ভাবেই মেলেনি রাজেন্দ্রলাল মিত্র বা হরিনাথ তর্কালঙ্কারের নাম। এমনকি, সহকারী সম্পাদকের বক্তব্য কিংবা ভূমিকাতেও দেওয়া হল না তাঁদের নাম। সম্ভবত, হরিনাথ তর্কালঙ্কার *শিবজীর চরিত্র*-এর *বিবিধার্থ*পাঠ প্রকাশের শেষ পর্যন্ত যুক্ত ছিলেন। কারণ, পরবর্তীতে অন্য কোন সহলেখকের নাম করেননি রাজেন্দ্রলাল মিত্র। বঙ্গভাষানুবাদক সমাজ থেকে তিনি বা সহলেখককে স্বীকৃতি দেওয়া হল না। শুরুটা যে তিনি করেছিলেন, তা জানিয়েছি—বইটির বিজ্ঞাপনেও সেটি উল্লেখ ছিল। এমনকি, 'ভূমিকা'তে রচনার ঔচিত্য-প্রসঙ্গে যে সংশয় করেছেন বঙ্গভাষানুবাদক সমাজ—তাও কি রাজেন্দ্রলাল মিত্রের হাতে সম্পূর্ণ গ্রন্থের প্রণয়ন না হতে পারার জন্যেই। কারণ, উক্ত সমাজের অন্যান্য প্রকাশনা কিংবা *বিবিধার্থ*-এর অন্য কোনও প্রস্তাবের সঙ্গেই আর খুঁজে পাওয়া যায়নি হরিনাথ তর্কালঙ্কারের নাম। এখানেই, যোগ্য সম্পাদক হিসেবে রাজেন্দ্রলাল মিত্রের ঔদার্য ও সম্মান প্রদর্শনের মৌলিকত্ব। দ্বিশত জন্মবর্ষে ঐতিহাসিক ও সম্পাদক রাজেন্দ্রলাল মিত্র ও তাঁর *শিবজীর চরিত্র* নব্য-পরিচয়ে মূল্যায়নের অপেক্ষা রাখে।

তথ্যসূত্র ঃ

১. *The Englishman and Military Chronicle,* XIII, no. 39, (8 February, 1851, Calcutta)

২. *First Report of the Vernacular Literature Committee* (1852, Calcutta)

৩. *English Records on Sivaji* (1659-1682), Shiva Charitra Karyalaya (1931, Poona)

৪. *The Hindoo Patriot* (3 August, 1891, Calcutta)

৫. *শিবজীর চরিত্র*, ভার্নাকুলার লিটারেচার সোসাইটি (১৮৬২, কলকাতা)

৬. তদেব

৭. "শিবজীর চরিত্র", *বিবিধার্থ সংগ্রহ* (অগ্রহায়ণ, ১৭৮০, কলকাতা)

সহায়ক গ্রন্থ ও প্রবন্ধ-

১. *রাজেন্দ্রলাল মিত্র*, ব্রজেন্দ্রনাথ বন্দ্যোপাধ্যায় (১৩৫০, কলকাতা)

২. *রাজেন্দ্রলাল মিত্রের বাংলা রচনা সম্ভার*, সম্পাদনা সুবিমল মিশ্র (২০১৮, কলকাতা)

৩. *রাজেন্দ্রলাল মিত্র*, শ্যামল চক্রবর্তী (২০২২, কলকাতা)

৪. *Historians and Historiography in Modern India,* ed. S. P. Sen (1960, Kolkata)

৫. *Rajendralal Mitra as a Historian: A Revolution*, Shyamali Sur, Proceedings of the Indian History Congress, vol. 35 (1974, Delhi)

Folklore Workshop 2023

Owing to the global pandemic the very popular Folklore Workshop of The Asiatic Society was held after a hiatus of three years on the theme titled 'Folklore, Cinema & Theatre : Relation & Relevance' from 23-28th January 2023 (with a break on 26th). Response was huge as expected, with 156 applications pouring in from state and outside, out of which 80 were shortlisted on the basis of qualification & designation.

Inaugural Session was graced by Professor Swapan Kumar Pramanick, President, Dr. Satyabrata Chakrabarti, General Secretary & Dr. Asok Kanti Sanyal, Biological Secretary of The Asiatic Society, with Keynote Address by Shri Samik Bandyopadhyay and a special lecture on the history of Folklore Workshops in the Society by Professor Pallab Sengupta, former President of The Asiatic Society.

In the following sessions renowned resource persons from Folklore, Literature, Films & Theatre who deliberated on various aspects of the theme included Professor Pabitra Sarkar, Professor Sanjay Mukhopadhay, Professor Soumitra Basu, Professor Munmun Gangopadhyay, Dr. Tarun Pradhan, Shri Suman Mukhopadhyay, Shri Joydip Mukherjee, Shri Supriyo Sen, Dr. Chandramalli Sengupta, Dr. Mimi Bhattacharjee, Dr. Biswajit Roy, Dr. Monalisa Chatterjee. In the evaluation sessions 48 papers were presented by the participants which were highly appreciated by a panel of subject experts.

The workshop was organised by Professor Ranjana Ray, Anthropological Secretary & Dr. Chandramalli Sengupta, Member, Academic Committee of the Asiatic Society as joint co-ordinators with active support from Shri Arupratan Bagchi, Administrative Officer, Dr. Sakti Mukherjee, Research Officer-in-Charge and the entire Academic section of the Society. The success of the workshop was reflected when the participants formed a WhatsApp group after the workshop for further communication on Folklore.

L-R: Dr. Chandramalli Sengupta, Dr. Satyabrata Chakrabarti, Professor Swapan Kumar Pramanick, Professor Pallab Sengupta, Shri Samik Bandyopadhyay, Professor Ranjana Ray and Dr. Asok Kanti Sanyal.

Participants and Distinguished Audience at the Inaugural Session.

The Asiatic Society at International Kolkata Book Fair 2023

The Asiatic Society's Book Stall (181) at the Fair.

Book Lovers at the Stall.

Book Release Programme at the Stall No. 101 B on 7 February 2023.

Asiatic Society's Exhibition Stall (101 B) at the Kolkata International Book-fair 2023 displaying photographic reproductions and audio-visual productions on Manuscripts.

জার্মান প্রাচ্যবিদ জুলিয়াস এগলিং (১৮৪২-১৯১৮)

জগৎপতি সরকার
আজীবন সদস্য, দি এশিয়াটিক সোসাইটি

জুলিয়াস এগলিং প্রাচ্যবিদ্যা তথা ভারতবিদ্যা গবেষণায় সুপ্রতিষ্ঠিত একজন মানুষ। তাঁর অসাধারণ সব কাজের মধ্যে একটি হচ্ছে *শতপথ ব্রাহ্মণ* গ্রন্থের ইংরেজি অনুবাদ এবং দ্বিতীয়টি হচ্ছে লন্ডনের ইন্ডিয়া অফিস লাইব্রেরির 'সংস্কৃত পুঁথির তালিকা' নির্মাণ। উক্ত দুটি কাজই আজও এগলিংকে পৃথিবীর বিদ্বৎসমাজে সম্মানিত করে তোলে। জুলিয়াস এগলিং ১৮৪২ সালের ১২ই জুলাই জার্মানির হেকলিংগেন শহরে জন্মগ্রহণ করেন। তাঁর পিতা ছিলেন আনহল্ট যিনি হেকলিংগেনে প্রভূত সম্পত্তির অধিকারী ছিলেন। তিনি ব্রেসলাউ এবং বার্লিনে ভারততত্ত্বের পাঠ গ্রহণ করেছিলেন। তিনি ১৮৬৭ খৃষ্টাব্দে লন্ডনে ভারতীয় পুঁথির উপর কাজ করতে যান। তিনি সেখানে ম্যাক্সমুলারের সহযোগী হন এবং ১৮৬৭ থেকে ১৮৬৯ সাল পর্যন্ত তার সঙ্গে কাজ করেন। খ্রিস্টিয় ১৮৬৯ সাল থেকে ১৮৭৫ সাল পর্যন্ত তিনি রয়াল এশিয়াটিক সোসাইটির যথাক্রমে গ্রন্থাগারিক এবং সম্পাদক পদে ব্রতী হন। তার মধ্যে ১৮৭২ থেকে ১৮৭৫ পর্যন্ত তিনি লন্ডনের ইউনিভার্সিটি কলেজের অধ্যাপকের পদ অলংকৃত করেন। ১৮৭৫ থেকে তিনি এডিনবরা বিশ্ববিদ্যালয়ের সংস্কৃত এবং তুলনামূলক ভাষাসাহিত্যের অধ্যাপক হন। যদিও তিনি সেখানকার নাগরিকত্ব গ্রহণ করেননি। প্রথম বিশ্বযুদ্ধের অবসানের পর তিনি জার্মানিতে ফিরে আসেন।

আগেই বলেছি তিনি ম্যাক্সমুলারের সহযোগী হিসেবে দীর্ঘকাল কাজ করেছিলেন। এবং সেই কাজের সুবাদে তিনি ১৮৬৯ সালে ম্যাক্সমুলারের প্রাতিশাখ্য সংস্করণের শব্দ তালিকা নির্মাণ করেন। তিনি ঋক্‌বেদের পদপাঠের অংশটিও পরীক্ষা করেন। উক্ত অংশটি ১৮৭২ থেকে ১৮৭৪ সাল পর্যন্ত লন্ডন থেকে প্রকাশিত ঋক্‌বেদ সংস্করণের ৫ম এবং ৬ষ্ঠ ভাগের অংশ হিসেবে প্রকাশিত হয়। এগলিং-এর একটি ক্ষুদ্র ব্যাকরণ ১৮৭৪ থেকে ১৮৭৮ সাল পর্যন্ত কলিকাতা থেকে 'বিবলিওথিকা ইন্ডিকা' প্রকাশনা হিসেবে আত্মপ্রকাশ করে। তিনি বর্ধমান বিরচিত *গণরত্নমহোদধি* গ্রন্থটিও একসময় সম্পাদনা করেছিলেন। সময়কাল ১৮৭৯-৮০। গ্রন্থটি লন্ডন থেকে Auctores Sanscritici প্রকাশনার ৫ম বিভাগ হিসেবে প্রকাশিত হয়। জুলিয়াস এগলিং-এর একটি বিখ্যাত

কাজ ছিল রয়াল এশিয়াটিক সোসাইটিতে সংরক্ষিত (যেটি 'হজসেন সংগ্রহ' হিসেবেও আজও পরিচিত) 'বৌদ্ধ-সংস্কৃত পুঁথিসমূহের তালিকা' নির্মাণ। এই কাজটি তিনি লন্ডনে বসে করেছিলেন ১৮৭৫ সাল নাগাদ সংস্কৃত সুপন্ডিত ই.বি. কাউয়েলের সঙ্গে যৌথ প্রচেষ্টায়। এছাড়াও এগলিং-এর দুটি প্রামাণ্য কাজের পরিচয় আমরা পাই। যে কাজ দুটি তিনি শুরু করেছিলেন ১৮৮০ সাল নাগাদ। কাজ দুটি শেষ হতে সময় নেয় প্রায় ২০ বছর। তার মধ্যে প্রথমটি হচ্ছে *শতপথ ব্রাহ্মণ*-এর ইংরেজি অনুবাদ। এই কাজটি শুরু করার পেছনে ম্যাক্সমুলারের অকৃত্রিম অবদানকে আজও অস্বীকার করা যায় না। এই অনুবাদ গ্রন্থটি *Sacred Books of the East* গ্রন্থমালায় পরপর ৫টি খণ্ডে প্রকাশিত হয়। এই গ্রন্থটির প্রথম ভাগের উপস্থাপনায় এগলিং যথাক্রমে বর্ণপ্রথা, পুরোহিত সম্প্রদায়, বৈদিক দেবদেবী প্রভৃতি নানান বিষয় সম্পর্কিত কিছু সমস্যার কথা আলোচনা করেন। পরবর্তী ভাগগুলিকে তিনি সোমযোগসহ অন্যান্য যোগের কথা আলোচনায় রাখেন। তাই আজও এই অনুবাদটি একাধারে ঐতিহাসিক এবং ভাষাতাত্ত্বিকদের নিকট অত্যন্ত মূল্যবান সম্পদ। আর দ্বিতীয় কাজটি হচ্ছে ১৮৮৭ সালে প্রকাশিত ইন্ডিয়া অফিস লাইব্রেরির 'সংস্কৃত পুঁথি সমূহের তালিকা' নির্মাণ। এই কাজটি সাতটি ভাগে প্রকাশিত হয়। প্রথম ভাগে তিনি রাখেন বেদ সম্পর্কিত বিষয় এবং দ্বিতীয় ভাগে রাখেন যথাক্রমে ব্যাকরণ, ছন্দ, সংগীত এবং শব্দবিজ্ঞানের বিষয়সমূহ। তৃতীয় ভাগে তিনি রাখেন ধর্মশাস্ত্রের পুঁথির বিষয়, চতুর্থ ভাগে তিনি রাখেন দার্শনিক ও তন্ত্রসাহিত্যের বিষয়, পঞ্চম ভাগে তিনি আলোচনা করেন জ্যোতির্বিজ্ঞান, গণিত, স্থাপত্যসহ অন্যান্য বিজ্ঞান, ষষ্ঠ ভাগে তিনি আলোচনা করেন মহাকাব্য সাহিত্য এবং সপ্তম ভাগে তিনি রাখেন কাব্য প্রণয়নের এক দীর্ঘ তালিকা। সেখানে অবশ্য তিনি কোনোকিছুই বাদ দেননি। যেমন গদ্য, পদ্য, নাটক প্রভৃতি। এরূপ অসাধারণ মনীষার মহাপ্রয়াণ ঘটে ১৯২৮ সালের ১৩ই মার্চ। যাইহোক, এগলিং-এর উপরিউক্ত কাজগুলি প্রমাণ করে তাঁর প্রাচ্যবিদ্যার প্রতি ঐকান্তিক উৎসাহ এবং শ্রদ্ধা। যা আজও তাঁকে সশ্রদ্ধ চিত্তে স্মরণ করতে দাবি জানায়। শুধু তাই নয় কলকাতার এশিয়াটিক সোসাইটির সঙ্গে তাঁর নিবিড় সম্পর্কের কথা আজও আমাদিগকে নাড়া দেয়। এশিয়াটিক সোসাইটির গর্ব এবং গৌরবের জায়গা বোধহয় এখানে, যেখানে প্রাচ্য এবং পাশ্চাত্যের জ্ঞানের বিনিময় একটা মাত্রা এনে দেয়। আর এইসব মনীষাসমূহ সেখানে সেতুরচনার ভূমিকা নেন। তাইতো তাঁরা অনন্য।

হিমালয় পরিব্রাজক — উমাপ্রসাদ

সুবীর ভট্টাচার্য
সম্পাদক, *যারা যাযাবর*

হিমালয়। বাংলা ভ্রমণ সাহিত্যের সর্বশ্রেষ্ঠ আকর্ষণ। আজও তার তুষারাবৃত শিখর দুরন্ত হিমবাহ, দূর্গম নদীউৎস, প্রণম্য তীর্থস্থান এবং পাহাড়ি মানুষ ভ্রামণিকদের আকর্ষণ করে। সেই অমোঘ আকর্ষণে যুগ যুগ ধরে মানুষ ছুটে এসেছে পাহাড়ি পথের চড়াই-উৎরাই পেরিয়ে। তবে হিমালয় ভ্রমণের অভিজ্ঞতা নিয়ে লেখালেখির শুরু কিন্তু খুব বেশিদিন নয়। ১৮৫২ থেকে '৫৭ সালের মধ্যে হিমালয়ের বিভিন্ন তীর্থ ও দর্শনীয় স্থানের ভ্রমণবৃত্তান্ত নিয়ে যদুনাথ সর্বাধিকারীর লেখা 'তীর্থ ভ্রমণ' বাংলা ভাষায় লেখা প্রথম ভ্রমণকাহিনী। তবে ১৮৭৫ সালে বাংলা ভাষায় প্রকাশিত প্রথম ভ্রমণগ্রন্থ *কাশ্মীর কুসুম*। লেখা রাজেন্দ্রমোহন বসু কাশ্মীর প্রবাসের সময় তার প্রাকৃতিক রমনীয়তা, নৈসর্গিক শোভা এবং ভূস্বর্গের নানাস্থানে ভ্রমণের অভিজ্ঞতা নিয়ে মনমোহন বসুর সম্পাদনায় কলকাতা থেকে প্রকাশিত *মধ্যস্থ* পত্রিকায় ধারাবাহিক লেখা শুরু করেন। যদিও তখন 'কাশ্মীরের বিবরণ' এই শিরোনামেই লেখাটি প্রকাশিত হতো। মহিলারাও পিছিয়ে থাকলেন না। ১৮৮৭ সালে জোড়াসাঁকো ঠাকুরবাড়ির স্বর্ণকুমারী দেবী দার্জিলিং বেড়িয়ে এসে *ভারতী* পত্রিকায় ধারাবাহিকভাবে ছয় কিস্তিতে লিখলেন 'দার্জিলিং' শীর্ষক এই ভ্রমণের আখ্যান। বাংলা ভাষায় মহিলা রচিত এটাই প্রথম হিমালয় ভ্রমণকাহিনী। এঁদের অনুসরণ করে ধীরে ধীরে হিমালয়কে ঘিরে বাংলা ভাষায় সৃষ্টি হতে থাকল ভ্রমণ-সাহিত্য। প্রমথনাথ বসু (*একটি নীহারবাহুর পাশে*, ১৮৮৯) সারদাপ্রসাদ ভট্টাচার্য (*অমরনাথ যাত্রীর বিবরণ*, ১৮৯৫) জগদীশচন্দ্র বসু (*ভাগরীথীর উৎস সন্ধানে*, ১৮৯৫) রমানন্দ ভারতী (*হিমানন্দ*, ১৯০১) জলধর সেন (*হিমালয়*, ১৯১১) হেমলতা দেবী (*নেপালে বঙ্গনারী*, ১৯১২) ভগিনী নিবেদিতা (*স্বামীজীর সহিত হিমালয়ে*, ১৯১৭) প্রবোধকুমার সান্যাল (*মহাপ্রস্থানের পথে*, ১৯৩২) প্রমুখ লেখকরা হিমালয়ে ঘোরার দুঃখ-কষ্ট-সুখ- আনন্দের অভিজ্ঞতাকে ভ্রমণকাহিনী হিসেবে গ্রন্থিত করে বাংলা ভাষায় লিখিত হিমালয় ভ্রমণ সাহিত্যকে এগিয়ে নিয়ে গেলেন।

যদিও একথা অনস্বীকার্য, গিরিরাজ হিমালয়কে বাংলার ঘরে ঘরে পৌঁছে দেবার মহান কাজটি কিন্তু করেছিলেন হিমালয়-পথিক উমাপ্রসাদ মুখোপাধ্যায়। *দেশ* পত্রিকার সম্পাদক সাগরময় ঘোষ বলেছেন, "হিমালয়কে ঘরে ঘরে পৌঁছে দেবার ব্রত নিয়েছেন উমাপ্রসাদ। হিমালয়কে জানা এবং জানাবার ব্রত।"

স্যার আশুতোষ মুখোপাধ্যায়ের তৃতীয় পুত্রটি মেধাবী ছাত্র হিসেবে তাঁর দুই অগ্রজ রমাপ্রসাদ ও শ্যামাপ্রসাদের থেকে কোন অংশে কম ছিলেন না। ১৯১৯-এ ম্যাট্রিকুলেশন পরীক্ষায় তৃতীয়, ১৯২১ সালে ইন্টারমিডিয়েট পরীক্ষায় কলাবিভাগে প্রথম,

১৯২৩ সালে ইংরাজি অনার্সে প্রথম শ্রেণীতে প্রথম এবং ১৯২৫-এ এম.এ. পরীক্ষায় তাঁর স্থান হল প্রথম শ্রেণীতে দ্বিতীয়। পারিবারিক ঐতিহ্য মেনে এরপর ভর্তি হন আইনকলেজে। ১৯২৮ সালে আইনপরীক্ষাতেও তার মেধার পরিচয় দিয়ে প্রথম শ্রেণীতে সপ্তম স্থানে তিনি। কিন্তু সুদূর পিয়াসী প্রকৃতিপ্রেমী উমাপ্রসাদ গতানুগতিক জীবনের গণ্ডীর মধ্যে কোনদিন সেভাবে নিজেকে বাঁধেননি, বাঁধবার চেষ্টাও করেননি। কখনো ওকালতি কখনো অধ্যাপনা করেছেন, কিন্তু অর্থোপার্জনের বিশেষ আগ্রহ না থাকায় সেভাবে কোন পেশাকেই আঁকড়ে ধরেননি। তাঁর প্রাণ-মন-সত্তা জুড়ে ছিল প্রকৃতি, বিশেষত হিমালয়। সাধুসন্ন্যাসীদের যেমন পূর্বাশ্রমের সবকিছু মুছে যায়, কোন বিঘ্নই থাকে না, তেমনি উমাপ্রসাদের জাগতিক জীবনের অন্য সব পরিচয় হারিয়ে গিয়ে শুধু একনিষ্ঠ হিমালয় সাধক, হিমালয়-পথিক পরিচয়টি। আক্ষরিক অর্থেই মনে প্রাণে তিনি আজীবন ছিলেন একজন হিমালয়-তপস্বী শীতাদ্রি পরিব্রাজক।

পণ্ডিত রাহুল সাংকৃত্যায়নের *ভবঘুরে শাস্ত্র*-র সেই শাশ্বত বাণী "ভবঘুরেকে এই পৃথিবীতে ঘুরে বেড়াতে হবে, তাঁকে তাঁর নিজের জীবনকে নদীর প্রবাহের মতো সতত বহতা রাখতে হবে। তাই সেই প্রবাহে বাধা সৃষ্টি করে এমন কোন জিনিসের ব্যাপারে তাঁর সাবধান হওয়া প্রয়োজন...তরুণের জীবনে সব থেকে বড় বাধা...তা হলো প্রেম। (৪র্থ মুদ্রণ ১৯৯৪ পৃ. ৮৭) অকৃতদার উমাপ্রসাদ সারাজীবন বাহুল সাংকৃত্যায়নের এই উপদেশ অক্ষরে অক্ষরে মেনেছেন। যদিও তাঁর মা যোগমায়া দেবী, এমনকি রবীন্দ্রনাথ-শরৎচন্দ্রও তাঁকে সংসারী করার অনেক চেষ্টা করেছিলেন, কিন্তু কেউই উমাপ্রসাদকে এই 'চিরকুমার ব্রত' থেকে নিবৃত্ত করতে সফল হননি।

উমাপ্রসাদ বিশ্বাস করতেন, স্বচক্ষে হিমালয়কে না দেখে শুধু লোকের মুখে গল্প শুনে বা বই পড়ে হিমালয়ের বিস্ময়কর বিশালতা এবং অনন্য রূপসম্ভার কল্পনা করা অসম্ভব। যদিও মধ্যবিত্ত ঘরকুনো বাঙালির হৃদয়ে হিমালয়-প্রীতি জাগিয়ে তুলে তাকে হিমালয়ের বুকে টেনে আনার সম্পূর্ণ কৃতিত্ব কিন্তু তাঁর অসামান্য হিমালয় ভ্রমণ-সাহিত্যের।

বাংলা সাহিত্যে হিমালয়কে নিয়ে ভ্রমণকাহিনী লেখা তাঁর সাহিত্য-অঙ্গনে পদার্পণের অনেক আগেই শুরু হয়েছিল। কিন্তু তিনি যেভাবে শিখর-পাহাড়-নদী-অরণ্য-পশুপাখি সাধু সমাজ সর্বোপরি সাধারণ মানুষের জীবন—তাদের সুখদুঃখের কথা অতি সহজ ভাবে পাণ্ডিত্যের অহংকার বর্জিত এক বিস্ময়কর উজ্জ্বল আবেগে লিখেছেন, তা বাঙালি ভ্রমণকাহিনীর পাঠককে আজও মোহাবিষ্ট করে রেখেছে। তাঁর লেখার আকর্ষণের আরেকটি কারণ তিনি শহরের নরনারীদের হিমালয়ে নিয়ে গিয়ে তাদের নায়ক-নায়িকা বানাননি। তাঁর নায়ক নায়িকারা হিমালয়ের গন্ধমাখা সেখানকারই ভূমি-সন্তান। হিমালয়ের প্রকৃতি আর মানুষই ছিল তাঁর ভ্রমণসাহিত্যের বেশি অংশ জুড়ে।

তিনি ছিলেন খুব সচেতন লেখক। অসাধারণ শব্দচয়নে আর ছোট ছোট বাক্যগঠনে তাঁর প্রকৃতি বর্ণনা পড়তে পড়তে পাঠকের চোখের সামনে যেন ছবি ফুটে ওঠে। লেখার ক্ষেত্রে তাঁর ছিল 'মিনিমালিস্টিক অ্যাপ্রোচ'। "তিনি ভ্রমণ-পথের দুর্গমতার কথা বলেছেন, কিন্তু ভয়াবহ আতিশয্য সৃষ্টি করেননি। ধৈর্য্য ও মনোবলে কীভাবে দুর্গম পথ সুগম হয় তার নির্দেশ দিয়েছেন। সেইসঙ্গে ভ্রমণ-পথের চারপাশের সৌন্দর্যের বিবরণ দিয়েছেন।" তাঁর লেখা পড়লে বোঝা যায়, তিনি চাইতেন মানুষ হিমালয়ে আসুক অ্যাডভেঞ্চারের টানে নয়, সৌন্দর্য-পিয়াসী ভ্রামণিকের রূপে। যাঁরাই তাঁর কাছে এসেছেন পাশে বসিয়ে হিমালয়ের প্রাকৃতিক বৈচিত্র্য, পাহাড়ি মানুষের আন্তরিকতা-আতিথেয়তা-সততার কথা অন্তরঙ্গ আগ্রহে শুনিয়েছেন। তাঁর বার্তা ছিল, হিমালয়ে এসে হতাশ হবার কোন কারণ নেই। যেটুকু পাওয়া যাবে সেটুকুকেই পরমতৃপ্তিতে অনাবিল খুশিতে দু'হাত ভরে তুলে নিতে হবে। যেভাবে মানুষ মন্দিরে এসে দেবতার কাছে তার ভক্তি নিবেদন করে নিঃস্বার্থ আবেগে, তেমনি মানসিকতা নিয়ে হিমালয়েও যেতে হবে। শয়নে-স্বপনে-জাগরণে হিমালয়ই ছিল উমাপ্রসাদের আরাধ্য দেবতা। হিমালয়

থেকে দূরে থাকার সময়েও তাঁর প্রাণ-মন জুড়ে থাকতো হিমালয়। এমনকি জীবনের অন্তিম পর্বে রোগশয্যায় বন্দী অবস্থাতেও তিনি মগ্ন থাকতেন হিমালয়ের ধ্যানে।

গঙ্গোত্রী-গোমুখ যাত্রার অভিজ্ঞতা নিয়ে তাঁর লেখা প্রথম ভ্রমণকাহিনী *গঙ্গাবতরণ*। *দেশ* পত্রিকায় ১৯৫৩ সাল থেকে ধারাবাহিকভাবে প্রকাশিত হতে শুরু করে। গ্রন্থাকারে প্রকাশ পায় ১৯৫৫ সালে। প্রকাশক রঞ্জন পাবলিশিং হাউস। সাথে সাথে বাঙালি পাঠক খুঁজে পেল 'রোমান্স বহুল কল্পনার আতিশয্যতা কেন্দ্রিক' ভ্রমণকাহিনী লেখার বাইরে সহজ-সরল সুললিত গদ্যের একজন ভ্রমণ-লেখককে। এরপরের গ্রন্থ *হিমালয়ের পথে পথে* (১৯৬৪)। পাঠকদের নিরন্তর চাহিদায় বিশ্রামের সময় আর তিনি পেলেন না। একের পর এক প্রকাশিত হতে থাকল হিমালয় ভ্রমণের বই—*কুয়ারি গিরিপথে* (১৯৭৮) *মণিমহেশ* (১৯৮০ ভ্রমণসাহিত্যে প্রথম সাহিত্য আকাদেমি পুরস্কারপ্রাপ্ত) *কৈলাস ও মানস সরোবর* (১৯৮১) *ত্রিলোকনাথের পথে* (১৯৮১) *শেরপাদের দেশে* (১৯৮৪) *মুক্তিনাথ* (১৯৮৫) *পঞ্চকেদার* (১৯৮৮) এবং *তপোভূমি মায়াবতী* (১৯৯২, তাঁর শেষ গ্রন্থ)। কিন্তু যে মানুষটার জীবনের মন্ত্রই ছিল 'চরৈবেতি', তাঁর ভ্রমণ-স্মৃতি কি শুধু হিমালয়কে ঘিরেই থাকবে? না, হিমালয় ছাড়া জঙ্গল-মরুভূমি-আদিবাসীদের পৃথিবীতেও তাঁকে দেখা গেছে ধীর পায়ে স্থিতধী অন্বেষায় ঘুরে বেড়াতে। লিখলেন *গুপ্তেশ্বর, পালামৌর জঙ্গলে, দুধওয়া, কাবেরী কাহিনী, আরবসাগরের তীরে, জলযাত্রা, আলোছায়ার পথে, আফ্রিদি মুল্লুকে*-র মতো হিমালয়-অন্যত্র ভ্রমণকাহিনী।

শুধুমাত্র ভ্রমণকাহিনীতেই নয়, নিজের পরিবারের অন্যতম দুজন প্রিয় মানুষ মেজদা শ্যামাপ্রসাদের ব্যক্তিগত জীবনের নিখুঁত ছবির অ্যালবাম 'শ্যামাপ্রসাদের ডায়েরী এবং মৃত্যুপ্রসঙ্গ' এবং 'আশুতোষের ছাত্রজীবন' গ্রন্থে শব্দাঙ্কিত সশ্রদ্ধ পিতৃতর্পণেও তিনি তাঁর লেখার মুন্সিয়ানা দেখিয়েছেন। আর *অ্যালবাম, অ্যালবাম পুনশ্চ, ক্যালাইডস্কোপ,* এবং *ধেয়ানে আলোক রেখা*—গ্রন্থগুলিতে খুঁজে পাওয়া যায় বিরল ব্যক্তিত্বের উমাপ্রসাদকে।

বিজন-বিলাসী মানুষটির প্রিয় স্থান ছিল মধুপুর। শব্দবহুল কোলাহলমুখর কলকাতা শহর তাঁর কাছে সাহিত্যসৃষ্টির উপযুক্ত জায়গা ছিল না। মধুপুরের নির্জন নিস্তব্ধ পরিবেশে গঙ্গাপ্রসাদ হাউস-এর বিশাল দোতলা বাড়িটি তাঁর লেখার বিশেষ করে ধ্যানগম্ভীর হিমালয় সম্পৃক্ত সাহিত্য-সৃজনের সব থেকে প্রিয় স্থান ছিল। যে কটাদিন মধুপুরে থাকতেন মিতাহারি (২ কেজি চাল ২ কেজি আটা সারা মাসের বরাদ্দ) উমাপ্রসাদ স্বপাক আহারের সময়টুকু ছাড়া দিনের বেশি সময় কাটাতেন বই পড়ে আর সৃষ্টিশীলতার ব্যস্ততায়।

আজ দীর্ঘ ২৫ বছর (১৯৯৭ সালের ১২ অক্টোবর) তিনি আমাদের ছেড়ে চলে গেছেন। কিন্তু রেখে গেছেন ভ্রমণকাহিনী লেখার এক নতুন ধারা, যা 'সেজ-কা-কাল্ট' হিসেবে ভবিষ্যৎ ভ্রমণ-লিখিয়েদের মধ্যে বেঁচে থাকবে। কবি শক্তি চট্টোপাধ্যায়ের কথার অনুরণন তুলে বলতে পারি :

"দিশি বিদিশি মন্দ ভালো বহুৎ ভ্রমণ বিষয়ে লেখা আমি পড়েছি, তবে উমাপ্রসাদ যেভাবে আমায় অধোন্মাদ করে তুলতেন বা আজো, এ বয়সে তোলেন, তার কোন তুলনা পাইনা।' (*অন্তর্ভ্রমণ ও বহির্ভ্রমণ*)।

যতদিন বাংলা ভাষায় ভ্রমণ-সাহিত্য বেঁচে থাকবে দেবাত্মা হিমালয়ের মতো পরিব্রাজক উমাপ্রসাদ মুখোপাধ্যায়ও বেঁচে থাকবেন পাঠকের মনে চিরস্মরণীয় হয়ে।

সত্যেন্দ্রনাথ বসু রচনা সংকলন
তৃতীয় পরিবর্ধিত ও পরিমার্জিত সংস্করণ
প্রকাশক : বঙ্গীয় বিজ্ঞান পরিষদ
মূল্য : ৬০০.০০ টাকা

সত্যেন্দ্রনাথ বসু, সংক্ষেপে সত্যেন বোসের নাম জানেন না এমন শিক্ষিত বাঙালি আছেন বলে মনে হয় না। কিন্তু বেশিরভাগ লোকই জানেন সত্যেন বোসের বিশ্বজোড়া খ্যাতির মূলে ছিল আইনস্টাইনের অবদান। শুধু একটি পেপারের সৌজন্যে বিশ্বজোড়া খ্যাতি বিজ্ঞান জগতে খুবই দুর্লভ। পৃথিবী বা বলা যায় হয়ত সমস্ত মহাবিশ্বের অর্ধেক মৌলিক কণার নাম 'বোসন'। এই নামকরণ করেছিলেন বিখ্যাত তাত্ত্বিক পদার্থবিদ পল ডিরাক (Paul Dirac)। যে সব প্রাথমিক কণার স্পিন শূন্য বা পূর্ণ সংখ্যা তারা সবাই 'বোসন'। সর্বশেষ বোসন যা ল্যাবরেটরিতে আবিষ্কার হল তা হল হিগস বোসন। যে সব প্রাথমিক কণার স্পিন ১/২, ৩/২ ইত্যাদি 'তারা ফার্মিয়ন' নামে পরিচিত। বিখ্যাত বিজ্ঞানী এনরিকো ফার্মির (Enrico Fermi) সম্মানার্থে এই নামকরণ। এই নামটিও পল ডিরাকের দেওয়া। কিন্তু সত্যেন বোস ছিলেন এক বহুমুখী প্রতিভা। সাহিত্যে তাঁর ছিল অসীম আগ্রহ। বাংলায় বিজ্ঞানচর্চায় আজীবন উৎসাহ দিয়েছেন। *সত্যেন্দ্রনাথ বসু রচনা সংকলন* থেকে পাঠক সত্যেন বোসের নানা বিষয়ে লেখা সম্পর্কে অবহিত হবেন।

আলোচ্য বইটি মূলত সত্যেন বোসের নানান বিষয়ে বাংলায় লেখা নিবন্ধের সংকলন। ভূমিকায় বইটির প্রথম সংস্করণ ও দ্বিতীয় সংস্করণের ভূমিকা আছে। এ ছাড়া অবশ্যই রয়েছে বর্তমান সংস্করণের ভূমিকা। সংক্ষেপে বোসের জীবনী আলোচনা করা হয়েছে। যে সময় সত্যেন বোস ছাত্র বা অধ্যাপক ছিলেন তখন বর্তমানে রাজাবাজার সায়েন্স কলেজে এখন যা ফলিত গণিত (Applied Mathematics) হিসেবে পরিচিত তার তৎকালীন নাম ছিল মিশ্র ও ফলিত গণিত (Mixed and Applied Mathematics)। এই ডিপার্টমেন্টে বোসের সহপাঠী ছিলেন ড: মেঘনাদ সাহা ও প্রফেসর নিখিলরঞ্জন সেন। প্রফেসর সেন বেশ কিছু মৌলিক কাজ করেছিলেন কিন্তু সাহা ও বোস এই দুই দিকপালের প্রতিভার ঔজ্জ্বল্যে তিনি খানিকটা ঢাকা পড়ে যান। আলোচ্য বইটিতে সত্যেন বোসের স্মৃতিচারণা করেছেন গগনবিহারী বন্দ্যোপাধ্যায় (আমার মাস্টারমশাই)। গগনবিহারী ছিলেন ফলিত গণিতের অধ্যাপক ও সত্যেন বোসের ছাত্র। এ ছাড়াও আর একটি গুরুত্বপূর্ণ লেখা স্থান পেয়েছে। এটি হল "বোস আইনস্টাইন ঘনীভবন" (Bose Einstein condensation). Solid, Liquid, Gas ছাড়াও পদার্থের আর একটি অবস্থার নাম দেওয়া হয়েছিল প্লাজমা। এটি হল আয়নিত গ্যাস ও ইলেকট্রনের সমন্বয়ে গঠিত পদার্থের চতুর্থ অবস্থা। বোস আইনস্টাইন ঘনীভবনকে পদার্থের আরেকটি অবস্থা বলা যেতে পারে। বোস আইনস্টাইন পরিসংখ্যান (Bose Einstein Statistics) অনুযায়ী তাত্ত্বিক দিক দেখে এই পদার্থের অস্তিত্ব অনুমান করা হলেও ল্যাবরেটরিতে এটি প্রথম ধরা পরে ১৯৯৭ সালে। এর কারণ এর আগে প্রযুক্তি

এতখানি উন্নত ছিলনা যার দ্বারা কোন বস্তুকে প্রায় শূন্য ক্যালভিনে নিয়ে যাওয়া যায়। আইনস্টাইন বা বোস তাঁদের জীবদ্দশায় এর আবিষ্কার দেখে যেতে পারেননি। আলোচ্য বইটিতে এই জটিল বিষয় নিয়ে যথাসম্ভব সরল ভাষায় লিখেছেন অধ্যাপক জয়ন্ত ভট্টাচার্য, যিনি প্লাজমা ফিজিক্সের উপর দীর্ঘকাল গবেষণা করেছেন। এই প্রসঙ্গে উল্লেখ্য যে বোস আইনস্টাইন ঘনীভবনের উপর গবেষণার জন্য ২০০১ সনে তিন বিজ্ঞানী পদার্থ বিদ্যায় নোবেল পুরস্কার পান। তাঁরা হলেন এরিক কর্নেল ((Eric Cornell) উলফগ্যাংগ কেটেরলে (Wolfgang Ketterle) ও কার্ল ওয়াইম্যান (Carl Weiman)। অধ্যাপক জয়ন্ত ভট্টাচার্য আক্ষেপ করেছেন "কিন্তু দুঃখের কথা এই যে একশো বছর আগের বাংলার স্ফুলিঙ্গ আজকের বাংলায় কোন দাবালন সৃষ্টি করেনি"। ওঁর কথাটি সত্যি। আমরা রবীন্দ্রযুগে পেয়েছি আচার্য জগদীশচন্দ্র বোস ও আচার্য প্রফুল্লচন্দ্র রায়কে। পরবর্তীকালে বাংলার বিজ্ঞান জগৎ পেয়েছে শিশির মিত্র, সত্যেন্দ্রনাথ বোস, মেঘনাদ সাহা, প্রশান্তচন্দ্র মহলানবিশ ও জ্ঞান ঘোষ প্রমুখ বিশ্বখ্যাত বিজ্ঞানীদের। স্যার সি ভি রমন যে কাজের জন্য নোবেল পুরস্কার পেয়েছিলেন সেই কাজ কোলকাতার এক বিজ্ঞান প্রতিষ্ঠানের ল্যাবরেটরিতেই করেছিলেন (কালটিভেশন অফ সায়েন্স)। এঁদের খ্যাতির আড়ালে ঢাকা পড়ে গেছেন বিধুভূষণ রায়ের মত পদার্থবিদ। আলোচ্য গ্রন্থটিতে সত্যেন বোস, শিশির মিত্র সম্পর্কে লিখেছেন ("মহাজীবন", শিশির মিত্র)। এই প্রসঙ্গে বলা যেতে পারে শিশির মিত্রের মাস্টার পিস *Upper Atmosphere* বইটি প্রকাশ করেছিল এশিয়াটিক সোসাইটি।

সত্যেন্দ্রনাথ বসু রচনা সংকলনে, নানান পত্র পত্রিকায় সত্যেন বোস বিভিন্ন বিষয়ে যা বাংলায় লিখেছিলেন মূলত সেগুলিই স্থান পেয়েছে। বইটিতে সত্যেন বোসের লেখাগুলি কয়েকটি পর্বে (পর্ব শব্দটি ব্যবহার করছি লেখাগুলি চিহ্নিত করার সুবিধার জন্য) ভাগ করা হয়েছে বিষয় অনুযায়ী। আইনস্টাইনের উপর তিনটি লেখা ও মাদাম কুরীর উপর তিনটি লেখা এখানে সংকলিত হয়েছে। প্রথম পর্বটির শিরোনাম দেওয়া হয়েছে "বিজ্ঞান চিন্তা"। এই লেখাগুলি পড়লে বোঝা যায় নিজে পদার্থবিদ হলেও বিজ্ঞানের নানা আবিষ্কার সম্পর্কে তাঁর গভীর জ্ঞান ছিল। "জৈব বিজ্ঞানে নোবেল পুরস্কার" লেখাটি এর একটি প্রকৃষ্ট উদাহরণ। । এই পর্বে "বিজ্ঞানের সংকট" লেখাটি অবশ্য পাঠ্য। "প্রাচীন বিজ্ঞান চর্চা" লেখাটিতে এ বিষয়ে সত্যেন বোসের গভীর জ্ঞানের পরিচয় পাওয়া যায়। "শিক্ষা চিন্তা" পর্বের প্রথম লেখাটি (শিশু ও বিজ্ঞান) এখনো রীতিমত ভাবনার বিষয়। বইয়ের ভারে অল্পবয়সী ছেলে মেয়েদের মেরুদণ্ড বেঁকে যায় কিন্তু আসল শিক্ষা হয় কি! এই পর্বে অন্য লেখাগুলিতে সত্যেন বোসের বাংলা ভাষায় বিজ্ঞানচর্চার প্রচেষ্টায় তাঁর উদ্যোগের পরিচয় আমরা পাই। এই পর্বে বিশেষ উল্লেখযোগ্য লেখা হল "বাংলার শিক্ষা সমস্যা ও আশুতোষ"। "মহাজীবন" পর্বে যাঁদের কথা আলোচনা করা হয়েছে তাঁরা সবাই প্রাতঃস্মরণীয় ব্যক্তি। শিশির মিত্র সম্পর্কে আগেই বলেছি। এই পর্বে চারজন ব্যক্তিত্ব আছেন যাঁরা বিদেশি। গ্যালিলিও (Galileo Galilei) মাদাম কুরী (Madam Curie), আইনস্টাইনের (Albert Einstein) নাম স্কুলের ছাত্ররাও জানে। তোমোনাগা ও জ্যাক হাদামার হয়ত বিজ্ঞান ও গণিত জগতের বাইরে তত সুপরিচিত নন। শিন ইচিরো, অনেক সময় উল্লেখ করা হয় শিন ইতরো নামে, তোমোনাগা (Shin Ichiro Tomonaga) একজন জাপানি পদার্থবিদ যিনি বিখ্যাত তাঁর 'মেসন থিয়োরি'-র জন্য। তোমোনাগা ১৯৬৫ সালে পদার্থ বিদ্যায় নোবেল প্রাইজ পেয়েছিলেন। তাঁর সঙ্গে পদার্থ বিদ্যায় নোবেল প্রাইজ পেয়েছিলেন বিজ্ঞান জগতের দুটি অতি পরিচিত নাম, রিচার্ড ফেইনম্যান (Richard Feynman) ও জুলিয়ান সুইঙ্গার (Julian Swinger)। আর যে সব বাঙালি মনীষীদের বিষয়ে আলোচনা করা হয়েছে তাঁরা হলেন আচার্য প্রফুল্লচন্দ্র, ডা: মহেন্দ্রলাল সরকার ও রামেন্দ্রসুন্দর ত্রিবেদী। প্রথম দুজনের সম্পর্কে নতুন

কিছু বলার নেই। কিন্তু আমরা আত্মবিস্মৃত জাতি তাই রামেন্দ্রসুন্দরকে প্রায় ভুলে গেছি। রামেন্দ্রসুন্দর প্রচলিত অর্থে বিজ্ঞানী নন। কিন্তু তাঁকে তৎকালীন বিদগ্ধ জগতের একজন উল্লেখযোগ্য ব্যক্তিত্ব বলা যেতে পারে। নানা বিষয়ে অগাধ জ্ঞান ও যুক্তিপূর্ণ লেখার জন্য তাঁর খ্যাতি ছিল। বিজ্ঞানের নানা বিষয়ে তাঁর আগ্রহ ছিল। সাবলীল বাংলা ভাষায় অনেক বিষয়ে তিনি লিখেছেন। স্মৃতিচারণে স্বাভাবিকভাবেই প্রফুল্লচন্দ্র ফিরে এসেছেন। প্রফুল্লচন্দ্রের প্রতি সত্যেন বোসের অগাধ শ্রদ্ধা ছিল। মাদাম কুরীর ল্যাবরেটরিতে সত্যেন বোস কাজ করার সুযোগ পেয়েছিলেন। এর জন্য তাঁকে ফরাসি ভাষা শিখতে হয়েছিল। সত্যেন বোস জার্মান ও ফরাসি দুটো ভাষাতেই পারদর্শী ছিলেন। ফরাসি শেখা তাঁর পরবর্তী সাহিত্য চর্চায় একটা গুরুত্বপূর্ণ ভূমিকা নিয়েছিল। সে কথায় পরে আসব।

অটো হান বিখ্যাত হয়েছিলেন ইউরেনিয়ামের 'ফিসন' আবিষ্কারের জন্য। নিউট্রনের ধাক্কায় ইউরেনিয়াম দুই ভাগ কখনো বা তিন ভাগে ভেঙ্গে যায়। আইনস্টাইনের বিখ্যাত ফরমূলা $E=mc^2$ এবং অটো হানের আবিষ্কারের ফলে আমরা যেমন পেয়েছি Nuclear reactor তেমনি পেয়েছি নিউক্লিয়ার অস্ত্র। দুর্ভাগ্যক্রমে বিজ্ঞানের যুগান্তকারী আবিষ্কার আর বিজ্ঞানীদের হাতে থাকেনা। যে গবেষণা লক্ষ লক্ষ লোকের প্রাণ বাঁচায় রাষ্ট্রশাসক তা যুদ্ধে, সে নিউক্লিয়ার বোমা বা বায়োলজিকাল যুদ্ধ, যেখানেই হোক, ব্যবহার করেন। এই পর্বে হয়ত সাধারণের কাছে দুটি নাম অপরিচিত মনে হতে পারে বিশেষ করে কুমার হারীতকৃষ্ণ দেবের নাম। প্রবোধচন্দ্রের নাম তৎকালীন সমাজে অপরিচিত ছিলনা। এঁদের সম্পর্কে বোসের লেখা আমাদের সমৃদ্ধ করে। "শ্রদ্ধাঞ্জলি পর্বে" যাঁদের নাম আছে তাঁরা বাঙ্গালিদের অতি শ্রদ্ধেয় ও ভালোবাসার ব্যক্তি। তবু একজন বিজ্ঞানীর চোখে এঁদের আলোচনা অবশ্য পাঠ্য। অনেকের মনে হতে পারে জগদীশ বোস, প্রফুল্ল চন্দ্র, বিবেকানন্দ ও নেতাজীর সঙ্গে সৌমেন্দ্রনাথ ঠাকুরের নাম কেন এই পর্বে আছে! সৌমেন্দ্রনাথ, ঠাকুর পরিবারের সন্তান। তাঁর প্রপিতামহ ছিলেন মহর্ষি দেবেন্দ্রনাথ ঠাকুর। কিন্তু সৌমেন্দ্রনাথ ঠাকুর বাড়ির ছকবাঁধা গণ্ডীর থেকে বেরিয়ে এসেছিলেন। তিনি ছিলেন সোশালিস্ট মনোভাবাপন্ন। কিছু পরিমাণে সত্যেন বোসও সোশালিস্ট ভাবনার দ্বারা প্রভাবিত হয়েছিলেন এ কথা ভাবলে হয়ত খুব একটা ভুল হবে না। অন্তত তিনি কোন আইভরি টাওয়ারের ব্যক্তি ছিলেন না। এরপর "ভাষণপর্বে" রয়েছে 'নিখিল বঙ্গ সাহিত্য সম্মেলনে' ও কলিকাতা বিশ্ববিদ্যালয়ের সমাবর্তনে তাঁর ভাষণ। আর আছে তাঁর সপ্ততিতম বর্ষ উপলক্ষে তাঁকে যে সম্বর্ধনা দেওয়া হয়েছিল সেই সভায় তাঁর ভাষণ। এখানে "নীহারিকা জগৎ" শিরোনামে যে লেখাটি আছে সেটি ড: মেঘনাদ সাহার স্মৃতি উপলক্ষে যে সভা অনুষ্ঠিত হয়েছিল সেই সভায় তাঁর ভাষণ। মেঘনাদ সাহাকে Father of Indian Astrophysics বলা হয়। তাই বোধ হয় সত্যেন বোস এই বিষয়টি বেছে নিয়েছিলেন। এখানে একাধিক বার তিনি নিখিলরঞ্জন সেনের কথা উল্লেখ করেছেন। তাঁর সহপাঠী নিখিলরঞ্জন সেনের সম্পর্কে তাঁর গভীর শ্রদ্ধা ছিল। নিখিল সেন মারা যাওয়ার পর সত্যেন বোস একটি অবিচুয়ারী লিখেছিলেন। এটি বিখ্যাত বিজ্ঞান পত্রিকা *নেচার*-এ ছাপা হয় ১৯৬৩ সালে। কিন্তু "অনুবাদপর্বে" বা অন্য কোনওখানে সেটি সংকলিত হয়নি। আশাকরি পরবর্তী সংস্করণে এটি স্থান পাবে।

"নানা চিন্তা" পর্বে দুটি ছোট লেখাতে সত্যেন বোসের চরিত্রের কয়েকটি দিক আমরা দেখতে পাই। একটি অবশ্যই তাঁর যুক্তিবাদী মন। তাঁর সহপাঠী মেঘনাদ সাহা ব্যঙ্গ করে বলতেন আমাদের দেশের লোকের ধারণা সব "ব্যাদে আছে"। সত্যেন বোস প্রাচীন ভারতে বিজ্ঞানের অগ্রগতি নিয়ে লিখেছেন এক যুক্তিবাদী দৃষ্টিভঙ্গী নিয়ে। তাঁর মনে হয়েছে আমরা বড় বেশি কাব্য করি। কোদালকে কোদাল বলার অভ্যেস আমাদের নেই। এই প্রসঙ্গে তিনি রবীন্দ্রনাথের মনকে শিশুর মনের সঙ্গে তুলনা করেছেন, কিন্তু নিন্দার্থে নয়। প্রকৃতির সব কিছুর

মধ্যে রবীন্দ্রনাথের কবি মন আনন্দিত হত। এভাবে রবীন্দ্রনাথকে কেউ দেখেছেন বলে আমি জানি না। তার কারণ আমরা কর্তাভজার দেশ। যুক্তিবাদী দৃষ্টিভঙ্গী থেকে কোন মনীষীর জীবনচর্চা আমাদের ধাতে নেই ! রবীন্দ্রনাথ সত্যেন বোসকে খুব স্নেহ করতেন। "বাংলাদেশ ডাক দিয়েছে" লেখাটি ১৯৭১-এ বাংলাদেশের মুক্তি যুদ্ধের সময়ে লেখা। এখানে তাঁর বাঙ্গালি মনের পরিচয় পাই যখন তিনি লেখেন "এই বিপর্যয়ে একাত্ম বঙ্গজাতির জয় হোক। আমারও এই আশা। ...জয় বাংলা"। "অনুবাদপর্বে" বিখ্যাত কয়েক বিদেশি লেখকের গল্প ও প্রবন্ধের বাংলা অনুবাদ সংকলিত। যোসেফ আগননের দুটি লেখার অনুবাদ আছে যা মূল ফরাসি থেকে অনুবাদ। 'মহা-কথা' গল্পটি La Bache নামক গল্পটির অনুবাদ। "ছোট রুটির গোলা" আগননের লেখা একটি প্রবন্ধের অনুবাদ। আগনন (Shmuel Yosef Agnon) সাহিত্যে নোবেল প্রাইজ পেয়েছিলেন ১৯৬৬ সালে। এখানে একটু বিভ্রান্তির সম্ভাবনা আছে। "ছোট রুটির গোলা" লেখাটির ভূমিকায় লেখা আগনন ১৯৩৬ সালে নোবেল পুরস্কার পেয়েছিলেন। ১৯৬৬ বাংলা সনে হবে ১৩৭২। সত্যেন বোসের অনুবাদটি ছাপা হয় বাংলা ১৩৭৪ সনে। ১৯৩৬ হয়ত ছাপার ভুল। "শেষের সাত দিন" লেখাটি ফরাসি লেখক যাঁরী ত্রইয়ার (Gory. A. Troia) তলস্তয়ের জীবনীর অনুবাদ। "পথ চলতে একদিন" বিখ্যাত জার্মান লেখক হাইনরিখ বোলের (Heinrich Boll) একটি গল্পের ছায়া অবলম্বনে লেখা। হাইনরিখ বোল আমার খুব প্রিয় লেখক। ইনি ১৯৭২ সালে সাহিত্যে নোবেল পুরস্কার পান। "মাও-মারলো সংবাদ" মারলোর (Andrew Malraux) লেখা থেকে অনুবাদ। এই কথোপকথনটি মারলোর মাও (Mao DeZong) ও মারলোর কথোপকথন। এটি মারলোর লেখা "Anti-Memoirs" বইটিতে মারলো লিপিবদ্ধ করেছিলেন। আর একটি বিদেশি গল্পের সত্যেন বোস কৃত অনুবাদ এখানে সংকলিত হয়েছে। এটি "হল জাহাজ ডুবি" গল্পটি। মূল গল্পটির রচয়িতা বিখ্যাত ইটালিয়ান লেখক Edmaodo De Amicis। এই পর্বে বিজ্ঞানের কয়েকটি গুরুত্বপূর্ণ লেখা আছে। "আইনস্টাইন ও আপেক্ষিকতাবাদ সম্পর্কে পাউলি" নিবন্ধটি আইনস্টাইনের সম্বর্ধনা সভায় (১৯৫৫) বিশ্বখ্যাত জার্মান বিজ্ঞানী পাউলির (Wolf -gang Pauli) ভাষণের মূল জার্মান ভাষা থেকে অনুবাদ। উনবিংশ শতাব্দীর বিজ্ঞানের দুই যুগপুরুষ ম্যাক্সওয়েল (J.C.Maxwell) ও মাইকেল ফ্যারাডের (Michael Faraday) কাজের আলোচনা করা হয়েছে "বিশ্ব-প্রকৃতির সত্তাবোধের কল্পনার পরিণতিতে ম্যাক্সওয়েলের প্রভাব" লেখাটিতে। ১৯০১ সনে ম্যাক্সওয়েলের জন্মশতবর্ষ পালনের জন্য কেম্ব্রিজে একটি সভার আয়োজন করা হয়েছিল। তৎকালীন বিখ্যাত মনীষীরা এই সভায় ভাষণ দিয়েছিলেন। এ সম্পর্কে একটি ছোট পুস্তিকা প্রকাশিত হয়। নিবন্ধটি তারই সারাংশ। হয়েল (Fred Hoyel) ও নারলিকারের (J.V.Narlikar) মহাকর্ষের নতুন থিয়োরি সম্পর্কে সত্যেন বোসের যুক্তিবাদী এই লেখাটি বিজ্ঞানের ছাত্র ও গবেষকদের অবশ্য পাঠ্য। "গণিতক্ষেত্রে উদ্ভাবনের মনস্তাত্ত্বিক বিচার" লেখাটি হাদামার (এই বিখ্যাত গণিতবিদের পরিচয় এই বইটিতে পূর্বেই দেওয়া হয়েছে) রচিত একটি পুস্তকের মূল অংশের অনুবাদ। শুধু গণিত কেন বিজ্ঞানের সমস্ত ক্ষেত্রে এই বিষয়টি নিয়ে অনেক বিজ্ঞানীই আলোচনা করেছেন। "সত্যের স্বরূপ" লেখাটি সর্বজনবিদিত রবীন্দ্রনাথ ও আইনস্টাইনের কথোপকথন। অন্যধর্মী লেখাগুলি হল রোমা রোঁলার (Romain Rolland) সঙ্গে তিনজন প্রাত:স্মরণীয় বাঙ্গালি ভারতীয় ব্যক্তিত্বের কথোপকথন। এঁরা হলেন রবীন্দ্রনাথ, বিবেকানন্দ ও সুভাষচন্দ্র বোস। রোমা রোঁলার ডায়েরি থেকে অনূদিত। এর পরের পর্বে আছে বিভিন্ন গ্রন্থে সত্যেন বোসের লেখা ভূমিকা। মাদাম কুরী, আইনস্টাইন ছাড়াও রয়েছে দিলীপকুমার রায় সম্পর্কে লেখা আর আচার্য জগদীশচন্দ্র বোসের জন্মশত বার্ষিকী উপলক্ষে তাঁর শ্রদ্ধাঞ্জলি ও স্মৃতিচারণ। এটি অধ্যাপক প্রবোধ চন্দ্র বাগচী পাঠ করেন। সত্যেন বোস তখন বিশ্বভারতীর উপাচার্য ছিলেন। এই পর্বে

একটি ছোট কিন্তু ইন্টারেস্টিং লেখা "এসরাজ" চিঠিপত্র বিভাগে যে সমস্ত চিঠি এখানে সংকলিত হয়েছে তার মধ্যে নিশ্চয় যেটা সর্বাগ্রে আসবে সেটা হল ১৯২৪ সনে আইনস্টাইনকে লেখা তাঁর চিঠি যা বিজ্ঞানের ইতিহাসে অবিস্মরণীয় হয়ে থাকবে। এই চিঠির প্রতিলিপি আমি ক্যালকাটা ম্যাথামেটিক্যাল সোসাইটিতে দেখেছি। রবীন্দ্রনাথকে লেখা সত্যেন বোসের চিঠি এবং সত্যেন বোসকে লেখা রবীন্দ্রনাথের চিঠিতে আমরা অসমবয়সী দুই যুগ পুরুষের পরস্পরের প্রতি গাঢ় সৌহার্দের পরিচয় পাই। এই বিভাগে সব চিঠিপত্রই ঐতিহাসিক দলিল। ইংরাজিতে যে লেখাগুলি এখানে সংকলিত হয়েছে তার মধ্যে দুটি ভাষণ বিশ্বভারতীর সমাবর্তন উপলক্ষে উপাচার্যের ভাষণ। আর আছে ইন্ডিয়ান স্ট্যাটিসটিকাল ইনস্টিটিউটের (ISI) সমাবর্তনে সত্যেন বোসের তিনটি ভাষণ। এখানে উল্লেখযোগ্য যে ১৯৬৭ থেকে ১৯৭৪ অবধি সত্যেন বোস আই এস আই এর প্রেসিডেন্ট ছিলেন। প্রায় সমসাময়িক আই এস আই এর প্রতিষ্ঠাতা প্রশান্তচন্দ্র মহলানবিশ সত্যেন বোসের ঘনিষ্ঠ বন্ধু ছিলেন। চিত্র পরিচিতি পর্বে কতকগুলি দুষ্প্রাপ্য ছবি আছে। তবে এখানে আরো দুটি চিত্র স্থান পেলে ভাল হত। একটি হল প্রশান্তচন্দ্র ও রাণী মহলানবিশের সঙ্গে সত্যেন বোসের ছবি ও সম্পূর্ণ অন্য মেজাজে দিলীপ রায়ের সঙ্গে ওঁর ছবি। দিলীপ রায় ছিলেন সুবিখ্যাত লেখক, কবি ও নাট্যকার দ্বিজেন্দ্রলাল রায়ের পুত্র। সবশেষে বলার অপেক্ষা রাখেনা যে যাঁরা সত্যেন বোসের জীবনের নানান দিক সম্পর্কে পরিচিত হতে চান তাঁদের জন্য এটি অবশ্য পাঠ্য। এই বইটি বাংলার প্রতিটি স্কুল ও কলেজ লাইব্রেরিতে থাকা অতি আবশ্যক।

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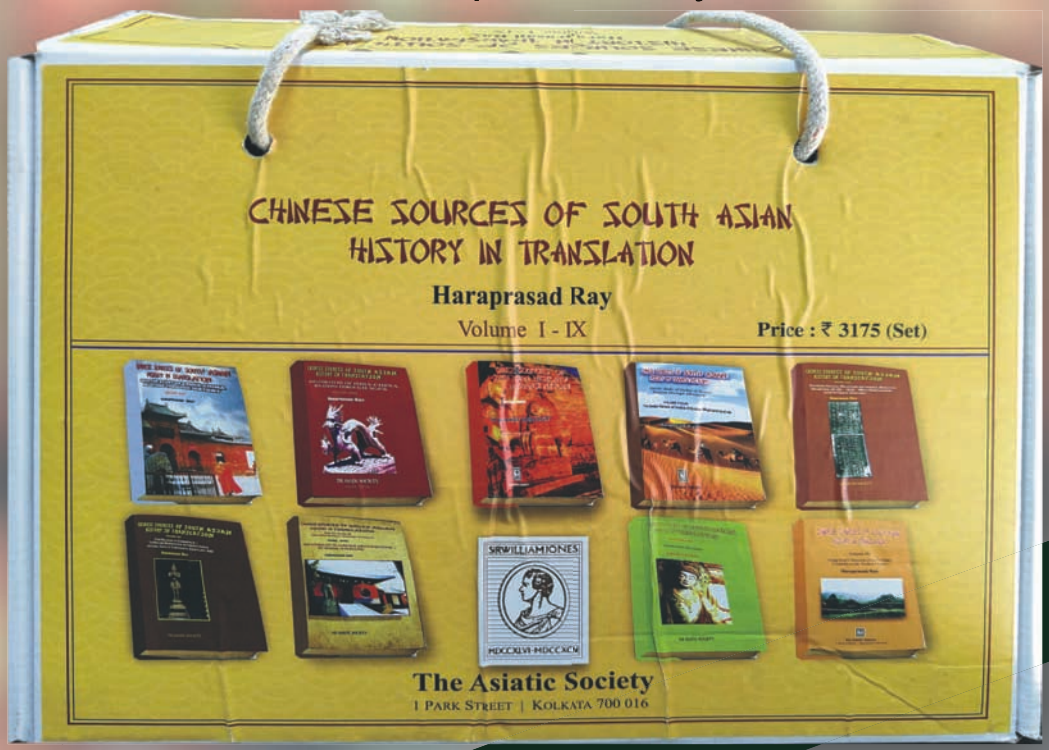

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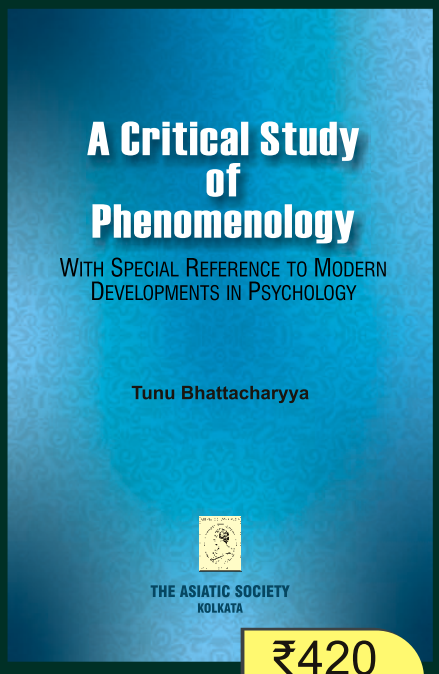

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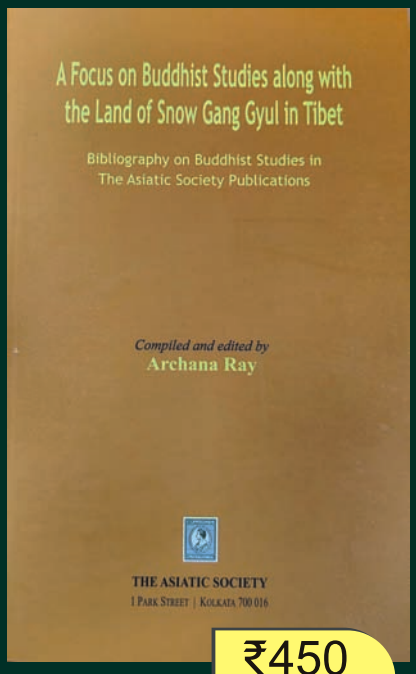

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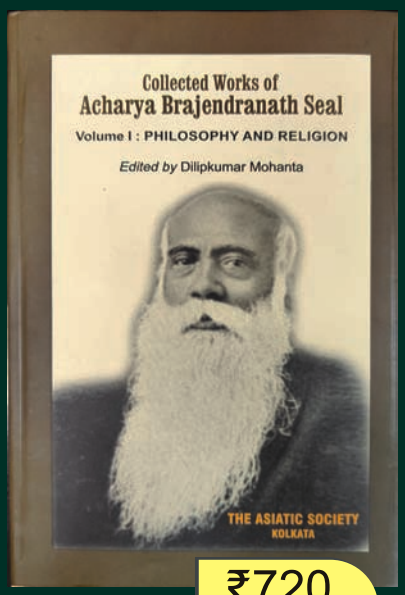

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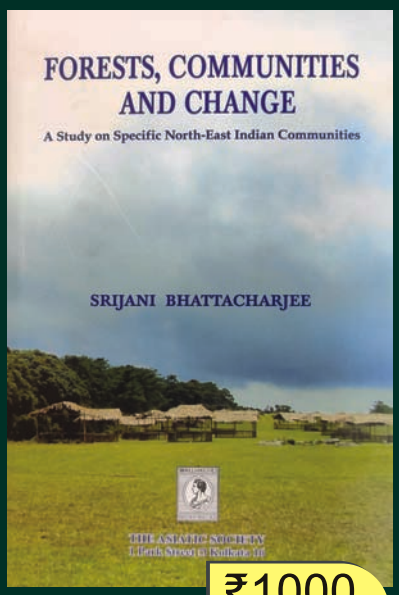

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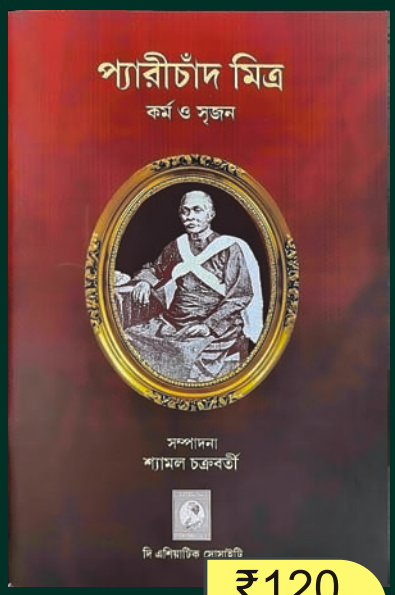

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