

Drone Warfare Lessons – Part 3

By Brig Hemant Mahajan, YSM

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Surveillance and Intelligence Gathering:

Drones, equipped with high-resolution cameras and advanced sensors, have revolutionized surveillance capabilities, becoming invaluable assets for security agencies worldwide. They play a crucial role in monitoring border areas, coastal regions, critical infrastructure, and even inaccessible terrains, providing unprecedented situational awareness.

Much like the advent of body cameras in the past, drones have emerged as a transformative force in public safety. Their deployment enhances the safety and efficiency of incident response operations while offering remote visibility and manageability. This technological advancement significantly amplifies law enforcement capabilities, allowing for swift and effective responses to various scenarios.

In the United States, police departments have embraced drones across a spectrum of operations. From search and rescue missions to disaster management and anti-terrorism operations, drones have become indispensable tools. They are utilized for monitoring crime, traffic, law enforcement activities, and ensuring public safety with remarkable efficiency.

The widespread adoption of drones in law enforcement can be attributed to their multifaceted benefits. Not only do they enhance surveillance capabilities, but they also streamline operations, reduce response times, and minimize risks to personnel. Their versatility and adaptability make them essential components of modern policing strategies worldwide.

India stands to benefit significantly from adopting best practices observed in modern police departments globally. Embracing drone technology can bolster the country's law enforcement capabilities, improving response times, enhancing surveillance, and ultimately ensuring the safety and security of its citizens. By leveraging the advancements made in drone technology and incorporating them into existing frameworks, India can stay at the forefront of modern policing methodologies.

Rapid First Response

Drones serve as ideal first responders, outpacing conventional vehicles. They can swiftly reach emergency locations, assess situations aerially, and relay critical information before human responders arrive.

Cost-Effective Aerial Surveillance

Unlike manned helicopters, drones offer a cost-effective solution for conducting aerial surveillance. This is particularly valuable in situations requiring an immediate response, where traditional methods are expensive and time-consuming.

Life-Saving Potential

Equipped with various attachments, drones can be controlled by a single officer from a safe distance. This capability is invaluable in high-risk scenarios such as counter-insurgency, hostage rescue, and car chases, allowing Police to engage perpetrators without jeopardizing their own safety.

Public Safety Tool

Drones, equipped with thermal sensors and cameras with high zoom capabilities, prove effective in covering large areas during search and rescue operations. They provide a crucial aerial perspective for enhanced public safety.

Drones for public safety are further enhanced by specialized payloads, including:

Loudspeakers: Used for announcements and crowd control.

Spotlights: Essential for night-time or low-visibility operations, particularly in search and rescue missions.

Beacons: Improve visibility in the night sky, alerting others to the drone's presence.

Live video monitoring is a pivotal feature, allowing drones to transmit high-quality live feeds to the control room. This capability proved instrumental during events like the farmers' agitation, blocking Delhi roads enabling authorities to monitor adherence to lockdown regulations effectively.

Challenges and Concerns: For Use Of Drones During War

While drones offer significant advantages in warfare, there are also challenges and concerns associated with their use:

Contest with Air Defense Systems: As drone technology evolves, so do air defense systems. Anti-drone measures, such as jamming, interception, and kinetic or non-kinetic countermeasures, are being developed to neutralize drone threats. This creates a cat-and-mouse game between drone operators and defenders.

Vulnerabilities: Drones can be susceptible to cyberattacks, signal jamming, and other forms of electronic warfare. Securing communication links and ensuring the integrity of drone systems is crucial to prevent unauthorized access and potential misuse.

Limited Detection Range and Coverage:

Counter-drone systems often have limitations in terms of detection range and coverage. Some detection technologies, such as RF or EO/IR sensors, may have relatively short ranges, requiring the deployment of multiple systems for comprehensive coverage. Additionally, certain counter-drone technologies may be more effective at detecting drones in specific environments, such as open areas, rather than in complex urban or mountainous terrain.

Cost and Scalability:

Implementing counter-drone technology can be costly, especially for large-scale deployments that require multiple systems and sensors. The cost of developing, procuring, and maintaining counter-drone systems can be a significant barrier to their widespread adoption. Ensuring scalability and affordability of counter-drone technology is an ongoing challenge for security forces.

Identification and Classification:

Distinguishing between hostile and non-hostile drones is crucial for effective neutralization. However, identifying the intent and payload of a drone can be challenging, as many consumer drones have similar appearances to their military counterparts. Ensuring accurate identification and classification of drones in real-time can be complex, and misidentifying a drone could lead to unintended consequences. The US troops lost three soldiers, as they could not distinguish between friend and foe, recently in middle east.

Electronic Counter-Countermeasures (ECCM):

Adversaries can employ electronic countermeasures to disrupt or deceive counter-drone systems. They may use techniques such as frequency hopping, spread spectrum modulation, or spoofing to confuse or jam the sensors of counter-drone systems. Developing effective ECCM capabilities to counter these tactics is a continuous challenge.

To be continued in next issue

NATO@75: Strengthening Alliances in a Changing World

By Dr.Santhosh Mathew

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"An attack against one ally is considered an attack against all allies." - Article 5 of the North Atlantic Treaty.

As the North Atlantic Treaty Organization (NATO) commemorates its 75th anniversary, it stands at a critical juncture in its history. Established in 1949 with the primary goal of safeguarding the freedom and security of its member nations, NATO has since evolved to address emerging security challenges, geopolitical shifts, and technological advancements. Today, as the world faces complex threats ranging from cyber-attacks to terrorism and hybrid warfare, NATO's role in promoting collective defense and transatlantic unity remains as vital as ever.

Over the past seven and half decades, NATO has played a pivotal role in maintaining peace and stability in the Euro-Atlantic region. From deterring aggression during the Cold War to conducting peacekeeping operations in the Balkans and Afghanistan, NATO has demonstrated its adaptability and resilience in the face of changing security landscapes. Moreover, NATO's commitment to democratic values, individual liberty, and the rule of law has not only solidified its member nations' bonds but also served as a beacon of hope for aspiring democracies around the world. The Warsaw Pact, formed in 1955, consisted of Eastern Bloc countries led by the Soviet Union, designed as a response to NATO and to solidify Soviet control over Eastern Europe. With the end of the Cold War and the dissolution of the Soviet Union in 1991, the Warsaw Pact became defunct, marking a significant shift in the geopolitical landscape of Europe.

NATO primarily focuses on the Euro-Atlantic region; SEATO and CENTO were formed to address security challenges in Southeast Asia and the Middle East, respectively. Understanding the historical context and implications of these alliances provides valuable insights into the broader security landscape, including their relevance to South Asia. SEATO was created in 1954 in response to the perceived threat of communist expansion in Southeast Asia, particularly following the Korean War and the Indochina conflicts. CENTO, formerly known as the Baghdad Pact, was established in 1955 to address security concerns in the Middle East, particularly in the aftermath of the Suez Crisis and the rise of Arab nationalism. Comprising Iran, Iraq, Turkey, Pakistan, and the United Kingdom, CENTO aimed to contain Soviet influence and promote economic and military cooperation among its member states.

Recognizing these challenges, NATO has embarked on a process of adaptation and modernization to ensure its relevance and effectiveness in the 21st century. This includes investments in cutting-edge technologies, such as artificial intelligence, autonomous systems, and space-based capabilities, to maintain military superiority and resilience against emerging threats. Furthermore, NATO has prioritized strengthening its partnerships with like-minded countries and organizations to foster a more inclusive and interconnected security architecture.

At the heart of NATO's success lies its collective defense principle, embodied in Article 5 of the North Atlantic Treaty, which states that an attack against one member is considered an attack against all. This mutual commitment to solidarity and shared responsibility has served as a powerful deterrent against aggression and coercion, thereby preserving peace and stability in the Euro-Atlantic area. Moreover, NATO's emphasis on burden-sharing and defense spending has contributed to the alliance's cohesion and effectiveness. In recent years, NATO members have made significant progress towards meeting their defense investment targets, with a growing number of countries increasing their defense budgets and capabilities. By ensuring fair burden-sharing, NATO not only strengthens its collective defense posture but also reinforces the bonds of trust and solidarity among its members.

As NATO charts its course for the future, maintaining a strong transatlantic bond remains paramount. The United States' commitment to NATO and its European allies serves as the cornerstone of Euro-Atlantic security, underpinning the alliance's deterrence and defense posture. However, fostering a more balanced and equitable transatlantic partnership requires greater consultation, coordination, and cooperation on both sides of the Atlantic.

Furthermore, NATO must continue to adapt to emerging security challenges, including the growing nexus between security and technology. By harnessing the potential of emerging technologies while addressing their associated risks and vulnerabilities, NATO can enhance its resilience and agility in an increasingly complex and interconnected world.

One of the most significant developments in NATO's recent history is the expansion of its membership. Since its inception, NATO has welcomed new members who share its values and commitment to collective security. In 2024 Sweden became the newest member of the alliance. The decision marks a historic milestone for Sweden, a country known for its long-standing policy of military non-alignment and signals a fundamental shift in its approach to collective defense and security cooperation. NATO is primarily funded by its member states, with contributions based on a cost-sharing principle known as "burden-sharing." While all NATO members contribute financially to the alliance, some countries contribute more significantly than others due to factors such as their gross domestic product (GDP), defense budget, and strategic interests.

As NATO celebrates its 75th anniversary, it stands as a testament to the enduring power of collective action and shared values in addressing common security challenges. From its humble beginnings as a collective defense pact to its current role as a cornerstone of Euro-Atlantic security, NATO has proven its ability to adapt and evolve in response to changing geopolitical dynamics. Looking ahead, NATO must remain steadfast in its commitment to upholding the principles of democracy, individual liberty, and the rule of law, both within its member nations and beyond. By fostering unity, resilience, and innovation, NATO can continue to safeguard the freedom and security of its member nations for generations to come. As the world continues to grapple with complex and evolving threats, NATO's role as a pillar of stability and solidarity has never been more critical. By staying true to its founding principles while embracing change and innovation, NATO can ensure that it remains a bulwark of peace and security in an uncertain world.

"NATO is the most successful alliance in history because it has been able to change when the world changed." - Anders Fogh Rasmussen, former NATO Secretary General.

Step It Up with Manila

By Srikanth Kondapalli

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External Affairs Minister Jaishankar toured the Philippines March 25-27, meeting President Ferdinand Marcos and his Foreign and Defence Secretaries and discussing bilateral and strategic ties, counter-terrorism, defence cooperation and maritime domain awareness.

Most significantly, in his speeches, Jaishankar expressed support for Philippines' sovereignty in the context of its maritime and territorial disputes with Beijing in the South China Sea and pointedly reiterated the rule of law as enshrined in the 1982 UN Convention of the Law of the Seas. While China protested these comments as "interfering in its internal affairs", Jaishankar was only administering Beijing its own Chinese medicine. For years, China has toyed with Delhi using India's neighbours Pakistan, Nepal, Sri Lanka, Bangladesh, and increasingly Maldives.

Both India and the Philippines have been facing Chinese aggression on multiple fronts. The details of China's continued occupation of disputed territory in the Eastern Ladakh-Aksai Chin area and obstruction of Indian patrolling in the Depsang plains amid the four-year-long military standoff in the mountains are well-known. In the maritime domain, China conducts nearly 30 surveillance missions in the Indian Ocean, scouring through seabed resources as well as snooping on the Indian Navy and India's ballistic missile tests, including the recent Agni-5 MIRV test. Despite Indian protests, China docked a surveillance ship at Hambantota port in Sri Lanka two years ago. A similar situation of China's unilateralism has prevailed in South China Sea, too, since 2014.

Despite China's late-1980s promise to peacefully resolve the South China Sea disputes (involving maritime boundaries and islands with Taiwan, Brunei, Malaysia, Indonesia Vietnam and Philippines) and to jointly exploit resources there with them, China has undertaken unilateral measures to claim sovereignty over the entire region based on historical claims.

Despite the July 2016 ruling at The Hague quashing any historical claims, upholding local traditional communities' rights overfishing and criticising environmental degradation due to dredging projects, China has built more than 3,000 acres of infrastructure on the disputed islands and deployed missiles, fighter jets and naval forces and has denied freedom of navigation to other countries, including the Philippines and India. This is destabilising one-third of globe shipping and nearly 40% of Indian trade. China has aggressively sent oil rigs and coastguard ships to intimidate the Philippines, Vietnam, Malaysia and other disputants and users of the sea. Beijing wanted an exclusive but non-binding "Code of Conduct" with some South-East Asian countries, in a bid to diminish the stakes of the US, Japan, Australia and India in the region.

China's aggressive patrolling in the Philippines' territorial waters at Second Thomas Shoal is creating ripples in the region. Located within 200 nautical miles of the Philippines (and 600 nautical miles away from China's Hainan Island), the Philippines is well within its jurisdiction to patrol the region. However, China's intrusions have increased in the past decade.

Similar to the way it has prevented Indian patrolling in the Depsang Plains in Ladakh since 2020, China's Coast Guard has been obstructing Philippine resupply ships approaching the Second Thomas Shoal since 2014. It has relentlessly coerced the Philippines with not only Coast Guard deployments but also by using water cannons on the Philippine supply ships since 2021, stepping up the intensity since August 2023. The region is thus sitting on a powder-keg, and that calls for the leadership in both the Philippines and India to wake up and prepare.

However, the responses of successive leaderships in both countries has been lackadaisical and myopic in nature. Even the recent Indian shift from Look East to Act East policy lacks teeth.

Moreover, like PM Modi before 2020, the previous Philippine leader Rodrigo Duterte also courted China's Xi Jinping in the hope of better ties. Instead, Beijing attempted to soften up both New Delhi and Manila on trade while stealthily building up positions and upping the ante on territorial disputes on the borders with India and in the South China.

Both Delhi and Manila were thus looking to step up bilateral cooperation and counter China. But progress has been sketchy and at best cosmetic. Bilateral interactions at the highest levels have been few and far between since Indira Gandhi's visit to Manila in 1981.

One major exception to the largely uneventful bilateral relations has been cooperation in defence matters, including the \$375-million deal in 2022 to supply the BrahMos missile system to the Philippines. It was to be given to Vietnam but had been stuck in red tape. India is also considering supplying the Philippines with fast attack craft, training and capacity building.

When China has supplied nuclear weapons, ballistic missiles and conventional weapons to Pakistan and other South Asian countries, and continues its aggressive activities in the South China Sea, can New Delhi and Manila afford to continue to be complacent and lethargic in joining hands to counter the common challenges they face?

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Why Andaman and Nicobar Islands Are Key To Indo-Pacific Security

By Arun Prakash

Author is a retired chief of Naval Staff.

The aftermath of the 1857 War of Independence saw the British establish a penal colony in the Andaman and Nicobar (A&N) islands, where many Indian revolutionaries and freedom fighters were incarcerated for life. The dark symbolism of kalapani, as the A&N came to be known, coupled with the remoteness of the islands, led to years of benign neglect by a distant New Delhi. It was only in 1962, when the Indian Navy (IN) raised an alarm about the reported sighting of a Chinese submarine, that the government sanctioned a detachment of 150 sailors to form a "naval garrison" to guard this huge archipelago of 836 islands spread across 450 miles of sea.

Against this backdrop, recent reports regarding the government's heightened security focus on these strategic islands are to be welcomed, especially because in the past, these islands nearly slipped from India's grasp.

Liberated by INA

In February 1942, just a month after the fall of Singapore, the islands were occupied by the Japanese as a prospective springboard for the invasion of India. Towards the end of 1943, they became the first part of India to be "liberated" from British rule, when Netaji Subhas Chandra Bose visited Port Blair and hoisted the INA tricolour. However, this was mere symbolism because the British reoccupied the A&N after the Japanese surrender in 1945. On the eve of Independence, the fate of these islands hung in balance. It is not commonly known that the British Chiefs of Staff had recommended that, given their strategic oceanic location, the A&N should be retained as a Crown possession. According to contemporary accounts, so relieved was British PM Clement Atlee when Indian leaders reluctantly swallowed the bitter pill of the Partition plan that he overruled the Chiefs of Staff and let India have these islands.

In September 1965 after the commencement of India-Pakistan hostilities, President Ayub Khan sent retired Air Marshal Asghar Khan as an emissary to seek support from fraternal Indonesia.

In his memoirs, Asghar Khan records his surprise when the Indonesian navy chief, Admiral Martadinata, asked him: “Don’t you want us to take over the Andaman Islands? They are an extension of Sumatra and are, in any case, between East Pakistan and Indonesia. What right have the Indians to be there?” As it happened, the Indo-Pak conflict concluded before the Indonesians initiated any action.

After Kargil War

In 1976, the A&N naval garrison, having been supplemented by army troops, was upgraded to Fortress Andaman & Nicobar. In 2001, the post-Kargil War security review saw the establishment of India’s first joint/unified operational command — the Andaman Nicobar Command (ANC) in Port Blair. By placing forces of all three services and the Coast Guard, under the command of the newly created commander-in-chief, A&N, the military had taken a great leap of faith. In the 23 years that have elapsed, the ANC has proved an unqualified success, as a “theatre” in microcosm and provided tangible proof that the concept of “jointness” can work successfully in the Indian environment. Regrettably, the tried-and-tested ANC template has not found favour in the military’s vain, four-year-old quest for “theaterisation”.

Turning to other security-related aspects of the A&N islands, note must be taken of their unique geography. In the north, the islands are separated from Myanmar territory by a mere 22 miles. At the southern end, Indira Point is just 90 miles from Indonesia’s Aceh province and the coast of Thailand lies 270 miles to the east. In stark contrast, Port Blair is about 850 miles from Chennai, as well as Kolkata. Although the surface area of these islands is only 8,300 sq km, they add 300,000 sq km to India’s exclusive economic zone with the promise of undersea hydrocarbon and mineral deposits. Only 31 of the archipelago’s 836 islands and islets are inhabited. This means there is a possibility of surreptitious occupation — a la “Kargil heights” — by a covetous neighbour.

A theatre command

To obviate the possibility of intrusions by state and non-state entities, ANC will need to maintain three-dimensional maritime domain awareness through networked assets, including radars, aircraft, satellites and unmanned vehicles. The command must be invested with adequate defensive and offensive firepower, as well as rapid-reaction forces with amphibious and airlift capabilities. The frequent transits of PLA Navy (PLAN) warships, submarines and research/intelligence-gathering vessels in these waters portend a sustained Chinese naval presence, including nuclear attack submarines. This would require the IN to maintain a substantial anti-submarine warfare capability in the A&N.

The severe disruption and re-routing of shipping, occasioned by the Houthi attacks in the Red Sea, have served as yet another harsh and expensive reminder that “maritime choke points” constitute critical vulnerabilities for world trade and commerce. In this context, the Malacca Strait — more than 90,000 merchant ships carrying about 30 per cent of the world’s traded goods pass through it every year — presents a challenge as well as a latent opportunity for India. Of significance for Indian strategists is the location of the Great Nicobar Island, which sits astride the western entrance/exit of the Malacca Strait and can comprehensively dominate all shipping — merchant as well as naval — in transit. This was the reason that as far back as 2003, Chinese Premier Hu Jintao warned the PLAN about a future “Malacca Dilemma”.

One hopes that the reported security infrastructure upgradation is part of a cohesive strategy, which aims to convert the A&N islands into a formidable maritime bastion that will not only extend India’s defensive perimeter but also bestow the ability to project power or extend a hand of friendship to maritime neighbours. Such a strategy must acknowledge that for the foreseeable future, India would need to enlist the cooperation of like-minded partners to maintain peace and tranquillity in the Indo-Pacific.

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Shahpur Kandi Dam: Inching Towards India-Pakistan

By Lt Gen KJ Singh

Author superannuated in August 2016 after 39 years of distinguished service. The General officer has commanded Western Command, an Armoured Division in the Strike Corps, a T-90 Armoured Brigade and an elite Armoured Regiment - 63 Cavalry.

Media reports built great hype on the completion of the Shahpur-Kandi Project (SKP), with catchy headlines of India stopping the flow of waters of the Ravi River to Pakistan. Pakistani newspaper Dawn had reported that filling up the reservoir for the Baglihar dam (on Chenab) in 2008 had resulted in 30% crop losses in Pakistan. For Pakistan, Ravi is the River of Punjab and Lahore. The famous ghazal by Pak singer Sajjad Ali sums it up poignantly, “Jeh Ravi which Pani Koi na, the apni kahani koi na”, meaning – if there is no water in Ravi, we have no story to tell. The apparent question is, are we heading towards Indo-Pak water wars?

SKP Project

Objective assessment indicates that 98% of the work is complete. The filling of the reservoir has commenced, and it will take two to three months to fill up the reservoir for the projected water level and power generation requirements. Recently constructed dams and reservoirs have been the missing parts of the Ranjit Sagar Dam (RSD), also known as Thein Dam. RSD was commissioned in 2001, after an inter-state agreement in 1979. The scheme was upgraded to a national project in 2008, but work commenced in 2013, only to get stalled in 2014. Centre had to intervene in 2018 to resolve the festering dispute between Punjab and Jammu and Kashmir.

Balancing reservoirs in large dam systems is essential for exercising positive control of water flowing downstream. SKP, 11 km from Thein, is a multipurpose project and includes two hydel projects (55.5 m height) with an installed capacity of 206 MW. It seeks to check the uncontrolled water flow (approximately 2 MAF) to Pakistan and harness it for irrigation. It is projected to supply 1150 cusecs of water for irrigating 32,173 hectares in the Kandi belt of Kathua and Samba through the Main Ravi Canal. The earlier tedious method of lifting water into the Tawi Lift Canal will be simplified with gravity feed. Regulated water supply in canals will bolster the defence potential of the vulnerable Kathua-Samba corridor. J&K will also get a 20% share of power. Besides getting 80% power, Punjab will draw water to irrigate an additional 5,000 hectares. Balancing reservoirs will also optimise the Upper Bari Doab Canal (UBDC) water supply, which was erratic and inefficient, conditioned by power generation considerations.

Ravi River-Water Utilisation

Indus Water Treaty (IWT) allows India to utilize the waters of the three Western rivers of Ravi, Beas and Sutlej. As per some estimates, 95% of the water would get utilized, but some water, especially in the rainy season, would still flow to Pakistan. Ravi basin includes many tributaries like Ujh, which join after transiting through the Shakargarh bulge in Pakistan. A follow-up project at Makaura-Pattan in Gurdaspur is envisaged to impound approximately 600 cusecs of water further for irrigation and drinking water supply. Punjab had asked for central funding of 412 crore in 2019. Haryana has even pitched for an ambitious link canal like SYL from the proposed dam to Harike to boost the water supply downstream.

Ravi is a trans-border river, defining 70 km of the Indo-Pak border and is notorious for shifting its course. It is resuscitated in Pakistan by link canals transferring water from the Marala Dam to Chenab. It also provides several enclaves on both sides. These can be utilised as launch pads as they obviate the need to fight tricky river-crossing operations. Defences are supplemented with Ditch cum Bundhs (DCB). Hydrological control of Ravi definitely aids operational plans.

Criticality of Water Management

India has the lowest per-capita freshwater availability. With barely 4% freshwater reserves for 17% of the global population, it creates severe water stress. Even by optimistic projections, we have only 90 days of reserves, compared to many countries boasting two years' worth of pounded reserves. Fresh water is becoming a much sought-after resource as it is required in large quantities for silicon chip fabrication. Chinese aggressive forays to control the 'Water table of Asia' in Tibet are ascribed to looming water stress and ambitious plans for chip manufacturing.

China enjoys upper riparian leverages on our major rivers, the Indus, Sutlej, and Brahmaputra. The Dragon has a dubious record of opacity and refusal to share even mandated data. It was accused of triggering the Pare-chu deluge in Sutlej in 2000 and the Brahmaputra floods in 2020. It is reportedly building the Yarlung-Zangbo dam on Tsangpo (Brahmaputra) with plans to build a 1,100 km-long channel to the Takaltaman desert.

Climate change-induced melting of glaciers is further curtailing the availability of water. Parvez Musharaff, in his RCDS course thesis, had inferred that water would be the next trigger for the Indo-Pak conflict. Both countries face unresolved domestic inter-state water disputes like Cauvery, SYL in India, and Kalabagh and Kohala in Pakistan. The abysmal track record of water management in Pakistan is reflected in periodic floods, most notably the debilitating deluge in 2022 and the build-up of salinity in the Indus basin. Pak obduracy is delaying de-silting operations in existing IWT dams, notably Salal (Reasi), on Chenab.

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India is Proud of: Dr Rukhmabai Raut 22 Nov 1864-25 Sept 1955



Rukhmabai Raut went on to become India's first qualified physician and was a major cause behind the enactment of Age of Consent Act in 1891. Once Google doodle honoured her on her on her 153rd birth anniversary on 22 Nov 2017, by dedicating an illustration showing a woman with a stethoscope around her neck.

Rukhmabai Raut, who was one of the first women doctors to practice medicine in British India and staunchly opposed child marriage. Google doodle commemorated the anniversary by dedicating an illustration to Raut on its homepage in India, showing a woman with a stethoscope around her neck, with two hospital beds, a nurse and a patient in the backdrop. Born on 22 Nov in 1864, Raut went on to become India's first qualified physician and was the major cause behind the enactment of Age of Consent Act in 1891.

Raut was married off at the age of 11 to Dadaji Bhikaji who was aged 19. She, however, continued to stay at the house of her widowed mother, who later got married to Assistant Surgeon Sakharam Arjun Raut. She was supported by her stepfather, when she refused to stay with Bhikaji and his family at his house. This led to the famous legal battle known as Dadaji Bhikaji vs Rukhmabai case, 1885 in legal field. While Bhikaji asked for "restitution of conjugal rights", Justice Robert Hill Pinhey made note that in this case, Raut was a young woman and was married off in "helpless infancy" and hence cannot be forced. The case came up for retrial after many criticised the judgement as diminishing Hindu customs. With debates around Hindu vs English law, internal reforms vs external reforms, respecting ancient customs and traditions, the final judgement asked Raut on March 4, 1887, to live with her husband or face imprisonment for six months instead. Bravely, she wrote that she would rather be imprisoned for six months than choosing to live with her husband.

The matter was finally settled when Queen Victoria dissolved her marriage by overruling the court order. Bhikaji renounced his claim over Raut after a payment of two thousand rupees. Raut later went to England to pursue further studies. She studied at the London School of Medicine a 5 year degree course in medicine. She wrote many influencing letters under the pseudonym A Hindu Lady. Meanwhile her case was studied by many and in fact, even initiated many discussions from a feminist perspective in England. It also influenced the Age of Consent Act, 1891 which abolished child marriages thereafter.

She worked as the Chief Medical Officer at a state hospital in Rajkot for 35 years before retiring to Bombay. She died on September 25, 1955.

History of mankind is witness of few courageous stands taken by individuals for their conviction and justice which has overwhelmingly influenced social fabric of society.

Dr Rukhmabai Raut was such a brave woman.

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