समाचार पत्रों से चयित अंश
Newspapers Clippings

दैनिक सामयिक अभिज्ञता सेवा

A daily Current Awareness Service

Vol. 43 No. 82 24 April 2018

रक्षा विज्ञान पुस्तकालय
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The Tribune
VOICE OF THE PEOPLE

Tue, 24 April, 2018

90 older Mi-17s to get electronic warfare suite

By Vijay Mohan

The Air Force is upgrading the older variants of its Mi-17 helicopters by equipping them with electronic warfare (EW) suite to increase their capability to operate effectively in a hostile environment.

According to IAF sources, 90 of these medium-lift helicopters — 56 Mi-17 and 34 Mi-17 1V variants — will be upgraded by No.3 Base Repair Deport in Chandigarh in collaboration with state-owned Bharat Electronics Limited (BEL). The IAF approached BEL in this regard last month.

The move to upgrade the older series comes in the backdrop of a project to retrofit the latest version, the Mi-17 V5 that entered services a few years ago, with similar EW equipment. Last year, BEL was also approached to equip some Mi-17s with advanced navigational aids.

The EW suite comprises of a radar warning receiver (RWR), a missile approach warning system (MAWS) and a counter measure dispensing system (CMDS). The RWR detects radio waves emitted by radars and electronic surveillance equipment whereas the CMDS enables the crew to imitate counter measures or evasive action against enemy radars and missiles by firing chaff or flares.

The MAWS is meant to alert the crew about any incoming ground or air-launched missile and also cue the CMDS to trigger. Mi-17 helicopters are used for special operations as well as close air support, logistic supplies and troop movement, requiring them at times to operate at low altitudes and slow speeds, thereby making them vulnerable to missile attacks.

The Air Force expects the programme to upgrade the 90 helicopters to be completed in 48 months. This includes training an initial batch of pilots, flight engineers and flight gunners to operate the new systems.

Dassault eyes more India deals

- French aviation major Dassault Aviation held its executive committee meeting in New Delhi to reaffirm commitment to the ‘Make in India’ policy.
- “The company’s executive committee rallies around the huge challenge to highly contribute to the ‘Make in India’ and Skill India policies that will lead to India’s self-sufficiency in the aerospace domain,” said Eric Trappier, Chairman and CEO of Dassault Aviation.
- India is buying 36 Rafale jets from Dassault Aviation in an off-shelf purchase. The company is also in running for the 110 fighter jet tender floated by the Indian Air Force and interested in the 57 fighter jet purchase by the Navy for aircraft-carrier operations.

The Statesman
PEOPLE'S PARLIAMENT, ALWAYS IN SESSION

Tue, 24 April, 2018

Make-in-India defence

By PK Vasaudeva

The four-day DefExpo India, held from April 11 to 14 in Chennai has ambitiously positioned India as an emerging defence manufacturing hub in the world, and as an exporter of defence systems and components. It has showcased the strength of the country’s public sector.

Such objectives appeared a bit ambitious considering that India is the world's top importer of arms and does not figure among the top 25 exporters of arms. Yet, indigenisation of defence procurement is critical not only for strategic reasons but also for the success of the Modi's mission, 'Make in India'.

India accounted for 12 per cent of the total global arms imports during 2013-17. The government spends around 30 per cent of its total defence budget on capital acquisitions and 60 per cent of defence related requirements are currently met through imports.

About 62 cent of India's arms imports in 2013-17 originated in Russia, 15 per cent in the US and 11 per cent in Israel. India is the largest customer for Russian and Israeli defence industries and the third largest customer for the French. It is also important to note that India's imports from the US jumped by 557 per cent between 2008-12 and 2013-2017.

In contrast to the country's rising imports of arms and equipment, China had reported a 19 per cent drop in overseas purchases between 2008-12 and 2013-17, but has emerged as the fifth largest exporter of arms, accounting for 4.6 per cent of the global arms export market, according to the estimates of the Stockholm International Peace Research Institute.

India can also become a defence-manufacturing powerhouse if the government demonstrates its willingness to rely on India-made defence manufactures and places large orders with the public-sector enterprises with proven skills as well as with the private sector players who have forged relationships with global players for technology transfers.

The 'Make in India' initiative by the Government is focusing its efforts on increasing indigenous defence manufacturing and is becoming self-reliant. The opening up of the defence sector for private sector participation is helping foreign Original Equipment Manufacturers (OEMs) enter into strategic partnerships with Indian companies and leverage opportunities in the domestic market as well as global markets.

India's focus on indigenous manufacturing in defence space is paying off as the Ministry of Defence has over the last two years unveiled several products manufactured in India like the HAL Tejas Light Combat Aircraft (LCA), the composite Sonar dome, a Portable Telemedicine System (PDF) for the Armed Forces, Penetration-cum-Blast (PCB) and Thermobaric (TB) ammunition specifically designed for Arjun tanks, a heavyweight torpedo called

Varunastra manufactured with 95 per cent locally sourced parts and medium range surface to air missiles (MSRAM).

The Defence Acquisition Council (DAC) under the Ministry of Defence cleared defence deals worth more than Rs 82,000 crore under 'Buy and Department of Industrial Policy and Promotion Make (Indian)' and 'Buy Indian' category. The deals include the procurement of T-90 Tanks, Mini-Unmanned Aerial Vehicles (UAV) and light combat helicopters. Hundred per cent FDI is allowed in the defence sector, out of which up to 49 per cent is under the automatic route.

FDI above 49 per cent is permitted through the Government route on a case-to-case basis where it is likely to result in access to modern technology. During fiscal 2015-16, Rs 2,059.18 crore worth of defence platforms, equipment and spares manufactured in India were exported to more than 28 countries.

Some of the major defence equipment exported by Defence Public Sector Undertakings (DPSUs) and Ordnance Factory Board (OFB) are patrol vessels, helicopters and their spares, sonars and radars, avionics, Radar Warning Receivers (RWR), small arms, small calibre ammunition, grenades and telecommunication equipment. The government increased the defence budget by 5.91 per cent for FY 2018-19 to Rs 2,95,511.41 crore with an additional amount of Rs 1,08,853.30 crore for defence pensions. The defence budget, which will account for 12.10 per cent of the total government expenditure, is 7.81 per cent more than the Rs 2,74,114.12

crore announced in the last budget for FY 2017-18. The figure was later revised to Rs 2,79,003.85 crore including capital outlay of just Rs 99,563.86 crore for modernisation.

The government will develop two defence industrial production corridors and bring out an industry-friendly military production policy to promote defence manufacturing in India.

Arun Jaitley has said that the government will also bring out an industry-friendly "defence production policy 2018" to promote domestic production by the public sector, private sector and MSMEs. Further, private investment in defence production had been opened up, including liberalisation of foreign direct investment.

The preferential treatment given to Defence Public Sector Undertakings (DPSUs) in excise duty/custom duty has been discontinued to create a level playing field. As per the revised policy, all Indian industries (public and private) are subjected to the same kind of excise and custom duty levies since April 2015.

The customs duty exemption on the import of defence equipment has been removed to encourage imports and incentivise domestic manufacturing. The Defence Procurement Procedure (DPP) of 2013 was amended with effect from from 2 April 2016 to provide for the following:

New most preferred acquisition category Buy Indian (IDDM (Indigenously Designed, Developed and Manufactured) introduced to encourage indigenous design, development and manufacturing of defence equipment. This category refers to procurement from Indian vendors of products that are indigenously designed, developed and manufactured, and have at least 40 per cent indigenous content. If the product is not designed and developed indigenously, it will have to have 60 per cent indigenous content.

* The MAKE procedure, which is directed at promoting research and development in the industry with support from the government, has been revamped. * Make 1 ~ The Government will refund 90 per cent of the development cost to encourage local development; 20 per cent will be given as advance. If the vendor develops a prototype but does not get an order within two years, then the Government will also reimburse the remaining 10 per cent.

* Make II ~ Prototype development will be through funding by industry, but if a tender is not issued within two years of successful development of the prototype, the Government will refund 100 per cent of the development cost to a duly selected vendor.

* Make III ~ Preference to MSMEs Defence Offset Policy The offset policy in capital purchase contracts with foreign defence OEMs stipulates a mandatory offset requirement of a minimum of 30 per cent for defence contracts.

Under the ambit of the foreign trade policy, it provides guidelines for engaging with Indian missions/embassies abroad for export promotion, offers options for export financing through line of credit, promotes better use of offset policy and the export of indigenously developed defence systems as well as streamlining of the export regulation process.

In an unprecedented move, India has called in all its 44 defence attaches from missions abroad for a series of specialised briefings that are aimed at increasing efforts to tap potential for defence exports and strengthen the interface between the government and industry.

The initiative, spearheaded by defence minister Nirmala Sitharaman, intends to bring the defence attaches to speed up on several areas that include exploring new defence markets and promoting "Make in India"

The Indian EXPRESS
JOURNALISM OF COURAGE
NEW DELHI WWW.INDIANEXPRESS.COM

Tue, 24 April, 2018

India plans to gift obsolete weaponry to friendly countries

By Sushant Singh

In a bid to boost defence cooperation, the government has asked the armed forces to compile a list of obsolete military equipment that can be "refurbished at minimal cost" and gifted to "friendly" countries, sources told *The Indian Express*.

Apart from the strategic significance, sources said, the government hopes to create a base "to expand export of newer defence platforms, which have been made in India, to these countries". However, the move appears to have taken by surprise senior army and air force officers, who say much of the equipment that can be classified as obsolete is currently in use due to lack of funds.

Specific military platforms being looked at, said sources, are artillery guns, armoured vehicles, helicopters, naval patrol vehicles and radar systems that are obsolete or nearing obsolescence. So far, India has only gifted used Mi25 helicopters to Afghanistan, although it has provided indigenous smaller equipment such as patrol boats to some countries in the neighbourhood.

Speaking to *The Indian Express*, government sources said: "In the course of our engagement with many foreign countries, especially during various high-level visits, a number of friendly foreign countries have projected a requirement for second-hand military equipment for their armed forces on a gift basis."

These requests have come from some countries of the Indian Ocean Region, some African countries, Central Asian Republics and the Asia-Pacific region, they said. Fulfilling the requests, sources said, would "open the way for deeper strategic engagement with these countries, but also pave the way for long-lasting partnership through deploying training teams, offering special courses in India as well as supply of spares, repair work being carried out in India over the long term".

However, a top IAF official told *The Indian Express* that it had no spare helicopters to be gifted after it handed over three Mi-25 helicopters to Afghanistan in 2015. The official said the IAF was still using four-decade old Pechora missiles, which are obsolete but have not been replaced due to the limited defence budget this year.

A senior Army official expressed surprise at the preparation of a list of equipment to be gifted at a time when the armed forces is still struggling with obsolete equipment.

According to the Army Vice Chief's testimony to a Parliamentary standing committee, 68 per cent of equipment is obsolete and no funds have been allocated to replace them. Hit by a shortage of funds, the Army has decided to stop purchasing certain types of expensive ammunition to build stocks for even 10 days of fighting.

The latest proposal by the government is akin to the Excess Defense Assets (EDA) programme of the United States where it transfers excess defence equipment to chosen foreign countries at a reduced price or as a grant. The reduced price is a percentage of the original acquisition value, based on age and condition of the equipment, and ranges from five per cent to 50 per cent of the original cost.

The recipient country, however, has to pay for packing, crating, handling and transportation, as well as refurbishment, if applicable. The Indian proposal envisages the transfer to be a gift.

The Statesman
PEOPLE'S PARLIAMENT, ALWAYS IN SESSION

Tue, 24 April, 2018

World focus on N Korea N-deal at two summits

When North Korean leader Kim Jong Un meets South Korean President Moon Jae-in on Friday, the world will have a single overriding interest: How will they address North Korea's decades-long pursuit of nuclear-armed missiles?

Success, even a small one, on the nuclear front could mean a prolonged detente and smooth the path for a planned summit between Kim and President Donald Trump in May or June. Optimists hope the two summits might even result in a grand nuclear bargain.

North Korea's announcement on Saturday to suspend further nuclear and intercontinental ballistic missile tests and close its nuclear test site raised hopes in Washington and Seoul for a breakthrough in the upcoming nuclear negotiations. However, the North's statement stopped well short of suggesting it has any intentions to give up its nukes or halt its production of missiles.

Failure to reach a nuclear agreement would raise serious questions about the sincerity of Kim's recent outreach to Seoul and Washington and rekindle the fears of war that spread across the Korean Peninsula last year.

Although North Korea has expressed a willingness to have "candid" talks with the United States about the denuclearization of the peninsula, there's rampant skepticism about whether Kim will give up his nukes.

Those weapons are the core of his authoritarian rule, a "powerful treasured sword" meant to neutralize U.S. nuclear threats. And the North's call for "the denuclearization of the Korean Peninsula" has been linked to a demand for the withdrawal of the 28,500 U.S. troops in South Korea.

Kim suggested during a trip to Beijing in March that he prefers step-by-step disarmament in return for corresponding concessions. That, critics say, could allow the North to covertly continue its weapons programs while winning badly needed aid, which occurred during now-dormant six-nation nuclear talks from 2003 to 2008.

Analysts say it's likely that Kim will make similar commitments during the inter-Korean summit as a way of reaching out to the United States. Go Myong-Hyun of the Seoul-based Asan Institute for Policy Studies said Kim may also offer up a rough timetable for denuclearization.

During the two summits, Kim may demand a security guarantee for his government, the scrapping of what he calls U.S. hostility and the easing or lifting of international sanctions on the North. The Kim-Trump meeting, not the Korean summit, will be the main venue for dealing with nukes because the United States must largely determine whether to accept the North's demands.

Kim, therefore, has an interest in making his meeting with Moon a success, especially following reconciliation in recent months that saw athletes from both countries parade together during the Pyeongchang Winter Olympics opening ceremony and South Korean pop stars perform in Pyongyang.

It's much less clear how the Kim-Trump meeting will go. Trump's pick for secretary of state, Mike Pompeo, said recently that "no one is under any illusions that we will reach a comprehensive agreement." Pompeo made a secret trip to meet with Kim and discuss the summit in recent weeks.

Trump seemed more optimistic after North Korea's announcement on Saturday, to which he responded with a tweet saying, "This is very good news for North Korea and the World" and "big progress!" He added that he's looking forward to his upcoming summit with Kim.

U.S. officials have said they want complete, verifiable and irreversible disarmament by North Korea. Kim won't likely accept that anytime soon because he's closing in on his goal of developing nuclear missiles capable of striking the continental U.S. after decades of struggle and sacrifice.

MAIL TODAY

Tue, 24 April, 2018

How conflict of interest is killing science

By Dinesh C Sharma

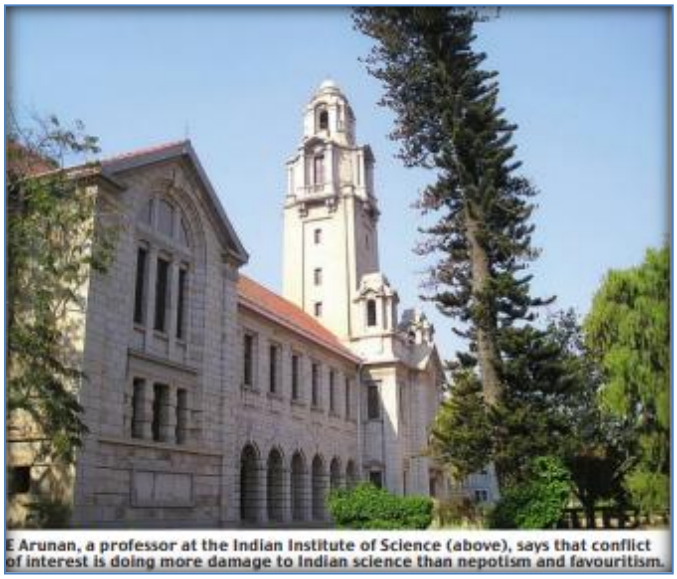
Conflict of interest is not an issue that's talked about openly in Indian academic and scientific circles. And so, an editorial on the subject in Current Science - a flagship journal of Bengaluru based Indian Academy of Sciences - has raised quite a few eyebrows.


Nobel laureate CV Raman

The editorial, penned by E Arunan, a member of the editorial board and a professor at the Indian Institute of Science, is bold and scathing, stating that conflict of interest is doing more damage to Indian science than nepotism and favouritism. The work of people in academic and scientific research institutions is primarily driven by research grants, projects, fellowships, awards and positions. And selection committees that govern all this are ridden with severe conflict of interest.

"One can see scientists sitting in committees, selecting their own students or junior colleagues from among a list of scientists for an award, a fellowship, position or project. This is not the same as recommending your student or younger colleague," the editorial notes. This constitutes conflict of interest because senior scientists select their students - not for their merit alone -but "expect the beneficiary to show some gratitude" later on.

This means those students or juniors with independent line of thinking don't get selected. "Beneficiaries of this kind of selection process expect the next generation to behave the same way. In a few generations, our system would have ended up choosing the most subservient people for top positions," Arunan has pointed out. The editorial says this system is in place even for positions at the higher level where it's more of quid pro quo or confluence of interests. Persons holding top positions with the power to approve a grant or a project to an institution should not join the same institution in some capacity after their retirement. Raman Research Institute (RRI), founded by CV Raman, has been cited as an example.


E Arunan, a professor at the Indian Institute of Science (above), says that conflict of interest is doing more damage to Indian science than nepotism and favouritism.

The institute started looking out for a director only after Raman passed away in 1970, at 82. And the selection committee found no one more suitable than Raman's son -V Radhakrishnan, who was living in California and had no formal degree. "Why did Raman not groom a successor during his tenure? Why didn't anyone from within the RRI or anywhere else in the world get picked to succeed Raman? Have actions like these throughout our history led India to perform below its potential?"

The editorial asks. Coming from a practising scientist at one of India's topmost research institutions, these remarks should not be brushed aside as mere expression of some sort of frustration or denial. All those concerned need to introspect and take remedial measures, particularly making transparent procedures for selection for top positions, grants, awards and projects. Every institution involved — beginning with funding agencies -should develop a code defining conflict of interest. They must lay down procedures to implement and enforce the code. While the editorial refers only to scientific institutions, the malaise is seen across the academic world including our universities. Hopefully the editorial will generate public discourse on the issue and lead to some action.

People with the power to approve a grant to an institution shouldn't join the same institution

A new study on leopards in tea gardens and forest mosaic landscape in West Bengal has found that big cats are adapting and living in areas used by humans. Their prey now includes domesticated animals like cattle and goats. The domestic prey available to leopards was found to be six times higher than wild prey in the study area. This means leopards are feeding on whatever is available, not necessarily choosing domestic prey over wild prey.

THE ASIAN AGE

Tue, 24 April, 2018

Mechanism behind spread of deadly fungal infection found

Scientists have discovered a unique mechanism that drives the spread of a rare and deadly fungal infection that affects the lungs and brain.

Cptococcosirys is a fungal infection that usually only occurs in people with impaired immunity, according to researchers at the University of Birmingham in the UK.

However, one strain of the fungus - known as the Pacific Northwest strain of Cryptococcus gattii - has gained the ability to infect otherwise healthy individuals.

The infection affects the lungs first, because it is acquired by inhaling fungal spores.

In the absence of therapy, and sometimes despite it, the infection quickly spreads to the brain and other organs with often fatal consequences.

Those infected with the disease have to undergo antifungal drug therapy that can last month's - but those drugs often fail to curtail the disease and instead surgery is required to remove the infection from the lungs and central nervous system.

"It is vital that new drugs are developed to combat this disease, and in order to do that we need to find out how the disease spreads," said Ewa Bielska, lead author of the research published in the journal Nature Communications.

Previous research demonstrated that the high virulence of this Cryptococcosis gattii strain results from its remarkable ability to grow rapidly within human white blood cells which relies on a unique 'division of labour' mechanism within the infection.

"To achieve this, individual fungal cells must work together to coordinate their behaviour, but how they do this has, up until now, been unknown," said Bielska.

Now, researchers have discovered that this 'division of labour' can be triggered over large cellular distances and is mediated through the release of microscopic fluid-filled "bags" called extracellular vesicles.

"These vesicles act like 'carrier pigeons', transferring messages between the fungi and helping them to coordinate their attack on the host cell," said Robin May, Director of the University of Birmingham's Institute of Microbiology and Infection.

"This is a previously unknown phenomenon in infectious disease, but also provides us with a potential opportunity to develop new drugs that work by interrupting this communication route during an infection," said May.

THE ASIAN AGE

Tue, 24 April, 2018

Scientists demonstrated a new way to bend and stretch diamonds

In a new study, scientists have successfully managed to find a way through which the Diamonds can be bent and stretched. Diamonds are considered as one of the hardest substance on Earth and finding a way to bend and stretch is truly a great achievement. Scientist knew that if they managed to make the diamonds as thin as possible then diamond can be flexible.

Recently, a group of researchers from the Massachusetts Institute of Technology (MIT) demonstrated that diamond needles that are about a thousand times thinner than a hair strand, can be bent and stretched up to nine percent without breaking. That means if the Diamonds could be made to ultra-fine needles then they can turn flexible. The scientists also said that these diamond needles can return to their original position once the pressure is removed.

For the research, the MIT scientists were accompanied by the scientists of the City University of Hong Kong and Singapore's Nanyang Technological University. The scientists took thin films of artificial diamonds and engraved tiny needles out of them. These nano-needles measured just a few hundred nanometers (billionths of a meter) across. When they pressurized the needles they were able to bend them and stretch them by as much as 9 percent without breaking. Normal diamonds have a stretch limit of less than one percent.

Co-author of the study, Yang Lu from the Chinese University of Hong Kong said that they developed a unique nanomechanical approach to precisely control and quantify the ultra large elastic strain distributed in the nanodiamond sample. Prof Subra Suresh, from NTU Singapore, informed that their results were so surprising that they had to run the experiments again under different conditions just to confirm them. "We also performed detailed computer simulations of the actual specimens and bending experiments to measure and determine the maximum tensile stress and strain that the diamond nano-needles could withstand before breaking," Prof. Suresh said.

The researchers noted that their latest study demonstrated that what is usually not possible at the microscopic and macroscopic scales can occur at the nano-scale where the whole specimen consists of only dozens or hundreds of atoms, and where the surface to volume ratio is large.

THE ASIAN AGE

Tue, 24 April, 2018

Laser-based saliva test to help diagnose diseases early

A novel laser-based technique can analyze human saliva and non-invasively diagnose immune system disorders even before the symptoms appear, increasing the chances of recovery, scientists say.

Disorders of the immune system lead to various diseases from allergy and type I diabetes to more dangerous autoimmune diseases, such as multiple sclerosis.

However, such diseases are diagnosed only when the symptoms are clearly demonstrated. Researchers of St Petersburg Polytechnic University (SPbPU) in Russia developed a unique method of immune diseases diagnosing before the symptoms appear.

They proposed a laser-correlation spectroscopic technique (also called dynamic light scattering) for studying the immune response in body fluids, for example, in saliva.

"We offer a cheap and effective method of diagnosing the diseases without any indication. We need a laser, a receiver and a programme for data analysis," said Elina Nepomnyashchaya, from SPbPU.

"In the course of routine clinical examination, saliva can be tested so that the patient can learn more about the disease before the symptoms appear. This method will increase the chances of recovery," Nepomnyashchay said.

It is known that saliva contains the same immune proteins as blood. Moreover, it is much easier and cheaper in comparison with blood analysis. The proposed method is to analyse the scattered light obtained by laser illumination of humans biological fluid (saliva or blood). The laser beam is focused on the sample. The proteins in the liquid scatter the light, which is registered by the detector.

By analysing the change in the intensity of scattered light in time, it is possible to determine the size of the particles floating in the liquid, researchers said. The particle size changes during the activation of immunity, the proteins are binding and become larger.

In addition, the size composition of biological fluids in different people can vary. It depends on the certain diseases in the organism. Thus, it is possible to determine whether the human body reacts to infections properly and to diagnose the diseases. With this method, it is also possible to test medical drugs not on a human, but on his biological fluids, paving the way for custom treatments to suit the individual.

Such studies of the dynamics of the activation of immune proteins using optical methods have not yet been carried out, thus the research remains to be done. The current task is to create a detailed study of the reactions of donors with various pathologies.

THE ASIAN AGE

Tue, 24 April, 2018

Humans did not come from Earth, claims scientist

According to experts, life spreads like an "interstellar infection" and clusters of planets in the galaxy have alien life forms.

According to new revelations, a few scientists have claimed that they cannot rule out the Panspermia hypothesis that bacteria distributed by space dust, asteroids or meteors arrived on earth and sparked life. Scientists were recently stunned to find two ancient meteorites which crash landed 20 years ago containing the basic building blocks for life. According to experts, life spreads like an "interstellar infection" and clusters of planets in the galaxy have alien life forms.

Dr Ellis Silver, who has studied evolution, has an outlandish belief on the human race's origins. In his book, Humans are not from Earth, which has been debated online recently, he claims that we were brought here tens of thousands of years ago by aliens. His reasoning is humans appear so unable to cope with life on Earth. In a story published in Daily Star, the scientists said, "Mankind is supposedly the most highly developed

species on the planet, yet is surprisingly unsuited and ill-equipped for Earth's environment: harmed by sunlight, a strong dislike for naturally occurring foods, ridiculously high rates of chronic disease, and more."

He claimed the difficulty of childbirth was more proof to his claims.

Dr Silver furthered his claim by pointing out how humans regularly suffer from bad backs which he theorized was because life evolved on a planet with lower gravity. According to Silver he would be surprised if one could find a single person who is 100 per cent healthy and not suffering from some perhaps hidden or unstated condition or disorder. He goes on to say that while the Earth approximately meets human needs as a species, but perhaps not as strongly as whomever brought humans to the planet initially thought.

Bizarrely, he believes Earth could actually be some kind of galactic jail. "The Earth might be a prison planet, since we seem to be a naturally violent species and we're here until we learn to behave ourselves," he added. The life started elsewhere theory gained credence recently, albeit without the aliens.

Two space rocks, which are approximately 4.5 billion years old, smashed into Texas and Morocco in 1998. Studies have found that both the meteorites, which are thought to have originated from an asteroid belt between Jupiter and Mars, contained water and organic compounds.