

O Sun God, Savitr!
Thou dazzling fount of life-persuasive light!
Sublimest mystery speeding from afar!
Swift became that burst too potent on the sight!
This radiant type of strength and youth!
Glowing eternally!



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The Telangana Science Journal

Health and Nutrition

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May the golden-eyed Savitar, come hither!
Shining forth he rises from the lap of the dawn!
Praised by singers, my God Savitar!
Stepped forth and never missed his place!
He steps forth the splendor of the sky the wide!
Seeing, far-shining, the shining wanderer!
- Rig Veda, vii, 65

He alone shines!
All luminaries get illuminated by His Illumination!
The whole Universe is enlightened by His light!
- Kathapanisad

ॐ भूर्भुवः स्वः तत्सवितुर्वरेण्यं भर्गो देवस्य धीमहि धियो यो नः प्रचोदयात् ॥

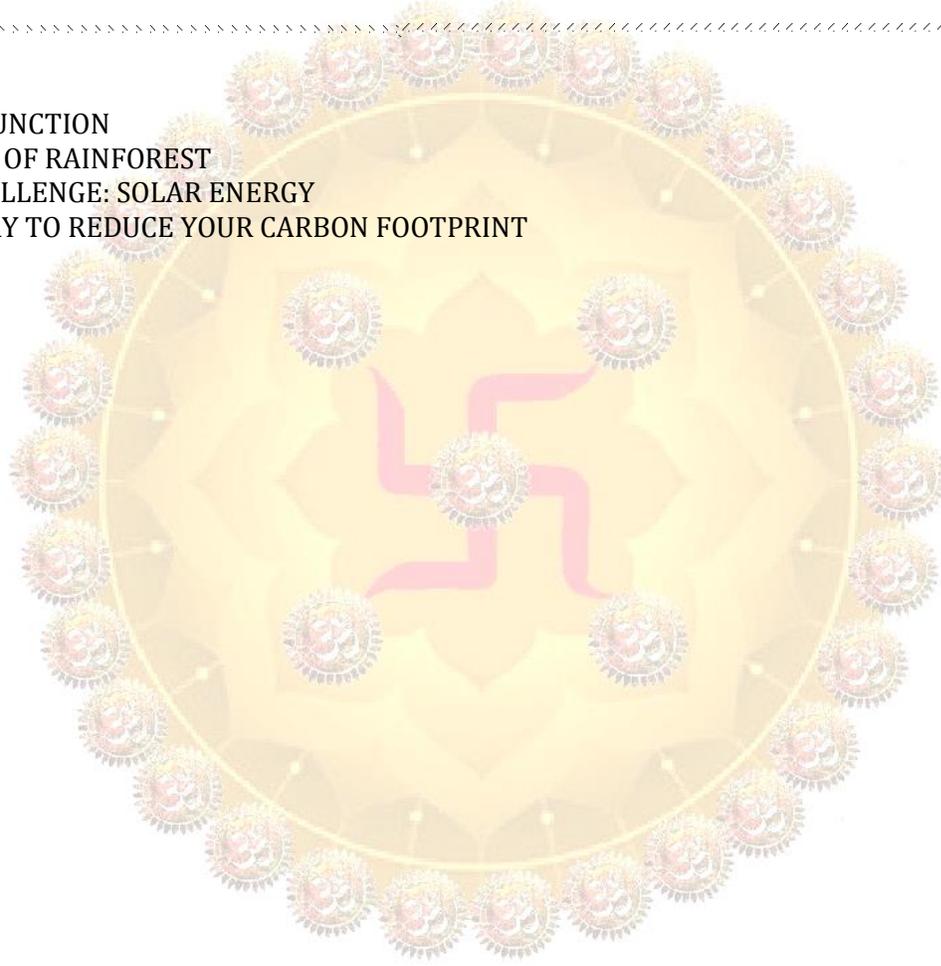
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Chief Editor: Dr. Sreenivasarao Vepachedu¹

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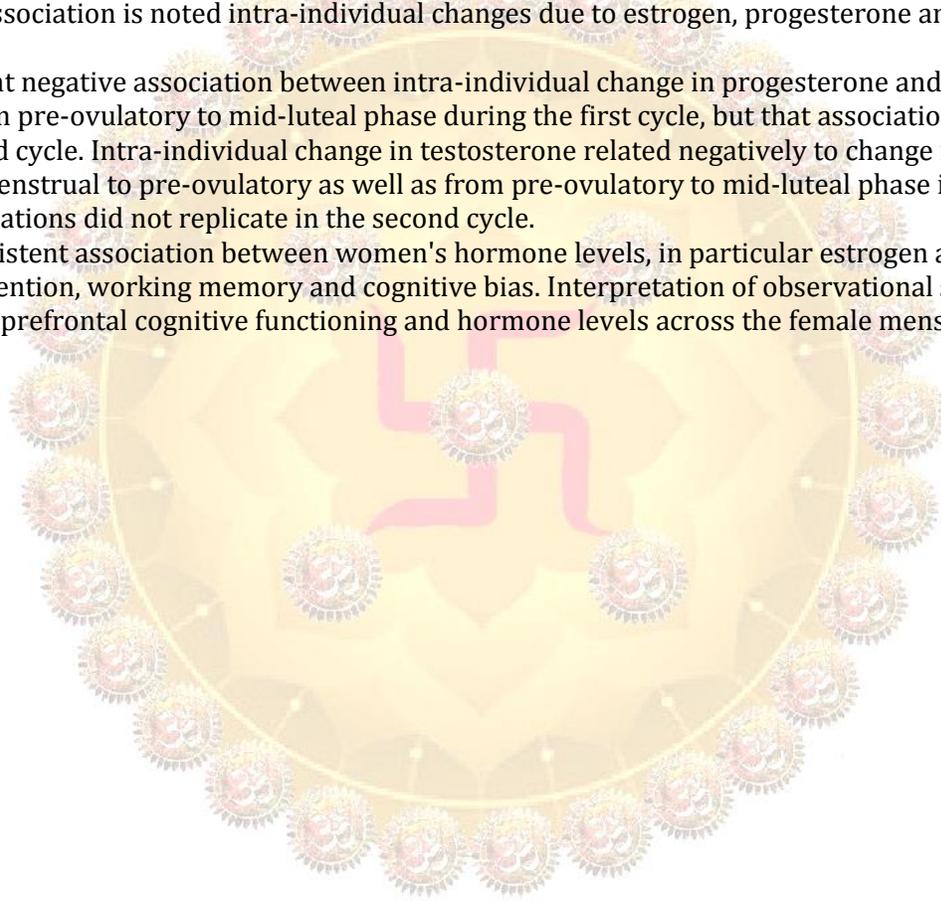
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LACK OF HORMONAL ASSOCIATION WITH COGNITIVE FUNCTION²

A recent review suggested that these cognitive functions may correlate positively with estrogen and progesterone (2014). However, according to research published this month in Behavior Neuroscience, a significant negative association is noted intra-individual changes due to estrogen, progesterone and testosterone levels.

There was a significant negative association between intra-individual change in progesterone and change in working memory from pre-ovulatory to mid-luteal phase during the first cycle, but that association did not replicate in the second cycle. Intra-individual change in testosterone related negatively to change in cognitive bias from menstrual to pre-ovulatory as well as from pre-ovulatory to mid-luteal phase in the first cycle, but these associations did not replicate in the second cycle.

Thus, there is no consistent association between women's hormone levels, in particular estrogen and progesterone, and attention, working memory and cognitive bias. Interpretation of observational studies on associations between prefrontal cognitive functioning and hormone levels across the female menstrual cycle is complicated.



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FOREST RAIN OF RAINFOREST BFGSDG

In most tropical regions, two factors control the timing of the rainy season: The Monsoon, a seasonal change of direction in prevailing winds, and the Intertropical Convergence Zone (ITCZ - pronounced "itch"), a belt of converging trade winds around the equator that shifts north or south with the seasons.

The Monsoon³: The monsoon is a seasonal rain and wind pattern that occurs over the Continents of India, South America, and African. NASA satellites and models show the monsoon patterns like never before. Monsoon rains provide important reservoirs of water that sustain human activities like agriculture and supports the natural environment through replenishment of aquifers. However, too much rainfall routinely causes disasters in the region, including flooding of the major rivers and landslides in areas of steep topography. This visualization uses a combination of NASA satellite data and models to show how and why the monsoon develops over this region.

The Intertropical Convergence Zone (ITCZ)⁴: The ITCZ appears as a band of clouds consisting of showers and occasional thunderstorms encircling the globe near the equator, extending for many hundreds of miles or broken into smaller line segments. The ITCZ follows the sun and moves north in summer and south in winter in the Northern Hemisphere causing the wet and dry seasons in the tropics. The sun crosses the equator twice a year in March and September, and consequently makes for two wet seasons each year. In December and July, when the sun is at its greatest extent north (or south) of the equator makes for two dry seasons.

Further away from the equator, the two wet seasons merge into one, and the climate becomes more monsoonal, with one wet season and one dry season. In the Northern Hemisphere, the wet season occurs from May to July, in the Southern Hemisphere from November to February.

The Forest Rain⁵: Unlike the above regions that experience either the monsoon or ITCA, the southern Amazon experiences both of these. According to the research is published in the Proceedings of the National Academy of Sciences (PNAS) suggests that the southern Amazon rainforest triggers its own rainy season using water vapor transpired from plant leaves based on the water vapor data from NASA's Tropospheric Emission Spectrometer (TES) on the Aura satellite, along with other satellite measurements.

The Central Arctic Ocean⁶: Most of the central Arctic Ocean used to be covered with thick multiyear ice that would not completely melt during the summer and reflect back sunshine. Now, most of this old ice is lost exposing the open ocean below resulting in a record low wintertime Arctic sea ice and a record high Arctic warming, nearly twice the global average. NASA launched the Operation IceBridge, a short campaign to survey melt ponds, the pools of meltwater on the ice surface that may contribute to the accelerated retreat of sea ice on July 17 from Thule Air Base in the northwest Greenland. IceBridge uses an instrument called the Airborne Topographic Mapper laser altimeter, recently upgraded to transmit 10,000 pulses every second, allowing the mission to measure ice elevation more precisely as well as try out new uses on land ice.

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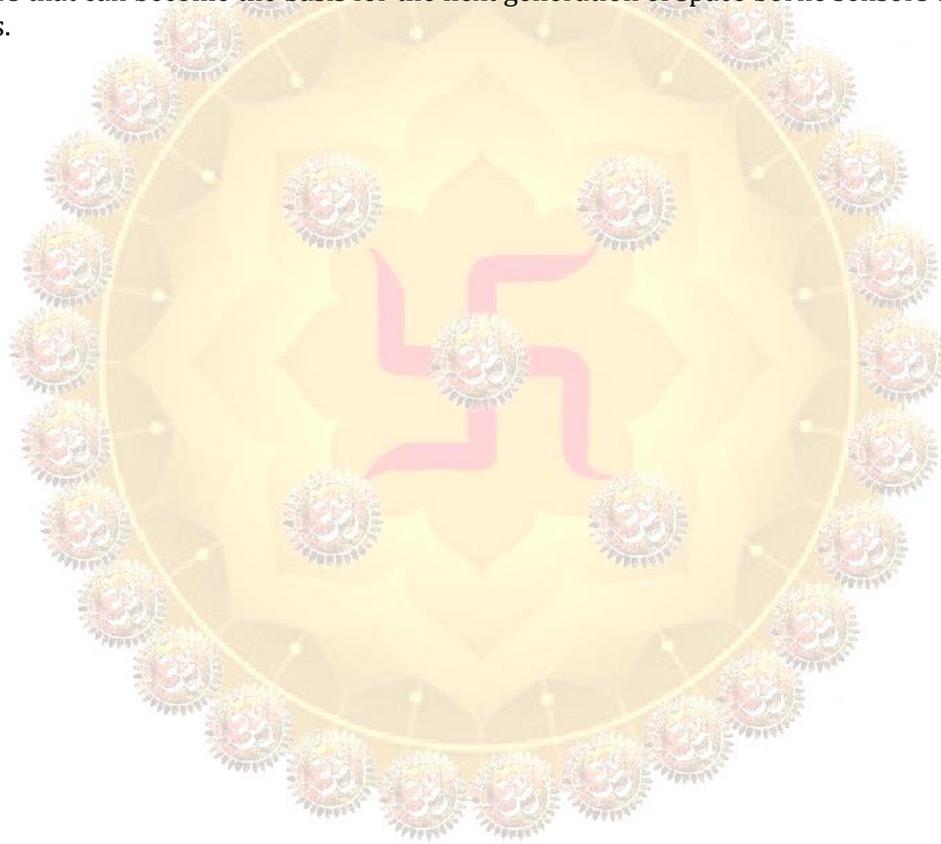
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The Arctic-Boreal Vulnerability Experiment (ABOVE)⁷: ABOVE is a NASA-led effort to monitor changing Arctic and boreal ecosystems, initiated in 2016, has started its second season, with the first aircraft taking flight over Alaska and northwest Canada in May. More than 500 researchers and support staff are involved in ABoVE. This summer, the campaign expands to include measuring the region from aircraft using state-of-the-art sensors that can become the basis for the next generation of space borne sensors to study terrestrial ecosystems.



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BREAKTHROUGH, INNOVATIVE, AND GAME-CHANGING (BIG) IDEA CHALLENGE: SOLAR ENERGY⁸

Solar energy is by far the most abundant energy resource on Earth. A whopping 173,000 terawatts of solar energy strike the Earth continuously. That's more than 10,000 times the world's total energy use. An early adopter of solar power, the space industry began to use this technology to provide power for spacecraft in the 1960s. Vanguard 1 was the first spacecraft to use solar cells, and it's the oldest artificial satellite still in orbit around Earth.

Cars that run on electricity instead of gas have no tailpipe emissions, but the overall benefit to the environment depends on the sources of electricity used to charge them. If your electricity comes from THE SOLAR ENERGY, low-emission sources and renewables, electrical vehicles are great. But if you charge them with electricity that comes from coal, *the net emissions are on par with conventional gas powered vehicles. Better technology will help store energy from solar panels and wind turbines, as well as power electric vehicles and devices longer, reducing energy demands.*

Now, NASA's Game Changing Development Program (GCD), managed by the Space Technology Mission Directorate (STMD), and the National Institute of Aerospace (NIA) are seeking novel concepts that emphasize innovative mechanical design, low mass and high efficiency, with operational approaches that assure sustained power generation for many years - NOT ON THE EARTH - on the Mars!

Through the 2018 Breakthrough, Innovative, and Game-changing (BIG) Idea Challenge, NASA is enlisting university students in its quest for efficient, reliable and cost-effective solar power systems that can operate on Mars both day and night. The teams will have until November to submit their proposals. Interested teams of three to five undergraduate and/or graduate students are asked to submit robust proposals and a two-minute video describing their concepts by 30 November 2017.

The goal is to have a reliable operating power source in place before astronauts ever step foot on the surface of Mars. That means solar array designs will need to fit compactly into a single cargo launch, have the capability to deploy robotically on the surface, and begin producing power soon after landing.

The 2018 BIG Idea Challenge invites teams and their faculty advisors to work together to design and analyze innovations in the design, installation, and sustainable operation of a large solar power system on the surface of Mars, in the following areas:

- Novel packaging, deployment, retraction, and dust-abatement concepts
- Lightweight, compact components including booms, ribs, substrates, and mechanisms
- Optimized use of advanced ultra-lightweight materials and high efficiency solar cells
- Validated modeling, analysis, and simulation techniques
- High-fidelity, functioning laboratory models and test methods

From these proposals, NASA and industry experts will select four teams to continue developing their proposed concepts, submit a technical paper, and present their concepts in a face-to-face design review at

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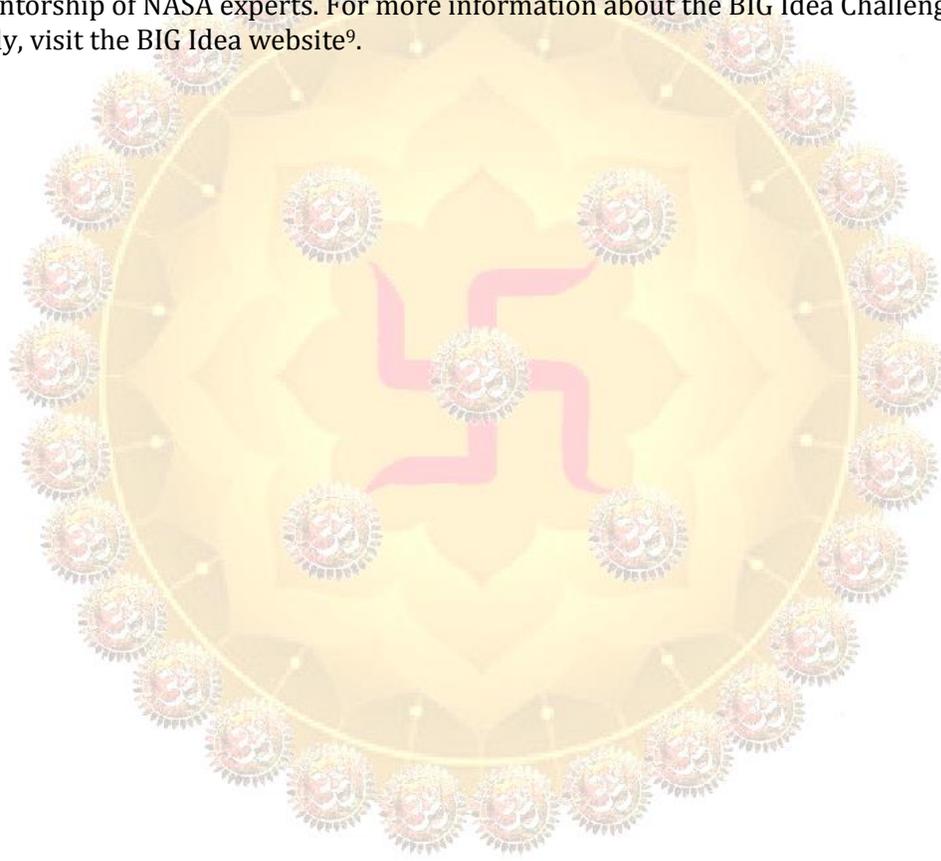
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the 2018 BIG Idea Forum, held at a NASA center in early March 2018. Each of these four teams will receive a \$6,000 stipend to participate in the forum. Student members from the BIG Idea Challenge winning team will receive offers to participate in paid summer internships at either NASA's Glenn Research Center in Cleveland, Ohio, or Langley Research Center in Hampton, Virginia, where they will continue developing their concept under the mentorship of NASA experts. For more information about the BIG Idea Challenge, and details on how to apply, visit the BIG Idea website⁹.



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THE BEST WAY TO REDUCE YOUR CARBON FOOTPRINT

Four lifestyle choices have a major impact:

1) BECOME A VEGETARIAN: Eating no meat cuts an individual's carbon footprint by 820 kilograms of carbon dioxide (CO₂) each year, on average, about four times the reduction they'd get by recycling as much as possible. Emissions generated by eating meat result, in large part, from the large amounts of energy needed to grow, harvest, and process feed crops.

2) FOREGO AIR TRAVEL: Foregoing one round-trip transatlantic flight each year would cut a person's emissions of CO₂ by 1600 kilograms.

3) DITCH YOUR CAR: Getting rid of the car would reduce emissions by 2400 kilograms, or 2.4 metric tons.

4) MOST SIGNIFICANTLY, HAVE FEWER CHILDREN: To truly make a difference you should have fewer children. By choosing to have one fewer child per family, a whopping 58.6 metric tons trim the carbon footprint by—about the same emissions savings as having nearly 700 teenagers recycle as much as possible for the rest of their lives.

Few people doubt the severity of the problem that overpopulation presents for this planet. Its consequences are poverty, famine, disease and death, sometimes on very large scales. Minor problems include overcrowding, strained infrastructure and social instability. By facilitating contraception and women's medical services we enable family planning. "Allowing women to plan their pregnancies also leads to healthier outcomes for children. A recent study showed that if all births were spaced at least two years apart, the number of deaths among children younger than five would decline by 13%. The number would decline by 25% if there were a three-year gap between births"¹. Making birth control accessible to all is a moral requirement for anyone who has the power to help. It is inconsistent, for example, to say that contraception and abortion is "murder" whilst ignoring the fact that poverty and overpopulation are far bigger killers¹⁰. Despite the effectiveness of these four measures, neither the textbooks in schools nor government reports/websites in the European Union, the United States, Canada, or Australia highlight these choices, because:

- 1) Feeding 318 Million Americans, the meat and poultry industry is the largest segment of US agriculture¹¹. In 2013,
 - the meat and poultry industry processed:
 - a. 8.6 billion chickens
 - b. 33.2 million cattle
 - c. 239.4 million turkeys
 - d. 2.3 million sheep and lambs
 - e. 12 million hogs

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-American meat companies produced:

- f. 25.8 billion pounds of beef
- g. 23.2 billion pounds of pork
- h. 5.8 billion pounds of turkey
- i. 286 million pounds of veal, lamb and mutton
- j. 38.4 billion pounds of chicken

-Top Livestock and Poultry Slaughtering States

- k. Cattle - Nebraska, Kansas, Texas
- l. Hog - Iowa, North Carolina, Minnesota
- m. Chicken - Georgia, Arkansas, Alabama
- n. Turkey - Minnesota, North Carolina, Arkansas

-There are 6,278 federally inspected meat and poultry slaughtering and processing plants in the US.

- o. More than 482,100 workers were employed in the meat and poultry packing and processing industries. Their combined salaries totaled more than \$19 billion.
- p. Through its production and distribution linkages, the meat and poultry industry impacts firms in all 509 sectors of the US economy, in every state and every congressional district in the country.
- q. In all, companies involved in meat production, along with their suppliers, distributors, retailers and ancillary industries employ 6.2 million people in the US with jobs that total \$200 billion in wages. Employees in meat processing plants on average earn more than \$32,700 per year plus benefits, and employees in meat packing plants earn \$26,400 per year plus benefits, for jobs in rural areas with a low cost of living.
- r. Through direct taxes paid, these companies and their employees provide \$81.2 billion in revenues to federal, state and local governments. The consumption of meat and poultry generates \$2.4 billion in state sales taxes.
- s. The meat and poultry industry's economic ripple effect generates \$864.2 billion annually to the US economy, or roughly 6% of the entire GDP. In 2013 (the most recent year data is available), meat and poultry industry sales totaled \$198 billion.

-Feeding the World

- t. The US exported 1.7 billion metric tons (MT*) of beef and beef variety meat in 2014. Export value of beef and beef variety meat exports reached a record \$807 billion in 2014.
- u. On a volume and value basis, the top four markets for US beef in 2014 were Canada, Japan, Mexico, and Hong Kong.
- v. The US exported 1.65 billion MT of pork and pork variety meat in 2014. Annual total pork shipments were valued at \$5.6 billion, up 10% from 2013.

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Health and Nutrition

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He alone shines!
 All luminaries get illuminated by His Illumination!
 The whole Universe is enlightened by His light!
 - Kathapanisad

May the golden-eyed Savitar, come hither!
 Shining forth he rises from the lap of the dawn!
 Praised by singers, my God Savitar!
 Stepped forth and never missed his place!
 He steps forth the splendor of the sky the wide!
 Seeing, far-shining, the shining wanderer!
 - Rig Veda, vii, 65

ॐ भूर्भुवः स्वः तत्सवितुर्वरेण्यं भर्गो देवस्य धीमहि धियो यो नः प्रचोदयात् ॥

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- w. The top markets for US pork in terms of value and volume were Japan, Mexico and Canada.
 - x. The US exported 3.6 billion MT of poultry and poultry variety meats in 2014. The value was estimated at \$4.5 billion.
 - y. Exports in 2013 accounted for 21.5 percent of US pork production and 10 percent of beef production.
 - z. *1 MT=2204.6 lbs.
2. AIR TRAVEL IS A CRITICAL ECONOMIC ENGINE OVER 10 MILLION AMERICAN JOBS DRIVEN BY COMMERCIAL AVIATION¹²
- a. Commercial aviation helps drive more than 10 million American jobs and 5 cents of every dollar of US GDP and \$1.5 TRILLION. Our member airlines contribute at the local, state, national and global levels, transporting people and goods around the world safely, efficiently and economically. The industry supports and creates new markets at home and abroad, as communities across the world rely on access to air transportation for economic growth and stability.
 - b. Airlines are the physical internet, connects communities 110 countries serving more than 800 destinations, transporting more than 2 million passengers and 50,000 tons of cargo daily.
3. AUTOMOTIVE SPOTLIGHT: The Automotive Industry in the United States¹³
- a. The United States has one of the largest automotive markets in the world and is home to many global vehicle and auto parts manufacturers. After vehicle production dipped below 6 million units in 2009, production more than doubled to over 12 million passenger vehicles in the United States in 2015. The United States is the second largest vehicle producer in the world, behind only China in 2015. U.S. vehicle sales declined to 10.4 million units in 2009. However, vehicle sales have steadily risen each year since and reached 17.4 million units in 2015. Overall, the United States is the world's second largest market for vehicle sales.
 - b. Since Honda opened its first U.S. plant in 1982, almost every major European, Japanese, and Korean automaker has produced vehicles at one or more U.S. assembly plants. General Motors, Ford, Fiat Chrysler, Honda, Toyota, Nissan, Hyundai, Kia, BMW, Mercedes-Benz, Mazda, Mitsubishi, Subaru, Volkswagen, and Tesla all have U.S. manufacturing facilities. In addition, many manufacturers also have engine and transmission plants and are conducting research and development, design, and testing in the United States. The automotive industry, including dealerships, historically accounts for approximately 3 to 3.5 percent of U.S. gross domestic product. Motor vehicles and parts manufacturers employed, on average, 909,700 people in 2015.

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ॐ असतो मा सद्गमय । तमसो मा ज्योतिर्गमय । मृत्योर्मा अमृतं गमय । ॐ शान्तिः शान्तिः शान्तिः ॥

O Sun God, Savitr!
 Thou dazzling fount of life-persuasive light!
 Sublimest mystery speeding from afar!
 Swift became that burst too potent on the sight!
 This radiant type of strength and youth!
 Glowing eternally!



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- Since GM and Chrysler exited bankruptcy, the "Detroit Three" have invested in facilities, totaling more than \$30 billion in domestic investments. International automakers have \$52 billion invested in U.S.-based production facilities and directly employ more than 97,000 Americans.
- Despite challenges within the industry in recent years, the U.S. automotive sector is at the forefront of innovation. New research and development initiatives are transforming the industry to better respond to the opportunities of the 21st century. According to the Auto Alliance, the automotive industry spends nearly \$100 billion on R&D, with \$18 billion per year spent in the United States.
- In 2015, the United States exported approximately 2.6 million vehicles valued at \$65 billion to more than 200 countries around the world, with additional exports of automotive parts valued at approximately \$81 billion. With an open investment policy, a large consumer market, a highly skilled workforce, available infrastructure, and government incentives, the United States is the premier place for the future of the auto industry.

4. CHILDREN: CONSUMERS WILL CONTINUE TO SPEND ON CHILDREN'S CLOTHING, ESPECIALLY ON HIGH-END BRANDS¹⁴

- The Children's and Infants' Clothing Stores industry comprises establishments that specialize in retailing apparel for children under the age of 17. Over the five years to 2017, while macroeconomic growth has encouraged shoppers to splurge on high-end children's clothing, many apparel purchases have been captured by industries that directly compete for consumer dollars. Revenue \$10 bn.
- The UK childrenswear market is worth £5.6bn, according to Euromonitor, with a retail value estimated to rise to £5.9bn by 2017.
- The Roman Catholic Church only allows 'natural' birth control, by which it means only having sex during the infertile period of a woman's monthly cycle. Artificial methods of contraception are banned. Thus the only way for a Catholic couple to be faithful to the Church's teachings on human sexuality and to avoid having children is to use 'natural' family planning. For most of the last 2000 years all Christian churches have been against artificial birth control¹⁵.
- Islam is strongly pro-family and regards children as a gift from God.

One hundred million unique chemicals have been produced in the past 60 years, at a rate of about 10 million per year in the past decade. The United States Toxic Substances Control Act is ill-equipped to properly evaluate whether significant environmental concerns are associated with this flood of chemicals into our marketplace. As a consequence, chemicals continue to be approved for commercial use, although their environmental impacts are unknown.

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REFERENCES AND NOTES

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² [Lack of Associations between Female Hormone Levels and Visuospatial Working Memory, Divided Attention and Cognitive Bias across Two Consecutive Menstrual Cycles:](#)
<http://journal.frontiersin.org/article/10.3389/fnbeh.2017.00120/full>

³ <https://www.youtube.com/watch?v=CR7KL6KSlx4>

⁴ <http://www.srh.noaa.gov/jetstream/tropics/itcz.html>

⁵ <https://climate.nasa.gov/news/2608/new-study-shows-the-amazon-makes-its-own-rainy-season/>
<https://www.jpl.nasa.gov/images/earth/forest/20170717/amazon20170717.jpg>

⁶ https://www.nasa.gov/mission_pages/icebridge/index.html

⁷ <https://climate.nasa.gov/news/2590/nasas-arctic-ecosystem-science-flights-begin/>
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⁸ <http://www.sciencemag.org/news/2017/07/best-way-reduce-your-carbon-footprint-one-government-isn-t-telling-you-about>
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⁹ BIG Idea: <http://bigidea.nianet.org> <http://www.nasa.gov/spacetech> and www.nianet.org

¹⁰ The Necessity of Birth Control and Contraception http://www.humantruth.info/birth_control.html#IsMoral

¹¹ The United States Meat Industry at a Glance
<https://www.meatinstiute.org/index.php?ht=d/sp/i/47465/pid/47465>

¹² Economic Impact of Commercial Aviation <http://airlines.org/industry/> and <http://airlines.org/data/>

¹³ The Automotive Industry in the United States <https://www.selectusa.gov/automotive-industry-united-states>

¹⁴ CHILDREN'S & INFANTS' CLOTHING STORES IN THE US <https://www.ibisworld.com/industry-trends/market-research-reports/retail-trade/clothing-accessories-stores/childrens-infants-clothing-stores.html>

Children's fashion: small people, big business <https://www.theguardian.com/fashion/2015/feb/15/childrenswear-childrens-fashion-prince-george-suri-cruise-harper-beckham>

¹⁵ The Bible and contraception
http://www.bbc.co.uk/religion/religions/christianity/christianethics/contraception_1.shtml

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