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Space rock yields carbon bounty

FORMIC ACID, A MOLECULE IMPLICATED IN THE ORIGINS OF LIFE, HAS BEEN FOUND AT RECORD LEVELS ON A METEORITE THAT FELL INTO A CANADIAN LAKE IN 2000.

COLD TEMPERATURES ON TAGISH LAKE PREVENTED THE VOLATILE CHEMICAL FROM DISSIPATING QUICKLY.

AN ANALYSIS SHOWED FOUR TIMES MORE FORMIC ACID IN THE FRAGMENTS THAN HAS BEEN RECORDED ON PREVIOUS METEORITES.

THE RESEARCHERS TOLD A MEETING OF THE AMERICAN GEOPHYSICAL UNION THAT THE FORMIC ACID WAS EXTRATERRESTRIAL.

FORMIC ACID IS ONE OF A GROUP OF COMPOUNDS DUBBED "ORGANICS", BECAUSE THEY ARE RICH IN CARBON.

"WE ARE LUCKY THAT THE METEORITE WAS UNTOUCHED BY HUMANS HANDS, AVOIDING CONTAMINATION BY ORGANIC COMPOUNDS THAT WE HAVE ON OUR FINGERS," SAID DR CHRISTOPHER HERD, THE CURATOR OF THE UNIVERSITY OF ALBERTA'S METEORITE COLLECTION.

SAMPLES OF THE METEORITE TOTALLING 850 GRAMS WERE COLLECTED FROM TAGISH LAKE IN CANADA, PURCHASED IN 2006 BY A CONSORTIUM INCLUDING THE ROYAL ONTARIO MUSEUM AND RECENTLY SUBJECTED TO CHEMICAL ANALYSIS.

THE SCIENTISTS FOUND LEVELS OF FORMIC ACID FOUR TIMES HIGHER THAN HAD PREVIOUSLY BEEN RECORDED ON A METEORITE. STUDIES HAVE UNTIL RECENTLY FOCUSED ON THE MURCHISON METEORITE THAT LANDED IN A TOWN OF THAT NAME IN AUSTRALIA IN 1969.

"THE INTERESTING THING IS THAT WE DO SEE THIS VARIABILITY BETWEEN METEORITES, SEEMING TO HAVE INCREASED ENRICHMENTS OF ONE PARTICULAR COMPOUND OVER ANOTHER," SAID MARK SEPHTON, A METEORITE AND GEOCHEMISTRY PROFESSOR AT IMPERIAL COLLEGE LONDON.

"THIS HAS FOR A WHILE BEEN OVERLOOKED AS WE CONCENTRATED PREDOMINANTLY ON THE MURCHISON METEORITE, BUT NOW WE'VE GOT ANOTHER FRESH SAMPLE AND WE CAN START TO ANALYSE A DIFFERENT PORTION OF THE ASTEROID BELT AND THEREFORE A DIFFERENT PORTION OF THE SOLAR SYSTEM."

PRIMORDIAL KITCHEN

THE PARTICULAR TYPES, OR ISOTOPES, OF HYDROGEN THAT ARE FOUND IN THE FORMIC ACID SHOW THAT IT MOST LIKELY FORMED IN THE COLD REGIONS OF SPACE BEFORE OUR SOLAR SYSTEM EXISTED.

ON EARTH, FORMIC ACID IS COMMONLY FOUND IN THE STINGS OF INSECTS SUCH AS ANTS, BUT PROFESSOR SEPHTON IT IS LIKELY TO HAVE BEEN AN IMPORTANT "INGREDIENT IN THE KITCHEN" ON EARTH BEFORE LIFE BEGAN.

THE ACID IS KNOWN TO ACT AS A "REDUCING AGENT" - ACTING AS A MAGNET FOR OXYGEN ATOMS DURING CHEMICAL REACTIONS - AND FACILITATE THE CONVERSION OF SOME AMINO ACIDS INTO OTHERS.

IT MAY ALSO BE IMPLICATED IN THE TRANSFORMATION OF THE MORE PRIMITIVE RNA INTO DNA.

ONLY ONE OF THE FOUR "NUCLEOBASES" THAT MAKE UP RNA AND DNA IS DIFFERENT BETWEEN THE TWO: URACIL IS PRESENT IN RNA WHILE THYMINE TAKES ITS PLACE IN DNA.

PROFESSOR SEPHTON'S TEAM FOUND URACIL IN THE MURCHISON METEORITE, BUT NO MEASURABLE AMOUNT OF THYMINE. HOWEVER, FORMIC ACID IS KNOWN TO HELP ALONG THE REACTION THAT CONVERTS THE URACIL INTO THYMINE.

THE REACTION, HE SAID, IS "ONE OF THE WAYS IN WHICH YOU CAN TAKE SOME SIMPLE MOLECULES AND INCREASE THE CHEMICAL DIVERSITY OF THE POOL OF PRE-BIOTIC MOLECULES".

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THE SCIENCE SEGMENT

KOMODO DRAGONS USE VENOM TO KILL THEIR PREY, SCIENTISTS DISCOVER

RESEARCHERS HAVE DISCOVERED THAT THE BITE OF THE WORLD'S LARGEST LIZARD, THE KOMODO DRAGON, IS VENOMOUS.

THE CARNIVOROUS BEASTS ARE UNUSUAL BECAUSE THEY RELEASE THEIR PREY AFTER BITING THEM, APPARENTLY LEAVING THE ANIMALS TO BLEED TO DEATH BEFORE EATING THEM. BUT MANY EXPERTS HAVE CLAIMED THE VICTIMS DIE AFTER BEING INFECTED WITH BACTERIA THAT COVER THE LIZARDS' SERRATED TEETH.

KOMODO DRAGONS LIVE ON SEVERAL INDONESIAN ISLANDS AND TYPICALLY GROW TO 3M LONG AND WEIGH AROUND 50KG. THEY LIE IN WAIT FOR PREY AND AMBUSH THEM BY CHARGING FORWARDS WITH THEIR JAWS OPEN. THE LIZARDS CAN SPEND HOURS IN ONE SPOT, WAITING FOR WILD BOAR, DEER, GOATS AND OTHER LARGE MAMMALS TO PASS BY.

SCIENTISTS AT THE UNIVERSITY OF MELBOURNE USED COMPUTER MODELS TO INVESTIGATE THE STRENGTH OF THE LIZARDS' BITE AND FOUND IT WAS WEAK COMPARED WITH OTHER PREDATORS, SUCH AS THE AUSTRALIAN SALTWATER CROCODILE.

BUT MAGNETIC RESONANCE IMAGING SCANS REVEALED COMPLEX VENOM GLANDS IN THE DRAGONS' MOUTHS THAT HAD NEVER BEEN DOCUMENTED BEFORE.

BRYAN FRY, WHO LED THE TEAM, SURGICALLY REMOVED THE GLANDS FROM A TERMINALLY ILL DRAGON IN A ZOO. TESTS SHOWED THEY CONTAINED A SIMILAR POISON TO THAT FOUND IN GILA MONSTERS AND SNAKES, ACCORDING TO A REPORT IN PROCEEDINGS OF THE NATIONAL ACADEMY SCIENCES.

THE POWERFUL VENOM HAS A DEVASTATING EFFECT ON PREY, CAUSING A SUDDEN DROP IN BLOOD PRESSURE THAT SENDS THEM INTO SHOCK. AT THE SAME TIME, THE VENOM STOPS THE VICTIM'S BLOOD CLOTTING, SO IT BLEEDS TO DEATH.

THE DISCOVERY SUGGESTS MANY MORE LIZARDS MAY POSSESS SNAKE-LIKE VENOM THAN PREVIOUSLY THOUGHT. UNTIL RECENTLY, ONLY TWO POISONOUS LIZARDS WERE THOUGHT TO EXIST, THE GILA MONSTER AND THE MEXICAN BEADED LIZARD. BOTH LIVE IN SOUTHERN US STATES AND MEXICO.

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THE ARENA GOES ABROAD

NEW ZEALAND RANKED MOST PEACEFUL COUNTRY

NEW ZEALAND, THE PACIFIC ISLAND NATION OF 4.2 MILLION PEOPLE AND 40 MILLION SHEEP, IS THE PLANET’S MOST PEACEFUL COUNTRY THIS YEAR, ACCORDING TO A GLOBAL INDEX. THE U.S. IS RANKED 83RD.

INCREASING POLITICAL STABILITY AFTER THE ELECTION OF A COALITION GOVERNMENT LED BY FORMER MERRILL LYNCH & CO. TRADER JOHN KEY HELPED PUSH NEW ZEALAND TO THE TOP, FROM THIRD PLACE IN 2008, IN THE GLOBAL PEACE INDEX. TRADE AGREEMENTS WITH AUSTRALIA ALSO RAISED NEW ZEALAND’S RANKING. DENMARK AND NORWAY FOLLOW, WHILE ICELAND DROPPED TO FOURTH PLACE FROM FIRST AFTER ITS BANKING SYSTEM COLLAPSED, LEADING TO VIOLENT STREET PROTESTS.

THE INDEX, COMPILED BY THE INSTITUTE FOR ECONOMICS AND PEACE IN SYDNEY, RANKS 144 COUNTRIES ON 23 AREAS, FROM MILITARY SPENDING AND SUPPORT FOR UNITED NATIONS PEACEKEEPERS TO ECONOMIC INDICATORS, MURDER RATES AND HUMAN RIGHTS PROTECTION. IRAQ IS RANKED AS THE WORLD’S LEAST PEACEFUL COUNTRY, FOLLOWED BY AFGHANISTAN, SOMALIA AND ISRAEL.

“WE NEED TO CREATE AN ENVIRONMENT THAT IS LESS VIOLENT BECAUSE OF THE ECONOMIC BENEFIT,” CLYDE MCCONAGHY, PRESIDENT OF THE INSTITUTE FOR ECONOMICS AND PEACE, SAID IN A TELEPHONE INTERVIEW. HALTING VIOLENCE, INCLUDING CIVIL UNREST, CRIME AND WAR, COULD SAVE THE WORLD $7.2 TRILLION EACH YEAR IN DIRECT SPENDING AND LOST BUSINESS, HE SAID.

BY PROVIDING DATA INDICATING THAT PEACE CREATES ECONOMIC GROWTH, THE REPORT IS INTENDED TO HELP BUSINESSES WORK WITH GOVERNMENT TO REDUCE VIOLENCE AND DIVERT TO PEACEFUL USES MONEY AND MANPOWER SPENT DEALING WITH VIOLENCE AND ITS EFFECTS, HE SAID.

GDP INCREASES

GROSS DOMESTIC PRODUCT INCREASES BY $3,100 FOR EVERY 10 PLACES A COUNTRY RISES ON THE PEACEFULNESS INDEX, AND CONSUMER SPENDING ON FOOD RISES BY $132, ACCORDING TO THE REPORT.

“THE WORLD HAS BECOME SLIGHTLY LESS PEACEFUL IN THE PAST YEAR,” THE REPORT’S AUTHORS WROTE. THEY FAULT “THE INTENSIFICATION OF VIOLENT CONFLICT,” RISING FOOD AND FUEL PRICES, GROWING UNEMPLOYMENT AND A “POPULAR RESENTMENT” THAT CAUSED “POLITICAL REPERCUSSIONS” IN MANY COUNTRIES.

THE U.S. RANKING IMPROVED AS THE REPORT’S AUTHORS DETERMINED THE COUNTRY WAS LESS SUSCEPTIBLE TO A TERRORIST ATTACK.

“THAT’S THE ONLY INDICATOR THAT IMPROVED ENOUGH TO SHIFT THE U.S. POSITION,” MCCONAGHY SAID.

BOSNIA AND HERZEGOVINA ROSE THE MOST, CLIMBING 23 PLACES TO 50. THE RETURN OF REFUGEES FROM THE BALKAN WARS OF THE 1990S, AND IMPROVING RELATIONS BETWEEN THE BOSNIAN SERB STATE AND THE MUSLIM-CROAT FEDERATION REDUCED BOTH MURDERS AND THE NUMBER OF POLICE OFFICERS IN THE COUNTRY.

MADAGASCAR FALLS

MADAGASCAR FELL THE MOST, BY 30 PLACES TO 72, THE INDEX SHOWED. TROOPS FIRED ON OPPOSITION PROTESTORS, KILLING AT LEAST 28 PEOPLE AND LEADING TO THE OVERTHROW OF PRESIDENT MARC RAVALOMANANA IN MARCH.

FOURTEEN OF THE TOP 20 COUNTRIES ARE IN WESTERN OR CENTRAL EUROPE, DOWN FROM 16 LAST YEAR, AS RISING INFLATION AND POLITICAL UNREST DROVE DOWN THE PEACE RANKINGS OF SLOVAKIA AND HUNGARY THIS YEAR.

RUSSIA FELL THREE PLACES TO 136. THE REPORT CITES RUSSIA’S INVASION OF GEORGIA IN AUGUST AND DAMAGED RELATIONS WITH RUSSIA’S NEIGHBOR UKRAINE.

“RATES OF HOMICIDE AND VIOLENT CRIME REMAIN HIGH,” THE AUTHORS SAID, AND A “VERY HIGH” PROPORTION OF THE RUSSIAN POPULATION IS IN JAIL, “SECOND ONLY TO THE U.S. IN THE 144 COUNTRIES SURVEYED.”

THE KEY ELEMENTS OF PEACE INCLUDE “HUMAN RIGHTS, GENDER EQUALITY, DEMOCRATIC PARTICIPATION, TOLERANT SOLIDARITY, OPEN COMMUNICATION AND INTERNATIONAL SECURITY,” ACCORDING TO THE REPORT.

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FAMOUS QUOTES

JOHN ADAMS (1735 – 1826) 91 YEARS.

HE WAS AN AMERICAN POLITICIAN AND THE SECOND PRESIDENT OF THE UNITED STATES (1797–1801), AFTER BEING THE FIRST VICE PRESIDENT (1789–1797) FOR TWO TERMS. HE IS REGARDED AS ONE OF THE MOST INFLUENTIAL FOUNDING FATHERS OF THE UNITED STATES.

ADAMS CAME TO PROMINENCE IN THE EARLY STAGES OF THE AMERICAN REVOLUTION. AS A DELEGATE FROM MASSACHUSETTS TO THE CONTINENTAL CONGRESS, HE PLAYED A LEADING ROLE IN PERSUADING CONGRESS TO ADOPT THE UNITED STATES DECLARATION OF INDEPENDENCE IN 1776. AS A REPRESENTATIVE OF CONGRESS IN EUROPE, HE WAS A MAJOR NEGOTIATOR OF THE EVENTUAL PEACE TREATY WITH GREAT BRITAIN, AND CHIEFLY RESPONSIBLE FOR OBTAINING IMPORTANT LOANS FROM AMSTERDAM.

ADAMS'S REVOLUTIONARY CREDENTIALS SECURED HIM TWO TERMS AS GEORGE WASHINGTON'S VICE PRESIDENT AND HIS OWN ELECTION AS THE SECOND PRESIDENT OF THE UNITED STATES. DURING HIS ONE TERM AS PRESIDENT, HE WAS FRUSTRATED BY BATTLES INSIDE HIS OWN FEDERALIST PARTY AGAINST A FACTION LED BY ALEXANDER HAMILTON, AND HE SIGNED THE CONTROVERSIAL ALIEN AND SEDITION ACTS. THE MAJOR ACCOMPLISHMENT OF HIS PRESIDENCY WAS HIS PEACEFUL RESOLUTION OF THE QUASI-WAR CRISIS WITH FRANCE IN 1798.

AFTER ADAMS WAS DEFEATED FOR REELECTION BY THOMAS JEFFERSON, HE RETIRED TO MASSACHUSETTS. HE AND HIS WIFE ABIGAIL ADAMS FOUNDED AN ACCOMPLISHED FAMILY LINE OF POLITICIANS, DIPLOMATS, AND HISTORIANS NOW REFERRED TO AS THE ADAMS POLITICAL FAMILY. HIS ACHIEVEMENTS HAVE RECEIVED GREATER RECOGNITION IN MODERN TIMES, THOUGH HIS CONTRIBUTIONS WERE NOT INITIALLY AS CELEBRATED AS OTHER FOUNDERS'.

ADAMS WAS THE FATHER OF JOHN QUINCY ADAMS, THE 6TH PRESIDENT OF THE UNITED STATES.

"AS I UNDERSTAND THE CHRISTIAN RELIGION, IT WAS, AND IS, A REVELATION. BUT HOW HAS IT HAPPENED THAT MILLIONS OF FABLES, TALES, LEGENDS, HAVE BEEN BLENDED WITH BOTH JEWISH AND CHRISTIAN REVELATION THAT HAVE MADE THEM THE MOST BLOODY RELIGION THAT EVER EXISTED?"

"THIS WOULD BE THE BEST OF ALL POSSIBLE WORLDS, IF THERE WERE NO RELIGION IN IT."

"FACTS ARE STUBBORN THINGS; AND WHATEVER MAY BE OUR WISHES, OUR INCLINATIONS, OR THE DICTATES OF OUR PASSIONS, THEY CANNOT ALTER THE STATE OF FACTS AND EVIDENCE."

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