

3-24-1993

Avion 1993-03-24 (B)

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AERONAUTICA

McDonnell Douglas awards ASTOVL contract

McDonnell Douglas Press Release

ST. LOUIS — McDonnell Douglas has been selected for Phase II of the Advanced Short Takeoff/Vertical Landing (ASTOVL) aircraft technology demonstration program.

The three-year, \$27.7 million contract was one of two awarded by the Advanced Research Projects Agency (ARPA). Under the contract, a team led by McDonnell Douglas Aerospace will develop and build a full-scale wind tunnel model with an operating gas-coupled lift fan and engine based upon proven YF120 ATF engine technology. Testing will take place at the National Aeronautics and Space Administration's Ames Research Center in California, beginning in early 1995.

The McDonnell Douglas-led team includes British Aerospace, General Electric Aircraft Engines and Rolls-Royce.

The McDonnell Douglas program is structured to validate a gas-coupled propulsive-lift concept, identify other critical technologies and demonstrate operational aircraft design margin and affordability. In Phase III, an ASTOVL technology demonstrator will be built to further reduce risks involved in applying such designs to future aircraft such as the Short takeoff/vertical landing Strike Fighter (SSF). The SSF is intended to enter U.S. Naval service after the year 2010. It also has potential applications with the United Kingdom's Royal Navy.

ASTOVL requirements include short takeoff and vertical landing performance,

low-observable features and supersonic flight without using engine afterburning as well as significant survivability and supportability benefits. Projected ASTOVL missions include deck-launched intercept, close air support and combat air patrol, providing significant tactical flexibility for the changed defense environment.

The McDonnell Douglas design is equipped with a single General Electric YF120 derivative engine. To provide lift in the STOVL mode, the engine exhaust will be vectored with nozzles similar to those used on the AV-8B Harrier II. The engine also will power a fuselage-mounted fan for vertical lift by routing compressed air from the engine exhaust.

"Our proposal to ARPA reflects five years of work in flight controls, materials, propulsion, aerodynamics and low-cost manufacturing technologies," said Dick Martens, ASTOVL program manager for McDonnell Douglas. "Because ARPA's request for proposal placed as much emphasis on affordability as it did on technical parameters, we will apply our team's expertise in integrated product definition to make development and construction as cost efficient as possible."

After successful completion of this phase of the ASTOVL project, ARPA plans to select one contractor to build two flying demonstrators from a single design powered by either a gas or shaft-coupled propulsion system. That phase of the program is designed to prove the overall technical concept and potential combat applications.

"We're very excited about our team win-



The AV-8B Harrier II jump jet is the model for the ASTOVL multirole tactical fighter because of its vertical takeoff and landing capability.

ning the program, and its long-term importance for McDonnell Douglas. I believe the technology to be demonstrated here paves the way for future tactical aviation," said Jim Sinnett, vice president-general manager of McDonnell Douglas' New Aircraft and Missile Products Division. "I'm very pleased with our team and the outstanding support given by BAe and General Electric to establish a technical basis for a viable gas-coupled lift fan concept," Sinnett said.

"We believe our team is a natural to develop the next generation ASTOVL multirole tactical fighter, building upon our extensive fighter/attack background and carrier suitability experience to the ASTOVL program." In addition, in the AV-8B Harrier II, McDonnell Douglas and British Aerospace developed and built the only operational aircraft capable of vertical short takeoff and landing.

"That experience, coupled with expertise

in low-cost prototyping and manufacturing, developed in McDonnell Douglas Aerospace's Phantom Works, makes us confident the McDonnell Douglas ASTOVL team can deliver a highly successful demonstrator," he said.

In the first phase of the ASTOVL program, contracts were issued to engine companies to develop propulsion concepts. That phase has been completed.

Royal Netherlands Air Force to Receive 2 KDC-10's

McDonnell Douglas Press Release

Long Beach, Calif. — McDonnell Douglas has received a \$32 million cost-plus contract from the U.S. Air Force to begin modification of two DC-10 Series 30CF (convertible freighters) into KDC-10 tanker transport aircraft for the Royal Netherlands Air Force.

Under the Foreign Military Sales (FMS) program, the Transport Aircraft unit of McDonnell Douglas Aerospace will complete a price proposal and definitization of the full contract which the company estimates at approximately \$100 million over a two-and-one-half year period.

The \$32 million contract, which covers the initial phase of the program, was awarded by VSAF's Oklahoma City Air Logistics Center.

The program calls for design, modification and certification of two Royal Netherlands Air Force (RNLAF) DC-10-30CFs as KC-10 boom-type aerial refueling tankers. The contract will include all initial support requirements such as spares, support equipment and technical publications.

"This is an important contract for us," said Rodney M. Linford, vice president-general manager, Advanced Programs and Technology for McDonnell Douglas Transport Aircraft. "This could open up future opportunities for allied nations to convert other (DC-



The Royal Netherlands Air Force will use the KDC-10 in the new remote aerial refueling system under development.

10) transports into aerial refueling tankers."

The DC-10-30CFs, built by McDonnell Douglas, were obtained by the RNLAF from Martinair, the Dutch charter airline.

A new remote aerial refueling

operator's system is being developed by the Defense and Electronics Systems unit of McDonnell Douglas Aerospace in Santa Ana, Calif., based on concepts validated by the technology group of the Transport Aircraft unit.

Most of the engineering for the aircraft modification will be accomplished at McDonnell Douglas' Long Beach facilities, Linford said, but the subcontractor for the actual modification work has yet to be selected.

McDonnell Douglas predicts passenger traffic to grow

McDonnell Douglas Press Release

LONG BEACH, Calif. — McDonnell Douglas forecasts world air passenger traffic will grow at a 6.7 percent annual rate over the next 20 years, which will require a fleet of more than 17,000 jetliners by the year 2011 to serve air travel needs.

David P. Shube, deputy general manager of market development at the Douglas Aircraft division of McDonnell Douglas, says, "Between 1992 and 2011, the forecast indicates that 14,072 new passenger aircraft deliveries will be required to satisfy projected traffic levels."

Expressed in 1992 U.S. dollars, these planes will cost just over one trillion dollars.

The company said that 9,200 aircraft, or 65 percent, will be needed to accommodate traffic growth, while nearly 4,900 of these deliveries, or about 35 percent, will be for replacement purposes.

Shube said the open market, or the difference between the forecast of new deliveries and airlines' existing orders, will be more than 11,000 aircraft. The value of these airplanes is more than \$800 billion.

The expectation for strong growth in aircraft manufacturing is based on McDonnell Douglas' forecast for moderate economic expansion in North America and Europe and strong expansion in the Asia/Pacific region.

For the next two decades, the Asia/Pacific economies are expected to grow at an average annual rate of 5.1 percent, outpacing growth in other parts of the world. Rapid economic growth in Asia will provide the base for higher increases in both domestic and international air traffic growth, Shube says. This, in turn, will mean the need for expansion of airline fleets domiciled in the Asia/Pacific region.

By 2011, the McDonnell Douglas outlook says, a fleet of approximately 17,500 aircraft will be required for commercial service. To meet this requirement, future aircraft deliveries will be almost evenly split between narrowbody and widebody models, it said. "On the basis of value, however, the dominance of widebodies becomes very apparent, with over 76 percent of the total." The company estimated that the

world's active passenger jetliner fleet totaled just over 8,000 last year.

The company forecasts that international air traffic growth from now to 2011 will be 8 percent a year. Domestic growth within each nation will average 5.5 percent per year, excluding the former USSR.

Airlines domiciled in North America will continue to lead in the number of new aircraft deliveries required through 2011 with nearly 5,200 units, or 37 percent of the world total. Because of an extensive domestic travel market served by hub-and-spoke operations, North America will lead in required deliveries of narrow-bodies at nearly 3,200, or about 46 percent of the world total.

Asia/Pacific-based carriers will require the largest number of wide-body aircraft, with 2,900, to serve the fast growing international routes between Asia and North America and Asia and Europe. With nearly 1,100 narrowbodies also required between 1992 and 2011, Asia/Pacific will rank second behind North America for total deliveries at almost 4,000 aircraft.

European airlines are expected to take 23 percent of all jetliner deliveries over the next two decades. The value of these aircraft, expected to be a balance between wide-bodies and narrow-bodies, will be about \$214 billion.

McDonnell Douglas says that new deliveries to airlines in the Middle East and Africa will be required primarily to satisfy capacity needs for medium and long range routes. New deliveries will be valued at more than \$60 billion.

Latin America will be the second fastest growing region in passenger traffic and the fleet of aircraft is expected to expand by 134 percent. Most of the growth in new aircraft will be in short and medium range planes. The value of new aircraft will be about \$50 billion.

The aircraft outlook also forecasts jet fuel prices to remain relatively flat and stable, accounting for normal inflation. Demand for jet fuel will rise, but so will the supply, the McDonnell Douglas Outlook says. Shube warns, however, that short-term price fluctuations will remain a part of the world's oil environment.

Video helps prospective new aircraft owners

Wonderful World Of Flying Press Release

New York NY — With new aircraft prices out of most people's reach, buying a used aircraft is the sensible alternative and a new video covering the nine essential steps to purchasing a used aircraft help pilots make the right choice.

Every year, more than 50,000 aircraft change hands, but as this new video warns, many pilots buy over their heads and end up with a costly mistake.

"How To Buy A Used Aircraft," from the producers of the popular Wonderful World of Flying video series provides a step-by-step guide to purchasing a used aircraft. Bill Cox, well-known aviation authority and journalist, takes pilots through a thorough and practical process that is critical to finding the right aircraft and getting the right deal.

Every pilot considering buying a used aircraft should have this video; it will save money, time and many mistakes that could prove costly and aggravating.

In the video, Cox first covers the basic decisions that pilots should make before they embark on an aircraft search. These include high or low wing (Cox discusses the advantages and disadvantages of both) retractable or fixed gear (each have good and bad points) how many seats do you really need (Cox shows how the "cost per seat" can rise dramatically with more than four seats) turbocharged or not (expensive but worth it in some cases) aircraft age (older is cheaper, but is it better?) and finally the control panel: what are the "must haves" versus the "nice to haves" and what sort of condition the avionics should be in.

After providing invaluable advice in helping pilots narrow down the choices, Cox goes over the nine essential steps that potential aircraft purchasers should follow to ensure they are making a sound investment and getting the right aircraft, for the right price.

Cox provides detailed information about what to look for, how to

do it, and where to go for assistance.

Cox finds airport bulletin boards good and convenient sources for used aircraft information and recommends the AOPA Title Search department as a quick and affordable way to get the title search done.

Throughout the video, Cox warns pilots not to buy "over their heads," but rather buy what they need and then upgrade as necessary.

Too often, says Cox, pilots spend too much money buying more than they need and end up regretting it.

Among many useful items of information, Cox points out that an aircraft with an accident in its past should not necessarily mean automatic rejection.

To order "How To Buy A Used Aircraft," call 1-800-875-PROP, or write Aviation Media, Inc., 248 E. 35th St., New York, NY 10016. Price per video is \$19.95, plus \$3.00 for shipping and handling.

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- Checking the log-books
- Making the secondary inspection (including propeller, engine, gear, wings, fuselage, empennage and cabin)
- Flying the flight test
- Performing the final inspection
- Researching the title
- Insuring your airplane

The company forecasts that international air traffic growth from now to 2011 will be 8 percent a year.

Project Gemini astronauts inducted into Hall of Fame

Gemini Astronaut Inductees

John Young
Gemini 3-Apollo 10-Apollo 16-STS-1-STS-9

James McDivitt
Gemini 4-Apollo 9

Edward White II
Gemini 4

Charles Conrad
Gemini 5-Gemini 11-Apollo 12-Skylab 2

Frank Borman
Gemini 7-Apollo 8

James Lovell
Gemini 7-Gemini 12-Apollo 8-Apollo 13

Thomas Stafford
Gemini 6-Gemini 9-Apollo 10-Apollo/Soyuz

Neil Armstrong
Gemini 8-Apollo 11

David Scott
Gemini 8-Apollo 9-Apollo 15

Eugene Cernan
Gemini 9-Apollo 10-Apollo 17

Michael Collins
Gemini 10-Apollo 11

Richard Gordon
Gemini 11-Apollo 12

Buzz Aldrin
Gemini 12-Apollo 11

By Joshua Mussaf
Club Editor



Thirteen astronauts who orbited the Earth during Project Gemini were installed in the U.S. Astronaut Hall of Fame in Titusville, Florida, last Saturday.

The day began with an old fashion parade through Cocoa Beach. Hall of Fame officials estimate about 8,000 people watched as nine astronauts rode past spectators in vintage Corvettes from the 1950s and '60s.

Events then moved to the Hall of Fame, also home to Space Camp Florida, where ten of the Gemini astronauts participated in a press conference prior to their induction. Topics at the press conference included a discussion of their early exploits to the current state of the space program, which all seemed to be displeased with.

Astronaut Eugene Cernan, Gemini 9 pilot and the last American to walk on the Moon, said that NASA has done a poor job of telling the American people about what the space program is about. He later stated, "When we came back, we said it isn't the end, it's the beginning of a whole new era in the history of mankind. And I think we have somehow abandoned that cause."

Gemini 5 and 11 astronaut Charles "Pete" Conrad reminded the press of the ambitious plans for the post-Apollo era. "We had a timetable, we were to be on Mars in 1983," Conrad said. Christopher C. Kraft Jr., flight director during the Mercury and Gemini programs and later director of NASA's Johnson Space Center, served



Photo by Joshua Mussaf

Ten of the Project Gemini astronauts conclude a press conference before being inducted into the Astronaut Hall of Fame in Titusville last Saturday. Included among the astronauts is Buzz Aldrin (far right) the second man to walk on the moon.

as host for the ceremony. One by one, in the order that they flew, Kraft called out the names of the new inductees:

John W. Young, James A. McDivitt, the late Edward H. White II, Charles (Pete) Conrad Jr., Frank Borman, James A. Lovell, Thomas P. Stafford, Neil A.

Armstrong, David R. Scott, Eugene A. Cernan, Michael Collins, Richard F. Gordon Jr. and Buzz Aldrin.

Of the 13 men honored, two did not attend: Astronaut David Scott, who had last-minute business to attend to

see Astronauts, page B8

Cyberspace conference set in Ohio

By Brian Gamage
Space Technology Editor

NASA's Lewis Research Center and the Ohio Aerospace Institute will host a conference in Cleveland, March 30 and 31, focusing on and providing insights into the fascinating new world of Cyberspace.

Cyberspace is the "universe" that human beings enter when they use computers.

"In keeping with the conference mission to foster speculative concepts and advanced thinking in science and technology, this event will provide a panoramic view of the research and technology that will assist humans in exploration activities," said Dr. Sheila Baily,

conference chairperson.

Baily also said that this new vision includes "not only the Earth's environment and the Martian terrain, but the artificial reality of cyberspace."

Each of the five speakers for the conference is a scientist with a unique view of the future. Together, the speakers share a common vision of cyberspace as a world where computers, robots and the human mind will be more closely linked.

San Diego State University mathematician and science fiction writer Vernor Vinge will talk about linking the mind and the computer. His novels explore the ethical questions associated with society's use of computers and the potential for good and evil use of these computers.

Carol Stoker, NASA Ames Research Center scientist, who uses remote sensing and telepresence in exploration activities being conducted in the Antarctic, will talk about the science and engineering challenges of using robots there and what might be faced in similar expeditions to the moon or Mars.

John Dalton, NASA's Goddard Space Flight Center manager for NASA's Earth Observing System ground system, will discuss the use of information systems to support climate research and how global environmental models are evolving.

More and more analysis of the Earth is using scientific visualization methods which are themselves on the cutting edge of computer science.

The edges of science... Dark matter makes up most of the universe

By Brian Gamage
Space Technology Editor

Last week in *The edges of science...* I introduced the bizarre notion of dark matter and how scientists have been unsuccessful in its detection.

It is a known fact that the speeds of the planets in our solar system decrease with distance from the Sun. By observing our neighboring galaxy M31, scientists have determined that the speeds of stars do not decrease with distance from the center of the galaxy. Instead the speeds level off to a constant value, in direct violation of Newton's observed laws.

Scientists solve this observational problem by placing vast amounts of dark matter in a cloud around the galaxy, which would exert a strong gravitational force

that could allow for the high speeds.

The amount of dark matter needed to produce this phenomenon with every spiral galaxy and other objects in the universe would be absolutely tremendous. It turns out that dark matter would comprise about 90 percent of the matter required to produce a closed universe, which would result in the Big Crunch. This is in direct analogy to the 90 percent of an iceberg that lies beneath the surface of water.

In order to understand the physics of the macroscopic universe, scientists have resorted to studying the physics of the microscopic universe, namely the interactions between elementary particles. During the first few seconds of the universe the only things that existed were these elementary particles and every other particle

see Dark Matter, page B8

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Former astronaut trainer speaks about space shuttle program



Nicholas Simatos addresses space shuttle program issues during a speech last Wednesday in the John Paul Riddle Student Center.

By Todd Engelman
Staff Reporter

Mr. Nicholas Simatos replaced astronaut Eileen Collins as the Women in Aviation Week's speaker on Wednesday night in the Student Center. Collins was required to remain in Houston for mission support on STS-55.

"Basically, I described what astronauts go through during the initial year of qualifying after the selection process. Next, I discussed the environment of the space shuttle working and what that has done for mankind," Simatos explained. The human element is key to Simatos' view of the shuttle's abilities.

Simatos was a NASA Shuttle Astronaut Trainer. He graduated from Embry-Riddle in 1974 with a master's degree in Aeronautical Science and is now an Assistant Professor of Aeronautical Science here.

He was in the Air Force for 12

years. He trained as an astronaut in 1984. He later worked with the Space Surveillance and Missile Warning Program. Recently, he has been asked to help with the Russian Space Program.

His presentation was in conjunction with Women in Aviation Week. Though there have only been a few women astronauts in the U.S. space program, Simatos said that they have all had better academics overall than the men. The female astronauts are all Ph.D.'s, Simatos pointed out, while several of the men involved have lower degrees.

He said that Sally Ride was the first woman astronaut in the U.S.

Simatos said that two of the more famous female astronauts were Christa McAuliffe and Judy Resnik, who died in the *Challenger* disaster. There are about 20 women astronauts currently in the shuttle program, according to Simatos.

He said, "Early research with the X-15 helped pave the way for the space shuttle."

Simatos discussed many of the experiments and subsystems of the space shuttle. He said that the shuttle has over 1,000 critical one-items that could potentially cause serious problems if they fail.

There is a three percent chance for one of these failures during any flight, according to Simatos. Despite this danger, he feels that few astronauts would ever turn down the chance to go on a mission.

He discussed what was required to be an astronaut. For a mission specialist, applicants must have at least a bachelor's degree in a science, engineering, or mathematics field with a preference on Ph.D.'s, have at least three years of experience in your field, and have at least 20/200 vision correctable to 20/20.

For a pilot, the minimums are 1,000 hours of jet time, a bachelor's degree, with a preference on test pilots. So far, only one pilot has been non-military. Payload special-

What's wrong with the shuttle?

- ✓ Over 1,000 separate items are critical to the safety and success of the flight.
- ✓ A three percent chance exists each flight that a critical system might fail, putting the lives of crew members in danger.
- ✓ Payload costs are around \$9,000 per pound, making it an expensive way of launching satellites into space.

Air Force to launch Atlas and Delta rockets

By Brian Gamage
Space Technology Editor

A General Dynamics Atlas I is scheduled to launch from Cape Canaveral Air Force Station tomorrow evening. The launch will mark the return to flight after the failure last August of the Atlas Galaxy IR mission.

The investigation into that failure resulted in additions and modifications to one of the upper stage's engines, which experienced a failure of a check valve, much the same way as *Columbia's* main engine during Monday's STS-55 launch attempt.

For the past week and a half NASA and Air Force officials were required to schedule and reschedule range assignments for *Columbia* and the Atlas and Delta expendable launch vehicles.

When a vehicle is assigned "range," no other vehicle may schedule a launch within 48 hours

NASA searches for gravity waves in space

Three interplanetary spacecraft to conduct joint science experiment

By Brian Gamage
Space Technology Editor

NASA and the European Space Agency have teamed up to attempt the most thorough detection of gravity waves ever. Three interplanetary spacecraft, ESA's Ulysses and NASA's Mars Observer and Galileo, are currently being used to determine the existence of ripples in spacetime called gravity waves.

Such waves have never been directly detected, although their existence was predicted almost a century ago in Einstein's theory of relativity and cosmologists have proposed indirect evidence to their existence.

The waves are believed to be produced by supernova explosions, collapsing black holes and other events of this kind. Past searches with ground-based interferometers and single spacecraft have failed to detect them.

Gravity waves are a form of energy which is released from the interaction of incredible amounts of mass, like the amounts in a black hole, with spacetime. Spacetime is the four-dimensional nature of the universe, which, according to Einstein's theory, curves around mass.

The larger the mass, the greater the curvature

of spacetime, and subsequently, the greater the energy of gravity waves emitted from an interaction.

This joint ESA/NASA experiment started Sunday and will continue until April 11. For the first time, three spacecraft will make measurements simultaneously, which will greatly increase the reliability of any detection. Astrophysicists are hoping to make this major discovery by

The Mars Observer's high gain antenna will be one piece of equipment used to detect ripples in spacetime.

spending the next few weeks "listening" for gravity waves passing by the three spacecraft.

The experiment will hopefully be able to detect waves of very low frequency, possibly from the Big Bang or supermassive black holes.

"For Ulysses it will be the second chance to search for these rare events. Last March, Ulysses 'listened' for a period of about four weeks," said Dr. Richard Marsden, Deputy Ulysses Project Scientist at ESA's Research and Technology Center. "Although no gravitational waves were found on that occasion, the experiment set new upper limits on their intensity, thereby excluding a number of possible sources," said Prof. Bruno Bertotti, Principal Investigator of the Ulysses Gravitational Wave Experiment.

ESA's Ulysses spaceprobe was launched by Space Shuttle *Discovery* on October 6, 1990 to become the first probe ever to explore and circumnavigate the poles of the Sun. In February 1992, the spacecraft approached Jupiter and made use of the gravitational pull of the giant planet to swing itself out of the solar plane.

Ulysses will fly over the South polar region of the Sun between May and September of next year. Right now, Ulysses is 735 million kilometers from the Sun, and by September 1995, will have passed over the North Pole of the Sun completing its almost five year long journey.

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Fly X-wing, the craft that made Skywalker famous

By Ronald Hess
Data Technology Editor

If you are tired of flying vintage, military or exotic aircraft simulators, then you might want to consider X-wing. The name probably sounds familiar. It is.

X-wing is a game that simulates the starfighters of the Star Wars movie Trilogy. Players can fly X-wing fighters, Y-wing fighter/bombers and the A-wing interceptor prototype against the familiar Tie-fighters and a few "Empire" prototypes.

This game takes a different direction from the current Star Wars story-based games. The spacecraft are the same, as are most of the characters. The difference between this game and others is that this

game focuses upon the Rebel Alliance and their part in the Star Wars story.

The game begins once you register as a cadet in the Alliance. You are stationed on an Alliance star base, where you have the option of flying any of the three starfighters through training maneuvers or reenacting historical battles.

The training missions allow you to become familiar with each spacecraft. The historical battles enable you to hone your combat skills. Once you have had sufficient training, you can register for a tour of duty.

I found the training flights and battles to be very challenging. Training flights include flying through gates placed upon hovering platforms. Targets and time-limits add an extra challenge.

The combat simulators set a series of goals to be accomplished in a certain amount of time. The tours of duty are the most difficult portion of the game.

The game includes excellent graphics and digitized speech and sound. Play is similar to most flight simulators on the market. Control is accomplished via the usual methods, keyboard, mouse or joystick. The list of keyboard functions is almost as long as the list for Falcon 3.0.

X-wing is stiff competition for Wing Commander II (WC II), which is currently the best game on the

market under the space flight simulators genre.

WC II is, of course, the sequel to Wing Commander I. Both games have an interesting plot, where man is at war with a race called the Kilrathi, a sentinel lion species. X-wing does not have a particular plot, but is based upon the familiar movie story-line.

Both WC II and X-wing have excellent graphics and sound, but X-wing takes up less than half the hard drive space required for WC II.

The greatest advantage that X-wing has over WC II is speed.

X-wing is stiff competition for Wing Commander II, currently the best game in the space flight simulator genre

WC II is slowed significantly by hard drive access time. This is due to the complex graphics, sound and speech. X-wing takes advantage of expanded memory to minimize drive access time.

Another time saver is the ability to adjust the graphics detail. X-wing can be configured with varying levels of detail for numerous aspects of the game. The game provides individual graphic detail settings for such things as background, debris and starfighters.

These options allow slower computers to operate more smoothly while only sacrificing details chosen by the gamer. The detail settings are not available on WC II.

X-wing can be played on a 286 or faster machine. As usual, the faster the machine, the better the game play. The detail options are great for

slower machines. Sound and speech are unavailable unless you own a sound card. This is a significant drawback.

Expanded memory is highly recommended to speed up play and is necessary for the flight recorder option.

As for gameplay, a joystick is a must. The arrow keys do not provide accurate control, and the mouse is a nuisance for certain types of maneuvers. There is no avoiding the numerous key presses required for flying and combat. X-wing is compatible with the Thrustmaster joystick system, for those who can afford it.

The graphics, sound quality, speed and gameplay make X-wing one of the best flight simulators on the software market.

Symantec executives indicted

SAN JOSE, Calif. (AP) - Criminal theft charges against two computer software company executives could change the way business is done in Silicon Valley.

Symantec Corp. president and chief executive Gordon Eubanks, 46, and Eugene Wang, 35, a Symantec vice president, pleaded innocent to felony charges they stole trade secrets from competitor Borland International Inc.

Wang, who was hired away from Borland last fall, was accused of stealing secrets about products under development by Borland engineers and company plans. Both men were charged with conspiring to misuse the secrets.

They face penalties of up to six years in jail and maximum fines of \$100,000 and \$200,000, respectively.

"This is a white-collar fraud case as far as we're concerned," Santa Cruz County District Attorney Art Danner said. "It's the same as any other case where people are charged with stealing something."

Scotts Valley-based Borland is a leading maker of computer software programs, especially in the database

and languages arenas. Symantec is a major competitor in the programming languages field.

Both men proclaimed their innocence, and said the case should be dealt with in civil, not criminal, court.

"We've committed no crime, and we intend to prove that in court," Eubanks said.

Attorneys who deal with cases of trade secret litigation said trade-secrets theft claims are common in civil court, but rarely are the subject of criminal charges.

Some said the high-visibility of the charges could change employment practices among Silicon Valley firms, and inhibit employees from changing jobs.

"There's always the risk of a chilling effect on mobility" of workers, said Robert Barr, an attorney with the San Francisco and Palo Alto law firm of Brobeck, Phleger & Harrison who specializes in intellectual property and trade-secrets cases.

"In my opinion," Barr said, people who are considering jumping from one high-tech firm to another "would be wise to consult an attorney. And I'm not just trying to

drum up business."

The Symantec-Borland investigation began in September after Symantec, based in Cupertino, hired Wang. Two days after he left Borland, Borland officials filed a civil lawsuit claiming he had stolen trade secrets, including strategic corporate plans and details of unfinished products.

Symantec responded with a lawsuit of its own, claiming Borland was abusing the legal system to drive down Symantec's stock price and harm its business.

Borland also took the unusual step of filing a criminal complaint against Wang and Eubanks. Borland officials declined to comment on the case.

Criminal trade-secret cases are more difficult to prosecute than civil cases, in part because prosecutors must prove that scientific or technical knowledge was stolen and it is hard to define such secrets, attorneys said.

"Trade secrets cases consume resources like mad. They are not easy to do. They are not easy to

see Symantec, page B8

XEROX software aides the blind

ROCHESTER, N.Y. (AP) - A standard personal computer can be turned into a reading machine for the blind and visually impaired, Xerox Corporation officials said as they introduced a new software package.

Reading AdvantEdge software works with a scanner and a voice-synthesis card to scan books, faxes and other printed materials and read the words aloud with a computer-generated voice.

The software is compatible with Xerox Imaging System scanners, H-P scanners, and most screen readers and speech cards, including DECtalk, Xerox said.

The list price for the software is \$795. Software and scanner packages range in price from \$1,295 to \$2,995.

Xerox last year introduced a portable reading machine, called the Reading Edge, that used the same technology and sold for

\$5,495.

Xerox says it sees a growing market for such devices because of the Federal Americans with Disabilities Act, which requires many businesses to modify facilities to accommodate people with impaired vision and other disabilities.

Xerox, best known for copiers, entered the reading-machine business when it bought Kurzweil Computer Products in 1980.

Microsoft sends hate mail to Japan

REDMOND, Wash. (AP) - Microsoft Corp. will send a letter to 50 Japanese companies asking them not to illegally copy personal computer software, a company spokeswoman says.

The spokeswoman, who asked that her name not be used, said that software piracy is a serious problem in Asia, as it is elsewhere in the world. But she said the problem has not been confronted in Japan as it has been in the United States.

The Wall Street Journal quoted Makoto Naruke, president of Microsoft's Tokyo unit, as saying the illegal software copying rate in Japan is four times worse than in the United States. Naruke said that while Japan accounts for 18 percent of the worldwide personal computer sales, it only has 5 percent of the world's software sales.

The spokeswoman said Japan has laws against illegal copying, but they haven't been widely enforced. She said Microsoft is not threatening

prosecution, but rather wants the companies to be aware of the laws.

"The intent of this letter Microsoft is sending out is education of what's not OK," she said.

The letter is being sent out in conjunction with the Business Software Alliance, an international trade organization that combats software piracy. The 50 companies receiving the letter include software resellers and computer equipment manufacturers, she said.

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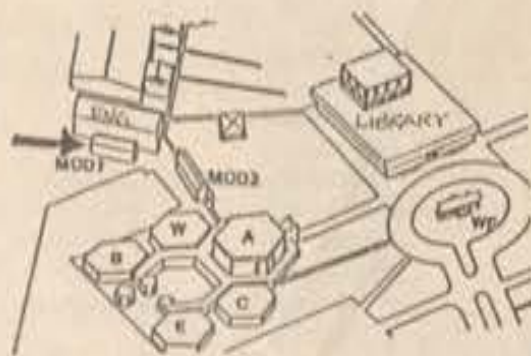
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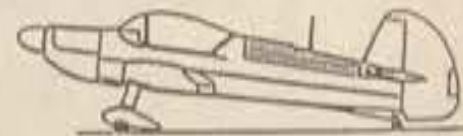
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Living Colour returns with *Stain*

By John Luke
Staff Writer

Living Colour hit the charts in the late 80's with hard hitting titles like "Cult of Personality" from their *Vivid* album which launched them into the limelight. I was lucky enough to catch them as the opening act for the Rolling Stones on their *Steel Wheels* tour in 1991 in Jacksonville.

Their hard hitting, heavy style is very different from most other black groups, but their cool rhythms and neat vocals really hit home, especially for the young. Today's students will identify with the philosophically deep yet entertaining message Living Colour conveys.

The first cut is a hard-hitting song about one's lifetime and how the singer wants people to "Go Away."

The second song is relatively lighter and upbeat compared to the first, yet pretty bassey. "Ignorance is Bliss" asks why we need "problem solving." This song advocates ignorance to the world's problems while taking care of one's own responsibilities.

"Leave It Alone" opens with a short narrative and goes into a melody, where the singer is saying that he's not going to be sucked in by the "in" crowd, and also that peace requires people to act responsibly. A neat little guitar solo is found nestled in the bridge of this song, then a rhythmic ending ends with a funky guitar chord.

"Bi" is slower and lighter with a little better harmonies between the beat and the lead. The bridge is interesting, along with a wild guitar solo. It suggests that "everybody loves you when you're bi(sexual), feeling other girls and feeling other guys." Although not my sexual preference, the song is probably great to dance to.



Living Colour returns with new style on their album *Stain*, which features songs about political and sexual politics.

"Mind Your Own Business" uses a recurring double-time rhythm which provides a neat change of pace in the midst of this slower song, but because the rhythm gets so erratic at points, it becomes a little annoying. It starts slow and heavy, then moves into a quick beat and back and forth again.

"Auslander" is a progressive tune delving into what the singer wants and what the singer has. He sings, "everything that I want is everything that you've got." Again, a change-up double time is used, more entertainingly this time to produce a nice effect.

"Never Satisfied" states that he's always seeking for more than he's got. The bridge provides another great guitar solo ending in a real

nifty crescendo. Although this song has a good beat, it is a little too repetitive for my taste.

"Nothingness" is a slower, more melodic song that starts with the soft chirping of crickets. A nice melody brings forth the tragedy of a lonely individual who seeks a home. This song builds up in a nice flow which moves into a neat repeating ending of "nothing lasts forever."

A nice beat starts "Postman," "Nobody knows the trouble I've seen," is this song's battle cry, and the beat is almost militant as well.

"This Little Pig" points out the fact that all of us have a mission, that they are unique from each other and the irony of the song is that the pigs of the world are greedy and self-centered.

"Wall" calls for the walls between the races to fall. Hate is cited as something which should be removed amongst all people.

While not for everyone, *Stain* has a few songs many people might find appealing. *Stain* provides everything their fans have waited for. If you liked *Vivid*, you should at least try *Stain*.

Critic's Corner:

Point of No Return features guns, action and Bridget Fonda



Mike McGrath

Movie Critic

Point of No Return

Starring: Bridget Fonda
Anne Bancroft
Harvey Keitel

Rated: R

Rating: ★★

Length: 1 hr., 48 minutes

Playing: UA Cinemas 1-2-3

Every once in a while, there comes a movie that has that one special quality that everyone has to see. *Point of No Return* is one such film.

What exactly is this quality? Was it the spectacular action advertised? No. Was it the intriguing plot that the commercials offered? No. Was it the overt symbolism which characterizes the film genre of the 90's? It could be, but I really don't understand the question I wrote.

Wait a minute, I think I know what it is. It can only be the presence of the stunning Bridget Fonda.

Point of No Return stars Bridget Fonda and a bunch of other people. Bridget plays a criminal sentenced

to death. Upon dying, she receives a second chance by some super secret government agency.

These spy guys train her in the field of assassination. However, our heroine has a change of heart. She doesn't want to kill anymore.

Of course, we all sympathize with her. Apparently, we are to forget that she just about kills everything that moves. At times, I caught myself actually cheering her on.

Action is what the commercial promised and action is what the customer gets. She kicks, bites and chops her way into the hearts of the audience.

There are bombs going off and red rockets glaring around every corner. There are some unbelievable events, but overall the action was enough to keep the action hungry viewer happy.

The many different and exciting guns in the movie were a sight to see. These guns were the kind that made people whistle. Of course, everyone knew what kind of guns they were. I heard everything from AK-47 to Red Rider 2000. Every gun she picked up outweighed her by at least ten pounds.

The movie flowed rather nicely. Some parts were abbreviated to shorten the sequence of events.

This is one of the weak points in the movie. I wanted to see more of the transformation from savage beast to sophisticated assassin.

The supporting cast did a wonderful job. Bridget, however, owned the whole screen. Anne Bancroft made several brief appearances. She was always upstaged by Miss, and I hope it is Miss Fonda.

She handled the many changes in character very nicely. Many more movies and hopefully more complex roles are in her future.

Harvey Keitel makes a brief appearance. His character, also a killer, left the second largest impression. He only sees three

minutes or so of time and about three sentences, but he comically delivers his lines. There could have been a whole movie on this guy alone.

Like *Silence of the Lambs*, we are asked to like a killer. I can see the objections to this already. Bridget is so mesmerizing on the screen that one cannot help but love any character she plays.

To make my point, I liked the movie. I think that is very obvious. Bridget Fonda is probably the only reason for this. Any other person just wouldn't do.

If you don't believe me, take any one of the *Golden Girls* and put them in the lead role. See the difference?

If you want a high energy movie with a high energy Fonda, *Point of No Return* will fill the empty spot on a Friday night. This movie is sure to be a contender for any hyperactive college student's attention.

If, however, you have trouble getting it up for an interesting film, and want a low energy movie with a low energy Fonda, try watching *Glenn Gary*, *Glenn Ross* while doing knee bends with Bridget's aunt, Jane.

If you don't like Bridget Fonda at all, don't come looking for me. I'll be living in the theater until this one leaves.

★★★★ - Can't miss!
★★★ - Worth watching.
★★ - Wait until dollar theatre.
★ - Read a book instead.

"Everybody loves you when you're bi, feeling other girls and feeling other guys."

-excerpt from "Bi" by Living Colour

"A LANDSLIDE OF LAUGHS."

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-Chuck Henry, ABC-TV, LOS ANGELES

"THE FUNNIEST PICTURE MURPHY HAS MADE IN QUITE SOME TIME."

-Ronnell Tinn, LOS ANGELES TIMES

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-Scott Granger, WICK/AMERICAN MOVIE CLASSICS



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AAAE

By Stephen R. Harvey
Secretary

Tonight (Wednesday, April 24th) in the Endeavour Room of the U.C. at 7:00 p.m., the AAAE will be hosting Lou Stefan, a Line Pilot and Human Factors Instructor with Federal Express in Memphis. Mr. Stefan has previously worked for

ERFSEDS

By Keith Sterner
Public Relations

Keep thinking about the upcoming officer vacancies. These positions will need to be filled by people who have a strong desire to keep the club going. Leadership is a valuable skill, and this is your opportunity to get some experience. Don't just do it for a resume line, do it because you care and want to! Let an officer know if you are interested, elections will be soon.

Notice to all members: The GTE Challenger Learning Center trip will be held on Saturday/Sunday, April 3-4. The money has already been collected, and a few open spots are remaining. If you're not currently included on this list, however, there may still be some open slots. Anyone interested in going needs to see Cindy, A.S.A.P.!

Sci-Fi Saturday is on Saturday, March 27th. Movies to be included are: "Jetsons: The Movie" (to be shown first, of course!), "2010",

AHP

By Jason Piper
Historian

Well this week was an outstanding one for the brothers and the pledges. Everyone had a great time at the water-ski party, but first the business stuff.

We held our elections this past Thursday. Samuel Greco was elected our new president for next year. Thomas Mullarkey Jr. is the vice president, Matthew Potter the secretary, James Pawson is the treasurer elect, Richard Robitaille the pledge master, Frank Guarascio the parliamentarian, Dominick Dunnigan the historian, and Gary Gulluza the alumni secretary. Congratulations to the new board members, I'm sure they will do fine.

Now the fun stuff. The water-ski party was an all out blast, regardless of the weather. The water was extremely cold. We braved the storm and skied and parried through the rain showers.

Joel broke the rope trying to get out of the water after ten or so attempts he got up on his skis, only to be pelted to death by the rain. Everyone else managed to ski all night.

Newberry thinks he's a hot dog. Pawson took a good apill, I heard. Other seamen who drew attention to themselves were Scott Spaulding and Chris Sorenson.

Scott was just being Scott, he attempted to sink a boat and as always, knew something the rest of us didn't. But this time Scott was wrong, the perfect spot he knew

ΘΦΑ

By Kelly Watkins
Public Relations

Hey Howdy, penguins!
Here it is to the point:
Eric- you know I love ya, babe!
Just returning your fav photo gesture.

Alli- paddiddle! Too bad HE wasn't a paddiddle- (10 days?)
Erin- just get down on your knees...

Lisa- la la la la laaaaa...
Pledges- Trust! (& loyalty)
Meg- great trivia memory- the

KAPΣ

By Michael Jackson
Member

The Xi Beta chapter of Kappa Alpha Psi Fraternity, Inc. presents a forum on "Affirmative Action." The forum will be held on Tuesday, March 30, 1993 in the University Center, and will begin promptly at 8:00 p.m.

We encourage all students and faculty members to come out and voice his or her opinion on this important subject. Guest speaker

Naval Aviation

By Eric Heinzer
President

Attention Naval Aviation club members. Although the semester is almost over we still have some activities planned. They include a trip to the U.S.S. Saratoga on the 26th of March, and airshow at Sanford Airport on the 3rd and 4th of April featuring the Blue Angels. Also in the works is a SH-60 and a T-34 static display.

On Wednesday, March 10th, Mr.

ΔΧ

By Chris Hildebrandt
Public Relations

Greetings to all of you lonely souls out there. I hope everybody enjoyed last weeks article. It was meant in good humor and not to be taken seriously, except for certain parts, which we all know what parts they were.

I wish I could say something about last Friday's St. Patrick's Day party, but when I wrote this article it had not even happened yet. I guess that I could lie and say that it was the party of the century, but I would look like a fool if it was a total flop or even canceled. Maybe next week I will have something to say about it, then again, maybe not.

The end of the semester is getting closer and closer. Can you believe it, there are only three weeks left. Pretty soon we will have to stop partying and start studying for exams (NOT). I don't think we know how to stop partying.

Garnette spoke to the club about his experiences flying the F6F Hellcat during WWII. He had many interesting items from the time, such as an aircraft recognition manual and a weapons control box from a WWII aircraft, to show to the attending club members.

The new club T-Shirts have arrived and will be sold at the next meeting. Check the club board in the UC for meeting updates.
All Welcome
Fly Navy!

Sucks to be in the Lambda Chi's shoes now.

It is a miracle that our bus does not smell like tuna after the social with the Thetas a week ago. Thank you all for not christening our bus again.

Congratulations to the Pledges on a job well done in stealing Bob. You came so close in getting caught several times at Taco Bell. It was better for you Pledges that you did that on that night, especially so early, because we had some other plans of our own. Don't worry though because our plans were just postponed.

A reminder to all the brothers that we have our yearbook picture this Saturday in Spruance Hall. Make sure that you are there wearing your Jersey if you want to be remembered.

Sorry that I didn't put anyone and their mothers down this week but we were long overdue for it.

Beau, you're still a pervert.

Clubs Policy

- ➔ All articles must be type-written, double spaced or on disk format (unformatted in Word Star or Microsoft Word).
- ➔ Deadline for submission of all club material is **Wednesday at 5 p.m.**, one week prior to publication.
- ➔ Photos may be submitted with club articles.
- ➔ All submitted material becomes property of the *Avion* with the exception of disks.
- ➔ The *Avion* reserves the right to edit all submitted copies.
- ➔ For more information stop by or call the *Avion* office at (904) 226-6049.



The Air Force's Chief of Safety, General Cole, visited ROTC detachment 157 earlier this month. The General talked to the cadets about the Air force's role in Operations Desert Shield and Desert Storm.

Air Force ROTC

By C/Maj Scott Kulka
Public Affairs

On Friday, March 12th, General Cole visited detachment 157 as part of his travels throughout the Southeast area. General Cole is the Air Force's Chief of Safety working at the Pentagon.

Some of his duties include safely disposing of nuclear weapons, aircraft accident investigation and personnel safety. The General talked to the cadets about the Air Force's role in Desert Shield/Desert Storm, and used some slides and video to help illustrate his points.

The General also illustrated how the Air Force's new policy of "Global Reach, Global Power" was proven during the conflict. He said that every six weeks during Desert Storm, the Air Force alone airlifted the equivalent of the entire population, buildings, and goods of Oklahoma City.

He said that, within thirty hours after the invasion of Kuwait, the Air Force was in Saudi Arabia and patrolling the skies with F-15's

against the world's fourth largest army.

General Cole's briefing covered the time period from the invasion of Kuwait, the mobilization, deployment, and actual battles to the withdrawal of allied forces from the area. He also pointed out facts that most people didn't know: most of the anti-aircraft batteries in Baghdad were firing blindly into the skies whenever allied aircraft flew overhead.

Also, that damage assessment on strategic targets was difficult because many of the precision weapons dropped on bunkers left only a small entry hole while destroying everything inside, but leaving the bunker still standing.

General Cole also said that the Iraqis would bury their tanks in the sand to hide them from radar in an effort to keep them from being hit.

The General also pointed out that, in his opinion, the United Nations' forces should have continued fighting against Saddam Hussein because the Iraqi forces were not as badly damaged as the allies were led to believe.

The Riddle Players

By Josie L. Stidham
Thespian

Great news is coming your way from the Riddle Players! You've seen the signs. You've heard the rumors. Yes, it's what you've all been waiting for...THE MYSTERY PLAY!

Alicia Columbe is the director of this farce which was written by Jean Claude Van Italie. It's a mystery play (obviously) performed by eight of Riddle's finest thespians. The cast of this most prestigious performance are as follows:

Mystery Writer: Erik Pratt
Senator: Tony Noble
Senator's Wife: Josie L. Stidham
Professor: Jim Marvin
Butler: Scott Smith
Laura: Amie Tavanese

ΣΠ

By Tore Gudrood Markusen
Harold

As we draw closer to our Orchid Ball on April 2, it is highly dubious that if you do not have a date at this time you will probably not have one at all! Let me stress the importance of this annual event by mentioning some of the planned activities.

1. You will be dazzled as you gaze upon the scenic vistas of Lake Monroe in beautiful Sanford.
2. You probably will miss the slide show presented by Matt Kuhn and Bob Lane. I guess it's time to see several slides of the "Beave" wearing his fatigues again, while he's narrating "The world according to Kuhn." Will he be wondering if brothers should be smoking?
3. You may miss the chance to mingle with important Sigma Pi alumni celebrities like Wayne Newton and Adam West.
4. Will an open bar mean an early

ΣΦΔ

By Bill McDermott
Historian

I'd like to begin by wishing all brothers and pledges of Sigma Phi Delta a happy St. Patrick's Day. Though it's not one of the major holidays, like Christmas or Easter, it's still a great holiday. It is a day when anyone and everyone, no matter what their heritage can be Irish for a day.

The barbecue and subsequent party with Delta Chapter were a blast. They have left for home and I'm kinda sorry to see them go. It is quite cool to have friends halfway across the country who share a com-

Edward 1: Brian Zoss
Edward 2: Ron Roberts

This play is your typical "the butler did it" mystery. It is a two act play which has only one scene: a party. The mystery writer is in total control of everything that happens because he is writing it as he goes along. The characters are exaggerated figments of his imagination and each fit into a stereotype appropriate for their role. It is an exciting play which NOBODY should go without seeing!

The Mystery Play will be performed in the University Center this Friday and Saturday (April 2nd and 3rd). Yes, TWO NIGHTS for your convince. 8:30 PM is the time, and \$2.00 is the cost. (A small price to pay for such entertainment!) See you at the show!!!

end to the evening for some?

5. How well will the shiny pins stick together in a foreign land like Sanford?

6. Who will be the eager volunteer to room with Bourke?

7. You can watch the planes of Skyfest from the balcony of your room.

8. You will never see a more touching moment when several brethren Laueir their sweethearts.

9. But most of all, you will miss the opportunity to see brothers actually eating with knives and forks. And as we already should have learned, it is not proper to sop your biscuit in the gravy.

On a final note, I would like to welcome the new Executive Council for the Fall '93 semester. May you be victorious in your pursuit of justice and chivalry. (Not to mention getting a stripper at the next rush party!) And to the past EC, thanks for your strong guidance and support the past semester.

mon bond with you, brotherhood.

Speaking of brotherhood, it is the topic you pledges should be thinking highly of. We've only got about four and a half weeks left in the semester. Keep that fact in mind while you are studying to become brothers of Sigma Phi Delta. Now is the time to prove to us just how much being brothers of Sigma Phi Delta means to you. It is a huge commitment and a vast responsibility. Just know what you are getting yourselves into.

I'm glad to see you guys are over the house more often. You've got to get to know all the brothers. Some of us will be with you for the next three or four years. The friendships made can last you a lifetime.

Senior Class Council

By John Luke
Communications Chair

Less than a month to graduation, ye hah!!! Those seniors planning to take advantage of the discount hotels/motels and discount car rentals which the Senior Class Council has so diligently provided may pick up a copy of this information at Student Activities. That's right, if you're inviting friends or family to graduation and they need a place to stay or if they will need a rent-a-car, then you need to get into the Student Activities office and ask for your copy of this important information for all Graduating Seniors.

The Senior Class Car Wash was canceled due to weather. However, Senior Class Council Secretary Linda Zinn assures everyone that the Senior Class is in good financial shape to round out the term. Seniors with any questions about graduation requirements should see the Records & Registration office and those with questions concerning the ceremony should contact the Dean of Student Affairs office where Associate Dean of Students Becky Robertson is more than helpful.

Seniors with any questions about their party should contact Student Activities to get the details. The Senior Class project is being solidified and will be announced soon. Get hyped, it's time to graduate!

Aerospace Society

By Joshua Mussaf
Historian

Thanks to all club members who attended the speech by Professor Nick Simatos last Wednesday. His presentation on the space shuttle program was very informative.

The Aerospace Society has a very busy week coming up. Tonight, we will be viewing a show at the Daytona Beach planetarium at the Daytona Beach Museum of Arts and Science. Everyone should meet in front of the library at 6:50 p.m.

Our club picture for the *Phoenix* Yearbook will be taken this Friday, March 26, at 3:10 p.m. in front of the Wright Flyer. Please be prompt and make sure that you are wearing your club t-shirt.

For those of you who do not have a club t-shirt, they are still available for \$6.00. Please see Stephanie if you are interested. See Steph, I didn't say "those lovely club t-shirts."

Our trip to Walt Disney's Typhoon Lagoon is set for this Saturday, March 27. The reduced club cost is only \$22.00. Please pay our treasurer, Alicia, as soon as possible this week. We will meet in front of the library at 9:00 a.m.

Finally, our car wash has been rescheduled for this Sunday, March 29, at 10:00 a.m. The car wash will be at the Texaco gas station at the corner of Beville and Ridgewood. Those who need a ride should meet in front of the library at 9:45 a.m. Hopefully, the weather will cooperate with us on Sunday so we can make a lot of money!

Calvin and Hobbes by Bill Waterson

Panel 1: Calvin is sitting at his desk, looking at a book. Hobbes is sitting next to him, looking at the book. Calvin says: "I'M GOING OUTSIDE." Hobbes says: "ARE YOU DONE WITH YOUR HOMEWORK?" Calvin says: "YES." Hobbes says: "YOU READ THAT WHOLE CHAPTER?" Calvin says: "LET'S JUST LEAVE IT. THAT I'M DONE." Hobbes says: "BACK TO YOUR ROOM, BUSTER." Calvin says: "I'LL BET SOME KIDS WALK AROUND CORNERS WITHOUT EVEN THINKING ABOUT IT." Hobbes says: "THAT WAS A ROTTEN TRICK." Calvin says: "GRAVITY MUST PULL ESPECIALLY HARD ON TIGERS." Hobbes says: "THAT'S AN IMPRESSION WE LIKE TO CULTIVATE."

Panel 13: Calvin is sitting at his desk, looking at a book. Hobbes is sitting next to him, looking at the book. Calvin says: "LOOK AT THESE TV COMMERCIALS. EACH ONE IS A JUMBLE OF LIGHTNING QUICK, UNRELATED IMAGES AND FILM TECHNIQUES." Hobbes says: "IT DUPLICATES THE EFFECT OF RAPIDLY FLIPPING THROUGH CHANNELS. IT'S A BARRAGE OF NON-LINEAR FREE ASSOCIATION." Calvin says: "I GUESS THEY'RE ADMITTING THAT A 15-SECOND COMMERCIAL EXCEEDS THE AMERICAN ATTENTION SPAN BY A GOOD 14 SECONDS." Hobbes says: "HUH? ARE YOU STILL TALKING ABOUT THAT?" Calvin says: "SCIENTIFIC NAMES." Hobbes says: "SURE. SCIENTISTS COME UP WITH GREAT, WILD THEORIES, BUT THEN THEY GIVE THEM DULL, UNIMAGINATIVE NAMES." Calvin says: "FOR EXAMPLE, SCIENTISTS THINK SPACE IS FULL OF MYSTERIOUS, INVISIBLE MASS. SO WHAT DO THEY CALL IT?" Hobbes says: "DARK MATTER." Calvin says: "DUH! I TELL YOU, THERE'S A FORTUNE TO BE MADE HERE!" Hobbes says: "I LIKE TO SAY 'QUARK.' QUARK, QUARK, QUARK, QUARK." Calvin says: "INSTEAD OF MAKING AN IDIOT OF YOURSELF, WHY DON'T YOU GO FIND ME SOME SCIENTISTS?" Calvin says: "MISS WORMWOOD, I PROTEST THIS 'C' GRADE! THAT'S SAYING I ONLY DID AN 'AVERAGE' JOB!" Hobbes says: "I GOT 75% OF THE ANSWERS CORRECT, AND IN TODAY'S SOCIETY, DOING SOMETHING 75% RIGHT IS OUTSTANDING! IF GOVERNMENT AND INDUSTRY WERE 75% COMPETENT, WE'D BE ECSTATIC!" Calvin says: "I WON'T STAND FOR THIS ARTIFICIAL STANDARD OF PERFORMANCE! I DEMAND AN 'A' FOR THIS KIND OF WORK!" Hobbes says: "I THINK IT'S REALLY GROVE HOW THE DRINKS MANAGER STRAIGHT FROM THE BOTTLE."

Far Side by Gary Larson

Panel 1: A man is riding a horse through a field. He is holding a guitar and singing. A speech bubble says: "Yippy-I-yo-mama!" Panel 2: A man is sitting on a bench, looking at a small, round object on the ground. A speech bubble says: "Look, Dad! ... Snidgets!" Panel 3: A man is walking through a field, looking at a small, round object on the ground. A speech bubble says: "Crossing paths on their respective journeys of destiny, Johnny Appleseed and Irving Ragweed nod 'hello.'" Panel 4: A man is sitting on a bench, looking at a small, round object on the ground. A speech bubble says: "Unbeknownst to most students of psychology, Pavlov's first experiment was to ring a bell and cause his dog to attack Freud's cat."

Dave by David Miller

Panel 1: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "THEY DIDN'T HAVE ANY DONUTS, SO I BROUGHT THESE INSTEAD!" Panel 2: A woman is standing next to the man, looking at the box of donuts. A speech bubble says: "HEY-NICE MUFFINS!" Panel 3: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "SEXUAL HARASSMENT OR MERELY A COMMENT?" Panel 4: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "NEVER TRUST SOMEONE ON THE OTHER SIDE OF A DESK, MUCH NICER THAN YOURS, SAYING..." Panel 5: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "HEY, REALLY, I'M ON YOUR SIDE!" Panel 6: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "BACHELORS NUMBER 1, 2 AND 3... WHAT IS 'MAN'S BEST FRIEND'?" Panel 7: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "UM...A DOG?" Panel 8: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "A LOVELY WOMAN, SUCH AS YOURSELF!" Panel 9: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "A 27-INCH ZENITH WITH REMOTE!"

Bound and Gagged by Dana Summers

Panel 1: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "THEY DIDN'T HAVE ANY DONUTS, SO I BROUGHT THESE INSTEAD!" Panel 2: A woman is standing next to the man, looking at the box of donuts. A speech bubble says: "HEY-NICE MUFFINS!" Panel 3: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "SEXUAL HARASSMENT OR MERELY A COMMENT?" Panel 4: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "NEVER TRUST SOMEONE ON THE OTHER SIDE OF A DESK, MUCH NICER THAN YOURS, SAYING..." Panel 5: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "HEY, REALLY, I'M ON YOUR SIDE!" Panel 6: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "BACHELORS NUMBER 1, 2 AND 3... WHAT IS 'MAN'S BEST FRIEND'?" Panel 7: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "UM...A DOG?" Panel 8: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "A LOVELY WOMAN, SUCH AS YOURSELF!" Panel 9: A man is sitting at a desk, looking at a box of donuts. A speech bubble says: "A 27-INCH ZENITH WITH REMOTE!"

→ Autos for sale

Buying a vehicle? Buy from a Riddle alumni. New and used cars and trucks/program cars. Contact Mark F. Monaco at Gary Yeoman's Ford executive car sales. 947-4455. Bring this ad!!!

Bike for sale! Suzuki 750 GS, Year 1982. 8,000 miles only! Very reliable, very fast! \$1100 Call Dominique 258-3385

1984 Mustang SVT. Rare car. Gray with turbo, 5 spd., new engine, too many options to list. \$5000 obo. Call Jon 254-0485 for more info.

For sale: '83 Suzuki GS550L. Excellent condition. Low mileage, runs great. \$1000. Includes two helmets and saddlebags. Call 253-8809/322-0222. Ask for Paul.

'84 KAWASAKI LTD 750. Low miles, new battery and recent tune-up. Take home for summer. First \$500 takes it. Call 756-7853 or 226-7102.

1985 Buick Skylark, 4 door, automatic, 86k miles, blue, runs great. Asking \$1500 obo. Call Anna at 257-4762 or leave message.

1983 Renault Alliance. Restored/conditioned. Runs great, four new tires, perfect body condition custom painted maroon and yellow. Must see. \$1000 obo. Need to pay tuition. Call Keith at 274-5575.

→ Roommates

Room for rent: 4 bdrm house 2 1/2 baths, full house and landscaping on the river. \$180 rent plus 1/2 utilities available for entire summer. 5 miles from Riddle, 2 miles from beach. Call 257-1284.

House for rent during summer A and B. One person male or female. \$200 rent plus 1/2 utilities, no deposit. Big yard, pets o.k. Located close to school. Call Bob in Avion (226-6049)

Lake View spacious 2 bdr and 2 1/2 baths. Townhouse condo, Ormond Beach close to shopping center. 673-0970 Available July 1, 1993

For Sale or Rent: 2 Bed/2 Bath Townhouse. Two levels, full appliances. Pool, Cable TV, Water and Trash Removal all included. Located only 2.5 miles from ERAU. Call today for more Details 788-4343.

2 roommates needed for a 3 bdrm apt. Male or Female. \$185-mth. 1/3 utilities. Apt. is spacious with lots of sunlight. Mature, clean, studious, non-smoker preferred. A good sense of humor, too. Contact Frances 252-9249. Leave name & # on machine if I'm not home.

For rent: Male or female wanted. One room available for \$250/mo. Utilities not incl. but average about \$85/mo. Plenty of luxuries available. Call 760-1630. Must see to appreciate.

Room for rent, 3 bedroom house, 1/2 mile from school, \$162.50 + utilities (avg.) \$45. Basketball court, hot tub, available immediately. Call 258-2890.

Large 3-bedroom home. All newly remodeled. All new carpet, paint, kitchen and deck. Country setting on cul de sac. Furniture and utilities available. \$700. 676-9100.

→ Misc. for sale

DOWNTOWN USED FURNITURE 9000 sq. ft. showroom. Tues.-Sat. 10-5:30 406 N. Beach St. Daytona 239-9884. Buy and Sell.

For sale: Hewlett Packard 485 Scientific Calculator. 32k memory (expandable). All manuals, warranty. \$125 obo. 253-5194 Mike

Moving Sale: 3 piece dinette \$90; tan couch \$50; papoon couch w/cushion \$80; rattan rocker chair w/cushion \$60; brass and wood end table \$30; ceiling fan \$20; obo's. Call Kris 274-2336.

Moving sale: TV table brass and wood \$30; 4 piece place set, dishes, pans, silverware, glasses \$50; New Regline vacuum \$60; swivel chair bar stools (2) \$40; obo's Call Kris 274-2336.

For Sale: Queen Size, semi-waveless waterbed w/heater, pads, and sheet set; round kitchen table and 4 chairs. If interested call 252-5681. Ask for Cheryl.

Guitar for sale! Great acoustic guitar sold with case only \$70! Call Dominique: 258-3385

Refrigerator - 20 cu.ft. front free Pidgeonlake with waterline in the door. Recently overhauled \$300 obo. Call Kevin 1-439-4770 or leave message box 1397. Have truck will deliver.

Hide-a-bed w/ mattress \$50. Dresser \$50. Call Casey 760-9686.

SCUBA Diving equipment includes: tank, regulator, fins, boots and BCD!! Only \$300! Call Dominique 258-3385.

Sega game gear and AC adaptor and six games \$230 obo. 238-3812.

Car audio equipment at discount prices!!! Pyle, JVC, CRUNCH and more. Give yourself the best for less. Call (904)426-7275 for more info.

Queen mattress for sale \$30 call Kim 252-7123.

For sale. Brown couch fair condition, wood accents \$30. Call Patty Ext-6926.

IBM PS2 Model 30/286. 30 Meg hard drive, 3.5" Floppy, VGA screen. Included Tandy DOT printer. Only \$600. Great value for this ready to use package. Call 761-9504.

For sale: typewriter: Smith-Corona XD650. Dictionary, spell correct, internal memory to store documents, computer compatible (can be used as a printer) Asking \$125 obo. Calculator: Hewlett Packard stat/math 215 great for statistics, and decision math. Asking \$60 obo. Call Dan: 322-1380.

Wilson tennis racket for sale. 2 months old Pro Staff Classic (Higberg's) with Prince Performance String. Must sell \$100. 761-9504.

CLASSIFIED AD POLICY

- Non-commercial classified advertising and personals are free to the student body, faculty and staff of Embry-Riddle with 35 word limit.
- All other non-commercial advertising is \$10 with a 35 word limit. Each additional word is 10 cents.
- Commercial advertising is available through the Avion advertising department, at 226-6051.
- Classified advertising is carried out by filling out a classified ad card in the Avion office.
- Only one classified ad per card. Name and address of advertiser must be included for the ad to run.
- Only paid ads will run for two issues and may be renewed by filling out another classified ad card.
- No classified ads will be accepted over the phone.
- For more information, stop by or call the Avion office at (904) 226-6049.

For sale: Sofa bed \$50. 4 cu.ft. refrigerator \$125, toaster oven \$15. Call Keith 274-2292.

For sale: Handgun P-89 Ruger 9mm \$350. Guitar Washburn with amp and acc. \$325. Call 767-4806.

Jacuzzi for sale: 10 person tub, good condition. All equipment \$600.

For sale: 1 couch, 1 kitchen table and chairs, 1 dresser, 1 desk. Real cheap!! Contact me at 253-7988 or box 8878.

Neon lights. Wide variety of colors. Will install in and/or under your automobile. Low price! Limited amount! Call Dwayne 226-7492 or Kleaton 255-6379.

→ Miscellaneous

Multi-engine flight training. \$70 hr, block time. MEI or initial rating. All other certificates and ratings also available. Don 677-9730.

Quality flight instruction at a great price! Private, instrument, commercial, BFR's and ICC's. Call Phil at 788-1360.

ATTENTION SENIORS! Free routine consultations this week. 8 am to 2 pm Wednesday thru Sunday. Nova Rd flea market, Space A19. Lowest rates! 322-2828

Learn to Fly Tailwheel in the Piper Super Cub. Private, Commercial, BFR Training Also Available. Call Jim at 760-1630.

Quality SCUBA Certification Experienced Independent PADI Instructor. Open water \$100, Safe Air NITROX and advanced training Call Jan Neal at 761-2021.

Born \$20-25 in 45 min. Licensed drivers needed as subjects in driver reaction time testing. Contact Dr. Cameron, B517, ext 6387 to make an appointment for testing.

Do you need a ride to Tennessee or somewhere along the way? Will leave 23-24 April. Lots of room. Share gas. Possible return 25 Aug. Call 756-8941 or Box 5694.

→ Personals

To our newly initiated AZD sisters. Congratulations from all of us to all of you! Go girls! We Love you. Xi lov. YOUR SISTERS.

TO THE DOL. I love to play with my Dol so on this day I wish to say your first clue starts this way. In the building named Hunt is where you will start yours. PR6013U/65A6(PG.75)

TO MY LITTLE SIS JEANETTE. Congratulations and thanks for joining! Best of luck with everything and I'll be watching over you! Lihua CHERYL.

MR. DINNEY. Thanks for everything. It just keeps getting better, and I liked your rose the best. LUV BLONDIE

LIL STEPH. Glad I got to meet you this weekend - Want to go out Saturday night? BYRDMAN

Look out U.S. National Rowing team, Louis rowing your way! A RIDDLE COXSWAIN

TO KILLER REDHEAD (NIKITA). Let's make sure we find that room we were looking for last week. FROM A NOT SO COOL GUY!

JSV. Thanks for clearing me up Sunday nite. I had a great time. MUCH better than a site w/ Princess!! RJ

Mike, Ari, and Psycho. Happy Birthday!! Love, Rachel

MATT B. I never meant to hurt you. You just expected more than I can give right now. I'm sorry. RACHIEL.

THUMPER. Was that you that parked the 172 on the maintenance ramp.

THUMPER. Next time you decide to bump someone from behind you should be more careful.

Does anyone realize that the "N" is upside down? Astronautical University???

FOOTER GRABBER. Stop it jerky. Footer grabbing is bad and there shall be no more of that. If it continues, I will have to start weenie grabbing. Do you understand? LOVE YA, SWEETHEART.

DEAR VANESSA. You extend my arm like no other woman. I want to tell you how I feel, but I just can't get the words out. MUMBLES

Radiation only affects commies and fags!! GENERAL RIPPER

DEAR NAME WITHHELD UPON REQUEST (BILLY BOB). Thanks to your request for country music on WERU radio, the U.C. now sounds like M.T.A. truckdriving school. SLASH

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Astronauts

(continued from page B2)

and the late Edward White II, who died in the 1967 Apollo 1 fire. Edward H. White III accepted for his father.

The 13 join the original Mercury Seven astronauts, who were installed in the Hall of Fame when it initially opened in 1990. They are Alan B. Shepard, the late Virgil I. (Gus) Grissom, John H. Glenn Jr., Malcolm Scott Carpenter, Walter M. Schirra Jr., L. Gordon Cooper Jr., and Donald K. (Deke) Slayton. The Mercury astronauts and Gus' widow, Betty, attended the ceremony.

From the two groups, 13 moved on to the Apollo Moon landing program. Seven walked on the Moon; five others orbited the Moon.

Each Astronaut is featured in his own special section with personal space mementoes on display.

Video films and photos depict their flights. Highlights of America's early space flights are featured in a museum theater that has been rebuilt.

A self-paced tour of the Hall of Fame takes visitors back in time to the early days of space exploration. Strolling through a "time tunnel,"

they relive the 1957 launch of the Soviet Sputnik satellite that ushered in the Space Age, as well as America's response with Explorer 1 as the two superpowers began their competition for supremacy in this new arena. Also featured is an honor roll of all astronauts who have flown in space.

Project Gemini was the bridge between America's first tentative forays into space in Mercury and the Apollo program. The program perfected all of the flight techniques necessary to go to the moon, including rendezvous, docking, space-walking and long-duration flight. The 10 launchings of the two-man spacecraft took place in 1965 and 1966.

The addition of the Gemini astronauts will be the second major enhancement in less than a year to the Astronaut Hall of Fame/Space Camp Florida facility located at the entrance to the Kennedy Space Center.

In May 1992, a full-scale replica of the space shuttle — *Shuttle to Tomorrow* — opened to the public. Inside the cargo bay is a 72-seat theater, where visitors are taken on a 12-minute futuristic space trip through a multi-sensory video presentation.

Dark Matter

(continued from page B2)

was synthesized from these.

The early 1960's and 70's were a time of great upheaval in the field of particle physics. The elementary particles called quarks were discovered, unified theories of the forces between them were implemented and the strong, weak and electromagnetic forces were unified into a single fundamental force.

All of these unified theories were substantiated by CERN and Fermilab, two particle accelerators, in the early 1970's. These observations and detections still did not establish a suitable explanation for what dark matter is.

Scientists believe the solution might lay in the "supersymmetry" (SUSY) theories that propose the addition of a new set of elementary particles. For example, the SUSY partner of a quark in this theory

would be a "squark" and the SUSY partner of a photon would be a "photino."

Continued studies of particle physics using higher energy accelerators, like the Superconducting Supercollider, which is currently being slated for construction in Texas, might provide more insight into the peculiarities of dark matter.

Next week in *The edges of science...* Opinions Editor Aric Moller will paint a picture of the elusive elementary particles known as quarks.

The information contained in this article was obtained from the following sources, which can be found in the Jack R. Hunt Memorial Library.

The Shadows of Creation, Dark Matter and the Structure of the Universe, by Michael Riordan and David N. Schramm, W. H. Freeman and Co., New York, 1991.

Speaker

(continued from page B3)

ists are chosen by individual companies as representatives on a mission. Simatos said that all astronauts are expected to be good public relations people and give lots of speeches.

After being accepted, astronaut trainees spend about a year training in Houston, Texas. They go through zero-g training in a modified KC-135 and perform extra vehicular activity training in a large swimming pool.

There are also many flights on T-38s to help build proficiency and teamwork. They are then given an assignment to work on until their flight.

The shuttles are expected to fly missions until 2003. Unfortunately, the payload costs are around \$9,000 per pound. McDonnell Douglas is currently working on a possible replacement to the shuttle called the *Delta Clipper*. This is a single-stage-to-orbit design that should have payload costs of around \$500 per pound.

The National Aerospace Plane (NASP), or a modified version of it, is also a contender for the job. Simatos said that future horizontal takeoff crafts which enter orbit and are essentially planes would possibly cost one percent of current costs to get satellites into orbit.

Symantec

(continued from page B4)

win," said Frank D. Berry Jr., a Santa Clara County deputy district attorney who handles such cases.

The investigation centered on electronic mail messages Wang sent Eubanks. Some attorneys say a key factor in proving the theft could also be whether those e-mail messages are admissible as court evidence or are protected under California privacy statutes.

Danner said that the investigation had involved hundreds of hours of examining technical information, and that his office had consulted with software experts during the probe.

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- 2) 6-inch 2 item pizza & soda
- 3) 8 Buffalo wings, 12 oz. soda
- 4) Chef or Greek Salad

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