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SPACE TECHNOLOGY

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Embry-Riddle professor studies ozone layer in detail Dr. Hamwey's work to be published in a scientific journal in the near future

By Dr. Robert Hamwey and Joe Cambron
Special to The Avion

For several years scientists have argued over the effect of pollution upon the earth's ozone layer. More recently, the media has spread the idea that a depleting layer will be the earth's end unless damaging pollutants are removed from consumer and industrial use.

Such events as the Earth Summit have highlighted the need to address the changes occurring in the ozone layer, but most people only have an elementary understanding of the ozone layer and its effects on our lives. In a resort city, such as Daytona, where many of us spend uncounted hours beneath the sun's rays, it is even more important for each of us to assess the risks of prolonged exposure to the sun.

Dr. Robert Hamwey, a respected Associate Professor of Physical Science at Embry-Riddle, has spent the last several years analyzing data on this subject. He expects to have his work published in a scientific journal in the near future. His research and knowledge of ozone provided the information for the following analysis of the earth's ozone problem.

Importance of Ozone

Most people do not realize how little ozone protects us from the ultra-violet radiation (UV) of the

sun. In fact, if the total amount of ozone in the earth's stratosphere were to fall to earth, it would only be three millimeters in depth, even though the ozone layer occupies roughly 15 kilometers of the stratosphere.

Even so, the ozone serves two important purposes. First, the ozone layer holds the lower-atmosphere (where weather and climate is governed) in place by warming the stratosphere. Without this heating, our climate would not support most forms of life.

Second (and more commonly known), it screens out dangerous UV radiation that has been linked to diseases such as skin cancer.

Depletion's effect

Ozone is obviously vital to life on earth, which makes its delicate nature (its thinness) of great concern when the words "ozone depletion" are mentioned.

Currently, most scientists agree that ozone depletion is continuing at a rate of 0.3 percent per year. While this may seem like a small amount, over several decades-if it were to persist-it could result in dramatic changes both in the earth's climate and in the risk of UV damage to plant and animal life. Currently, the ozone layer appears to thin substantially over the earth's poles during polar winters. This appears to be a worsening phenomenon, but the environmentalists that erroneously stated that there is an ozone hole

above President Bush's house in Maine were exaggerating.

Causes of depletion

Ozone is frequently destroyed and created. Ozone is created as a result of sunlight causing diatomic oxygen to split and join with other diatomic oxygen molecules.

Ozone may be destroyed by absorbing UV rays or by nitric oxide, nitric dioxide or chlorine. Nitric oxide and nitric dioxide are produced both by industry and by natural processes in the oceans and the soil.

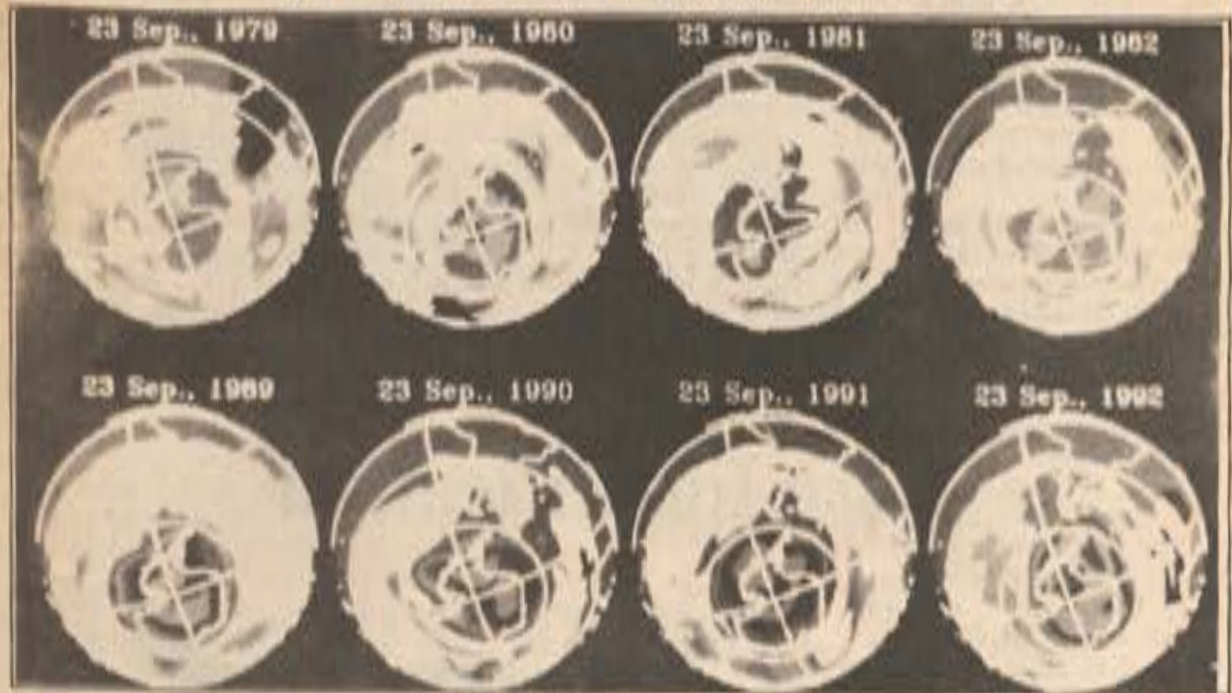
Most scientists think chlorine, however, has thrown the equilibrium of the ozone layer out of alignment. It is produced by chloro-floro-carbon (CFC) which has broken down in the atmosphere. CFCs are produced by most cooling systems, including air conditioners and refrigerators. CFCs are also spewed forth from spray cans and from the manufacture of plastic.

Seasonal changes

Changes in such things as atmospheric pressures and weather affect the seasonal ozone levels for specific areas. Using data from the World Meteorological Organization (WMO) for 30 to 35 degrees north latitude (approximately Daytona Beach), it is now established that high ozone levels result in the winter and spring, while lower levels persist in the summer and fall.

Risks

The ozone layer is responsible for absorbing harmful UV radiation



These images show the development of the "ozone hole" over Antarctica during the last 10 years.

from the 290 to 320 nanometer bandwidth (UV-B). Currently 80 percent of this radiation is absorbed. Incidentally, a 50 percent increase in exposure to UV-B results in a 100 percent increase in UV-B radiation damage to humans, plants, and animals. Similarly, a 50 percent decrease in ozone results in a 100 percent increase in the amount of UV-B reaching the surface.

In humans, UV-B causes sunburn, skin wrinkling, eye damage, and skin cancer (including melanoma).

Animals are less susceptible to damage than humans because of the animal's fur. Most scientists believe that stopping the release of CFCs into the atmosphere would allow the ozone levels to climb back to normal over time.

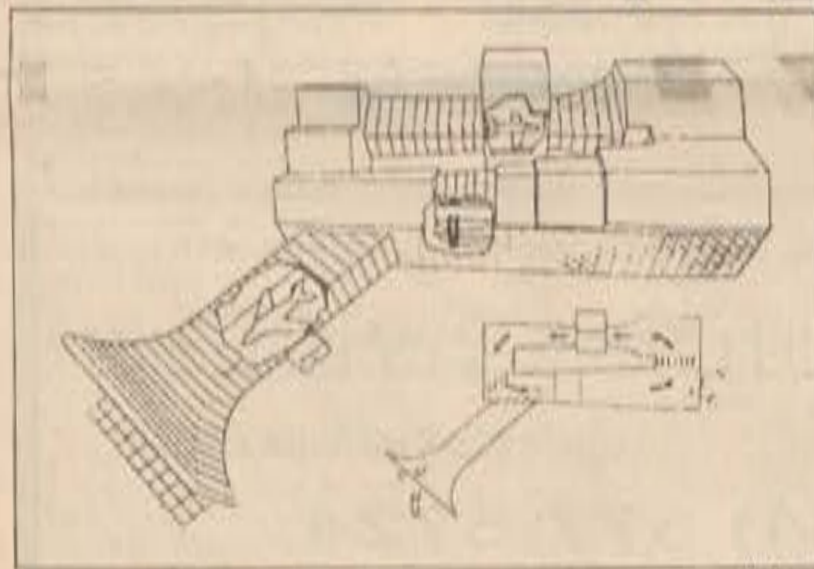
The future

According to the WMO the total amount of ozone in the atmosphere has decreased by about 3 percent. During that period, the yearly decrease in ozone would be equal to 0.1 percent. Recent data suggests

that level has tripled over the last decade. In another thirty years, the amount of ozone above Daytona Beach may fall by another 10 percent unless CFC emissions are reduced.

The 1987 Montreal protocol and subsequent worldwide agreements have attempted to limit CFC emissions, but Dr. Hamwey believes that an international commitment towards meeting the CFC reduction objectives can only improve the situation.

NASA makes progress in aeronautics



This graphic depicts the wind tunnel test sections at the world's largest wind tunnel at the Ames Research Center.

By Brian Gamage
Space Technology Reporter

Today, no aircraft, spacecraft or space launch or reentry vehicle is built or committed to flight until after its design and components have been thoroughly tested in wind tunnels.

Every modern aircraft and space rocket has made its maiden flight in a wind tunnel and they have been among the key tools which make American aircraft and aeronautical equipment the most desired in the most widely used in the world.

The National Aeronautics and

Space Administration (NASA) maintains the largest number and variety of wind tunnels ever operated by any single agency or company. NASA's 42 major wind tunnels vary in size from those large enough to test full-sized airplane to those with a test section only a few inches square where models as small as a match are tested.

Wind tunnels have come a long way in their technological development and their sophistication has kept pace with the needs of designers. The Wright brothers were the first to designed and use wind tunnels to develop the wing configura-

tions and control surfaces with which they achieved the first powered human flight early in this century.

In wind tunnels at NASA's Ames and Langley Research Centers, crucial reentry tests were performed in the 70s with the Space Shuttle. These tests simulated the severe heating from atmospheric friction that the space transportation system later had to withstand during its flights in the 80s.

Some of the current wind tunnels are designed for the study of wing and fuselage shapes. Other wind tunnels are devoted either to testing propulsion systems or aircraft performance at different speeds.

Air flow in a wind tunnel is produced and conditioned in several ways to simulate flight at the speeds, altitudes and temperatures that would be encountered by particular kinds of aircraft. Some tunnels specialize in accelerating air only to subsonic speeds which are slower than the speed of sound. Others reach transonic air speeds, supersonic speeds, and hypersonic speeds.

High winds are needed for testing proposed components for advanced research aircraft, such as the X-30, the U.S. National Aerospace Plane, which will lead to passenger vehicles able to fly in low earth orbit and land anywhere on Earth in four hours or less.

The largest wind tunnel in the free world is at NASA's Ames Research

Center. This subsonic tunnel, is over 1,400 feet long and 180 feet high. Air is driven through these test sections by six 15-bladed fans each having a diameter equal to the height of a four-story building.

The Ames facility opened in 1956, with three test sections: a transonic section that is 11 feet wide and 11 feet high, and two subsonic sections that measure nine feet by seven and eight feet by seven feet. In these sections using pressure and wall shape changes the air can be adjusted to simulate flying conditions at various altitudes.

George C. Marshall Space Flight Center's 14 by 14-inch Transonic Wind Facility got its name because it can conduct tests in three speed regimes. The Center's High Reynolds Number Wind Tunnel can produce wind speeds ranging from Mach 0.25 to Mach 3.5 in simulations that give results very closely resembling those of actual flight experience.

NASA's wind tunnels are a national technological resource and have provided vast knowledge that has contributed to the development and advancement of the nation's aviation industry, space program, economy and the national security.

Amid today's increasingly fierce international and technological competition, NASA's wind tunnels are crucial tools for helping the United States retain its global leadership in aviation and space flight.

Spinoffs continue to help improve lives

By Roland Houle
Editor in Chief

What do dental braces, scratch-resistant eye glasses and the Michigan Silverdome have in common? They are some of the many "spinoffs" of aeronautics and space research that affect our everyday lives.

A space spinoff is a technological development that was created for the aerospace industry that has been transferred to uses different from its original applications in the aerospace industry. NASA estimates that for each technological development from the aerospace industry, there are approximately 17 different spinoffs.

Dental braces contain an arch wire that needs to be changed periodically. In the past this wire was brittle and needed to be replaced often. Now, the wire is made of a new material called Nitinol, which is extremely elastic.

An alloy of nickel and titanium, Nitinol was developed for aerospace applications. Because of its ability to return to its original shape after bending, Nitinol is used for satellite antennas and other hardware. The antennas can then be compacted for launch and later expanded to full size once in orbit.

Scratch-resistant glasses are a space spinoff of a highly abrasion-resistant coating developed as a means of protecting plastic surfaces of aerospace equipment from the harsh environment.

The roof of Michigan's Silverdome is covered with a light, low cost, flexible material that was adapted from a special fabric used for space suits in the 60s.

Stars and Stripes, winner of the 1987 America's Cup, also used a NASA spinoff. Tiny grooves in the yacht's hull called "giblets" contributed to increased boat speed. Boeing Aircraft Company is now using this technology in its new jetliners to reduce air drag and improve fuel efficiency.

Some other spinoffs of aerospace technology are water recycling, advanced wheelchairs, laser heart surgery, shock absorbent sneakers, and reflective windows.

There are millions of other spinoffs from the aerospace industry that are used in manufacturing, medicine, athletics, transportation, agriculture and other areas. Together, they affect everyone's lives in some way, from the time you use your toothpaste in the morning until you use your remote control to shut off the television when you go to bed.

Members of the Association of Space Explorers meet in U.S. for first time

By Jon Osterholm
Special to The Avion

LEWISBURG, W.Va. — For the first time in the eight-year history of the Association of Space Explorers (ASE), members of the international organization met in the United States for their annual conference.

Though some may not be recognized by name, many of the astronauts or cosmonauts who attended the conference are renowned for various reasons. Among the most notable cosmonauts were Valentina Tereshkova, who was the first female to go into orbit, and Sergei Krikalev, who spent 15 months in space during two missions. Pete Conrad and Scott Carpenter, who flew during the United States' earliest space traveling years attended the conference, as did medical specialists Owen Garriott, who spent two months on board Skylab in the 70s.

The ASE met in both Washington D.C., and at the lavish and historical

Greenbrier Resort, located in White Sulphur Springs, West Virginia. Former space shuttle astronaut Jon McBride, who resides in Lewisburg, hosted the conference. McBride went into space aboard the Space Shuttle *Challenger* in 1984.

Representatives from 19 countries attended the ASE conference, which was held during the last week in August.

Space: The good, the bad, the ugly

During their week-long meeting, members of ASE were busy visiting local communities to talk about their experiences and to answer audience questions. During a presentation at the West Virginia School of Osteopathic Medicine in Lewisburg, six former and practicing space explorers discussed everything from physical illnesses and medical experiments in space to the humbling and thought-provoking experience of space travel.

Space shuttle astronaut Charles Walker, who was a payload specialist on two *Discovery* flights and one

Atlantis flight, talked for some time about the experience of space travel after a young girl in the audience asked the question, "What does it feel like to be in space?"

With a look of fondness, Walker recalled how he was "humbled" by the view of the Earth from 200 miles in space. The engineer used the terms "beauty" and "freedom" while talking about his experience in general terms.

He suggested that every space traveler has a strong emotional reaction to space flight which influences their philosophical outlook for the rest of their lives. Walker, who now works for McDonnell-Douglas in Washington, D.C., said that his perspective of Earth from space made him realize that "we are all on this thing together," and that we all need to work together to preserve "space-ship Mother Earth."

The beauty of space is partially checked by the effect of weightlessness on the human body. Millie Hughes-Fulford, another shuttle

astronaut and former Embry-Riddle trustee, talked about Space Adaptation Syndrome, or SAS, which she experienced to the fullest extent on her mission. The illness, which tends to cease after an hour in space, is measured on a 0 to 20 scale. Fulford said she reached the higher end of the scale, which involves vomiting while weightless.

Fulford also said that, in space, white blood cells do not multiply, the body loses electrolytes and muscles lose much of their strength. Bone is also lost in space, where there is found a high level of calcium in urine.

The former Soviet program

Sergei Krikalev, who spoke through an interpreter, said his "greatest worry" was that there would be bloodshed during the attempted Soviet coup in August 1991, which began as he was eating breakfast aboard the *Sukoy* space station one morning. He did not return to Earth for some time after the end of Gorbachev's rule and the

segmentation of the U.S.S.R. He had been in space for ten months when he finally returned in March.

The independent states that were born from the break up of the Soviet Union have kept the space program going, Krikalev said, though their center is in Kazakhstan (formerly in the Western Soviet Union). He mentioned that the program has not been severely hurt, having had joint missions with the Germans and French since the collapse of the U.S.S.R.

Real and imagined space travel

Many of the astronauts gave their opinions of what the future holds for space travel and the realities of space travel. Two of the explorers gave their views of our knowledge versus our ability.

Owen Garriott said that we have the knowledge to do things in space that we have yet to develop the infrastructures to support. He said that we could even go to Mars based on what we have put on paper, not on what we can build. With all that in existence, many years will pass

before humans develop machinery to match the ability of the hand and the human brain, according to Walker. The two are still the "best mechanisms for solving difficult problems," Walker stated.

Jon McBride said that the central mission of the ASE is to encourage internationally cooperative, peaceful space exploration. The organization also works to enhance education and strengthen environmental stewardship. Much of this year's meetings was focused on the group's desire for an unmanned mission to Mars that would involve aerospace interests from several countries.

The Association of Space Explorers has less than 300 members.

He suggested...every space traveler has a strong emotional reaction to space flight which influences their...outlook for the rest of their lives.

U.S. Army in the process of updating the Apache helicopter

By Denis Biscobing
Aeronautics Writer

The U.S. Army is now in the process of updating the AH-64 Apache attack helicopter.

The AH-64D, nicknamed the Longbow, is now in the flight testing segment of its 70-month development program.

As of September First, almost forty hours of the planned 2,500 hours of testing had been completed.

The Longbow is the joint effort of the Army, McDonnell Douglas, Martin Marietta and Westinghouse.

Martin Marietta and Westinghouse are in charge of the Longbow Fire Control Radar, and the radar frequency fire-and-forget Hellfire missile system.

The first full-production Longbow is scheduled for mid-1996.

but the Army plans to update the current fleet of 811 aircraft.

McDonnell Douglas plans to remanufacture 60 aircraft per year until all of the rotorcraft have been modernized.

The plan is to reconfigure 227 of the current fleet into AH-60D Longbows, and the remaining 584 into AH-64C's.

The AH-64C is practically identical to the AH-64D, except for the lack of the lack of the Longbow radar and the 701C engine system.

The Apache established itself as a weapons platform in Operation Desert Storm, where 288 aircraft were deployed in 15 battalions.

The Apaches maintained a battle-ready rate of 86 percent and flew more than 18,700 flight hours.

Its duties included deep attack, long range surveillance, armed

recon, and security missions.

The "remodeled" AH-64C is predicted to be 7.5 times more effective than the A-model, and the D has been predicted to be 16 times more effective.

This superiority is due to the updated Westinghouse Longbow digitized electronics.

The new Apache will be able to send and receive targeting information by data link between command and control centers and other aircraft.

This will allow better coordinated attacks on multiple targets.

The second prototype AH-64D will begin flight testing in November, while the Longbow radar will be flight tested in mid-1993.

The updating of the proven A-model into the C and D models will prepare the Apache for its flight into the 21st Century.



Compared to the old model shown above, the new Longbow will feature an improved powerplant, updated digitalized electronics, and a Hellfire missile system.

Early hurdles overcome by upstart airlines

By Michael Stellwag
Aeronautics Writer

Nearly every new airline faces a far bigger hurdle than finding planes or people to operate them: lack of capital. In an industry where even the largest carriers have difficulty raising money, it's next to impossible for start-ups. However, Family Airlines contends that its three-month-old private offering "has gone very well," and that the company has enough capital to last until it begins service and receives ticket revenue.

There are no tax breaks and few economic incentives for starting an airline, and little confidence on Wall Street that there's enough need for new ones. Timothy Petty, an analyst with Alliance Capital Management, sums up the financial community's point of view: "It's just bad investing as I see it. I wouldn't give start-ups much of a chance."

Perhaps surprisingly, the most difficult airline to start is one that is business-oriented — "one that requires the high-priced businessman to survive," says Phil Roberts, who runs Roberts & Associates, a transportation management consulting firm in California.

That's because business fliers pick an airline based on how conveniently the flights are timed and what frequent-flyer programs they belong to. Small start-up airlines can't compete on that score.

But they can often provide service that big carriers shun as unprofitable. Reno Air started flying in July, with only two MD-80s in its fleet, ferrying passengers twice daily between Reno, Nev., and Los Angeles and Reno and Seattle. It has since expanded flights to San Diego and Portland, Ore.

"The niche we see is Reno as a destination because of its attractiveness as a gaming center," said Jeffrey Erickson, the former president of now-defunct Midway Airlines who now runs Reno Air. "It's a city where over the years

Airlines dispute the USAir-British Airways agreement

By Michael Stellwag
Aeronautics Writer

Top executives of major U.S. airlines said the U.S. should demand talks on an international "open-skies" agreement before it permits British Airways (BA) to acquire part of USAir.

Supporting the idea at a Washington press conference were: Stephen Wolf, Chairman and Chief Executive of UAL Corp.'s United Airlines Inc.; Robert Crandall, Chairman, CEO of AMR Corp.'s American Airlines Inc.; Ronald Allen, chairman, CEO of Delta Air Lines.

Wolf said BA's acquisition of effective control of USAir "should not be approved without the U.K. and EC providing reciprocal competitive opportunities for U.S. carriers."

"We cannot accept a situation in which British Airways is allowed to gain unlimited access to the entire

U.S. market, while we are denied a corresponding ability abroad," Wolf said. "To allow this would be the worst mistake our government has ever made in international air transportation."

Wolf said he had made his case to British Transportation Secretary John MacGregor as well as to U.S. Transportation Secretary Andrew Card and asked, in conjunction with other airline executives, to meet with President Bush to discuss their concerns about the transaction. The group has also held discussions with representatives of Democratic presidential candidate Bill Clinton.

Crandall noted that the U.S.-U.K. air transport agreement is one of the most restrictive in the world because it restricts flights by U.S. carriers between the U.S. and U.K. to service between a very few cities. The British government also exercises unilateral control over all fares on U.S.-U.K. flights, Crandall said.

see Open Skies, page B6

see Upstart, page B6

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Black Crowes play UCF

By Douglas O. Fischer
Diversions writer

Def American recording artists, the Black Crowes, performed on September 29, 1992 before a packed house at the UCF Arena. Comprised of Chris Robinson on vocals, Rich Robinson on guitar, Steve Gorman on drums, Johnny Colt on bass, Marc Ford on guitar, and Ed Harsh on keys, the Black Crowes are currently in the midst of their *High as the Moon* tour.

The scenic hour and a half drive through back roads leading nowhere was worth the trip, if nothing else just to see what a big college looks like. UCF is big, really big. The campus even has road directory signs. They were most helpful in finding the Arena, which is something all college campus should have.

People were still showing up after the opening act had finished. These late arrivals were thirsty and proceeded to the one and only beer line which was 45 minutes long. This created a jam at one of two entry ways into the arena.

There were plenty of security personnel inside and out. Carrying a camera caused the carrier to be detained until a proper photo pass was produced. Even obvious display of passes didn't stop the questioning.

After the throw rugs on stage were vacuumed, the Crowes entered the arena. The house lights went out, the smoke machine started filling the stage with fog. Then the stage lights came on, and show began. After an intricate intro the curtain of lights in front of the stage opened and the Black Crowes, started out with "Sting Me." An excellent song off their new album *The Southern Harmony and Musical Companion*. An album that will be platinum even if it only sell half as much as their debut *Shake your money maker*. This debut put the Black Crowes from clubs to arenas in what seems almost no time at all.

A few songs later and after a professional beer drinking photographer fell from his perch, the Black Crowes started what was to be a 25 minute set of psychedelic blues laced rock 'n' roll jam session. This grooving sound, where Rich and

Marc enhanced, not competed with each other. This combined with lights that were strung all around the stage, made for a pleasurable experience for both sight and sound receptors. The crowd swayed in every direction during this jam. The crowd acted as if the Black Crowes had invited them to a personal party - that was the atmosphere created.

The band received a very warm and well deserved applause when they finished. The crowd went wild when Chris said, "Thanks for letting us jam for you." It really felt like you were at one of the band members' houses attending an invitation only jam session.

The Black Crowes then played a mix from both their albums, but saved "She Talks to Angels," "Remedy," and "Jealous" for their encore performance, a very good encore performance at that. The show was well worth the drive.

The Southern Harmony and Musical Companion will be liked by both those who liked *Shake your Money Maker*, and by those who buy it for the songs played on the radio or MTV.

The Black Crowes demonstrate



Rich Robinson adds a touch of R&B with his Gibson Les Paul guitar, while rocking the crowd at the UCF arena.

that it is possible for a band to write their own material, record it, and put on a killer show.

The Black Crowes are an

American Band that sound like themselves not some falling rocks. They are worth checking out live or on tape.

So Alone is a tribute to Johnny Thunders' music

By Rick Arkwright
Diversions Writer

Though I hate to speak poorly of the dead, this reissue of Johnny Thunders, released by Warner Bros., leaves me little choice in the matter.

Thunders, the guitarist for the punk outfit The New York Dolls, was compared to Keith Richards, both for his gritty, low budget guitar work and his legendary excessive rock 'n' roll lifestyle.

Thunders, unlike Richards, didn't survive his wild child days and succumbed to a drug overdose in April.

I assume that his untimely demise is what prompted this reissue of mostly inferior songs that hardly provide the coda that this talented musician deserved.

Thunders did his best work on the road, playing in small venues to dedicated fans helped him to flesh out his songs which on *So Alone* so often seem to be merely demo sketches that only suggest the power that they'd generate in a live setting.

On *So Alone*, Thunders explores many classic rock riffs, from the big city cool of "You Can't Put Your Arms 'Round A Memory" with it's

Lou Reed like spoken vocals and gritty guitar lick that has influenced folks as divergent as John Mellencamp and The Ramones, to the barrel house piano and "Mony Mony" driven guitar that screams of the 60's.

Unfortunately, much of *So Alone* sounds like Thunders is using every tried and true riff from that era without adding anything new or personal to any of them.

A song such as "London Boy," with it's terribly second rate rip off of The Sex Pistols, makes Thunders sound frustrated, bitter and inept all at the same time.

Occasionally, the sound quality and musical content improve enough to give a glimpse of what Thunders is capable of. On "Untouchable" Thunders struts a bit and there's excellent sax work throughout. On "Subway Train" Thunders rocks out with a guitar riff for the ages and a confident New York swagger throughout.

So Alone is a terribly uneven effort. For the most part the production values are non-existent and could easily be equaled by any garage band with access to a Foxtex or Tascam 4 track unit. Thunders' wispy thin and strained pipes high-

light the fact that he really needed a vocalist, much like an Ace Frehley solo effort. Yet, there is an urgency to Thunders' songs that hint of his abilities. It's doubtful that this album would've seen the light of day if Thunders were still with us, and one can only guess what he might have been up to in the future.

Ironically, Thunders' former band mate David Johansen, a.k.a. Buster Poindexter, has gone on with his new persona as lounge lizard supreme, to insure himself steady work, while Thunders who stayed true to his muse is gone. Go figure. GRADE: D+

Saigon Kick releases The Lizard

By Douglas O. Fischer
Diversions Writer

For their second album on Atlantic Records, this South Florida band shows they have what it takes to climb the charts. Since *The Lizards* release the Ballad "Love is on the Way" has been getting substantial airplay - first because of the overwhelming number of request and secondly due to it being an excellent song. Before you play this album be warned - It will grow on you upon repeated listenings. Yes it's that good.

The promo sticker on the outside reads "It's more than just an attitude" includes "Hostile Youth," "All I want, 'love is on the way" and 13 more intense tracks to play loud.

The sticker is not a promo lie. It is an indicator of the good music contained within.

The Lizard was produced by Saigon Kick guitarist Jason Bieler, who also wrote all the songs, some in conjunction with other band

members.

The first a step to making the album was to go to a place where they could get some work done. LA and Home were passed over for Stockholm.

For anybody who has been to there they know that Rock and Roll musicians are treated as artists, not scumbags.

This makes it that much easier to record an album. This combined with the bands cohesiveness yielded a finished album in 13 days.

The Lizard's songs cover a wide range of topics from politics to anger. "Hostile Youth" is an excellent Metal Rocker about rebellion, which is getting some air play.

"Freedom" is another burner and is about our worlds' lack of freedom.

The Lizard's songs cover a wide range of topics from politics to anger.

"God of 42nd Street" is a good acoustical jam about crudest street in the world forty deuce in New York City. "My dog," is a hilarious Punk Rocker, too bad it's only a minute long.

"Love is on the way," is the acoustic ballad which is propelling the lizard up the charts. This song can be heard at least once a day on all of the central Florida Rock Station's. It is a big time request song.

"Body Bags" is a metal protest song - "Look into the eyes of the government liars, listen to the sound of the Guilty Choir." Quite an appropriate song to listen to before you vote. "Miss Jones," is almost Pop Metal, but its not preprogrammed its Saigon Kick playing another toe tapper.

"Channel," finishes up a most excellent album. "Channel" is an acoustic love song which has terrific vocal harmonies. The simplicity of this song and the way it sounds could have been influenced by only one band, The Beatles.



Saigon Kick's second release under the Atlantic record label is entitled *The Lizard*.

Boo Radleys and Swallow go back to the alternative basics

By Fred Block
Diversions Writer

It's been a tiresome schoolday, and you're flipping through the channels with your buddies. You stop at MTV to see if they are playing you're favorite Marky Mark



Blow is the first album released by Swallow, a fresh young alternative band from England.

video. Instead, some annoying Buzz Clip thing comes on. "What is this crap," you wonder while you quickly change the channel to something that's not so weird.

"Hey wait a minute man - turn that back," yells the weird-lookin' kid sitting next to you. You know,

the one with the Soundgarden T-shirt on. The one who doesn't look like Johnny Aviation.

For a split second, your mind opens up. Instead of telling him to get lost, you ask him, "What is it with this alternative junk and what's the big deal with Seattle and why are all of these bands so ugly?"

The kid just replies, "Open your ears, man. It's just better music." Everyone laughs at you.

"Hmmm," you think to yourself, "maybe I should listen to that stuff - everyone else is."

So you flip back to the Buzz Clip as quickly as possible. Immediately, everyone starts to sing and tap their feet to the music.

You don't really have any idea of what it is about, but boy does it feel good to be back in the safety of the crowd again. Now you are "alternative." End of story.

To tell you the truth, I'd really rather not use the word "alternative." People like the kid I just described have ruined it.

Fortunately though, there are still bands that are truly alternatives to the mainstream bands that don't follow the traditions so much.

Bands that care about the music more than the money. I'd like to share with you a couple of bands like this.

The Boo Radleys and their album, *Everything's Alright Forever*, are a fresh concoction of contemporary sounds. The sound has an interesting

way of blending several musical styles into workable songs.

For example, the song "I Feel Nothing" combines swirling and washing distortion sound, acoustic guitar, and fuzz bass, but not necessarily all at the same time.

"Room at the Top" is similar in that its slow tempo distortion can send you off into a pretty deep daze if you let it.

The vocals, however, are not what you'd expect from this sort of band. Instead of yelling and screaming, you can hear soothing, melodic voices. A nice touch that is very fitting.

Most of the CD, aside from the rocker "Does This Hurt?", is pretty slow. Not boring in the slightest, just slow. This album is great for pre-slumber listening. Congratulations to the Boo Radleys for an excellent CD.

Next, a band named Swallow. Like The Boo Radleys, they come from England. Aside from being an extremely young band (less than a year old), Swallow is adept at creating rather trippy, ethereal music.

On their album *Blow* you can hear fragile vocals and fuzzy guitars somewhat reminiscent of bands like Lush or The Cocteau Twins.

Although they have not really created an entirely new sound, Swallow has taken its influences a bit further by stretching ideas and magnifying certain musical styles.

An example is their interesting



Boo Radleys' *Everything's Alright Forever* is alternative music as it is supposed to be, but at a slower pace.

use of feedback and delay on the song "Halo."

Most of the songs are slower ones and are excellent for just plain relaxing. If you are familiar with Lush (all of you Lollapalozers out there) and enjoy their music, you will most likely find "Blow" to be an excellent CD.

Napalm Death, Carcass, and Cathedral play in Orlando

By Douglas O. Fischer
Diversions Writer

Earache Records' British death metal recording artists Napalm Death, Cathedral, and Carcass are currently touring the U.S. on their "Campaign for Musical Destruction" tour. These guys are keeping the mosh pits filled everywhere they go.

If you are a death metal fan, you most likely own a Napalm Death album, considering that they are the second largest seller of death metal music.

Recently these bands did a show in central Florida. All who attended did some serious moshing.

Cathedral, who debuted in 1991 with *Forest of Equilibrium*, hit the stage first.

Their music screams of Black Sabbath influence. The first three songs on the debut are slow and eerie; "Soul Sacrifice" picks up the beat to full moshing speed.

This album has a hope-for-mankind message lurking within the lyrics.

Next up was Carcass. This is an appropriate name for the forensic pathologists whose new album *Tools of the Trade*, is like a medical text put to music.

The title song is a listing of surgical instruments set to the full speed beat of death metal.

The other three songs on this rather short-but-worthy-of-the-money compact disk are listings of what one might find during an autopsy - of course.

Their music was dangerously fast, but that was exactly what the crowd in the mosh pit wanted.

They wanted super fast, slam-your-neighbor-into-the-amplifiers type music. And they got it. All at warp speed.

The final act was Napalm Death, and once again there was some serious slamming in the pit.

Their new album is titled *Utopia Banished*. If you liked their previous releases, you will like this latest collection of 15 songs that address various social problems.

The overall message is on the compact disk back cover, "Change your life," only you can do it, no-one else is going to do it for you.

Should you be at a party and put on Napalm Death, the room will either clear out or turn into Slam Central U.S.A. In either event, remember to take the necessary precautions.

The major response of the attendees after the show was "Awesome." The rest of the people were too busy moshing and slamming on their way to their cars to be bothered by this reporter who failed to notice any blood stains anyplace around or inside the central Florida venue.

Three death metal bands, three great albums, all leads to one super slamming live event that is sure to give death metal fans one slamming night to remember.

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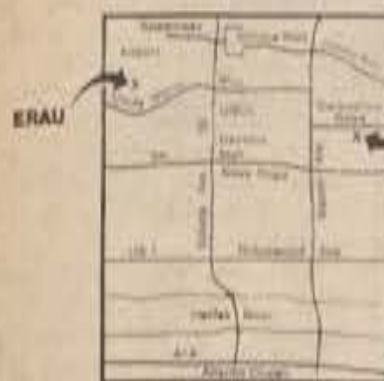
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ALL WINTER LONG!

Surf Club

By JR Brotherton
Member

Welcome surfers! The fall 1992 season is under way and is already off to a good start.

The first inter-club contest was held one-third of a mile south of the Blackbeard's access ramp on Sunday October 4, and decided who will compete in the SSA contest on the weekend of October 17. All members were welcome to compete in the inter-club contest (I can't say are welcome to compete because this article was written before the contest and printed in the paper after the contest).

Anyone who is interested in joining the surfing club can attend the meetings usually on Wednesday at 7:00 in room B506. If you don't know how to surf, we will give you the opportunity to try and also help you learn. If you are interested in buying a new board, contact Bob Taylor at 274-2186, he is currently working with a local surf shop on a discounted group order, and the more boards we order the bigger the discount we will get.

If you are interested in trading a board or buying a used board, contact Lee Major at 274-5503 or Sean Martin at 760-4403, and they will get your name on a trade list.

This semester's officers are as follows:

- President - Lee Majors
- Vice President - Sean "continuously sick" Martin
- Treasurer - Sean Washington
- Secretary - J.R. Brotherton

ΣX

By Brian Kilday
Member

Yes the article is in, so leave me alone! Congratulations to the 27 newly installed pledges, may your journey be both enlightening and fulfilling. Hoorah! Football opened with a 27-0 victory over Army ROTC.

Canoe trip anyone? The retreat is still pending, however, leading indicators suggest it will be sometime this month. Health report: Frank, by the time this article is published you

Over the weekend of September 27, we had a kicking party at Professor Vic Morris house in New Smyrna Beach.

While surfing during the first part of the day, we had two people wounded in action. David Rohn received minor injuries on his bodyboard when attempted an east coast barrel roll. Becky Lussier and Jen Larson treated him at the scene and he was fine afterwards.

Jake Krauklis, the brother of Jonas Krauklis, originally from Orlando, was attacked by a small shark. After telling his brother he thought he had been bitten by something, he lifted his foot from the water and saw criss-cross lacerations in a semi-circular type pattern.

Jake was taken to the local hospital, released, given a trophy from the club, and went home. Shark attacks are common along the east coast of Florida according to a recent issue of Surfer magazine. The article went on to say the attacks off Florida are usually by small sand sharks and rarely fatal.

Professor Morris said most likely there was a small fish swimming next to his foot when the accident happened. Nevertheless, if you are surfing and see a shark, the best action is to leave the water for a while.

For details on future events, check the box in the Student Center located by the SGA office. If you didn't pay your dues at the meeting last night, be sure to bring them on Sunday. Sean Martin wants to get the inter-club contest started around 8:00 am, so don't sleep in.

had better have woken up from your nap! To Chuck, perhaps Chip could send all of us a postcard!

J.G. totalled another car last week, bringing his score to 0.75/semester.

May we have a keg count, please? Of course. As of September 26, the consumption average is 0.55 kegs/day. This average will improve, stay tuned.

Finally, congratulations to Rich Schooley, he will be celebrating his wedding nuptials this Saturday to Carmen. Best wishes Rich.

AFROTC

By Gary Santoro
Member

The 1992 Fall semester is in full swing at Air Force R.O.T.C., Detachment 157.

The recent downsizing of the cadet corps from a cadet wing to a group has had little effect on the tempo of activities.

Currently at Embry-Riddle there are over 140 cadets enrolled in Air Force R.O.T.C.

The past several weeks have been extremely busy here at Embry-Riddle. On Tuesday morning, September 29, the corps held a formal flag raising and military parade around the school campus.

The Special Operations unit performed during the Daytona Beach

Firemen's parade on Saturday, October 3.

Arnold Air Society held a 24 hour Vigil on October 3, to honor American POW/MIA's and to commemorate those that didn't return.

On September 25, Arnold Air Society also showed their mettle in an exciting basketball game against the detachment Cadre.

The game, which was held at DBCC, was finally won by Arnold Air after going into double overtime.

Despite Government defense cutbacks, there is still a need for motivated Air Force Officers. Limited scholarships are also available.

If you are interested in Air Force R.O.T.C. and would like more information please stop by the detachment or contact Captain McNaughton at extension 6878.

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 copy.
- For more information stop by or call the Avion office at (904) 226-6049.

FPWA

By Michele McNett
Vice President

The car wash last weekend was rained out, and will be rescheduled. But, breakfast at Denny's was cool, and a big thanks to those who did show up for the car wash.

Congrats to Carrie Skora who will be club secretary. I am going to Homestead this Friday (after classes of course) and will be transporting donations of clothes, food or whatever to the victims of Andrew down there.

Anyone needing or wanting to bum a ride to Miami or thereabouts this weekend, just let me know: 253-1678.

Also, on Key Largo there is a sort

of homeless shelter for cats. There are lots of them and they all need good homes. They are free; won't you please give a cute little malnourished kitten a good home?

I will bring one back for you, if you let me know.

Sweetest day is October 17. We will be selling "Sweets for the sweet" that Friday, October 16, in the SC, at the Flight Deck. We will be putting those together in the meeting the Tuesday before and blowing up the balloons on Thursday night.

If you haven't been to any of the meetings please come, it's Never to late to join.

Meetings are always on Tuesday at 6:30 pm in room A-113.

AAS

By Nicole L. Malloy
Public Affairs Officer

What better way to raise money than doing something you love.

That is what Arnold Air Society asked themselves a few weeks ago. So the cadets of AAS challenged the AFROTC instructors and staff (Cadre) to a basketball game.

The game served as a fundraiser; because everyone was charged a dollar to watch the game. By the end of the game, everyone knew they had gotten more than their money's worth.

This spectacular event was held at the DBCC gym on Friday, September 25th.

Tensions grew as game-time drew near. Finally it was time for the tip off. Sgt. Molinari took the tip off with almost no challenge from the cadets, however the ball ended up in Cadet Arnald Rodriguez's hands and shortly thereafter in the hoop for the first score of the night.

The Cadre took over and maintained a four to ten point lead throughout the first half, ending with 34 Cadre to 29 cadets.

The second half was a little more intense. The cadets came on strong and closed the gap from the first half.

Cadre and cadets were putting full effort into the challenge. As the end drew near, the score was 62 to 60, Cadre - cadets. With only a few seconds left, the cadets attempted to tie the score.

The first shot bounced off the rim,

but the cadets got the rebound. The second shot was also rejected, again the cadets got the rebound. There was time left for only one more shot.

As the buzzer sounded, the ball slid into the hoop and through the net, tying the game 62 to 62.

The first overtime was as intense as the second half. For every shot the cadets made, the Cadre and scored.

As the five minutes drew to a close, the score was 68 to 68. The cadets had a chance to win the game. With only a few seconds left, the ball was in the air, headed for the hoop, but the shot came up short and the ball bounced off the rim.

The second overtime would be the last. The Cadre got the first two points, but the cadets matched that and went on for a few more.

A cadet made one shot from the foul line, making sure there would not be another tie. As the game progressed, it was easy to see the cadets were on fire and the Cadre were losing steam. The final score was 79 to 72, cadets.

The crowd roared in triumph (the stands were mostly filled with cadets).

The teams shook hands, congratulating each other on a well-played game, and slowly drifted out the doors.

The conversation turned to thoughts of a rematch, possibly at the end of October or early November. Whenever the rematch is, you definitely do not want to miss it!

Scuba Club

By Bryce Buzzard
President

On September 30, 1992, the Embry-Riddle Scuba Club held general elections for all of the club officer positions.

You can meet all of the new officers tonight a 7:30 in room E613, as tonight is our next general meeting.

The results of the elections were as follows: President - Bryce Buzzard, Vice President - Timothy J. Mau, Secretary - Dave Hodgus, Treasurer - Bruce McPherson,

Public Relations Officers - Alicia Bozwell, Anwar El-Yafi, Robert Metzger, and Mark Vallon.

All former members, new members, and anyone who is interested in diving this semester should attend tonight's meeting. We will be introducing the new officers, discussing future dive trips as well as signing up people for new classes.

I look forward to seeing a classroom full of people tonight! We have many new officers with many new ideas, and the sooner we can get things going the better! See you tonight!

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Open Skies

(continued from page B2)

While U.S. air carrier rights are limited in the U.K. and Europe, a British Airways and USAir combination would create almost unbeatable competition, the executives argued.

"Just by combining the existing schedules of BA and USAir, you get an entity that would provide single-carrier service to more than 12,000 markets spanning much of the globe - from the U.S. to the U.K., Europe, Africa, the Middle East and Asia - at a time when U.S. carriers enjoy access to a mere third of those markets," Crandall said.

Crandall estimated the BA-USAir match would cost U.S. carriers "hundreds of millions of dollars in revenue, something we can ill afford, to say the least."

"We are calling on our government to demand no less than total and effective liberalization of U.S.-U.K. aviation relationship as a precondition for the approval of any significant investment in USAir by British Airways," said Delta's Allen.

A comprehensive Open Skies agreement has been an idea occasionally supported by the U.S. since the end of World War II, but objections by the U.K. and other European nations have always squelched the idea.

The Executives also indicated that while U.S. Transportation Secretary Card seems to be listening to their ideas, he hasn't shown clear signs of doing anything about it. The U.K.'s MacGregor, meanwhile, seems opposed to permitting U.S. carriers unlimited access in the U.K.

"Based on what British Transport Secretary John MacGregor had to say on his visit here last week, we have serious doubts as to whether the British government has the desire, much less the willingness, to open its aviation market to U.S. carriers," said Delta's Allen.

Upstart

(continued from page B2)

service has slipped and air fares have edged up." Reno Air got its financial start with a \$6 million initial public offering earlier this year.

Employees of Kiwi Airlines had to put up the money themselves to get their carrier up and running. Named for a flightless bird, the Newark, N.J., airline has attracted employees who were grounded because the other airlines they worked for entered bankruptcy, shut down or had layoffs. Pilots have invested \$50,000 apiece, while other

workers put up less. Some invested their time, such as 43 former Eastern employees who last summer visited 300 Atlanta travel agencies to spread the word about Kiwi.

Kiwi, which began service last week, is working hard to "fly under radar," its executives say, by providing flights that don't compete head-to-head with larger airlines that might feel compelled to under price them. "We've deliberately structured Kiwi routes to stay out of the way of the major airlines," said Bob Iverson, a former Pan Am pilot who is Kiwi's chief executive. "We don't undercut. Whatever their bottom price is, that's ours."

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10 speed mountain bike. Only used three or four times, needs new gear changing case and minor adjustments, bought for \$150 last spring, will sell for \$80. Call John R. at 251-6065.

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CJ Only you can make it long and EZ. JG

GG Yes! Really! BBHM

JEN Well, we're back again. I missed you. I can't wait until Christmas. Bahamas! ERIC

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Attention: those interested in becoming a member of the nation's largest fraternity, Tau Kappa Epsilon and being a charter member of a chapter here at Riddle, contact Lee 274-2701 or attend organizational meeting on Oct. 22, 7 pm in Spruance Hall room 4.

Learn to fly or earn a new rating or certificate. Highest quality instruction. Private, instrument, commercial, manuals, and rental checkout. Call David at 760-4801.

Campaign volunteers needed! Experience the political process and add it to your resume! Call David at 756-5760.

Notices

Students have hands-on opportunities

If you are a sophomore, junior, or senior studying computer science, engineering, physics, environmental and life science, mathematics or physical science, the Science and Engineering Research Semester, SERS, offers you the unique opportunity to do hands-on research with some of the nation's top scientist at one of seven national research laboratories during the academic year.

To be eligible for participation in SERS, students must have completed the sophomore year at an accredited U.S. community college or a four-year college or university. Applicants must be U.S. citizens or permanent resident aliens interested in pursuing a degree in computer science, engineering, environmental or life sciences, mathematics, or physical sciences. A limited number of appointments are also available within six months after graduation

for students not enrolled in graduate school.

Guidelines suggest an overall grade point average of 3.0 or higher, based on A = 4.0.

For more information on the SERS program contact: Science and Engineering Research Semester, 901 D Street, SW, Suite 201 A; Washington, DC 20024 (202) 488-2426.

The application deadline for the Spring semester is October 20. The 1993 Fall term deadline is March 15, 1993.

Graduate deadline approaching

All students anticipating Degree Completion by December 15, 1992 must formally apply at the Office of Records and Registration. An application for ceremony attendance is also required and there is a \$40 charge should you choose to attend

the ceremony. Applications will be accepted through the DEADLINE date of October 9, 1992.

Applications are also being accepted for those anticipating April '93 degree completion. Come to the Office of Records and Registration and fill out an application to receive a Preliminary Graduation Evaluation. We will try to have one done and mailed to your box before Advanced Registration for Spring.

Academic team to be selected

USA Today, in cooperation with four higher education associations, is beginning its annual search for the nation's best college students. Sixty of them will be named to our 1993 All USA Academic Team.

The recognition, however, will be more than equal. The students selected to our first, second and third teams will be featured in a special

section of our newspaper, planned for February 5. The 20 first-team members will be invited to receive their awards at a ceremony in Washington, D.C. Each of the first team members will receive a \$2,500 cash award.

Any full-time undergraduate is eligible. Each nomination must be signed by a faculty member familiar with the student's work and an administrator.

Criteria for the team were developed in consultation with our co-sponsors, the National Association of Independent Colleges and Universities (NAICU), the National Association of State Universities and Land-Grant Colleges (NASULGC), the American Association of Colleges for Teacher Education (AACTE) and the Council for Advancement and Support Education (CASE).

Winners will be selected by a panel of educators, chosen in cooperation with our co-sponsors.

The criteria are designed to find students who excel not only in scholarship but in leadership roles on and off campus.

The key element, to be given most weight by the judges, will be a student's outstanding original academic or intellectual product. The judges will be influenced by the student's ability to describe that outstanding endeavor in his/her own words. They will not read an author's work, see an artist's painting or hear a composer's music. They will rely solely on the student's ability to describe the effort in writing, supplemented by recommendations from the nominating professor and up to three other persons of the nominee's choice. Please call Carol Skalski at (703) 276-5890 if you have any questions.

All entries must be postmarked by November 30, 1992.

New MA111 study guide released

A required course for at least half the students here at ERAU has been, is right now, or will be Aviation I:

MA 111. This course is not always the easiest, but its background is important. MA 111 is taught freshman year in order to set a firm algebraic foundation; which will be necessary for the remainder of your aviation degree. Luckily, this semester students won't have to struggle as much with MA 111, thanks to the release of a helpful course study guide.

College mathematics for Aviation I: MA 111 is a new study guide by Dr. Siva, Ph.D., University of Texas, and Dr. Hewage, Ph.D., Rowling Green State, both veteran course professors. It is their finding that students struggle with the course because of fear to ask questions and/or confused of what should be read from the text. This guide will ease those problems with simple explanations, relevant examples and helpful exercises. Students will have a better understanding of all text material and insight on problems for easier question asking. This guide is also a great help for tutors and as a test guide for your next exam. The course is required, but you don't have to struggle.

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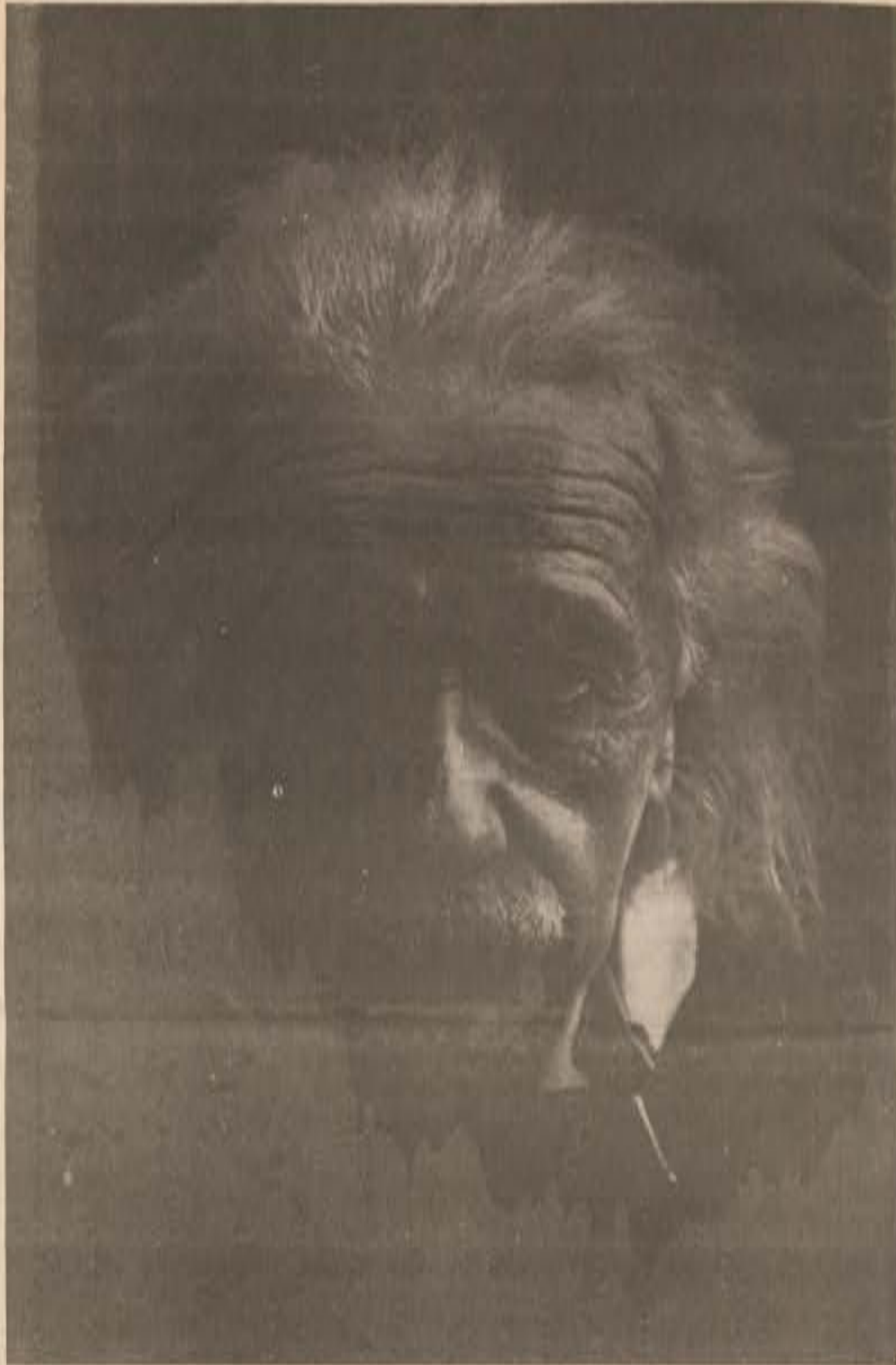
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