

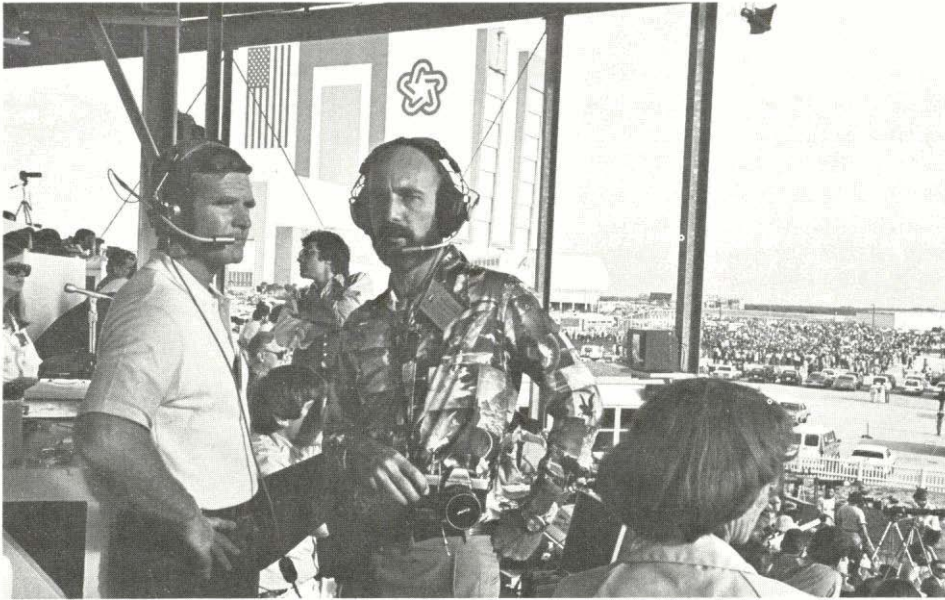
The Pelican

A Newsletter for the F.I.T. Family

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NUMBER 5



Counting down

Dr. **Barry Fullerton**, left, and Dr. **Ed Strother** help man **WFIT-FM Radio** during coverage of preparations for the initial **Space Shuttle** voyage from Kennedy Space Center.

Shrimp are project target

The prospects of growing shrimp in aquaculture systems that rely on treated wastewater as a nutrient source is to be investigated by a pair of Florida Institute of Technology researchers supported by a National Science Foundation (NSF) grant.

Matthew Landau, a doctoral degree candidate in oceanography, explained that the \$90,000 NSF support will allow work over a two-year period.

Landau will be co-investigator in the
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Aging studied

The following story about F.I.T. research into the process of aging was released in April by the Federation of American Societies for Experimental Biology.

Protein synthesis, a process necessary for life, doesn't work very well in old age. Studies of the problem may eventually lead scientists to an understanding of the ultimate cause and control of aging.

Dr. George C. Webster of the Florida Institute of Technology discussed this possibility today at the 65th Annual Meeting of the Federation of American Societies for Experimental Biology in Atlanta.

Dr. Webster and fellow researcher Sandra L. Webster, in their studies of protein synthesis in aging fruit flies, have found that the problem lies in the third stage of protein synthesis — the stage in which amino acids are linked together to form a steadily elongating chain.

During the past several decades, many investigators interested in discovering why bodily functions deteriorate with age have focused their attention on individual body cells and the proteins which are responsible for both their structure and function.

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Sports programs join Sunshine State Conference

Admission of the F.I.T. varsity sports program to the Sunshine State Conference has been announced by Norm Kaye, executive director of the conference.

"The Sunshine State Conference looks forward to continued growth and to continued efforts toward excellence," Kaye said in a letter to Athletics Director Bill Jurgens. "We believe that your institution will assist us in achieving these objectives," Kaye continued.

Jurgens said the conference membership announcement — which affects six sports — culminates preparations by F.I.T. for competition of the caliber that is traditional for member schools.

The coach said F.I.T., along with becoming an NCAA Division II university last year, instituted competition schedules that meet Sunshine State Conference

requirements.

Already the university is highly competitive in several sports with conference members that include the University of Central Florida, Biscayne College, Eckerd College, Rollins College, Florida Southern College, and St. Leo College.

Jurgens said F.I.T. made application for conference admission last May. He termed the group of schools "one of the strongest, if not the strongest, Division II conference in the country."

The conference competition encompasses basketball, baseball, soccer, golf, tennis, and cross-country running. Jurgens said as a result of the admission, the university will institute a running team during the 1981-82 academic year. F.I.T. has varsity teams in the other

sports.

One benefit of conference membership, Jurgens explained, is the opportunity to participate in post-season competition. (During the past season, conference member Florida Southern's basketball team advanced all the way to a Division II national title.)

Jurgens said the conference membership becomes effective in July. So F.I.T. will not be eligible for post-season tournaments held during the current academic year, he said.

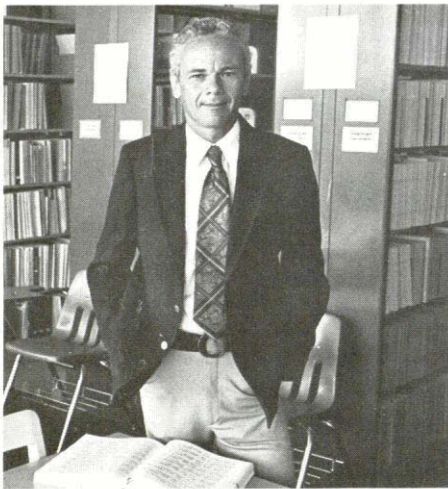
"The membership will result in no drastic changes in our athletics program," Jurgens said. "We feel our teams have improved over the years, and we believe joining the conference will allow continued improvement in the quality of the sports involved."

Campus Notes

Dr. Margot Haberhern, assistant professor of English and humanities, recently presented a paper at the Comparative Drama Conference sponsored by the Classics Department of the University of Florida at Gainesville. Dr. Haberhern's paper was titled "Shakespeare's Development of the Soliloquy in the First Tetralogy."

Dee Dee Pannell, director of the Interactive Computing Facility, and Mike Newell, scientific analyst, recently completed a one-week course on the "VAX 11/780" comouter svstem held in Washington, D.C.

Dr. Robert Shearer, assistant professor of philosophy, was one of the judges for the Young Artist's Competition held in conjunction with the Festival of the Arts at Brevard Community College. The winner received a \$1,500 scholarship.



DECADE OF BOOKS — Dr. Llewellyn L. Henson on April 5 had logged ten years of service in the F.I.T. Library. He joined the staff as associate director of the libraries, and in 1972 became director. He has held that position since, returning to Florida State University's School of Library and Information Science in 1977-78 to work on his doctorate [awarded in 1980].

Several faculty and graduate students presented research papers at the annual Southeastern Psychological Association Convention held in late March in Atlanta. Dr. Frank Webbe, with Betty Meadows and Pad Nicodemus, delivered a paper, "Modulation of Schedule Controlled Responding by Continuously Present White Noise." Dr. Thomas Harrell, with Scott Howard, presented a paper entitled "Stress-innoculation Training for Pain Control: A Case Study." Dr. Harrell also presided over a poster session on Clinical Assessment.

Howard presented a second paper, with Christopher Pino, entitled "Environmental Perceptions. Activities and Behavior Mapping in Aged Domicillary Residents." Dr. Art Gutman presided over a paper session on animal learning and operant behavior, and also delivered a paper entitled "The Role of Stimulus Conditions in Producing Positive Behav-

ioral Contract in Rats." Michael Honaker, along with Dr. Paul Siegel of the University of Alabama, presented a paper entitled "Opponent-Processes in Fear States."

Ann Diebel and some of her colleagues presented a paper entitled, "Sex Role Orientation and Sexual Adjustment." Diebel and her colleagues were the recipients of a research award for their work. "An Investigation of Sex Role Orientation. Sexual History and Personal/Family Characteristics Among Pregnant Women."

Dr. James T. Stoms, Dean of the School of Management and Humanities, has been notified by Prentice-Hall, Inc. that his revised text, "Project Cost Control in Action," has been accepted for publication and will be marketed beginning in April 1981. The text is authored by O.P. Karbanda, E.A. Stallworthy, and L.F. Williams. Revision for the American market was made by Dr. Stoms. The text addresses the problems involved in the cost control of major plant investment projects.

Dr. D. H. Allen, F. I. Chem. E., Department of Management Science and Technology Studies, University of Stirling, Scotland, notes in his foreword to the text. "This book should be essential reading for anyone involved directly or indirectly with project cost control. Its know-how and wisdom, distilled from the authors' wide experience, should provide food for thought for even the most experienced cost control engineer and project manager. It is also to be recommended as a text book for students now that the study of engineering management is becoming a properly established part of engineering courses, as it offers a real insight into this important area of project management."

F.I.T.'s student section of the American Society of Mechanical Engineers was represented at the recent Regional Student Conference in Long Beach, Mississippi. Section Charman Kenneth Revay led the five-student delegation. In addition to the students, both Dr. Tom Bowman and Dr. Palmer Stiles attended the conference.

Thomas Alexiou, a mechanical engineering senior, presented a paper entitled, "Structural Redesign of a Multi-Axis Tracking System." The presentation was a well-prepared effort by Alexiou and his co-worker Victor Oechsle, who is also a mechanical engineering senior.

A high spot of the conference was F.I.T.'s winning of the annual "Design Competition." During the competition students must make quick on-the-spot decisions on building a vehicle from assorted straws, foam disks, toothpicks, milk cartons, and coat hangers. The vehicle must cross an 8-foot-long cafeteria table carrying a load of 25 pennies without falling off. F.I.T.'s first place entry among

the student entries was the second in four years, a feat unmatched by the 20 other A.S.M.E. student sections at the conference.

Dr. Kathe Jensen of Biological Sciences recently announced the discovery of a new species of marine snail from the Florida Keys. Her description of "Oxynoe azuropunctata" appeared in the "Journal of Molluscan Studies." One other species of Oxynoe was previously known from Florida. The new species is quite similar in shape and color, but differs in embryology and diet. The name "azuropunctata" refers to a pattern of bluish spots which occurs on the back of the green animal.

Dr. Jensen received her Ph.D. in 1980 from the Department of Biological Sciences. Her doctoral research involved the behavioral, biochemical, and anatomical factors in feeding of the Ascoglossa, the group of marine slugs to which Oxynoe belongs.

Dr. Alan Rice, assistant professor of ocean engineering, has had published in the January issue of the Journal of Geophysical Research his paper titled, "Convective Fractionation: A Mechanism to Provide Cryptic Layering, Banded Tuffs and Explosive Volcanism in Igneous Processes."

This and other work has led to invitations for Dr. Rice to speak this year at the General Assembly of the International Association of Seismology and Physics of the Earth's Interior in Ontario. the NATO Advanced Study Institute on Early Evolution of the Planets and their Atmospheres in England, and at Caltech.



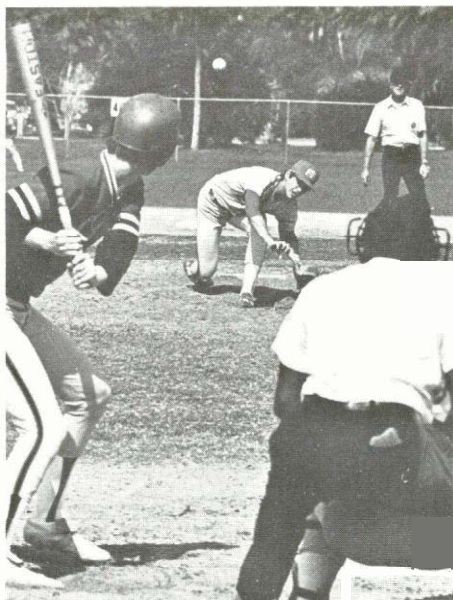
Dr. Alan Rice

Dr. Rice has also been invited by Fellows of the Royal Society to attend petrology committee sessions of the Royal Geological Society.

While at F.I.T., Dr. Rice has given lectures on mechanisms of explosive volcanism at Florida State University; State University of New York, and lectures on seabed radioactive waste disposal at Columbia University.

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Campus Notes



Where's Philly?

Philadelphia is the place where **F.I.T.'s** crew team, under **Bill Jurgens**, will seek the small college championship at the May 8-9 **Dad Vail Regatta**. On the way, the team had no difficulty in capturing the Florida Intercollegiate **Rowing Championship** for the fifth straight year.

Meanwhile, the **baseball team** has had days when the pros from **Philadelphia** might seem a worthy opponent. Despite a **multi-game slump**, **Coach Les Hall's squad** headed into the bottom of its schedule with a **whopping 27 wins against 11 losses**.

Dr. **Ronald H. Jones**, director of the Medical Research Institute, recently met with the Hon. **Richard S. Schweiker**, secretary of the Department of Health and Human Services, to discuss matters pertaining to the **Food and Drug Administration (FDA)** and preventive medicine.

FDA problems enumerated at the meeting included the **backlog** of Abbreviated New Drug Applications, difficulties in obtaining Individual New Drug Applications for products of proven safety or with low **risk/benefit** ratio, and deregulation.

Dr. Jones reports that Secretary Schweiker has a keen interest in **preventive medicine** and is establishing programs to support research and education in the field. The programs emphasize natural products and food supplements, self health care, and development of more efficient methods to predict and diagnose medical disorders. Dr. Jones, as vice president of the International Preventive Medicine Foundation, has been involved in developing effective health supplements and educational programs in preventive medicine.

Mary Grefe, the national president of the American Association of University Women, recently visited F.I.T. along with Dr. **Quincalee Brown**, executive director of the organization.

Dr. John Miller hosted a luncheon for the visitors. Also attending were **Linda Tisdale**, president of the Melbourne branch of AAUW; **Cissy Petty**, Dean Jerome **Lauderbaugh**, and **Joy Dickens**.

A voice from F.I.T.'s past has been heard. At **Sal's Spaghetti House**, recently at the **Riverview Inn (U.S. Highway 1, Malabar)** you'll find **George Poidomani**. He was an F.I.T. student from '69 to '73, graduating with a degree in management science. He subsequently became director of housing and later worked as acting dean of students until 1978. After leaving F.I.T. Poidomani was in the restaurant business, was road manager for the **Amazing Kreskin**, and acted in a movie.

Dr. **Jack Maloney**, director of continuing education at **Jensen Beach**, was **guest speaker** at a recent **Jensen Beach Chamber of Commerce Monthly Forum**.



PICNIC PAUSE — There comes a time even at **F.I.T.'s annual picnic in Rodeo Park** to relax for refreshments. That's an idea that **agrees with Shirley Fraser** of Admissions.

Earl J. Lewis, a graduate student in biological oceanography, is the senior author on a recent paper describing a new species of amoeba. The paper, "**Acanthamoeba tuhiashi N. Sp., a New Species of Fresh-Water Amoebida (Acanthamoebidae)**," was published in "**Transactions of the American Microscopical Society**" and was coauthored by **T. K. Sawyer**.

Dr. **Frederick B. Buoni**, chairman of the **Operations Research program**, participated in a **Radiation Emergency Seminar** at **Clearwater Beach**. The seminar —

sponsored by **Florida Power and Light Company** and the **American Nuclear Society** and coordinated by **Southern Science Application, Inc.** — discussed governmental and industrial planning for nuclear radiation emergencies. Dr. **Buoni** was a member of the program committee and served as an expert consultant during a simulated emergency exercise.

A paper by Dr. **Pieter S. Dubbelday** of **Physics and Space Sciences**, has been accepted for publication by the "**Journal of the Acoustical Society of America**." The title of the paper is, "**An analysis of effective shear modulus for flexural and extensional waves and its application to reflection of sound by a plate**." Coauthor is **Dr. Anthony J. Rudgers** of the **Naval Research Laboratory in Orlando**.



WELCOME — Dr. **Andrew Revay Jr.** takes the opportunity at the recent **Parents' Weekend luau dinner** to greet visitors to the **campus**.

Four chemical **oceanographers** presented papers at the recent meeting of the **National American Chemical Society** in **Atlanta**. Dr. **John Trefry** presented a paper entitled, "**The Potential Impact of Drilling Fluids on the Texas Flower Gardens**."

Also presenting papers were Research Associate **Robert Trocine**, on "**Inorganic Tracers of Petroleum Drilling Fluid Dispersion in the Northwest Gulf of Mexico**;" Research Associate **Brad Weichert**, on "**Organic Tracers of Petroleum Drilling Fluid Dispersion in the Northwest Gulf of Mexico**;" and graduate student **Mehrdad Sadoughi**, on "**Vessel-related Inputs of Copper to the Coastal Zone**." Coauthors on the papers included graduate students **Dave Meyer**, **Don Anne**, **Frank Saksa**, and **Dr. Richard H. Pierce Jr.**

Dr. **Pierce** has received a **\$47,000 contract** from the **National Oceanic and Atmospheric Administration** to study adsorbents used to recover toxic organic chemicals from seawater.

The **project** is an important addition to the on-going study of dispersion of drilling fluid components in the marine environment. That study is headed by **Dr. Pierce** and **Dr. Trefry**, and is currently in its second year. The target of the **investigation is the Texas Flower Garden Reef area** in the **Gulf of Mexico** and **possible effects** of oil drilling operations in the **vicinity**.

Growing old linked to protein production

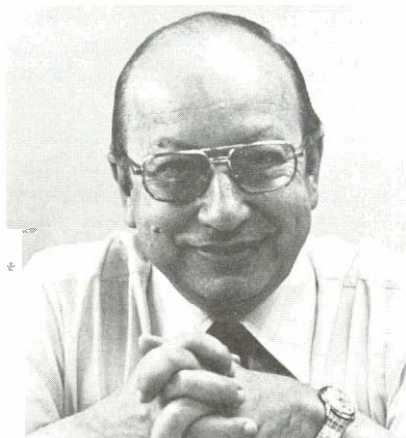
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These proteins, of which there are probably two or three thousand kinds making up each living cell, are composed of chains of amino acids, that are carefully folded into particular shapes. The properly folded proteins, all acting together, are responsible for the process we call life.

For some reason, proteins unfold spontaneously. When they do, they become **inactive**. Body cells **constantly** replace inactive proteins through the process of protein synthesis in which information coded in the cell's genetic material is expressed in the form of specific proteins.

Protein synthesis occurs in four distinct stages. In the first, amino acids are attached to ribonucleic acid, a large molecule which transports amino acids from the cell's pool of these compounds to the site of protein synthesis. In the second stage, through a complex series of reactions, the formation of a protein molecule is begun on a cellular structure known as a ribosome.

In the third stage, successive amino acids are transferred from the ribonucleic acid to the steadily elongating chain of amino acids. This chain spontaneously folds to form an active protein. In the fourth and final stage, synthesis is



Dr. George Webster

terminated at the protein's last amino acid.

Recent evidence from several laboratories, including that of Dr. Webster, indicates that young organisms readily replace inactive proteins by vigorous protein synthesis. As the organism gets older, however, protein synthesis steadily decreases. The unfolded proteins are not replaced, the cell deteriorates, the organism's functions slow down, and it eventually dies.

What **goes** wrong with protein synthesis in old age? The Websters have been trying to find out.

Through established techniques of research in molecular biology, the Florida investigators have demonstrated that in the aging fruit fly — an organism chosen for its short life span, its uniform cellular aging, and its biochemical characteristics which are surprisingly similar to those of higher organisms — it is the third stage of protein synthesis, the chain elongation stage, that decreases greatly with age. This stage appears to be chiefly responsible for the decrease in protein synthesis seen in aging fruit flies.

The Florida researchers are now trying to find out if the third stage of protein synthesis is also responsible for decreased protein production in old mice. The phenomenon may or may not be limited to fruit flies.

Dr. Webster believes that by pinpointing the reactions responsible for the deterioration of cellular structures and functions, scientists may learn what is ultimately responsible for aging.

It may be that the genes responsible for the elongation stage are shut down or that other genes which inhibit elongation are switched on in old age. In either event, Dr. Webster commented, "when the substances controlling the expression of the genes are identified, the possibility of controlling aging will have arrived."

Sewage plant effluent feeds algae

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project with Dr. Richard Pierce, a chemical oceanographer and associate professor in the Oceanography and Ocean Engineering Department.

"Basically, we will be taking secondary sewage effluent, mixing it with sea water, and using **this** to grow algae. We will feed the shrimp the algae," said Landau. "Secondary" effluent is treated wastewater such as emerges from most local sewage plants.

Another group of shrimp will be fed commercially-produced shrimp food, allowing a comparison with those feeding on the **experimental** algae.

The treated wastewater contains high amounts of nitrate and phosphate. Those nutrients limit the production of marine populations in **localized** areas. **Increases** in the nutrients can lead to disastrous population explosions.

Landau notes that the shrimp growing process "can remove most of the nitrates and about half of the phosphates" from the wastewater. The resulting water is similar to that emerging from "tertiary" or most advanced treatment plants.

The cleansing effect can allow creation of a 'polyculture' system, Landau said, which amounts to a man-assisted food chain or ecosystem. "**This** type of aquaculture has **been** used in the Far East for ages," he explained.

The F.I.T. study will involve several thousand shrimp grown in tanks at the Harbor Branch Foundation at Fort Pierce. The university and the Foundation often cooperate in oceanography research projects.

At the Foundation facility, shrimp feeding on algae grown with the aid of wastewater will be cultivated in a pair of 30-foot-square tanks. Another two tanks of the same size will contain shrimp grown with commercially prepared foods.

The shrimp emerging from the F.I.T. study will be judged by a panel from University of Florida as to color, smell, and texture.

What most separates the new project from pilot studies already completed on such wastewater uses is the laboratory examination of shrimp that F.I.T. will engage in. "We're taking the work a step further and looking at the chemistry of the shrimp," Landau said.

Dr. John Ryther of the Foundation and of Woods Hole Oceanographic Institute is also a **co-investigator** on the project, and Landau credits his participation for helping to secure the NSF grant. "Dr. Ryther is sort of 'Mr. Marine Biology' in the U.S.," Landau said of the scientist's reputation.

Also serving as a coinvestigator is Dr. Joseph Ziegler of **F.I.T.'s** Medical Research Institute.

Bacteriological studies would have to precede any use of shrimp from the experimental process as food. Landau said. "Even then, we may have some marketing problems," he said of selling shrimp grown with the aid of wastewater. Such a product might be better accepted in other countries, the scientist said.

But Landau said economic considerations might favor the use of such a process in the production of bait shrimp. Such businesses could produce the shrimp with a smaller system than would be needed for food production.

Conference here

An Environmental Science and Engineering Student Activities Conference will be held on Saturday, May 16, at Florida Institute of Technology. The conference begins at 9 a.m. in Room **S112** of the **Crawford** Science Building.

The purpose of the conference is to provide a forum for information exchange between Florida universities on current student environmental research. Chris Bove, Susan Meyers, and Allan Schreiber will be presenting papers for F.I.T. The three are environmental science graduate students, supervised by Dr. Tom V. Belanger.