



AstroTurf soft—but the elbows to the jaw are a bit hard to take.

## Chemical engineering presented NSF grant

Dr. C. D. Holland, head of the Chemical Engineering Department, has been awarded a \$64,000 National Science Foundation grant to continue research into developing mathematical models for industrial plant processes.

The two-year study is entitled "Dynamic Behavior of Distillation Systems." Industrial facilities at Baytown, Texas City, Corpus Christi and Dallas will be utilized.

Assisting Dr. Holland are Dr. Tkuho Yamada, post-doctorate student and professor of chemical engineering at Nagoya Institute of Technology, Japan, and Ph.D. candidates Gregorio P. Pendon of the Philippines and Adrian E. Hutton of Baytown. Other graduate students are expected to participate later.

Research began four years ago under NSF funding, Dr. Holland noted.

"Far too frequently, engineers have not learned anything from their designs other than whether or not it worked," Dr. Holland explained. "That is, once the plant is constructed there is little or no attempt to study the operating units for the purpose of improving the design methods or mathematical models used in the

original plant design."

Dr. Holland claims the research is "an innovation in educational research."

It has already led to better understanding between educational institutions, industrial organizations and federal supporting agencies.

Dr. Holland said graduate students go to operating plant sites to collect data on distillation columns, absorption and desorption processes and liquid-liquid extraction processes.

On the basis of the data, the students develop mathematical models of the processes as well as scaleup procedures. Suitable numerical methods are developed for solving problems involving these processes by use of A&M's high speed IBM 306/65 computer.

Five papers have been published and four more have been accepted for publication from information collected the past four years, Dr. Holland reports.

Projects completed include the Zoller Gas Plant at Refugio and the U. S. Department of Interior's Saline Water Demonstration Unit at Freeport.

Current projects are adsorption and desorption processes investi-

gated by Pendon and liquid-liquid extraction processes studied by Hutton.

Pendon's project is a cooperative effort between A&M's Chemical Engineering Department and Mobil's Corpus Christi Production Division and Dallas Production Research Laboratories.

Hutton will study a liquid-liquid extraction process through the use of a column in the sulfur dioxide extraction plant at Humble Oil and Refining Company's Baytown plant.

The column constitutes an application of the Edelenau process developed in the early 1900's to improve burning properties of kerosene by removal of the aromatics.

Two other projects will have graduates students assigned later.

At Monsanto's Texas City plant, the proposed research is to develop procedures for scaling up distillation columns from bench-scale laboratory columns to pilot-plant columns and then to plant-size columns.

The Baytown Humble Oil plant will be used for a scaleup of centrifugal extractors in operation at the Phenol Extraction Plant.

## Department to add 3 faculty, courses

Appointments of three faculty members and the addition of three undergraduate fall semester courses have been announced by Dr. Paul P. Van Riper, head of the Political Science Department.

Joining the faculty as assistant professors are Dr. James F. Creagan, Dr. Elias S. Themos and Samuel M. Babcock. The appointments are effective Sept. 1.

New courses include P.S. 350, Political Thought, a general survey of materials from ancient to modern times; P.S. 351, Contemporary Political Theory, covering the main streams of modern thought, and P.S. 425, American Political Thought, a general survey from colonial to present times.

"The new appointments have permitted us to expand our offerings, especially for undergraduates," Dr. Van Riper said.

Dr. Creagan, 29, has been a Foreign Service officer since 1966. He currently is Second Secretary at the U. S. Embassy in El Salvador.

Besides serving in embassies in Mexico and El Salvador, Dr. Creagan has been a special lecturer at the University of the

Americas and Universidad de El Salvador.

He has a B.A. degree in history from Notre Dame and in 1965 received the Ph.D. in government and foreign affairs from the University of Virginia.

After a year as assistant professor at St. Mary's in San Antonio Dr. Creagan joined the Foreign Service.

Dr. Creagan will teach American government and American foreign policy this fall.

Dr. Themos, a native of Greece, received a B.S. degree in chemistry from Eastern Illinois University in 1963. He earned the M.A. in history at Southern Illinois University in 1965 and the Ph.D. in government in 1967.

He has taught at Roosevelt College, Northwestern and currently North Carolina State.

Dr. Themos has a background in political theory, international relations and organization and political development. He also is able to translate Old Greek.

Babcock has a B.A. in government from Miami University of Ohio and the M.A. in Asian studies from the University of California, Berkeley.

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## The Church..For a Fuller Life..For You..

*This is Mary Sue. She has nice clothes and good food. I know, because sometimes I help feed and dress her.*

*What she doesn't have is a mother and a father. Oh, she has parents, but they're judged unfit to care for her.*

*Things must have been pretty bad for her at home. It took a long time to win her trust. The day she smiled was a major triumph for us all.*

*I'm a teen-age volunteer at a foundling home operated by our church. For most of the youngsters, this is the first experience with love and kindness, good food and clean clothes. Now I realize how important is our church's mission work.*

*Your church interprets God's love in its ministry to the sick and starving, the aged and the dispossessed.*

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to care for her

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Revelation	Revelation	Psalms	Psalms	Isaiah	Lamentations I	Corinthians
4:1-11	5:9-11	46:1-11	121:1-8	40:21-31	3:25-33	10:1-13

### CALENDAR OF CHURCH SERVICES

**ST. THOMAS EPISCOPAL**  
906 Jersey Street, So. Side of Campus  
Rector: William R. Oxley  
Asst.—Rev. Wesley Seeliger  
8:00 A.M. & 9:15 A.M. Sunday Services

**A&M CHURCH OF CHRIST**  
8:00 & 10:00 A.M. Worship  
9:00 A.M.—Bible Study  
5:15 P.M.—Young People's Class  
6:00 P.M.—Worship  
7:15 P.M.—Aggie Class  
9:30 A.M.—Tues., Ladies Bible Class  
7:15 P.M.—Wednesday - Bible Study

**UNIVERSITY LUTHERAN**  
(Missouri Synod)  
9:30 A.M.—Bible Class  
10:45 A.M.—Divine Worship  
7:35 P.M.—Wednesday Vespers  
5:30 P.M.—Worship Celebration  
Sunday Evening

**UNITARIAN FELLOWSHIP**  
305 Old Highway 6, South  
Pres. Clinton Phillips  
No meetings until next September

**A&M PRESBYTERIAN**  
7-9 A.M.—Sun. Breakfast - Stu. Ctr.  
9:45 A.M.—Church School  
11:00 A.M.—Morning Worship  
6:00 P.M.—Sun. Single Stu. Fellowship  
7:15 P.M.—Wed. Student Fellowship  
6:45 A.M.—Fri. Communion Service  
Wesley Foundation

**CHURCH OF THE NAZARENE**  
9:45 A.M.—Sunday School  
10:45 A.M.—Morning Worship  
6:30 P.M.—Young People's Service  
7:00 P.M.—Preaching Service

**CHRISTIAN SCIENCE SOCIETY**  
9:30 A.M.—Sunday School  
11:00 A.M.—Sunday Service  
11:00 A.M.-2 P.M.—Tues. Reading Rm.  
7:00-8:00 P.M.—Wed., Reading Room  
8:00 P.M.—Wed. Evening Worship

**FIRST BAPTIST**  
9:30 AM—Sunday School  
10:45 AM Morning Worship  
6:10 PM—Training Union  
7:30 PM—Evening Worship  
6:45 PM—Choir Practice & Teachers' meetings (Wednesday)  
7:45 PM—Midweek Services (Wed.)

**SECOND BAPTIST**  
710 Eisenhower  
9:45 A.M.—Sunday School  
11:00 A.M.—Church Service  
6:30 P.M.—Training Union  
7:30 P.M.—Church Service

**OUR SAVIOUR'S LUTHERAN**  
8:30 & 10:45 A.M.—The Church at Worship  
9:30 A.M.—Bible Classes For All  
Holy Communion—1st Sun. Ea. Mo.

**CENTRAL CHRISTIAN CHURCH**  
3205 Lakeview  
9:45 A.M.—Bible School  
10:45 A.M.—Morning Worship  
6:00 P.M.—Youth Hour  
7:00 P.M.—Evening Worship

**ST. MARY'S CATHOLIC**  
Sunday Masses—9:00 and 11:00 A.M.  
Saturday Mass—7:00 P.M.

**FAITH CHURCH UNITED CHURCH OF CHRIST**  
9:15 A.M.—Sunday School  
10:30 A.M.—Morning Worship  
7:30 P.M.—Evening Service

**COLLEGE HEIGHTS ASSEMBLY OF GOD**  
9:45 A.M.—Sunday School  
11:00 A.M.—Morning Worship  
6:30 P.M.—Young People's Service  
7:30 P.M.—Evening Worship

**A&M METHODIST**  
9:45 A.M.—Sunday School  
10:55 A.M.—Morning Worship  
5:30 P.M.—Campus & Career Class  
5:30 & 6:00 P.M.—MYF Meetings

**CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS**  
26th East and Coulter, Bryan  
8:30 A.M.—Priesthood meeting  
10:00 A.M.—Sunday School  
5:00 P.M.—Sacrament Meeting

**FIRST CHRISTIAN CHURCH**  
Homestead & Ennis  
9:45 A.M.—Sunday School  
10:50 A.M.—Morning Worship  
5:30 P.M.—Young People

**GRACE BAPTIST CHURCH**  
2505 S. College Ave., Bryan  
An Independent Bible Church  
9:45 A.M.—Sunday School  
10:50 A.M.—Morning Worship  
7:00 P.M.—Prayer and Bible Study

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