

AMERICAN  
INSTITUTE OF  
AERONAUTICS AND  
ASTRONAUTICS  
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HOUSTON SECTION

# newsletter

October 1978

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## COMMENTS FROM THE CHAIRMAN

The monthly Board Meeting was held October 3 with 18 people attending, but still we lacked three of our committees. The meeting lasted one hour.

I look forward to total representation at our November 7 meeting at the Kings Inn at 12:00 to 1:00 o'clock.

The October 1978 Dinner Meeting was well attended: 108 members and guests. The program was good and the turnout gratifying.

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The Board is reminded that the monthly meetings are held at the Kings Inn on the first Tuesday of each month (put that on your calendar) and the membership is reminded that our monthly Section Meeting is on the third Tuesday, with the exceptions of December 12 and our March, 1979 meeting (dates to be announced later).

Come to the October 17, 1978 meeting at the Gilruth Center and hear Bob Gammage; see our new Associate Fellow; and see Bob Glowczwski receive the Membership Award.

If any member wants to participate in Section activities, get in touch with any of the officers; see your August 1978 Newsletter.

#### FOURTH ANNUAL AIAA HOUSTON SECTION MINI-SYMPOSIUM

The fourth annual mini-symposium for our Houston section of the AIAA is currently planned for March 1979. One of the technology areas under consideration for papers is "Payloads of Opportunity for the Space Shuttle." If selected, this topic area would include payload concepts, technical integration, design and development, and anticipated technological yield.

I'd like to receive your inputs on the interest you feel this topic area would generate. Drop a note in the mail to me at NASA, Mail Code CG, or call me at 483-2609 with your comments.

Also, we are seeking volunteers from our student chapter members and recent graduates to aid in the planning and development of this fourth mini-symposium. If you would like to assist, please contact me at your earliest opportunity, as shown above.

Earl Thompson  
Vice-Chairman, Technology

#### "THE COUNCIL SPEAKS" AIAA SCHOLARSHIP PROGRAM

The AIAA Scholarship Program is now into its third year. Nine \$1000 Scholarships are available for qualified freshman, sophomore, junior, and senior students. Last year we had only forty applications for nine scholarships. There certainly are more qualified students than that in these United States!

The Scholarship Program is administered by the AIAA National Student Activities Committee; the applications are available in October. Applications are reviewed and recipients for the next school year are determined in February. The recipients are selected on the basis of scholarship, ability to apply concepts of science and engineering, personal assessment of career goals and letters of recommendation by five individuals (not related to the applicant). It should be emphasized that the scholarship award is based on academic merit and the income of the parents is not a consideration.

Private companies donate the money for the Scholarship Program. The more interest shown in the program, i.e., the more applications submitted, the better our chances to receive more money to award more scholarships. The less interest shown in the program, the higher the probability of companies withdrawing their support. Information on the Scholarship Program can be obtained from me or from Jeff Irons, Director of Student Programs, AIAA, 1290 Avenue of the Americas, New York, N. Y. 10019.

Tom Murtagh  
Chairman, Student Activities Committee  
NASA/JSC Code FA2  
Houston, Texas 77058  
(713) 483-4546

#### BOND AND MC CLANE ON THE MEND

Houston Section Councilor Aleck Bond and Region IV Director Jim McLane have both undergone recent surgery. We are pleased to report that both are doing very well. Jim is back at work and Aleck is expected back in Mid-October.

#### YUGOSLAVIA'S MARSHAL TITO A HOUSTON SECTION MEMBER?

Bill Simmons, our erstwhile membership chairman extraordinaire, and his lovely wife Jo are off to Dubrovnik, Yugoslavia for the 29th Congress of the International Astronautical Federation, October 1 - 8, 1978. Afterwards the Simmons will tour Yugoslavia. Don't be surprised if Bill signs up Marshall Tito and a whole host of others for the AIAA.

#### LOCAL PROFESSIONAL COMMUNITY CONTRIBUTES MAJOR SUPPORT TO THE ENGINEERS COUNCIL OF HOUSTON (ECH)

A number of local area people are making major contributions to ECH. Dr. Lynn Diamont of IBM is ECH President-Elect this year. Lynn served as AIAA delegate to the ECH for several years. Dr. Ann James of NASA is serving on the ECH Executive Committee, and is Chairman of the ECH Technical Careers Committee. Carrington Stewart of NASA is also serving on the ECH Executive Committee. Stewart is also the Houston Section - AIAA Professional Participation Committee Chairman.

#### LSU STUDENT CHAPTER VISITS JSC -- OTHER STUDENT VISITS PLANNED

Dr. Bob Courter and eleven members of the Louisiana State University AIAA Student Chapter visited JSC on Saturday, September 30, 1978, for an all-day tour of JSC Facilities prior to the Rice-LSU football game (which LSU won easily 37-7). The

group was welcomed at 11 a.m. in Building 45 by Guy Thibodaux and Norm Chaffee of JSC's Propulsion & Power Division. After getting an overview of the Space Shuttle Program and reviewing some of the PPD hardware, the group visited the Saturn V display area and then had lunch in the JSC cafeteria. Activities after lunch included tours of the Building 2 Museum Area, the Mission Control Center, the Shuttle Mockup Area in Building 9A, and the Skylab and Simulator Displays in Building 5. Norm Chaffee and Ernie Hillje of JSC, and Jim Pendergrass of MDAC acted as tour guides and hosts during the day. The LSU group had an enjoyable day and we hope this can become an annual event.

Plans are also under way for Dr. John Bertin and a group of AIAA student members from the University of Texas to visit JSC later this year.

#### PARTICIPANTS IN MEETINGS

Houston Section Members represent us well in meetings, as the following list shows:

##### AIAA/NASA Conference on "Smart" Sensors

NASA - Langley Research Center  
Hampton, Va.  
November 14 - 16, 1978

1. Dean Grimm, NASA - JSC, will act as moderator of a panel discussion on "Smart Sensors: Their Potential and Limits".
2. L. W. McFadin, NASA - JSC, will present a paper entitled "The Application of Smart Sensor Techniques to a Solid-State Multispectral Sensor".

##### 29th Congress of the International Astronautical Federation (IAF)

Dubrovnik, Yugoslavia  
October 1 - 8, 1978

1. P. C. Rambaut, NASA - JSC; paper entitled "Weightlessness and Bone Loss in Man - A Review".
2. Dr. R. L. Johnson, NASA - JSC; paper entitled "Weightlessness, Orthostatic Tolerance, and the Cardiovascular System".
3. Dr. Carolyn S. Leach, NASA - JSC; paper entitled "A Review of the Consequences of Fluid and Electrolyte Shifts in Weightlessness".
4. Clarke Covington, NASA - JSC; paper entitled "Solar Power Satellite: An Initial Baseline System Recommendation".
5. D. R. Criswell, R. O. Waldron, and T. E. Erstfield, Lockheed; paper entitled "Processing of Lunar Materials for Use in Space".

6. R. S. Johnston, NASA - JSC, Co-Chairman of Session on Bioastronautics.
7. J. P. Rummel, W. J. Huffstetler, R. S. Johnston, NASA - JSC; paper entitled "NASA Life Science Experiments for Spacelab I".
8. H. L. Stutesman, NASA - JSC; co-author of paper entitled "The Shuttle Extravehicular Mobility Unit (EMU) - A Combination of New Technology and Proven Hardware".

Anglo-American Workshop on Energy and Aerospace

London, England  
December 5 - 7, 1978

1. Dr. Christopher C. Kraft, Jr., NASA - JSC, will present a paper entitled "Towards the Future".

In addition to these papers, our attention has been drawn to a couple of papers which were published in our journals last year.

M. F. Zedan and Dr. Charles Dalton of the University of Houston co-authored two papers. One, entitled "Incompressible Irrotational Axisymmetric Flow About a Body of Revolution: The Inverse Problem", was published in the Journal of Hydronautics. The second paper, entitled "Potential Flow Around Axisymmetric Bodies: Direct and Inverse Problems", was published in the AIAA Journal. The duo also presented a paper at the AIAA 11th Fluid and Plasmadynamics Conference in Seattle in July, 1978, entitled "Viscous Drag Computation for Axisymmetric Bodies at High Reynolds Numbers".

AIAA - SEPTEMBER MEETING: "SPACELAB"

Mr. Michel Bignier, Director, Spacelab Program, European Space Agency, addressed the September meeting of the Houston Section of AIAA.

Mr. Bignier's presentation was entitled "Spacelab - International Implications and Participation".

The European Spacelab primary program objectives were stated by Mr. Bignier as verifying the Spacelab system, and demonstrating both the performance and interface capabilities. Numerous applications of the program were named, including earth observations, material sciences, communications, technology, astronomy, physics, and life sciences.

Mr. Bignier gave a synopsis of the various configurations Spacelab can have; long or short modules, pallets, or any combination. Some of the configurations discussed were artists' conceptions and some were actual factory photographs.

Mr. Bignier has held his present position since 1976. Prior to this he was the Director General for the French Center d'Etudes Spatiales (CNES) for four years.

Mr. Bignier is a graduate of the Ecole Nationale Superieure d'Aeronautique, Ecole Nationale Superieure de Telecommunications, and Ecole Polytechnique. He is currently a member of the International Academy of Astronautics, the Aeroclub of France, and the Aeronautics and Astronautics Association of France (AAAF). He has also received numerous awards, including holding office in the Legion d'Honneur, L'Ordre du Merite de la RFA, and the Medaille de L'Aeronautique.

Sharon Barnes

#### SHUTTLE PAYLOAD SPACE FOR TEXAS A&M

Project Enterprise represents a unique opportunity for students to obtain experiment space onboard the Space Shuttle (see June 1977 issue of A&A). NASA is offering a "Getaway Special" for small self-contained payloads. To qualify, the payload package must be for research and development, weigh less than 200 lbs., be smaller than 5 cu. ft. and require no shuttle services (these payloads are flown on a space available basis). The price for the small self-contained payloads will be a minimum of \$3000 and will not exceed \$10,000. The downpayment required is \$500 with the balance due the year the payload flies.

The Executive Board of the AIAA Houston Section has agreed to raise two \$500 down payments in support of a cooperative program with Rice and Texas A&M Universities. The objective of these cooperative programs is for the AIAA Houston Section to arrange for the purchase of payload bay space; i.e., down payment, to assist the universities in fund-raising activities as required, and to provide expertise in areas related to the design, construction, and testing of the payload.

This commitment has been met for Rice University but several hundred dollars is still required to raise \$500 for Texas A&M. Contributions from Section membership are needed. Please send your tax-deductible donation to Mark Craig, Code EX3, NASA Johnson Space Center, Houston, Texas 77058 as soon as possible.

#### CONTINUING PROJECT ENTERPRISE; A PROGRAM

The Rice University George R. Brown School of Engineering and the Aeronautics and Astronautics Houston Section (AIAA/HS) intend to undertake a program entitled Project Enterprise; (refer to March 1975 Newsletter). The objective of this program is to promote, within the framework of a university education, an awareness of the benefits of space for mankind. To this end, outstanding students will be given the opportunity to send experiments of their own creation into space aboard the Space Shuttle. Experiments will be restricted to engineering or engineering-related fields of investigation. Responsibilities within the program follow:

##### The AIAA/HS, for its part, shall:

- (a) Reserve an initial 2.5 cubic feet of payload bay space by making the appropriate down payment;



- (b) Serve as a point of contact with NASA in obtaining student access to government-owned equipment and facilities as available;
- (c) Provide expertise, on request, in areas relating to the design, construction, and testing of payloads;
- (d) Assist the Rice University George R. Brown School of Engineering in fund-raising activities as noted below.

The Rice University George R. Brown School of Engineering for its part, shall:

- (a) Form a Shuttle Experiments Steering Committee composed of an appropriate number of faculty members and a representative of the AIAA/HS;
- (b) Acting through the above Committee:
  - (1) Coordinate fund raising activities, in conjunction with the University Development Office and with the assistance of the AIAA/HS, for completing the purchase of the payload space and provision of adequate funding of the experiments selected to be flown.
  - (2) Solicit proposals of engineering experiments from University students.
  - (3) Select from the experiments proposed those worthy of support consistent with the funds acquired through the fund raising activities in (1).
  - (4) Assign faculty advisors for each experiment selected.
  - (5) Review each experiment's progress at appropriate intervals to assure flight readiness.
  - (6) Assure that each experiment is brought to conclusion through post-flight analysis and documentation.

SEPTEMBER MEETINGS, RICE STUDENT AIAA

The Rice Student Branch of AIAA held two meetings during September. Films were shown and the initial organization of branch activities was discussed. Members planned a field trip in October to see the Confederate Air Force Air Show at Harlingen. Trial arrangements between Rice and the Houston Section on Project Enterprise have been undertaken. Initiation of activities for Getaway Special will take place in the near future.

Fred Wierum, Rice University

## CONTINUING EDUCATION

The Continuing Education Committee has a large number of the AIAA Recorded Lecture Series on Cassette Tapes. These lectures are available to all members on a sign-out basis. To borrow a lecture, contact: John Sunkel, JSC, Building 16, Room 264A, 483-4612.

### Available Lectures

#### One Hour Lecture

Decision Theory

Dynamic Programming

Fundamentals of Precise Attitude Determination of Satellites

An Introduction to Guidance and Control System Concepts

Linear System Analysis: Classical vs Modern Techniques

Problems in Orbit Transfer

An Introduction to Rocket Propulsion, with Emphasis on Liquid Rockets

Vectors

How to Plan an Investment Program

The Baleful Influences of the Boundary Layer

Low Speed Wing Theory

#### Two Hour Lecture

Digital Flight Control

Flight Computer Design

Linear Quadratic Design Techniques

Manual Control

An Introduction to Navigation Systems

Nuclear Propulsion

Probability, Random Processes and Estimation Theory

Introduction to Stability Theory

Survey of Basic Optimization Techniques



### 13th Aerospace Mechanisms Symposium

The Johnson Space Center will host the 13th Aerospace Mechanisms Symposium at the Gilruth Recreation Center on April 26 and 27, 1979. These annual symposia are specifically devoted to the problems of design, fabrication, test and operational use of mechanisms and provide a forum for interchange among persons engaged in the field of mechanisms technology.

Mr. Aleck C. Bond is the JSC host chairman and he will be assisted by Mr. Allen J. Louviere of JSC, both of whom belong to our AIAA section.

All AIAA members are invited to make plans to attend the symposium. Additional information will be provided in the subsequent issues of the Newsletter.

### AMERICAN ASTRONAUTICAL SOCIETY 25TH ANNIVERSARY CONFERENCE

The AAS is holding their 25th Anniversary Annual Meeting in Houston this year, co-sponsored by the AIAA. It will be held Monday, October 30, 1978 through Wednesday, November 1, 1978 at the Stouffer's Greenway Plaza Hotel. Eleven outstanding sessions will be offered, with significant talks by such national leaders as Dr. George Mueller, Dr. Burton Edelson, Dr. Peter Glaser, Major General Ed Coy, Dr. Tony Calio, Dr. Charles Sheffield, and many others.

The banquet speaker Wednesday, November 1, will be Mr. Karl G. Harr, President, Aerospace Industries Association, honoring Representative Olin Teague, U. S. House of Representatives, for his outstanding support of U. S. space activities during his long tenure in the Congress.

Many of our local AIAA Section members are participating, either as speakers or as conference chairmen, under Mr. Richard S. Johnston, the general chairman of the conference.

### L-5 SOCIETY NEWS

The Houston Chapter of the L-5 Society meets the third Friday of each month at the Museum of Natural History in Hermann Park. The next meeting will be at 7:30 p.m. on October 20, 1978 and will feature JSC's Al Louviere who will discuss "Construction in Space". A special invitation is extended to the Houston AIAA Section. The Houston L-5 Society Officers are Jimmy Rosamond, President (491-1480) and Margaret Adamson, Secretary.

### ENERGY AND THE SPS

With only 6% of the world's people, the United States accounts for 32% of the worldwide energy consumption but also 31% of the world's gross national product (GNP). In fact, for the past twenty years, neglecting inflation, it has taken about 11 million barrels of oil equivalent for each billion dollars of GNP in the industrialized world. The United States now requires only 80

employees to produce a million dollars of GNP. Western Europe requires twice as many employees and Japan three times as many for each million dollars of GNP. This production efficiency of the labor force has continually improved over the years resulting in a higher standard of living for employees and consumers. Increased energy utilization translates into increased GNP, more jobs, and a better standard of living for all.

A recent conference on "Meeting Our Energy Needs" noted that the number of new nuclear power plants placed in operation has been declining the past few years. Conservation, economic slowdown, environmental constraints, the reconsideration of the breeder reactor, and a moratorium on nuclear waste reprocessing have all combined to slow the pace of nuclear power and shift the spotlight to coal and solar energy. Conferees pointed out that the use of coal for electric power generation will decline after the year 2000 as it becomes too valuable as a nonrenewable resource.

Dr. Peter E. Glaser first proposed a Solar Powered Satellite (SPS) in 1968. The House Committee on Science and Technology and the Senate Committee on Energy and Natural Resources are now in agreement for funding to "find a cost-effective space power system". NASA has proposed the SPS as an alternative for baseload electrical power generation. Dr. James W. Moyer, of Southern California Edison Company, stated that, from the viewpoint of a major utility, there is currently no other viable alternative! Space Shuttle will provide the test capability for SPS. The energy challenge from the Congress to space technology is to demonstrate the true potential of a solar powered satellite. The need is apparent and the time for action is now.

#### AIAA BOARD OF DIRECTORS MEETING, AUGUST 1978: ITEMS OF INTEREST

A Special AIAA Presidential Citation is to be presented to Representative Olin Teague, U. S. Congress, for his significant contributions to national support of aerospace activity.

Aaron Cohen and Robert F. Thompson, both members of the Houston Section, have been nominated as Fellows of AIAA.

Three new Technical Committees have been set up: Design Technology Technical Committee; Economics Technical Committee; and Lighter-than-Air Technical Committee.

The suggestion has been made that some members of the Houston Section might be interested in becoming members of one of these committees.

The AAS 25th Anniversary Conference to be held in Houston, 30 October - 2 November 1978, co-sponsored by AIAA, was approved. (The Future United States Space Program, Stouffers Greenway Plaza Hotel, registration fee, \$20 one day, \$50 for all four days, 1830 NASA Rd. 1, LEC Mail Code D-01, Houston, 77058 -- for Members, non-members, increased fee.)

First place for Sections having more than 500 members for Section Membership Chairman was awarded to Robert V. Glowczwski.

Student Membership has gained 17% over the preceding year. Transition from ex-student members to first year of regular membership has showed about the same percentage as regular member renewal.



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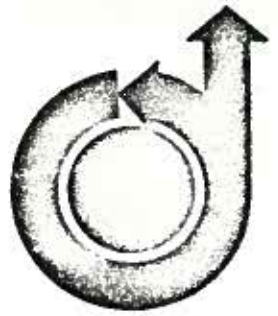
PRESENTS

"THE ENERGY PROBLEM"

BY

BOB GAMMAGE

U. S. CONGRESSMAN, TEXAS  
22ND CONGRESSIONAL DISTRICT



CONGRESSMAN GAMMAGE HAS BEEN VERY ACTIVE IN THE FIELD OF ENERGY LEGISLATION SINCE HIS ELECTION TO THE U. S. CONGRESS, AND HE CO-SPONSORED HR 12505, SOLAR POWER RESEARCH ACT. HE SERVES ON THE HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY AND ITS SUBCOMMITTEES FOR SPACE SCIENCE AND APPLICATIONS AND FOSSIL FUELS AND NUCLEAR ENERGY DEVELOPMENT. CONGRESSMAN GAMMAGE ALSO SERVES ON THE HOUSE COMMITTEE FOR INTERSTATE AND FOREIGN COMMERCE.

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TUESDAY, OCTOBER 17, 1978  
GILRUTH RECREATION CENTER  
NASA JOHNSON SPACE CENTER

6 - 7 PM	SOCIAL HOUR	\$6.00	MEMBERS & SPOUSES
7 - 8 PM	DINNER	\$7.00	NON-MEMBERS
8 PM	PROGRAM	\$4.00	STUDENTS

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FOR RESERVATIONS (DEADLINE NOON, FRIDAY OCT. 13) CALL:

SHARRON KEMP  
483-2529

PAULA ASHCRAFT  
488-5660 x201

DIANE PARSONS  
845-7541  
(COLLEGE STATION)

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