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INSTITUTE OF
AERONAUTICS AND
ASTRONAUTICS
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HOUSTON SECTION

newsletter

MAY 1978

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FROM THE CHAIRMAN

The 1977-1978 year was good for the Houston Section! We had an excellent group of monthly programs, an outstanding mini-symposium, a membership drive that set records for the AIAA, and the Section provided down payments for "Getaway Special" payload space on the Shuttle for Rice and Texas A&M Universities.

The successes for this past year are the result of hard work by a lot of dedicated people in the Houston Section. The day-to-day operations of the Section would come to a screeching halt if it were not for Ernie Hillje's hard work. Our third mini-symposium was an unqualified success because of Joe Loftus.

The Houston Section NEWSLETTER is published at intervals from September through June at the Clear Lake Offices of Northrop Services, Inc., and McDonnell Douglas Corp., by the Houston Section AIAA. Address all contributions to Norman H. Chaffee/EP4, NASA, Johnson Space Center, Houston, Texas 77058.

The meeting announcements would never get out if Bob Stephens weren't helping. And while we're on the subject of meetings, let's not forget Paula Ashcraft and Doris Folkes who take all the reservations for us. And remember the guy who pays all the bills, Earle Crum. Each of our councilors was responsible for a monthly program and I extend my sincerest thanks to each of them; Chuck Jacobson, Dottie Lee, Hu Davis, Phil Deans, and Sharon Barnes.

Bob Glowczwski was responsible for the membership drive in connection with the January meeting which provided our Section with 90 new members. Project Enterprise and the Houston Science Engineering Fair were ably handled by Mark Craig. National and Section awards plus Section officer nominations were coordinated by Bill Hayes and his nominating/awards committee.

This Newsletter would never be published without the help of Otto Kuhlmann and Pam McCambridge at Northrop, and the editing efforts of Bill Stewart. Publicity for our meetings gets done because Norm Chaffee and Dick Crane make it happen. I know that I have not named all of the people who helped make the Houston Section the most dynamic section in the country, and if your name has been omitted I apologize and extend my thanks to each and every member of the Section for this past year. I know that each of you will provide the same support to your officers and councilors for the 1978-1979 year.

--Tom Murtagh

ENERGY AND THE SPS

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. However, 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.

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. However, 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. In addition, conferences pointed out that the use of coal for electric power generation will decline after the year 2000 as it becomes toovaluable as a nonrenewable resource.

--Robert J. Ward
Legislative Affairs

HOUSTON SECTION AWARDS FOR 1977-78

At the Houston Section meeting on May 11 at the JSC Gilruth Recreation Center, Chairman Tom Murtagh presented the Houston Section Service Awards for 1977. This year's recipient of the *Professional Service Award* was *Mark K. Craig* of NASA/JSC for his outstanding efforts in implementing the Houston Section's "Getaway Special" Shuttle payload project with Rice University.

The winner of the *Community Service Award* is *Charles A (Chuck) Jacobson*, Director of the McDonnell Douglas Technical Services Company in Houston, for his excellent contributions to the community. *Mr. Robert V. Glowczwski*, our irrepressible Membership Chairman, is the winner of the *Section Service Award* for his outstanding leadership in the Section's membership activities, including staging of the most successful new membership drive in the history of AIAA last January.

We have three winners this year in our recognition of the most outstanding technical paper given by a Houston Section member at an AIAA sponsored meeting. This year's winners and their papers are as follows (in alphabetical order):

1. *Dr. Winston D. Goodrich* of NASA/JSC, et al for a paper entitled "Effect of Surface Cooling and Roughness on Transition for the Shuttle Orbiter."

2. *Mr. W. M. Hole* (of Rockwell-Houston) et al for a paper entitled "Arc Jet Test and Analysis of Orbiter TPS Inter-Tile Heating in High Pressure Gradient Flow."

3. *Dr. D. T. Tsahalis* (of Shell Research) for a paper entitled "Theory of Skin Friction Reduction by Compliant Walls."

Congratulations to all of this year's award winners! The entire Section has benefitted from your good work.

AIAA HOUSTON SECTION OFFICERS AND COUNCILORS (1978-79)

CHAIRMAN	E. L. "Ted" Hays (TEEEM)
VICE-CHAIRMAN - OPERATIONS	Bob Stephens (MDAC)
VICE-CHAIRMAN - TECHNICAL	Earl Thompson (MDAC)
SECRETARY	Bill Dickson (LEC)
TREASURER	Bob Glowczwski (MDAC)
COUNCILORS	Aleck Bond (NASA/JSC) H. E. "Pete" Clements (NASA/JSC) Stan Lowy (Texas A&M) Fred Wierum (Rice)

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COUNCILORS WITH ONE YEAR REMAINING TO SERVE

Hubert Davis (NASA/JSC)
William Hayes (MDAC)
Philip Deans (NASA/JSC)
Sharon Barnes (NASA/JSC)

NOTE: Past Chairman is ex-Officer Member of Council: Tom Murtagh (NASA/JSC)

BOND ON NATIONAL NOMINATING COMMITTEE

Aleck C. Bond, JSC Associate Director for Program Support and a past chairman of the Houston Section, has been selected to represent Region IV on the 1978 AIAA National Nominating Committee. The 14 member committee, chaired by immediate Past President Professor Rene Miller, is made up of a representative from each of the six AIAA Regions and at least four Past-Presidents of the Institute. Meeting in Washington, D.C., next May, the committee will select, as required, nominees for the National Offices of President, President-elect, Vice-Presidents, Treasurer, and Directors. Announcement of Bond's selection was made on March 28 by Region IV Director Jim McLane.

75th ANNIVERSARY OF THE WRIGHT BROTHERS' FIRST POWERED FLIGHT, 1903-1978
A PROJECT OF THE HISTORY TC & THE WICHITA SECTION

The Wright Propeller

by

Mal Holcomb

When the Wright Brothers started their development of the airplane, they believed that much of the technology already existed; and that in those areas it would be just a matter of adapting the technology to their need and operational environment. One such area was that of the propeller; in fact, the Wrights felt the propeller would be one of the easiest items that they had to develop.

Investigation of existing aeronautical literature indicated there was no analytical method of design for aerial propellers. But Wilbur and Orville still did not think this a great problem; after all, ships had been using screw propellers for nearly a century and it should be a simple matter to use marine engineering propeller theory and simply swap air tables in place of water tables. A literature search showed the Wrights there was no theoretical procedure for designing or analyzing marine propellers, just some rules of thumb.

The brothers then sat down to first develop a propeller theory and, second, use the theory to design a propeller for their airplane.

After several months of thrashing the problem between them, the brothers arrived at an analytical propeller theory. Up to that time, it was believed that propellers, marine or aerial, got all their thrust from the forward reaction of the rear surfaces pushing against the working fluid (air or water). Other aerial pioneers, such as Maxim and Langley, used propellers with large, flat blades that were simply pushing surfaces in which little or no attention was paid to the curvature of the upper (forward) surface. The Wrights realized that a major portion of a propeller's thrust comes from the lift generated because of the blade section properties. With their new propeller theory and their wind tunnel derived airfoil data, they were able to proceed in the design of the propellers.

The Wrights chose to use two propellers so they could obtain a reaction against a greater quantity of air and by rotating them in opposite direction they would thus neutralize the torque.

Once the propellers were designed, the brothers went to their shop and, with drawknives, hand-carved the propellers. The final result was a pair of propellers that had a higher efficiency than any previously achieved. This high propeller efficiency was an important factor in the Wrights' successful conquest of the sky.

SCIENCE FAIR AWARDS

The Houston Section Engineering Fair was held March 30 - April 1 in the Astrohall and drew over 620 projects in the junior and senior divisions. As in past years, the Houston Section gave an award to the project in each division which best exemplified the objectives and interests of the Institute. The award is comprised of a handsome plaque and a special tour of the Johnson Space Center. This year's winner, in the junior division, is Paul Dizon of Seabrook Intermediate School with his project "Rocket Centers of Pressure". Paul's interest in model rocketry led him to investigate the relation between model centers of gravity and centers of pressure to determine why some rockets were unstable. In the senior division the winner was Jim Boggs of Clear Creek High School. Jim constructed an "Inertial and Directional Tracking System" from commercially available electronic components, spare parts, and used aircraft instruments. By recording direction and acceleration time histories his unit was able to track the path that it had taken from a known starting location. Incidentally, Jim was also named one of the Grand Prize winners so that he will be an entrant in the National Science Fair in Anaheim later this year.

BRAZOS VALLEY S&E FAIR HELD

The fourth Brazos Valley Science and Engineering Fair was held on April 5th and 6th on the campus of Texas A&M University. The Houston Chapter of the American Institute of Aeronautics and Astronautics participated again this year by providing funds for a Special Award to the most outstanding exhibitor in the area of aeronautics or space related activities.

The judging was performed by a team of three students from the Texas A&M University AIAA Student Branch headed by Keith Spalding. This year a fifty dollar cash award was made to Edward Earl Bay from Navasota High School for his project, "An Investigative Study of the Refractivity of Aqueous Solutions". This outstanding exhibit was also judged to be Best of the Fair and will represent the region at the International Science and Engineering Fair in Anaheim, California, later this month.

JUNE MEETING L-5 SOCIETY

The June meeting of the Houston Chapter of the L-5 Society will be held at 7:30 pm on Friday, June 16, 1978. The location is Room 117 of Science and Research Building I on the University of Houston Main Campus. The speaker will be Dr. Hubert Davis, head of the Future Programs Office at Johnson Space Center. For more information, call Larry Friesen at McDonnell Douglas, 488-5660 Ext. 293.

RECENT PAPERS BY HOUSTON SECTION MEMBERS

Ed Whitsett of JSC recently gave a presentation entitled, "Manned Maneuvering Units", at the Goddard Memorial Symposium in Washington, sponsored by the AIAA, the AAS, and the German Astronomical Society.

KINTNER DISCUSSES FUSION AS A SOURCE OF ENERGY

On Tuesday, April 18, 1978, Mr. Edwin E. Kintner, Director, Division of Magnetic Fusion, U.S. Department of Energy, Washington, D.C., addressed the American Institute of Aeronautics and Astronautics, NASA - Houston Section, with a presentation on "The Status and Outlook for Magnetic Fusion Energy". Mr. Kintner, a graduate of the U.S. Naval Academy, was the guest speaker for the evening at the Gilruth Recreation Center, NASA/Johnson Space Center.

Using slides, accompanied by a most descriptive dialogue, Mr. Kintner stated at the outset that "fusion", the power of the sun and stars, is a source of energy for electric power generation now under research and development at the Department of Energy. Fusion Reactors, as a future source of energy, are of particular interest because "deuterium", the fuel required, is virtually limitless and further, the environmental aspects appear most favorable.

Mr. Kintner continued by stating that there were three inexhaustible sources of energy -- "solar", "fission" and "fusion". Magnetic Fusion, the one under development by the Department of Energy, is the subject of "feasibility studies" through 1982, with Budget Authority through 1979. Magnetic Fusion Programs are currently in progress at Oak Ridge, Los Alamos, General Atomic and other institutions, including universities and industry. In addition to the United States, there are three other major programs of international importance - U.S.S.R., European and Japan.

The Program Co-ordinator for the evening was Robert R. Stephens, Program Manager, Advanced Space Programs, McDonnell-Douglas Technical Services Co., Inc.

HILLAKER ADDRESSES MAY MEETING

Harry J. Hillaker of General Dynamics spoke to the May Meeting of the Houston Section following the Section awards and introduction of new Officers and Councilors.

Formerly the F-16 program manager, Mr. Hillaker presently is the manager of advanced programs at Convair.

Charts were presented to indicate that 2000 to 3000 new fighters will be needed by the several countries involved through 1980. However good the F-16 is, it presently is "old hat", according to Hillaker.

Technical material was presented to indicate the performance of developmental aircraft currently under test. Superior performance was shown in each of several different categories.

The fighters which can be foreseen presently will be a function of avionics, the controlling factor. "Digital" airplanes -- craft using digital processing -- appear to be indicated by present trends, with improved manueverability and efficiency resulting.

PRAIRIE VIEW STUDENT CHAPTER BEGINS OPERATIONS

Prairie View A&M University Student Branch, the Institute's newest student branch and the third to be associated with the Houston Section, conducted their first field trip with a visit to the Johnson Space Center at Houston on April 18. The space center tour was designed to provide a view of activities relating to the students' interest .

in their space shuttle "Getaway Special" payload, a project sponsored by McDonnell Douglas/Houston.

Visits to the astronaut training simulators, orbiter cargo bay mockup and manipulator development facility, mission control center, and Space Environment Simulation Laboratory were complemented by a visit with JSC Director Christopher Kraft, Jr., and a discussion of payload planning with Shuttle Payload Integration and Development Program Deputy Manager Cliff Charlesworth.

Led by Student Branch Chairman Sidney Brewer and Faculty Advisor Dr. Herschell Sheely, the group was guided on their tour by Houston Section Student Activities Chairman Mark Craig and Region IV Director Jim McLane. Following the tour, the students were special guests of the Houston Section at their April dinner meeting, which focused on the status and future of fusion reactors for power generation.

FEINBERG OF RICE REPORTS

1977-78 Student Chapter meetings included:

1. John Schuessler spoke on the Aerospace Industries' responsibility toward the UFO problem.
2. Frank Curtis spoke on the Space Shuttle carrier aircraft.
3. Ron Thory spoke on Spacelab and the ESA.
4. David McKay spoke on Lunar geology from Apollo.
5. Showed a NASA film on Space Program history.
6. James Goolsbay spoke on F-16.

Consistently, there have been about five student members attending the Houston Section meetings.

An outstanding achievement was the start of Project Enterprise.

Average attendance at Student Chapter meetings rose from a low of about 8 last year to over 30 this year. Membership in the Chapter rose to a solid 31.

New officers for the coming year are:

Chairman	Wayne Derrick
Vice-Chairman	David Zichichi
Secretary-Treasurer	Richard Klein

PROFESSIONAL PARTICIPATION COMMITTEE CONDUCTS PROJECT MATCH

The Professional Participation Committee is conducting a Project called Match. Committee chairpersons and members are urged to get involved and reap the benefits.

The process of getting involved is simple. Committees needing member support for committee activities can call the Professional Participation Committee; members desiring to participate in committee activities can call the Professional Participation Committee. The Professional Participation Committee will match needs with desires.

The result, if logic holds true, is more participation in Section activities. Let the PPC hear from you.

--C. H. Stewart/483-4926, Chairperson
Professional Participation Committee

MEMBERSHIP MATTERS

New Members.

March

Thomas P. Bauer	?
Carolyn L. Conley	JSC/CG5
James D. Davis	MDAC
Ralph M. Lawton	MDAC
Robert A. Ligons	JSC/CH5
John Lintott	JSC/SE4
James C. Orr	?
James M. Webb	MDAC

APRIL

James L. Clement, Jr.	?
Dr. A. Darrell Devers	TAMU
Charles E. Douglas	MDAC
George E. Kelly, Jr.	JSC/EL2
Roger Allen Kerr	?
Frederick Kolb	?
Carl A. Lauritzen	?
Kenneth R. Nelson	Singer
Sally K. Ride	JSC/CB

Advance in Grade.

Jose C. Alvarez (Ford Aerospace) to Associate Fellow

Membership Status - Region IV Sections

	MEMBERS ASSIGNED			NEW MEMBERS RECRUITED	
	*6/30/77	4/30/78	% Change	Number	% of Base
Albuquerque	160	172	+ 7.5	19	11.9
Central Texas	22	21	- 4.5	3	13.6
Holloman-Alamogordo	34	37	+ 8.8	5	14.7
HOUSTON	507	598	+ 17.9	141	27.8
Inland Missile Range	39	38	- 2.6	5	12.8
North Texas	541	532	- 1.7	51	9.4
Oklahoma	90	102	+ 13.3	16	17.8
Southwest Texas	100	101	+ 1.0	13	13.0

Comment: We are continuing to show "how it's done". Bob Glowczwski and his crew are doing an outstanding job, Let's have a final drive to get our "% Change" up to 20% for the year (by 6/30/78). It can be done, so why not do it? Collect some of those $10 coupons and be ready for your 1978-79 dues bill which will be out in June or July. DO IT NOW!!!

Membership Status - National Regions

	MEMBERS ASSIGNED			NEW MEMBERS RECRUITED	
	*6/30/77	4/30/78	% Change	Number	% of Base
Region I	6477	6595	+ 1.8	699	10.3
Region II	1750	1849	+ 5.7	212	12.1
Region III	1835	1825	- 0.5	207	12.3
REGION IV	1493	1601	+ 7.2	253	16.9
Region V	1536	1577	+ 2.7	174	11.3
Region VI	7967	7976	+ 0.1	664	8.3
National Assigned	21058	21423	+ 1.7	2179	10.3

Comment: We're still the TOP Region in AIAA -- as we have been for several years!

Membership Chairman Award Status. Bob Glowczwski sure seems to have the Large Section Award in the bag -- all that needs to be done is to pull up the zipper in the next couple months. Bob has 101.78 points with Pacific Northwest in the #2 spot with 50.64 and Dayton-Cincinnati #3 with 48.28. In the medium sized sections it's #1 Palm Beach (74.01), #2 New York (54.37) and #3 Princeton (54.37). In the small Sections it's Vandenberg #1 (154.21), Central Florida #2 (95.00) and Delaware #3 (91.18); the Region IV Sections are way back in the pack.

1978-79 Dues. As you know, your dues are payable by September 30th each year. Advance dues bills are sent out early in July. Each member that pays early helps save AIAA money for repeat billings - about $0.35 for each mailing - and it is therefore very important that you remit your dues at the earliest possible moment. Furthermore, the summer is an ideal time to pay - midway between the trauma of "IRS Day" and Christmas shopping. Why not initiate a "Do-It-Yourself Dues Reduction Campaign"? It's simple - recruit new members and you'll get $10 in Incentive Coupons for each one you recruit. Need details? Call Bob Glowczwski!

Above all, pay your dues by the deadline and you'll sure help your poor, overworked Membership Chairman! Last year over 100 of the Section members were late in their payments, which meant a lot of telephone work by the Membership Committee. Even worse, the Section lost about 50 members for non-payment of their dues - almost 10%! That's a lot of "drop-outs" that we can ill afford to lose. It hurt us in that 50 of our new members had to offset the loss. So please, pretty please -- REMIT YOUR DUES AS EARLY AS POSSIBLE, preferably in response to the early billing.

--Bill Simmons

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