



Donald W. Douglas, Jr., President of Douglas, discusses valve and fuel flow requirements for space vehicles with Dr. Henry Ponsford, Chief, Structures Section.

Spaceliners have the biggest thirst in the universe

Each 6,000,000 pound thrust rocket ship now being planned for manned interplanetary exploration will gulp as much propellant as the entire capacity of a 170 passenger DC-8 Jetliner in less than 4 seconds! It will consume 1,140 tons in the rocket's approximately 2 minutes of burning time. Required to carry this vast quantity of propellant will be tanks tall as 8 story buildings, strong enough to withstand tremendous G forces, yet of minimum weight. Douglas is especially qualified to build giant-sized space ships of this type because of familiarity with every structural and environmental problem involved. This has been gained through 20 years of experience with missile and space systems.

Douglas is now seeking qualified engineers, physicists, chemists and mathematicians for programs like SATURN plus others such as ZEUS, SKYBOLT, MISSILEER, DELTA, GENIE and ANIP. For full information write to Mr. C. C. LaVene, Douglas Aircraft Company, Inc., Santa Monica, California, Section B.



MISSILE AND SPACE SYSTEMS ■ MILITARY AIRCRAFT
DC-8 JETLINERS ■ CARGO TRANSPORTS
AIRCOMB ■ GROUND SUPPORT EQUIPMENT

Personals

1914

Albert W. Wells died on August 3 of cancer. He had retired in 1945 from the engineering department of the Los Angeles Railway. He is survived by his sister, Rachel Wells.

1920

Russell M. Otis, PhD '24, died on November 19 of a cerebral hemorrhage. At the time of his death he was vice president of the Oil Shale Company in Beverly Hills. Dr. Otis had a fellowship with the first physics faculty at Caltech and, under the direction of Robert Millikan, was the first scientist to do research at the Institute on cosmic rays.

From 1924 to 1927 he worked at the Bell Laboratories in New York, where he designed the vacuum tube used in the first transatlantic telephone. He then served as research director at the Hughes Development Company until 1931. He spent a number of years as a consulting engineer in private practice before becoming research director of the Lane-Wells Company in 1941, and in 1952 he became vice president of the firm. He joined Oil Shale in 1958.

He is survived by his wife, a son, Robert, and two grandchildren.

1922

Richard M. Bozorth, PhD, writes from Short Hills, N.J., that he "made a second trip to the USSR at the request of the State Department and happened to be in Moscow at the break-up of the Paris Conference, and in Sverdlovsk (a closed area) when the U-2 was in the news. I received an inscribed gift at the Sixth Annual Conference on Magnetism for founding the conference. I'm retiring from the Bell Laboratories next April and am planning to accept an invitation to spend a year at the University of Tokyo, and also spend some time as a consultant to the U.S. Navy."

1930

Henry Imus is now rotating shift superintendent of the plant superintendent's office of Technicolor, Inc. He is also the proud co-possessor of an Academy Award for an invention of wet printing motion picture film. "Our family is exploding," he writes. "We've got kids in Sacramento (at Aerojet); at the University of Virginia (working for a master's degree in business); and at U.C. Riverside (where our freshman daughter is studying to become a lab technician)."

1931

Brigadier General Benjamin C. Holzman, MS '33, has been named Commander of the Air Force Cambridge Research

Laboratories in Bedford, Mass. He was formerly Commander of the Air Force Office of Scientific Research in the Air Research and Development Command. He is married and has a daughter, Katherine, 17.

1932

Walter P. Huntley, a partner in the law firm of Fulwider, Mattingly & Huntley in Los Angeles, died of a heart attack on December 12. A former JPL employee, Walter also worked at Decca Records in Middlesex, England, for over a year before joining the firm of patent attorneys. He is survived by his wife; a son, Michael, who is in the Army in Japan; a daughter, Judy; and twins, Lindsay and Christina.

1934

Paul L. Kartzke, MS '35, takes over as executive vice president of the Shell Oil Company of Canada in Toronto this month. He has been vice president in charge of exploration and production at the Calgary Office. The Kartzkes have three children: Barbara, who graduated from the University of Colorado last June, and is now studying at the University of Geneva; Paul, a freshman at Stanford; and Richard, a student at Lawrenceville Academy in New Jersey.

1938

Charles F. Robinson, MS, PhD '49, director of the Bell & Howell Research Center in Pasadena, has been elected vice president of Consolidated Electrodynamics Corporation, a subsidiary of Bell & Howell. He has been with CEC since 1947.

1940

Comdr. William A. Spooner was transferred last summer from the Bureau of Naval Weapons in Washington, D.C., to Indianapolis, where he is now programs officer at the U.S. Naval Avionics Facility. "My wife and two children (Billy, 8, and Eileen, 6) are having their first experience of living in the Midwest," he writes. "Next February I will complete 18 years in the Navy—a career I never anticipated when I graduated from Caltech. Most of my duty has been in the field of aviation electronics but has broadened into more general management activities since I graduated from the Harvard Business School in 1956."

1942

Parameswar Nilakantan, MS, writes from Bangalore, India, that he is now director of the National Aeronautical Laboratory there. He was formerly director of technical development and production (air) at the Ministry of De-

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Where
do
you
go
from
here?



We're not looking for a direct answer.

This is just to remind you that a good knowledge of miniaturization is worth having — wherever you go in the world of engineering.

Keeping engineering minds well-informed on the latest progress in — and with — MPB miniature and instrument bearings is one of our main objectives. MPB bearings are made in over 500 types and sizes, with O.D.'s from 5/8" to 1/10". They are used in over 16,000 applications, ranging from dental handpieces to missile systems.

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Personals . . . continued

fense of the Government of India. He has been vice president of the Aeronautical Society of India since 1958.

1943

William C. Thompson is now working with digital computers at Autonetics. He was formerly with North American Aviation in Downey. The Thompsons have two daughters, Margaret 3½, and Shelby Lee, 1½.

1944

Walter Fillipone, MS, senior geophysicist at the head office of the Union Oil Company in Los Angeles, writes that he had a visit with *Enrique Silgado*, MS '44, in Lima, Peru, last year. Enrique is teaching at the University there. Walter spent a couple of months last summer in Australia where he supervised the start of Union Oil's exploration in the Surat Basin in Queensland.

Robert McAnlis writes that he and his family are now in New Jersey, where he operates out of the general engineering headquarters of the Johns-Manville Company in Manville. Bob travels to the various Johns-Manville plants in New Jersey and California, acting as a consultant in industrial ventilation and dust control. The McAnlises have three daughters — 12, 10 and 8.

1945

James K. Nason died in Los Amigos Hospital in Downey on November 21 of polio. He had gained national recognition as resident engineer on the Long Beach Bridge and the Long Beach Freeway in North Long Beach, by predicting the amount of settling within one-eighth of an inch. He was on his way to greater success as a construction engineer when polio struck five years ago. After some time in an iron lung and a year of hospitalization, he came home. He continued working in a specially rigged wheelchair and also painted pictures as a hobby. He was offered a scholarship by the National Artists School recently. Jim is survived by his wife and two daughters — Cynthia, 7, and Deborah, 8.

1950

Adam Schuch, PhD, is alternate group leader at the Los Alamos Scientific Laboratory in New Mexico. He has been at the lab for 11 years.

John B. Rutherford, MS, is now a partner in a new firm, Rutherford & Chekene, consulting engineers in San Francisco. He was formerly in business for himself as a structural engineer in Los Altos.

Jerome K. Delson, MS, PhD '53, will be in Copenhagen for a year as a consultant in power system planning for

the North Zealand Electricity and Tramway Company.

Floyd B. Humphrey, PhD '56, research group supervisor at JPL, now has two daughters — Virginia, born on November 5, and Victoria, 4.

1951

Woldemar V. Jaskowsky, consultant at the Plasmadyne Corporation in Santa Ana, is in Germany for a year at the Institute of Plasmaphysics in Munich.

J. P. Nitsch, PhD, is associate director of a phytotron now under construction at Gif-sur-Yvette, about 15 miles south of Paris. The lab is being built by the French counterpart of the National Science Foundation. "As good followers of Caltech's example and lead in this field," writes Jean, "we have patterned the general disposition of climatic rooms after that in the Earhart Plant Research Laboratory. We have added a biochemistry laboratory and a "semi-phytotron" to the structure — making this phytotron the largest in the world. Even though the lab may still take some 2 years to complete, research work on naturally-occurring plant hormones is already well started, and workers from various countries are coming here. Caltech's pre- and post-doctoral research fellows will always be especially welcome."

1955

James L. Adams, instructor at Stanford University, was married on November 9 to Miss Judith Scholtz at Knights Landing.

1956

Thomas P. Gordon, MS, PhD '59, is now in the research and development department of Five Chemicals of Canada, a subsidiary of S. B. Penick and Co. in Toronto. The Gordons have a son, Christopher, born last March.

Byron Johnson, Jr., is city engineer of Claremont, Calif. He has two sons — Douglas, 3½, and Neal, 1½.

Raymond Orbach writes that "after getting my BS in physics, my wife and I moved to Berkeley where in 1958 our son, David, was born. In January 1960 I received my PhD. Since then we have been living in Oxford, England, where I have been doing research at the Clarendon Laboratory on an NSF fellowship. Our second child was born here — a girl, Deborah. With the renewal of my NSF grant we expect to be here yet another year."

1957

Lt. Pierre Lesgourgues, MS, is still in the French Air Force, serving as a pilot in Algeria. He hopes, however, to return to civil engineering in the spring.