

birth of a satellite

Most new ideas, like this inhabited satellite, start out as drawings on a sheet of paper. Here artist Russell Lehmann shows the first step in building the space station proposed by Darrell C. Romick, aerophysics engineer at Goodyear Aircraft.

Two ferry ships, one stripped of rocket units, are joined end to end. As others are added, this long tube forms temporary living quarters for crews. Eventually, outer shell will be built around core, making completed station 3,000 feet long, 1,500 feet in diameter.

● No one can be sure which of today's bright ideas will become reality tomorrow. But it is certain that in the future, as today, it will be important to use the best of tools when pencil and paper translate a dream into a project. And then, as now, there will be no finer tool than Mars—from sketch to working drawing.

Mars has long been the standard of professionals. To the famous line of Mars-Technico push-button holders and leads, Mars-Lumograph pencils, and Tradition-Aquarell painting pencils, have recently been added these new products: the Mars Pocket-Technico for field use; the efficient Mars lead sharpener and "Draftsman's" Pencil Sharpener with the adjustable point-length feature; and — last but not least — the Mars-Lumochrom, the new colored drafting pencil which offers revolutionary drafting advantages. The fact that it blueprints perfectly is just one of its many important features.

The 2886 Mars-Lumograph drawing pencil, 19 degrees, EXEXB to 9H. The 1001 Mars-Technico push-button lead holder, 18 degrees, EXB to 9H. Mars-Lumochrom colored drafting pencil, 24 colors.



J.S. STAEDTLER, INC.
HACKENSACK, NEW JERSEY

at all good engineering and drawing material suppliers

PERSONALS

1920

James R. Black, general traffic manager of the Pacific Telephone and Telegraph Company in southern California, died on December 20, after a long illness. He was 58 years old. A native Pasadenan, Jim had been with the telephone company since 1920, and had held such positions as traffic chief, district traffic superintendent, and division traffic manager before being named general traffic manager in 1941. He was president of the Caltech Alumni Association in 1934-35. Jim is survived by his wife, Georgenia; two sons, James and Stuart; and four grandchildren.

E. Victor Houseell, senior engineer in the plant department of the Pacific Telephone and Telegraph Company in Los Angeles, completed 35 years of service with the company last month. *Mark A. Sawyer* also chalks up 35 years with Pacific Telephone this month; he's a protection engineer in the engineering department.

1921

Alfred J. Stamm, subject matter specialist in chemistry at the U. S. Forest Products Laboratory in Madison, Wisconsin, has just returned from a trip around the world with his wife, two daughters and a son. Al took a leave of absence to accept a senior Fulbright research award at the Australian Forest Products Laboratory in Melbourne.

Edward D. Seaver is now vice president and chief engineer of Summerbell Roof Structures in Los Angeles.

1926

Jen-Chieh Huang is vice president of the Taiwan Sugar Corporation in Taipei, Taiwan, China.

1928

Richard G. Folsom, MS '29, PhD '32, is director of the engineering research institute of the University of Michigan in Ann Arbor. He was formerly chairman of the department of mechanical engineering at UC in Berkeley.

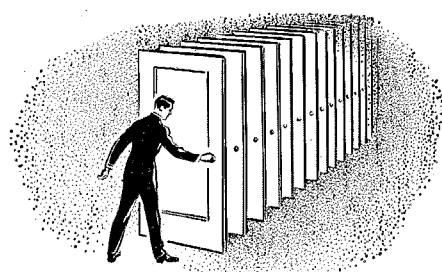
Ralph Waldo Cutler, MS '29, has gone into business for himself as a consulting structural and mechanical engineer in South Pasadena. He was formerly a partner in the Vernon Construction Company.

1929

Ernest B. Hugg, MS '30, was recently appointed assistant director of the Physical Plant department (formerly known as Buildings and Grounds) at Caltech.

1931

George F. Wislicenus, MS, PhD '34, is now director of the ordnance research lab at Pennsylvania State University in Uni-



Doors to Opportunity UNLIMITED at FTL

"Small-company" project system plus expanding facilities and assignments speed recognition for ambitious young engineers at Federal Telecommunication Laboratories

FTL offers unlimited, interesting, challenging assignments with opportunities for real achievement in professional recognition.

Unlimited opportunities to advance in a growing research and development laboratory... new buildings... more and better facilities... a dynamic expanding staff. Unlimited cultural and educational opportunities.

FTL, a congenial and inspiring place to work and grow, is "in the country"—yet only minutes away from New York City's unique advantages.

East Coast Assignments Include:

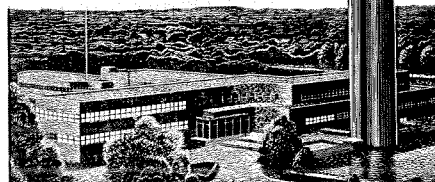
Radio Communication Systems
Traveling Wave Tubes
Electronic Countermeasures
Air Navigation Systems
Antennas • Missile Guidance

Transistors and other Semiconductor Devices
Computers • Telephone and
Wire Transmission Systems

Opportunities for relaxed living and career-building also available at FTL's West Coast Laboratory... with openings in Digital Computers, Inertial Navigation Systems and Infra Red Systems. Write to: 15191 Bledsoe St., San Fernando, Cal.



Federal Telecommunication Laboratories
A Division of International Telephone and Telegraph Corporation
500 Washington Ave., Nutley, N. J.



East Coast Laboratory and Microwave Tower

Personals . . . CONTINUED

versity Park. He's also serving as secretary of the American Society of Mechanical Engineers.

1932

Joseph Sheffet, MS '33, has been elected 1957 vice president of the Structural Engineers Association of Southern California. He has his own business as a structural engineer in Pasadena.

1933

Jack Sparling was installed as a director of the Structural Engineers Association of Southern California at their January 2 meeting in Los Angeles. Jack is vice president and chief engineer of Quinton Engineers, Ltd., in Los Angeles.

1935

Rear Admiral James S. Russell, MS, writes from Washington, D.C., that he will be completing his second year as chief of the Navy's Bureau of Aeronautics in March. "Although one gets appointed and sworn in for four years," says Jim, "a relief during the third year is usual. I am enjoying this excursion into big business with its engineering, administration, and high finance, but 'tis a pleasant day when a seaman can return to the sea."

Jesse E. Hobson, PhD, has been named vice president of the United Fruit Company of Boston and New York. He had been director of the Stanford Research Institute in Menlo Park, California, for eight years prior to his resignation early in 1956. The Hobsons will now make their home in Boston.

1936

Chauncey W. Watt, Jr., came back to California last June to work as a product engineering supervisor at Consolidated Electrodynamics Corporation in Pasadena. For the past 14 years Chan has been in Massachusetts, working for MIT in the digital computer lab and the Lincoln Labs. He married a Boston girl and they have a 10-year-old daughter, Kathie.

1937

James W. Daily, MS, PhD '45, professor of hydraulics at MIT, is now a senior member of the American Society of Mechanical Engineers.

Noel R. Park is working as a geophysicist for the Standard Oil Company in Midland, Texas.

1938

Roger H. Cowie reports that he is "working for the Shell Oil Company in New Orleans as a marine geologist, supervising exploration geological work in the Gulf of Mexico, off the Louisiana coast. I now have five children—all little demons: George, 14, was born in Wewoka, Oklahoma; Alison, 12, was born in (of all

places) Pasadena, California; John and Victoria, 8, were born at Waynesville, Missouri; and Steve, 2, arrived in Houston, Texas."

Gardner P. Wilson recently joined the ElectroData Division of the Burroughs Corporation in Pasadena as manager of the western engineering branch, which works on the development and design of large electronic computers. The Wilsons live in Pasadena and have two daughters, 12 and 10.

1939

Arthur J. Stosick, PhD, formerly division chief of the rockets and material division of Caltech Jet Propulsion Laboratory, is now assistant to the director of the new Union Carbide Research Institute which will be located near Tarrytown, New York. Facilities for the new Institute, which will be devoted to basic research, should be completed by the spring of 1958.

1941

Jerry A. Jones is now manager of the chemical and metallurgical research laboratory of the Lockheed Aircraft Corporation's Georgia division in Marietta. Except for two years of duty in the Navy, Jerry has been with Lockheed since 1951. The Jones' have three children and are living in Atlanta, Georgia.

Joseph W. Trindle, MS '49, ("PhD frustrated by Smythe"), has been a North African missionary for the past six years. He writes: "During our very recent sick leave to the States, I wasn't unaware of the temptation to get one of the engineering jobs which were so plentifully advertised. ('Just think! If you get a decent job, you can send out four missionaries,' was the way one member of my family put it to me), but both my wife and I are very happy to be back in Morocco.

"When our freighter put in to Casablanca, we were greeted by the Port Engineer, who had known me during the war. He and his wife gave us the keys to the city for two days. We heard from them that Radio Cairo is continuing to inflame the Moors against the French, despite the insistence of the new Sultan that the French are welcome citizens of the new Morocco. There are ten to fifteen thousand Moorish troops closing in on the southern city of Agadir who have defied the authority of their Sultan, and are looting the countryside to obtain their sustenance. Europeans are having to evacuate.

"There is also a general slowdown strike whereby factories are being forced to shut. To cite an example, a Simmons Mattress factory in Casablanca, which formerly made over eighty mattresses a day, is now producing seventeen. The

manager pleads with the workers, showing how the factory will be forced to close and they will be jobless; but they prefer to listen to Cairo. And so Morocco, with every resource for a lively industrial life, is returning to the poverty it knew before the French came.

"These are some of the conditions which make us happy to be back, believe it or not; for such human dilemmas can never be solved by human resources, however great; whereas the gospel of Christ is always the very power of God and alone can save. Our work will not be without its danger, for the Koran specifies that apostates from Islam should die; and in their zeal to kill our converts, it is quite understandable how fanatics would seek to kill us also."

1943

Charles P. Strickland, Jr., has been named industrial sales manager of the southwest district for the York Corporation, a subsidiary of the Borg-Warner Corporation. With headquarters in Houston, Texas, he will be responsible for the sale of York industrial air conditioning and refrigeration products in Louisiana, Texas, and parts of Alabama, Mississippi and New Mexico. The Stricklands have a new daughter, Charlene, who is just four

months old. Their other children are Anita, 10, and Frederick, 1½.

Capt. William E. Sweeney, MS, AeE, director of electronics in the Navy's Bureau of Aeronautics, writes that since they combined the departments of Armament, Aircraft Navigation and Electronics last August, he now has a new title—director of Avionics. Bill got a second MS—this one in business administration—from George Washington University in Washington, D.C., last June.

1944

George G. Shor, Jr., MS '48, will be back in La Jolla in February. He writes: "During the last year, I've moved around. In the summer, I led a two-ship oceanographic and geophysical trip to the Aleutians and the Hawaiian Islands; I expect to go on another next summer. Immediately after this, I attended the International Geological Congress at Mexico City, along with other Caltech staff members and alumni. Among those who had come the farthest was Joe Alexander, MS '50, who is with the British Colonial Geological survey at Batu Gajah, Malaya. He reported that he had his PhD from the University of London, and, since leaving Caltech, he has acquired a wife, teenage stepdaughter, and an infant son, and is

finding field work at Malaya a good deal safer than it was when he was there in 1948.

"In October I came to Woods Hole Oceanographic Institution for a four-month exchange visit, bringing my wife and children—Sandy, 5, and Lyn, 1½—with me. New England weather has confirmed in all of us a great love for California. We came east a family of four—and will return a family of five, including a small Yankee named Donald Williston Shor, who arrived on December 15.

"All this traveling is for the Scripps Institution of Oceanography at La Jolla."

1946

Andrew Berrien Campbell, engineering supervisor of the Hillman-Kelly Company in Los Angeles, will be married to Miss Verence Mills of San Francisco, on St. Valentine's Day, in San Gabriel, California.

Comdr. Robert J. Trauger, U.S.N., MS, is now a student at the Industrial College of the Armed Forces at Fort McNair in Washington, D.C. Previously he headed the Patrol Plane Design Branch in the Navy's Bureau of Aeronautics in Washington. He's hoping his next tour of duty will be in California.

Richard A. Fayram, MS, senior research engineer at Aerojet-General Nucleonics in San Ramon, California, died of heart complications following a case of chicken pox, on Christmas morning, at his home in Orinda, California. He had been a consultant to the radiation laboratory at the University of California at Berkeley and was associated with the Aerojet-General Nucleonics project as a senior staff member for the past year. Dick had worked in the atomic energy field since 1947, when he was a member of the NEPA division of the Fairchild Engine and Airplane Company in Oak Ridge, Tennessee. In 1955 he received a Fulbright Fellowship which took him to Oslo, Norway, where he studied the application of nuclear energy to ship propulsion. He is survived by his widow, Jeannette, and three children—David, Margaret and Richard, Jr.

Richard H. De Lano, MS '46, secretary of the Systems Laboratories Corporation in Sherman Oaks, California, has been appointed as director of the company's systems integration division. For the past ten years, his major experience has been in electronics and radar, one of his major projects being the development of the Falcon air-to-air guided missile when he was senior staff physicist at the Hughes Aircraft Corporation.

John Richter is now field engineer for the Portland Cement Association in the Los Angeles metropolitan area. He was formerly a sales engineer for the Davidson

Engineering Opportunities
in the field of
MISSILE CONTROLS

Positions available
for mechanical and
electrical engineers

AERONAUTICAL DIVISION
Robertshaw-Fulton
CONTROLS COMPANY
Santa Ana Freeway at Euclid Avenue
Anaheim, California

"EVERYTHING'S UNDER CONTROL"

UNEQUALED FACILITIES... assure



In this inspection area of the new Fafnir instrument bearing facilities, dust particles larger than 0.2 of a micron are filtered out by special air conditioning.

Completely new facilities for manufacturing precision instrument bearings increase Fafnir's ability to meet growing demands and more exacting bearings specifications. Latest type equipment, including ultrasonic cleaning units and unique testing devices, assure new highs in instrument bearing quality. Fafnir's precision instrument bearing facilities are unequaled in the field today — another sound reason why industry looks to Fafnir for help with bearing problems. The Fafnir Bearing Company, New Britain, Connecticut.

FAFNIR BALL BEARINGS

MOST COMPLETE LINE IN AMERICA

NEW HIGHS in QUALITY for INSTRUMENT BEARINGS

The development and application of Fafnir instrument bearings call for a knowledge of the design and operation of widely diversified types of equipment, ranging from automatic pilots, computers, and guided missile instruments, to laboratory equipment. Perhaps the challenging and varied field of bearing engineering or engineering sales offers you the opportunities you want. We'd be glad to hear from you.

3 BIG STEPS



to success as an **ENGINEER**

- 1. AMBITION**—it is assumed you have this in abundance or you wouldn't be where you are.
- 2. GOOD SCHOOL**—you are fortunate studying in a fine school with engineering instructors of national renown.
- 3. THE A.W.FABER-CASTELL HABIT**—shared by successful engineers the world over. It only costs a few pennies more to use CASTELL, world's finest pencil, in 20 superb degrees, 8B to 10H. Choose from either imported #9000 wood-encased, Locktite Refill Holder with or without new Tel-A-Grade degree Indicator, and imported 9030 drawing Leads.

If you hope to be a master in your profession, use CASTELL, drawing pencil of the masters. If your College store is out of CASTELL, write to us.

A.W.FABER-CASTELL
PENCIL CO., INC. NEWARK 3, N. J.



Personals . . . CONTINUED

Brick Company in Los Angeles. The Richters have two sons and live in La Canada.

Morton M. Astrahan, MS, is manager of advanced engineering in the IBM research laboratory in San Jose, California. He's been with the company since 1949.

1948

Hamed Kamal Eldin, MS, is public relations manager for the Near East division of Esso Standard, Inc. His office is in Maadi, Cairo, Egypt.

George Roe writes from Hawaii that he "just got back from a two-year trip around the world. I worked for a few months in Australia—and married an Australian girl. We're settling down in Honolulu for good. I've just returned to a job as engineer and estimator for a large general contractor here."

Charles Susskind reports that he now has a third child, Amanda Frances, born on New Year's Day. The other two children are Pamela, 4, and Peter, 2. Charles is now assistant professor of electrical engineering at the University of California in Berkeley and he is also active as an engineering consultant. In his spare time, he is a journalist and broadcaster for KPFA-FM on cultural topics, notably music.

1949

Carl W. Helstrom, MS, PhD '51, research mathematician for the Westinghouse Research Laboratories in Pittsburgh, Pennsylvania, was married in New York City last October to Miss Barbro Dahlbom of Bollnäs, Sweden.

Charles H. Arrington, Jr., PhD, has been appointed laboratory director for the DuPont Company's chemical department in Wilmington, Delaware. He's been with Du Pont since 1949.

1950

Cdr. Jack L. Shoenhair, MS, writes from the Naval Air Station at Pensacola, Florida, that he is now Assistant Overhaul and Repair Officer there, and has been selected for Captain. He also reports a new addition to the family—Kathy—which makes a total of four.

1952

Harry E. Williams, MS, is attending the University of Manchester in England on a Fulbright Scholarship. He was formerly a development engineer at Caltech's Jet Propulsion Lab.

Peter Verdier, listed as one of our "Lost Alumni" in the December *E & S*, has been located at the chemistry department of Harvard University, where he is studying for his PhD.