WE HEAR THAT . . .

FUBINI

Eugene G. Fubini has resigned as a corporate vice-president and group executive of IBM. He is now a private technical consultant and IBM has arranged to become one of his clients. Fubini was responsible for IBM's research and advanced systems development divisions. Before joining IBM in 1965 he was assistant secretary of defense and deputy director of defense research and engineering.

Starting 1 July, **J. W. Leech** of Queen Mary College, London, will be professor and department chairman at the University of Waterloo, Ontario.

Ronald Smelt, vice-president and chief scientist at Lockheed Aircraft Corp, succeeds **Robert C. Seamans,** Secretary of the Air Force, as president of the American Institute of Aeronautics and Astronautics.

At the University of Manitoba, **R. D. Connor** was promoted to dean of science and appointed a member of the University Grants Commission by the Government of Manitoba.

New chief of the high-frequency impedence standards section at the NBS Boulder Laboratories is **Leslie E. Huntley.**

Alec T. Stewart is the new head of the physics department at Queen's University, Ontario.

At Clark University, **C. Alton Coulter** was promoted to associate professor and **Joseph P. McEvoy,** formerly of RCA Laboratories, was appointed assistant professor. **Roger P. Kohin** and **Barbara C. Kohin** are on sabbatical leave at the Jozef Stefan Nuclear Institute, Ljubljana, Yugoslavia.

George W. Mackey has been elected the first holder of the new Landon T. Clay Professorship of Mathematics and Theoretical Science at Harvard University.

Effective 1 July, **Linus Pauling,** currently at the University of California, San Diego, will become a chemistry professor at Stanford, where he will continue his research into the molecular basis of disease.

B. W. Currie was named vice-president of research and dean of graduate studies at the University of Saskatchewan.

At Bell Telephone Laboratories **William D. Warters** was promoted to executive director of technical staff, employment, education and salary administration. Promoted to executive director, electronic materials and processes division is **David G. Thomas.**

Don L. Ridgeway, professor of experimental statistics at North Carolina State University, has also been appointed professor of physics.

At Bolt Beranek and Newman Inc, **Leo L. Beranek** was elected chief scientist, **Samuel Labate,** president and chief executive officer and **John E. Stratton,** executive vice-president, as of 1 July. Beranek is now president and chief executive officer, Labate is executive vice-president and Stratton is vice-president and treasurer.

Julian K. Knipp has become Dean of Arts and Sciences at Tufts University. Formerly physics chairman, he is succeeded by **Allan M. Cormack.** Appointed assistant professors were **John H. Bartley, Robert P. Guertin, Charles K. Sinclair** and **Gilbert Wolsky.**

APPLETON

George Appleton was named director of the college physics program, Education and Manpower Division, American Institute of Physics. He is on leave from California State College, Long Beach, and his research is in low-temperature thermal conductivity. He received his BS from Carnegie Institute of Technology and his PhD from the University of Southern California.

L. V. Blake has become head of the newly-formed radar geophysics branch of the Naval Research Laboratory's Radar Division. The new branch will conduct experimental and theoretical investigations on the effects of the geosphere, troposphere and ionosphere on propagation and detection of radar signals.

The director of the Laboratory for Planetary Studies at Cornell University's Center for Radiophysics and Space Research, **Carl Sagan,** has been named editor of *Icarus.*

SALMON

Vincent Salmon, senior research scientist of the Stanford Research Institute, is president-elect of the Acoustical Society of America, succeeding **Isadore Rudnick,** who is now president. Rudnick is at the University of California at Los Angeles. **John Bouyoucos** of the electronics division, General Dynamics Corp is vice-president-elect.

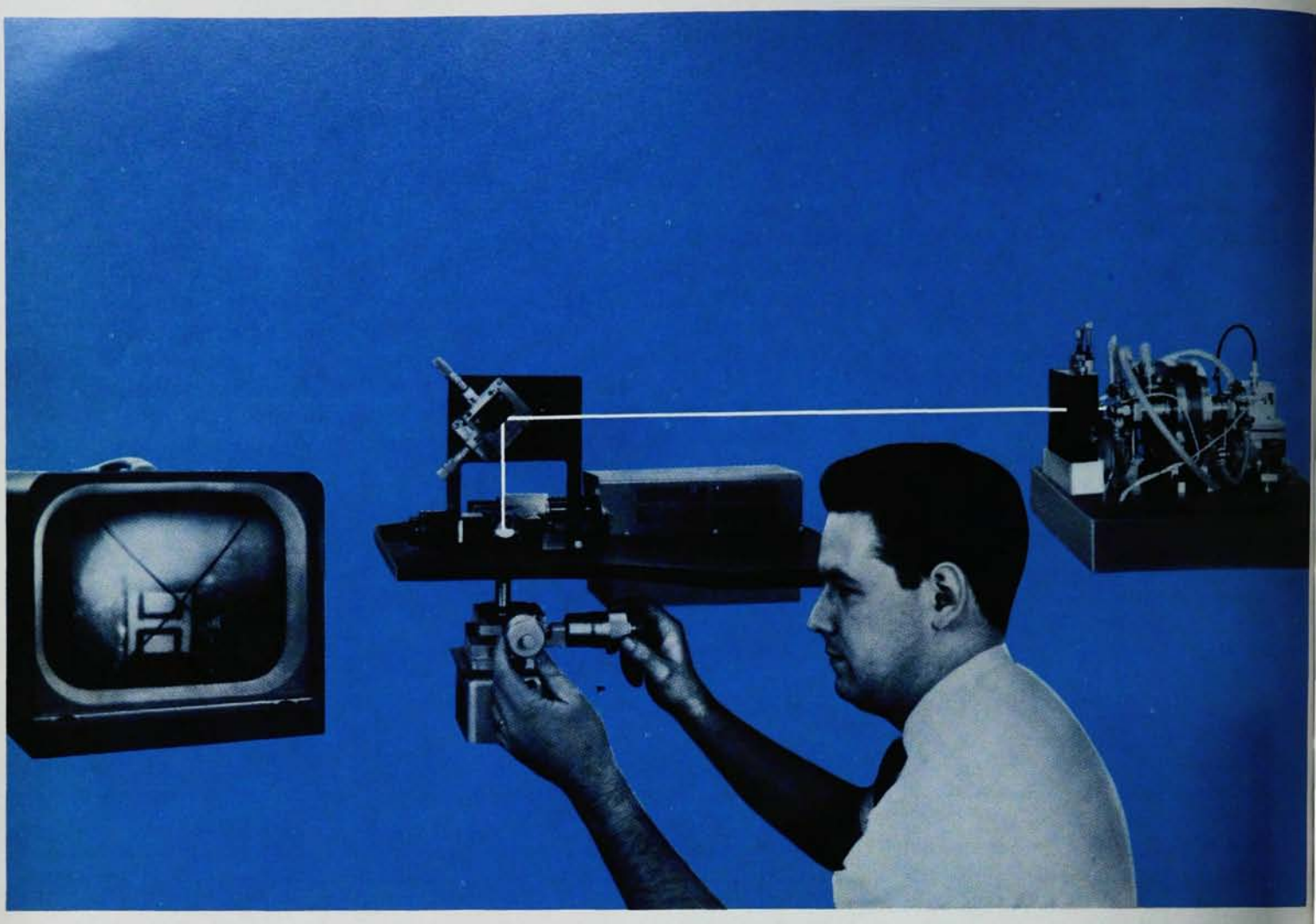
The University of Ottawa has appointed **John C. Woolley** chairman of the physics department. He replaces **John M. Robson,** who is now chairman at McGill University.

H. S. Sommers has been named a fellow of the technical staff of RCA Laboratories, where he is group head of semiconductor optical-device research.

Named senior physicist in source design and advanced products at KEV Electronics Corp is **Edward R. Pollard.** He was formerly with Ion Physics Corp.

William E. Schneider, formerly with the National Bureau of Standards, has become vice-president and chief scientist of Optronic Laboratories, a subsidiary of Columbia Scientific Corp.

The National Science Teachers Association honored **Jerrold R. Zacharias** of MIT with a Distinguished Service



Micromachining with the laser

Bell Laboratories engineers M. I. Cohen and B. A. Unger have developed experimental techniques for using lasers in certain delicate thin-film integrated circuit work: machining circuit patterns, making "gap" capacitors, trimming tantalum thin-film resistors and monolithic quartz resonators, and cutting masks for circuit fabrication.

Our experimental system (above) combines a solid-state YAG (yttrium aluminum garnet) laser, manual positioning of the circuit, and television observation. The optical part of the system was developed by Western Electric's Engineering Research Center, located at Princeton, New Jersey.

The high spectral purity of the continuous-wave YAG laser, invented at Bell Laboratories, lets us focus the light to a very small spot for precision cuts less than 5 microns (1/5 mil) wide and resistor trimming accurate to better than 0.1 percent. And, through Q-switching, the YAG laser produces high peak power at high repetition rates—over 1,000 pps—giving us the cutting speed necessary for practical circuit work.

Laser beams pass through any transparent atmosphere or material and can be accurately concentrated onto tiny areas. With the proper wavelength, we can machine components inside a transparent encapsulation without damaging it. Also, since we can regulate cutting depth, we can "micromachine" thin films without harming underlying materials.

To make capacitors, for example, Cohen and Unger use a laser to cut (vaporize) a narrow gap between conductors. In gold conductors on sapphire or alumina substrates, they have cut gaps from 5 microns to 600 microns wide with good control.

Similarly, Bell Labs engineers have adjusted thin-film quartz crystal resonators to frequencies as precise as one part in 10^8. The laser vaporizes part of the thin-film electrode, raising the resonator frequency to the desired value.

By removing hairline shorts, we have also repaired expensive integrated circuits that could not be reclaimed by standard techniques.

Pioneered at Bell Laboratories and Western Electric, laser micromachining is already in pilot and volume production use at Western Electric and other major integrated circuit manufacturers.

From the Research and Development Unit of the Bell System—

Bell Labs

Citation. He was cited for his work on course-content improvement projects, his use of teaching and learning aids and his formation of the Physical Science Study Committee in 1956.

ASA Honors Waterfall For 40 Years Service

After 40 years as secretary, Wallace Waterfall was honored by the Acoustical Society of America at its April meeting, when the society's 26 living expresidents presented him with a sterling-silver tuning fork.

Named secretary at the society's inception in 1929, Waterfall has recently held the combined position of secretary and treasurer. At the meeting the office of secretary was abolished and Waterfall was named treasurer.

He also served as editor of the *Journal of the Acoustical Society* from 1929–33 and was the first recipient of the society's gold medal.

Waterfall became secretary of the American Institute of Physics in 1945, and was executive secretary during 1949–58 and secretary and treasurer in 1958–64. He was AIP secretary and deputy director from 1964 to 1967 and has been secretary since then. He was secretary and treasurer of the Acoustical Materials Association.

Chew, Cromer, Hayes, Gelbard, Nuckolls Get Lawrence Award

The Atomic Energy Commission has honored five scientists with the Ernest O. Lawrence Memorial Award for 1969. The recipients were Geoffrey Chew of the Lawrence Radiation Laboratory, Berkeley; Don T. Cromer and F. Newton Hayes, Los Alamos Scientific Laboratory; Ely M. Gelbard, Bettis Laboratory, Westinghouse Electric Co; and John H. Nuckolls, Lawrence Radiation Laboratory, Livermore. Each received a citation, a medal and $5000.

Chew was cited for contributions to nuclear and elementary-particle physics and for his leadership. Cromer was noted for his work on the structures of many intermetallic compounds of plutonium and other transuranic elements.

Hayes was honored for work on scintillation counting; Gelbard for his development of reactor design and computational techniques; and Nuckolls for his contributions to high-efficiency thermonuclear devices.

Primakoff Receives NYU Alumni Award

New York University Graduate School of Arts and Sciences has made a Distinguished Alumni Award to Henry Primakoff, who is the first Donner Professor of Physics at the University of Pennsylvania.

Primakoff graduated from NYU in 1938 and is known for his theoretical work in nuclear forces, meson field theory and ferromagnetism. He was elected to the National Academy of Sciences last year.

The award consists of a plaque presented at a dinner in his honor.

Eisenhower Named Recipient of Atoms-for-Peace Award

General Dwight D. Eisenhower, shortly before his death, was named the recipient of the Atoms-for-Peace Award for his role in the peaceful uses of atomic energy. The $50 000 honorarium was given at the general's request to Eisenhower College in Seneca Falls, N. Y.

In 1953 Eisenhower, then President, proposed establishment of an international agency dedicated to the benign uses of atomic energy. Acting on this suggestion, the UN created the International Atomic Energy Agency. Eisenhower also was noted for concentrating US policy towards international coöperation in new and peaceful uses of atomic energy.

The award is sponsored by the Ford Motor Co as a memorial to Henry and Edsel Ford. It is given "solely on the