TABLE I
THE MEDIUM OF DIELECTRIC FILM AND THE INSERTION LOSS

DIELECTRIC MEDIUM	REFRACTIVE INDEX n	INSERTION LOSS dB
H_2O	1.33	-0.73
Si-OIL	1.40	-0.56
CH_2I_2	1.74	-1.19

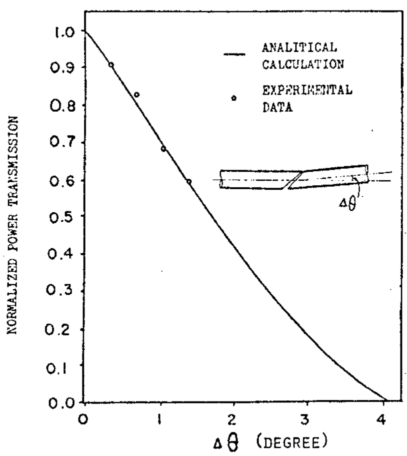

Fig. 4. Decrease of power transmission caused by angular misalignment $\Delta\theta$.

of the reflected and transmitted wave is given by

$$\frac{R}{T} = \frac{|r_{||}|^2 \cos^2 \phi + |r_\perp|^2 \sin^2 \phi}{|t_{||}|^2 \cos^2 \phi + |t_\perp|^2 \sin^2 \phi} \qquad (1)$$

where r and t are, respectively, the reflection and transmission coefficients of the film for an incident plane wave [2], where the symbols $||$, $\perp$ indicate the direction of the ploarization to the plane of incidence, and ϕ is the angle between the polarization of the incident wave and the plane of incidence.(See Fig. 2.)

The coupling coefficient is calculated from the ratio R/T of (1), and the measured coupling coefficient for the wave of the electric field polarized normal to the plane of incidence is shown in Fig. 3 with the analytical results. Several kinds of liquids, H_2O ($n = 1.33$), Si-oil ($n = 1.40$), CH_2I_2($n = 1.74$), are used for the dielectric film medium.

The analytical results of reflectivity for the wave of parallel polarization become very small because the angle of the film is close to the Brewster angle, and the resulting output is a scattered light which is about 10 dB larger than the analytically expected coupled power.

The insertion loss is obtained from the ratio of the power of port 1 and port 2. The measured insertion losses of the directional coupler by using respective dielectric films are tabulated in Table I.

If two fibers are not aligned in a straight line, the transmitted power decreases with the angular misalignment $\Delta\theta$ (Fig. 4). The analytical result is derived from a common area in the spatial frequency domain of the input and output light which is determined by the acceptance angle of the two fibers. Experimental data reasonably agree with the theoretical results. Directivity is obtained from the ratio of the output light power from port 3 and port 4 and is measured to -20.4 dB.

The experimental directional coupler has the advantages of relatively large coupling coefficient and small size in an optical fiber applications. By choosing an adequate inserting medium, a 3-dB coupler for optical transmission system can be obtained.

ACKNOWLEDGMENT

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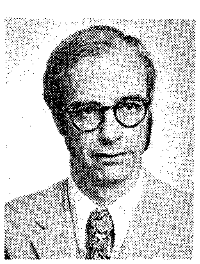
Contributors



Henry L. Bertoni (M'67) was born in Chicago, Ill., on November 15, 1938. He received the B.S. degree in electrical engineering from Northwestern University, Evanston, Ill., in 1960, and the M.S. degree in electrical engineering, and the Ph.D. degree in electrophysics from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1962 and 1967, respectively.

From 1966 to 1967 he was an instructor in the Electrophysics Department of the Polytechnic Institute of Brooklyn (now, of New York). In 1967 he joined the faculty of the Electrophysics Department, and is currently an Associate Professor. His past research has dealt with the propagation and scattering of electromagnetic waves in anisotropic media and in lossy media. Currently, his interests are in the excitation and guiding of elastic surface waves for microwave acoustics and in integrated optics.

Dr. Bertoni is a member of Commission VI of the URSI, Sigma Xi, Eta Kappa Nu, and Tau Beta Pi.

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Angel Cardama (S'67–M'73) was born in Santiago, Spain, in 1944. He received the Ingeniero de Telecomunicación degree from the Universidad Politécnica de Madrid, Madrid, Spain, in 1968, and the Sc.M. and Ph.D. degrees in electrical engineering from Brown University, Providence, R. I., in 1970 and 1973, respectively.

In 1972 he joined the faculty of the E.T.S. Ingenieros de Telecomunicación at the Polytechnic University of Barcelona, Barcelona, Spain, where he is presently Profesor Agregado.

Dr. Cardama is a member of the Optical Society of America and Sigma Xi.

David C. Chang (S'65–M'67) was born in Hupeh, China, on September 9, 1941. He received the B.S. degree in electrical engineering from Cheng Kung University, Tainan, Taiwan, China, in 1961, and the M.S. and Ph.D. degrees in applied physics from Harvard University, Cambridge, Mass., in 1963 and 1967, respectively.

From 1963 to 1967 he was a Research Assistant at the Gordon McKay Laboratory, Harvard, University. He joined the University of Colorado, Boulder, as an Assistant Professor in 1967, and since 1971 he has been an Associate Professor of Electrical Engineering. In 1972, he was a Visiting Professor at Queen Mary College, University of London, London, England.

Dr. Chang is a member of Sigma Xi, the Society of Industrial and Applied Mathematics, and an associate member of the International Scientific Radio Union Commission VI.

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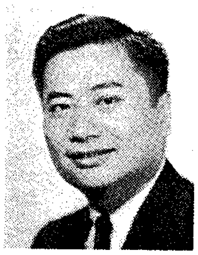

William S. C. Chang (S'56–M'58–SM'65) was born in Nantung, China, on April 4, 1931. He received the B.S. and M.S. degrees from the University of Michigan, Ann Arbor, and the Ph.D. degree from Brown University, Providence, R. I., in 1952, 1953, and 1957, respectively.

He conducted research and taught at Stanford University, Stanford, Calif., and Ohio State University, Columbus, before joining the Faculty of Washington University, St. Louis., Mo., in 1965 as Chairman of the Electrical Engineering Department. He recently returned to teaching and research and is now a Professor of Electrical Engineering and the Director of the Laboratory for Applied Electronic Sciences. His research ranges from surface-wave antennas, microwave masers, lasers, hypersonic plasma, and holography to integrated optics and the use of lidar for air-pollution monitoring.

Dr. Chang is a member of the American Physical Society, the American Optical Society, and the American Society of Engineering Education.

★

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He is Manager of the Opto-Electronics Department at Hughes Research Laboratories, Malibu, Calif., which he joined in 1956. He worked in the fields of secondary emission from solids, theory of semiconductors, and lasers.

Dr. Evtuhov is a member of the American Physical Society, the American Association for the Advancement of Science, Tau Beta Pi, and Sigma Xi.

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Leopold B. Felsen (S'47–A'53–M'54–SM'55–F'62) was born in Munich, Germany, on May 7, 1924. He received the B.E.E., M.E.E., and D.E.E. degrees from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1948, 1949, and 1952, respectively.

During World War II he was concerned with work on electronic ballistics-calibration devices in the U. S. Army. Since 1948 he has been with Polytechnic Institute of Brooklyn, now Polytechnic Institute of New York, first with its Microwave Research Institute and presently with its Department of Electrical Engineering and Electrophysics where he holds the position of Professor. In September 1974, he was appointed Dean of Engineering. On a leave of absence during 1960–1961 he served as a Liaison Scientist with the London Branch of the Office of Naval Research. His research work has dealt with a variety of areas in electromagnetic radiation and diffraction theory, and his present interest is centered primarily on quasioptic techniques. He has been teaching graduate courses on various topics in electromagnetic theory, and during the summer of 1967 he was a Visiting Professor at the University of Colorado, Boulder. During September 1967 he was in Russia as an invited guest of the Soviet Academy of Sciences for the purpose of lecturing and scientific discussion, and he was also their invited guest to attend the 1971 Electromagnetic Theory Symposium in Tbilisi, USSR. He was awarded a Guggenheim Fellowship for 1973. In 1974, he was appointed a Distinguished Lecturer for the Antennas and Propagation Society.

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Detlef Gloge (M'66) was born in Breslau, Germany, on February 2, 1936. He received the Dipl.-Ing. and Dr. Ing. degrees in electrical engineering from the Technische Hochschule Braunschweig, Braunschweig, Germany, in 1961 and 1964, respectively.

Since 1961 he has been with Bell Laboratories, Holmdel, N. J., where he has been working on optical transmission techniques and components for optical transmission systems.

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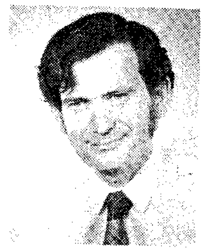

Jay H. Harris (S'57–M'66) was born in Newark, N. J., in 1936. He received the B.E.E. degree from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1958, the M.S. degree from the California Institute of Technology, Pasadena, in 1959, and the Ph.D. degree from the University of California at Los Angeles in 1965.

From 1958 to 1965 he was a member of the Technical Staff of the Hughes Aircraft Company. His work there was concerned with various aspects of antenna design and electromagnetic-wave propagation. The academic year 1965–1966 was spent as a Fulbright Hayes Fellow at the Laboratoire d'Electronic of the University of Paris where he was engaged in research dealing with wave propagation in linear accelerators. Since 1966 he has been at the University of Washington, Seattle, where he is now a Professor in the Department of Electrical Engineering. He was a Traveling Lecturer of the Optical Society of America from 1971 to 1972 and a Visiting Associate Professor at the University of California at San Diego (La Jolla) from 1972 to 1973. His research since going to Seattle has dealt with wave propagation in plasmas, ultrasonic measurement of biological flow systems, and integrated optics and optical communications. Currently he is serving as Program Director for Devices and Waves in the Engineering Division, National Science Foundation.

Dr. Harris is a member of the American Physical Society.

★

Ivan P. Kaminow (A'54–M'59–SM'73–F'74) was born in Union City, N. J., on March 3, 1930. He received the B.S.E.E. degree from Union College, Schenectady, N. Y., the M.S.E. degree from the University of California, Los Angeles, and the M.A. and Ph.D. degrees in applied physics from Harvard University, Cambridge, Mass., in 1952, 1954, 1957, and 1960, respectively.

From 1952 to 1954, he was a Member of the Technical Staff at Hughes Aircraft Company, Culver City, Calif., where he was chiefly concerned with slot-array antennas. Since 1954, he has been with the Bell Telephone Laboratories, Holmdel, N. J., where he was first a Member of the Communications Development Training Program and subsequently the recipient of the CDTP Fellowship, in 1956. He is currently engaged in research on optical communications, nonlinear optics, and ferroelectrics, and has worked on light modulators, magnetic and dielectric materials, ferrite devices, and microwave antennas.

Dr. Kaminow is a member of Sigma Xi, the American Physical Society, and the American Optical Society.

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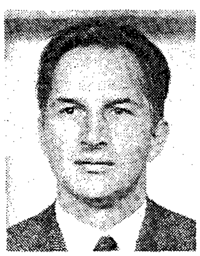

Herwig Kogelnik (M'61–F'73) was born in Graz, Austria, in 1932. He received the Dipl.-Ing. and Doctor of Technology degrees, both from the Technische Hochschule Wien, Vienna, Austria, in 1955 and 1958, respectively, and the Ph.D degree from Oxford University, Oxford England, in 1960.

From 1955 to 1958 he was Assistant Professor at the Institut für Hochfrequenztechnik, Vienna, engaged in microwave research and teaching. He won a British Council Scholarship to Oxford from 1958 to 1960, where he did research on electromagnetic radiation in magnetoplasmas and anisotropic media. He joined Bell Laboratories, Holmdel, N. J. in 1961, where he has been concerned with research in optics, electronics and communications, including work on lasers, holography, optical guided-wave devices, and integrated optics. Since 1967 he has been Head of the Coherent Optics Research Department.

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Edward T. Kornhauser (SM'55) was born in Louisville, Ky., on June 30, 1925. He received the B.E.E. degree from Cornell University, Ithaca, N. Y., in 1945, and the M.S. and Ph.D. degrees from Harvard University, Cambridge, Mass., in 1947 and 1949, respectively.

From 1949 to 1951 he was an Instructor in the Department of Engineering Science and Applied Physics, Harvard University. Since 1951 he has been with Brown University, Providence, R. I., where he is now a Professor of Engineering. During 1959–1960, on leave from Brown University, he was a NATO Fellow and Visiting Lecturer at the University of Bristol, Bristol, England, and in 1967, he was with the Department of Engineering Science, Oxford University, Oxford, England. Most of his research work has been related to electromagnetic and acoustic waves.

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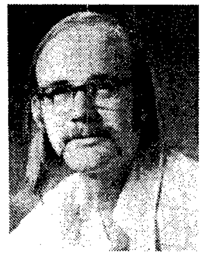

Edward F. Kuester (S'73) was born in Saint Louis, Mo., on June 21, 1950. He received the B.S.E.E. degree from Michigan State University, East Lansing, Mich., in 1971, and is currently working towards his Ph.D. degree at the University of Colorado, Boulder.

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From 1969 to 1971 he was a Postdoctoral Fellow with the Department of Physics, University of California, San Diego; from 1971 to 1973, a Research Associate with the Department of Physics, University of Toronto, Toronto, Canada; and since 1973 a Queen Elizabeth II Fellow with the Department of Applied Mathematics, Institute of Advanced Studies, Australian National University, Canberra, Australia. His special fields of research are plasma physics, aeronomy, fiber optics, and electromagnetic theory.

★

R. J. Martin was born in Newark, N. J., in 1921.

He joined the Vacuum Tubes and Radio Department of Bell Laboratories, Holmdel, N. J., in 1940. After serving in the Navy during the war, he returned to Bell Laboratories in 1946. Since then he has been engaged in the research of microwave tubes, radar, semiconductors, superconductivity, lasers, Raman scattering, and, recently, integrated optics.

★

Ernst-Georg Neumann was born in Halle/Saale, Germany, on May 21, 1929. He received the Diploma in physics in 1959 and the Dr. rer. nat. degree in 1961, both from the University of Göttingen, Göttingen, Germany.

From 1961 to 1967 he was with the Microwave Laboratory of the Drittes Physikalisches Institut of the University of Göttingen as a Research Associate and Assistant, where he was engaged in research on microwave absorbers, open resonators, dielectric rod transmission lines, antennas, and microphones. He coauthored a textbook on physical and applied acoustics. In 1967 he was recognized as Academic Lecturer in physics by the University of Göttingen. Since 1967 he has been with the Institut für Hoch- und Höchstfrequenztechnik of the University of Bochum, Bochum, Germany, as a Lecturer and since 1970 as an Associate Professor. His current research interests are in the areas of dielectric rod transmission lines for microwave and optical wavelengths, microwave measurements and acoustic oscillations self-excited by flames.

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Morton B. Panish was born in New York, N. Y. He received the B.S. degree from the University of Denver, Denver, Colo., in 1950, and the M.S. and Ph.D. degrees both in physical chemistry, from Michigan State University, East Lansing, in 1952 and 1954, respectively.

From 1954 to 1957 he was at the Oak Ridge National Laboratory working on molten salt chemistry. From 1957 to 1964 he was employed by AVCO Corporation and was engaged in studies of very high-temperature chemical thermodynamics. He joined Bell Laboratories, Murray Hill, N. J., in 1964 and was appointed to head the Materials Science Research Department of the Solid State Electronics Laboratory in 1969. While at Bell Laboratories he has studied the chemical thermodynamics and phase chemistry of III–V systems, heteroepitaxy of III–V compounds, impurity incorporation and diffusion in III–V compounds, and the growth and properties of heterostructure injection lasers.

Dr. Panish is a fellow of the American Physical Society and a recipient of the Electronics Division Award of the Electrochemical Society. He is a member of the Editorial Board of the *Journal of Applied Physics* and *Applied Physics Letters*.

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S. T. Peng (M'74) was born in Taiwan, China, on February 19, 1937. He received the B.S. degree in electrical engineering from the Provincial Cheng-Kung University in 1959, the M.S. degree in electronics from the National Chiao-Tung University in 1961, both in Taiwan, China, and the Ph.D. degree in electrophysics from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1968.

From 1968 to present, he has been employed as a Research Associate in the Department of Electrical Engineering and Electrophysics, Polytechnic Institute of New York. In the academic year 1969–70, he was a visiting professor at the National Chiao-Tung University. In 1972, he engaged in a Summer Research Program at the Thomas J. Watson Research Center, IBM, Yorktown Heights, N. Y. He has carried out research in the area of wave propagation, radiation, diffraction, and nonlinear electromagnetics, and has published numerous papers in electromagnetics and acoustics.

Dr. Peng is a member of Sigma Xi.

★

Hans-Dieter Rudolph was born in Olsberg/Sauerland, Germany, on August 4, 1943. He received the Dipl.-Ing. degree in 1969 from the Technical University at Darmstadt, Darmstadt, Germany, and the Dr.-Ing. degree in 1974 from the University of Bochum, Bochum, Germany.

Since 1969 he has been a Research Engineer (wiss. Ass.) at the Institut für Hoch- und Höchstfrequenztechnik of the University of Bochum. He worked on dielectric transmission lines carrying out practical and theoretical studies.

Dr. Rudolph is a member of the Verband Deutscher Elektrotechniker and the Nachrichtentechnische Gesellschaft.

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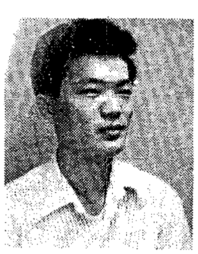

Sang-Yung Shin was born in Korea on September 14, 1946. He received the B.S. degree in electrical engineering from Seoul National University, Korea, in 1968, and the M.S. degree in electrophysics from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1973.

In 1968, he studied at the Graduate School of Seoul National University for a semester until the commencement of his military service. Since the fall of 1971, he has been a Research Fellow at the Polytechnic Institute of New York (formerly Polytechnic Institute of Brooklyn) where he is currently pursuing a doctoral program and working on problems of electromagnetic wave propagation.

★

Gerald Smolinsky was born in Philadelphia, Pa., on February 25, 1933. He received the B.S. degree in chemistry from Drexel University, Philadelphia, in 1955, and the Ph.D. degree in organic chemistry from the University of California, Berkeley, in 1958.

After a year of postdoctoral work at Columbia University, he joined the Organic Chemistry Research and Development Department of Bell Laboratories, Murray Hill, N. J. His early research interests included the study of the chemistry of nitrenes, reactive intermediates, and small heterocyclic systems. More recently, he has been investigating the chemistry of organic compounds subjected to an RF discharge, the preparation of polymers by a glow discharge technique, and the preparation of organic materials suitable for use as slab light guides.

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Allan W. Snyder, photograph and biography not available at the time of publication.

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Richard Steinberg was born in Teaneck, N. J., on August 23, 1947. He received the B.S.E.E. degree from Rutgers University, New Brunswick, N. J., in 1969, and the M.S.E.E. from Columbia University, New York, N. Y., in 1970.

He is presently pursuing doctoral studies at Columbia University, where he has been an NDEA Fellow and Teaching Assistant.

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Yasuharu Suematsu (M'62) was born in Gifu-Prefecture, Japan, on Spetember 22, 1932. He received the B.S., M.S., and Ph.D. degrees, all in electrical engineering, from the Tokyo Institute of Technology, Tokyo, Japan, in 1955, 1957, and 1960, respectively, where his studies were primarily in the field of microwaves.

In 1960 he joined the Department of Electrical Engineering of the Tokyo Institute of Technology as a Research Assistant. In 1961 he was transferred to the Department of Electronics Engineering as an Associate Professor. He is now a Professor in that department. He stayed at the Electro-Science Laboratory, Ohio State University, Columbus, from 1967 to 1968, where he studied nonlinear optics. His recent work has included integrated optics, fiber and nonlinear optics, and injection lasers.

Dr. Suematsu is a member of the American Institute of Physics, the Institute of Electronics and Communication Engineers of Japan, and the Japanese Society of Applied Physics.

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Theodor Tamir (A'54–M'58–SM'62) was born in Bucharest, Romania, on September 17, 1927. He received the B.S., Dipl. Ing., and M.S. degrees in electrical engineering, all from the Technion, Israel Institute of Technology, Haifa, Israel, in 1953, 1954, and 1958, respectively, and the Ph.D. degree in electrophysics from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1962.

From 1953 to 1956 he was employed as a Research Engineer by the Scientific Department of the Ministry of Defense, Israel, and was engaged in the research and development of microwave systems and components. From 1956 to 1958 he was an instructor at the Technion, where he carried out research and taught courses in high-frequency techniques. In 1958, he joined the Polytechnic Institute of Brooklyn (now, of New York), where he is presently a Professor of Electrophysics and Head of the Department of Electrical Engineering and Electrophysics. Since 1965 he has also served as Consultant to several electronics laboratories. He has carried out research in the area of wave propagation, radiation, and diffraction, and he has published numerous papers of basic interest in electromagnetics, optics, and acoustics. He is presently coeditor (in charge of electromagnetic theory, integrated optics, and microwave acoustics) for *Applied Physics*, published by Springer-Verlag.

Dr. Tamir is a Fellow of the IEE (London), a member of the Optical Society of America, of Commission VI of URSI, and of Sigma Xi. In 1964 he won the Institution Premium, the highest award of the IEE, as coauthor of a paper on "Complex Guided Waves," and in 1967 he shared an IEE Electronics Section Premium for an article on "The Nature and Optimization of the Ground Wave Excited by Submerged Antennas." The IEEE Antennas and Propagation Group awarded him Special Recognition in 1968 for a paper "On Radio Wave Propagation in Forest Environments." He is listed in *Who's Who in America*, *Directory of International Biography*, and other biographical publications.

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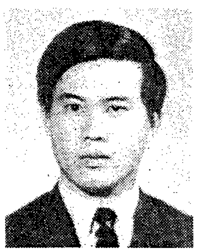

G. A. Teh was born in Kluang, Johore, Malaysia, on October 14, 1949. He received the B.Sc. degree in electronic engineering with First Class Honours from University College, London, England, in 1971.

Since October 1971 he has been working on integrated optics in the Department of Electronic and Electrical Engineering, University College, where he is currently studying toward the Ph.D. degree.

Mr. Teh won the IEE Prize for the year 1971.

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P. K. Tien (S'49–A'51–M'56–F'66) was born in Checkiang, China. He received the B.S. degree in electrical engineering from the National Central University, Nanking, China, in 1942, and the M.S. and Ph.D. degrees from Stanford University, Stanford, Calif., in 1948 and 1951, respectively.

In 1952 he joined the Electronics Research Laboratory of Bell Laboratories, Holmdel, N. J., where he is now Head of the Department of Electron Physics Research. He has published technical papers in many different fields of physics and engineering: microwave tubes, electronmagnetic theory, electron dynamics, noise, parametric amplifiers, ferromagnetic resonance, ultrasonics, acoustoelectric effect, superconductivity, and lasers. His own research at this time involves mainly thin-film materials, optoelectronics, and integrated optics.

Dr. Tien is a member of Sigma Xi, the American Physical Society, and the Optical Society of America. He received the Achievement Award from the Chinese Institute of Engineers in 1966.

★

John Warner received the B.S. and Ph.D. degrees from the University of Nottingham, Nottingham, England, in 1960 and 1963, respectively.

Prior to receiving the Ph.D. degree, he did research on semiconducting alloys. Since 1963 he has been with the Royal Radar Establishment, Malvern, Worcs., England where he has worked in the area of electrooptics and nonlinear optics. He has carried out pioneer research in up-conversion at optical frequencies, paying particular attention to the preservation of image information during the frequency changing. He has recently returned from a sabbatical year spent at the U. S. Naval Research Laboratory, Washington, D.C. He is coauthor of a book on nonlinear optics to be published by Academic Press and has published several articles in various journals.

★

Michael G. F. Wilson was born in Dunstable, England, on August 25, 1932. He received the B.Sc. and Ph.D. degrees, both in electrical engineering, from the University College, London, England, in 1955 and 1958, respectively.

For four years prior to his studies at University College, he worked at Marconi Instruments, Ltd. From 1958 until 1963 he was a Research Engineer at the Central Research Laboratory of Associated Electrical Industries, Aldermaston, England, where he worked on dc pumped microwave tubes. Since 1963 he has been on the staff of the Department of Electronic and Electrical Engineering, University College, where he is now a Senior Lecturer.

Dr. Wilson is a member of the Institution of Electrical Engineers, London.

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Robert K. Winn was born in Raton, N. Mex., on December 24, 1939. He received the B.S.E.E. degree from New Mexico State University, University Park, in 1967, and the M.S.E.E. and Ph.D. degrees, both in electrical engineering, from the University of Washington, Seattle, in 1969 and 1974, respectively.

While at the University of Washington, he held teaching and research assistantships in electrical engineering. Since September 1973 he has been at the University of Akron, Akron, Ohio, as an Assistant Professor in Electrical Engineering.

Dr. Winn is a member of Sigma Xi, Eta Kappa Nu, and the Optical Society of America.

★

Amnon Yariv (S'56–M'59–F'70) was born in Tel Aviv, Israel, on April 13, 1930. He received the B.S., M.S., and Ph.D. degrees, all in electrical engineering, from the University of California, Berkeley, in 1954, 1956, and 1958, respectively.

He was employed by Bell Telephone Laboratories, Murray Hill, N. J., in 1959, during the early stages of the laser effort. He then joined the staff of the California Institute of Technology, Pasadena, in 1964, as an Associate Professor of Electrical Engineering, and became a Professor in 1966. He also took part in the discovery of a number of early solid-state laser systems, the formulation of the theory of parametric quantum noise and the prediction of parametric fluorescence, the invention of the technique of mode-locked ultrashort-pulse lasers and FM lasers, the introduction of GaAs and CdTe as IR electrooptic and window materials, and the proposal and demonstration of semiconductor based integrated optics technology. His present research efforts are in the areas of nonlinear optics, IR electrooptical materials, recombination mechanisms in semiconductors, and thin-film optics. He authored or coauthored numerous papers in professional journals as well as two books: *Quantum Electronics* (New York: Wiley, 1967) and *Introduction to Optical Electronics* (New York: Holt, Rinehard and Winston, 1971). He is also an Associated Editor of the IEEE JOURNAL OF QUANTUM ELECTRONICS and *Optics Communications*.

Dr. Yariv is a Fellow of the Optical Society of America, and a member of the American Physical Society and Phi Beta Kappa.