Education, Industry News

Two new sections, Cape Canaveral and Denver, have been authorized by the Board of Governors, bringing the total number of Sections to 15.

Since publication of the SMPTE Elections reports in the November, 1962, Journal (p. 860), additional election reports have been received from the following Sections:

BOSTON: Chairman, Charles W. Wyckoff; *Secretary-Treasurer*, Lester E. Bernd; newly elected *Managers*, Willard Hauser, Edward Kornstein, Edward H. Rideout.

CANADIAN: Chairman, Michael W. Barlow; *Secretary-Treasurer*, Ken Jones; newly elected *Managers*, Maurice French, Lawrence S. Goode, Harold Hundert.

DALLAS – FORT WORTH: Chairman, Robert G. Redd; *Secretary-Treasurer*, Marty Young; newly elected *Managers*, Bruce Jamieson, Malcolm D. McCarty, R. Shields Mitchell.

WASHINGTON: (Election results are noted as received, but recent changes are explained below.) *Chairman*, Arthur Rescher; *Secretary-Treasurer*, Philip Martin, Jr.; newly elected *Managers*, Ernest Acquisto, Jack J. Clink, Robert H. Hemmig.

Two changes were made in the Washington, D.C., Section shortly after installation of new officers and managers. Philip Martin, Jr., has been appointed to the post of Chairman by the Board of Managers to fill the unexpired term of Arthur Rescher who has resigned. Willis M. Warren has been appointed Secretary-Treasurer to succeed Mr. Martin. The untimely death of Carl Turvey left a vacancy on the Board of Managers to which Harold E. Dixon, of Walter Reed Army Medical Center, has been appointed.

One addition has been made to the Board of Governors. William D. Hedden has been elected to the Board of Governors to fill the unexpired term of Geo. W. Colburn who was elected Convention Vice-President for the two-year term which began January 1, 1963.

Edward P. Curtis retired in January as Vice-President of Eastman Kodak Co. He is continuing to serve on the Board of Directors. A well-known authority on aviation, Mr. Curtis, who holds the rank of Major General in the U.S. Air Force Reserve, served with distinction in World Wars I and II. He holds the Croix de Guerre, Order of the Bath, and the Distinguished Service Cross. He joined Kodak in 1920 and in 1940 left to serve in World War II. He returned in 1945 and later that year he was elected Vice-President in charge of world-wide sales of professional motion-picture film. He was elected to the Kodak Board of Directors in 1957 and that same year he was voted Aviation Man of the Year by the Air Force Association and was also awarded Look Magazine's Collier Trophy for outstanding achievement in aviation.

A member of the Society for more than 30 years, Mr. Curtis holds the rank of Life Fellow. Among his activities in the Society has been that of guest speaker at the 86th Convention's Get-together Luncheon in New York. Speaking on the topic, "Engineering in the Space Age," he warned then that "any engineering activity must be evaluated and considered in the framework of Man's entry into the Space Age."

SMPTE President Reid H. Ray was host to members of the Society of Photographic Scientists and Engineers at a dinner meeting held in St. Paul in February. About 75 members of the local section met at Reid H. Ray Film Industries, Inc. Dinner was served on the sound stage. Later two illustrated papers were presented by members of the firm's staff. A paper on "Quality Control in Processing Motion Picture Films" was read by Bryan Allen, Laboratory Quality Control Engineer. A paper on "A Measuring Stick for Color Continuity" was given by Gordon Ray, Art Director of the film company. The meeting concluded with a tour of the studio and the laboratory.

The British Broadcasting Corporation went on the air from Station 2L0 a half-century ago, its first contribution to the listening public being the sound of blows struck by Joe Lewis and Georges Carpentier in an historic prize fight; its first TV program was broadcast from Alexandra Palace about a quarter of a century ago. Announcements from Marconi Wireless

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Telegraph commemorating these two anniversaries (November 14, 1922, and November 2, 1936) serve to illuminate the changing patterns of communication during the brief time that has elapsed since the awe-struck owners of the first radio sets listened to the tinny sounds of distant dance music and the howls of static. At present many of these same set-owners have come to a placid acceptance of TV signals bounced off satellites and the implications of inter-planetary communication.

Announcement of a second BBC channel to be placed in operation in April, 1964, was made forty years to the day from the time of BBC's first broadcast and about 25 years from its first TV broadcast. Of special significance is the announcement that the new channel, to be known as BBC Channel 2, will use the 625-line system instead of the 405-line system used since 1947. The second BBC channel was recommended by a royal commission which criticized the commercial network established a few years ago.

Formed in London in 1922 with six member companies and a share capital of 100,000 pounds, the BBC presently has an annual income of more than 40 million pounds. The corporation owns 400 transmitters and employs a staff of 17,000. A daily audience of about 20 million viewers watch its programs.

Station 2L0, BBC's first station, was acquired from the Marconi Company, which had begun broadcasting in May, 1921. A few highlights of the events preceding establishment of the BBC are outlined in the Marconi Company release, beginning in 1947 when "Bakewell devised a system of transmitting still pictures over telegraph wires which incorporated the vital principle of scanning the subject piecemeal in a series of lines." The next great name in television noted in the release is that of Nipkow who, in 1884, invented an "Electric Telescope" with spiral holes in rotating discs operating in synchronism. Nipkow's device did not work, but only because at that time two key components — an efficient light-sensitive cell and the amplifying thermionic valve— were not in existence. In 1907, Rosing, a Russian professor, devised an apparatus using mirror drum scanning at the transmitter and a rudimentary cathode-ray tube for presentation of the received picture. In 1908, Campbell Swinton, an electrical engineer, presented a proposal for scanning the image at the transmitter by a special type of cathode-ray tube and presenting the picture on a cathode-ray tube at the receiver. World War I put a stop to developmental activities in this direction, but in the early 1920s television bloomed again. Great names of this decade are Baird, Jenkins and Zworykin.

In Great Britain two important companies, EMI Ltd. and the Marconi Company, became actively interested in television and in 1934 the Marconi-EMI Television Company was formed. Meanwhile Baird, with a different system than that developed by Marconi-EMI, was endeavoring to obtain official approval for his system. The Baird equipment employed 240-line scanning with 25 pictures/sec, the scanning process being carried out by greatly improved Nipkow discs running at 6,000 rpm in a vacuum. The Marconi-EMI systems operated on 405 lines with all-electronic interlaced scanning. The two rival systems were tested by BBC by alternating them weekly until February 5, 1947, when the 405-line electronic system was selected as the most satisfactory. The 625-line system will be used in the second BBC channel scheduled for April, 1964.

The account concludes with: "In this fashion began the world's first public television service, well ahead of the USA, which did not start public transmissions until April 30, 1939."

One of the favorite inhabitants of the strange science-fiction world of perhaps a decade ago was the robot that responded to human speech, carrying out commands given it in ordinary conversational tones. Now that machines that automatically recognize human speech have been made, the drive to perfect them has begun. A Bell Telephone Laboratories scientist, Peter Denes, reporting on this at a recent meeting of Acoustics Society of America, suggested that these machines, in order to become the intellectuals of the robot world, must be especially apt at identifying a "t" sound. A statistical analysis of speech in ordinary conversations, conducted by Mr. Denes, found that of all the pairs of speech sounds whose substitution for each

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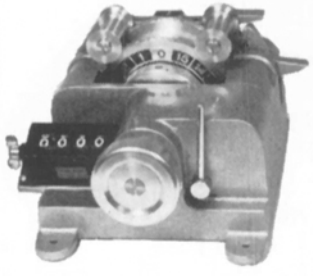

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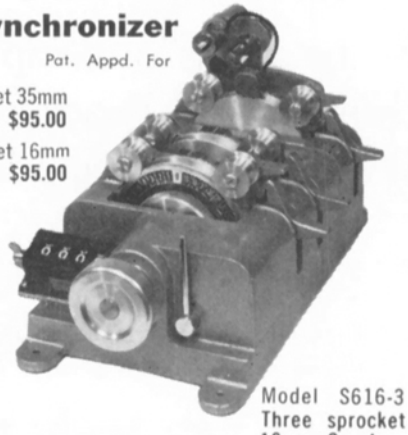

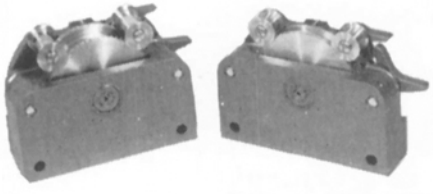

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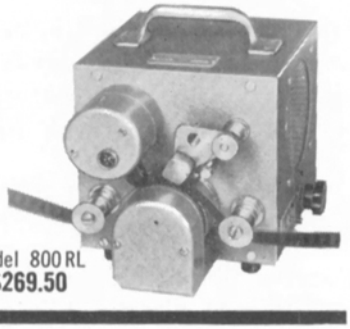

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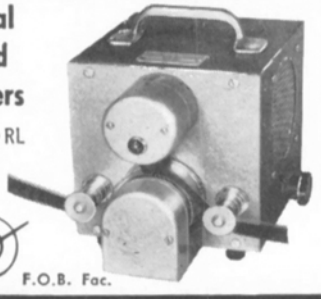

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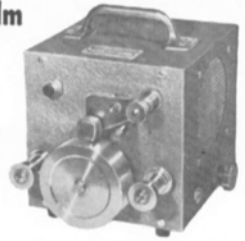

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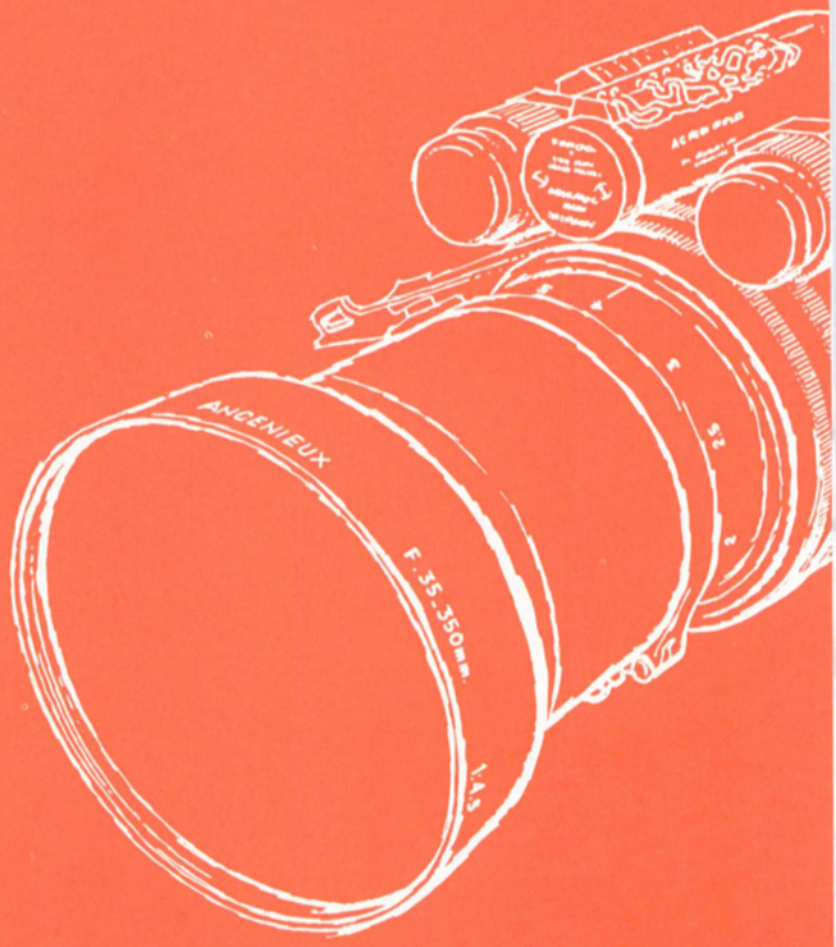

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Zoom L5	F/2.5	1:4	20/80mm	"C"
Zoom L6*	F/2.5	1:4	20/80mm	"C"
Zoom L5 RTR	F/2.5	1:4	12.5/50mm	"C"
Zoom L6 RTR*	F/2.5	1:4	12.5/50mm	"C"
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Zoom 10 x 25	F/3.2	1:10	25/250mm	Neutral
Zoom LA2	F/3.5	1:4	35/140mm	Neutral
Zoom LB1	F/2.2	1:4	35/140mm	Neutral
For Orthicon TV Cameras				
LB3	F/3.0	1:4	50/200mm	Neutral
LB4	F/5.3	1.4	100/400	Neutral
LB5	F/3.8	1:4	35/140mm	Neutral
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S2/32	F/1.8	32mm	Neutral
S2/40	F/1.8	40mm	Neutral
S1/50	F/1.8	50mm	Neutral
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other could result in the wrong recognition of a word (such as the "t" and "s" in "tell" and "sell") the "t" sound appears in the two most frequently recurring pairs. In these two it is the alternate to the sounds of "n" and "f."

Speech recognition machines, it was suggested, would not *at first* possess the human ability to identify words by context and must therefore rely more heavily on a good "hearing" of individual sounds, especially those most frequent or critical.

The most frequent speech sounds were found to be the nondescript "uh," followed by "t" and "i" sound of "bit," and "n." The least common sound in conversational English in the "zh" as in "pleasure." Of the two most frequent types of consonant, the most frequent is the plosive, which includes such sounds as "t," "d" and "k." Next are the fricatives, or "hissing" sounds such as "s," "f," "sh" and "h." The probability of one type of consonant following another was determined, and it was found that consonants articulated in similar ways rarely follow one another.

Mr. Denes also commented that the first-person singular "I" is used more than any other complete word in ordinary conversations, and found that it is used twice as often as the second-person "you," which ranks in sixth place. The sample used by Mr. Denes for computer analysis included 23,000 words from books of typical conversation, books that are used to teach the English language to foreigners.

Importance of the "tight white light beam" of the lasers and masers now opening an area of reality that once existed only in the imaginations of the wildest of science fiction writers is highlighted almost daily by announcements of new developments and refinements. Some of these have been arrived at almost simultaneously by separate groups working independently. An example of this phenomenon is the coincidence of the simultaneous announcements reported in the November *Journal* (p. 904) made by General Electric and IBM of the development of a laser which uses an electric current to generate coherent light.

This month, developments are reported by Bell Telephone Laboratories and by RCA, plus an announcement from NASA of the contemplated use of a laser to track a satellite which will be launched early in 1963 to study the ionosphere.

Developmental activities at Bell Telephone Laboratories have resulted in the formation of a crystal of potassium dihydrogen phosphate (KDP) as a Fabry-Perot resonator — essentially a rod of the material between two highly reflecting parallel surfaces. Prior to this development KDP modulation at microwave frequencies of a coherent light beam was possible only with pulsed operation. The Fabry-Perot construction serves to shorten the length of crystal needed for adequate phase modulation of optical radiation. Instead of passing once or twice through a long crystal, the light wave bounces back and forth many times within the modulating cavity. The enhanced modulation efficiency reduces substantially the microwave power required for modulation and thereby decreases the heating of the crystal. This permits continuous application of the modulating microwave signal.

Earlier, Bell Laboratories demonstrated a helium-neon optical maser which emits a visible beam. This maser has now been made to emit an infrared line (11500 A) and the visible line (6328 A) simultaneously by means of a technique employing mirrors with peak reflectivity at both wavelengths. The mirrors are coated with 11 layers of reflective material, each layer having a thickness of a quarter wavelength of the 11500 A line, then with a transition layer, then nine layers of the material at a quarter wavelength of the 6328 A line. These developments were reported in papers presented at the Northeast Electronics Research and Engineering Meeting held during November in Boston.

RCA has reported development of a "sun-pumped" laser, said to be the "first man-made device" capable of using sunlight directly without converting it to another energy medium.

The apparatus used in the sun-pumping experiment included a 12-in. hemispherical mirror for focusing the sunlight, a laser employing a calcium-fluoride crystal and a spectrometer for detecting the laser's output. During the experiment the laser was kept in a bath of liquid neon and emitted continuous radiation at the infrared wavelength of 2.36 microns when exposed to about 50 w of radiant power from the sun.