

References

- ABATE, J. E.: Linear and adaptive delta modulation. Proc. IEEE **55**, 298–308 (1967).
- AHLFORS, L. V.: Complex analysis. New York: McGraw-Hill Book Co. 1953.
- ALLEN, J.: Speech synthesis from unrestricted text. IEEE Int. Conv. Digest. New York, March 1971.
- ATAL, B. S., HANAUER, S. L.: Low-bit-rate speech transmission by linear prediction of speech signals. J. Acoust. Soc. Am. **49**, 133 (A) (1971).
- — Speech analysis and synthesis by linear prediction of the speech wave. J. Acoust. Soc. Am. **50**, 637–655 (1971).
 - — SCHROEDER, M. R.: Predictive coding of speech signals. Proc. Int. Congr. Acoust. C-5-4, Tokyo, Japan, August 1968.
- AYERS, E. W.: Speech synthesizers using formant principles. British Post Office Res. Station Report 20315, August 1959.
- BARNEY, H. L., DUNN, H. K.: Speech analysis; Speech synthesis; Chapters 12 and 13. In: Manual of phonetics (L. KAISER, ed.). Amsterdam: North-Holland Publ. Co. 1957.
- BAUMANN, R. H., LICKLIDER, J. C. R., HOWLAND, B.: Electronic word recognizer. J. Acoust. Soc. Am. **26**, 137 (A) (1954).
- BAYSTON, T. E., CAMPANELLA, S. J.: Development of a continuous analysis speech compression system. Final Engineering Rpt., Project No. 6 (7-4313)-43004, Melpar, Inc., July 1957.
- Continuous analysis speech bandwidth compression system. J. Acoust. Soc. Am. **29**, 1255 (A) (1957).
- BÉKÉSY, G. v.: Über die Schwingungen der Schnekkentrennwand beim Präparat und Ohrenmodell. Akust. Z. **7**, 173–186 (1942).
- Über die Resonanzkurve und die Abklingzeit der verschiedenen Stellen der Schnekkentrennwand. Akust. Z. **8**, 66–76 (1943).
 - Shearing microphonics produced by vibrations near the inner and outer hairs cells. J. Acoust. Soc. Am. **25**, 786–790 (1953).
 - Experiments in hearing. New York: McGraw-Hill Book Co. 1960.
 - ROSENBLITH, W. A.: Chapter 27. In: Handbook of experimental psychology, (S. S. STEVENS, ed.). New York: John Wiley & Sons 1951.
- BELL, A. G.: Prehistoric telephone days. Natl. Geographic Mag. **41**, 223–242 (1922).
- BELL, C. G., FUJISAKI, H., HEINZ, J. M., STEVENS, K. N., HOUSE, A. S.: Reduction of speech spectral by analysis-by-synthesis techniques. J. Acoust. Soc. Am. **33**, 1725–1736 (1961).
- BENNETT, W. R.: Time-division multiplex systems. Bell System Tech. J. **20**, 199–221 (1941).
- The correlatograph. Bell System Tech. J. **32**, 1173–1185 (1953).
- BERANEK, L. L.: The design of speech communication systems. Proc. I.R.E. **35**, 880–890 (1947).
- Acoustics. New York: McGraw-Hill Book Co. 1954.
- BERG, J. W. VAN DEN: Transmission of the vocal cavities. J. Acoust. Soc. Am. **27**, 161–168 (1955).
- An electrical analogue of the trachea, lungs and tissues. Acta Physiol. Pharmacol. Neerl. **9**, 361–385 (1960).
- ZANTEMA, J. T., DOORNENBAL, P., Jr.: On the air resistance and the Bernoulli effect of the human larynx. J. Acoust. Soc. Am. **29**, 626–631 (1957).
- BERGEJK, W. A. VAN: Studies with artificial neurons. II. Analog of the external spiral innervation of the cochlea. Kybernetik **1**, 102–107 (1961).
- BIDDULPH, R.: Short-term autocorrelation analysis and correlatograms of spoken digits. J. Acoust. Soc. Am. **26**, 539–544 (1954).

- BJÖRK, L.: Velopharyngeal function in connected speech. Suppl. **202**, Acta radiol. (1961).
- BLACKMAN, R. B., TUKEY, T. W.: The measurement of power spectra. New York: Dover Publications, 1959.
- BLISS, J. C.: Kinesthetic-tractile communications. IRE Trans. Inform. Theory IT-8, 92–99 (1962).
- BLOCH, B., TRAGER, G. L.: Outline of linguistic analysis. Linguistic Society of America. Baltimore: Waverly Press 1942.
- BOGERT, B. P.: Determination of the effects of dissipation in the cochlear partition by means of a network representing the basilar membrane. J. Acoust. Soc. Am. **23**, 151–154 (1951).
- The vobanc—a two-to-one speech bandwidth reduction system. J. Acoust. Soc. Am. **28**, 399–404 (1956).
 - HEALY, M. J. R., TUKEY, J. W.: The frequency analysis of time-series for echoes. Proc. Symp. Time Series Analysis, (M. ROSENBLATT, ed.), chap. 15, 209–243, 1963.
 - KOCK, W. E.: Narrowband transmission of speech. U.S. Patent 2, 890, 285, June 1959.
- BOGNER, R. E., FLANAGAN, J. L.: Frequency multiplication of speech signals. IEEE Trans. Audio and Electroacoust. AU-17, 202–208 (1969).
- BOLT, R. H., et al.: Speaker identification by speech spectrograms: A scientist's view of its reliability for legal purposes. J. Acoust. Soc. Am. **47**, 597–612 (1970).
- MACDONALD, A. D.: Theory of speech masking by reverberation. J. Acoust. Soc. Am. **21**, 577–580 (1949).
- BONDARKO, L. U., ZAGORUYKO, N. G., KOZEVNIKOV, V. A., MOLCHANOV, A. P., CHISTOVICH, L. A.: A model of human speech perception. Acad. Sci., U.S.S.R., Sibirsk, Nauka, 1968.
- BONDARKO, L. V., VERBITDKAYA, L. A., ZINDER, L. R., PAVLOVA, L. P.: Distinguishable sound units of Russian Speech. Sb. Mekhanizmy Recheobrazovaniya I Vospriyatiya Slozhnykh Zvukov (1966).
- BORST, J. M.: The use of spectrograms for speech analysis and synthesis. J. Audio Eng. Soc. **4**, 14–23 (1956).
- COOPER, F. S.: Speech research devices based on a channel vocoder. J. Acoust. Soc. Am. **29**, 777 (A) (1957).
- BRADY, P. T., HOUSE, A. S., STEVENS, K. N.: Perception of sounds characterized by a rapidly changing resonant frequency. J. Acoust. Soc. Am. **33**, 1357–1362 (1961).
- BRICKER, P. D., FLANAGAN, J. L.: Subjective assessment of computer-simulated telephone calling signals. IEEE Trans. Audio and Electroacoust. AU-18, 19–25 (1970).
- BROWMAN, C. P., COKER, C. H., McMAHON, L. E., UMEDA, N.: Automatic system for synthesis-by-rule. J. Acoust. Soc. Am. **49**, 118 (A) (1971).
- — UMEDA, N.: Toward rules for natural prosodic features in American English. J. Acoust. Soc. Am. **47**, 94 (A) (1969).
- BROWN, J. M., BROLIN, S. J.: Companded delta modulation for telephony. IEEE NEREM Rec. 1966.
- BULLINGTON, K., FRASER, J. M.: Engineering aspects of TASI. Bell System Tech. J. **38**, 353–364 (1959).
- BURON, R. H.: Generation of a 1000 word vocabulary for a pulse excited vocoder operating as an audio response unit. Proc. Conf. on Speech Communication and Processing, A.F. Cambridge Res. Laboratories and IEEE Audio and Electro-acoust. Group, Cambridge, Mass., November 1967.
- CAMPANELLA, S. J., COULTER, D. C., IRONS, R.: Influence of transmission error on formant coded compressed speech signals. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.

- CARLSON, A. B.: Communication systems. New York: McGraw-Hill Book Co. 1968.
- CARLSON, J. P.: Digitalized phase vocoder. Proc. Conf. on Speech Communication and Processing, A.F. Cambridge Res. Labs. and IEEE Audio and Electroacoust. Group, Cambridge, Mass., November 1967.
- CARROLL, J. D.: Individual differences and multidimensional scaling. In: R. N. SHEPARD, A. K. ROMNEY, and S. NERLOVE (Eds.), Multidimensional scaling: Theory and applications in the behavioral sciences, 1971, in press.
- CHANG, S.-H.: Two schemes of speech compression system. *J. Acoust. Soc. Am.* **28**, 565-572 (1956).
- PIHL, G., ESSIGMANN, M. W.: Representations of speech sounds and some of their statistical properties. *Proc. I.R.E.* **39**, 147-153 (1951).
- CHAPMAN, W. D.: Techniques for computer voice response. IEEE Int. Conv. Digest, New York, March 1971.
- CHERRY, C.: On human communication. New York: John Wiley & Sons 1957.
- CHIBA, T., KAJIYAMA, M.: The vowel, its nature and structure. Tokyo: Tokyo-Kaiseikan Pub. Co. 1941.
- CHISTOVICH, L. A.: On the discrimination of complex audio signals, report I. *Problemy Fiziol. Akust.* **3**, 18-26 (1955).
- Temporal characteristics of hearing. Doctoral Dissertation, Pavlov Institute of Physiology, Leningrad, 1958, Publ. by Academy of Sciences of the U.S.S.R. (Abstract).
- Temporal course of speech sound perception. *Proc. IV Int. Congr. Acoust.*, Copenhagen, Denmark, August 1962.
- Direction of transition as a perceptual parameter of time-varying stimuli. *Proc. Int. Congr. Acoust. B-3-7*, Tokyo, Japan, August 1968.
- Change in the fundamental voice frequency as a distinctive feature of consonants. *Akust. Zh.* 1968.
- KLAAS, A. Yu., ALEKIN, R. O.: The importance of imitation in the recognition of sound sequences. *Vopr. Psichol.* **5**, 173-182 (1961).
- KOZHEVNIKOV, V. A., ALYAKRINSKI, V. V.: Speech, articulation and perception. Acad. Sci., U.S.S.R., Nauka, 1965.
- COHEN, A., 'THART, J.: Speech synthesis of steady-state segments. *Proc. Stockholm Speech Comm. Seminar*, R.I.T. Stockholm, Sweden, September 1962.
- COKER, C. H.: Computer-simulated analyzer for a formant vocoder. *J. Acoust. Soc. Am.* **35**, 1911 (A) (1963).
- Real-time formant vocoder, using a filter bank, a general, purpose digital computer, and an analog synthesizer. *J. Acoust. Soc. Am.* **38**, 940 (A) (1965).
- Synthesis by rule from articulatory parameters. Proc. Conf. on Speech Communication and Processing, A.F. Cambridge Res. Labs. and IEEE Audio and Electroacoust. Group, Cambridge, Mass., November 1967.
- Speech synthesis with a parametric articulatory model. Proc. Kyoto Speech Symposium, Kyoto, Japan, A-4-1-A-4-6 (1968).
- An experiment in computer communications through a data loop. *Bell System Tech. J.* April 1972.
- CUMMISKEY, P.: On-line computer control of a formant synthesizer. *J. Acoust. Soc. Am.* **38**, 940 (A) (1965).
- UMEDA, N.: Acoustical properties of word boundaries. *J. Acoust. Soc. Am.* **47**, 94 (A) (1969).
- On vowel duration and pitch prominence. *J. Acoust. Soc. Am.* **47**, 94 (A) (1969).
- Text-to-speech conversion. IEEE Int. Conv. Digest, New York, 216-217, March 1970.

- COKER, C. H., UMEDA, N., BROWMAN, C. P.: Automatic synthesis from text. *IEEE Int. Conv. Digest*, New York, March 1971.
- COLTON, F. B.: Miracle men of the telephone. *Natl. Geographic Mag.* **41**, 273-316 (1947).
- COOLEY, J. W., TUKEY, J. W.: An algorithm for the machine calculation of complex Fourier series. *Math. Comp.* **19**, 297-301 (1965).
- COOPER, F. S.: Spectrum analysis. *J. Acoust. Soc. Am.* **22**, 761-762 (1950).
- DELATTRE, P. C., LIBERMAN, A. M., BORST, J. M., GERSTMAN, L. J.: Some experiments on the perception of synthetic speech sounds. *J. Acoust. Soc. Am.* **24**, 597-606 (1952).
- GAITENBY, J. H., MATTINGLY, I. G., UMEDA, N.: Reading aids for the blind: A special case of machine-to-man communication. *IEEE Trans. Audio and Electroacoust.* **AU-17**, 266-270 (1969).
- LIBERMAN, A. M., BORST, J. M.: The inter-conversion of audible and visible patterns as a basis for research in the perception of speech. *Proc. Nat. Acad. Sci. U.S.* **37**, 318-325 (1951).
- PETERSON, E., FAHRINGER, G. S.: Some sources of characteristic vocoder quality. *J. Acoust. Soc. Am.* **29**, 183 (A) (1957).
- RAND, T. C., MUSIC, R. S., MATTINGLY, I. G.: Voice for the laboratory computer. IEEE Int. Conv. Digest, New York, March 1971.
- CROWTHER, W. R., RADER, C. M.: Efficient coding of vocoder channel signals using linear transformation. *Proc. IEEE* **54**, 1594-1595 (1966).
- DAGUET, J.: "Codimex" speech compression system. *Proc. Stockholm Speech Comm. Seminar*, R.I.T. Stockholm, Sweden, September 1962.
- DAS, S. K., MOHN, W. S.: Pattern recognition in speaker verification. *Proc. Fall Joint Computer Conference*, 721-732 (1969).
- DAVID, E. E., JR.: Naturalness and distortion in speech-processing devices. *J. Acoust. Soc. Am.* **28**, 586-589 (1956).
- Computer-catalyzed speech research. *Proc. JV Int. Congr. Acoust.*, Copenhagen, Denmark, August 1962.
- McDONALD, H. S.: Note on pitch synchronous processing of speech. *J. Acoust. Soc. Am.* **28**, 1261-1266 (1956a).
- Techniques for Coding speech signals for transmission over a reduced capacity digital channel. *J. Acoust. Soc. Am.* **28**, 767 (A) (1956b).
- SCHROEDER, M. R., LOGAN, B. F., PRESTIGIACOMO, A. J.: New applications of voice-excitation to vocoders. *Proc. Stockholm Speech Comm. Seminar*, R.I.T., Stockholm, Sweden, September 1962.
- DAVIS, H.: Chapter 28. In: *Handbook of experimental psychology* (S. S. STEVENS, ed.). New York: John Wiley & Sons 1951.
- Chapter 4. In: *Handbook of noise control* (C. M. HARRIS, ed.). New York: McGraw-Hill Book Co. 1957.
- A mechano-electrical theory of cochlear action. *Ann. Otol. Rhinol. Laryngol.* **67**, 789-801 (1958).
- A model for transducer action in the cochlea. *Cold Spring Harbor Symp. Quant. Biol.* **30**, 181-190 (1965).
- DAVIS, K. H., BIDDULPH, R., BALASHEK, S.: Automatic recognition of spoken digits. *J. Acoust. Soc. Am.* **24**, 637-642 (1952).
- DENES, P. B., MATHEWS, M. V.: Spoken digit recognition using time-frequency pattern matching. *J. Acoust. Soc. Am.* **32**, 1450-1455 (1960).
- DENNIS, J. B.: Computer control of an analog vocal tract. *Proc. Stockholm Speech Comm. Seminar*, R.I.T., Stockholm, Sweden, September 1962.

- D'EUSTACHIO, D., D'EUSTACHIO, I.: Articulation testing in moderate sized rooms. *J. Acoust. Soc. Am.* **32**, 1525 (A) (1960).
- DEWEY, G.: Relative frequency of English speech sounds. Cambridge, Massachusetts: Harvard University Press 1923.
- DIXON, N. R., MAXEY, H. D.: Terminal analog synthesis of continuous speech using the diphone method of segment assembly. *IEEE Trans. Audio and Electroacoust.* **AU-16**, 40–50 (1968).
- DODDINGTON, G. R.: A method of speaker verification. *J. Acoust. Soc. Am.* **49**, 139 (A) (1971).
- DOLANSKY, L. O.: An instantaneous pitch-period indicator. *J. Acoust. Soc. Am.* **27**, 67–72 (1955).
- Choice of base signals in speech signal analysis. *IRE Trans. Audio* **8**, 221–229 (1960).
- DREYFUS-GRAF, J.: Phonetograph und Schallwellen-Quantelung. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.
- DUDGEON, D. E.: Two-mass model of the vocal cords. *J. Acoust. Soc. Am.* **48**, 118 (A) (1970).
- DUDLEY, H.: Remaking speech. *J. Acoust. Soc. Am.* **11**, 169–177 (1939a).
- The vocoder. *Bell Lab. Record* **17**, 122–126 (1939b).
 - Phonetic pattern recognition vocoder for narrow-band speech transmission. *J. Acoust. Soc. Am.* **30**, 733–739 (1958).
 - BALASHEK, S.: Automatic recognition of phonetic patterns in speech. *J. Acoust. Soc. Am.* **30**, 721–732 (1958).
 - GRUENZ, O., Jr.: Visible speech translators with external phosphors. *J. Acoust. Soc. Am.* **18**, 62–73 (1946).
 - RIESZ, R. R., WATKINS, S. A.: A synthetic speaker. *J. Franklin Inst.* **227**, 739–764 (1939).
 - TARNOČZY, T. H.: The speaking machine of Wolfgang von Kempelen. *J. Acoust. Soc. Am.* **22**, 151–166 (1950).
 - DUNN, H. K.: The calculation of vowel resonances, and an electrical vocal tract. *J. Acoust. Soc. Am.* **22**, 740–753 (1950).
 - Methods of measuring vowel formant bandwidths. *J. Acoust. Soc. Am.* **33**, 1737–1746 (1961).
 - BARNEY, H. L.: Artificial speech in phonetics and communications. *J. Speech Hear. Res.* **1**, 23–39 (1958).
 - FLANAGAN, J. L., GESTRIN, P. J.: Complex zeros of a triangular approximation to the glottal wave. *J. Acoust. Soc. Am.* **34**, 1977 (A) (1962).
 - WHITE, S. D.: Statistical measurements on conversational speech. *J. Acoust. Soc. Am.* **11**, 278–288 (1940).
 - EGAN, J.: Articulation testing methods, II. OSRD Report No. 3802 November 1944 (U.S. Dept. of Commerce Report PB 22848).
 - ELIAS, P.: Predictive coding. *IRE Trans. Information Theory* **IT-1**, 16–33 (1955).
 - ESTES, S. E., KERBY, H. R., MAXEY, H. D., WALKER, R. M.: Speech synthesis from stored data. *I.B.M. J. Res. Develop.* **8**, 2–12 (1964). Also, *J. Acoust. Soc. Am.* **34**, 2003 (A) (1962).
 - FAIRBANKS, G.: Voice and articulation drillbook, second ed. New York: Harper & Brothers 1940.
 - EVERITT, W. L., JAEGER, R. P.: Method for time or frequency compression-expansion of speech. *IRE Trans. Audio* **AU-2**, 7–12 (1954). - FANO, R. M.: Short-time autocorrelation functions and power spectra. *J. Acoust. Soc. Am.* **22**, 546–550 (1950).

- FANT, G.: On the predictability of formant levels and spectrum envelopes from formant frequencies. In: For Roman Jakobson. 's-Gravenhage: Mouton & Co. 1956.
- Modern instruments and methods for acoustic studies of speech. *Acta Polytech. Scand. Ph.* **1**, 1–81 (1958).
 - Acoustic analysis and synthesis of speech with applications to Swedish. *Ericsson Technics* **15**, 3–108 (1959a).
 - The acoustics of speech. Proc. III Int. Congr. Acoust., Stuttgart, Germany 1959b.
 - Acoustic theory of speech production. 's-Gravenhage: Mouton & Co. 1960.
 - STEVENS, K. N.: Systems for speech compression. *Fortschr. Hochfrequenztechn.* **5**, 229–262 (1960).
 - FARNSWORTH, D. W.: High-speed motion pictures of the human vocal cords. *Bell Lab. Record* **18**, 203–208 (1940).
 - FISCHER, F. A.: Versuche zur rationellen Übertragung gesprochener Information. *Jahrbuch des elektrischen Fernmeldewesens* 1956–1957, S. 103–112. Verlag für Wissenschaft.
 - FLANAGAN, J. L.: Difference limen for the intensity of a vowel sound. *J. Acoust. Soc. Am.* **27**, 1223–1225 (1955a).
 - A difference limen for vowel formant frequency. *J. Acoust. Soc. Am.* **27**, 613–617 (1955b).
 - Automatic extraction of formant frequencies from continuous speech. *J. Acoust. Soc. Am.* **28**, 110–118 (1956a).
 - Bandwidth and channel capacity necessary to transmit the formant information of speech. *J. Acoust. Soc. Am.* **28**, 592–596 (1956b).
 - Band width and channel capacity necessary to transmit the formant information of speech. *J. Acoust. Soc. Am.* **28**, 592–596 (1956).
 - Estimates of the maximum precision necessary in quantizing certain ‘Dimensions’ of vowel sounds. *J. Acoust. Soc. Am.* **29**, 533–534 (1957).
 - Difference limen for formant amplitude. *J. Speech Hear. Dis.* **22**, 205–212 (1957a).
 - Estimates of the maximum precision necessary in quantizing certain “Dimensions” of vowel sounds. *J. Acoust. Soc. Am.* **29**, 533–534 (1957b).
 - Note on the design of “Terminal-Analog” speech synthesizers. *J. Acoust. Soc. Am.* **29**, 306–310 (1957c).
 - Some properties of the glottal sound source. *J. Speech Hear. Res.* **1**, 99–116 (1958).
 - Analog measurements of sound radiation from the mouth. *J. Acoust. Soc. Am.* **32**, 1613–1620 (1960a).
 - Resonance-vocoder and baseband complement. *IRE Trans. Audio* **AU-8**, 95–102 (1960b).
 - Audibility of periodic pulses and a model for the threshold. *J. Acoust. Soc. Am.* **33**, 1540–1549 (1961a).
 - Some influences of the glottal wave upon vowel quality. Proc. 4th Int. Congr. Phonetic Sciences, Helsinki, Finland, September 1961 b.
 - Models for approximating basilar membrane displacement-part II. *Bell System Tech. J.* **41**, 959–1009 (1962a).
 - Computer simulation of basilar membrane displacement. Proc. IV Int. Congr. Acoust., Copenhagen, Denmark, August 1962b.
 - Recent studies in speech research at Bell Telephone Laboratories (II). Proc. 5th Int. Congr. on Acoust., Liege, Belgium, September 1965.
 - Use of an interactive laboratory computer to study an acoustic oscillator model of the vocal cords. *IEEE Trans. Audio and Electroacoust.* **AU-17**, 2–6 (1969).
 - Focal points in speech communication research. Proc. VIIth Int. Cong. Acoust., Budapest, Hungary, August 1971. Also *IEEE Trans. Com. Tech.* **COM-19**, 1006–1015 (December 1971).

- FLANAGAN, J. L., BIRD, C. M.: Minimum phase responses for the basilar membrane. *J. Acoust. Soc. Am.* **34**, 114-118 (1962).
- CHERRY, L.: Excitation of vocal tract synthesizers. *J. Acoust. Soc. Am.* **45**, 764-769 (1969).
 - COKER, C. H., RABINER, L. R., SCHAFER, R. W., UMEDA, N.: Synthetic voices for computers. *IEEE Spectrum* **7**, No. 10, 22-45 (1970).
 - — BIRD, C. M.: Computer simulation of a formant-vocoder synthesizer. *J. Acoust. Soc. Am.* **35**, 2003 (A) (1962).
 - DAVID, E. E., Jr., WATSON, B. J.: Physiological correlates of binaural lateralization. *Proc. IV Int. Congr. Acoust.*, Copenhagen, Denmark, August 1962.
 - GOLDEN, R. M.: Phase vocoder. *Bell System Tech. J.* **45**, 1493-1509 (1966).
 - GUTTMAN, N.: On the pitch of periodic pulses. *J. Acoust. Soc. Am.* **32**, 1308-1328 (1960).
 - — WATSON, B. J.: Pitch of periodic pulses with nonuniform amplitudes. *J. Acoust. Soc. Am.* **34**, 738 (A) (1962).
 - HOUSE, A. S.: Development and testing of a formant-coding speech compression system. *J. Acoust. Soc. Am.* **28**, 1099-1106 (1956).
 - LANDGRAF, L.: Self-oscillating source for vocal-tract synthesizers. *IEEE Trans. Audio and Electroacoust.* **AU-16**, 57-64 (1968).
 - SASLOW, M. G.: Pitch discrimination for synthetic vowels. *J. Acoust. Soc. Am.* **30**, 435-442 (1958).
 - SCHROEDER, M. R., BIRD, C. M.: Single channel speech interpolator for 2:1 bandwidth reduction. *J. Acoust. Soc. Am.* **34**, 2003 (A) (1962).
 - SHIPLEY, K.: Digital conversion of adaptive delta modulation to linear delta modulation. *J. Acoust. Soc. Am.* **50**, 107 (A) (1971).
 - et al.: Research on speaker verification. National Acad. Sci. — National Res. Council Report. Contract No. N00014-67-A-0244-0021, March 1971.
 - FLETCHER, W. W.: A study of internal laryngeal activity in relation to vocal intensity. Ph.D. Thesis, Northwestern Univ. Evanston, Ill. 1950.
 - FORGIE, J. W., FORGIE, C. D.: Automatic method of plosive identification. *J. Acoust. Soc. Am.* **34**, 1979 (A) (1962).
 - DICKEY, E. P.: A recognition program for English fricative consonants. *J. Acoust. Soc. Am.* **33**, 1676 (A) (1961).
 - HUGHES, G. W.: A real-time input system for a digital computer. *J. Acoust. Soc. Am.* **30**, 668 (A) (1958).
 - FRANKE, E. K.: Mechanical impedance measurements of the human body surface. AF Tech. Rpt. No. 6469, April 1951, U.S. Air Force, Wright Air Development Center, Wright-Patterson Air Force Base, Dayton, Ohio.
 - FRENCH, N. R., STEINBERG, J. C.: Factors governing the intelligibility of speech sounds. *J. Acoust. Soc. Am.* **19**, 90-119 (1947).
 - FREUDBERG, R., DE LELLIS, J., HOWARD, C., SCHAFFER, H.: An all-digital pitch excited vocoder technique using the FFT algorithm. *Proc. 1967 Conf. on Speech Communication and Processing*, Air Force Cambridge Research Labs. and IEEE Audio and Electroacoustics Group, November 1967.
 - FRICK, F. C.: Degarble. *J. Acoust. Soc. Am.* **34**, 717 (A) (1962).
 - FRY, D. B., DENES, P.: The solution of some fundamental problems in mechanical speech recognition. *Language and Speech* **1**, 35-58 (1958).
 - FUJIMURA, O.: The Nagoya group of research on speech communication. *Phonetica* **7**, 160-162 (1961).
 - Analysis of nasal consonants. *J. Acoust. Soc. Am.* **34**, 1865-1875 (1962a).
 - Formant-antiformant structure of nasal murmurs. *Proc. Stockholm Speech Comm. Seminar*, Stockholm, Sweden, September 1962b.

- FUJIMURA, O., ISHIDA, H., KIRITANI, S.: Computer controlled dynamic cineradiography. *Annual Bulletin (Research Inst. of Logopedics and Phoniatrics)*, Univ. of Tokyo, No. 2, 6-10 (1968).
- LINDQUIST, J.: Sweep-tone measurements of the vocal tract characteristics. *J. Acoust. Soc. Am.* **49**, 541-558 (1971).
 - FUJISAKI, H.: Automatic extraction of fundamental period of speech by autocorrelation analysis and peak detection. *J. Acoust. Soc. Am.* **32**, 1518 (A) (1960).
 - ISHIDA, H.: Simulation and evaluation of predictive coding systems for speech transmission. *Research on Information Processing*, Annual Rept. 2, Div. of Elec. Eng., Univ. of Tokyo, June 1970.
 - KAWASHIMA, T.: The roles of pitch and higher formants in the perception of vowels. *Proc. Conf. on Speech Communication and Processing*, A.F. Cambridge Res. Labs. and IEEE Audio and Electroacoust. Group, Cambridge, Mass., November 1967.
 - YOSHIMUNE, K.: Analysis, normalization and recognition of sustained Japanese vowels. *Research on Information Processing*, Annual Rept. 2, Div. of Elec. Eng., Univ. of Tokyo, June 1970.
 - GABOR, D.: Lectures on communication theory. Technical Report No. 238, Research Laboratory of Electronics, Mass. Inst. of Tech., Cambridge, Mass., April 1952.
 - GALAMBOS, R.: Neural mechanisms in audition. *Laryngoscope* **68**, 388-401 (1958).
 - GALUNOV, V. I.: Some features of speech perception. *Akust. Zh.* **12**, 422-427 (1966).
 - GILL, J. S.: Automatic extraction of the excitation function of speech with particular reference to the use of correlation methods. *Proc. III Int. Congr. Acoust.*, Stuttgart, Germany, September 1959.
 - GOLD, B.: Computer program for pitch extraction. *J. Acoust. Soc. Am.* **34**, 916-921 (1962).
 - BIALLY, T.: Voice response with monotone synthetic speech. *IEEE Int. Conv. Digest*, New York, New Jersey, March 1971.
 - JORDAN, K. L., Jr.: A note on digital filter synthesis. *Proc. IEEE* **56**, No. 10 (1968).
 - LEBOW, I., McHUGH, P., RADER, C.: The FDP, a fast programmable signal processor. *IEEE Trans. Computers* **C-20**, No. 1 (1971).
 - RADER, C.: Systems for compressing the bandwidth of speech. *IEEE Trans. Audio and Electroacoust.* **AU-15**, No. 3 (1967).
 - RADER, C. M.: Digital processing of signals. New York: McGraw-Hill Book Co. 1969.
 - TIERNEY, J.: Digitalized voice-excited vocoder for telephone quality inputs using bandpass sampling of the baseband signal. *J. Acoust. Soc. Am.* **37**, 753-754 (1965).
 - GOLDEN, R. M.: Digital computer simulation of a sampled-data voice-excited vocoder. *J. Acoust. Soc. Am.* **35**, 1358-1366 (1963).
 - MACLEAN, D. J., PRESTIGIACOMO, A. J.: A frequency multiplex system for a ten spectrum channel voice-excited vocoder. *J. Acoust. Soc. Am.* **36**, 1022 (A) (1964).
 - KAISER, J. F.: Design of wideband sampled-data filters. *Bell System Tech. J.* (pt. II) **53**, 1533-1546 (1964).
 - GOODMAN, D. J.: The application of delta modulation to analog-to-PCM encoding. *Bell System Tech. J.* **48**, No. 2, 321-343 (1969).
 - FLANAGAN, J. L.: Direct digital conversion between linear delta modulation and adaptive delta modulation. *Proc. IEEE Int. Conf. on Communications*, Montreal, Canada, June 1971.
 - GOPINATH, B., SONDHI, M. M.: Determination of the shape of the human vocal tract from acoustical measurements. *Bell System Tech. J.* **49**, No. 6, 1195-1214 (1970).
 - GOULD, G. T.: Design of a speech stretcher, FM-TV. *J. Rad. Comm.* **11**, 30-36 (1951).
 - GREEFKES, J. A., JAGER, F. de: Continuous delta modulation. *Philips Res. Rept.* **23**, 233-246 (1968).

- GRUENZ, O., Jr., SCHOTT, L. O.: Extraction and portrayal of pitch of speech sounds. *J. Acoust. Soc. Am.* **21**, 487-495 (1949).
- GRÜTZMACHER, M., LOTTERMOSER, W.: Über ein Verfahren zur trägeheitsfreien Aufzeichnung von Melodiekurven. *Akust. Z.* **2**, 242-248 (1937).
- GUILD, S. R., CROWE, S. J., BUNCH, C. C., POLVOGT, L. M.: Correlations of differences in the density of innervation of the organ of Corti with differences in the acuity of hearing. *Acta Oto-Laryngol.* **15**, 269-308 (1931).
- GUINAN, J. J., Jr., PEAKE, W. T.: Middle-ear characteristics of anesthetized cats. *J. Acoust. Soc. Am.* **41**, 1237-1261 (1967).
- GUTTMAN, N., FLANAGAN, J. L.: Pitch of nonuniformly spaced pulses in periodic trains. *J. Acoust. Soc. Am.* **34**, 1994 (A) (1962).
- - Pitch of high-pass filtered periodic pulses. *J. Acoust. Soc. Am.* **36**, 757-765 (1964).
 - - NELSON, J. R.: An instrument that creates some artificial speech spectra for the severely hard of hearing. *Am. Ann. Deaf.* **113**, 295-302 (1968).
- HAGGARD, M. P., MATTINGLY, I. P.: A simple program for synthesizing British English. *Proc. Conf. on Speech Communication and Processing*, A.F. Cambridge Res. Labs. and IEEE Audio and Electroacoust. Group, Cambridge, Mass., November 1967.
- HALL, J. L.: Maximum-likelihood sequential procedure for estimation of psychometric functions. *J. Acoust. Soc. Am.* **44**, 370 (A) (1968).
- HALLE, M.: Book Review C. F. HOCKETT, Manual of phonology. *J. Acoust. Soc. Am.* **28**, 509-510 (1956).
- - The sound pattern of Russian. The Hague: Mouton & Co. 1959.
- HALSEY, R. J., SWAFFIELD, J.: Analysis-synthesis telephony, with special reference to the vocoder. *Inst. Elec. Engrs. (London)* **95**, 391-411, pt. III, (1948).
- HAMMETT, J. C., Jr.: An adaptive spectrum analysis vocoder. Ph.D. Thesis, Dept. Elec. Eng., Georgia Inst. Tech., Atlanta, Ga. (1971).
- HANAUER, S. L., SCHROEDER, M. R.: Non-linear time compression and time normalization of speech. *J. Acoust. Soc. Am.* **40**, 1243 (A) (1966).
- HARLOW, A. F.: Old wires and new waves. New York: Appleton-Century, Co. 1936.
- HARRIS, C. M., ed.: Handbook of noise control. New York: McGraw-Hill Book Co. 1957.
- HARRIS, K. S., GAY, T.: Some stress effects on electro-myographic measures of Consonant articulation. *Proc. Speech Symposium*, Kyoto, Japan, August 1968.
- - HUNTINGTON, D. A., SHOLES, G. N.: Coarticulation of some disyllabic utterances measured by electromyographic techniques. *J. Acoust. Soc. Am.* **39**, 1219 (A) (1966).
- HASKEW, J. R.: A comparison between linear prediction and linear interpolation. MS Thesis, Electrical Engineering Dept., Brooklyn Polytechnic Institute: New York, New York, June (1969).
- HECKER, M. H. L.: Studies of nasal consonants with an articulatory Speech synthesizer. *J. Acoust. Soc. Am.* **34**, 179-188 (1962).
- HEINZ, J. M.: Model studies of the production of fricative consonants. *Quart. Progr. Rept. Research Laboratory of Electronics*, Mass. Inst. of Tech., Cambridge, Mass., July 15, 1958.
- - An analysis of speech spectra in terms of a model of articulation. *Proc. IV Int. Congr. Acoust.* Copenhagen, Denmark, August 1962a. Also, *Proc. Stockholm Speech Comm. Seminar*, R.I.T. Stockholm, Sweden, September 1962.
 - - Reduction of speech spectra to descriptions in terms of vocal tract area functions. ScD. Thesis, Mass. Inst. of Tech., August 1962b.

- HEINZ, J. M., STEVENS, K. N.: On the properties of voiceless fricative consonants. *J. Acoust. Soc. Am.* **33**, 589-596 (1961).
- HELMHOLTZ, H. L. F. v.: On the sensations of tone. New York: Dover Publ. Inc. 1954; Translation of the Fourth German Edition of 1877 by A. J. ELLIS.
- HENKE, W.: Preliminaries to speech synthesis based upon an articulatory model. *Proc. Conf. on Speech Communication and Processing*, A.F. Cambridge Res. Labs. and IEEE Audio and Electroacoust. Group, Cambridge, Mass., November 1967.
- HILDEBRAND, F. B.: Advanced calculus for engineers. New York: Prentice-Hall Inc. 1948.
- - Methods of applied mathematics. New York: Prentice-Hall, Inc. 1952.
- HIRAMATSU, K., KOTOH, K.: A spoken digit recognition system using error correcting procedure. *Proc. Int. Congr. Acoust. B-4-3*, Tokyo, Japan, August 1968.
- HIXON, T. J., KLATT, D. H., MEAD, J.: Influence of forced transglottal pressure changes on Vocal fundamental frequency. *J. Acoust. Soc. Am.* **49**, 105 (A) (1971).
- HOLMES, J. N.: A method of tracking formants which remains effective in the frequency regions common to two formants. *Rept. JU 8-2*. Joint Speech Res. Unit, British Post Office, Eastcote, England, December 1958.
- - Research on speech synthesis. *Rept. JU 11-4*, Joint Speech Res. Unit, British Post Office, Eastcote, England, July 1961.
 - - An Investigation of the volume velocity waveform at the Larynx during speech by means of an inverse filter, *Proc. IV Int. Congr. Acoust.*, Copenhagen, Denmark, August 1962. Also, *Proc. Stockholm Speech. Comm. Seminar*, R.I.T. Stockholm, Sweden, September 1962.
 - - KELLY, L. C.: Apparatus for segmenting the formant frequency regions of a speech signal. Research Report No. 20566. British Post Office Research Station, Dollis Hill, London, January 1960.
 - - MATTINGLY, I. G., SHEARME, J. N.: Speech synthesis by rule. *Language and Speech* **7**, 127-143 (1964).
- HOODE, R. A.: A study of tongue body motion during selected speech sounds. Ph.D. Thesis, Univ. of Michigan, 1967.
- HOUSE, A. S.: Analog studies of nasal consonants. *J. Speech Hear. Disorders* **22**, 190-204 (1957).
- - PAUL, A. P., STEVENS, K. N., ARNOLD, J. B.: Acoustical description of syllabic nuclei: Data derived by automatic analysis procedures. *Proc. Stockholm Speech Comm. Seminar*, R.I.T., Stockholm, Sweden, September 1962.
 - - STEVENS, K. N.: Auditory testing of a simplified description of vowel articulation. *J. Acoust. Soc. Am.* **27**, 882-887 (1955).
 - - Analog studies of the nasalization of vowels. *J. Speech Hear. Disorders* **21**, 218-232 (1956).
 - - Estimation of formant bandwidths from measurements of transient response of the vocal tract. *J. Speech Hear. Res.* **1**, 309-315 (1958).
 - - PAUL, A. P.: Acoustical description of syllabic nuclei: An interpretation in terms of a dynamic model of articulation. *Proc. Stockholm Speech Comm. Seminar*, R.I.T., Stockholm, Sweden, September 1962.
 - - SANDEL, T. T., ARNOLD, J. B.: On the learning of speechlike vocabularies. *J. Verbal Learn. and Verbal Behavior* **1**, 133-143 (1962).
- HOWARD, C. R.: Speech analysis-synthesis schemes using continuous parameters. *J. Acoust. Soc. Am.* **28**, 1091-1098 (1956).
- HOWELL, A. S., SCHNEIDER, G. O. K., STUMP, T. M.: A military semi-vocoder for analog telephone transmission. *J. Acoust. Soc. Am.* **33**, 1663 (A) (1961).

- HOWELL, A. S., SCHNEIDER, G. O. K., STUMP, T. M.: Analog multiplexing of a telephone semi-vocoder. *J. Acoust. Soc. Am.* **33**, 1663 (A) (1961).
- HUGGINS, W. H.: A phase principle for complex-frequency analysis. *J. Acoust. Soc. Am.* **24**, 582-589 (1952).
- A note on autocorrelation analysis of speech sounds. *J. Acoust. Soc. Am.* **26**, 790-792 (1954).
 - Representation and analysis of signals, part I; the use of orthogonalized exponentials. Johns Hopkins University, Report No. AF 19 (604)-1941, ASTIA No. AD 133741, September 1957.
- HUGHES, G. W.: The recognition of speech by machine. *Res. Lab. Elect. Tech. Rept.* 395, Mass. Inst. Tech., Cambridge, Mass., May 1961.
- HALLE, M.: Spectral properties of fricative consonants. *J. Acoust. Soc. Am.* **28**, 303-310 (1956).
- ICHIKAWA, A., NAKATA, K.: Speech synthesis by rule. *Proc. Int. Congr. Acoust.* B-5-6, Tokyo, Japan, August 1968.
- INGÅRD, U.: On the theory and design of acoustic resonators. *J. Acoustic. Soc. Am.* **25**, 1037-1061 (1953).
- INOMATA, S.: A new method of pitch extraction using a digital computer. *J. Acoust. Soc. Japan* **16** (4), 283-285 (1960).
- ISHIZAKA, K., FLANAGAN, J. L.: Acoustic properties of a two-mass model of the vocal cords. *J. Acoust. Soc. Am.* **51**, 91 (A) (1972).
- MATSUDAIRA, M.: What makes the vocal cords vibrate. *Proc. Int. Congr. Acoust.* B-1-3, Tokyo, Japan, August 1968.
- ITAKURA, F., SAITO, S.: An analysis-synthesis telephony based on maximum likelihood method. *Proc. Int. Congr. Acoust.* C-5-5, Tokyo, Japan, August 1968.
- A statistical method for estimation of speech spectral density and formant frequencies. *Electronics and Communications in Japan* **53A**, 36-43 (1970).
- JAGER, F. DE: Deltamodulation, A method of PCM transmission using the 1-unit code. Philips Res. Rept. **7**, 442-466 (1952).
- GREEFKES, J. A.: "Frena," a system of speech transmission at high noise levels. *Philips Tech. Rev.* **19**, 73-108 (1957).
- JAYANT, N. S.: Adaptive delta modulation with a one-bit memory. *Bell System Tech. J.* **49**, 321-342 (1970).
- ROSENBERG, A. E.: The preference of slope overload to granularity in the delta modulation of speech. *J. Acoust. Soc. Am.* **49**, 133 (A) (1971).
- JOHNSTONE, B. M., BOYLE, A. J. F.: Basilar membrane vibration examined with the Mössbauer technique. *Science* **158**, 389-390 (1967).
- JUDSON, L. S., WEAVER, A. T.: Voice science. New York: F. S. Crofts & Co. 1942.
- KADOKAWA, Y., SUZUKI, J.: A simple calculation of the vocal tract configuration from three formant frequencies. *Proc. Int. Congr. Acoust.* B-2-5, Tokyo, Japan, August 1968.
- KATO, Y., OCHIAI, K., ARASEKI, T.: A terminal analog speech synthesizer in a small computer. *IEEE Int. Conv. Digest*. New York, March 1971.
- KATSUKI, Y.: Neural mechanism of hearing in cats and insects. Pages 53-75. In: *Electrical activity of single cells*. Tokyo: Igakushoin, Hongo, Tokyo, 1960.
- KAUTZ, W. H.: Transient synthesis in the time domain. *IRE Trans. Circuit Theory CT-1*, 29-39 (1954).
- KELLY, J. L., Jr., GERSTMAN, L. J.: An artificial talker driven from a phonetic input. *J. Acoust. Soc. Am.* **33**, 835 (A) (1961).
- An artificial talker driven from a phonetic input. *J. Acoust. Soc. Am.* **33**, 835 (A) (1961).

- KELLY, J. L., Jr., LOCHBAUM, C.: Speech synthesis. *Proc. Stockholm Speech Comm. Seminar*, R.I.T., Stockholm, Sweden, September 1962.
- VYSSOTSKY, V. A.: A block diagram compiler. *Bell System Tech. J.* **40**, 669-676 (1961).
- KELLY, J. M., MILLER, R. L.: Recent improvements in 4800 BPS voice-excited vocoders. *Proc. Conf. on Speech Communication and Processing*, A.F. Cambridge Res. Labs. and IEEE Group on Audio and Electroacoust., Cambridge, Mass., November 1967.
- et al.: Final report on predictive coding of speech signals, contract No. DAAB03-69-C-0338, Bell Laboratories, June 1970.
- KEMPELEN, W. V.: Le mécanisme de la parole, suivi de la Description d'une machine parlante. Vienna: J. V. Degen 1791.
- KERSTA, L. G.: Amplitude cross-section representation with the sound spectrograph. *J. Acoust. Soc. Am.* **20**, 796-801 (1948).
- Voiceprint identification. *Nature* **196**, 1253-1257 (1962a).
 - Voiceprint-identification infallibility. *J. Acoust. Soc. Am.* **34**, 1978 (A) (1962b).
- KHARKEVICH, A. A.: On the possibilities of spectrum compression. *Elektrosvyaz* **12**, No. 8, 3-8 (1958). Also, *Telecommunications* No. 11, 1121-1128 (1958).
- KIANG, N. Y. S., PEAKE, W. T.: Components of electrical responses recorded from the cochlea. *Ann. Otol. Rhinol. Laryngol.* **69**, 448-458 (1960).
- WATENABE, T., THOMAS, E., CLARK, L.: Discharge patterns of single fibers in the cat's auditory nerve. Cambridge: M.I.T. Press, Research Monograph No. 35; 1965.
- KIRITANI, S., FUJIMURA, O., ISHIDA, H.: Computer controlled radiography for observation of articulatory movement. *Proc. Int. Congr. Acoust.* 21-C-13 Budapest, Hungary, August 1971.
- KOCK, W. E.: Speech bandwidth compression. *Bell Lab. Record* **34**, 81-85 (1956).
- Speech communication systems. *Proc. I.R.E.* **50**, 769-776 (1962).
 - MILLER, R. L.: Dynamic spectrograms of speech. *J. Acoust. Soc. Am.* **24**, 783-784 (1952).
- KOENIG, R.: Quelques expériences d'acoustique. Paris 1882.
- KOENIG, W., DUNN, H. K., LACEY, L. Y.: The sound spectrograph. *J. Acoust. Soc. Am.* **18**, 19-49 (1946).
- KRAFT, L. G.: Correlation function analysis. *J. Acoust. Soc. Am.* **22**, 762-764 (1950).
- KRAMER, H. P., MATHEWS, M. V.: A linear coding for transmitting a set of correlated signals. *IRE Trans. Inform. Theory IT-2*, 41-46 (1956).
- KRATZENSTEIN, C. G.: Sur la naissance de la formation des Voyelles. *J. phys.* **21**, 358-380 (1782). Also, *Tentamen Coronatum de Voce, Acta Acad. Petrog.* 1780.
- KRINGLEBOTN, M.: Experiments with some vibrotactile and visual aids for the deaf. *Proc. Conf. on Speech-Analyzing Aids for the Deaf*, Amer. Ann. Deaf **113**, 311-317 (1968).
- KROPFL, W.: An experimental data block switching system. *Bell System Tech. J.* April 1972.
- KRUSKAL, J.: Nonmetric multidimensional scaling. *Psychometrika* **29**, 115-129 (1964).
- KRYTER, K. D.: Methods for the calculation and use of the articulation index. *J. Acoust. Soc. Am.* **34**, 1689-1697 (1962).
- KULYA, V. I.: Application of Laguerre Functions to parametric coding of speech signals. *Elektrosvyaz*, No. 7, 33-39 (1962). Also, *Telecommunications and Radio Engineering*, part I. *Telecommunications* No. 7, 34-41 (1962).
- Analysis of a Chebyshev-type vocoder. *Telecomm. and Radio Engng.*, Part 1, No. 3, 23-32, March 1963.

- KUREMATSU, A., INOUE, S.: Speech recognition with time-normalized frequency pattern. Proc. Int. Congr. Acoust. B-4-5, Tokyo, Japan, August 1968.
- LADEFOGED, P.: The perception of speech. Proc. Symp. on Mechanization of Thought Processes, National Physical Laboratory Teddington, England Nov. 24-27, 1958.
- BROADBENT, D. E.: Information conveyed by vowels. J. Acoust. Soc. Am. **29**, 98-104 (1957).
- FROMKIN, V. A.: Experiments on competence and performance. Proc. Conf. on Speech Communication and Processing, A.F. Cambridge Res. Labs. and IEEE Audio and Electroacoust. Group, Cambridge, Mass., November 1967.
- LAWRENCE, W.: The synthesis of speech from signals which have a low information rate. Pages 460-469. In: Communication theory (W. JACKSON, ed.). London: Butterworths Sci. Publ. 1953.
- Formant tracking by self-adjusting inverse filtering. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.
- LEE, F. F.: Reading machine: From text to speech. IEEE Trans. Audio and Electroacoust. **AU-17**, 275-282 (1969).
- LEE, Y. W.: Statistical theory of communication. New York: John Wiley & Sons 1960.
- LEVITT, H., NELSON, J. R.: Experimental communication aids for the deaf. IEEE Trans. Audio and Electroacoust. **AU-18**, 2-6 (1970).
- LIBERMAN, A. M., INGEMANN, F., LISKER, L., DELATTRE, P., COOPER, F. S.: Minimal rules for synthesizing speech. J. Acoust. Soc. Am. **31**, 1490-1499 (1959).
- COOPER, F. S., HARRIS, K. S., MACNEILAGE, P. F.: A motor theory of speech perception. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.
- DE LATTRE, P. C., COOPER, F. S., GERSTMAN, L.: The role of consonant-vowel transitions in the stop and nasal consonants. Psychol. Monographs **68**, No. 379 (1954).
- HARRIS, K. S., HOFFMAN, H. S., GRIFFITH, B. C.: The discrimination of speech sounds within and across phoneme boundaries. J. Expt. Psychol. **54**, 358-368 (1957).
- LIKCLIDER, J. C. R.: The intelligibility of amplitude-dichotomized, time-quantized speech waves. J. Acoust. Soc. Am. **22**, 820-823 (1950).
- On the process of speech perception. J. Acoust. Soc. Am. **24**, 590-594 (1952).
- POLLACK, I.: Effects of differentiation, integration, and infinite peak clipping upon the intelligibility of speech. J. Acoust. Soc. Am. **20**, 42-51 (1948).
- STEVENS, K. N., HAYES, J. R. M.: Studies in speech, hearing and communication. Final Report, Contract W 19122ac-14, September 30, 1954, Acoustics Lab. Mass Inst. of Tech., Cambridge, Mass.
- LIEBERMAN, P.: Perturbations in vocal pitch. J. Acoust. Soc. Am. **33**, 597-603 (1961).
- LINDBLOM, B.: On vowel reduction. Rept. 29, Speech Transmission Laboratory, Royal Inst. Tech., Stockholm, Sweden, May 1963.
- LINDGREN, N.: Automatic speech recognition. IEEE Spectrum, part (I), **2**, 114-136, March (1965); part (II), **2**, 45-59, April (1965); part (III), **2**, 104-116, May (1965).
- LINVILL, J.: Development progress on a microelectronic tactile facsimile reading aid for the blind. IEEE Trans. Audio and Electroacoust. **AU-17**, 271-274 (1969).
- LUMMIS, R. C.: Real time technique for speaker verification by computer. J. Acoust. Soc. Am. **50**, 106 (A) (1971).
- MALÉCOT, A.: Acoustic cues for nasal consonants. Language **32**, 274-284 (1956).
- MALME, C. I.: Detectability of small irregularities in a broadband noise spectrum. Quarterly Rept., Res. Lab. Elec., Mass. Inst. of Tech., Cambridge, Mass. January 1959.

- MANLEY, H. J.: Fourier coefficients of speech power spectra as measured by Auto-correlation Analysis. J. Acoust. Soc. Am. **34**, 1143-1145 (1962).
- KLEIN, D. B.: Analysis-synthesis of continuous speech in terms of orthogonalized exponentially damped sinusoids. J. Acoust. Soc. Am. **34**, 724 (A) (1962). Also, J. Acoust. Soc. Am. **35**, 464-474 (1963).
- MARCOU, P., DAGUET, J.: New methods of speech transmission. Proc. of 3rd Symp. on Info. Theory, London 1955. Pages 231-244. In: Information theory (ed. C. CHERRY). Butterworths Sci. Publ., London: 1956. Also, Ann. Telecommun. **11**, 118-126 (1956).
- MARKEL, J. D.: The Prony method and its application to speech analysis. J. Acoust. Soc. Am. **49**, 105 (A) (1971).
- Digital inverse filtering—a new tool for formant trajectory estimation. IEEE Trans. Audio and Electroacoust. **AU-20**, June 1972.
- MARTIN, T. B., NELSON, A. L., ZADELL, A. J.: Speech recognition by feature abstraction techniques. Wright-Patterson AFB, Avionics Labs., Rept. AL-TDR, 64-176 (1964).
- MATHEWS, M. V.: External coding for speech transmission. IRE Trans. Inform. Theory **IT-5**, 129-136 (1959).
- MILLER, J. E., DAVID, E. E., Jr.: An accurate estimate of the glottal-waveshape. J. Acoust. Soc. Am. **33**, 843 (A) (1961a).
- — Pitch synchronous analysis of voiced sounds. J. Acoust. Soc. Am. **33**, 179-186 (1961b).
- WALKER, P.: Program to compute vocal-tract poles and zeros. J. Acoust. Soc. Am. **34**, 1977 (A) (1962).
- MATSUI, E.: Computer-simulated vocal organs. Proc. Int. Congr. Acoust. B-5-1, Tokyo, Japan, August 1968.
- MATLINGLY, I. G.: Synthesis by rule of prosodic features. Language and Speech **9**, 1-13 (1966).
- MCDONALD, R. A.: Signal-to-noise and idle channel performance of differential pulse code modulation systems—particular application to voice signals. Bell System Tech. J. **45**, 1123-1151 (1966).
- MEEKER, W. F., NELSON, A. L., SCOTT, P. B.: Experiments in Automatic speech recognition. J. Acoust. Soc. Am. **34**, 1996 (A) (1962).
- MERMELSTEIN, P.: Determination of the vocal-tract shape from measured formant frequencies. J. Acoust. Soc. Am. **41**, 1283-1294 (1967).
- Computer simulation of articulatory activity in speech production. Proc. Int. Joint Conf. on Artificial Intelligence, Washington, D.C. 1969.
- MEYER-EPPLER, W.: Die Reliefdarstellung von Zeit-Frequenz-Spektren durch photographische Differentiation. Akust. Beih. No. 1, AB-1-3 (1951).
- Zum Erzeugungsmechanismus der Geräuschlaute. Z. Phonetik **7**, 196-212 (1953).
- Grundlagen und Anwendungen der Informationstheorie. Berlin-Göttingen-Heidelberg: Springer 1959.
- UNGEHEUER, G.: Die Vokalartikulation als Eigenwertproblem. Z. Phonetik **10**, 245-257 (1957).
- MILLER, D. C.: Science of musical sounds. New York: Macmillan Co. 1916.
- MILLER, G. A.: The magical number seven, plus or minus two: Some limits in our capacity for processing information. Psychol. Rev. **63**, 81-97 (1956).
- Sensitivity to changes in the intensity of white noise and its relation to masking and loudness. J. Acoust. Soc. Am. **19**, 609-619 (1947).
- Decision units in the perception of speech. I.R.E. Trans. Inform. Theory **IT-8**, 81-83 (1962).
- HEISE, G. A., LICHTEN, W.: The intelligibility of speech as a function of the context of the test materials. J. Exptl. Psychol. **41**, 329-335 (1951).

- MILLER, R. L.: Improvements in the vocoder. *J. Acoust. Soc. Am.* **25**, 832 (A) (1953).
 — Nature of the vocal cord wave. *J. Acoust. Soc. Am.* **31**, 667–677 (1959).
- MØLLER, A. R.: Network model of the middle ear. *J. Acoust. Soc. Am.* **33**, 168–176 (1961).
 — On the transmission characteristic of the middle ear. Proc. IV Int. Congr. Acoust., Copenhagen, Denmark, August 1962.
- MONCUR, J. P., DIRKS, D.: Binaural and monaural speech intelligibility in reverberation. *J. Speech Hear. Res.* **10**, 186–195 (1967).
- MORSE, P. M.: Vibration and sound. New York: McGraw-Hill Book Co. 1948.
- MUNSON, W. A., MONTGOMERY, H. C.: A speech analyzer and synthesizer. *J. Acoust. Soc. Am.* **22**, 678 (A) (1950).
- NAKATA, K.: Synthesis of nasal consonants by a terminal-analog synthesizer. *J. Radio Res. Lab. (Tokyo)* **6**, 243–254 (1959).
 — Synthesis and perception of Japanese fricative sounds. *J. Radio Res. Lab. (Tokyo)* **7**, 319–333 (1960).
 — SUZUKI, J.: Synthesis and perception of Japanese vowels and vowel-like sounds. *J. Radio Res. Lab. (Tokyo)* **6**, 617–634 (1959).
- NAKATANI, L. H.: Measuring the ease of comprehending speech. Proc. 7th Int. Congr. Acoust., Budapest, Hungary, 1971.
- McDERMOTT, B.: Effect of pitch and formant manipulation on speech quality. *J. Acoust. Soc. Am.* **50**, 145 (A) (1971).
- NETTER, F.: Anatomical drawings of the ear. In: Clinical Symposia **14**, 39–73 (1962).
- NEVEL'SKII, P. B.: Comparative study of the volume of the short-term and long-term memory. Proc. 18th Inter. Psychol. Congr. Symp. 21–26 (1966).
- NOLL, A. M.: Short-time spectrum and "cepstrum" techniques for vocal pitch detection. *J. Acoust. Soc. Am.* **36**, 296–302 (1964).
 — Cepstrum pitch determination. *J. Acoust. Soc. Am.* **41**, 293–309 (1967).
- OCHIAI, Y.: Fondamentales des qualités phonémique et vocalique des paroles par rapport au timbre, obtenues en employant des voyelles japonais vocalisées par des sinets japonais. *Mem. Fac. Eng., Nagoya Univ.* **10**, 197–201 (1958).
 — Phoneme and voice identification studies using Japanese vowels. *Language and Speech* **2**, 132–136 (1959).
 — KATO, H.: Sur la netteté et la naturalité de la voix humaine refléchies du point de vue de la qualité de transmission. *Mem. Fac. Eng., Nagoya Univ.* **1**, 105–115 (1949).
- ÖHMAN, S. E. G.: A model of word and sentence intonation. Proc. Int. Congr. Acoust. B-5-4, Tokyo, Japan, August 1968.
- OETINGER, R., HAUSER, H.: An electrical network for the investigation of the mechanical vibrations of the inner ear. *Acustica* **11** (3), 161–177 (1961).
- OIZUMI, J., KUBO, E.: Synthesis of speech. *J. Acoust. Soc. Japan* **10**, 155–158 (1954).
- OLIVE, J. P.: Automatic formant tracking by a Newton-Raphson technique. *J. Acoust. Soc. Am.* **50**, 661–670 (1971).
- OLSON, H. F.: Speech machine considerations. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.
 — BELAR, H.: Phonetic typewriter, III. *J. Acoust. Soc. Am.* **33**, 1610–1615 (1961).
- O'NEAL, J. B., Jr.: Predictive quantizing systems (differential pulse code modulation) for the transmission of television signals. *Bell System Tech. J.* **45**, 689–721 (1966).
- O'NEIL, E. F.: TASI Bell Lab. Record **37**, 83–87 (1959).
- OPPENHEIM, A. V.: Speech analysis-synthesis system based on homomorphic filtering. *J. Acoust. Soc. Am.* **45**, 459–462 (1969).
 — SCHAFER, R. W.: Homomorphic analysis of speech. IEEE Trans. Audio and Electroacoust. **AU-16**, 221–226 (1968).

- OPPENHEIM, A. V., SCHAFER, R. W., STOCKHAM, T. G.: Nonlinear filtering of multiplied and convolved signals. *Proc. IEEE* **56**, 1264–1291 (1968).
 — *et al.*: Papers on digital signal processing. Cambridge, Massachusetts: M.I.T. Press 1969.
- PAGET, Sir RICHARD: Human speech. London and New York: Harcourt 1930.
- PAPOULIS, A.: Probability, random variables, and stochastic processes. New York: McGraw-Hill Book Co. 1965.
- PEAKE, W. T., GOLDSTEIN, M. H., Jr., KIANG, N.Y.-S.: Responses of the auditory nerve to repetitive acoustic stimuli. *J. Acoust. Soc. Am.* **34**, 562–570 (1962).
 — KIANG, N. Y.-S., GOLDSTEIN, M. H., Jr.: Rate functions for auditory nerve responses to bursts of noise. *J. Acoust. Soc. Am.* **34**, 571–575 (1962).
- PERKELL, J. S.: Cineradiographic studies of speech: Implications of certain articulatory movements. Proc. 5th Int. Congr. Acoust., Liège, Belgium, September 1965.
- PETERSON, E.: Frequency detection and speech formants. *J. Acoust. Soc. Am.* **23**, 668–674 (1951).
 — COOPER, F. S.: Peakpicker: a bandwidth compression device. *J. Acoust. Soc. Am.* **29**, 777 (A) (1957).
- PETERSON, G. E., BARNEY, H. L.: Control methods used in a study of the vowels. *J. Acoust. Soc. Am.* **24**, 175–184 (1952).
 — LEHISTE, I.: Duration of syllable nuclei in English. *J. Acoust. Soc. Am.* **32**, 693–703 (1960).
 — WANG, W. S.-Y., SIVERSTON, E.: Segmentation techniques in speech synthesis. *J. Acoust. Soc. Am.* **30**, 739–742 (1958).
- PETERSON, L. C., BOGERT, B. P.: A dynamical theory of the cochlea. *J. Acoust. Soc. Am.* **22**, 369–381 (1950).
 — PICKETT, J. M.: Tactile vocoder as an aid for the deaf. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.
- Some applications of speech analysis to communication aids for the deaf. IEEE Trans. Audio and Electroacoust. **AU-17**, 283–289 (1969).
 — PIERCE, J. R.: Network for block switching for data. Bell Syst. Tech. J. April 1972.
 — Whither speech recognition. *J. Acoust. Soc. Am.* **46**, 1049–1051 (L) (1969).
 — DAVID, E. E., Jr.: Man's world of sound. Garden City, New York: Doubleday & Co., Inc. 1958.
 — KARLIN, J. E.: Information rate of a human channel. Proc. I.R.E. **45**, 368 (1957).
 — PIMONOW, L.: Coded speech and its application in aids for the deaf. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.
- PIROGOV, A. A.: A harmonic system for compressing speech-spectra. Elektrosviaz No. 3, 8–17 (1959). Also, Telecommunications No. 3, 229–242 (1959).
 — POLLACK, I.: The information of elementary auditory displays. *J. Acoust. Soc. Am.* **24**, 745–749 (1952).
 — FICKS, L.: Information of elementary multidimensional auditory displays. *J. Acoust. Soc. Am.* **26**, 155–158 (1954).
 — POTTER, R. K., KOPP, G. A., GREEN, H. C.: Visible speech. New York: D. van Nostrand Co. 1947.
 — STEINBERG, J. C.: Toward the specification of speech. *J. Acoust. Soc. Am.* **22**, 807–820 (1950).
 — PRESTIGIACOMO, A. J.: Plastic tape sound spectrograph. *J. Speech Hear. Disorders* **22**, 321–327 (1957).
 — Amplitude contour display of sound spectrograms. *J. Acoust. Soc. Am.* **34**, 1684–1688 (1962).
 — PRUZANSKY, S.: Pattern-matching procedure for automatic talker recognition. *J. Acoust. Soc. Am.* **35**, 354–358 (1963).

- PURVES, B., BLACKETT, K., STRONG, W.: Speech synthesis with a vocal tract synthesizer. *J. Acoust. Soc. Am.* **47**, 93 (A) (1970).
- RABINER, L. R.: Digital-formant synthesizer for speech synthesis studies. *J. Acoust. Soc. Am.* **43**, 822-828 (1968).
- Speech synthesis by rule: An acoustic domain approach. *Bell System Tech. J.* **47**, 17-37 (1968).
 - GOLD, B., McGONEGAL, C. A.: An approach to the approximation problem for non-recursive digital filters. *IEEE Trans. Audio and Electroacoust. AU-18*, 83-106 (1970).
 - JACKSON, L. B., SCHAFER, R. W., COKER, C. H.: Digital hardware for speech synthesis. Proc. 7th Int. Congr. Acoust., Budapest, Hungary, August 1971. Also published in *IEEE Trans. Com. Tech. COM-19*, 1016-1020 (December 1971).
 - SCHAFER, R. W., FLANAGAN, J. L.: Computer voice response using low bit-rate synthetic speech. *IEEE Int. Conv. Digest*, New York, March 1971.
 - — Speech synthesis by concatenation of formant-coded words. *Bell System Tech. J.* **50**, May-June (1971).
 - — RADER, C. M.: The chirp z-transform algorithm and its application. *Bell System Tech. J.* **48**, 1249-1292 (1969).
 - RAGAZZINI, J. R., FRANKLIN, G. F.: Sampled-data control systems. New York: McGraw-Gill 1958.
 - RANKE, O. F.: Das Massenverhältnis zwischen Membran und Flüssigkeit im Innenohr. *Akust. Z.* **7**, 1-11 (1942).
 - REDDY, D. R.: Computer recognition of connected speech. *J. Acoust. Soc. Am.* **42**, 329-347 (1967).
 - Consonantal clusters and connected speech recognition. Proc. Int. Congr. Acoust. C-5-15, Tokyo, Japan, August 1968.
 - Segment-synchronization problem in speech recognition. *J. Acoust. Soc. Am.* **46**, 89 (A) (1969).
 - RHODE, W. S.: Observations of the vibration of the basilar membrane in squirrel monkeys using the Mössbauer technique. *J. Acoust. Soc. Am.* **49**, 1218-1231 (1971).
 - GEISLER, C. D.: Measurement of the amplitude and phase of vibration of the basilar membrane using the Mössbauer effect. *J. Acoust. Soc. Am.* **47**, 60 (A) (1970).
 - RHODES, F. L.: Beginnings of telephony. New York: Harper Bros. 1929.
 - RICHARDSON, E. G., ed.: Technical aspects of sound. Amsterdam: Elsevier Publ. Co. 1953.
 - RIESZ, R. R.: Differential intensity sensitivity of the ear for pure tones. *Phys. Rev.* **31**, 867-875 (1928).
 - SCHOTT, L.: Visible speech cathode-ray translator. *J. Acoust. Soc. Am.* **18**, 50-61 (1946).
 - RISBERG, A.: The use of the transposer for the management of the deaf child. *Intern. Audiology* **5**, 362-372 (1966).
 - Visual aids for speech correction. Proc. Conf. on Speech-Analyzing Aids for the Deaf, Amer. Ann. Deaf **113**, 178-194 (1968).
 - A new coding amplifier system for the severely hard of hearing. Proc. 3rd Inter. Congr. on Acoust., Stuttgart, Germany, 1959.
 - RITSMA, R.: Frequencies dominant in the perception of the pitch of complex sounds. *J. Acoust. Soc. Am.* **42**, 191-198 (1967).
 - ROSE, J. E., GALAMBOS, R., HUGHES, J. R.: Microelectrode studies of the cochlear nuclei of the cat. *Bull. Johns Hopkins Hosp.* **104**, 211-251 (1959).
 - ROSEN, G.: Dynamic analog speech synthesizer. *J. Acoust. Soc. Am.* **30**, 201-209 (1958).

- ROSENBERG, A. E.: A computer-controlled system for the subjective evaluation of speech samples. *IEEE Trans. Audio and Electroacoust. AU-17*, 216-221 (1969).
- Effect of masking on the pitch of periodic pulses. *J. Acoust. Soc. Am.* **38**, 747-758 (1965).
 - Effect of pitch averaging on the quality of natural vowels. *J. Acoust. Soc. Am.* **44**, 1592-1595 (1968).
 - Listener performance in a speaker verification task. *J. Acoust. Soc. Am.* **50**, 106 (A) (1971 a).
 - Effect of glottal pulse shape on the quality of natural vowels. *J. Acoust. Soc. Am.* **49**, 583-590 (1971 b).
 - SCHAFER, R. W., RABINER, L. R.: An investigation of the effects of smoothing and quantization of the parameters of formant-coded speech. *J. Acoust. Soc. Am.* **49**, 123 (A) (1971).
 - ROSENBLITH, W. A., STEVENS, K. N.: On the DL for frequency. *J. Acoust. Soc. Am.* **25**, 980-985 (1953).
 - RUIZ, P. M.: A digital simulation of the time-varying vocal tract. *J. Acoust. Soc. Am.* **49**, 123 (A) (1971).
 - RUSSEL, G. O.: The vowel. Columbus: Ohio State Univ. Press 1928.
 - Speech and voice. New York: Macmillan Co. 1931.
 - SAPOZHKOVA, M. A.: The speech signal in cybernetics and communication. Moscow: Svyaz'izdat 1963.
 - Promising applications of formant vocoders. *Telecommunications* **23**, 30-34, No. 10 (1969).
 - SASS, E. J., MACKIE, G. B.: Analog voice compression study. Final Report, Contract No. DCA 100-69-C-0037, Radio Corp. America, May 1970.
 - SAWASHIMA, M.: Observation of the glottal movements. *Proc. Speech Symp.*, paper C-2-1, Kyoto, Japan, August 1968.
 - HIROSE, H., KIRITANI, S., FUJIMURA, O.: Articulatory movements of the larynx. Proc. Int. Congr. Acoust., B-1-1, Tokyo, Japan, August 1968.
 - SCHAFFER, R. W., RABINER, L. R.: Design of digital filter banks for speech analysis. Proc. 5th Annual Princeton Conf. on Information Sciences and Systems. Princeton, New Jersey, March 1971.
 - — System for automatic formant analysis of voiced speech. *J. Acoust. Soc. Am.* **47**, pt. 2, 634-648 (1970).
 - SCHOTT, L. O.: A playback for visible speech. *Bell Lab. Record* **26**, 333-339 (1948).
 - SCHROEDER, M. R.: On the separation and measurement of formant frequencies. *J. Acoust. Soc. Am.* **28**, 159 (A) (1956).
 - Recent progress in speech coding at Bell Telephone Laboratories. Proc. III. Int. Congr. Acoust. Stuttgart, Germany 1959.
 - Correlation techniques for speech bandwidth compression. *J. Audio Eng. Soc.* **10**, 163-166 (1962).
 - Description of the geometry of the human vocal tract by acoustic measurements. *J. Acoust. Soc. Am.* **41**, 1002-1010 (1967).
 - ATAL, B. S.: Generalized short-time power spectra and autocorrelation function. *J. Acoust. Soc. Am.* **34**, 1679-1683 (1962).
 - DAVID, E. E., Jr.: A vocoder for transmitting 10 kc/s speech over a 3.5 kc/s channel. *Acustica* **10**, 35-43 (1960).
 - HANAUER, S.: Interpolation of data with continuous speech signals. *Bell Syst. Tech. J.* **46**, 1931-1933 (1967).
 - LOGAN, B. F., PRESTIGIACOMO, A. J.: New methods for speech analysis-synthesis and bandwidth compression. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.

- SCHROEDER, M. R.: Vocoder: Analysis and synthesis of speech. Proc. IEEE **54**, 720–734 (1966).
- FLANAGAN, J. L., LUNDY, E. A.: Bandwidth compression of speech by analytic signal rooting. Proc. IEEE **55**, 396–401 (1967).
- SEKI, H.: A new method of speech transmission by frequency division and multiplication. J. Acoust. Soc. Japan **14**, 138–142 (1958).
- SHANNON, C. E.: Prediction and entropy of printed English. Bell System Tech. J. **30**, 50–64 (1951).
- WEAVER, W.: The mathematical theory of communication. Urbana: University of Illinois 1949.
- SHEARME, J. N.: A simple maximum selecting circuit. Electronic Eng. **31**, 353–354 (1959).
- Analysis of the performance of an automatic formant measuring system. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.
- HOLMES, J. N.: An experiment concerning the recognition of voices. Language and Speech **2**, 123–131 (1959).
- SMITH, G. F., KELLY, L. C.: A formant tracking system for speech measurements. Joint Speech Research Unit Rept. JU 7-2 British post office, Eastcote, England.
- SHEPARD, R.: The analysis of proximities: Multidimensional scaling with an unknown distance function (I and II). Psychometrika **27**, 125–140, 219–246 (1962).
- Metric structures in ordinal data. J. Math. Psychol. **3**, 287–315 (1966).
- SIMON, PELA: Films radiologiques des articulations et les aspects génétiques des sons du langage. ORBIS **10**, 1 (1961).
- SIVIAN, L. J.: Speech power and its measurement. Bell System Tech. J. **8**, 646–661 (1929).
- SLAYMAKER, F. H.: Bandwidth compression by means of vocoders. IRE Trans. Audio AU-**8**, 20–26 (1960).
- HOUDÉ, R. A.: Speech compression by analysis-synthesis. J. Audio Eng. Soc. **10**, 144–148 (1962).
- SMITH, C. P.: A phoneme detector. J. Acoust. Soc. Am. **23**, 446–451 (1951).
- Speech data reduction. Air Force Cambridge Research Center Report TR-57-111, Astia No. AD 117290, Bedford, Mass., May 1957.
- Voice-communications method using pattern matching for data compression. J. Acoust. Soc. Am. **35**, 805 (A) (1963).
- SMITH, S.: Diphlophonie und Luft-Schall-Explosionen. Arch. Ohren-, Nasen- u. Kehlkopfheilk. ver. Z. Hals-, Nasen- u. Ohrenheilk. **173**, 504–508 (1958).
- SONDHI, M. M.: New methods of pitch extraction. Proc. Conf. on Speech Communication and Processing, A.F. Cambridge Res. Labs. and IEEE Audio and Electro-acoust. Group, Cambridge, Mass., November 1967.
- GOPINATH, B.: Determination of the shape of a lossy vocal tract. Proc. 7th Int. Congr. Acoust., Budapest, Hungary, August 1971.
- STARK, R. E., CULLEN, J. K., CHASE, R.: Preliminary work with the new Bell telephone visible speech translator. Proc. Conf. on Speech-Analyzing Aids for the Deaf, Amer. Ann. Deaf, **113**, 205–214 (1968).
- STEAD, L. G., JONES, E. T.: The S.R.D.E. speech bandwidth compression project. Report 1133, Signals Research and Development Establishment, Christchurch, England. March 1961.
- WESTON, R. C.: Sampling and quantizing the parameters of a formant tracking vocoder system. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.
- STEELE, R. W., CASSEL, L. E.: Effect of transmission errors on the intelligibility of vocoded speech. IEEE Trans. Comm. Sys. **11**, 118–123 (1963).
- Dynamic encoding as applied to a channel vocoder. J. Acoust. Soc. Am. **35**, 789 (A) (1963).

- STEVENS, K. N.: Autocorrelation analysis of speech sounds. J. Acoust. Soc. Am. **22**, 769–771 (1950).
- The perception of sounds shaped by resonant circuits. ScD. Thesis, Mass. Inst. Tech., Cambridge, Mass., 1952.
- Stop consonants. Quart. Rept., Acoustics Laboratory, Mass. Inst. Tech., Cambridge, Mass., December 1956.
- Toward a model for speech recognition. J. Acoust. Soc. Am. **32**, 47–55 (1960).
- BASTIDE, R. P., SMITH, C. P.: Electrical synthesizer of continuous speech. J. Acoust. Soc. Am. **27**, 207 (A) (1955).
- HOUSE, A. S.: Development of a quantitative description of vowel articulation. J. Acoust. Soc. Am. **27**, 484–493 (1955).
- — Studies of formant transitions using a vocal tract analog. J. Acoust. Soc. Am. **28**, 578–585 (1956).
- — Perturbation of vowel articulations by consonantal context. J. Speech Hear. Res. **6**, 111–128 (1968).
- KASOWSKI, S., FANT, C. G. M.: An electrical analog of the vocal tract. J. Acoust. Soc. Am. **25**, 734–742 (1953).
- STEVENS, S. S., DAVIS, H.: Hearing. New York: John Wiley & Sons 1938.
- STEWART, J. Q.: An electrical analogue of the vocal organs. Nature **110**, 311–312 (1922).
- STUMPF, C.: Die Sprachlaute. Berlin: Springer 1926.
- SUBRAHMANYAM, D. L., PETERSON, G. E.: Time-frequency scanning in narrowband speech transmission. IRE Trans. Audio AU-7, 148–160 (1959).
- SLAYMAKER, F. H.: The voice fundamental pitch and formant tracking computer program by short-term autocorrelation function. Proc. Stockholm Speech Comm. Seminar, R.I.T., Stockholm, Sweden, September 1962.
- SUZUKI, J., KADOKAWA, Y., NAKATA, K.: Formant frequency extraction by the method of moment calculations. J. Acoust. Soc. Am. **35**, 1345–1353 (1963).
- NAKATA, K.: Recognition of Japanese vowels. J. Radio Res. Lab. (Tokyo) **8**, 193–212 (1961).
- TASAKI, I., DAVIS, H., ELDREDGE, D. H.: Exploration of cochlear potentials in guinea pig with a microelectrode. J. Acoust. Soc. Am. **26**, 765–773 (1954).
- TEAS, D. C., ELDREDGE, D. H., DAVIS, H.: Cochlear responses to acoustic transients. J. Acoust. Soc. Am. **34**, 1438–1459 (1962).
- TERANISHI, R., UMEDA, N.: Use of pronouncing dictionary in speech synthesis experiments. Proc. Int. Congr. Acoust. B-5-2, Tokyo, Japan, August 1968.
- TITCHMARSH, E. C.: The theory of functions. London: Oxford University Press 1932.
- TOMOZAWA, A., KANEKO, H.: Companded delta modulation for telephone transmission. IEEE Trans. Comm. Tech. COM-**16**, 149–157 (1968).
- TOSI, O.: Speaker identification through acoustic spectrography. Proc. XIV Int. Congr. Logopedics and Phoniatrics, Paris, September 1968.
- OYER, H., PEDREY, C., LASHBROOK, B., NICOL, J.: An experiment on voice identification by visual inspection of spectrograms. J. Acoust. Soc. Am. **49**, 138 (A) (1971).
- TRUBY, H. M.: Acoustic-cineradiographic analysis considerations, Suppl. 182, Acta Radiol. (1959).
- TUNTURI, A. R.: Analysis of cortical auditory responses with the probability pulse. Am. J. Physiol. **181**, 630–638 (1955).
- UNGEHEUER, G.: Elemente einer akustischen Theorie der Vokalartikulation. Berlin-Göttingen-Heidelberg: Springer 1962.
- UPTON, H.: Wearable eyeglass speech-reading aid. Proc. Conf. on Speech-Analyzing Aids for the Deaf, Amer. Ann. Deaf **113**, 222–229 (1968).

- VELICHKO, V. M., ZAGORUYKO, N. G.: Automatic recognition of 200 words. *Int. J. Man-Machine Studies* **2**, 223-234 (1970).
- VILBIG, F.: An apparatus for speech compression and expansion and for replaying visible speech records. *J. Acoust. Soc. Am.* **22**, 754-761 (1950).
- Frequency band multiplication or division and time expansion or compression by means of a string filter. *J. Acoust. Soc. Am.* **24**, 33-39 (1952).
 - HAASE, K.: Some systems for speech-band compression. *J. Acoust. Soc. Am.* **28**, 573-577 (1956a).
 - Über einige Systeme für Sprachbandkompression. *Nachr.-techn. Fachber.* **3**, 81-92 (1956b).
 - WAGNER, K. W.: Ein neues elektrisches Sprechgerät zur Nachbildung der menschlichen Vokale. *Preuß. Akad. Wiss. Berlin Abh.* **2**, 44 p. (1936).
 - WATHEN-DUNN, W., LIPKE, D. W.: On the power gained by clipping speech in the audio band. *J. Acoust. Soc. Am.* **30**, 36-40 (1958).
 - WATSON, T. A.: How bell invented the telephone. *Trans. Am. Inst. Elec. Engrs.* **34**, 1011-1021 (1915).
 - WEBER, S.: Modern communication methods. *Electronics* **32**, 94-108 (1959).
 - WEBSTER, A. G.: Acoustical impedance and the theory of horns. *Proc. Nat. Acad. Sci. U.S.* **5**, 275-282 (1919).
 - WEBSTER, J. C.: Information in simple multidimensional speech messages. *J. Acoust. Soc. Am.* **33**, 940-944 (1961).
 - WEGEL, R. L.: Theory of vibration of the larynx. *Bell System Tech. J.* **9**, 207-227 (1930).
 - WEINSTEIN, C. J.: Short-time Fourier analysis and its inverse. MS Thesis, Dept. of Electrical Engineering, M.I.T., Cambridge, Mass. (1966).
 - OPPENHEIM, A. V.: Predictive coding in a homomorphic vocoder. *IEEE Trans. Aud. Electroacoust.* **AU-19**, 243-248 (1971). - WERNER, P. A., DANIELSSON, K.: 17 kanals vocoder i laboratororientforande F0A3, Laboratory for National Defense rapport A345, Stockholm 1958.
 - WHEATSTONE, Sir CHARLES: The scientific papers of Sir Charles Wheatstone. London: Taylor & Francis 1879.
 - WICKELGREEN, W. A.: Distinctive features and errors in short term memory for English consonants. *J. Acoust. Soc. Am.* **38**, 388 (1966).
 - Distinctive features and errors in short term memory for English vowels. *J. Acoust. Soc. Am.* **38**, 583-588 (1965). - WIENER, F. M., ROSS, D. A.: The pressure distribution in the auditory canal in a progressive sound field. *J. Acoust. Soc. Am.* **18**, 401-408 (1946).
 - WIENER, N.: The extrapolation and smoothing of stationary time series with engineering applications. New York: John Wiley & Sons 1949.
 - YAGGI, L. A., Jr.: Full-duplex digital vocoder. Texas Inst. Inc., Dallas, Report SP 14-A62, June 1962.
 - MASON, A. E., Jr.: Polymodal vocoder; a new approach to versatile and reliable voice communications. *J. Acoust. Soc. Am.* **35**, 806 (A) (1963). - YOUNG, M. A., CAMPBELL, R. A.: Effects of context on talker identification. *J. Acoust. Soc. Am.* **42**, 1250-1254 (1967).
 - ZWISLOCKI, J.: Theorie der Schneckenmechanik. Diss. Eidg. Tech. Hochschule, Zürich, 1948 (Buchdruckerei Gassman Solothurn).
 - Some impedance measurements on normal and pathological ears. *J. Acoust. Soc. Am.* **29**, 1312-1317 (1957).
 - Electrical model of the middle ear. *J. Acoust. Soc. Am.* **31**, 841 (A) (1959).

Author Index

Page numbers in *italics* refer to the References

- | | | |
|--|--|--|
| Abate, J. E. 403, 406 | Békésy, G. v., Rosenblith, W. A. 88, 92, 406 | Bogert, B. P., Kock, W. E. 407 |
| Ahlfors, L. V. 59, 406 | Belar, H., see Olson, H. F. 199, 420 | Bogert, B. P., see Peterson, L. C. 123, 124, 125, 421 |
| Alekin 310 | Bell, A. G. 2, 3, 206, 207, 210, 406 | Bogner, R. E., Flanagan, J. L. 407 |
| Alekin, R. O., see Chistovich, L. A. 408 | Bell, A. M. 206 | Bolt, R. H., et al. 407 |
| Allen, J. 269, 406 | Bell, C. G., Fujisaki, H., Heinz, J. M., Stevens, K. N., House, A. S. 172, 173, 174, 406 | Bolt, R. H., MacDonald, A. D. 201, 388, 407 |
| Alyakrinskii, V. V., see Chistovich, L. A. 310, 408 | Bennett, W. R. 155, 327, 406 | Bondarko, L. U., Zagoruyko, N. G., Kozevnikov, V. A., Molchanov, A. P., Chistovich, L. A. 309, 407 |
| Araseki, T., see Kato, Y. 268, 416 | Beranek, L. L. 311, 316, 406 | Bondarko, L. V., Verbitdskaya, L. A., Zinder, L. R., Pavlova, L. P. 407 |
| Arnold, J. B., see House, A. S. 298, 299, 300, 415 | Berg, J. W. van den 45, 63, 85, 251, 406 | Borst, J. M. 213, 407 |
| Atal, B. S., Hanauer, S. L. 367, 368, 369, 406 | Berg, J. W. van den, Zantema, J. T., Doornenbal, P., Jr. 45, 46, 210, 406 | Borst, J. M., Cooper, F. S. 212, 407 |
| Atal, B. S., Schroeder, M. R. 283, 399, 406 | Bergeijk, W. A. van 96, 406 | Borst, J. M., see Cooper, F. S. 212, 291, 292, 293, 294, 409 |
| Atal, B. S., see Schroeder, M. R. 158, 159, 423 | Bially, T., see Gold, B. 413 | |
| Ayers, E. W. 342, 406 | Biddulph, R. 155, 157, 338, 406 | |
| Balashek, S., see Davis, K. H. 166, 193, 194, 409 | Biddulph, R., see Davis, K. H. 166, 193, 194, 409 | |
| Balashek, S., see Dudley, H. 195, 410 | Bird, C. M., see Flanagan, J. L. 147, 117, 201, 225, 246, 266, 268, 343, 387, 389, 412 | |
| Barney, H. L., Dunn, H. K. 151, 406 | Björk, L. 407 | |
| Barney, H. L., see Dunn, H. K. 410 | Blackett, K., see Purves, B. 422 | |
| Barney, H. L., see Peterson, G. E. 71, 72, 154, 289, 290, 421 | Blackman, R. B., Tukey, J. W. 175, 407 | |
| Bastide, R. P., see Stevens, K. N. 228, 425 | Bliss, J. C. 320, 407 | |
| Baumann, R. H., Licklider, J. C. R., Howland, B. 199, 406 | Bloch, B., Trager, G. L. 15, 407 | |
| Bayston, T. E., Campanella, S. J. 406 | Bogert, B. P. 123, 126, 371, 407 | |
| Békésy, G. v. 87, 89, 90, 91, 93, 94, 95, 102, 109, 110, 112, 118, 124, 126, 406 | Bogert, B. P., Healy, M. J. R. Tukey, J. W. 176, 185, 407 | |