

Proceedings of the Ninth International Congress of
Phonetic Sciences, Copenhagen 1979

Actes du Neuvième Congrès International des
Sciences Phonétiques, Copenhague 1979

Akten des neunten internationalen Kongresses für
phonetische Wissenschaften, Kopenhagen 1979

PROCEEDINGS OF THE NINTH INTERNATIONAL CONGRESS
OF
PHONETIC SCIENCES

HELD IN COPENHAGEN 6 - 11 AUGUST 1979

VOLUME I



COPENHAGEN

1979

PREFACE

The Ninth International Congress of Phonetic Sciences will be held in Copenhagen 6-11 August 1979 under the patronage of Her Majesty Queen Margrethe II of Denmark and under the auspices of the Permanent Council for the Organization of International Congresses of Phonetic Sciences.

The congress committee has decided to attempt an innovation of the traditional scientific programme by restricting the number of individual section papers and giving priority instead to longer meetings centered around subjects considered to be of general and current interest, and which are here treated in reports, special lectures, and symposia. Moreover, we have wished to publish the full text of reports and symposium papers well in advance of the congress in order to allow for a more thorough and informed discussion.

Volume I contains the full text of reports, summaries of special lectures, and abstracts of section papers. Volume II, which is published simultaneously, contains the full text of the symposium papers and summaries of the moderators' introductions. Volume III, which will be published after the congress, will contain the full text of the key-note address, the plenary lecture, the special lectures, the full introductions by the moderators of symposia, and summaries of the discussions in the (semi-)plenary sessions.

In order to minimize the expense of reproduction, the proceedings are offset-printed. We requested the participants to submit their papers in a shape ready for reproduction. We have, however, taken care to correct typing errors and we have retyped a

large number of the contributions in order to ensure a relatively homogeneous appearance of the books, permitting them to serve not only as preprints but also as lasting proceedings of the congress.

We wish to thank all the contributors to these volumes who, by sending their papers at an early date have made it possible to publish the two volumes in due time before the congress. We are also grateful to a number of colleagues in various countries who have helped us in various ways, giving good advice, judging papers, organizing symposia, etc.:

Dennis Fry (in his capacity of President of the International Council), Arthur Abramson, Henning Andersen, Hans Basbøll, Mogens Baumann-Larsen, Wolfgang Dressler, Gunnar Fant, Charles A. Ferguson, Victoria Fromkin, Osamu Fujimura, Eva Gårding, John Gilbert, Kerstin Hadding, Einar Haugen, Wiktor Jassem, Klaus Kohler, E.F. Konrad Koerner, Peter Ladefoged, Ilse Lehiste, Alvin Liberman, Anatoly Liberman, Björn Lindblom, James Lubker, John Ohala, David B. Pisoni, Celia Scully, Børge Spang-Thomsen, Kenneth N. Stevens, Elizabeth Uldall.

Sincere thanks are due to the secretary of the Institute of Phonetics, Else Parkmann, who enthusiastically retyped a large part of the Proceedings, and to Inge Knudsen, the administrative secretary of the congress, for her competent work.

We gratefully acknowledge the support we have received from: The Danish Research Council for the Humanities, without whose generous support it would not have been possible to hold the congress, the Danish Ministry of Education, the "Tuborg Foundation", and "Knud Højgaards Foundation". We are also grateful to the University of Copenhagen for granting us disposal of the Amager buildings of the university, and for relieving us of some of our teaching obligations in the academic year 1978/79.

The Editors

C O N T E N T S

VOLUME I

Preface

Permanent Council

Previous Congresses

Congress Committee

P l e n a r y L e c t u r e

Summary

BJÖRN LINDBLOM: The goal of phonetics, its unification and application 3

S t a t u s R e p o r t s

Speech Production

PETER MACNEILAGE: Speech production	11
PETER LADEFOGED: Articulatory parameters	41
MASAYUKI SAWASHIMA: A supplementary report on speech production	49

Speech Perception

MICHAEL STUDDERT-KENNEDY: Speech perception	59
LUDMILLA CHISTOVICH: Auditory processing of speech	83
HIROYA FUJISAKI: Some remarks on recent issues in speech perception research	93

Phonology

HANS BASEBØLL: Phonology	103
STEPHEN R. ANDERSON: Notes on the development of phonological theory	133
JOAN B. HOOPER: Formal and substantive approaches to phonology	143

S p e c i a l L e c t u r e s

- GUNNAR FANT: The relations between area functions and the acoustical signal 155
- OSAMU FUJIMURA: Modern methods of investigation in speech production 161
- NIELS A. LASSEN: The physiology and pathophysiology of language functions as illustrated by measurements of the regional blood flow in the cortex of the brain 167
- HISASHI WAKITA: New methods of analysis in speech acoustics 169

S e c t i o n A b s t r a c t s

Section no. 1

Speech Production

- CHRISTIAN ABRY, LOUIS-JEAN BOË et RAYMOND DESCOUT: Voyelles labiales et voyelles labialisées en français 177
- D. AUTESSERRE et B. TESTON: Etude électropalatographique et aérodynamique simultanée des occlusives françaises 178
- F. BELL-BERTI, L.J. RAPHAEL, D.B. PISONI and J.R. SAWUSCH: Acoustic correlates of differing articulatory strategies 179
- JEAN-FRANÇOIS P. BONNOT: Etude expérimentale de certains aspects de la gémination et de l'emphase en arabe 180
- G.J. BORDEN, K.S. HARRIS, H. YOSHICKA and H. FITCH: Feedback and feedforward mechanisms used by speakers producing familiar and novel speech patterns 181
- BLANKA BOROVÍČKOVÁ and VLASTISLAV MALÁČ: Microtiming of two-consonant clusters 182
- ANDREW BUTCHER: Articulatory timing in voiceless fricatives 183
- LUIZ CARLOS CAGLIARI: The articulatory function of the velum 184
- OLOF ECKERDAL and CLAES-CHRISTIAN ELERT: Tomographic registration of the front oral cavity at the pronunciation of s 185
- EDDA FARINETANI and JAN GAUFFIN: Aerodynamic measurements on Italian interconsonantal vowels 186

- SLAVKO GERŠIĆ und DIRK STEFFEN SCHRÖDER: Elektropalatographie als Kontrollhilfe für das Artikulations-training im Gehörlosenunterricht 187
- SHIZUO HIKI and YUMIKO FUKUDA: Mouth shape in the production of [w] and [ɸ] sounds in Japanese 188
- MINORU HIRANO, SHIGENOBU MIHASHI, TAKAO KASUYA and SHIGEJIRO KURITA: Structure of the vocal fold as a sound generator 189
- HARRY HOLLIEN and JAMES W. HICKS: Mechanisms for the control of vocal frequency 190
- PATRICIA HOLLIEN and E. THOMAS DOHERTY: Mechanisms of adolescent voice change 191
- K. IZDEBSKI and T. SHIPP: Neuromechanical components of reaction times for voice initiation 192
- ALBERT F.V. van KATWIJK: Auditory feedback as a factor in disrupted speech production 193
- ERIC KELLER: The selection of phonetic targets 194
- CHIN-W. KIM and HAN SOHN: A complementary relationship between lip and jaw movements during articulation 195
- S. KIRITANI, H. HIROSE and M. SAWASHIMA: Temporal characteristics of coarticulation between consonants and adjacent vowels - X-ray microbeam study on Japanese and English 196
- HERMANN J. KÜNZEL: Photoelectric and videofluorographic registration of velar height: Calibration of the velograph 197
- PETER LADEFOGED, MONA LINDAU and PAT COADY: Generating vocal tract shapes in continuous speech 198
- ASHER LAUFER and I.D. CONDAX: The epiglottis as an articulator 199
- JOHN LAVER: The neuromuscular representation of speech 200
- WENDY LINKER: A cross-linguistic study of lip position in vowels 201
- ANDERS LÖFQVIST: Inter-articulator programming in the production of Swedish obstruents 202
- ALAIN MARCHAL: Etude des occlusives t/d du français par électropalatographie 203
- SEIJI NIIMI: The pharyngeal wall movement during speech 204
- JOHN J. OHALA, CAROL J. RIORDAN and HARUKO KAWASAKI: Investigation of pulmonic activity in speech 205

- CONRAD OUELLON: Phénomènes liés à l'enchaînement des consonnes françaises dans la chaîne parlée 206
- ROBERT F. PORT, SALMAN AL-ANI and SHOSAKU MAEDA: Temporal compensation for segmental timing in Arabic and Japanese 207
- CAROL J. RIORDAN: Vertical larynx movement during stop closure 208
- PETER J. ROACH: Laryngeal-oral coarticulation in glottalized English plosives 209
- MASAYUKI SAWASHIMA and HAJIME HIROSE: Laryngeal gestures for voiceless sounds during speech 210
- CELIA SCULLY and EDWARD ALLWOOD: Computer modelling of articulator dynamics 211
- CELIA SCULLY and MARION A. SHIRT: Oral and nasal outputs for vowels in non-nasal contexts 212
- PÉLA SIMON, ANDRÉ BOTHOREL, FRANÇOIS WIOLAND et GILBERT BROCK: Méthode de synchronisation image-son pour l'étude radiologique des faits de parole - application au français 213
- FRANÇOIS WIOLAND: Méthode d'analyse des données radiocinématographiques pour l'étude des faits de jointure en français 214
- VICTOR W. ZUE and STEFANIE SHATTUCK-HUFNAGEL: The palatalization of alveolar fricatives in American English 215

Section No. 2

Speech Perception

- W.A. AINSWORTH: Co-operative vowels and competitive consonants? 219
- BJÖRN STÅLHANE ANDRÉSEN: On the perceptibility of morphological couplings in English 220
- PETER F. ASSMANN: The role of context in vowel perception 221
- BELHASSEN BADREDDINE: Quelques expériences sur la perception de l'emphase en arabe 222
- WILLIAM J. BARRY: Complex encoding in word-final voiced and voiceless stops 223
- MARCEL P.R. van den BROECKE: Auditory discrimination of rise and decay times in two Dutch vowels 224

- ARVO EEK: The effect of language type on the acuity of the perception of duration 225
- JOHN HARRIS: Variations in attention to speech: New evidence 226
- VINCENT J. van HEUVEN: The phonetic function of rise and decay time in speech sounds, a preliminary investigation 227
- JOHN T. HOGAN: Some acoustic determinants of syllabicity 228
- PETER HOWELL: Adaptation in syllabic context: Vowel contingent or spectral specific 229
- V.B. KASEVICH and E.M. SHABELNIKOVA: Segmentals and suprasegmentals in speech perception 230
- KURT KITSELMAN: Recognition of selected phonetic contrasts in the spectral and temporal domains by aphasic adults 231
- KLAUS J. KOHLER: Dimensions in the perception of fortis and lenis plosives 232
- FLORINA J. KOOPMANS-van BEINUM: Perception of naturally produced vowels: Isolated, from words, and from normal conversation 233
- ELISABETH LHOTE: Perception et décodage linguistique: deux processus différents 234
- LEIGH LISKER: On the American English flap 235
- I.M. LUSHCHIKHINA: Speech perception in noise 236
- ANA M.B. de MANRIQUE and MARIA I. MASSONE: On the identification of Argentine Spanish voiceless fricatives 237
- STEPHEN M. MARCUS: Perceptual centres (P-centres) 238
- IGNATIUS G. MATTINGLY and ANDREA LEAVITT: Perception of stop consonants before low unrounded vowels 239
- LLOYD H. NAKATANI: Allophonic and prosodic cues for parsing speech 240
- T.M. NEAREY: Formant frequency variation and vowel quality 241
- LOUIS C.W. POLS and M.E.H. SCHOUTEN: Spectral and perceptual aspects of vowel coarticulation 242
- BERND POMPINO: Psychoakustische Fusion und dichotische Adaptation 243
- EDWARD T. PURCELL: Two parameters in the perception of Serbo-Croatian word tone 244

- BRUNO H. REPP and VIRGINIA A. MANN: Bidirectional context effects in perception of synthetic fricative-(stop)-vowel stimuli
245
- M. ROSSI: Les configurations et l'interaction des pentes de Fo et de I
246
- KATSUMASA SHIMIZU: Voicing features in the perception and production of stop consonants by Japanese speakers
247
- IMAN H. SLIS: Perception of vowel formant transitions
248
- CHRISTEL SORIN: Perception de crescendos d'intensité en fin de phrase
249
- JAMES MONROE STEWART and CAROL M. BARACH: Scaling of certain selected distinctive features in English
250
- WINIFRED STRANGE and JAMES J. JENKINS: Three sources of information in vowel identification
251
- W. TSCHESCHNER: Zur Belegung eines hierarchischen Sprachperzeptionsmodells
252
- HORST ULRICH: Zur Realisation und Perzeption vokalischer /r/-Allophone des Deutschen
253
- K. VAGGES, G.M. PELAMATTI and F.E. FERRERO: Auditory and phonetic processing of Italian voiceless fricatives shortened in duration
254
- JIA-LU ZHANG: The reflex theory of speech perception
255

Section No. 3

Speech Acoustics

- ANTONIO ALMEIDA: Preliminary studies for the automatic recognition of German speech sounds
259
- CHARLES BERTHOMIER: Calcul analogique de la fréquence du fondamental
260
- MICHEL CHAFCOULOFF: Les propriétés acoustiques de /j, ɥ, w, ɪ, r/ en français
261
- SANDRA FERRARI DISNER: Cross-linguistic normalization
262
- GUNNAR FANT: Vocal tract theory and boundary effects
263
- BERNARD GUÉRIN, LOUIS-JEAN BOË et ROLAND LANCIA: L'influence du couplage acoustique larynx - conduit vocal sur la fréquence fondamentale des voyelles. Une simulation
264

- T. de GRAAF: Vowel analysis with linear prediction
265
- JEAN-PAUL HATON et CLAUDE SANCHEZ: Un outil expérimental pour le décodage acoustico-phonétique de la parole continue
266
- WOLFGANG HESS: Pitch determination of speech signals by nonlinear digital filtering
267
- HARRY HOLLIEN, CHARLES C. JOHNSON and WOJCIECH MAJEWSKI: Method for identifying talkers from acoustic speech analysis
268
- BENOIT JACQUES et CLAU DÉSAUTELS: Aspects acoustiques de la voix de transsexuels: ton fondamental et fréquences formantielles
269
- WIKTOR JASSEM: Statistical classification of Polish fricative consonants based on their spectral features
270
- HECTOR R. JAVKIN: Phonetic explanations for devoicing of high vowels
271
- J.S. LIÉNARD: Sur quelques indices acoustiques des sons stables du français émis par plusieurs locuteurs
272
- M. RAQUEL DELGADO MARTINS: Intonation: analyse acoustique et perceptive du portugais
273
- G. MERCIER: Segmentation et reconnaissance acoustique phonétique de la parole continue
274
- G. PERENNOD et J. CAELEN: Etage phonétique d'un système de reconnaissance et de compréhension de la parole continue
275
- S.S. TATUBAEV: Kazakh vocal speech and spectral characteristics of vowels
276
- B. TESTON: Un système de détection automatique de la sonie des sons du langage
277
- INGO R. TITZE: Comments on the myoelastic-aerodynamic theory of phonation
278
- SATARO UCHITA: Remarks on the glottalization in Japanese
279
- Section No. 4
Phonology
- TSUTOMU AKAMATSU: The relevant feature, the non-correlated phoneme and the 'case vide'
283
- Z.M. AL'MUKHAMEDOVA: Phonological interpretation of neo-etymologized phonemes
284

THOMAS D. ARKWRIGHT: Simulation of phonologies	285	F. LONCHAMP et F. CARTON: Pour une explication "naturelle" (acoustico-articulatoire) de la mutation u > y	305
THOMAS D. ARKWRIGHT and ANDREW KEREK: A model that yields all alternative pronunciations	286	E.N.A. MENSAH: The nature of lingual consonants	306
ERIC BUYSSENS: Le son et la transcription dite phonétique	287	PAROO NIHALANI: Aspirates and mahā-prāṇa in Sindhi	307
WILLIAM M. CHRISTIE Jr.: Towards a Gestalt phonology	288	JIŘINA NOVOTNÁ-HURKOVÁ: Evaluation of the correlative opposition of "softness"	308
RICHARD COATES: The role of time in phonological representations	289	MANJARI OHALA: The phonological features of Hindi stops	309
ANNE M. COCHRAN: The diverse roles of glottal in Papua New Guinea languages	290	HERBERT PENZL: Sprachlaut, Schriftzeichen und Phonemwandel	310
YOUSSEF EL-HALEESE: Some observations on <u>Mufaxxama the "emphatic" phonemes in Arabic</u> by Roman Jakobson	291	HERBERT PILCH: Non-syllabic phonology	311
HELMUT FASSKE: Zur Bestimmung von Phonemen. Ein Vorschlag zur Präzisierung der 3. Trubetzkowschen Regel	292	JAN POSTHUMUS: Dutch marginal phonemes and the adaptation of English loans	312
IVAN and PETER FÓNAGY: Spelling errors and linguistic consciousness	293	CATHERINE O. RINGEN: Vowel harmony in natural generative phonology	313
YI-CHIN FU: The /-r/ suffixation and the phonological structure of Mandarin finals	294	JON D. RINGEN: Linguistic intuition and phonological data	314
JEAN-PIERRE GOUDAILLIER: Phonologie fonctionnelle, phonétique expérimentale et dialectologie luxembourgeoise - quelques résultats	295	MILAN ROMPORTL: Zur distinktiven Opposition "palatal-nichtpalatal"	315
HUSSEIN HABAILI et SUZANNE RICHARD: La palatalisation en franco-québécois	296	A. ROSETTI: Voyelle, semi-voyelle et consonne	316
ROBERT HINDERLING und ANTHONY ROWLEY: Ersatzdehnung und Prosodie im Bairischen, Skandinavischen und anderswo	297	STEFANIE SHATTUCK-HUFNAGEL and DENNIS H. KLATT: Distinctive feature constraints on phoneme errors of different types	317
ANTTI IIVONEN: On the dynamics of /h/, evidence from Finnish	298	VALERIYA SIROKHATOVA: The rise of the new diphthongs in Middle English	318
A.A. ISENGELDINA: Duration of English single consonants and clusters	299	WILLIAM J. SULLIVAN: On minimizing feature specifications of phonemes	319
RICHARD D. JANDA: Directionality and exception-features in generative phonology	300	TAMÁS SZENDE: Defining the phoneme: Phenomenological aspects	320
Z.N. JAPARIDZE: On the components of the distinctive features of phonemes	301	BRIT ULSETH: Duration differences as a cue for consonant gradation in Lappish	321
ILONA KASSAI: From phoneme to speech sound: Constraints in the linkage of variability in allophony	302	GALINA VORONKOVA: Some logical contradictions in the theory of the phoneme regarded as a bundle of distinctive features	322
EVGENIJ P. KIROV: Die Mutation a/o in nordrussischen Mundarten	303	DOUGLAS C. WALKER: Word boundaries in Canadian French phonology	323
JOHN M. LIPSKI: Phonetic euphemisms and phonological distance	304	LINDA R. WAUGH: The sound shape of language in all its facets	324
		ZONG-JI WU: A preliminary study of distinctive features and their correlations in Standard Chinese	325

V.C. ZHURAVLEV: The role of neutralization in the mechanism of phonological changes

326

Section No. 5

Sound Typology

VED KUMARI GHAI: Nasal sounds in Dogri

FERNANDE KRIER: La complexité des latérales en franoprovençal

DÓNALL P. Ó BAOILL: The voice-voiceless contrast in Irish sonorants

EDWARD Y. ODISHO: /ts/: A voiceless unaspirated emphatic alveolar affricate

SANDRA PINKERTON: Quichean (Mayan) glottalized and non-glottalized stops: A phonetic study with implications for phonological universals

GLADYS E. SAUNDERS: Linguistic attributes of retroflex r in Pignasco

ALBERTAS STEPONAVIČIUS: Universal and language specific traits in the system of sound features

ROMAN STOPA: Clicks, and their role in the evolution of language

Section No. 6

Child Language

B. de BOYSSON-BARDIES et N. BACRI: Modalités de structuration du protolangage de l'enfant

W.S. BROWN Jr.: Characteristics of consonant production/development for pre-adolescent children

N.I. LEPSKAYA, E.N. VINARSKAYA and G.M. BOGOMAZOV: Types of syllable division among Russian children of different age groups and modern theories regarding the syllable

LINDA SHOCKEY and Z.S. BOND: Phonological structure of speech addressed to children

M.E. SOLBERG: Inherent structure of segments: Evidence from natural experiments

329

JEANNETTE M. van der STELT: Motor analysis of infant sound

344

JAROSLAVA PAČESOVÁ: On some basic principles in child phonology

345

HENNING WODE: Language acquisition and phonetic similarity

346

Section No. 7

Synthesis of Speech

A. BOURJAULT: Simulation dynamique en temps réel des phénomènes de production de la parole

349

PETER B. DENES, MARK Y. LIBERMAN and JOSEPH P. OLIVE: Text-to-speech conversion by rule and a practical application

350

ETIENNE EMERIT: Prélude à la parole-ordinateur: le dictionnaire évagraphique

351

GEORG HEIKE: Phonetic modeling - theory and application

352

EUGEN KYNNAP: Synthesis of Estonian language

353

WOJCIECH MAJEWSKI, WOJCIECH MYŚLECKI, and JANUSZ ZALEWSKI: Optimal intonation contours for Polish speech synthesis

354

ANTTI SOVIJÄRVI: Examples of some synthesized Hungarian sentences

355

HANS WERNER STRUBE: Speech synthesis from interpolated log-area coded transitions

356

DANIEL TEIL et BERNARD PROUTS: Un module de traitement du texte écrit en français en vue de la synthèse automatique par diphonème

357

JANUSZ ZALEWSKI and WOJCIECH MYŚLECKI: Selection of glottal excitation parameters optimizing the naturalness of synthetic speech

358

339
340

Section No. 8

Prosodic Phenomena

OLGA AKHMANOVA and L'UDMILA MINAEVA: The prosody of grammar and the grammar of prosody

361

A.M. ANTIPOVA: Interrelation of rhythm and other components of intonation

362

- ANNE BERGHEAUD: Phénomènes de rupture et de non rupture en français parlé. Exploration de certaines relations entre structures prosodiques et syntactico-sémantiques. Une contribution à la phonoyntaxe 363
- L.P. BLOCHINA: Zum Problem der Segmentierung der Frequenzkonturen 364
- G.M. BOGOMAZOV and R.F. PAUFOSHIMA: The significance of non-phonematic components of the sound chain for the suprasegmental level of the language system (based on Russian language material) 365
- GEORGES BOULAKIA: "Perdu ou pas?" Une étude sur la contribution de l'intonation à la structuration de l'énoncé en français et de ses rapports avec l'ordre des mots 366
- RUTH M. BREND: Male and female intonation: A cause of British-American misunderstanding 367
- G. CAELEN: Contribution à l'étude de la prosodie générative: structures temporelles des phrases énonciatives simples et étendues en français 368
- L.A. CANTER, M.A. SOKOLOVA and A.P. TCHIZHOV: On an algorithmic study of English intonation 369
- ALBERT DI CRISTO, ROBERT ESPESSER et YUKIHIKO NISHINUMA: Présentation d'une méthode de stylisation prosodique 370
- ALAN CRUTTENDEN: Falls and rises: Meanings and universals 371
- REBECCA M. DAUER: Rhythm in modern Greek 372
- YURI A. DUBOVSKY: Stylistic load of prosodic features in English 373
- D. DUEZ et R. CARRÉ: Importance relative des paramètres de l'accent (durée et fréquence fondamentale) dans la perception de l'emphase 374
- K. FINTOFT: Toneme pattern contours in Norwegian 375
- HIROYA FUJISAKI, KEIKICHI HIROSE and MIYOKO SUGITO: Comparison of word accent features in English and Japanese 376
- JADRANKA GVOZDANOVIĆ: A perception test of prosodic features in Standard Serbo-Croatian 377
- LARS HELLAN: A possible 'non-autonomous' phonological unit in Norwegian 378
- ANTHONY HIND: On the nature of fall rise intonation in English 379
- D.J. HIRST: Pitch features for tone and intonation 380

- D.J. HIRST, A. DI CRISTO and Y. NISHINUMA: The estimation of intrinsic Fo: A comparative study 381
- YAYOI HOMMA: Tempo effects on the duration of Japanese vowels and consonants 382
- E. JASOVÁ: Die rhythmische Grundstruktur des Russischen Wortes 383
- JOHN T. JENSEN: Stress as the basis of the Swedish accent distinction 384
- VÉRA C. KACHKINA: Etude des fonctions distinctives de la prosodie de l'énonciation 385
- HARLAN LANE, FRANÇOIS GROSJEAN, and LYSIANNE GROSJEAN: The patterns of silence: Performance structures in sentence productions 386
- ANATOLY LIBERMAN: Prosodic length in West Germanic and Scandinavian 387
- M.C. LIN, L.H. LIN, G.R. XIA and Y.S. CAO: A study of tone-sandhi in Standard Chinese with computer 388
- IAN MADDIESON: Dimensions of tone systems 389
- PH. MARTIN: An experimental study of Toronto English sentence intonation 390
- ALAIN NICHAISE: Asyndète et intonation en français 391
- TATJANA M. NIKOLAEVA: Functions of stress and semantic structure of utterance 392
- Y. NISHINUMA et M. ROSSI: Essai d'automatisation de l'analyse prosodique du français 393
- J. ONDRÁČKOVÁ: Observations on rhythmical units with anacrusts in Czech 394
- JANINA OZGA: The newsreader's high fall 395
- R.K. POTAPOVA: Das Problem des Anschlusses in den germanischen sprachen 396
- ANNIE RIALLAND: Contours mélodiques syllabiques et tons à niveaux en terrasses 397
- A.C.M. Rietveld and L. BOVES: Automatic detection of prominence in the Dutch language 398
- ALAN E. SHARP: Further observations on secondary stress in British English 399
- JAN SKOUMAL: Notes on melodic homonymy in Standard Russian 400

- EBERHARD STOCK: Zur semasiologischen Interpretation der Sprechmelodie 401
- YUKIO TAKEFUTA: Some experiments in the digital extraction of American intonation patterns 402
- I.S. TIKHONOVA: Attitudinally distinctive function of some pre-tonic stress-and-pitch patterns in English in reference to their phono-stylistic usage 403
- I.G. TORSOUÉVA: L'étude de l'intonation et la théorie du texte 404
- JACQUELINE VAISSIÈRE: Jointures en français et structure prosodique 405
- GALINA M. VISHNYEVSKAYA: The accentual and melodical structure of stylistically heterogeneous texts. An investigation based on English language material 406
- L.V. ZLATOUSTOVA: Rules of interaction between segmental and suprasegmental features in the organization of spoken text 407

- BRITTA HAMMARBERG, BJÖRN FRITZELL, JAN GAUFFIN, JOHAN SUNDBERG and LAGE WEDIN: Perceptual and acoustic analysis of vocal dysfunction 419
- JÜRG HANSON: Untersuchungen zur phonematischen Einordnung der Zischlautstörungen 420
- JENNIFER LOW: L'intonation anglaise et l'enseignement par visualisation 421
- TATIANA MAKARENKO: Notes on the intonation of special and yes-no questions in Romanian compared to English 422
- E. PANAGOPOULOS: The perception of English minimal pairs by Greek listeners 423
- MARC L. SCHNITZER: Final report on a study in generative orthography 424
- ČASLAV S. STOJANOVIĆ: English and Serbo-Croatian vowel phonemes and errors made 425
- RUDOLF WEISS: Perception as an aid in teaching German pronunciation 426

Section No. 9

Applied Phonetics

- MOHAMMAD ANANI: Some phonetic differences between Arabic and English vowels 411
- D. AUTESSERRE, N. SCOTTO DI CARLO et M.C. HAZËL-MASSIEUX: Adaptation phonétique d'une méthode de rééducation de l'aphasie 412
- UZBEK SH. BAITCHURA: Some problems of alphabets and the Russian orthography 413
- U. BORTOLINI, F. DEGAN, C. MINNAJA and L.G. PACCAGNELLA: A stochastic model of phonemic patterns in spoken Italian 414
- W.S. BROWN Jr. and SUE NEWMAN: Supraglottal air pressure variations associated with consonant cognate pairs produced by deaf persons 415
- C. CHEVRIE-MULLER, N. CERCEAU et C. GUIDET: Étude de la régulation neuro-motrice des paramètres prosodiques à partir des productions de malades neurologiques 416
- JEAN-ROLAND DELTEL: Contacts de langues: Etude phonétique d'Ewondos francophones à Yaoundé 417
- DON GEORGE: First language phonetic perseveration: A theoretical explanation 418

Section No. 10

History of Phonetics

- MUHAMMED HASAN BAKALLA: Nasals and nasalization as treated by early Muslim phoneticians 429
- MOTI LAL GUPTA: Production and perception of speech - an Indian analysis 430
- J.H. HOSPERS: Graphemics and the history of phonology 431
- E.F.K. KOERNER: 19th-century attempts at the creation of a universal phonetic alphabet: From Volney to Passy 432
- GABRIELLE KONOPCZYNSKI: Un essai original de transcription musicale de la prosodie: Wilhelm Wundt: Völkerpsychologie (1900-1912) 433
- ANDRÁS O. VÉRTES: Regards sur l'histoire de la phonétique et de la phonologie 434
- HORST WEINSTOCK: Frühenglische Wege der Lautbeschreibung 435

Section No. 11

Sociophonetics

LAWRENCE M. DAVIS: Phonology in sociolinguistics: What do the data tell us?	439
SIMONE ELBAZ: Influence du facteur sexuel sur l'arabe marocain d'Oujda (Maroc Oriental) - (illustration phonologique, syntaxique, lexicale)	440
WILLIAM LABOV: A sociolinguistic approach to the problem of normalization	441
PIERRE R. LÉON: BB. Contribution à l'étude des voix de charme	442
RENATE PORTZ: Another look at stages in the acquisition of Standard English	443
GILBERT PUECH: L'organisation polylectale de la phonologie	444
SUZANNE ROMAINE: The notion of intermediate phonetic forms in sociolinguistics	445
LAURENT SANTERRE: Régression rapide du [r] apical dans le français de Montréal; étude socio-phonétique	446
PETER WINKLER: Digitale phonetische Analysen für "Verhaltenspartituren"	447

Index of Authors

451