Also included in this section are informative chapters on electrode configuration, the response of body tissues to implanted materials, and the problematic issue of recording site verification.

Part 2 has chapters devoted specifically to the mechanics of doing electromyography with experimental animals. In addition to clearly presented instructions of how to design, construct, and implant electrodes, proven techniques for transferring information from the animal to the signal processing and storage instruments are discussed. A helpful guide to selection of the major electronic instruments necessary for electromyography is followed by hints for detecting and trouble-shooting extraneous signals and recording artifact. The remaining chapters summarize specific techniques for correlating electromyograms with limb position and forces, for signal processing and display, for single-unit electromyography, and for surgery. A final chapter is devoted to helping the uninitiated get started. Appendixes devoted to techniques of anatomy and sources of materials are included.

I am enthusiastic about this timely contribution. Loeb and Gans's collective expertise and laboratory experience come through clearly and will make the book useful to any student contemplating, or actively using, electromyography.

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Children's Narrative Skills

Event Knowledge. Structure and Function in Development. Katherine Nelson in collaboration with 11 others. Erlbaum, Hillsdale, NJ, 1986. xii, 277 pp. $32.50.

Telling stories is an important way in which human beings represent and organize their experiences. Jerome Bruner in his recent book *Actual Minds, Possible Worlds* (Harvard University Press, 1986) argues that narrative is one of the two major modes of thought and that it has been ignored in our obsession with logical, Cartesian, or "paradigmatic" thought. Katherine Nelson and her colleagues and students have engaged over the last several years in a series of studies probing the development of children's abilities to recount the events they experience and the role such narratives play in the children's growing cognitive and linguistic systems. *Event Knowledge* reviews and synthesizes that research: although much of the research has been published in greater detail as journal articles or book chapters, this volume provides the opportunity to make explicit the full scope of the undertaking and the connections among the various studies.

It would seem on first reflection that talking about the events of their lives is not one of the things young children are very good at. Anyone who has tried to extract from a three-year-old a report of the events of the day can confirm that the telling is likely to be fragmentary, incoherent, and insufficiently responsive to the needs of a listener who did not share the experience. The results reported in *Event Knowledge* demonstrate, however, that young children can give very good reports about events they are familiar with if they are asked in the right way. Consider the following description of a birthday party at day camp, offered by a three-year-old: "She just ate the cake. And then we ate it. And then we sat down. And then, we were done with our snack" (p. 110). While considerably less complete or complex than a five-year-old or a seven-year-old would provide, an event description like this reveals remarkable sophistication and provides grist for a variety of analyses of how children understand, remember, and recount their experiences.

The most remarkable central finding of the research program is the young child's preference for and skill at generic, abstract event representations rather than representations of specific episodes. When asked about birthday parties, a child of four years nine months produced the following report: "Well, you get a cake and some ice cream and then some birthday [unclear] and then you get some clowns and then you get some paper hats, the animal hats, and then you sing 'Happy Birthday to you' and then then then they give you some presents and then you play with them and then that's the end and they go home and they do what they wanta" (p. 27). This account obviously draws on memories of particular birthday parties, but it is presented as a generic description, showing the child's capacity to use linguistic markers of generic statements (impersonal "you," timeless present, indefinite reference) and, more important, to abstract from a few personal experiences with birthday parties to a set of "rules" for such events. This set of rules is often referred to in cognitive psychology as a "script," though in the later chapters of this book (representing the later stages of her research efforts and her thinking), Nelson opts for the term "generalized event representation."

Many aspects of children's generalized and specific event representations are explored in the various studies reported in this book. It is argued that event representations constitute the basis for children's understanding of the world and for the organization of their memory. Nelson argues, for example, that taxonomic concept systems (banana, apple, and orange all grouped under fruit; fruit, cheese, and bread all grouped under food; and so forth) emerge from groupings established during experiences with events in which a variety of fillers can satisfy certain slots (for example, the various foods one can eat at breakfast constitute alternate fillers for the food slot in the generalized representation of the breakfast event). Furthermore, event representations themselves are organized into a hierarchy (McDonald's and Kentucky Fried Chicken events provide fast-food restaurant scripts, related to a generalized restaurant script that is higher up in the taxonomy but less fully specified). Thus, event representations form the basis of more sophisticated cognitive and conceptual systems.

Beyond the demonstration of children's preference for generic over specific event representations, the work presented in this book makes a strong case that asking the right questions about matters that children know something about enables them to reveal skills and abilities not accessible to the traditional researcher who relies on more "decontextualized" tasks and topics. Not only are children's memories longer and better organized than we have believed, their ability to deal cognitively and linguistically with abstraction, hypotheticals, temporal sequencing, and logical relations is surprisingly advanced. Children are limited not so much by their age or stage of development as by their knowledge—the amount of experience they have had with various events and the amount of help they have had in understanding and learning how to talk about the events they have experienced.

The event-representation–based view of children's cognitive development provides novel insights into their collaborative play, often based on shared scripts, their fantasy play, the made-up stories they tell, and their autobiographical memories. Nelson and her colleagues argue that children are much like adults in their autobiographies; episodes stand out as individual only if they depart from generalized event representations through the presence of some deviant or surprising factor. Many memories are reconstructed with the help of generalized event representations rather than truly remembered. Furthermore, although the role of culture and the nature of cultural differences are not discussed in this book, it is clear that the event knowledge that children acquire so efficiently constitutes socially shared and agreed-upon knowledge that has great power to explain how children become members of their cultures. So the next time a seven-

year-old answers your question about what happened at school today with a bored "Nothing," be aware that the same child could give a very detailed account of what goes on in second grade. Hearing the response "Nothing" might be less frustrating if we understood it in the context of shared social knowledge to mean what the seven-year-old no doubt intends, "Nothing out of the ordinary."

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Memoir of an Embryologist

Autobiography of Dr. Karl Ernst von Baer. JANE M. OPPENHEIMER, Ed. Science History Publications (Watson), Canton, MA, 1986. xviii, 389 pp. $25. Resources in Medical History. Translated from the German edition (Braunschweig, 1886).

Even at their best scientific autobiographies are tantalizing material for the historian or more general reader wishing to understand the scientific process. On the face of it they ought to represent the most authoritative and intimate account of science as it really was. Yet their subjectivity and the imperfection of memory make them suspect especially when they appear most revealing. One therefore starts out marveling at the conviction that lies behind the selection for publication of a volume such as this: it is not only an autobiography that makes no claims to literary merit—and is self-confessedly rambling—but one that nobody has thought worth translating since its first appearance in German in 1864. What warrants our interest in it today?

Karl Ernst von Baer (1792–1876) is frequently cited as the father of modern embryology, and whatever the exact nature of his influence (among his many contributions he clarified the organization of germ layers, described the notochord and the mammalian egg, and began a recognizably modern discussion of the significance of the initial similarities of embryos of different species and of the implications of the epigenetic emergence of anatomical organization during embryogenesis), it is clearly important to the history of biology of the period that his contemporaries and immediate successors held him in the highest regard. In von Baer's time embryology was an integral and influential part of biology in general (roughly filling the niche that evolutionary theory and genetics occupy today), so his impact was widely felt. There is good evidence, for example, that von Baer's consideration of the "transformations" from general to specific organization seen during vertebrate embryogenesis was an important influence on Darwin's thinking. T. H. Huxley described him as a "man of the same stamp" as Darwin. But his scientific work as such is perhaps a minor aspect of the interest of this book. The book has three components: in addition to a patchy, superficial, and often recriminatory account of his scientific life, there is an extensive annotated bibliography of von Baer's publications, which cover a wide ground including medicine, comparative anatomy, anthropology, and geography. Most extensively, the book records von Baer's thinking on subjects such as education, the organization of universities, and the position of intellectuals in Russia and Germany. In this may lie its greatest value. No doubt in large measure owing to the excellent translation, von Baer comes over in an extraordinarily immediate way: inevitably his science sounds primitive, but his discussions of aims in the understanding of biological phenomena and of the practical difficulties of doing highly original research read much as if they had been written in the 1980s.

Thus in many unexpected ways the courage shown by the publishers and the scientific editor has paid rich dividends. The autobiographical form becomes increasingly valuable as a resource with the passage of time precisely because it gets increasingly hard, in any other way, to identify the nature and origin of the traditions of scientific method, communication, and organization that we are often unconsciously constrained by. Material such as this is a uniquely direct reminder to us of how slowly science changes on levels such as these.

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Books Received

Analytical Methods for Pesticides and Plant Growth Regulators. Gunter Zweig and Joseph Sherma, Eds. Academic Press, Orlando, FL, 1986. Vol. 14, Modern Analytical Techniques. vi, 265 pp., illus. $50. Vol. 15, Principles, Statistics, and Applications. viii, 297 pp., illus. $55.

Analytical Methods in Human Toxicology. Part 2. A. S. Curry, Ed. VCH, New York, 1986. x, 354 pp., illus. $87.50.

Annual Review of Computer Science. Vol. 1. Joseph F. Traub *et al.*, Eds. Annual Reviews, Palo Alto, CA, 1986. xiv, 459 pp., illus. $39.

Anthropogenic Indicators in Pollen Diagrams. Karl-Ernst Behre, Ed. Balkema, Accord, MA, 1986. viii, 232 pp., illus., + pullout figures. $30. Based on a symposium, Wilhelmshaven, F.R.G., Oct. 1985.

Anti-Ia Antibodies in the Treatment of Autoimmune Disease. J. Brochier, J. Clot, and J. Sany, Eds. Academic Press, Orlando, FL, 1986. x, 157 pp., illus. $21.95. Immune Intervention, vol. 2. From a meeting, Montpellier, France, June 1985.

Antimicrobial Agents and Immunity. J. Jeljaszewicz and G. Pulverer, Eds. Academic Press, Orlando, FL, 1986, x, 282 pp., illus. $79.50.

Applied Electromagnetics. J. E. Parton, S. J. T. Owen, and M. S. Raven. 2nd ed. Springer-Verlag, New York, 1986. xvi, 288 pp., illus. $28.

Biological and Psychological Factors in Cardiovascular Disease. T. H. Schmidt, T. M. Dembroski, and G. Blümchen, Eds. Springer-Verlag, New York, 1986. xvi, 628 pp., illus. $52. Based on a conference, Winterscheid, F.R.G., June 1984.

Biology and Molecular Biology of Plant-Pathogen Interactions. John A. Bailey, Ed. Springer-Verlag, New York, 1986. x, 415 pp., illus. $97.90. NATO Advanced Science Institutes Series H, vol. 1. From a workshop, Ilminster, U.K., Sept. 1985.

Catalytical and Radical Polymerization. P. C. Barbé *et al.* Springer-Verlag, New York, 1986. x, 240 pp., illus. $79. Advances in Polymer Science, 81.

The Ceaseless Wind. An Introduction to the Theory of Atmospheric Motion. John A. Dutton. Dover, New York, 1986. xx, 617 pp., illus. Paper, $16.95. Augmented reprint, 1976 edition.

Cyst Nematodes. F. Lamberti and C. E. Taylor, Eds. Plenum, New York, 1986. x, 467 pp., illus. $79.50. NATO Advanced Science Institutes Series A, vol. 121. From an institute, Martina Franca, Italy, Sept. 1985.

Data Analysis in Astronomy II. V. Di Gesù *et al.*, Eds. Plenum, New York, 1986. xii, 399 pp., illus. $69.50. Ettore Majorana International Science Series, vol. 27. From a workshop, Erice, Italy, April 1986.

Descartes' Dream. The World According to Mathematics. Philip J. Davis and Reuben Hersh. Harcourt Brace Jovanovich, San Diego, CA, 1986. xx, 321 pp., illus. $19.95.

Design and Analysis of Coalesced Hashing. Jeffrey Scott Vitter and Wen-Chin Chen. Oxford University Press, New York, 1987. xii, 160 pp., illus. $29.95. International Series of Monographs on Computer Science.

Deutsches Krebsforschungszentrum Current Cancer Research 1986. Steinkopff, Darmstadt, and Springer-Verlag, New York, 1986. 254 pp., illus. Paper, $13.50.

Dictionary of Artificial Intelligence and Robotics. Jerry M. Rosenberg. Wiley, New York, 1986. xii, 203 pp. $32.95; paper, $14.95.

Diesel. Technology and Society in Industrial Germany. Donald E. Thomas, Jr. University of Alabama Press, Tuscaloosa, 1987. xiv, 280 pp., illus. $26.95.

Fundamental Principles of the Theory of Extremal Problems. Vladimir M. Tikhomirov. Wiley-Interscience, New York, 1986. 136 pp., illus. $24.95. Translated by Bernd Luderer.

Fundamental Problems of Gauge Field Theory. G. Velo and A. S. Wightman, Eds. Plenum, New York, 1986. viii, 401 pp., illus. $69.50. NATO Advanced Science Institutes Series B, vol. 141. From a course, Erice, Italy, July 1985.

Fundamentals of Immunology. Otto G. Bier *et al.* 2nd ed. Springer-Verlag, New York, 1986. x, 469 pp., illus. Paper, $29.95.

Fundamentals of Inelastic Electron Scattering. P. Schattschneider. Springer-Verlag, New York, 1986. xxii, 185 pp., illus. Paper, $39.

Fuzzy Set Analysis for Behavioral and Social Sciences. Michael Smithson. Springer-Verlag, New York, 1987. viii, 327 pp., illus. Paper, $25. Recent Research in Psychology.

Galen on Bloodletting. A Study of the Origins, Development and Validity of his Opinions, with a Translation of the Three Works. Peter Brain. Cambridge University Press, New York, 1986. xiv, 189 pp., illus. $39.50.

Gene Transfer. Raju Kucherlapati, Ed. Plenum, New York, 1986. xiv, 447 pp., illus. $59.50.

General Circulation of the Ocean. Henry D. I. Abarbanel and W. R. Young, Eds. Springer-Verlag, New York, 1987. xiv, 291 pp., illus. $69. Topics in Atmospheric and Oceanic Sciences. From a lecture series, San Diego, CA, 1983.

Generation and Modulation of Action Patterns. H. Heuer and C. Fromm *et al.*, Eds. Springer-Verlag, New York, 1986. x, 277 pp., illus. $64.90. Experimental Brain Research Series, 15. From a symposium, Bielefeld, F.R.G., Oct. 1984.

The Genius of China. 3,000 Years of Science, Discovery, and Invention. Robert Temple. Simon and Schuster, New York, 1987. 254 pp., illus. $19.95.

Geological Strain Analysis. A Manual for the R_f/ϕ Method. Richard J. Lisle. Pergamon, New York, 1985. viii, 99 pp., illus. $16.50; paper, $9.75.

Handbook of Environmental Engineering. Lawrence K. Wang and Norman C. Pereira, Eds. Humana,