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as such (*smysl u sobě*), and so the understanding of its language is not a postulate of Holy Writ." But is manifestly wrong to attribute this attitude to St. Cyril, who labored so long to translate as much religious literature as possible into Slavic and who constantly preached the right of all nations to hear the word of God in the vernacular (cf. particularly his *Life*, Ch. XVII). There is no reason to call this practical diplomat and energetic missionary a "mystic" (14), and it is naive to say that his translations aimed at bringing to the Slavs not a 'logico-formal understanding' but only "seelische Bedeutsamkeit" (18). The obvious fact that the uneducated Slav would have no 'logico-formal understanding' of "xenoglosses" like *alleluia* or concepts like Logos = God does not change Cyril's stated intentions a jot. The Slavic scribes of the early Middle Ages lacked any feeling that the written word must not be modified, as is attested fully by the clearly local Macedonian, Bulgarian, North or South Russian character of the emendations they introduced into the Biblical and liturgical texts, undoubtedly to make them more comprehensible. Further, the Cyrillo-Methodian insistence on understanding is reflected in the early medieval Czech efforts to translate not only the basic religious texts but also the scholastic philosophers into the vernacular and in the activities of the fourteenth-century Russian missionary St. Stephen of Perm, to mention but two of the outstanding examples. Lucyk's argumentation is entirely without support.

But the problems which are suggested do deserve attention.

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H. KONECZNA AND W. ZAWADOWSKI, *Przebiegię rentgenograficzne glosek polskich*. 16 pp. + 146 figures. Warszawa: Państwowe wydawnictwo naukowe, 1951. The present work consists of 144 tracings of x-ray stills of four speakers of Polish and a short introduction in which the authors, a well-known phonetician and a radiographer, give some details of their experimental procedure and make a brief attempt at interpretation of the data. It is most unfortunate that because of lack of some very elementary precautions the usefulness of the work is much less than what it might have been. It seems that the authors had no opportunity to consult most of the rather considerable literature on the utilization of x-rays in phonetic studies. (cf. the critical survey in A. S. MacMillan and G. Kelenen, "Radiography of the supraglottic speech organs", *AMA Archives of Otolaryngology* 55(1952) 671-688). The following criticisms are offered primarily in the hope that Mme Koneczna will have an opportunity to overcome some of the shortcomings of the present work in a second volume which is in preparation (p. 10, fn. 1).

The worst failure of the study (and one which, unfortunately, is beyond repair) is that the different tracings cannot be strictly compared with one another. Mme Koneczna writes: "... it is not always possible to superimpose one tracing on the other, since in spite of all precautions the experimental subjects changed the position of their heads slightly in the intermission between exposures. Their profiles, therefore, show up differently on different radiographs" (p. 7).

To make things even worse, not all tracings are reproduced to the same scale.

This is due in part to the fact that the distance between subject and photographic plate was not maintained constant. In addition some comparisons cannot be made because the sounds were produced by different subjects. Thus, e.g., it is impossible to compare the tracings for the labial fricatives (figs. 109-112) with those for the labial stops and nasals (figs. 61-66), since the former were produced by subject II and the latter by subject III.

The investigators accept the tracings at face value and make little allowance for the unavoidable distortions due to the special condition under which they are working. Mme Koneczna makes much of the fact that subject II shows an open velum in the articulation of the oral [a]. Since we are told that exposure time was one-fifth of a second (p. 5) it is probably not wrong to assume that the subject phonated for at least five seconds; i.e., for the time needed to make the exposure. Five seconds is an abnormally long time for a vowel, and it would not be surprising that during this prolonged phonation the subject inadvertently dropped his velum. In this connection it is, however, of interest—and this has been correctly stressed by Mme Koneczna as well as by B. Hájla in his review of this book (*Slavia* 22(1953) 131-135)—that the high (diffuse) oral vowels are never produced with an open velum.

It is difficult to account for the almost total absence of the standard data about the conditions under which the radiographs were made, about the subjects (we are not even told their sex), and about the instructions they were given. This is felt particularly when studying the tracings for the allophones which are found only in foreign words, as [ɲ] and [ʃ].

Since the teeth and jawbone obscure the outlines of the floor of the mouth the authors have omitted the latter in their tracings. The necessary data could be obtained from direct measurements on the subjects. It would be useful in estimating the volume of the front resonator in such sounds as [p] and [t].

It is surprising that Mme Koneczna disregards almost completely the one fact which is most strikingly revealed by x-ray photographs: the tremendous variations in the width of the pharynx. As a matter of fact, in radiographs the position of the front part of the tongue and, in particular, that of the apex are often impossible to locate precisely because they are obscured by the teeth. The pharynx, on the contrary, is always clearly visible, and it is unthinkable that variations in the volume of the pharyngeal cavity which may be as great as 1:4 (cf. figs. 8 and 44) should have no important phonetic effects.

Particularly obvious are the variations in the pharynx when we compare palatalized and unpalatalized consonants. The radiographs confirm the view that the articulation of the palatalized consonants consists in superimposing an [j]-articulation on the articulation of the plain consonant. In the tracings of all palatalized consonants we see clearly the characteristic features of the articulation of [j]: a narrowing of the mouth resonator simultaneous with a prominent widening of the pharynx, both of which are a consequence of arching the tongue up and forward towards the hard palate.

It seems to me that the authors have erred in their reading of the x-ray data in regard to the radix of the tongue on the radiographs of the allophones of the

phoneme /i/ (figs. 43, 44, 46, 48, 51, 57, 58). Is it not possible that the sharp breaks in the outline of the front wall of the pharynx are due to deposits of the barium sulphate paste (the substance used for coating the tongue to obtain better contrasts) on parts of the tongue other than the center line and edges?

X-rays are a powerful tool. They reveal to the investigator a host of things otherwise invisible. Unfortunately such an increase in the available data is not always accompanied by a comparable increase in knowledge. Much too frequently it results in a barren atomism on the part of the investigator who, bewildered by the many new facts, is incapable of ordering them in a significant manner.

In her brief interpretative essay Mme Koneczna shows signs of such bewilderment. It is symptomatic that she stresses almost exclusively what by now ought to be a commonplace among phoneticians, namely, that there are quite considerable differences even between two consecutive utterances of the same sound. Nevertheless, there *is* a sense in which at least some of the *different* events can be said to be the *same*. The fact that the subjects were instructed to repeat a given speech sound proves that to the investigators as well as to the subjects these different events were meaningfully identical in spite of all the striking differences in their articulatory and acoustical properties. Not to come to grips with the question of what constitutes identity is to leave untouched the most crucial question of the science. It is to be hoped that in the second volume Mme Koneczna will deal with this question in her usual lucid and penetrating manner.

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WILLIAM E. HARKINS, *A Modern Czech Grammar*. 338 pp. New York: King's Crown Press, Columbia University, 1953. Reviewed by JINDŘICH KUČERA, *University of Florida*.

An adequate college grammar of Czech for English-speaking students has long been overdue and it is therefore gratifying to see this long-felt need filled by a competent author. *A Modern Czech Grammar* by William E. Harkins, who was assisted by Marie Hnyková, has been published in a vari-typed edition in the series of Columbia Slavic Studies. The book is planned, as the author himself states in the Preface, as a complete, self-sufficient introduction to the Czech language which could be used both as a textbook in college courses and for study without a teacher. The introduction on Czech pronunciation and on the basic problems of orthography is detailed and competently presented. The book is divided into 30 lessons; each lesson begins with a reading text, supplemented occasionally by Czech proverbs, a few lines of a folk-song or an anecdote. A vocabulary, following the text, lists all the new words introduced; difficult expressions and idioms are carefully explained in footnotes. The rest of each lesson is devoted to grammatical explanations with illustrations and to exercises containing mostly both a translation from Czech into English and from English into Czech, as well as fill-in exercises of various types. Special review exercises are given at the end of every sixth lesson. The 30 lessons, which offer to the stu-



