COPTIC SOUNDS
PREFACE

The first part of this inquiry was intended as a systematic statement of my position with regard to certain broad questions and general matters which, unless disposed of at the outset, would have required repeated statement in scattered footnotes. It was issued, nearly two years ago, in a very small edition, because at that time the completion of the second and principal part of the inquiry was not immediately in sight. When it became evident that the collection of materials on the scale originally contemplated would be impossible, or possible only after the lapse of years, I decided to complete the second part on the basis of materials at hand, and to issue the volume at once.

Meanwhile Dr Hide Shohara, who was pursuing investigations under Professor Clarence L. Meader in the Department of General Linguistics of the University of Michigan, became interested in my inquiry, and together they prepared an independent study of my findings from another point of view. The publication of Miss Shohara's evidence and argument in one volume with my own seemed to be a convenient arrangement. In order to emphasize the distinctness of authorship and responsibility this treatise is presented in an appendix, in spite of its length and importance. The reader will note that although Miss Shohara in general confirms my views, she at times questions details. I have not attempted to effect a reconciliation, and indeed disclaim the competence in her field that would entitle me to do so.

Other valuable assistance has come to hand. Dr W. F. Hume, formerly Governor-General of the Geological Survey of Egypt, was kind enough to express an opinion in regard to the history of the Achmim "pocket," which greatly strengthened my conviction that this is a region of linguistic isolation. Professor Carl Schmidt kindly loaned me a transcript of some twenty-eight verses of Ecclesiastes in the so-called Old Fayyumic dialect, according to a manuscript recently acquired by the Staatsbibliothek at Hamburg, and transcribed by Father Angelicus M. Kropp, O.P. In gratefully acknowledging this assistance I wish also to extend my thanks to Professor Meader and to Mr Herbert C. Youtie for having read my manuscript and for having given me a number of helpful criticisms and corrections.
PREFACE

Looking back upon Part I, I must record my regret at having failed to use an article by Professor Hermann Ranke, *Keilschriftliches Material zur altägyptischen Vokalisation* in the *Abhandlungen* of the Berlin Academy, Philosophical-Historical Class, 1910. In this article Professor Ranke examined the trustworthiness of cuneiform spellings of Egyptian words, with results which would have led me to give far more attention to cuneiform evidence. There is, however, nothing in the article to upset my views. I am particularly gratified to find that Ranke believes ã to be the final, not the intermediate, stage in the development of á.

The position taken in Chapter I of Part I was attacked by Professor Walter Till in *Zeitschrift für ägyptische Sprache*, Vol. LXVIII, pp. 121-122, and was defended by me in the same journal, Vol. LXIX, pp. 130f. It was also defended (ibid., pp. 125-129) by Dr Hans Jakob Polotsky in connection with the presentation of his discovery of hitherto unobserved principles in the use of suffixes.

The terms “palatal,” “velar,” and “uvular,” employed in Part I, are not so correct as “pre-palatal,” “palatal,” and “velar”; but the difficulty of handling derivatives of “pre-palatal” through a long and tedious discussion is perhaps sufficient reason for using the less correct terms.

On page 41 of Part I, line 5 from the bottom, -a--ã should read -u--ã. Abbreviations and phonetic symbols in Part II are the same as in Part I. A few additional symbols have been included in such a way as to be self-explanatory.

In addition to those mentioned, I wish to express my indebtedness to Dr E. S. McCartney, the able general editor of University publications, and to the Institute of Archaeological Research of the University of Michigan, under whose auspices this book has been published with the aid of funds granted by the General Education Board of the Rockefeller Foundation.

W. H. W.

October, 1933
PREFACE TO PART I

This book proposes to trace the main currents in the history of Coptic sounds from the standpoint of general phonetics, which is physiological and psychological. In order to make clear these main currents in a long and complicated sound-history, it has been necessary to present the material in a manner unfamiliar to orientalists, under the captions of phonetic phenomena; to omit a great deal of the descriptive material that is found in grammars and compendiums; to use, in addition to the familiar symbols of egyptology, the precise symbols of general phonetics. The inquiry begins with Coptic, as the nearest thing to a living tradition; and it is for the copticist that the book is written. But the investigation had to be pushed backward to the beginnings of the national language of Egypt. Here the writer had to place himself under obligation to Erman, Sethe, Steindorff, Spiegelberg and Burchardt, for certain data which, with the guarantee of these names, it seemed usually unnecessary to verify. This dependence is indicated in every case. The interpretation of the data is entirely that of the writer. The late Professor Ember’s Egypto-Semitic Studies, edited by Dr Behnk, 1930, did not come to hand till after the manuscript had been closed; and Czernak’s Die Laute der ägyptischen Sprache, 1931, came only after everything was in type. If the present sketch has the disadvantage of being written without regard to these important publications, it has, on the other hand, the advantage of independence.

The results ought to be of interest to phoneticians, since nowhere else are we able to observe the history of a language over so vast a stretch of time; and to copticists and egyptologists, since a precise knowledge of the sounds and their history enables one to deal safely with spelling and etymology, and to distinguish dialectic differences which extend far back into the history of the language. Even Greek papyrology may profit by an acquaintance with the actual sounds of a bilingual Egyptian peasantry.

Professor Charles C. Fries has contributed to this volume the great benefit of his learned and illuminating criticism.

W. H. W.

January, 1932
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<td><em>AJSL</em></td>
<td><em>American Journal of Semitic Languages and Literatures</em>.</td>
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<td><em>BIF</em></td>
<td><em>Bulletin de l’Institut français d’archéologie orientale du Caire</em>.</td>
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<td><em>Guimet</em></td>
<td><em>Annales du Musée Guimet</em>.</td>
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JEA Journal of Egyptian Archaeology.


Keller Keller, Die antike Tierwelt, Leipzig, 1913.


Lefort Lefort, Littérature bohérrique, in Muséon, 1931, 115 ff.


Lenz Lenz, Herodian Technici Reliquiae, Leipzig, 1867–70.

Lep. Lepsius, in ZÄS, V (1867), 70 ff. (without title).


MÉR Mitteilungen aus der Sammlung der Papyri Erhardo Raineri, Wien, 1887–97.

MIF Mémoires de l’Institut français d’archéologie orientale du Caire.


MSL Mémoires de la Société de linguistique de Paris.

OL Orientalistische Literaturzeitung.

Passy Passy, Petite Phonétique comparée, Leipzig–Berlin, 1912.

Pernot Pernot, D’Homère à nos jours, 1921.


Quibell Quibell, Excavations at Saggara 1909, 1912.

Rahlfz Rahlf, Die Berliner Handschrift des suhthischen Psalters, in Abhandlungen der...Gesellschaft der Wissenschaften zu Göttingen, N.F., Philologisch-Historische Klasse, IV, 33 ff.

Roch. Rochomontex, La Prononciation moderne du copte dans la Haute-Égypte, in MSL, VII (1890), 245 ff.

Roeder Gr. Roeder, Ägyptisch, München, 1913.

RT Recueil de travaux relatifs à la philologie et à l’archéologie égyptiennes et assyriennes.


Sethe Sethe, Das ägyptische Verbum, Leipzig, 1899.


Sобб. Sobby, The Pronunciation of Coptic in the Church of Egypt, in JEA, II (1915), 15 ff.
ABBREVIATIONS, AND BIBLIOGRAPHY


SPA Situngsberichte der königlich-preußischen Akademie der Wissenschaften.

Spiro Spiro, An Arabic-English Vocabulary, Cairo, 1855.

St. Stern, Fragment eines koptischen Traktates über Alchimie, in ZÄS, XXIII (1885), 102 ff.


Stumme Stumme, Grammatik des tunisischen Arabisch, Leipzig, 1896.

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Till Till, Altes 'Alephe und 'Avin im Koptischen, in WZKM, XXXVI (1929), 186 ff.

Till Dial. Till, Koptische Diaslekgrammatik, München, 1931.

Till Fay. Till, Die Vokalisation des Fayyumischen, in BIF, XXX (1930), 361 ff.

Till Fay. Chr. Till, Koptische Christomathie für den Fayyumischen Dialekt, Wien, 1930.


Ungnad Ungnad, Babylonisch-assyrische Grammatik, München, 1906.

Veth Veth, Liber as-Suji de Nominibus Relatios, Leyden, 1840.


Wor. Prov. Worrell, The Proverbs of Solomon in Sahidic Coptic according to the Chicago Manuscript, Chicago, 1931.

Wüstenfeld Wüstenfeld, Jacod's Geographisches Wörterbuch, Leipzig, 1866–70.

WZKM Wiener Zeitschrift für die Kunde des Morgenlandes.

ZÄS Zeitschrift für ägyptische Sprache und Altertumskunde.

ZDMG Zeitschrift der deutschen morgenländischen Gesellschaft.

ZES Zeitschrift für Eingeborenen-Sprachen.


Zöega Zöega, Catalogus codicum Coptorum manusscriptorum qui in Museo Borgiano Velitris asservantur, Rome, 1810; reprint, Leipzig, 1903.
PART I

THE MAIN CURRENTS OF THEIR HISTORY
INTRODUCTION

The pronunciation of Coptic is, in the words of Stern,¹ “streitig und schwankend.” This is unfortunate because it is impossible to discuss sound-changes without supposing certain sounds. But classical scholarship is accustomed to describing letter-permutations in terms of an inherited phonology and without the need of agreeing upon the sounds involved; and egyptology is compelled by its materials to deal with a language about whose actual sounds nothing is so certain as their unlikeliness to the sounds currently given the language. The study of modern languages has brought with it a science of phonetics; and this science has extended to the study of Arabic, a modern language within the Semitic group. It is finding application in comparative Semitic grammar. Papyrology will shortly demand for both Greek and Coptic a rational phonology, the system of sounds used by a bilingual people. Here Greek and Coptic will throw light upon each other; for no one doubts that the Copts, like other bilingual peoples, had but one set of sounds. When the Coptic alphabet was devised its letters must have been taken over with their current Greek values.

How far we are from an application of modern phonetics² to the study of Coptic, may be seen in the case of the stops ṵ, ṳ, ṭ, ṭ, and especially χ, σ. It is well known that the first four were pre-dominantly rendered in Arabic by unaspirated sounds, and must therefore have been voiced or half-voiced in Coptic. Yet they are currently given as k, p, t, t.³ The change of these into the corresponding aspirates in Bohairic then becomes incomprehensible. Our best textbook of Sahidic still says that χ is “weiches dsch” (dž), while σ is “g, später tsch, jetzt sch” (g, tš, š).⁴ It is only in Bohairic that χ and σ are voiced and voiceless counterparts, approximately dž/tš; and only in very late and degenerate Bohairic that σ is š. The value g is derived from historical grammar and observation of Sahidic misspellings; but the other values are derived from Bohairic tradition. Confusion between χ and σ is a serious obstacle to the learning of Bohairic after studying Sahidic and to comparison of Coptic with Old Egyptian. We can almost

¹ St. Gr. 16 ff. ² For terminology and symbols, see pp. 9—10. ³ St. Gr., Stj. Gr., Till Gr. ⁴ Stj. Gr. 7.
Coptic Sounds

say with Lepsius: "Was aber die koptischen Buchstaben α und σ betrifft, so ist es noch keinem koptischen Grammatiker gelungen, sie scharf auseinander zu halten.... Beide Zeichen wechseln nicht nur in den drei Dialekten, sondern zuweilen sogar in ein und demselben Dialekte scheinbar willkürlich mit einander."¹

From the beginning of Coptic scholarship the sounds, and particularly certain sounds, have been discussed extensively, in grammars, in incidental notes, and in special articles. But there is little continuity of effort, the writers being usually unacquainted with their predecessors; and the results are generally inconclusive, because it was not possible to bring order out of the chaos of facts, or supposed facts. Stern² says that he based his system upon what he heard from Copts at Thebes and upon the testimony of his predecessors, Kircher, Petraeus and Tuki. He knows that this tradition has greatly modified original sounds, and that it has been strongly influenced by Arabic. Eleven years later, 1891, de Rochemontëix³ published a very important article which, if taken to heart, would have made several later articles unnecessary. Prince,⁴ in 1902, attempted to show that genuine dialectic traditions exist in modern Egypt. His careful records from different localities are interesting and valuable; but he does not successfully interpret them; and one is left with the feeling that modern native tradition, after a period of great corruption, has become very conventional. To reconstruct the phonology of Shenute's Coptic from these remains would appear to be like reconstructing the Hebrew of Isaiah from a phonetic plebscite of ignorant Jews in Russia, Lithuania, Hungary, Bokhara, Yemen or Morocco. Yet this is what in effect Sobhy⁵ does when he says that a true tradition is to be found among the older priests. Like Prince he shows that native tradition represents an impossible state of affairs for any actual language. This is evidently the result of transmitting through many generations of people a language which almost no one any longer understands. The case is even worse for Coptic than for Hebrew; for among the Copts not merely the laity but also the clergy is generally ignorant of the ritual language. Meanwhile the grammars⁶ make no substantial advance upon Stern. They deal at best with the historical values of the sounds—what they ought to be, supposing Old Egyptian sounds to have been

¹ ZAS, V (1867), 71. ² St. Gr. 16. ³ Rock. ⁴ Pr. ⁵ Sob., followed by a similar article in BIF. 1918, 51 ff. ⁶ Stif. Gr., Mal. Gr., Till Gr.
thus and so—not with what they would appear to be from their behavior, and from their interrelations with Greek and Arabic sounds. Chassinat, in 1926, writes with a knowledge of all his predecessors, though without phonetic insight. He is the first to discover that there are three stages of progressive fixation in transliterations between Coptic and Arabic, and that these correspond to three different situations: (1) Coptic in full vitality but taking up Arabic words; (2) Coptic still a living language, but Arabic being learned through transliterations of it in Coptic letters; (3) Coptic a dead language, being learned through transliterations of it in Arabic letters. To the second of these periods belongs the text published by Sobhy in 1926. Crum in the Epiphanius volume of the same year has recorded and classified minutely a great many most interesting misspellings in the non-literary documents from Thebes. They need now to be grouped and separated into types. Till, in 1929, reached the correct conclusion that traditional Coptic pronunciation is at best Bohairic and not Sahidic. Furthermore, he observes, upon the authority of Junker’s unpublished studies, that Sahidic distinguishes palatalized velars from true palatals, but not voiced from voiceless; whereas the reverse is true of Bohairic. The same conclusion was reached independently by the present writer a year later, and further developed in a subsequent article. As early as 1915 Erman published an article on the differences between the Coptic dialects in the matter of word-junction; and showed that Bohairic had preserved fuller forms than Sahidic, because the people of this region spoke more slowly. Till, in 1929, presented good evidence for believing that the old Semitic sounds, existed in the Coptic of Upper Egypt but not in that of Lower Egypt; and drew the further conclusion that Bohairic was the first, Sahidic the second, and Achmimic the third dialect to be written in Greek letters. The growing recognition of the broad phonetic differences of different regions will greatly assist in understanding Coptic phonology.

Altogether one might say that to confuse evidence from different regions, from different periods, and transmitted in different ways, is to make the problem insoluble.

1 *Ch.* 2 *Ch. 4, 23.* 3 *Sob. Mac.* 4 *Crum Eph., 1, 236 ff.* 5 *Till Gr. 11.* 6 *Till Gr. 51.* Till's terminology is inexact, but this is the substance of his statement. 7 *JEA, XV (1929), 191 ff.* 8 *JAOS, 1 (1930), 144 ff.* 9 *Erm. Unt.* 10 *Till.*
Native tradition is self-contradictory and inherently improbable. To cite here the examples which space permits would be to weaken the demonstration abundantly and unwittingly given by Prince, Sibby and other writers just mentioned. We have here at worst an ignorant jargon, perpetuated by the necessities of ritual and corrupted by transmission as a language which need not be understood; at best a badly spelled language—such as Portuguese or English—which is not the same as the Coptic of Shenute and the fathers. Among Coptics, as among Jews, “to read” the sacred language means to be able to pronounce it for religious purposes, and not necessarily to understand it. We cannot believe that Coptic at its beginning was a badly spelled language. When first reduced to writing in Greek letters it must have been, by all analogies, phonetically spelled in those letters as currently used. It is only after long history, confusion of dialects, phonetic change, interference of analogy and pseudo-learning, that a language reaches the stage of English. Even if the native Coptic tradition were recognized as a modern language of this sort, it is not the Coptic in which we are interested.

How close the original Coptic spelling was to Greek spelling may be seen from the specimens of Coptic in purely Greek letters.¹ These early transcriptions of Bohairic and the conventional spelling are the same except that the Greek does not know the special letters that were taken from Demotic. Yes, we can take the spelling of Coptic very seriously. It represented at the beginning the sounds actually heard at that time. Were it not so, we should not have the different dialects, Sahidic, Achmimic, Fayyumic, Bohairic, each with a consistent orthography; nor should we have the consistent misspellings of vulgar documents and of individual scribes.

As long as Coptic was a spoken language the Copts did what any simple people would have done. They misspelled the school language in the direction of their actual local speech; or they gave up the school language and wrote frankly in their local speech. The uneducated spell badly, chiefly in the sense that they spell phonetically, and so fail to conform to a norm established by another age or another community. We cannot imagine the first writers of Coptic to have taken over ζ from Greek with the value α / Α, the same as ι; to have taken over η with these values, α / Α, also; to have taken over β with the value θ—which it never had at any time in Greek—and also with the value ι. Later contact

¹ *MER*, II (1887), 57; V (1892), 41.
with Greek has introduced the value $i$, and given $A$ the values $h$/$\aleph$. De Rochemonteix\textsuperscript{1} shows that the elaborate vowel system of Coptic has been reduced to the three cardinal vowels of Arabic; and that these are relatively unimportant, depending upon neighboring consonants, as they do in Arabic. The value $g$ sometimes given to the letter $\zeta$ can be nothing more than the result of a mechanical equation between $\nu$ and $\xi$, the latter with the value which it has in the dialect of Cairo. If the Copts have arabicized their Coptic pronunciation, they seem also to have copticized their Arabic. We may believe Sobhy\textsuperscript{2} when he says that they pronounce Arabic differently from other Egyptians; but we need not on that account believe that this is due to the purity of their Coptic tradition. Parallels might be found in other segregated minority groups which corrupt the vernacular without benefiting their traditional language.

While Coptic was becoming more and more divergent from its orthographic fixation, another process was going on, by which transliteration into and out of Arabic became more fixed.\textsuperscript{3} While Coptic was still a vigorous language the attempts at transliterating occasional Arabic words into it were clumsy and tentative. Later, when Arabic was being learned by Copts through the medium of their own alphabet, the transliteration was more exact; but on the other hand the decay of Coptic had progressed, and the Coptic letters no longer had their old values. Still later, when Copts were learning Coptic through the medium of Arabic letters, the transliteration was still more exact while Coptic pronunciation had become a tradition. Finally, in recent times we have a maximum of rigidity in transliteration and a minimum of internal consistency. So what is gained in one respect is lost in another. To the first period belongs Chassinat's medical text\textsuperscript{4} and Stern's alchemistic text.\textsuperscript{5} The former belongs to the ninth or tenth century and comes from Mashaich, just south of Achmim; the latter is not much later and comes from Sohaj, also near Achmim. To the second period belongs Casanova's\textsuperscript{6} and probably also Sobhy's\textsuperscript{7} Arabic text in Coptic characters. Both of these, while they show late values for the Coptic letters, have not yet reached the modern stage in which $\sigma$ has the value $\xi$. That character evidently still represents $\tau$; for it never appears as the equivalent of $\varsigma$, nor indeed at all, since there is no $\tau\xi$ in Arabic. To the third period belong Galtier's

\textsuperscript{1} Roeh. 272 ff.  \textsuperscript{2} Sob. 15.  \textsuperscript{3} Ch. 4, 23.  \textsuperscript{4} Ch.  
\textsuperscript{5} St.  \textsuperscript{6} Cat.  \textsuperscript{7} Sob. Mac.
Coptic liturgical texts in Arabic characters.\(^1\) By this time the priesthood must have been very ignorant of Coptic. The letter \(\sigma\) is always rendered by \(\mathbf{\check{\mathbf{e}}}\), since, as we have said, there is no \(\mathbf{t}\) in Arabic. That \(\mathbf{(\check{\mathbf{e}})}\) is the value which \(\sigma\) has at present. In addition to the actual decay of Coptic sounds under the influence of Arabic vernacular, the necessity of equating Coptic letters with Arabic letters must have led to the loss of the Coptic sounds for which there were no Arabic letters. That is why, as we have seen, \(\mathbf{\check{\mathbf{x}}}\) is now pronounced sometimes as \(\mathbf{g}\), with the value which \(\mathbf{\check{\mathbf{c}}}\) has in Cairo. The Patriarch moved from Nitria to Cairo in the eleventh century.

Still another change was taking place. The surviving types of Upper Egyptian and Middle Egyptian Coptic were being extinguished by the Lower Egyptian type. As a result the modern native tradition is first and last Bohairic, and not applicable to the other dialects. The special characteristics of Bohairic, in the broadest sense, are these: (1) a fuller vocalization, due to a slower manner of speaking;\(^2\) (2) the distinction between voiceless (aspirated) and half-voiced (unaspirated) stops;\(^3\) (3) loss of distinction between palatals and palatalized velars;\(^4\) (4) loss of 3 and 4, or the furtive vowels generated by them.\(^5\) Conversely, the other dialects have: (1) a highly consonantal character; (2) no voiceless (aspirated) stops; (3) the distinction between palatals and palatalized velars; (4) the 3 and 4, or the furtive vowels generated by them. European scholarship derived its conventional pronunciation originally through Stern and his predecessors from the native works on Coptic grammar and from the usage of modern Copts; and we have seen that this tradition was Bohairic. When this tradition was later applied to the study of the Upper Egyptian dialects misconceptions resulted. Since the history of \(\mathbf{\check{\mathbf{x}}}\) and \(\sigma\) in Bohairic was different from what it was in Sahidic, a problem was created which would not have existed if Sahidic had been studied originally and independently in connection with Old Egyptian. The fundamentally consonantal character of Sahidic was overlooked; the true character of the supralinear stroke was lost sight of; and the doctrine of the prosthetic vowel and the \textit{murmelvokal}—even the accented \textit{murmelvokal}\(^6\)—arose. Before anything can be done with the phonology of Coptic, it must be separated into its dialects. This

\(^1\) Gal.
\(^2\) Erm. Unt. Also true of Fayumic.
\(^3\) \textit{JEAS}, XV (1929), 191 ff.; \textit{JAOZ}, I (1930), 144 ff.; \textit{Till Gr.}, 13, 51.
\(^4\) Ibid.
\(^5\) Ibid.
\(^6\) \textit{Till}.
has been done in treating the grammar, but not in treating the sounds.

Modern Greek pronunciation, as we have seen, affected the phonetic theories of the Copts. Proper names appear to have been pronounced in the Greek way. This was natural in a community where Modern Greek was spoken, and in which the proper names were the most conspicuous common element. Probably the Greek loan-words also suffered similarly, at least the commoner and least assimilated ones. But there is not the slightest ground for believing that these words were pronounced differently from pure Coptic words in the oldest Coptic. Have we not assumed, and reasonably assumed, that Coptic was originally written in Greek letters according to the current Greek values of those letters? The introduction of Modern Greek pronunciation into Coptic nowadays is often an affectation: as though one were to pronounce all the French words in English according to the present usage of Paris.

If this is bad, how much worse it is to pronounce Coptic according to the artificial Erasmian Greek system, which belongs to no race, age, place or dialect; or according to the orthography of German or other European vernaculars, as when ες is made into oi.

Reluctantly it was decided to use signs drawn partly from the system of the International Phonetic Association and partly from the system employed by Semitists and Egyptologists. The former in certain respects is indispensable, while the latter in other respects is better adapted to the particular subject, and far more intelligible to orientalists.

To avoid misunderstandings a number of terms should be defined. The others are usual or self-explanatory.

A *stop* is a sound produced by a complete obstruction followed by an explosion. A *fricative* is a sound produced by an incomplete obstruction. An *affricate* is a composite sound produced by a complete obstruction followed by a cognate partial obstruction. An *intermittent* is a sound produced by an automatic series of complete obstructions.

A sound is *voiced* when accompanied by phonation, and *voiceless* when not. A stop is *voiced* when the phonation begins within the period of compression, before the explosion; it is *voiceless* when the phonation begins after the explosion, with an intervening breath-sound, h; and it is *half-voiced* when the phonation begins
exactly with the explosion. A voiceless stop is therefore by
definition aspirated, because it has a breath added to it. Aspirated
does not mean converted into the corresponding fricative. The
Greek letters θ, φ, χ originally stood for the aspirated sounds θh,
ph, kh, as the Latin spelling of Greek loan-words shows; and
were correctly described by the grammarians as aspirates. Later
on θ, φ, χ became the fricatives ŋ, φ, h/ʃ; but they continued to
be called, and still are called (though wrongly) aspirates.

A glottal sound is made by the glottis, the vocal chords. A
uvular sound is one made between the extreme rear of the roof of
the mouth (which ends in the uvula) and the extreme rear of the
tongue. A velar sound is made between the rear (soft) portion of
the roof of the mouth and the rear portion of the tongue. A palatal
sound is made between the front (hard) portion of the roof of the
mouth and the front portion of the tongue. An alveolar sound is
made between the roots of the teeth (alveolae) and the tip of the
tongue. A dental sound is made between the teeth and the tip of
the tongue. A bilabial sound is made between the two lips. A denti-
labial sound is made between the upper teeth and the lower lip.
A velar-labial sound is one made by simultaneous velar and
bilabial articulation.

A palatalized velar sound results from shifting the velar
articulation forward so as to approximate the palatal. Such
palatalized velars are distinguishable from the palatais and from
the similar sounding dental affricates.

Low, high, intermediate are rather conventional terms, supposed
to describe the height of the tongue in making a vowel. Close and
open mean, then, a somewhat higher or lower position. Front,
back, middle similarly describe the location of the mass of the
tongue in the mouth in making a vowel.
PHONETIC SYMBOLS
(in addition to the ordinary egyptological)

- over a sign indicates length (duration)
° over or under a sign indicates "half-voiced," voiceless but not aspirated
' glottal stop
h breath-sound
˘ compressed breath-sound
’ c compressed voice-sound, perhaps becoming a stop
q voiceless uvular stop. Cannot be aspirated
a voiceless uvular fricative
k voiceless velar stop (aspirated)
ƙ palatalized voiceless velar stop (aspirated)
g voiced velar stop
ğ half-voiced velar stop
ğ̃ palatalized voiced velar stop
ğ̈ palatalized half-voiced velar stop
h voiceless velar fricative
ğ̄ voiced velar fricative
ŋ velar nasal
c voiceless palatal stop (aspirated)
j voiced palatal stop
j̄ half-voiced palatal stop
ç voiceless palatal fricative
j̄ voiced palatal fricative
t voiceless dental stop (aspirated)
d voiced dental stop
d̄ half-voiced dental stop
p voiceless dental fricative
ş voiced dental fricative
s voiceless alveolar fricative
z voiced alveolar fricative
ts affricate combination of t and s
dz affricate combination of d and z
š voiceless broad alveolar fricative
ž voiced broad alveolar fricative
tś affricate combination of t and ś
dź affricate combination of d and ź
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>dental nasal</td>
</tr>
<tr>
<td>l</td>
<td>dental lateral</td>
</tr>
<tr>
<td>r</td>
<td>tip-tongue intermittent</td>
</tr>
<tr>
<td>r</td>
<td>tip-tongue intermittent with one stroke only</td>
</tr>
<tr>
<td>p</td>
<td>voiceless bilabial stop (aspirated)</td>
</tr>
<tr>
<td>b</td>
<td>voiced bilabial stop</td>
</tr>
<tr>
<td>ð</td>
<td>half-voiced bilabial stop</td>
</tr>
<tr>
<td>φ</td>
<td>voiceless bilabial fricative</td>
</tr>
<tr>
<td>β</td>
<td>voiced bilabial fricative</td>
</tr>
<tr>
<td>f</td>
<td>voiceless dentilabial fricative</td>
</tr>
<tr>
<td>v</td>
<td>voiced dentilabial fricative</td>
</tr>
<tr>
<td>w</td>
<td>voiced velar-labial fricative</td>
</tr>
<tr>
<td>a</td>
<td>low middle vowel</td>
</tr>
<tr>
<td>i</td>
<td>high front vowel</td>
</tr>
<tr>
<td>u</td>
<td>high back vowel</td>
</tr>
<tr>
<td>e</td>
<td>close intermediate front vowel</td>
</tr>
<tr>
<td>ø</td>
<td>open intermediate front vowel</td>
</tr>
<tr>
<td>o</td>
<td>intermediate back vowel</td>
</tr>
<tr>
<td>æ</td>
<td>intermediate middle vowel</td>
</tr>
</tbody>
</table>
CHAPTER I

SYLLABIC CONSONANTS, SUPRALINEAR STROKE,
"MURMURVOWEL"

Vowels serve as the sonant or syllable-forming elements, and
non-vowels usually serve as the consonant or associated elements
in those syllabic groups into which discourse appears to divide
itself as we listen. Accordingly, we speak of non-vowels as though
they were always consonant. The generic terms vowel and non-
vowel are confused with the functional terms sonant and consonant;
and sounds are said to be divided into the two generic classes of
vowel and consonant. When this is done it becomes difficult to
speak of the sonant-functioning of non-vowels; for in that case
one has to say that "the consonants are functioning as sonants."
Perhaps this bad terminology, with its implied division of sounds
into the two permanent classes of sonant vowels and consonant
non-vowels, is partly responsible for our inability to recognize the
unusual phenomenon of sonant non-vowels: for example, the non-
vowels l and r after t function as sonants. Any sound may be
made to appear as a sonant by contrasting it with a less audible
one. Nevertheless, the word consonant is firmly established in the
sense of non-vowel; and we shall so use it in the following
discussion.

In the more familiar languages consonants frequently function
as sonants, though this is usually concealed by the spelling. The
words battle, chasm, heaven are pronounced as though they were
spelled batl, kasm, hevn. More difficult consonantal combinations
occur in certain languages, such as Polish, Russian and Berber-
Arabic:¹ brzmi, brenie, pstre, zniesch, lbist, ktibt, gdint, ftlt,
ntint, qbylt, rbaht, nhelt.

Both Bohairic and Sahidic have consonantal combinations that
appear harsh and unusual. This is particularly true of Sahidic,
in which the sentence "And we bring old age" must be expressed by
the combination SHRUTANSHTETEL. There is slight reason for sup-
posing that the Copts who established this orthography wrote
otherwise than they spoke, systematically omitting their shortest
vowels: in the manner of Demotic,² yet not omitting most of the

¹ Stummë, passim.
² Sahidic Copts were perhaps not in contact with Demotic writing. See Till, 195f.
vowels, as Demotic does.\textsuperscript{1} It is easier to believe that these very short vowels had disappeared, as in Slavic, leaving syllabic consonants in their place. It is possible for us to pronounce this combination without vowels; and the Copts of Upper Egypt probably did so. But this long string of agglutinated elements required proper division into syllables if it was to be intelligible. There was danger of false division because there were no vowels to serve as sonorous centers of syllables. Proper division was insured by placing a stroke over a consonant that served in place of a vowel as such a sonorous center. The stroke extended backward or forward so as to include in part a preceding or succeeding letter that belonged to the same syllable. With these strokes or dashes the combination read \textsuperscript{2} \textsc{tnn-tmnt-hl-lo}, and was pronounced \textsc{ntn-tmnt-hl-lo}. Every vowelless syllable is marked by a stroke.

In Bohairic the same combination would be written \textsc{megettallo}. There was no danger of a false division of syllables; for the syllabic centers were plainly marked by vowels, which in this dialect had been preserved by a slower manner of speaking.\textsuperscript{2} Accordingly, in most cases there was no need of the supralinear dash. On the other hand there were cases of syllabic \textsc{n}, \textsc{h} and \textsc{g}, and also of a vowel's forming a syllable by itself. These were marked by a dot or grave accent. But the same dot or accent is placed above the first of two initial consonants. We cannot tell what it means in this case. Native tradition makes it a prosthetic vowel, which Stern\textsuperscript{3} believes to be due to Arabic influence. Perhaps a prosthetic vowel had been preserved from Old Egyptian by the fuller vocalism of Bohairic and its consequent aversion to combinations of consonants. In later Sahidic manuscripts this occurs, probably under Bohairic influence.\textsuperscript{4} When it occurs in earlier manuscripts it is very rare, and due no doubt to analogy or accident.

As we have seen, Sahidic has come to us with a Bohairic tradition. If we learn first the Bohairic form of the word above given, and then its Sahidic form, we pronounce the Sahidic form in the Bohairic way, with full vowels, and conclude that the supralinear stroke is only a sign for the vowel \textsc{e} or the prosthetic vowel. This is the doctrine of Peyron\textsuperscript{5} and of Stern,\textsuperscript{6} even though the latter recognizes that the stroke is a syllable-accent, invented for

\textsuperscript{1} Cf. early specimens of Bohairic in \textsc{Mer}, II, 57. They represent the vowels.
\textsuperscript{2} \textsc{Emm. Uni.}
\textsuperscript{3} \textsc{St. Gr. 10}.
\textsuperscript{4} \textsc{St. Gr. 10}.
\textsuperscript{5} \textsc{Pey. Gr. 7}.
\textsuperscript{6} \textsc{St. Gr. 42}. 
the purpose of preventing a false division of syllables.\textsuperscript{1} It is also
the doctrine of Mallon,\textsuperscript{8} Steindorff\textsuperscript{8} and Erman,\textsuperscript{4} while believing
the stroke to indicate a vowel, think that it was shorter than e, and
represent it by a small suspended e, the 
\textit{murmurvowel (murmel-
vokal)}. In the absence of any available definition of murmervokal,
and supposing it to be what Till\textsuperscript{6} calls it, the Hebrew \textit{shewa}, it is
evident that this idea, while an advance upon the earlier one, does
not go far enough. What Steindorff, Erman and Till call the
murmervokal is really the syllabic-functioning of a consonant. In
Erman's own example, "Hole den Wagen," hastily spoken, \textit{hole
dn vagn}, there are no murmuvowels. It is a well-known fact, set
forth in elementary books on phonetics long ago, that l, m and n
may be syllabic in German and in English. Jespersen\textsuperscript{6}
gives
\textit{hatten, binden, Handel, haben}, as \textit{hatn, bindn, handl, habm}; and
Passy\textsuperscript{7} gives similar examples. The Sahidic stroke (and the
Bohairic dot, in one of its functions) indicates a sonant consonant,
not an e nor yet a murmuvowel.\textsuperscript{8}

There is one phenomenon which makes it impossible to suppose
that the Sahidic supralinear stroke indicates a murmuvowel:
\textit{(shewa)}, and that is the so-called \textit{accented murmuvowel} in such
words as \textit{\textbf{tibh}, \textbf{tume}, \textbf{kime}, \textbf{kalve}, \textbf{pppe}}. We are told:\textsuperscript{9} "Ausser
dem (betonten oder unbetonten) e besitzt das Koptische noch den
unbestimmten Vokal (Murmelvokal), der im Anlaut oder Inlaut
des Wortes auftritt und betont oder unbetont sein kann. Er wird
durch einen über den Buchstaben gesetzten wagerechten Strich
bezeichnet." Now an indefinite vowel, a murmuvowel, a \textit{shewa} is
by definition a vanishing vowel in an unaccented syllable—an
extremely short, slight and indeterminate sound. The original
vowel vanished because there was no accent. An accented \textit{shewa}
would appear to be an absurd conclusion from a false premise.
Again we are told:\textsuperscript{10} "Die Konsonanten \textbf{b.m.n'p} werden nach
einem in geöffneter Silbe (§ 43) stehenden betonten e verdoppelt.
Das e tritt dadurch in geschlossene Silbe und wird (nach § 31) zu
einem durch den übergesetzten wagerechten Strich bezeichneten \textit{e}.
" The five words in question are derived from Egyptian forms of the
type of \textit{*sem'et}.\textsuperscript{11} In Sahidic their history appears to have been:
\textit{*sem'et} > \textit{*semmet} > \textit{*simmet} > \textit{simme}. The \textit{e} was assimilated back-

\begin{itemize}
\item[1] St. Gr. 9.
\item[2] Mat. Gr. 16.
\item[4] Erm. Unt.
\item[5] Till Gr. 8.
\item[7] Passy, 44 f.
\item[8] Sethe, in \textit{Sethe Vok.} 163 (cf. ZAS, LIV, 129), still thinks of it as a vowel, e.
\item[9] Sff. Gr. 17.
\item[10] Sff. Gr. 25.
\end{itemize}
ward, and the ε forward, to the β, m, n, l, r; and the result was a long sonant followed by a short consonant: ßβ, ßm, ßn, ßl, ßr. The five words are to be pronounced: ḫβē, σÎεμε, κÎεμε, κÎελ, κÎερε. In Sahidic these words never had an opened syllable. In Bohairic the history is different: *sem'et>*semet>semi. The ß was lost entirely, not assimilated.¹ The result was an opened syllable. But this is not a Sahidic phenomenon. Incidentally it is seen that a sonant β, m, n, l, r may be both accented and long; although a murmur vowel can, of course, be nothing but unaccented and short.

If any sound may be made to appear as a sonant by contrasting it with a less audible one, it follows that the only sounds that can never function as sonants are the least audible of the consonants, such as the voiceless stops.² All other sounds may function as sonants.

If we remove from the Sahidic alphabet the vowels, the monograms, o, ϕ, χ, γ, ζ, ψ, θ, those letters that are doublets of other letters, v, ς, the ß which does not occur in Coptic words, and the half-voiced (voiceless though unaspirated) stops, k, n, t, z, s, as being least audible, there remain h, λ, m, n, p, c, m, q, ς. It should be possible to show that all of these may function as sonants in Sahidic.

These sounds fall into two classes, the more audible, h, λ, m, n, p, and the less audible, c, m, q, ς.¹

Those of the first group function as sonants in both accented and unaccented syllables:

Accented:

| ßhē | κÎε | ßm̄e | κÎıe | ßp̄e |

Unaccented:

| ßbhō | ßh̄lo | ßm̄mo | ßn̄-γût | ßp̄o |

| ßwɔ̄t | ßt̄lɑ | ßwɔ̄t̄m | ßɔ̄t̄m | ßwɔ̄t̄p̄ |

Those of the second group function as sonants in unaccented syllables only:

| ßwɔ̄t̄m | ßm̄l̄w̄m | ßm̄m̄e | ßn̄w̄ɔ̄t̄m | ßeɔ̄t̄m | ßm̄o | ßk̄o |

| ßp̄n̄e | ßp̄ōr̄p̄ | ßt̄w̄ēq̄ | ßw̄t̄p̄ |

The letters c, q, ς when initial are usually without the stroke, though Steindorff⁵ writes ωνα-, ωνα- in the Future I.

We saw that voiceless stops cannot function as sonants, because there is nothing less audible with which to contrast them. For

¹ Cf. Till on the loss of ß in Bohairic.
² These three in Sahidic are always monograms.
³ Jasp. 191.
⁴ Jasp. 191.
⁵ Sfc. Gr. 134.
that reason we excluded the half-voiced (voiceless though unaspirated) stops, ṅ, ŋ, ʈ, ʈ, ʂ, ʂ. It is however a question whether they may not be considered as forming syllables under certain circumstances.

A continuous uniform sound appears to the listener to be (and therefore is) a single syllable. If an interruption of any kind occurs—whether it be a change of audibility, or a change of pitch, or any other change—the uniform sound breaks up into syllables. It is the change in the uniformity that produces the syllables. Again, in a series of sounds that are equally audible but differently articulated, syllables are produced by the changes necessary in passing from one articulation to another. If the language is of such a character and structure that single sounds convey a meaning—and this is the case in Coptic—effort is no doubt made to distinguish these sounds in meaningful combinations where they stand adjacent to sounds of equal audibility, or even identical sounds. In the case of voiceless (and therefore aspirated) stops this can be done by exploding the stop with mouth-pressure only. The series p̱kṯḵtp̱, pronounced carefully without any vowels, indeed while holding the breath, will illustrate the point. In the case of half-voiced (voiceless but unaspirated) stops this method is impossible, because the stop, if exploded at all, has by definition to pass directly into the following vowel, and there is no following vowel. The same thing is true of voiced (and therefore unaspirated) stops, and for the same reason.

As we shall see later on, the letters ṅ, ŋ, ʈ, ʈ, ʂ, ʂ stand in Sahidic for the half-voiced stops, ḡ, ḧ, Ḗ, ḕ, ḣ, ḣ. These sounds could not form syllables if placed in a series with one another. But there is no reason to suppose that they could not do so if they were, in this situation, and by exception, aspirated: ʈ, ʈ, ʈ, ʈ, ʈ. I do not say that they were aspirated; I suggest it as a possibility.

The sounds represented by ṅ, ŋ, ʈ, ʈ, ʂ, ʂ function as phonetically distinct members, and therefore in a sense as syllables, in a great variety of combinations with one another. The most difficult combinations appear to be lacking. (Of course, they may be combined with other sounds, but in such combinations they are consonant and not sonant.¹ We are interested now in their sonant-function only.) When final they receive the stroke, extending over half of

¹ So Ṱkha- of Future I according to St. Gr. 219, where Syf. Gr. 134 has Ṭkha-, indicating that the ṭ makes a syllable by itself, and does not serve as consonant with the following letter.
the preceding non-vocalic letter. When they are initial they are usually without the stroke. This is remarkable, since in this position pronunciation is most difficult. Bohairic here uses the supralinear dot or accent, to indicate perhaps a prosthetic vowel. The similar employment of the stroke in Sahidic is due either to Bohairic influence or to analogy with other letters which may properly receive the stroke. The latter explanation must be invoked to account for the persistent though rare occurrence of the stroke over the article in the combinations Ṣim-, Ṣem- in good manuscripts of perhaps the sixth century.

The following list of examples is not exhaustive; neither are the examples in every case drawn from a text. But I think all will admit them to be regular and possible.

You place, ἀραῳ
You flee, ἀρωτ
You strengthen, ἀτορ
You finish, ἀτορ
You remain, ἀτῳ

The mouse, ἀποι
The straw, ἀποῃ
The completion, ἀποῃ
The lie, ἀπωλ
The earth, ἀραᾳ
The portion, ἀπτω
The wall, ἀπῳ
The power, ἀτωμ
The burial, ἀτις
The heaven, ἀτῃ

Producing, ἀνο
Putting to bed, ἀτο

Perfecting you, ἀοκα
Receiving you, ἀοῃ
Your foot, ἀαᾳ
Throwing you, ἀοῃ
Scolding you, ἀεἰνοὐῃ

Choosing, ἀωῃ

Throwing me, ἀοῃ
Scolding me, ἀεἰνοὐῃ
Perfecting me, ἀοκα
Hiding me, ἀωῃ

We conclude then that Sahidic exhibits a great variety of sonant, or syllabic, consonants; that these are indicated by the well-known supralinear stroke; and that there is no murmuvowel in Sahidic.

1 See above, p. 12. The analogy is with the plural article ἰ- ἰ-.
2 St. Gr. 108.
CHAPTER II

UNVOICING AND DEASPIRATION: COMPLETE IN SOUTH,
INCOMPLETE IN NORTH

Stops are either voiced or voiceless, aspirated or unaspirated. When phonation begins before the explosion a stop is voiced. When a puff of air ensues upon the explosion a stop is aspirated. Voiced stops are normally unaspirated because the continuous phonation prevents a violent puff of air at the explosion. Voiceless stops are normally aspirated because the absence of phonation permits a violent puff of air at the explosion. It is possible, however, to prevent phonation before the explosion, so that the stop is voiceless, and to begin phonation at the explosion, so that the stop is unaspirated. There are then three types of stop: voiced unaspirated, voiceless-aspirated and voiceless unaspirated. For convenience we may call these voiced, voiceless and half-voiced. It is evident that a half-voiced stop may arise out of a voiced one through loss of phonation, or out of a voiceless one through loss of aspiration. Some languages or dialects have half-voiced stops only, as do southern German and Turkish. Most languages have voiced and voiceless stops, but the voiceless stops are pronounced so weakly in unaccented syllables that they lose their aspiration and become half-voiced.\(^1\)

In Sahidic the letters χ, φ, θ have only one function. They serve as monograms for ρχ, πφ, τθ. Thus one may write μοχτ or μοφτ, πφοθ or πφοτ, θοτε or τφοτε. Also the Greek word ῥαλακας may be written τραλακας. It is evident that χ, φ, θ or ρχ, πφ, τθ represent aspirated stops—voiceless stops followed by an h, a puff of breath. These are the ordinary k, p, t heard in accented syllables in English. They are also the values which χ, φ, θ had in early Greek.\(^2\) The letters χ, φ, θ could not have stood for h/χ, f, p, the fricative sounds which they have in Modern Greek and in the English-Erasmi pronunciation.

If k, n, t with a following c represent the voiceless aspirated stops, k, p, t, it is reasonable to conclude that k, n, t without a following c represent the voiceless unaspirated stops, g, b, d. These are the ordinary k, p, t heard in unaccented syllables in English. They are also the values which k, n, t had in early Greek.\(^3\) The

\(^1\) Jones, 24 f., 26 f.
\(^2\) Moulton, II, 44 f.; Pernot, 161 f.
\(^3\) Ibid.
difference between accented-aspirated and unaccented-unaspirated k, p, t is easily seen in the examples: cocoa, paper, total, pronounced kōk, pēbp, tōdī.

The letter n is equivalent to Egyptian p and b: nōq < ph, nān < db. The letter t is equivalent to Egyptian t and d: tōt < twt, to m < dm. The letter k with its palatalized variety, σ, is equivalent to k and g: kōm < kmm, σōn < kp, σwph < grg. The sounds of k, n, t resulted then from the unvoicing of g, b, d, on the one hand, and the deaspiration of k, p, t, on the other. The unvoicing and deaspiration are apparently complete in Sahidic, and k, n, t apparently have everywhere the values of the half-voiced stops, ĝ, b, d. Aspirated stops have not been preserved in accented syllables in Sahidic, nor have they arisen immediately before consonant (not sonant) b, l, m, n, p, oσ, as they have in Bohairic.

In Bohairic the letters x, ϕ, o do not serve regularly as monograms for rε, nε, tε; in fact, instances are hard to find. This is partly due to the Bohairic use of the stronger article, m-, n-, t-, instead of the weaker article, n-, t-, before g. And yet there are one or two cases of the use of o for tε which make it appear that Bohairic might have used x, ϕ, o for rε, nε, tε, as far as the values of the letters are concerned. We find oerpho and oetho, like Sahidic oerpho and oetho, from oephe and oeth. But Bohairic has tgemho and tegemho, where Sahidic has oamo and oamo, preferring the double symbol. On the other hand, even Sahidic may have tgemho, tao, etc., preferring at times the double symbol. In fact, one may say that the monogram was used often in Sahidic and almost never in Bohairic, while being equally possible in both.

But the chief function of x, ϕ, o is to represent the aspirated stops which occur characteristically in Bohairic in accented syllables and immediately before consonant (not sonant) b, l, m, n, p, oσ.

Examples:

<table>
<thead>
<tr>
<th>xλm</th>
<th>ϕαλ</th>
<th>ομ</th>
</tr>
</thead>
<tbody>
<tr>
<td>xβa</td>
<td>ϕβαι</td>
<td>οβα</td>
</tr>
<tr>
<td>xλαλ</td>
<td>ϕλας</td>
<td>ολα</td>
</tr>
<tr>
<td>xμε</td>
<td>ϕμει</td>
<td>ομει</td>
</tr>
<tr>
<td>xνας</td>
<td>ϕνα</td>
<td>ονα</td>
</tr>
<tr>
<td>xρο</td>
<td>ϕρι</td>
<td>ορι</td>
</tr>
<tr>
<td>xσαλ</td>
<td>ϕσαλ</td>
<td>οσαλ</td>
</tr>
</tbody>
</table>

1 Egyptian etymologies everywhere are from Ṣī. 2 St. Gr. 193, 194; Ṣī. 160, 161. 3 St. Gr. 13 ff. Sonant b, l, m, n, p do not occur in Bohairic. 4 Cf. unaccented forms: rεκελ, ρακελ, tαλ.
The arguments which have been used in the case of Sahidic apply equally well to Bohairic. If $\chi$, $\phi$, $\psi$ are equivalent to $\kappa$, $\alpha$, $\tau$, then $\chi$, $\phi$, $\psi$ represent aspirated stops, $k$, $p$, $t$, and $n$, $n$, $t$ represent unaspirated stops, $\dot{g}$, $\dot{b}$, $\dot{d}$. Only now we have corroboration of these values. Bohairic employs the letter $\phi$ instead of $n$ in accented syllables, regardless of whether $n$ represents Egyptian $p$ or $b$. It employs the letters $\chi$, $\psi$ instead of $k$, $t$ in accented syllables when $k$, $t$ represent Egyptian $k$, $t$, but not when they represent Egyptian $g$/x, $d$/d. It is plain that we have here, as in English, the aspiration of voiceless stops in accented syllables, and their deaspiration in unaccented syllables. Examples: kōgo, pēba, tōdīl (cocoa, paper, total), to be contrasted with southern German: gagāo, babia, dodāl (Kakao, Papier, total).

Egyptian $g$, $d$ are not aspirated in accented syllables, nor are English $g$, $d$. Examples: gagāoīl, dēdo (gargoyle, dado). Accent does not add aspiration to a voiced stop, but accent preserves the aspiration of an aspirated stop. Egyptian $g$, $d$ are evidently voiced stops, and so, unaspirated by nature. Egyptian $k$, if equivalent to Arabic $q$, is by nature an unaspirated stop, though voiceless. In later Egyptian it became confused in certain cases with the other unaspirated (though voiced) stop, $g$.\(^1\) Egyptian $d$ had become identical with $d$ in most cases in Middle Egyptian.\(^2\) Egyptian $b$ is aspirated in accented syllables for the reason that it had become identical with $p$.

We conclude, then, that Egyptian $k$, $p$/b, $t$ were preserved as voiceless aspirated stops, $k$, $p$, $t$, in accented syllables, but became half-voiced stops, $\dot{g}$, $\dot{b}$, $\dot{d}$, in unaccented syllables in Bohairic; that Egyptian $g$/x, $d$/d remained voiced unaspirated stops (or became voiceless unaspirated stops?) in Bohairic; that Egyptian $k$, $p$/b, $t$ became permanently deaspirated, and Egyptian $g$/x, $d$/d became permanently unvoiced in Sahidic. Unvoicing and deaspiration were thus complete in the south, but incomplete in the north. Sahidic $n$, $n$, $t$ always have the values of half-voiced stops, $\dot{g}$, $\dot{b}$, $\dot{d}$. Bohairic $n$, $t$, when equal to Egyptian $k$, $t$, have the values of half-voiced stops in unaccented syllables; but when they equal Egyptian $g$/x, $d$/d they have the values of voiced (or half-voiced?) stops in all syllables. $n$ is independent of origin.

\(^1\) Erm. Gr. 47.
\(^2\) Erm. Gr. 48, 49.
are examples of Bohairic ꙰, ꙱ in accented syllables, representing Egyptian ḡ, ḍ, and possibly still having the values g, d:

\[
\begin{array}{llllll}
\text{kay} & <\text{g}s & \text{koh} & <\text{k}b & t & <\text{d}j \\
\text{roxi} & <\text{gw}j & \text{roq} & <\text{k}h & \text{th} & <\text{d}j \\
\text{row} & <\text{gw}s & \text{rac} & <\text{k}tś & \text{t}m & <\text{d}mj \\
\text{rei} & <\text{k}j.t & \text{tou} & <\text{d}wn & \text{tun} & <\text{d}h\h \\
\text{tai} & <\text{d}nj.t \\
\end{array}
\]

Exceptions are to be noted: From Egyptian ḡbšt we should get in Bohairic ṭepḥ, but we find ṭepḥ; from tḥt we should get ṭepḥ, but we find ṭepḥ; from ḵrə we should get ṭepḥ, but we find ṭepḥ. The reason is not apparent. ʀo wikipedia is curious.¹

The aspiration of stops before consonant ḏ, ƛ, ʍ, ʢ, ʪ, ʪ has no parallel to my knowledge. The supposed Hebrew parallel, cited by Stern,² as well as the English and German ones, depends upon his mistaking fricatives for aspirates. It is a noteworthy fact however that this aspiration is secondary, depending in no way upon whether the original Egyptian stop was aspirated or not. For the most part the original Egyptian stop was not aspirated.

Examples:

\[
\begin{array}{llll}
\text{voiced³} & \text{voiceless} \\
\sigma\lambda\lambda & <\text{gll}/\text{krr} & \chi\delta \alpha & <\text{kbi} \\
\sigma\lambda\omega\lambda\epsilon\epsilon m & <\text{glmlm} & \chi\delta \delta & <\text{kbb} \\
\sigma\lambda\omega & <\text{glg} & \chi\lambda \lambda & <\text{kll} \\
\sigma\rho m m & <\text{gr p t} & \chi\rho o & <\text{kr} \\
\sigma\rho \mu & <\text{grpi} & \chi\rho \mu \rho & <\text{krm} \\
\sigma\rho \gamma & <\text{grh} & \chi\rho \mu \gamma & <\text{krmtst} \\
\sigma\rho \mu \mu & <\text{grg t} & \chi\rho \omega \gamma & <\text{kr} \\
\sigma\rho \gamma & <\text{dśr} \\
\sigma \delta \alpha & <\text{d} g \h & \sigma \delta \alpha & <\text{d} b f \\
\sigma \delta \gamma & <\text{d} r t \\
\sigma \lambda \nu & <\text{d} r t \\
\end{array}
\]

\[
\begin{array}{llll}
\text{aspirated} \\
\chi \rho \omega \mu & <\text{krf} \\
\omega \mu \nu & <\text{tme } t \\
\omega \mu \nu & <\text{tn nw} \\
\end{array}
\]

\[
\chi \rho \omega \mu <\text{ḥbw} \text{is curious.⁴}
\]

¹ St. Gr. 40. See Chap. VI, below.
² St. Gr. 18.
³ The g has been palatalized in every case in addition to being aspirated (unvoiced).
⁴ St. Gr. 43.
UNVOICING AND DEASPIRATION

The relationship of $\sigma$ to $\varkappa$ is exactly that of $\chi$, $\phi$, $\theta$ to $\upsilon$, $\pi$, $\tau$ in Bohairic. $\sigma$ stands for $\varkappa$ in accented syllables and immediately before consonant (not sonant) $\lambda$, $m$, $n$, $p$.\(^1\) Examples: $\sigma\lambda\nu\lambda$, $\sigma\mu\epsilon$, $\sigma\nu\omicron$, $\sigma\omicron$.

When $\varkappa$ is not aspirated to $\sigma$, that is because $\varkappa$ represents Egyptian voiced sounds, $g$/$\zeta$, $\theta$, precisely as in the case of $r$, $t$.

Examples:

- $\zeta\lambda\iota$ $<\gamma\mu\jmath$
- $\zeta\lambda$ $<\gamma\omicron$
- $\zeta\omega\iota$ $<\gamma\omicron\omicron$
- $\zeta\omega\lambda$ $<\gamma\omicron\lambda$

- $\zeta\omega\nu$ $<\gamma\omicron\omicron$
- $\zeta\omega\nu\nu$ $<\gamma\omicron\omicron\omicron$
- $\zeta\omega\nu\nu\nu$ $<\gamma\omicron\omicron\omicron\omicron$

- $\zeta\omega\nu\nu\nu\nu$ $<\gamma\omicron\omicron\omicron\omicron\omicron$

- $\zeta\omega\nu\nu\nu\nu\nu$ $<\gamma\omicron\omicron\omicron\omicron\omicron\omicron$

In nine cases the Bohairic form does not follow this rule if derived from the Egyptian prototypes given by Spiegelberg. In three of these cases he gives alternate prototypes, one of which will work, the other not. In six cases he gives one prototype, which will not work. All of these cases may be explained as Sahidic-New Egyptian or Sahidic-Demotic forms, in which voiced is written as voiceless, or the reverse, because the two are confused in the scribe’s pronunciation: New Egyptian or Demotic forms showing the phonetic influence of the Upper Egyptian dialect of those days upon the standardized literary language. This is striking proof of the antiquity of the distinctions between the dialects of Upper Egypt and Lower Egypt.\(^3\)

\(^1\) Combinations with the labials, $b$, $v$, do not occur.

\(^2\) Cf. the unaccented form, $\zeta\alpha\tau\omicron\omicron\omicron\omicron\omicron$, having the unaspirated $\varkappa$.

\(^3\) In the 19th dynasty (chiefly) scribes cannot hear the difference between Canaanitish $\digamma$ and $\tau$. Cf. Chap. VIII, Burch, I, 45.
Examples:

<table>
<thead>
<tr>
<th>BOHAIRIC</th>
<th>EGYPTIAN</th>
<th>SAHIDIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ꡑꡣꡰ&lt;</td>
<td>(Demotic) ꡥ&lt;</td>
<td>ꡡ&lt;</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(New Eg.) ꡘ&lt;</td>
<td>ꡡ only</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(Demotic) ꡚ&lt;</td>
<td>ꡝ only</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(Demotic) ꡚ&lt;</td>
<td>ꡝ only</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(New Eg.) ꡚ&lt;</td>
<td>ꡝ only</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(Hieroglyphic) ꡟ&lt; gives neither Boh. nor Sah. form.</td>
<td></td>
</tr>
<tr>
<td>ꡛ&lt; ꡥ&lt;</td>
<td>*ꡡ&lt; ꡝ only</td>
<td></td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(Demotic) ꡤ&lt; ꡝ only</td>
<td></td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(Demotic) ꡥ&lt; ꡝ only</td>
<td></td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(Demotic) ꡥ&lt; ꡝ only</td>
<td></td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(Demotic) ꡥ&lt; ꡝ only</td>
<td></td>
</tr>
<tr>
<td>ꡣ&lt;</td>
<td>(Demotic) ꡥ&lt; ꡝ only</td>
<td></td>
</tr>
</tbody>
</table>

The rule for finding the normal Egyptian prototype is this: If the Sahidic form has ꡡ, then the original sound was a palatal (true palatal, old palatal); if ꡠ, a palatalized velar (new palatal). If the Bohairic form has ꡡ, the original sound was voiced (unaspirated); if ꡠ, voiceless (aspirated).

Again, ꡠ stands before ꡥ, ꡩ(?), ꡪ, ꡫ without reference to whether the original Egyptian sound was aspirated or not, exactly as was the case with ꡯ. ꡯ For the most part the prototype was not aspirated.

Examples:

<table>
<thead>
<tr>
<th>UNASPIRATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ꡠ&lt;</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
</tr>
<tr>
<td>ꡣ&lt;</td>
</tr>
</tbody>
</table>

1 By assimilation of ꡡ to ꡠ.
2 It is possible that the Hieroglyphic form ꡟ is not directly related to ꡠ.
There can be no doubt that Bohairic ς is merely the aspirated form of ξ, with which it is otherwise identical. And, since ς/ξ corresponds to both Egyptian palatals and velars, it must represent the sound into which both palatals and velars could have been merged. That can be nothing but a palatal, c/f. The unaspirated form was normally voiceless, ʃ; but when it corresponded to a voiced sound in Egyptian, it was probably voiced (or half-voiced?): j. Of course, we cannot tell whether it remained palatal, or passed on into corresponding dental affricates: ts/zs/dz. Some support for this is found in the fact that ξ serves as a monogram for τυ-, in Bohairic as well as Sahidic: *τύψιο > ςψιο, *τύφιο > ςψιο. On the other hand, there is not enough of double consonance to require an e in the Sahidic definite article. Example: ςξοί.
CHAPTER III

NEW PALATALIZATION OF VELARs: COMPLETE IN NORTH, INCOMPLETE IN SOUTH

As we have seen in the previous chapter, Bohairic employs s for x in accented syllables. This cannot happen in Sahidic because there are no aspirated stops in that dialect, but only half-voiced ones, which are used in all syllables, whether accented or unaccented. The letters s/x cannot therefore represent, as they do in Bohairic, the aspirated and unaspirated varieties of a single articulation. They must represent in any case two half-voiced stops; and, since they are different, and the difference is not one of aspiration, the difference must be one of articulation.¹ We already have the velar, labial and dental stops represented by n, n, t. The only common articulation remaining for s/x is therefore the palatal. But s/x represents two varieties of an articulation. These may very well be the palatalized velar and the palatal. The velar is moving forward toward the palatal position, but has not yet reached it. The two remain distinct. If this is true, it should be possible to show that Sahidic s in every case is descended from an Egyptian velar, and Sahidic x from an Egyptian palatal. It is easily shown by the following examples:

<table>
<thead>
<tr>
<th>SAHIDIC</th>
<th>BOHAIRIC</th>
<th>SAHIDIC</th>
<th>BOHAIRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>σιμει</td>
<td>gmj</td>
<td>ξιμι</td>
<td>ζω</td>
</tr>
<tr>
<td>σά</td>
<td>γ</td>
<td>ξα</td>
<td>ζοι</td>
</tr>
<tr>
<td>σωμε</td>
<td>ɡb. t</td>
<td>ξωμι</td>
<td>ζοι</td>
</tr>
<tr>
<td>σωμεν</td>
<td>γt</td>
<td>ξωμ</td>
<td>ζοζ</td>
</tr>
<tr>
<td>σωμη</td>
<td>γθ</td>
<td>ξωμη</td>
<td>ζθ θθε</td>
</tr>
<tr>
<td>σομ</td>
<td>γμ</td>
<td>ξομ</td>
<td>ζομ</td>
</tr>
<tr>
<td>σομε</td>
<td>γ θ θ θ θ θ</td>
<td>ξομε</td>
<td>ζθ θθ θθ θθ θθ θθ</td>
</tr>
<tr>
<td>σομεν</td>
<td>γ θ θ θ θ</td>
<td>ξομεν</td>
<td>ζθ θθ θθ θθ θθ θθ</td>
</tr>
<tr>
<td>σομεν</td>
<td>γ</td>
<td>ξομεν</td>
<td>ζομεν</td>
</tr>
<tr>
<td>σομεν</td>
<td>θ</td>
<td>ξομεν</td>
<td>ζομεν</td>
</tr>
<tr>
<td>σομεν</td>
<td>θ</td>
<td>ξομεν</td>
<td>ζομεν</td>
</tr>
<tr>
<td>σομεν</td>
<td>θ</td>
<td>ξομεν</td>
<td>ζομεν</td>
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<tr>
<td>σομεν</td>
<td>θ</td>
<td>ξομεν</td>
<td>ζομεν</td>
</tr>
<tr>
<td>σομεν</td>
<td>θ</td>
<td>ξομεν</td>
<td>ζομεν</td>
</tr>
</tbody>
</table>

¹ Cf. St. Gr. 18 (top).
The exceptions can all doubtless be explained as due to dialectic influences, Demotic misspelling or assimilation:

Sahidic $\text{waw}/\text{waw} < \text{kkkh} >$ Bohairic $\text{waw}$.

The unpalatalized Sahidic form and the palatalized Bohairic form justify the prototype, but the palatalized Sahidic form is a bohairism and ought to be $\text{waw}$. Cf. $\text{waw}$, “grinding the teeth.”

Sahidic $\text{solh} <$ Demotic $\text{dddl} >$ Bohairic $\text{welxel}$.

The Sahidic form demands a velar, and the Bohairic form an unaspirated sound; and the prototype should be $\text{dddl}$ or $\text{kkkl}$. But $\text{dddl}$ seems to be a Demotic misspelling under the influence of Bohairic.

Sahidic $\text{soyr} <$ New Egyptian $\text{bdl} >$ Bohairic $\text{zorx}$.

The Sahidic form should be $\text{soyr}$, but the $\text{x}$ was assimilated to the preceding $\sigma$.

We see that Sahidic distinguishes two sorts of palatals: the palatalized velar and the true palatal. Bohairic makes no such distinction, but represents them both by the character $\text{x}$, except when aspiration demands $\sigma$, as set forth in the preceding chapter. Palatalization is thus complete in the north, but incomplete in the south.

The palatalization of which we have been speaking should be called the new or second palatalization of velars, to distinguish it from old or first palatalization of velars which was complete, so far as it went, at the very beginning of Egyptian history.¹ This earlier palatalization turned many velars into palatales. Some of these palatales moved forward one stage and became dentals.² Those that did not remained in the language down into the Coptic period, in both Upper and Lower Egypt. In Sahidic they are always represented by $\text{x}$; and $\text{x}$ always stands for one or the other of them: $\text{g}$, $\text{t}$. Examples:

$\text{waw} < \text{dd}$  
$\text{waw} < \text{g.t}$  
$\text{waw} < \text{dd}$  
$\text{waw} < \text{dd}$  
$\text{waw} < \text{dd}$  
$\text{waw} < \text{dd}$  
$\text{waw} < \text{dd}$  
$\text{waw} < \text{dd}$  
$\text{waw} < \text{dd}$  
$\text{waw} < \text{dd}$  
$\text{waw} < \text{dd}$  

1 Erm. Gr. 48.  
2 Erm. Gr. 48.
When the time arrived to write Egyptian in Greek letters as Coptic, the Sahidic dialect took the Demotic sign for Egyptian .Drop, and used it for  DROP, the unaspirated form of the old palatal. But, as Sahidic had lost the distinction between aspirated and unaspirated, this sign, DROP was used to represent Egyptian DROP, the unaspirated form of the old palatal, also. There was need, however, of another sign which might be used for the new palatalized velar, as distinguished from the old palatal. Accordingly the Demotic sign for DROP was chosen: apparently because in the Demotic of Upper Egypt it had that sound in the (comparatively few) cases where DROP was palatalized. Its use was then extended to represent all velar palalats—those arising from DROP and DROP, as well as from DROP. In Lower Egypt the case was different. The Bohairic dialect took the Demotic sign for Egyptian  Drop, and used it for DROP, the unaspirated form of the old palatal, as well as for the unaspirated form of the new palatal, arising from DROP and DROP, all of which were now indistinguishable from one another. But, as Bohairic preserved the distinction between aspirated and unaspirated, this sign, DROP, could not be used to represent DROP, the aspirated form of the old palatal, and the aspirated form of the new palatal, arising from DROP. There was need of a new sign which might be used for the aspirated palatal, as distinguished from the unaspirated one. Accordingly the Demotic sign for Egyptian DROP was chosen: apparently because in the Demotic of Lower Egypt it had that sound in the (comparatively few) cases where DROP was palatalized. Its use was then extended to represent all aspirated palalats. The very unobvious choice of the Demotic sign for DROP suggests that one dialect imitated the practice of the other; but priority cannot be established in the present case.

The new or second palatalization did not affect every word in the language; for, if it had, quite obviously no DROP would have survived in Coptic. We have RA<KMM, RO<KH, RAR<NK, RAR<KKF, RO<KK, RA<KM, RIM<KM.T, RO<KKP, RIM<KP, RO<KKR, HET<KF, and many other words. What caused palatalization in certain instances, or what prevented it in others?

Palatalization is due to a forward movement of the velar articulation toward the palatal articulation. It ought to occur therefore chiefly in syllables where the velar articulation is followed or preceded by a palatal vowel, i or e. Moreover, it should occur chiefly or entirely in syllables where the velar articulation is
followed (rather than preceded) by a palatal vowel;\textsuperscript{1} for palatalization is usually, if not invariably, progressive. Lastly, it should occur in words most commonly used. Therefore we may presume that palatalization occurred in Egyptian in commoner words having the syllables \textit{gi}, \textit{ki}, \textit{ki}. But examination of the Coptic words having a sound which is descended from Egyptian \textit{g}, \textit{k}, \textit{k} gives negative results.

The presence or absence of a palatal vowel apparently has nothing to do with palatalization; for we have \textit{khr}e where we should expect *\textit{khre}, and \textit{soh}e where we should expect *\textit{sohe}.

The position of the palatal vowel apparently has nothing to do with palatalization; for we have \textit{net} where we should expect *\textit{net}, and \textit{mut} where we should expect *\textit{mhurt}.

The commonness of a word apparently has nothing to do with palatalization; for we have no palatalization in the common words, \textit{khru} move, \textit{re} other, \textit{reec} bones; while we have it in the uncommon words, \textit{sephr} sin, \textit{sephr} hunter, \textit{seh} armor scales(?).

It may be said, of course, on the other hand, that the character or position of the vowels may have been very different at the time of the second palatalization; and that we cannot tell what words were commonest in everyday speech at that time.

As between the groups descended from \textit{g}, \textit{k}, \textit{k} respectively, we observe that the \textit{g} has far more often been palatalized than \textit{k} or \textit{k}. This is exactly the case in classical Arabic, where old Semitic \textit{g} became \textit{dž}, while \textit{k} and \textit{k} remained unaltered. Dialects show every step in the evolution. In Cairo original \textit{g} is still \textit{g}; in Upper Egypt it is \textit{g}; in certain parts of Syria and Palestine it is \textit{dž}, as in classical Arabic; in other parts it is \textit{k}. In some regions palatalization has affected the \textit{k} also, and even the \textit{k}; and there is evidence of this from very early times. There is no apparent reason for the earlier palatalization of \textit{g}; and the fact that it occurred independently in Egyptian and Arabic must for the present remain a coincidence. Probably palatalization started in some group of words where there was a phonetic reason, and then spread to associated words, until \textit{g} was palatalized everywhere. In Coptic we find the \textit{g} palatalized with very few exceptions, not only before palatal vowels: \textit{thw}, \textit{thw}, but before non-palatal: \textit{sw}, and even velar (anti-palatal) vowels: \textit{sw}, \textit{sw}, both accented, like those given, and unaccented: \textit{sw}, \textit{sw}, and before the sonorous consonants: \textit{sw}, \textit{sw}, \textit{sw}, \textit{sw}, all accented and unaccented, and elsewhere: \textit{sw}. The cases in which

\textsuperscript{1} Jesp. 172.
it is not palatalized are some in which it is followed by a neutral or a velar vowel, or by a consonant: ḫwmb, ḫwmb, ḫwb, ḫwmb, ḫwmb.

As for the groups descended from ḫ and k, we see that k for the most part is not palatalized, even before palatal vowels, whether accented: ḫwmb, ḫwmb, or unaccented: ḫwmb; nor before neutral or velar vowels, whether accented: ḫwmb, ḫwmb, ḫwmb, ḫwmb, or unaccented: ḫwmb; nor before the sonorous consonants, whether accented: ḫwmb, ḫwmb, or unaccented: ḫwmb, ḫwmb, ḫwmb, ḫwmb, ḫwmb. On the other hand, it is palatalized at times even before a velar vowel: ḫwmb, ḫwmb, or a sonorous consonant, accented: ḫwmb, or unaccented: ḫwmb.

The k-group for the most part is not palatalized, even before palatal vowels, whether accented: ḫwmb, ḫwmb, or unaccented: ḫwmb; nor before neutral or velar vowels, accented: ḫwmb, ḫwmb, ḫwmb, or unaccented: ḫwmb; nor before sonorous consonants: ḫwmb. On the other hand, it is palatalized at times before a palatal vowel (unaccented): ḫwmb, ḫwmb; and even before a neutral or velar vowel (accented): ḫwmb, ḫwmb, ḫwmb, ḫwmb, ḫwmb.

It is evident that the ḫ-group and the k-group go together in that they generally are not palatalized, while the g-group is palatalized but there are exceptions in all three cases which remain unexplained. The ḫ, if a uvular, and not a velar with a following glottal stop, should become palatalized less readily than the velar k, but both become palatalized with equal readiness. The common quality of ḫ and k, as contrasted with g, is voicelessness; and that is no reason for their not becoming palatalized.

Mixture of dialects in the case of certain loan-words may occasionally have disturbed the regular operation of palatalization. We have in English the doublets dyke and ditch, milk and milk. But there seems to be no way of tracing this in Coptic. Palatalization was not uniform throughout even Upper Egypt. Sahidic manuscripts show interchange of s and ḫ in both Coptic and Greek words, due doubtless to the particular dialect of the scribe. Even standard Sahidic has the doublets ḫwmb/dwmb, ḫwmb/dwmb. From Egyptian gsr is derived the Sahidic form ḫwmb. From a theoretical transposed form *gšr is derived the Bohairic form ḫwmb. Note that in the Sahidic form the s has apparently prevented the palatalization of the g; while in the Bohairic form the g (not followed by s) has become palatalized, and has then palatalized the s.

Altogether, it would seem that analogy has been at work as a

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1 The ḫ is consonantal.
disturbing factor in Egyptian as it probably was in Arabic. We have said that palatalization started perhaps in some group of words where there was a phonetic reason, and then spread to all members of the group. Such a group might be composed of all words having a voiced velar stop, \( g \). But the group might include words of similar meaning or reference, or words frequently used together, as when English \textit{rubbish} becomes \textit{rubbage} under the influence of \textit{garbage}, \textit{forage} and similar words. This would be difficult to trace in Egyptian. Lastly, the group might consist of all the forms of a given verb or noun. It is only necessary here that speakers of the language should feel that \textit{all forms of each verb or noun must have the same sort of velar: either all palatalized or all not palatalized.}

In English many people pronounce \textit{fungi} and \textit{sarcophagi} with the same unpalatalized \( g \) that they use in \textit{fungus} and \textit{sarcophagus}. In Italian the plural \textit{fichi} has the unpalatalized \( k \) of the singular \textit{fico}. In such cases the regular operation of palatalization before a palatal vowel has been \textit{prevented} by analogy with the form in which there is a non-palatal vowel. It is more difficult to find cases in which palatalization has been \textit{caused} by analogy, but they do occur. In the Spanish verb \textit{llevar} palatalization has spread from forms which had an \( i \) in accented syllables, \textit{llevo}, to forms which had an \( i \) in un-accented syllables, \textit{llevente}, etc.\(^1\) Now in Coptic there is undoubtedly the feeling that all forms of the same verb must have the same sort of velar: either palatalized or unpalatalized. The effect of this dogma is to maintain in forms with a non-palatal vowel the palatalization which is natural in other forms. So, the construct and qualitative forms, \textit{t\(\lambda\)l\(\alpha\)s\(\epsilon\)s, \(\lambda\)s\(\mu\)s, \(\tau\)s\(\s\)s}, produce the infinitive forms, \textit{t\(\lambda\)l\(\alpha\)s\(\mu\)s, l\(\alpha\)s\(\mu\)s, s\(\mu\)s}, instead of *\textit{t\(\lambda\)l\(\alpha\)r\(\alpha\)s, l\(\alpha\)r\(\alpha\)s, s\(\alpha\)s}.\(^2\) Much more often the effect is the precise opposite: the infinitives, \textit{r\(\alpha\)b, r\(\alpha\)r, r\(\alpha\)l, r\(\alpha\)l\(\alpha\)s, r\(\alpha\)s\(\mu\)s, r\(\alpha\)s, r\(\alpha\)p\(\alpha\)s, r\(\alpha\)t, r\(\alpha\)r\(\alpha\)q, r\(\alpha\)q}, produce the construct and qualitative forms, \textit{r\(\alpha\)b\(\mu\), r\(\alpha\)r\(\mu\), r\(\alpha\)l\(\mu\), r\(\alpha\)l\(\alpha\)r\(\alpha\), r\(\alpha\)s\(\alpha\)r\(\alpha\)}, \textit{r\(\alpha\)p\(\alpha\)r\(\alpha\), r\(\alpha\)t\(\alpha\), r\(\alpha\)t\(\alpha\)}, \textit{r\(\alpha\)q\(\alpha\)}, with unpalatalized velars before palatal vowels.

Assimilation may account for palatalization: for example, in \textit{s\(\alpha\)s\(\alpha\)s\(\alpha\)s} and \textit{\(\alpha\)l\(\alpha\)s\(\alpha\)s\(\alpha\)s} the first \( s \) has been palatalized by the second; otherwise we should have the forms *\textit{s\(\alpha\)s\(\alpha\)s\(\alpha\)s, \(\alpha\)l\(\alpha\)s\(\alpha\)s\(\alpha\)s}.

When did the new or second palatalization occur? It must have taken place chiefly at a time when \( k \) was still voiceless, like \( k \); for in the main \( k \) and \( k \) behave alike in their relatively great resistance to palatalization. Both stood outside the analogical \( g \)-group. In

\(^{1}\) For this fact and illustration I am indebted to my colleague, Mr. Hirsh Hootkins.

\(^{2}\) Egyptian originals, of course, with \( k \); for \( g \) would be palatalized anyway.
later Egyptian,\(^1\) evidently after the great movement of palatalization, the ḫ became identical with the g, as we found it to be still in Bohairic. To be sure, palatalization may have continued over a long period, especially the sort that is due to analogy. In fact, every instance of the palatalization of ḫ may be due to a late analogical association of certain ḫ-words with the g-group, to which they then belonged. But the fact that ḫ and ḫ in the main are not palatalized leads us to think that the great movement of palatalization occurred at an early date, before the ḫ and g had become identical.

The second palatalization is, physiologically considered, a forward shift of the point of articulation. The following change of ḫ to g is also a forward shift, from the uvular to the velar position. The changes may be diagrammed thus, with phonetic characters instead of egyptological ones:

\[
\begin{array}{c|c}
\text{Bohairic} & \text{Sahidic} \\
\hline
\begin{array}{cccc}
t & t & t & t \\
c & c & c & c \\
ƙ & ƙ & ƙ & ƙ \\
d & d & d & d \\
j & j & j & j \\
g & ħ & ħ & ħ \\
q & q & q & q \\
\end{array} & \begin{array}{cccc}
t & t & t & t \\
c & c & c & c \\
ƙ & ƙ & ƙ & ƙ \\
d & d & d & d \\
j & j & j & j \\
g & ħ & ħ & ħ \\
q & q & q & q \\
\end{array}
\end{array}
\]

Both changes are occasionally reflected in Egyptian orthography. For the correct form, glu, corresponding to Bohairic ḫαλα and Sahidic *σαλα, the Demotic text of the Rosetta Stone\(^2\) has ḫ, evidently under Bohairic influence. The scribe hears the g as completely equivalent to the old palatal, ḫ. In later Egyptian the ḫ is sometimes written with the sign for g.\(^3\) But the second palatalization and the shift of ḫ to g are not generally represented in the writing.

\(^1\) Erm. Gr. 47. \(^2\) Sp. 266. \(^3\) Erm. Gr. 47.
CHAPTER IV

OLD PALATALIZATION OF VELARS, THE FORWARD SHIFT
AND ITS MEANING

Quite distinct from the later palatalization of velars is the earlier one. It is common to both Egyptian and the ancestor of the Semitic languages. It had already taken place before the beginning of Egyptian, as known to us; and only traces of the earlier velar are found in Egyptian orthography.

Old Egyptian had, as first known to us, two palatals, 𓎘 (j) and ⲟ (c). The second of these arose, in some cases at least, from k; for we have the pronoun ḫw, with its earlier form, kw; the pronominal suffixes, -t and -tn, corresponding to Semitic *-ki and *-kinā on the one hand and *-ti and *-tinā on the other; the particle st, with its earlier form sk; and the noun tbw, with its earlier form, kbw. What the other palatal, j, arose from, we do not know; but presumably it was in many cases the counterpart of k, the voiced velar stop, g: cf. nḏr, dnḥ, َنَذَرَ, َذَرَاجَ. It is of course possible that both palatal arose in some cases from k.

The early palatalization is, physiologically considered, a forward shift of the point of articulation. It was followed (complete in the Middle Empire) by a further change of the palatals, j and c, to dentals, d and t. This was also a forward shift of articulation. Both changes may be diagrammed as shown at the side.

```
<table>
<thead>
<tr>
<th>t</th>
<th>t</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>k</td>
<td>k</td>
<td>k</td>
</tr>
<tr>
<td>d</td>
<td>d</td>
<td>d</td>
</tr>
<tr>
<td>j</td>
<td>j</td>
<td>j</td>
</tr>
<tr>
<td>g</td>
<td>g</td>
<td>g</td>
</tr>
</tbody>
</table>
```

Both of these earlier changes are abundantly reflected in Egyptian writing. The literary language, in cases where there was a choice between k and t, almost entirely got rid of the forms with k. From the Middle Empire onward the t in most words became t, and the j became d. Finally, the characters j and t became mere graphic variants, and were used interchangeably, as were also j and d.

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1 In this and the following chapters the writer has depended upon Erman, Sethe and Burchardt for certain data which, under the circumstances, it seemed unnecessary always to verify. The dependence is always indicated. It refers always to observations of fact, not to interpretations of fact, which are the writer's own.

2 Zimm. 69. Here Ethiopic shows an older stage than most Semitic languages, and older than Egyptian.

3 Erm. Gr. 48 f.

4 Erm. Gr. 48, 49, 56.
 Altogether, we have five regular processes of forward shifting of the point of articulation:

1. Velars (in some cases) became palatals.
2. These palatals (in some cases) became dentals.
3. Velars still remaining (in some cases) became partly palatalized.
4. The uvular became a velar.
5. The partly palatalized velars became in Lower Egypt completely palatalized; the g still remaining (in some cases) became by analogy partly (Upper Egypt) or wholly (Lower Egypt) palatalized. Meanwhile (?) two other changes were going on:

1. The disappearance of many short vowels in the dialect of Upper Egypt, in consequence of a faster tempo in speaking.
2. The unvoicing and deaspiration of stops: complete in Upper Egypt, incomplete in Lower Egypt.

We cannot tell when either of these changes began. It is impossible to diagram the first; the second can be diagrammed thus:

**Bohairic**

\[\begin{array}{c}
\text{t} \\
\text{d} \\
\text{c} \\
\text{j} \\
\text{k} \\
\text{g} \\
\text{d} \\
\text{j} \\
\text{g}
\end{array}\]

**Sahidic**

\[\begin{array}{c}
\text{t} \\
\text{c} \\
\text{k} \\
\text{j} \\
\text{d} \\
\text{g} \\
\text{j} \\
\text{g}
\end{array}\]

Before l, n, r in Bohairic the d, j, g (or at least the original q) became aspirated: t, c, k.

The five regular processes of shifting, and the unvoicing and deaspiration of stops, may be thus diagrammed (p. 34), supposing for the sake of simplicity that the unvoicing and deaspiration occurred at the end of the story.

\[1\text{ Chap. I.}\]

\[2\text{ Chap. II.}\]
No language can compare with Egyptian in the length of its observable history. The persistent forward shifting in Egyptian is very interesting, for it can be observed over a period of four thousand years or more, and it is one of the problems of general linguistics.

Palatalization is a common enough phenomenon. It occurred in the group of Romance languages, and then ceased to be operative. It is operative in Slavic and Abyssinian languages. No one knows why it begins and why it ceases, why it breaks out in certain regions or at certain times. The causes are ever present, like bacteria in the body, but the causes are not always operative. It appears, runs its course, dies out and leaves its scars. It is not the result of civilized life nor of barbarous life especially, but it is curious that Chinese and Egyptian, languages long used by civilized men, are found at last to have most of their sounds in the front of the mouth.

Forward shifting of articulations has possibly an explanation in physiology. Lips, tip of the tongue, front of the palate, all are more sensitive than parts farther back; and they give a stronger return sensation when they are moved, and when they are brought into contact with one another. Lips and tip of the tongue are more easily moved with precision than parts farther back. If, then, by any chance an articulation is made a little farther forward than usual, it is more likely to be remembered. And it will tend to be made farther forward, for that on the whole is easier. The front vowels and the front consonants favor one another.

Semitic speech is remarkable for possessing, and for preserving through several thousand years of observed history, a number of sounds involving laryngeal movements which are difficult to make and to perpetuate. It would seem that these Semitic-speaking peoples find less difficulty in making back-sounds than human beings usually do; else they would never have hit upon them, or would have got rid of them.
Development of Uvular, Velar, Palatal and Dental Stops in Egyptian

1 Before l, n and r in Bohairic d > t, j > c and g (or perhaps only q) > k.
CHAPTER V

ANCIENT PRESSURE ARTICULATION

The pressure articulation is a swallowing motion by which the larynx is raised. In its early form the glottis is closed, then the closure of the oral stop is made, then the larynx is raised, compressing the air between the glottis and the closure of the oral stop, then the explosion of the oral stop is made, and the closure of the glottis is exploded, either at the same time as the closure of the oral stop, or just after it. This articulation is still found in the western Hamitic languages, but not in the eastern ones.\(^1\) It is also found in the Semitic languages of Abyssinia. It once existed in Hebrew and Aramaic.\(^2\) A later form of the articulation consists in raising the larynx, so that the tongue is retracted, thus giving a velar or u-resonance and altering the dentals to alveolars. The effect upon the listener is one of u-resonance and of dentals made too far back. The effect upon the speaker is one of tension and of extensive contact between the tongue and the roof of the mouth. From their subjective effect these sounds have been appropriately called emphatics. Acoustically they resemble the ordinary voiceless stops, because like the latter they are not aspirated. One of their number, the emphatic velar stop (voiceless), \(\mathbf{k}\), by a fusion of the two articulations, becomes a simple uvular stop (voiceless), \(\mathbf{q}\). This later form of the pressure articulation is the one we know from Arabic. Along with these emphatic stops are also emphatic fricatives. Also there are two sounds that represent the pressure articulation in its purity, separate from any oral articulations. These are the \(^c\) and the \(\mathbf{h}\). They are found in languages having the earlier form, as well as in those having the later form, of the pressure articulation. We have now to ask the question: To what extent is the pressure articulation represented in Egyptian?

In the preceding chapters we have supposed that Egyptian \(\mathbf{k}\) was \(\mathbf{q}\), the uvular stop (voiceless). But, as \(\mathbf{q}\) in Semitic languages arose out of \(\mathbf{k}\), this may be supposed to have been the case in Egyptian also.

The remaining Semitic emphatic sounds are \(\mathbf{\delta}\), \(\mathbf{\gamma}\), \(\mathbf{\zeta}\) and \(\mathbf{\iota}\); and the pure pressure articulations are \(^c\) and \(\mathbf{h}\).

\(^1\) Meinh. Sp. under respective sections.\(^2\) Meinh. Em.
Egyptian ḫ corresponds to Hebrew š and y;¹ from which it appears to have been an emphatic sound. But we have supposed ḫ to have been j̄, and to have descended from a ǧ. There is no emphatic ǧ, but a sound very similar to ǧ (represented by p) arose in early Aramaic out of an old Semitic ṣr; and perhaps the same thing happened in prehistoric Egyptian. We do not know whether ṣr and p r are represented by this ǧ which became j̄; but s̄ certainly is.² The way in which ṣr, p r, s̄ could all become ǧ would be for them to lose their principal articulations and preserve their emphatic articulations in the form of ǧ, which then became g.³ The g might conceivably result from the pressure articulation through the raising of the back of the tongue.

Egyptian ḫ corresponds etymologically to Hebrew ṣ as well as ṯ. Hence we infer that one of its ancestors was the emphatic ṣ̄. The pressure articulation was lost, and the remaining sound was confused with ḫ because both were unaspirated dentals.

The emphatics therefore once existed in the speech from which Egyptian is descended, but they ceased to exist before the beginning of history. The ḫ̄ lost its pressure articulation and, under the influence of the same, became ḷ. The fricatives, ṣr, p r, s̄, lost their principal articulations and, under the influence of the pressure articulation, became g. The remaining stop, ṣ̄, lost its pressure articulation simply, and then became the same as ḫ.

The pure pressure articulations ẓ (voiced) and ḫ (voiceless) without any doubt existed in Egyptian. They are represented in Egyptology by these very characters. The ẓ retained its sound down into the Persian period,⁴ or perhaps even in Coptic.⁵ The ḫ became h in all Coptic dialects.

There is one difficulty in the case of ḫ: Initial ẓ at times becomes ı̂ when the word contains an ḫ.⁶ This is the reverse of what happens in the case of ḫ. It would seem to indicate that ḫ is not the voiceless counterpart of ẓ. But since there can be no doubt otherwise that ḫ is the voiceless counterpart of ẓ, we must conclude that these are cases of dissimilation of ẓ from ḫ, as ı from ẓ in Aramaic, not cases of assimilation.

¹ Erm. Gr. 49: 40: 蓿طقة. ² Erm. Gr. 49: ܒܕܝ = ܚܫܝ. ³ Erm. Gr. 40. ⁴ Erm. Gr. 40. ⁵ Till. ⁶ Erm. Gr. 41. Cf. Aramaic ḫ> ܟ ̄, and all such cases, in which a primary and a secondary ẓ occur in the same word.
CHAPTER VI
FRICATIVES

The chapters on palatalization were concerned with the stops only, since the fricatives do not behave like the stops in this particular. It remains now to gather together—partly to repeat—what may be said about the individual character of the fricatives. It will be seen at once that the movement of $h$ to $h$, and of $h$ through $\varsigma$ to $s$, is quite as definitely a forward shift as was the general history of the stops.

The voiced laryngeal fricative, $\acute{u}$, was produced by the pressure articulation with voice. It persisted down to the Persian period, or perhaps even into Coptic times. It is represented by a doubling of certain vowels in the Coptic of Upper Egypt.

The voiceless laryngeal fricative, $\acute{u}$, was produced by the pressure articulation without voice. At some time or other it became the voiceless glottal fricative, $h$. It is represented by $\varsigma$ in all dialects.

The emphatic voiced dental fricative, $\varepsilon\varphi$, and the emphatic voiceless dental fricatives, $p\acute{u}$, $s\acute{u}$, if they ever existed in Egyptian, became the (unemphatic) voiced velar fricative, $\acute{g}$. The old Semitic voiced velar fricative, $\acute{g}$, if it existed in the ancestor of Egyptian, must have united with the $g$ arising out of the emphatics, $\varepsilon\varphi$, $p\acute{u}$, $s\acute{u}$. All then became $g$, and ultimately $j$; and are represented by $\chi$ in all dialects. But before $\chi$, $\nu$, $p$ in Bohairic they are $\sigma$.

The voiceless glottal fricative, $h$, came down unchanged; and is represented in all dialects by $\varsigma$. In Sahidic it is evidently very weak. In some manuscripts it is frequently omitted, or placed with indifference before or after a vowel.

The voiceless broad alveolar fricative, $s$, came down unchanged, and is represented in all dialects by $\varsigma$.

There is some uncertainty about the values of the egyptological symbols $s$ and $h$, and hence also of the symbols $\varsigma$ and $\varsigma$. It would be strange if any language were without a plain $s$-sound and a

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1 Chap. III, IV. 8 Chap. V. 5 Erm. Gr. 40.
6 Till. 9 Stf. Gr. 14, 193. 7 Chap. V. 8 Stf. Gr. 16.
9 Chap. V. 10 Chap. II. 11 Stf. Gr. 16.
12 Stf. Gr. 16. $\varsigma$ differs from $s$ usually in that the tip of the tongue is lower and the lips rounded.
plain z-sound, particularly Egyptian, since the Semitic languages all have a plain s and z. The Egyptian sign s is probably etymologically equivalent to old Semitic z and ş,1 voiced sounds; and is confused in Egyptian writing with d,2 also a voiced sound, though it appears in all dialects of Coptic as s, a voiceless sound. The ş is not related to any voiced sound, nor ever confused with any. In order, then, to provide Egyptian with a plain s-sound and z-sound, it is necessary to suppose that the Egyptian sign s really represented z, and that the sign ş represented s; and that z (from z and ş) lost its voicing from the Middle Empire onward,3 and thus became plain s. That would explain why both Egyptian ş and s appear in all dialects of Coptic as c. To be sure, there is no reason why this fricative should lose its voicing in Egyptian: no general movement in Egyptian phonological history that would account for it. Nevertheless the unvoicing must have occurred, for Coptic has no z.

We now have to decide upon a value for ḥ. Since there is no doubt that ḥ is the voiceless velar fricative, ḥ,4 and since the sounds ḥ and h are already accounted for, there remains as a likely value for the egpytological sign ḫ the voiceless uvular fricative, which phoneticians represent by z.5 This sound is the fricative corresponding to the stop q. None of the Semitic languages distinguishes it from ḥ; but it may have existed sporadically in them, having no etymological significance. It has arisen in certain European languages. Early Egyptians may have thought it worth distinguishing from ḥ. If we may suppose that it was accompanied by a rounding of the lips, not an unlikely thing for such an articulation (notice the qu and gu in many languages), we can explain the use of the ş-sign to represent ḫ in very early Egyptian.6 Inherent u is a well-known characteristic of velar and uvular sounds in Abyssinian languages. Not every velar or uvular sound has ḫ, but it is a constant tendency, favored perhaps in some cases by an original u-vowel. Egyptian ḫ may then have been a voiceless uvular fricative with lip-rounding (inherent u). It is to be noted that ḫ is etymologically distinct in Egyptian. Even though confused with ḥ in the conventional language, it remained nevertheless separate from ḥ, and never became ş in Coptic.

The development of ḥ and ḫ is different in Sahidic, Bohairic and Achmimic.

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1 Erm. Gr. 46. 2 Erm. Gr. 46. 3 Erm. Gr. 46. 4 Erm. Gr. 45. 5 Pas. 88. Reasons for not believing it to be ş will be stated farther on. 6 Erm. Gr. 46 f. Normal ş is always rounded (lips).
In Achmimic nothing further happened after \( h (\text{a}) \) had become \( \text{h} \), which was by the time of the Middle Empire.\(^1\) Both are represented by \( \text{g} \) in Achmimic. The \( h \) remained distinct, and is represented by \( \text{q} \). The development may be diagrammed thus:

\[
\begin{array}{c}
  h & \longrightarrow & h \\
  a & & \\
  h & \longrightarrow & h
\end{array}
\]

In Bohairic and Sahidic a forward movement of \( h \) (necessarily through \( \text{c} \)) to \( s \) must have begun before or with the forward movement of \( h \) to \( h \); otherwise \( h \) (via \( h \)) would have become \( s \), which it never does. In the written language, however, the change of \( h \) to \( h \) occurs as early as the Middle Empire,\(^2\) while the change of \( h \) to \( s \) does not occur until Graeco-Roman times.\(^3\) We cannot believe that these changes occurred in reverse order in the written language from the order in which we know they must have occurred in Bohairic and Sahidic. We know that \( h \) never became \( s \) in the written language,\(^4\) and that it never became \( s \) in Bohairic and Sahidic. The only possible conclusion is apparently that in the written language, as in the spoken language, \( h \) had begun to shift toward \( c \) early enough (Middle Empire) to prevent the mingling of \( h \) in such cases with \( h \) (\( \text{a} \)). And, since we cannot imagine the order to have been reversed, the two shifts must have taken place simultaneously in the Middle Empire. Incidentally we are able to prove now that the value of \( h \) could not possibly have been \( g \) (as has been suggested by one very competent scholar); for, if it had been, \( h \) would, even more readily than \( h \), have moved forward to \( s \); but it never becomes \( s \). The Bohairic development may be diagrammed thus:

\[
\begin{array}{c}
  s & \longrightarrow & s \\
  c & & \\
  h & \longrightarrow & h \\
  a & & \\
  h & \longrightarrow & h
\end{array}
\]

\(^1\) Setha, 1, 154.  \(^2\) Setha, 1, 154.  \(^3\) Setha, 1, 152.  \(^4\) Setha, 1, 156. The apparent exceptions are survivals of the ancient use of the sign \( s \) for \( h \).
In Sahidic one thing happened which did not happen in Bohairic. The hipster which in some cases had not moved forward, and the hipster which arose out of ḫ, instead of remaining, as they did in Bohairic (where they are represented by ẓ), lost their velar articulation entirely and became a simple breath-sound, ḫ, represented by ẓ. The Sahidic development may be diagrammed thus:

\[ \text{ṣ} \rightarrow \text{ṣ} \rightarrow \text{ṣ} \]

\[ \text{ḥ} \rightarrow \text{ḥ} \]

\[ \text{ḥ} \rightarrow \text{ḥ} \rightarrow \text{ḥ} \]

There is some confusion between fricatives and their corresponding stops.

Egyptian b must very often have had the sound of the (voiced) bilabial fricative, ṽ, for b and w are interchanged.\(^1\) The circumstance that the Greek letter beta had the value ṽ led to confusion between ḫ and ẓ in carelessly written Coptic documents. The two facts are independent.

Egyptian ḫ sometimes became k in New Empire documents and sometimes appears as k in Coptic.\(^2\)

The Egyptian signs ṣ and s interchange with ḏ and d at times.\(^3\) This is explained by supposing that ḏ was dialectically pronounced ḏz, instead of the usual ḏ. The affricate, ḏz, is similar in articulation and in acoustic effect to the sound z, the earlier value of the sign s; and the signs ḏ and s might have been interchanged in an early stage of the language. Then, after ṣ and s had become interchangeable signs, and after ḏ and d had also become interchangeable signs, ṣ/s was interchanged with ḏ/d.\(^4\)

\(^1\) Sethe, I, 117, 121.  \(^2\) Sethe, I, 153.  \(^3\) Sethe, I, 164.  \(^4\) See Chap. VIII.
CHAPTER VII

VOWEL SUPPORTS

In Semitic and Hamitic languages there is a conscious categorical difference between consonants (non-vowels) and vowels. The consonants in a word express the nuclear idea common to the whole etymological group to which the word belongs; the vowels in the word express the generic idea common to the whole logical or grammatical group to which the word belongs. The consonants constitute the root and the vowels are the word-forming elements. Consonantal roots of this kind may consist of one, two, three or even more consonants. Semitic languages prefer triconsonantal roots; and, by one means or another, have succeeded in making most of their roots behave as though they consisted of three consonants. But the process has never been completed; and each Semitic language exhibits the evidence of various divergent experiments in this direction, and of words that are still non-conforming. Of all the Hamitic languages, Egyptian is the one which shows in the most marked degree the Semitic striving after triconsonantal roots.

A word cannot come into being in a Semitic language unless it is the happy conjunction of two analogies: one extending to a group of words having certain consonants, and another to a group of words having certain vowels in a given arrangement. The character and position of vowels in a word are determined by fixed mental patterns which have nothing to do with the consonants in that word. So, without using any consonants whatever, one may describe the mental patterns of Arabic and define their meanings:

-\text{-a-a-a} & \text{He (killed)} \\
-\text{-u-i-a} & \text{He was (killed)} \\
-\text{ā-a-a} & \text{He tried to (kill)} \\
-\text{-ū-i-a} & \text{Attempt was made to (kill)} \\
-\text{ā-i-u} & \text{A (killer)} \\
-\text{-a-i-u} & \text{(Murder)ed. (Power)ful} \\
-\text{ā-ā} & \text{More (power)ful woman} \\
-\text{-u-ai-u} & \text{Little (dog)}

But these patterns, and the host of others which might be cited, presuppose a trilliteral root, without which it is impossible to make up the forms demanded by speech consciousness. What, then, is

\footnote{Omitting an irrelevant final n here and in following examples.}
to be done with root-ideas which come into the language in one way or another and which actually do not possess three consonants? The consonants are used, as far as they will go; and where there is no consonant, the vowel is placed, without a consonant. With the vast number of biconsonantal roots this results in three possible forms: (1) those in which the first vowel has no consonant, ḥakala; (2) those in which the second vowel has no consonant, saala; (3) those in which the third vowel has no consonant, qaraa. But if we (no less than Arabs) try to pronounce such words, we find that we introduce a glottal stop, ʰ, before the otherwise naked vowels, and say: ʰakala, ʰaalu, qaraa. We do this, and the Arabs do this, because we begin every simple phonation with a closed glottis; and an explosion must take place before the voice can sound. But here there is a difference between the Arabs and ourselves. The existence of a vowel-pattern in the Arab mind makes it necessary for him to regard every interrupter of vowel sonority as a consonant. The vowel pattern is preserved in a manner satisfactory to his speech-consciousness by his regarding the glottal stop as a consonant. That is the reason why Semites and Hamites have put a sign for the glottal stop into their alphabet, and we have not.

In some words, however, which originally were like saala or qaraa, the two identical vowels run together, and the resulting length compensates the pattern-consciousness for the absence of a consonant; and we have forms like qāma, sāra, ǧazā, ramā. That is quite satisfactory for a while; but, when it is necessary to form words on patterns involving a doubling of the middle radical, such as -a-ä-u, or a long vowel after the middle radical, such as -a-i-u, there simply must be a middle radical. In that case a consciousness of long ū or ĩ in other parts of the inflection leads the speaker to introduce these sounds as consonants into the forms where consonants are needed: and we have forms like qawwānu, sajjāru, qawwānu. By a similar process, the pattern -a-ū produces from ǧazā and ramā the forms ǧazwū and ramju.

In this manner were evolved in Semitic three vowel supports, phantom consonants, having no part in the significant consonantal root. Because of the essential difference between Semitic and Indo-European speech-consciousness at this point, these sounds play an entirely different rôle in the two speech families.

This is not the place to assemble the many facts illustrating the interchangeability of the three phantom consonants, but a few may be mentioned. Initially, Arabic prefers w where Hebrew
VOWEL SUPPORTS

prefers j and Akkadian prefers ƙ, with w in the oldest stages of that language. Example: walada, jālad, ƙaćadu. But Arabic and Hebrew may have initial j where Akkadian has ƙ. Example: jaumu, jōm, ƙūmu. In certain Hebrew verbs, one part of the inflection is based upon initial j, other parts upon initial w. Example: jālad, ḥōlid. In Arabic, the consonantal outline of certain forms exhibits a medial j, while the finished pointing of the grammarians shows a ƙ. Example: ƙājī. In vulgar Arabic ƙ̣ and w are interchanged in words of the same class, or even in the same word. Example: ƙāzî, ƙāwiz, ƙājīz. The imperatives and infinitives of verbs which had the phantom initial consonant seem to have lost it, or rather, never to have had it. Example: kul, qiʕ, from ƙakala, waqafa.

In Egyptian we have, besides the glottal stop, ƙ̣, the j and the w, an ambiguous combination of the glottal stop and the j which egyptology writes ƙ̣. The ƙ̣ sometimes becomes j. In prehistoric times the j had perhaps already become ƙ̣. The confusion between w and j is very old. ƙ̣ There is no doubt that ƙ̣, j and w were mere vowel supports in Egyptian, as they were in Semitic.

Erman9 noted the great number of roots in Egyptian having ƙ̣ or ƙ̣ as one of the radicals, and the very great number having ƙ̣. He attributed this to a degeneration of stronger consonants, such as are found in the corresponding roots in Semitic. We have seen that ƙ̣ may arise from a primitive emphatic consonant; ƙ̣ and this may account for a certain number of cases. Within the known history of Egyptian the r has degenerated into ƙ̣, ƙ̣, j in some cases; ƙ̣ and a similar but more extensive degeneration of strong consonants may therefore have occurred in the prehistoric period of the language. In certain dialects of English the t in words like bottle, butter, water is accompanied (or preceded, or followed) by ƙ̣; and then drops out, leaving only the ƙ̣. ƙ̣ This may have been the process by which original strong consonants disappeared in prehistoric Egyptian.

On the other hand it is possible that the Egyptian roots, with their weak radicals, are more primitive than the corresponding Semitic roots with their strong ones. It is well understood that a great many Hebrew roots, now triconsonantal, possess a common biconsonantal root in which the meaning common to all the group seems to reside. ƙ̣ This does not prove that the shorter root was

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1 Sethe, I, 66. 2 Sethe, I, 116. 3 Ern. Verk. 126. ƙ̣ Chap. V. ƙ̣ Sethe, I, 140. This r was probably ƙ̣, with but one stroke of the tip of the tongue. ƙ̣ No other r would resemble ƙ̣. ƙ̣ Jesb. 79. ƙ̣ Ges. 101.
ever actually used in speech, but only that a large number of words came into existence through a general analogy with a word group, and with endless variation of the third radical, depending upon symbolisms, cross associations, fusion with other roots, and other forces which cannot now be traced. The less essential radical in these roots may be one of the vowel supports, or a repetition of the second radical, or any one of a variety of strong consonants. Where symbolisms, cross associations and the like did not occur, simple vowel supports were used as being sufficient to preserve the triconsonantal pattern of the word. If, now, Egyptian, of all the Hamitic languages, is the one which most exhibits that striving after triconsonantal roots which is the characteristic of Semitic, the Egyptian roots with weak radicals (vowel supports) are a monument to the time when the triconsonantal pattern—demanded by certain vowel patterns—had taken possession of the mind; while, on the other hand, the biconsonantal roots inherited by Egyptian were insufficient for such patterns.

Considered physiologically, the glottal stop, ʔ, is nothing but the glottal snap which most people make when they begin phonation. Phonation appears to be easier, or the effect more satisfactory—though for no very apparent reason—if begun with j or w; and these are easily obtained from neighboring vowels, i and u. Arabic raʾis and ruʾūs became rajis and ruwūs in the Meccan dialect (as we see from the orthography) under the influence of neighboring vowels. Arabic ʿaʾiz became ʿājiz and ʿawīz in vulgar (Egyptian) Arabic without reference to neighboring vowels. Newsboys in New York have turned extra into wextra, as more suited to proclamation. Singing teachers use ʔ before the vowels in their exercises, as being the best manner of beginning phonation; and this sound appears in the la-la-la-la of folk songs, as well as in the word ululation, “howling.” The change of weak consonants to strong ones, as vowel-beginners, would seem to be favored by a definite preference.

In summary, original biconsonantal roots of Hamitic, in being employed with vowel patterns which demanded triconsonantal roots, developed a meaningless excrecent ʔ as a new radical. This was sometimes replaced by the more convenient but equally meaningless j or w; and later by the still more convenient ordinary consonants, under the influence of analogy or the like.
CHAPTER VIII

TESTIMONY OF CANAANITISH WORDS IN EGYPTIAN FROM 1550 TO 750 B.C.

In this chapter we are not dealing with correspondence between words in Egyptian and Semitic which are related through descent from a common ancestor, but with correspondence between words in New Egyptian, which are evidently loan-words or proper names derived from some Semitic idiom then spoken in Canaan, and the later forms of these words as they appear in Hebrew. Even though we suppose that this Semitic idiom is the ancestor of Hebrew, though not actually Hebrew, there remain several difficulties: (1) We know nothing of New Egyptian sounds except what we may learn by indirect inquiries like the foregoing chapters. (2) We know nothing of the sounds of old Canaanitish speech except what we may learn from Hebrew—supplemented by Phoenician inscriptions, and Greek and cuneiform transliterations—and from the general study of Semitic phonology. (3) We do not know the circumstances under which the words passed from the one language to the other. (4) The so-called "syllabic writing," in which these words are represented in Egyptian, is something very different from ordinary Egyptian writing, since the signs are written with exponents which vary their meaning in given combinations, and even change the character of the consonant represented.¹

The Canaanitish variety of Semitic speech is known to us first through certain glosses in the Amarna letters of the fifteenth century B.C., then through the Mesha inscription of about 850 B.C.; then from Phoenician inscriptions, which in some cases go back to the ninth or tenth centuries or earlier, but in most cases are later than the fifth century B.C.; then from the Hebrew text of the Old Testament, parts of which are as old as the second millennium B.C., but little of which is older than 850, and all of which reaches us through medieval Jewish tradition. Furthermore, Hebrew is not necessarily pure Canaanitish, but rather the Canaanitish spoken by invading Aramaeans. There were dialectic differences even within Hebrew.² The Egyptian transcriptions of Semitic words and names are from the period of the eighteenth to the twenty-

¹ Burch., I. 45. ² Judges xii, 6.
second dynasties,\footnote{Burch., 1, 3.} or from about 1550 to 750 B.C. On the whole, then, though the Phoenician-Moabite and Hebrew remains are old enough to establish contact especially with the latter end of the Egyptian remains, they are known to us only through written texts, precarious transliterations in Greek and other languages, and a late Jewish or Samaritan tradition. The letters ネ, ナ, ル certainly had more than one value each, though later tradition fails to distinguish the difference by diacritical marks as it does in the case of ユ, ヨ. It is not inconceivable that the sign ユ even stood for a third sound, ピ, either at an early period, or in certain places; and that ワ stood for ベ as well as for ズ.

When words or proper names pass from one language to another, they may of course be transliterated according to some conventional system, but this is very rare even in modern times, and is not to be expected of Egyptians in their dealings with ancient Canaanites. Even after the Canaanites had invented an alphabet (on principles derived from Egyptian writing), it is not likely that Canaanitish words were represented in Egyptian by conventional transliterations into Egyptian equivalents. It is far more likely that the foreign sounds, being imperfectly heard, were represented by the most natural means at hand, the nearest equivalents in Egyptian as then written and pronounced. The Egyptians who wrote down these foreign sounds could have had few theories or prejudices. They were practical men. In our own day the English forms, Cairo, Aleppo, Acre are not very accurate renderings of the Arabic forms, al-qāhirā, ḥalāb, ʿakkā; and coffee, syrup, checkmate are very poor equivalents of qahwa, šarāb, sāh māt. Many family names among immigrants in the United States are easy English approximations to difficult foreign combinations of sounds. It must have been the same with Egypt and Canaan. Evidence derived from the spelling of words by a foreign people, speaking another language and writing in another system, though useful in connection with other and better evidence, is seldom important enough to refute it.

When a word passes from one language to another we have to consider two variable quantities: the actual sound in the original language, and the sound-value of the character by which it is represented in the borrowing language. A strange dialect of Arabic, as represented by unskilled travelers who speak a provincial form of English, would not be of much use, even though the travelers understood what they wrote down. Egyptian scribes, of course,
spoke definite dialects of their language, however well they wrote the conventional language. Also the Canaanites spoke different dialects in different parts of their country and in different periods of time. How much the scribes understood of Canaanitish, we do not know.

In the transfer of a word from one language to another, it is not the articulation that is observed and imitated, but merely the acoustic effect of the sound. In general, people hear only the sounds of their own language, or rather, the sounds of their particular dialect. This leads to substitution through acoustic error. Many Americans pronounce the German word König as though it contained the American r, and, left to themselves, would certainly write it so. Geography contains many examples.1

Conventional spelling may exist in an ancient language without its being known. Even classical Arabic—generally phonetic in its spellings—has its purely graphic conventions. Egyptian sometimes uses two signs where only one sound is to be expressed, as when I is represented by hr.2 The second sign may be a substitute for the first, as when an ancient pronunciation and a later one are simultaneously represented.3 “Syllabic spelling” appears to be a conventional system of representing foreign sounds, though of course not necessarily a system of transliterating Canaanitish letters.

It is well to begin with the most difficult problem in this chapter: the fact that Canaanitish ו, whose value must almost certainly have been s, is represented, not by the Egyptian signs š or s—both of which at this time must have had the value of simple s—but by the Egyptian sign ṣ plus 3 or w in the combinations ṣl and ṣ.4 Of this fact Burchardt says:5 “Im Folgenden haben wir die auf den ersten Blick befremdende Erscheinung zu beobachten, dass ein Konsonant auch ganz verschiedene Lautwerte, je nach den phonetischen Komplementen, mit denen er verbunden wird; während sonst die phonetischen Komplemente auf den Lautwert gar keinen Einfluss haben und nur die Bedeutung des betreffenden Konsonanten innerhalb der syllabischen Schreibung nüanzieren. Dieser Konsonant ist =.” Without a complement this sign stands for t (not š, as the variants show). This sign is used to represent Hebrew ו in the wordsboro and י, and the feminine ending ו quite

1 Taylor, Chap. XV.  
2 Borch., I, 46.  
3 Supply “hat.”  
4 Erm. Gr. 38.  
5 Burch., I, 45—47.  
6 Erm. Gr. 29.
generally. Only once, and then incorrectly, is it used to represent Canaanitish ꞌ. Its t-character is confirmed by the fact that it is used to represent Hebrew ꞇ. Only in combination with ꞊ or ꞈ, as above stated, does it have the value of ꞌ. It is not true, then, that New Egyptian ꞛ by itself represents Canaanitish ꞌ. Much less is it true that ꞛ etymologically and by itself corresponds to Semitic ꞌ. The truth is that, in these New Egyptian renderings of foreign sounds, the sign by itself represents only Canaanitish Ꞌ and Ꞅ. We offer the following as an explanation, in the absence of a better one.

New Egyptian ꞈ represents Canaanitish ꞃ only (?) in such words as have Ꞌ in Arabic (and hence in old Semitic). New Egyptian ꞑ, Ʝ, ꞓ represent Canaanitish ꞃ only (?) in such words as have ꞯ in Arabic (and hence in old Semitic). Examples: Ꝑ is ꝍ (سر); Ꝓ is ꝑ (لیر), and Ꝑ is Ꝗ (لیر). Uncertain: ꝝ is ꝶ, ꝛ is Ꝝ, and Ꝝ is Ꝝ. Old Canaanitish therefore possibly had the sound Ꝝ as well as ꝯ, and represented both of them by Ꝑ. But the Egyptians represented the sound ꝯ by their sign Ꝓ (with an exponent), because there was no ꝯ-sound in their language at that time, and because the sign ꝛ already stood for a similar sound, Ꝝ (or possibly even Ꝝ). Then, because Ꝑ (in many words still) was the voiceless counterpart of ꝑ, it was used (with an exponent) to represent Ꝝ, the voiceless counterpart of ꝯ. (To be sure, there is no apparent reason for not representing Canaanitish Ꝝ by Egyptian ꝕ or ꝛ.) Lastly, because there was no Ꝝ-sound in Egyptian, the sign Ꝑ (with an exponent) was made to represent that also. It was chosen possibly because Ꝝ sounded to the Egyptians more like a palatal than anything else, and the other palatal sign had already been taken.

Note that New Egyptian Ꝑ was probably pronounced Ꝑ in most words and Ꝝ in others (dialectically perhaps Ꝝ), and that these same sounds appear in the Coptic equivalents. It never could have been Ꝝ. But Ꝝ must have been Ꝝ. From the Twenty-second Dynasty (950 B.C.) onward, and perhaps even earlier, Ꝝ is represented by the Egyptian signs ꝕ or ꝛ. Thus all the evidence points to the conclusion that the New Egyptian combinations, Ꝝ and Ꝝ, are pure conventions, in use during one period only of Egyptian history, and having nothing to do with sound changes in Egyptian or Canaanitish.

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1 Burch., I, 45.  2 Burch., I, 45.  3 Burch., I, 45.  4 Burch., I, 46.  5 Burch., I, 46.  6 Roeder Gr. 6.  7 Burch., I, 49.  8 Chap. VI.  9 Chap. VI.  10 Stf. Alph. 718.
The remaining sibilants present a hardly less difficult problem. New Egyptian š corresponds to Hebrew š where Arabic has ث. This can only mean that the sound in old Canaanitish was ﷰ. It could not have been š at this time, for it would then have been represented by Egyptian ṣ. Neither could it have been s, for in that case it would have become confused with the š and would appear in Hebrew as ל. We conclude that original Semitic ﷰ, which remained ﷰ in Arabic and (by an unusual change that can only have been due to acoustic error) became š in Hebrew, was still ﷰ in New Egyptian times. Phoenician inscriptions represented this ﷰ by 𐤊, not distinguishing it from š. The Egyptians heard this ﷰ as s, and represented it accordingly by š. Example: ḫḏšt represents _resolver (_answers ) ḫḏšt ( ẖdšṭ )

New Egyptian š corresponds to Hebrew š where Arabic has ﺶ. This can only mean that the sound in old Canaanitish was ﺶ. It could not have been s at that time, for in that case it would have become confused with š and would appear in Hebrew as ל. We conclude that original Semitic ﺶ, which remained ﺶ in Hebrew (written ﻏ, later distinguished as ﻏ, finally confused with ل) and (by the regular forward shift of articulation from palatal to alveolar) became š in Arabic, was still ﺶ of course in New Egyptian times. Phoenician inscriptions represented this ﺶ by 𐤊, not distinguishing it from š. The Egyptians heard this ﺶ as s, and represented it accordingly by š. Example: šḏrt corresponds to реш (реш ) ﺤڑ� (resolve)

New Egyptian š corresponds to Hebrew š where Arabic has ﺶ. This can only mean that the sound in old Canaanitish was š. It could not have been s at this time, for it would then have been represented by Egyptian š; and in that case it would have become confused with š and would appear in Hebrew as ל. We conclude that original Semitic ﺶ, which remained š in Hebrew (written ﻏ, later distinguished as ﻏ) and (by the regular forward shift from alveolar to dental) became š in Arabic, was still š of course in New Egyptian times. Phoenician inscriptions represented this š by 𐤊, not distinguishing it from ﷰ and ﺶ. The Egyptians heard this š as š, and represented it accordingly by š. Example: šmš represents ﺳ ﻮ ( ﻮ ) šmš ( ﻮ )

Although this inquiry is about Egyptian sounds, not about

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1 Burch., I, 36.
2 Burch., I, 36.
3 Not реш, as Burch. has it.
4 Burch., I, 37.
Canaanish sounds, it may be well to recapitulate here some incidental conclusions touching the latter language. We have seen that old Canaanish had all the original Semitic voiceless sibilants, and in their proper places. It represented the simplest one by ס, and the rougher ones, פ, כ, ם, by י. This may still have been the case in pre-exilic Hebrew. But later on the פ (by acoustic error, since such a shift of articulation would be unlikely, if not impossible) became ס. Also, the כ (by acoustic error, since a shift through ם would have confused it with ס) became ס. But since orthography in such words demanded a י, that letter was still used, though careless writers gave up the traditional orthography and wrote simply ס. Many centuries later it became the custom to place a dot over the left horn of the letter, to show that it was really to be pronounced like ס.

By admitting these two cases of acoustic error in Hebrew, it is possible to preserve the values which are demanded by comparative Semitic phonology and by the phonology of Egyptian. The other sound changes are regular, and represent a forward movement of the point of articulation, from palatal to alveolar, and from alveolar to dental. Diagram:

<table>
<thead>
<tr>
<th>Original Semitic</th>
<th>Old Canaanish</th>
<th>Hebrew</th>
<th>Arabic</th>
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</thead>
<tbody>
<tr>
<td>ס</td>
<td>ס</td>
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<tr>
<td>ם</td>
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<td>כ</td>
<td>כ</td>
<td>כ</td>
<td>כ</td>
</tr>
</tbody>
</table>

For the voiced sibilants, ז, ר, both represented under the sign ט, the proofs are far from certain, as we saw earlier in this chapter; but their existence is hardly to be doubted if the voiceless counterparts were there.

As we shall see a little farther on, it is possible to suppose that the emphatic sibilants, ס', פ', כ', all represented under the sign ג, still were heard in Canaanish; and this is not unlikely, if the unemphatic ones still existed.

We may say, then, that the visible facts of orthography, in both Egyptian and Canaanish, are best accounted for by supposing that old Canaanish possessed the full range of sibilants accredited to primitive Semitic.

This supposition is brilliantly corroborated by the old Aramaic

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1 The first in Akkadian also, the second in Aramaic also.
inscriptions of Zinjirli and Nerab, and at the same time accounts for the well-known phonetic difficulty presented by them. Their ง, ง, ง must represent ง, ง, ง in certain words; for these words in later Aramaic have ง, ง, ง, which could never have arisen out of the normal values of ง those Canaanitish letters. For some time, then, it has been recognized that old Aramaic had these old sibilants. The difficulty lay in explaining why these sibilants were represented by ง, ง, ง. There is no difficulty whatever if we suppose, as our inquiry has led us to believe, that old Canaanitish, as well as old Aramaic, had the primitive sibilants; and that the Canaanitish letters were used with the same multiple values in both languages.

As we have seen, the New-Egyptian sign ง was used (with an exponent) to represent Canaanitish ง (ง). There was no ง sound in Egyptian at this time. The word ง, probably pronounced งait in Canaanitish, was heard as งait by the Egyptians, and written as งddt-(with meaningless ง) by them. But the word passed into the common language also as งait, and hence appears in Coptic as งoere. A parallel case would be that of Turkish or Persian words which contain the sound งs, and have passed into Arabic with the sound ง. Example: งíekeetrics, งíaknís.

For the most part ง represents Canaanitish ง. At first glance it would appear that ง in New Egyptian times had the value of Arabic ง, an “emphatic” ง, whose chief characteristic is an ง-resonance; and that Canaanitish ง also had this value, since ง is related to Hebrew ง and Arabic ง etymologically. But we have seen that the “emphatics” probably did not exist in Egyptian in historical times; and that the ง in New Egyptian times could scarcely have had any values but ง or ง. We are therefore forced to seek some other explanation. That explanation is found in the theory that Canaanitish ง was not, like the Arabic ง, an ง with an ง-resonance, but ง: an ง with a glottal stop; and that it also stood for ง and ง (since ง is Tópos while ง is Σiótov). It is not too difficult to suppose that these strange sounds, accompanied by the glottal catch, which were unlike anything in New Egyptian, were heard as ง, or at least were represented by ง, as the most appropriate sign under the circumstances. The word งíekeetrics, probably pronounced งíum งí in Canaanitish, was

1 Breck. Sfr. 65. 2 Burch., I, 49. 3 Burch., I, 49. 4 Chap. V. 5 Mein. Em. 6 If ง existed (cf. above), why not ง; and if ง, why not ง?
heard as ḥumḥ by the Egyptians, and written ḥmḥ by them. But the word passed into the common language also as ḥumḥ, and hence appears in Coptic as (Sahidic, Achmimic) $\varkappa\varkappa\varkappa$.

New Egyptian ṭ represents Canaanitish ṭ (t) at all times; but also ṭ (d), and that chiefly in the Eighteenth Dynasty. With the Nineteenth Dynasty they begin to use ṭ to represent ṭ. This confusion of the sounds ṭ and ṭ is not Canaanitish, but rather Upper Egyptian (Sahidic). The scribes are perhaps Upper Egyptian, and do not hear the difference between the voiceless-aspirated and the voiced-unaspirated stops. Examples: brute tŏh represents ṭōḥ, but tmśk represents ṭōḥ. Again, since the sign for ṭ had come to stand for ṭ also, the ṭ could represent Canaanitish ṭ.

New Egyptian ṭ represents, not only Canaanitish ṭ (as above), but also ṭ. As ṭ was pronounced ṭ in old Canaanitish, and there was no such sound in New Egyptian, this sound was heard by Egyptians as ṭ. The similarity between ṭ and ṭ lies in the fact that both are unaspirated. Examples: ḵds represents ṭōḥ, but ḵdbh represents ṭōḥ.

The word tŏh had an unusual history, showing that spelling may affect pronunciation even in the speech of the illiterate. In this word the Canaanitish ṭ, being a normal ṭ, was correctly heard by the Egyptians, and correctly represented by Egyptian ṭ. But the Upper Egyptian pronunciation did not distinguish ṭ from ṭ; and the Egyptian writing used the sign ṭ at times to express the ṭ-sound. So, in Demotic we find the forms ḵṭḥ and ḵṭmṭḥ (m arising from dissimilation of doubled ṭ). This spelling, with the sign ṭ, must have influenced the vulgar pronunciation (through the example of the educated), so that we find in Coptic খ dioxide (Sahidic). This must have been the course of events, since a real sound-change to account for it would be without parallel in Egyptian speech. It should be noted that incorrect spellings may finally influence pronunciation in Egyptian. Conclusions uncritically reached in such cases would necessarily be misleading.

New Egyptian ḵ represents Canaanitish ṭ (k) most often, but also ṭ (g), and that chiefly in the Eighteenth Dynasty. With the Nineteenth Dynasty they began to use ḵ to represent ṭ. This

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1. Burch., I, 49.
2. Burch., I, 45.
4. Chap. II.
7. Chap. II.
8. Sf. 270.
confusion of the sounds k and g (like that of t and d above) is not Canaanitish, but rather Egyptian (Sahidic). Examples: knn represents מנה, but mkt represents מנה.

New Egyptian g represents Canaanitish ג (g), but also ג (g). As Egyptian possessed no ג-sound, that Canaanitish sound was heard as g, there being an element of resemblance, since both are voiced velars. Examples: mgdr is מגדא, but mgdr is מגדא (מגדא).

New Egyptian k represents Canaanitish כ (k) most often, ג (g) nearly as often, ג (g) very rarely but certainly. At this time Egyptian k must have been pronounced q, but not yet g, since that change came later. It had lost its pressure articulation long before, and therefore could not have been pronounced k. The Canaanitish sound at this time was still k and not yet q. Therefore the reason for the rendering of כ by Egyptian k must be sought in resemblance, not in identity, of sound. That resemblance consists in the fact that both are voiceless unaspirated stops. Example: lskrn represents לזרן. The reason for the rendering of ג also by Egyptian k must be sought in resemblance of sound. Both are unaspirated stops. Example: kdr represents קדר. The reason for the rendering of ג by Egyptian k must also be sought in resemblance: this time between ג (g) and q, which in *turn* resembled כ, as we have seen. Example: knt represents קנד (קנד). In none of these three cases did New Egyptian possess the Canaanitish sound.

New Egyptian p represents Canaanitish פ (p) in most cases. Example: lsp is לָסְפָּא. In some few cases it represents פ (p). Example: hpr is בּוּר. This confusion between p and b is not Canaanitish, but rather Egyptian. We have seen that p and b were confused, even in Lower Egypt, so completely that in Bohairic Coptic the usual distinction between voiced and voiceless stops is lost. But the slight evidence for confusion in New Egyptian times points to dialectic influence rather than to a general condition. No distinction is made in those cases where כ is pronounced f in Hebrew, in consequence of being preceded by a vowel and not being doubled. Examples: ipk is פוֹקָנָי, ip is פ. Very few, or doubtful, examples indicate that f may stand for פ in such cases, or even where it would be pronounced p in Hebrew. This may

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1 Burch., I, 42.  
4 Chap. V.  
5 Mein. Em.  
7 Chap. II.  
2 Burch., I, 39.  
6 Burch., I, 17.  
3 Chap. III, Erm. Gr. 47.  
8 Burch., I, 17.  
9 Burch., I, 17, 18.
be due to dialectic peculiarities in Canaanitish. But there is no reason for thinking that, in the case of \( p \), or the other stops, \( b, t, d, k, g \), the corresponding fricatives, \( \theta, \mu, \delta, \theta, g \), were heard, when preceded by a vowel and not doubled, according to a well-known rule of Hebrew grammar touching these letters. Had this been true, confusions would have resulted with other letters having these sounds in older stages of Canaanitish; and New Egyptian representations of them would have been different from what they are. We found no evidence of this in the preceding sections.

New Egyptian \( m \) represents Canaanitish \( m \). Through an Egyptian sound change it also represents \( b \). Cf. Egyptian \( nb \) with Sahidic \( mbn \) and Bohairic \( mbn \).\(^1\)

New Egyptian \( n \) represents Canaanitish \( n \) in most cases. But it also represents \( \theta \).\(^2\) The combination \( nr \) also represents \( \theta \).\(^3\) The \( r \) (by itself) represents both \( \gamma \) and \( \theta \).\(^4\) Since we have no hint of any confusion of \( n \), \( l \), \( r \) in Hebrew, it is evident that these spellings are due to some peculiarity of Egyptian sounds or symbols.

In Coptic the situation is exactly parallel. While \( n \) stands for \( n \), it also stands for \( \alpha \). While \( r \) stands for \( p \), it also stands for \( \lambda \).\(^5\) Neither in Egyptian nor in Coptic is \( n \) confused with \( r \).\(^6\) It is \( l \) seemingly which is confused, with \( n \), or with \( r \). Either there was no \( l \)-sound in Egyptian, or there was an \( l \)-sound, but no special \( l \)-sign. All three sounds exist in Coptic. Egyptian \( ns \) must have been pronounced with an \( l \), because that word has an \( l \) in the Semitic languages as well as in Coptic: \( \pi\delta\gamma, \lambda\lambda\epsilon \). Egyptian \( \tau j \) must have been pronounced with an \( l \), because that word has an \( l \) in the Semitic languages as well as in Coptic: \( \tau\nu\nu, \lambda\lambda\epsilon \). There would seem to be no doubt that New Egyptian had an \( l \). The Canaanitish \( l \) was correctly heard; and was represented, like their own \( l \), by the \( n \)-sign or the \( r \)-sign, or by a combination of the two.

It is true that the Fayyumic dialects (with more or less consistency) have an \( \lambda \) where all the other dialects have \( p \). But the other dialects have both \( p \) and \( \lambda \); and it is more likely that \( r \) and \( l \) have fallen together in Fayyumic, than that they have been differentiated in the other dialects. At the same time, it is possible that Egyptian writing lay under the influence of people who pronounced the \( r \) in such a way as to remind one, of \( n \) on the one hand, or of \( l \) on the other. The sound \( r \) has many possible transformations, and must have been pronounced differently in Egypt.

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\(^1\) Burch., I, 22.  
\(^2\) Burch., I, 26.  
\(^3\) Burch., I, 29, 30.  
\(^4\) Burch., I, 32.  
\(^5\) Stf. Gr. 15, 16.  
\(^6\) Seeth, I, 134.
at different times and places. We saw how it might have been ăr. 1
American r and ăr are often pronounced in such a way as to be
indistinguishable to a German, and their place and manner of
articulation are very similar.

New Egyptian ḫ represents Canaanitish ḫ. 2
New Egyptian ḫ represents Canaanitish ḫ (ז). 3
New Egyptian ḫ represents Canaanitish ḫ (ך). 4
New Egyptian ḫ represents Canaanitish ḫ (ך). 5
New Egyptian ḫ and ăr represent Canaanitish ḫ. 6
New Egyptian ḫ represents Canaanitish ḫ. 7 Evidence for ḫ is
very unlikely. 8
New Egyptian ḫ represents Canaanitish ḫ. 9

Summary

The Egyptian attempts, between about 1550 and 750 B.C., to
render old Canaanitish sounds in Egyptian characters confirm in
general the conclusions which we have reached as to the character
of Egyptian sounds. Such difficulties as we have encountered are
scarcely greater than those which exist in English or French, or in
any language whose written records are affected by irrational and
decadent spellings. In no case is there evidence strong enough to
discredit the principles and values established by a systematic study
of Egyptian sounds in their entirety.

CHAPTER IX

REVIEW AND CRITICISM OF THE STUDY OF THE VOWELS
BY OTHERS

The foregoing chapters have been devoted exclusively to the consonants of Egyptian and Coptic, and nothing has been said about the vowels. That is because the vowels must be studied by a method different from that used for the consonants.

The method for the consonants has been to rationalize the apparent sound-changes from the fairly well known values of the consonantal signs of Egyptian and Semitic, to corroborate or correct these values by successive approximations, and to test the results by the renderings of Semitic into Egyptian. But the rationalization of the vowel changes in Egyptian when these changes do not appear in Egyptian writing is impossible. There is nothing to corroborate or correct. Instead one must take the theoretical values of proto-Semitic and the fairly certain vowels of Coptic, and write the entire intervening history, testing the results by cuneiform and Greek evidence, of which the former is by nature unsatisfactory. This has been done by Sethe\(^1\) and Albright\(^2\), and Sethe's results have been clarified and applied by Till\(^3\). At present the inquiry cannot be pushed further, nor the method improved upon. We shall, therefore, be content with a summation of results, and merely add occasional comment or criticism.

The Hamito-Semitic prototype from which Egyptian is descended is assumed to have had a weak accent, limited to one of the last three syllables of a phonetic complex. Compound words were accented in the first member, and this was true down to the end of the Old Kingdom, possibly down to the end of the Middle Kingdom. Many roots were still triconsonantal which later became biconsonantal through phonetic decay. The Semitic case endings had disappeared from Old Egyptian, and final ū and ū from Middle Egyptian or even earlier.

Somewhere in the course of Middle Egyptian or even earlier the accent became strong and was limited to one of the last two

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\(^1\) Sethe Vob.
\(^2\) Albright Prin. His Notes on Egypto-Semitic Etymology in AJSL, XXXIV (1918), 81 ff. and 215 ff., are still interesting.
\(^3\) Till Gr., Till Fay.
syllables. Compound words were accented in the second member. Many roots became biconsonantal by phonetic decay. The strong accent preserved the vowel on which it fell, the only remaining full vowel in a phonetic complex. In an open syllable it was long; in a shut syllable it was short. Accented originally long vowels in shut syllables became short. Accented originally short vowels in open syllables became long. Unaccented originally short vowels in shut syllables became very short or indistinct. In open syllables they disappeared whenever it was possible thereby to throw the initial consonant back upon a preceding syllable of the same kind and close it. This caused a new syllable division by which all unaccented syllables became shut syllables. Their vowels therefore—like unaccented originally short vowels in shut syllables—became very short and indistinct. (In the dialects of Upper Egypt, we may add, these vowels under certain conditions gave place to syllabic consonants.) When there resulted a double consonance at the beginning of a word, a helping vowel was placed before it.

New Egyptian finds all these changes accomplished. New Egyptian is the vulgar dialect of Thebes, the direct progenitor of Sahidic Coptic. ("Sahidic" only in the general sense of "Upper Egyptian.")

The quantity of Coptic vowels was established in Old Egyptian, except for the quiescence of [i] under certain circumstances, and the shortening and lengthening of vowels in Bohairic. The syllable division of Coptic was established in Middle Egyptian or earlier. The quality of Coptic vowels, on the other hand, developed after New Egyptian. (Here the Coptic dialects show a divergence from one another which groups them differently than does their consonantal divergence; for, while Bohairic and Sahidic are radical in the matter of their vowels and the rest conservative, the valley, as a whole, and the Delta are each more conservative than the other in certain respects in the matter of their consonants.)

The quality of Egyptian vowels is far more difficult to determine than their quantity. Indeed their quality in unaccented syllables can hardly ever be determined, because in such syllables they have become short or obscure, or have disappeared. But in accented syllables their original quality may be inferred, since in such syllables they have suffered no shortening or obscuration.

The vowels of Coptic may be derived ultimately from the supposed vowels of proto-Semitic by perfectly natural sound

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1 Chap. I. But less often in Fayyumic.  
2 Chaps. II, III.
changes. (To be sure this tells us nothing of the vowels at any
given stage of Egyptian.) There were probably originally, as in
Semitic, three vowels, a, i, u, each of which could be long or short.
The most frequent by far, as in Semitic, was a. The most infre-
quent by far was u. (In fact there is grave doubt that u existed.
Till\textsuperscript{1} leaves it entirely out of his elaborations, though Sethe and
Albright employ it in theirs. The evidence is derived from trans-
literations into cuneiform, few in number, and doubtful, because
cuneiform is a bad system into which to transcribe anything, and its
vowels are by no means certainly known. Albright's\textsuperscript{2}
postulated change of \(\ddot{u}\) to \(\varepsilon\) is, so far as we know, unparalleled in any
language, and it is possible only through an intermediate stage of rounded
front vowels. Semitic \(u\) does not become \(e\) in Ethiopic, as Albright\textsuperscript{2}
alleges, but the obscure vowel \(\alpha\), as we know from living tradition.
It is quite conceivable that cuneiform in writing \(u\) really meant to
indicate \(\alpha\), perhaps their nearest equivalent for the foreign Egyptian
sound \(e\).)

Original \(a\), which could occur only in accented shut syllables,
changed to \(o\) some time within the New Egyptian period, and
emerged as such in Sahidic and Bohairic. But \(a\) survived in
remote places, and emerged as such in Fayyumic, Achmimic and
sub-Achmimic. To be sure, \(o\) appears in Achmimic and sub-
Achmimic (never in Fayyumic), and \(a\) appears in Sahidic and
Bohairic, under certain circumstances. Also this \(a\) sometimes
becomes \(e\) in Fayyumic and Achmimic (never in sub-Achmimic).
The \(o\) becomes \(\ddot{o}\) in Bohairic in certain positions.

Original \(\ddot{a}\) (and \(a\) which had become \(\ddot{a}\)), which could occur only
in accented open syllables, changed to \(\ddot{o}\) in the New Egyptian
period—after the fourteenth century. (External evidence that this
sound was \(\ddot{u}/\ddot{o}\) after the fourteenth century and \(\ddot{o}\) only after the
seventh century is hardly to be taken seriously, especially since \(\ddot{u}\)
is reached through \(\ddot{o}\) and not the reverse. Our writers admit that
there would have been a development of \(\ddot{a}\) through \(\ddot{o}\) to \(\ddot{u}\) and back
to \(\ddot{a}\). Such cycles—and Albright speaks of several—we should be
slow, though not unwilling, to admit. May they not be explained
by supposing that there were dialects? A progressive dialect might
be in evidence at an early date and then drop out of the picture.)
This \(\ddot{o}\) emerged as \(\ddot{o}\) in all dialects of Coptic. The original \(\ddot{a}\)
now survived, and nowhere appears in Coptic.\textsuperscript{3} Neither does it

\textsuperscript{1} Till Gr. 35; cf. Till Fay. 21.
\textsuperscript{2} Albright Prin. 66, 68.
\textsuperscript{3} Fayyumic \(a\) in \(\texttt{itaten}\) is short.
become ē or ĩ. But Ẹ quite regularly becomes ā (if indeed this is not an older stage of the vowel) after m and n in all dialects, and in certain other locations in the different dialects. (The reason for this does not appear, nor can the dialects be grouped with respect to it.)

Original ī, which could occur only in accented shut syllables, changed to e very early in Egyptian. Later on it became a, and emerged as such in Sahidic and Bohairic. But e survived in remote places, and emerged as such in Fayyumic, Acmimic and sub-Acmimic. To be sure a appears in sub-Acmimic, and e in Sahidic and Bohairic, under certain circumstances. It disappears in favor of a syllabic consonant in Sahidic, Acmimic and sub-Acmimic under certain conditions. The e becomes ē in Bohairic in certain positions. In other positions it becomes ē in Fayyumic.

Original ī (and ĩ which had become ī), which could occur only in accented open syllables, changed to ē in the New Egyptian period—after the fourteenth century. This ē emerged as ē in all dialects of Coptic. But the original ī appears in certain cases and certain words in all dialects, and in additional cases in Acmimic. The ē becomes e in Bohairic in a certain position. In other positions it becomes e in Bohairic and Fayyumic.

All these changes might be roughly diagrammed thus:

```
  ī
    ī
  ī
    ī
  ē
    ē
  ē
    ē
  e
    e
  a
    a
  a
    a
  ā
    ā
    o
      o
    ō
      ō
    ū
```

Old values were preserved in remote places, and elsewhere under certain conditions, and in one case the vowel moved forward; but in general, and in marked contrast to the consonants, the movement of the vowels is backward.
PART II
COPTIC DIALECTS
CHAPTER I

THE GEOGRAPHICAL-GENETIC RELATIONSHIP OF THE FIVE COPTIC DIALECTS

There are five literary dialects of Coptic: Bohairic (B), Sahidic (S), Fayyumic (F), Achmimic (A), and “sub-Achmimic” (A₃). The variations within F, though many, are not of a character to warrant its subdivision. On the other hand, A and A₃ are quite distinct. In the sixth and seventh centuries considerable phonetic variation comes to light in the misspellings of Theban documents and in manuscripts from different places within the valley.¹ Such regional differences must have existed earlier, but failed to express themselves in separate literary dialects. Most scholars are agreed² that B is native to some part of the Delta, although there is difference of opinion as to when it was first employed as a written language. F belongs certainly to the Fayyum, but it spread into the valley. The remaining dialects belong somewhere in the valley; but where each of them was originally spoken, or whether indeed they may not be phases in the evolution of a single dialect, is a matter of dispute.

The important question of the geographical-genetic relationship of the Coptic dialects is difficult to answer because the evidence is scarce and contradictory. There is no science of Coptic palaeography because so few manuscripts are dated. Rarely is the local origin known. Books were carried from one end of the country to the other. Sir Herbert Thompson's palimpsest³ was written in Wadi Sarga,⁴ as the colophon shows,⁵ but was taken to the Natron Valley⁶ where—probably because of its uselessness there—it fell into the hands of Syrians who employed it as writing material. The only “Achmimic” manuscript whose provenance is certainly known came not from the city or region of Achmim, in Region V,⁷ but from the Fayyum.⁸ Here also, if reports may be believed, manuscripts in sub-Achmimic were discovered in 1931. The sub-Achmimic  Acta Pauli⁹ which ought to have been found north of Achmim,¹⁰ is suspected of having come from Assuan.¹¹ Graffiti are not conclusive evidence for the dialect of the region in which

¹ Part II, Chap. III. ² Part II, 67. ³ Thompson Pal. ⁴ Region IV, Map 1. ⁵ Cram W5, 8. ⁶ Region I. ⁷ Cram Fay., No. ii. ⁸ Region III. ⁹ Schmidl. ¹⁰ Region V. ¹¹ Region VI.
they are found, especially when they are mixed in character, as are those of the region of Achmim. The Arabic spelling of Egyptian place-names ought to be good evidence of the local dialect, but is not generally accepted as such. No evidence, it seems, would be convincing except the living word, and that has passed away forever. Nevertheless, it may be possible, by the study of the geography of Egypt and the overlapping of phonetic characteristics, to arrange the known facts so as to present a plausible theory of the origin and distribution of the dialects. Here it is necessary to recognize the relativity of evidence.

Egypt consists of two naturally distinct parts: 1, a river valley, over five hundred miles long, shut in by deserts; 2, an alluvial plain, lying between the mouth of the valley and the Mediterranean Sea. From earliest times the people of the valley, Upper Egypt, have been distinct from the people of the Delta, Lower Egypt, in sentiment, and probably also in speech. Within the valley there is but one spot at all comparable to the Delta as a place where decided differences of speech might develop—the Fayyum. The rest of Upper Egypt is so nearly uniform that only a spectrum of dialects would be likely. And yet, up to the point where the Nile turns sharply eastward toward Qena, it is the western shore of the river that presents the larger and more important area. Here are all the chief cities and settlements. The eastern shore is narrow. The edge of the plateau, the Arabian desert, approaches the river at times so closely that it actually reaches the water, allowing only a narrow pathway of communication, or none at all. The result is a number of pockets, three or four, according to the criterion of separateness. Now these pockets, while not of course to be compared with the Fayyum, are sufficiently separate from the western shore, and from settlements to the north and south on the eastern shore, to afford shelter for local peculiarities.

1 Griffith, III, 183.
2 See maps, Part II, pp. 70–72. The question at once arises: Did the Achmim pocket exist in the fourth and immediately preceding Christian centuries; and is it any more isolated than certain other regions of Upper Egypt, particularly extreme Upper Egypt? Dr W. F. Hume, formerly governor-general of the Geological Survey of Egypt, has kindly replied to the writer’s query as follows: “It seems probable that the big bend of the river, forming the pocket in which Achmim is situated, has been long in existence. Achmim seems to me more isolated than any other locality in Upper Egypt. Huge terraces of gravel form a very desolate region between the river and the high scarp of the desert hills east of the Nile, and south of Achmim there are places where there is practically no cultivation between the scarp and the river. Thus the whole of the trade movement of Egypt south of the Delta and Cairo is and presumably has been mainly on the west bank of the Nile. South of Qena (Kena) the river is narrower, and the main
Map 1. General regional map of Egypt
Within such a country as Egypt the probabilities are that the Delta would develop a dialect of its own; that the oasis of the Fayyum would have its own variety of valley speech; that the rest of the valley would diverge in language from the Delta and the Fayyum roughly in proportion to distance.

But this natural relationship would probably be disturbed by the rise of neutral dialects and by cultural drifts. Region IV, between the Fayyum and Eshqāw,\(^1\) is where a completely neutral dialect might be expected, having no outstanding peculiarities of its own, but only such characteristics as remain after the surrender of everything individual. Such a dialect would become the vernacular of that part of the valley. Still farther up the river, in Region V, a second neutral dialect might develop similarly, except that it would be based upon a different type to begin with, and that it would be less neutralized because it would be less central to all influences. This would now be the vernacular of Region V, except perhaps for certain places lying a little off the beaten track. If there was a cultural drift from the north\(^8\) it is entirely possible that the neutral speech of Region IV might begin to invade the territory of the other neutral dialect, Region V, at least (or at first), in a literary way. In that case common people in the former would write without dialectic impurities, while those of the latter would betray the influences of their true vernacular, whether the neutral speech of the district or the still older dialect. If by any chance the northern neutral dialect acquired such influence as to promise the advantages of a universal literary medium, a cultural conflict might arise in Region V. There would be those who would seek to impose the rival dialect and those who would seek to reassert the claims of their own dialects. Monasteries would be the theater of such a conflict, particularly if they were on the western shore of the river and opposite one of the pockets of the eastern shore.

To what extent is this theoretical picture justified by the non-geographical facts?

The Greek forms of Egyptian names, presumably Alexandrian, show only a general resemblance to B forms,\(^8\) and do not prove that the ancient dialect of the Delta or of Alexandria was B.

roads are on the east bank. The important trade routes to Qoseir have their termini on the Nile at Qena, Qus, and Luxor.\(...\) There seem to me therefore good geographical reasons for your retention of Achmim as your probable center for the special case submitted for my opinion.\(^9\)

\(^1\) Map 1. \(^2\) Griffith, III, 184. \(^3\) Ibid., p. 187.
Supposedly early specimens of B, written wholly in Greek letters, may indeed be early, though it is unlikely that χ and φ could have had in Egypt the same phonetic value as ʃ and θ until some time after the literary fixation of B, at which time they were still aspirates, and not yet fricatives. These specimens may well be the work of Greeks who spoke Coptic but had no schooling in it.

The unsupported testimony of the striking etymologies, liliuin< F ɛλυάι and columba< F ɛλυάμμα, does not, of course, prove that the dialect of the Delta, or even of the coast, was F. If the Egyptian, Latin, Sanskrit, and Prussian forms of columba do show it to have been borrowed, the borrowing was ancient, and the ultimate origin of the word is unknown.

B, the only dialect which took over all the signs from Demotic which it needed, was therefore probably the only dialect in contact with Demotic at the time of its literary fixation, and hence is old, or even the oldest of the literary dialects. The B version of the Bible, unlike the F, A, and A₂ versions, appears to be independent of the S version. True, no early B manuscripts have survived; and the destructive nature of the Delta soil will hardly account for this, since no old B manuscripts have been found elsewhere in Egypt. Also, the non-Biblical B literature is late and secondary to S literature, and B might therefore be merely the local dialect of Nitria, and might have spread to the Delta only as an artificial idiom after the extinction of S. But this cannot be true if, in the eleventh century, S still occupied most of the valley and B was used near Alexandria. The Arabic name buhairy indicates that B was in some sense the dialect of the buhaira, the western Delta, but not necessarily of the whole Delta, at the time when the name was coined. There had been possibly two dialects in the Delta. The eastern one was supplanted by B.

1 MER, I, 49; V, 40 f. 2 Lefort. 3 Keller, II, 134. 4 Till, 195; and earlier Stern in ZÄS, XXIII, 153. Michigan Papyrus Inv. 4277, fragment of a B magical text, and Inv. 1526, an unskilled letter in the hand that is common in magical texts, having strong B features, might, to judge by some of the letter forms, be as early as the sixth century. 5 Kenyon, 162, contra Stern in ZÄS, XX, 202, and Lefort. The date of the B version is put by Kenyon, 159, 162, at the middle of the third century, or earlier, but in no case later than the fourth. Stern, loc. cit., puts it much later. 6 The earliest are of the eighth to tenth centuries. See Stern, op. cit., 192, footnote; Kenyon, 157; Crum Cat. BM, No. 739. 7 Lefort. 8 See below. 9 See Veth, 31, Spiro, 33, contra Mal. Gr. 2. The Arabic word for “northern” or “Lower Egyptian” is bah(a)ri. Stern had, however, settled all this in ZÄS, XVI, 23. 10 Stern, op. cit., 24.
The fundamental distinctness of B from the other dialects is proved by its sounds. It distinguishes between aspirated and unaspirated stops. It does not distinguish between palatal and palatalized velar stops. It early lost its laryngals. The $h$ either becomes $s$ or remains $h$, and does not become $h$. The $*$ before $b$, $l$, $m$, $n$, and $r$ becomes $e$; and these consonants are not doubled if the syllable is "opened."

The Fayyum had its own variety of valley speech. The Demotic story of King Petubastis, written in the Fayyum in the first century of the Christian era, reveals peculiarities of the F dialect. Documents in the F dialect have been found in large numbers in the Fayyum. Few would doubt that F, in several varieties, was the vernacular and for some time the written language of the famous oasis whose 'name it bears. Its graphic dependence upon B is attested by its use of $\pi\bar{a}$ and $\pi\bar{r}$ in violation of its own phonology (F *$\pi\alpha\lambda\iota\iota\iota\iota$, *$\pi\pi\pi\pi\pi\pi\pi$). The individuality of F is displayed in its sounds. It has $l$ instead of $r$, though the orthography shows $r$ in a very few places. It has $e$ before $t$, $h$, $h$, and $h$ (even when it has become $s$) when the original vowel was $*a$. It is not necessary to regard this as an "over-correction" of the $a$ of Sahidic, and therefore late and artificial. Before or after $t$ or $h$ in Akkadian an $*a$ becomes $e$; and this change can be observed elsewhere in Semitic. It must be fairly old in F, for it antedates the change of $h$ in some words to $s$. Fayyumic has $a$ before the suffix of the second person plural ($-\pi\pi$) instead of $v$. This is a very ancient difference, for all the other dialects here have a long vowel. Other peculiarities are: $*i$ before $b$, $l$, $m$, $n$, and $r$ becomes $i$, and also when final (even before suffixes) or when doubled. The $*i$ before $t$ becomes $e$.

The original dialect of Region II must have been S, for B and S were certainly in contact when the "late" vowels of these two dialects developed. F had not yet intruded to the extent of preventing this development or of being influenced by it, though certain F features other than the "early" vowels may have colored the spoken language. In the eighth century F was spoken as far south as Heracleopolis, but not at Eshmunain. Yet around the year 600 five Biblical manuscripts in the purest S were produced.

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1 Part I, Chap. II. 2 Part I, Chap. III. 3 Till. 4 Sef. Gr. 25. 5 Griffith, III, 184. 6 Crum Fay. viii; MER, V, 40. 7 Till Dial. 8. 8 Polotsky, review of Till Gr., OL, 1931, 839. 9 Ungnad, 6. 10 Krall KT, I, 7.
at the Monastery of St Jeremias at Saqqāra.¹ In the eleventh century S and B met at Cairo, and in the thirteenth century, at Minya;² but this may refer to the use of S and B merely as literary languages. The mixed B-S, F-S, and F-B manuscripts from the Monastery of St Jeremias and the Fayyum perhaps indicate the confusion of later times.³

The S dialect bears the Arabic name, as-Saʿid, which, at least from the twelfth century⁴ down to the present time, means “Upper Egypt” and nothing else. Extreme Upper Egypt is called as-Saʿid al-Ṣafā.⁵ There is therefore nothing in the traditional Arabic name to indicate that S came originally from extreme Upper Egypt.

The Greek Βίος τοῦ Ἁγίου Παχομίων,⁶ 60, tells how an Alexandrian, hearing of Pachomius and the brethren at Pbōw and Tabnēse, takes ship and goes “up into the Thebaid” where, knowing only Greek, he has to learn τὴν Ὑβαίκὴν γλῶσσαν, the speech there current. But Pbōw and Tabnēse are not in the Thebaid as ordinarily understood. They are within Region V, but still a long way north of Thebes and its hermit settlements. Rufinus,⁷ who died in the year 410, writes: “Venimus autem et ad civitatem quondam Thebaidis nomine Oxyrynchus…,” indicating a use of the name “Thebaid” to include practically or actually the whole of the valley.

To say, then, that S is the speech of the Thebaid or of the Saʿid is by no means to say that it is the speech of Thebes or the region immediately adjacent. But the name “Theban” stuck to the dialect for a long time, and the notion that it was the most southern of the literary dialects, at least, still sticks. Steindorf⁸ calls it “der Dialekt der thebanischen Landschaft, später literarisch über ganz Oberägypten verbreitet.” Leipoldt⁹ says: “Die Heimat

¹ Thompson Acts, ix. These three manuscripts in the Beatty collection and Inv. 166, 167 of the Michigan collection are identified with the Jeremias monastery through the recurrence of a formula, in one of the colophons, identical with an epigraphic formula reported by Quinell.

² According to the earlier version of Athanasius of Qūṣ (eleventh century), S was “used” in his day from Old Cairo (Misr) to the borders of Assuan; according to a later redaction, from Minya to Assuan. Stern in ZÄS, XVI, 23; MER, II, 48 f.

³ See Stern in ZÄS, XXIII, 145 f.; MER, II, 50; RT, VI, 64 f.; Griffith, III, 185; specimens in Crum Fay. passim and in Crum Cat. BM, 237, 282 a, Nos. 563, 572, 1183, 1237.

⁴ When Yaqūt was born.

⁵ Wüstenfeld, III, 392. It is clearly evident that the Saʿid extends as far north as Cairo.

⁶ In Acta Sanct., Maii III, *34. An expanded form of the same in Bohairic is found in Guimet, XVII (1899), 141 f.

⁷ Hist. Mon., Cap. V.

⁸ Stf. Gr. 3 f.

⁹ Leipoldt, 138.
DETAILS OF REGIONS IV-V
FROM TOPOGRAPHIC MAP OF EGYPT, 1:100,000 SURVEY OF EGYPT: RIVER AT FLOOD-LEVEL OF 1925, WITH CONTOURS OF CULTIVATED LAND AND (ON EASTERN SIDE) OF CLIFFS

MANFALUT

ABNÔB

ASYÛT

SCALE

0 1 2 3 4 5 6 7 8 9 10 KILOMETERS

31°00' E

31°15' E

27°15' N
Map 2. Details of Regions IV–Y
der koptischen Literatur ist...Oberägypten, und zwar die Thebais (der hier gesprochene Dialekt wird der saidische genannt...)."
The use of "zwar" indicates his narrower use of the word "Thebais." But, so far from being the speech of Thebes or of the remotest parts of Upper Egypt, S is far more likely to have been originally the speech of that populous and godly city of Oxyrhynchus, of which Rufinus speaks, and of the lower valley. The truth is that the purest non-literary documents have come from Region IV, and that Region V—especially Thebes—shows a persistent, if small and irregular, admixture of A₃ or A. The conclusion is that S was, from the sixth to the eighth centuries, perhaps only the literary language of Region V, but the vernacular and literary language of Region IV. The region above Thebes, number VI, has furnished only literary S texts, and other documents too few to permit judgment. If this is true, S is a neutral dialect that spread from Region IV.

At this point the question may be asked: Is S a neutral dialect, or does it merely appear so because the other dialects, F, A, and A₃, are studied through it, and so are regarded unconsciously as divergent from a colorless norm? The neutrality of S, being a negative matter, is difficult to demonstrate; but the fact appears when the regional phonetic peculiarities are analyzed. It is easy to list the peculiarities of B, of F, of A, but difficult to find the specific peculiarities of S. It shares certain peculiarities with all the dialects except B, certain others with all the dialects except F, still others with all the valley dialects except F; and it is related in different ways to B, to A₃, and to F. All its qualities are shared by other dialects. That is the reason for calling it neutral.

The impurity found in a certain number of non-literary documents from Region V consists of elements characteristic of F, A, and A₃. Investigation shows that these in part are primitive: Egyptian *á remains generally á, and *ë becomes €, instead of becoming ò and õ respectively. But the coloring is more specifically that of A or A₃, as though these dialects had been imperfectly superseded by S. Evidently A and A₃ are dialects belonging to

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1 Crum Ep., I, 233.
2 The Arabs in the middle of the seventh century must have encountered at Pbôw and Qâw an A or A₃ dialect, for they render these names by Fâw and Qâw. The Sahidic forms are Ṣâwât and Ṣâwât, with ò.
3 One of them is ù in the second person singular feminine of the possessive article, Ṣâwât, etc., where the other dialects have €.
4 Crum Ep., I, 234.
Region V; they are less neutral than S; they are conservative. They have in literary texts certain features in common, and exclusively so: *ā when final or doubled becomes ō, and ō when final becomes ū. It remains to determine the relationship of A to A₂.

A manuscript of St John in A₂ was found at Qāw, which is in one of the pockets, on the border between Regions IV and V. But other A₂ manuscripts have been found at points far distant: in the Fayyum, if we may believe the report, and at Assuan probably. The dialect cannot be localized. If an attempt is made to determine its individual phonetic characteristics, A₂ turns out to be another neutral dialect. Its affinities are: with all the dialects except B, with all except F, with all the valley dialects, except F, with the conservative dialects, A and F; and it is related in different ways to SF, to S, to A, and to B. These affinities show that A₂ is a neutral dialect, like S; and like S belongs to the valley—the valley, exclusive of the Fayyum. But the closest relations of A₂ are to A and S, whereas the closest relations of S are to B and A₂. That fact places A₂ farther up the valley than S. Its relationship to the conservative dialects A and F, as opposed to S and B, place it in an earlier stage of development than S. A₂ is therefore a more southerly and less neutralized dialect than S.

There remains only the A dialect, which must have lain to the south of A₂ originally. A number of Biblical and related manuscripts and fragments in the A dialect have been thought to have come from Achmim or its neighborhood, but the connection cannot be proved.² The same is true of the magical papyri. The graffito found near by³ are inconclusive evidence, especially as they are associated with non-Achmimic scribblings. The Arabic name of the city, Aḥmīm, derived probably from the seventh-century pronunciation of the local peasantry, has preserved the h, which the name would have in the A dialect, instead of the ñ, which it would have in all others.⁴ Ešmūnain, in Region IV, on the contrary betrays the presence of a dialect in which the old h had become considerably more like ñ. (This quite accords with the idea that S was the language of IV.) Sufficient weight has not been given to this fact.⁵ It may be argued on the other side that the Arabic name Samannūd is derived from Egyptian iband.
through the Greek form, Σεβέννυτος,² and has nothing to do with the Coptic form, ςεμνοτ,² which the Arabs would have heard; and that therefore the Arabic name أَلَّمَيْنُ is derived from the Egyptian حنَّتِم through the Greek form, Χέπμυς, and has nothing to do with the Coptic form, ṣِمَيْنُ, ṣِمَيْنِ. The reply is that سامانِنُد probably is derived from Σεβέννυτος, but that أَلَّمَيْنُ cannot be derived from Χέπμυς, because in that case it would certainly have had the form ṣِمَس, or something very similar. To arrive at the form أَلَّمِيْنُ one would have to suppose a mixture of the Greek Χέπμυς and the Coptic ṣِمَيْنُ, or else merely the Achmimic form ṣِمَيْنِ; and the latter is much the simpler view. Except for the evidence of the name, the graffiti, and the hearsay connection of the manuscripts, the A dialect cannot be localized. Analysis of its phonetic peculiarities shows that it is not neutral but strongly individual:  b (including  b from b) remains b under all circumstances, as against all other dialects. Where S at the end of a word has a consonant (or a double vowel, representing a consonant) followed by  β,  l,  m,  n, or  r, Achmimic has a helping vowel after the consonantal combination. (The first is a primitive feature, the second is a late one.) *fw becomes  ô. *i when final or doubled remains i. *â under the same circumstances becomes å.

The original arrangement of the dialects within the valley is shown conclusively by the manner in which phonetic group-qualities³ overlap. It is sufficient for the purpose to select fourteen groupings of phonetic peculiarity:

2. F  5. BS  10. SA  12. BS  14. BA  
3. A  6. FS  7. SA  8. AA  

Nos. 1–3 involve a single dialect each, and the group-qualities are those of the single dialects, described above.⁴ Nos. 4–8 involve two dialects each, and the group-qualities are conceivably regional, provided they include only such pairs as are geographically contiguous. With the five dialects in the geographical positions already assigned them this proves to be the case.⁵ No. 4 covers the Delta and the Fayyum, no. 5 the Delta and the northern part of the valley, no. 6 the Fayyum and the northern part of the valley, no. 7 the northern and central parts of the valley, and no. 8 the central part of the valley and some other region, more

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² Though not through Babylonian, as supposed by Czerny L, I, 63.  
³ For the quantity see Lenz, I, 221, line 14.  
⁴ Other group-qualities are not considered. See Figure 1.  
⁵ Part II, 68, 69, 75.  
⁶ See Figure 1.
remote. This arrangement of the dialects seems to be not only possible, but unavoidable. The arrangement is confirmed by nos. 9 and 10, which involve three dialects each. No. 9 covers the Fayyum and the northern and central parts of the valley. It is noteworthy that there is no BFS group. No. 10 covers the northern and central parts of the valley and some more remote region. Nos. 11 and 12 involve four dialects each, and the group qualities are regional, for the dialects are contiguous. But these groups are unimportant because they are too large to prove anything as to relative position. They are little more than the converse statement of the separateness of B and F, respectively, from all the remaining dialects. Nos. 13 and 14 involve in each case dialects which, according to our present scheme, are not contiguous. The Fayyum is separated from the central valley and more remote regions, and the Delta is likewise separated from the central valley. If our scheme is right, nos. 13 and 14 cannot therefore represent regional qualities. They may however represent primitive ones, such as have disappeared elsewhere. We have already seen¹ that no. 13, FA₂A, is based upon the possession of the primitive vowels ą and ē (from *ẹ). The basis for no. 14 also is the survival of a primitive characteristic, but under the influence of a following sound. In B and A₂ *ẹ, when followed by the suffix -j, does not pass to ą (B) or ẹ (A₂), as it should, but stops at ē.

¹ Part II, 73.
RELATIONSHIP OF THE COPTIC DIALECTS

The groups whose characteristics have not been described are BF, BS, FS, SA₂, FSA₂, SA₂A, FSA₂A, and BSA₂A. They are chiefly as follows:

BF (DELTAFAYUM)

Prosthetic and helping vowels instead of syllabic consonants.¹ This is only one feature of a system of generally fuller vowels, due no doubt, as Erman² first observed, to a slower manner of speaking. ⁴ instead of  ⁶ (the intermediate stage) from ⁶. In words such as:

<table>
<thead>
<tr>
<th>Egyptian</th>
<th>A</th>
<th>A₂</th>
<th>S</th>
<th>F</th>
<th>B</th>
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<tr>
<td>$\text{ṣnh}$</td>
<td>$\text{cā[α]nec}$</td>
<td>$\text{cānyw}$</td>
<td>$\text{cā[α]ny}$</td>
<td>$\text{myn}$</td>
<td>$\text{mym}$</td>
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<td>$\text{sḥ}$</td>
<td>$\text{cāy}$</td>
<td>$\text{myw}$</td>
<td>$\text{my}$</td>
<td>$\text{myy}$</td>
<td></td>
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<tr>
<td>$\text{sḥw}$</td>
<td>*$\text{cīge}$</td>
<td>$\text{cīwe}$</td>
<td>$\text{*$\text{mīm}$}</td>
<td>$\text{mōm}$</td>
<td></td>
</tr>
<tr>
<td>$\text{sḥ}$</td>
<td>$\text{cāi}$</td>
<td>$\text{cīwe}$</td>
<td>$\text{mōm}$</td>
<td>$\text{mōm}$</td>
<td></td>
</tr>
<tr>
<td>$\text{sḥ}$</td>
<td>$\text{cāi}$</td>
<td>$\text{cīwe}$</td>
<td>$\text{mōm}$</td>
<td>$\text{mōm}$</td>
<td></td>
</tr>
<tr>
<td>$\text{sḥ}$</td>
<td>$\text{cāi}$</td>
<td>$\text{cīwe}$</td>
<td>$\text{mōm}$</td>
<td>$\text{mōm}$</td>
<td></td>
</tr>
</tbody>
</table>

in which $\text{s/s}$ is followed by $\text{ḥ}$, the BF forms show assimilation of the $\text{s/s}$ to the sound resulting from $\text{ḥ}$, while the SA₂ show no assimilation. (In A., of course, the $\text{ḥ}$ remains unaltered, and there is no assimilation.) Evidently the sound resulting from $\text{ḥ}$ in BF is not the same as in SA₂, though both are represented by the same letter, $\text{ųu}$. The sound in BF caused assimilation of the preceding $\text{s/s}$ because it was physiologically closer to $\text{s/s}$. Therefore the sound of $\text{ųu}$, resulting from $\text{ḥ}$, was $\text{s}$ in BF, while it was $\text{c}$ in SA₂. $\text{c}$ lies midway between $\text{ḥ}$ and $\text{s}$. A smaller number of words, in which the original sound was $\text{s}$, follow the analogy of those having original $\text{ḥ}$; and non-assimilation becomes the pattern or rule in SA₂ for all words having $\text{c}$ followed by $\text{ųu}$. Such combinations of sibilants are normally unstable and subject to assimilation, dissimilation, and metathesis. Usage is established by some directive force, such as analogy.³

The post-tonic final vowel is $\text{i}$ and not $\text{e}$.

* $\text{i}$ before $\text{j}$ followed by a consonant becomes $\text{ę}$ instead of $\text{ą}$.
* $\text{i}$ before $\text{ḥ}$ becomes $\text{ę}$.
* $\text{ą}$ before $\text{ḥ}$ becomes $\text{ę}$.

¹ See Part I, 12.
² Erm. Unit.
³ Was $\text{ųu}$ in these words pronounced $\text{ç}$? See below, p. 78.
COPTIC SOUNDS

BS (DELTA—NORTHERN VALLEY)

*ά (except before ῖ, ἤ, ἔ, and ᾦ) becomes ό, and *fusc generally becomes ά. This characteristic consists in a backward movement of the mass of the tongue, since one may not here speak of the point of articulation. It may have invaded the northern part of the valley from the Delta, but in any case B and S were in contact, and were not separated by F.

FS (FAYYUM—NORTHERN VALLEY)

The post-tonic vowel before ἀ is (in F) more or (in S) less often a. In the other dialects it disappears and the ἀ becomes syllabic. This single and unimportant feature by which F and S are united shows again that the Fayyum was an isolated region, having little influence upon the northern part of the valley. Fayyumic influences in the northern valley must have begun rather late, because F made but a small contribution to the neutral dialect S, while the contribution of B to S (in spite of their fundamental separateness) was large. These F influences occurred too late to affect the standardized S. They appear only in so-called "impure" S documents.

In connection with the observation of BF, BS, and FS characteristics, it is noteworthy that there are no common characteristics uniting the Delta, the Fayyum, and the northern part of the valley. There was never a time or region in which all three were in close contact.

SA (NORTHERN VALLEY—CENTRAL VALLEY)

ζ (the intermediate stage) instead of ς from ἀ, as has been shown above. *fusc before Ἐ followed by a constant becomes ά.

FSA (FAYYUM—NORTHERN VALLEY—CENTRAL VALLEY)

渤海, where it does not become ς or ς, becomes ἀ. In all this great central region the ancient ς weakened to ἀ, while at the two extremes of the country, in B and A, it remained. This affinity between B and A is so obviously an archaism that it does not upset our regional grouping, and does not need representation in our diagram.

1 See Part I, 58.
2 See Part I, Chap. I.
3 Crum Ep. 233.
4 P. 77.
SA₄A (NORTHERN VALLEY—CENTRAL VALLEY—REMTHER REGION)

Syllabic consonants instead of prosthetic and helping vowels. This is merely the converse of what was said of BF.¹

*İ before  Allocator,  Allocator,  Allocator, and r (following the general tendency, just mentioned) disappears in favor of a syllabic consonant, while in B and F it remains, as ē and ŋ respectively.

The post-tonic final vowel is e and not i.

A positive characteristic of this region seems to be the insertion of an excrescent n after e (or the nasalization of e) in the syllable met. This is the rule in S and in the A₂ of the Acta Pauli, but rarer in the A₂ of St John and in A. It would appear to result from an influence extending from the northern part of the valley (S) to the central and remoter parts in decreasing degree.

SF₄A (ALL EXCEPT THE DELTA)

No distinction between aspirated and unaspirated stops. This is the converse of B.

Distinction between palatal and palatalized velar stops. This is also the converse of B.

Late disappearance of laryngals, if indeed they did disappear. This is also the converse of B.

 Allocator, Allocator, Allocator, and r, when they follow *İ in a so-called "opened" syllable, are doubled. This is also the converse of B. Apparently the doubling occurs in compensation for the loss of a laryngal. But this is not necessarily so. The doubling may represent the actual laryngal. In the situation described Allocator, Allocator, Allocator, and r are syllabic (syllable-forming) consonants, and function exactly like vowels. If the doubling of the vowel in bošne indicates the pronunciation *bošne, it is just possible for the doubling of the syllabic consonant in cašme to represent *smiče.²

Commonly in S, often in A₂ and F, sometimes even in A, the combination rt becomes R, whether at the beginning, middle, or end of a phonetic complex: "kew, "kew, ["kew], "kew-." Since v is an unnecessary letter in all dialects, a mere doublet of R,³ its employment here instead of R involves a graphic technicality. Since R in all dialects but B represents the sound 眚, and since v is the doublet of R, there can be here no change in the sound 眚. On the other hand, nothing is more natural than the

¹ See Part II, 77.
² See Part I, 5, 11–16 (especially 13).
³ See Part I, Chap. II.
change of n into η by assimilation to the following ḡ. The use of υ in these examples, ὅςὑςὑς, ὅςὑςὑς, ὅςὑς, may indicate the pronunciation: γςςςτς, γςςςτς, γςςςτς, γςςςτς. The assimilation of n to a following ḡ is, then, a common characteristic of FSA3A, most intense in the northern valley (S), from which it spread to all the valley, but not to the Delta. It is probably a primitive characteristic of the northern valley, antedating the development there of the neutral S.

n, before vowels, especially u, is often doubled. This is a common characteristic of F in the case of certain prepositions and inflectional elements, and of SA3A in the case of certain words and in vulgar texts generally.

BSA3A (ALL EXCEPT THE FAYYUM)

To define the characteristics of this group would be to restate the peculiarities of F in negative form, and this is unnecessary.

We have seen that the phonetic peculiarities of Coptic prevailed over certain regions, and involved one or more dialects. The dialects were combinations of regional peculiarities. The peculiarities sometimes spread abroad from one original area, becoming attenuated as they progressed. In doing so they obliterated primitive features. Adjacent dialects thus display common regional characteristics, and non-adjacent dialects common primitive characteristics.

A dialect is a natural variety of speech, resulting usually from the coincidence of several influences, but constant and generally consistent in its peculiarities. When the speaker of an impure dialect tries to write correctly, if his schooling has not been sufficient he will tend to spell phonetically according to his actual pronunciation. The amount of this phonetic spelling will be in direct proportion to his lack of education. The percentage of impurity within a given region does not therefore necessarily indicate the number of speakers of a divergent dialect, but rather the number of poor spellers of the standard dialect. It is, for example, entirely possible that everybody at Thebes spoke Sahidic, but with peculiarities, among which were the "older" vowels characteristic of the displaced dialects, A and A₁. They would not necessarily have been conscious of doing so. The contaminators of Sahidic may therefore have been either those who still in some measure spoke the older dialects, or those who spoke Sahidic, but
with certain phonetic peculiarities which their degree of schooling did not enable them entirely to overcome. As is usual in such cases, there resulted both error and overcorrection. The Alsatian peasant corrects his dialectic vin into vain, and then by analogy overcorrects paris into paraïs; and the scribe of Region VI writes ûtair for ûtor, and then overcorrects ûtar into ûtoïr.¹ Violent overcorrections like the latter example are very good evidence of the artificiality of the standard orthography in the locality concerned, which in this case is Esne. We can put it down, therefore, as fairly certain that scribes of Region VI, no less than those of Region V, used the "older" vowels, and that S is not native to extreme Upper Egypt.

Thus far little has been said of the time element in the relationship of the dialects. In the light of common knowledge and of what has been said above, a certain number of conclusions may be drawn, with more or less probability, as to the chronology of the dialects.

For the differentiation of the dialectic types a considerable space of time must be allowed. Dialectic differences must have existed even in Old Egyptian; and, if so, in Middle and New Egyptian also; and it is altogether reasonable to suppose that such differences correspond with certain dialectic differences in Coptic. But we cannot always say which are ancient and which more recent. The most ancient, because the most fundamental, difference is that between Delta and valley.² Scarcely less ancient, considering the isolation of the Fayyum, may be the I and other individual peculiarities of F. Then probably came the vowel changes involving the Delta and northern part of the valley, which F had not yet invaded. Meanwhile the speech of the northern part of the valley was becoming neutralized, as was also, but to a less extent, the speech of the valley farther south. This may well have occurred before the beginning of the Christian era; and it doubtless was the state of affairs when Sahidic orthography, toward the end of the third century, was established upon the actual pronunciation of that time. (Possibly Bohairic orthography was established fully as early or earlier, though we have no remains of so remote a period.) Sahidic now began to invade the middle and upper valley, through the prestige which it enjoyed as the

¹ Wor. Frest, I, 222, 276, 395.
² On S and B influences in New Egyptian and Demotic see Part I, 21, 22, 25, 52 (in two places).
language of the Scriptures. In the fourth century or thereabouts the people of the middle valley revolted from this dependence, and began to make translations of the Scriptures in the more southerly neutral idiom, sub-Achmimic, and even in the primitive but decadent rustic Achmimic; but the movement gained little headway. In the fifth century Sahidic became established as the standard form of literary Coptic throughout the valley, and doubtless became more and more the spoken language, though phonetic peculiarities lingered on. Then Sahidic invaded the Fayyum, but to a far less extent, for the documents from there show that the local dialect was still spoken, and was considered worthy of use as the language of letters and documents. In the eighth century Fayyumic, becoming aggressive, had invaded the valley as far as Heracleopolis at least, and it may have gone farther southward. In the eleventh century Sahidic was “used” throughout the valley, from Old Cairo to Assuan. The eastern variety of Delta speech had disappeared, and the surviving dialect of Alexandria and its region, or the dialect of Nitraia, was brought to Cairo as the official language of the liturgy, pushing Sahidic southward. By this time certainly, or even earlier, Bohairic was no longer spoken or understood by the people. Sahidic as well as Bohairic manuscripts were copied, but the orthography is mixed, betraying the complete disappearance of spoken Coptic. Sahidic is said to have lingered on in remote parts of Upper Egypt till the sixteenth century. The phonology of Bohairic (as read in the churches) became arabized by the vernacular, and became conventional through the effort to prevent further arabization. Finally, the official conventionalized, arabized, Bohairic pronunciation, spreading throughout Egypt, acquired local peculiarities, though apparently not as a result of the lingering influence of the older dialects, for these had long since passed away. Whatever influence there was had to be transmitted by way of the local dialect of spoken Arabic. European scholars acquiring Bohairic introduced features derived from their own vernaculars or their own conventional pronunciation of classical Greek. The resulting pronunciation was then applied to Sahidic.
CHAPTER II

THE PHONETIC CHARACTER OF THE FIVE COPTIC DIALECTS

When we speak here of the general phonetic character of the dialects we mean of course at the time of their literary fixation, which for S and possibly for B was in the third century, and for A and A₂, in the fourth century. After their literary fixation they of course continued to develop, as all living speech does, the written language serving however to retard change. Dialects mixed where they came in contact. With the advent of Arabic—itself not all of one type¹—the phonetic system of Coptic, in its various dialectic varieties, was at first influenced and at last replaced by that of an alien tongue. This may fairly be assumed because bilingual communities, such as the Swiss, Alsatian, German-American, and Armenian, are found to have but one system of sounds. It is far beyond the powers of most individuals to maintain two complete systems of articulation.

Bohairic must have sounded much like English. It had few unusual sounds. The laryngals had disappeared. There were no palatalized velar stops. The voiceless stops were aspirated, as in English; and there may even have been voiced stops. It was no more consonantal in general character than English. As we shall see, in some respects it particularly resembled British English.

The valley dialects (including F) had the general phonetic character of those south German dialects in which no distinction is made between the voiced and voiceless stops. At the same time, the valley dialects (excluding F) resembled Polish and Russian in their poverty of obscure vowels and their tolerance of harsh consonantal combinations. In addition to palatalals there were palatalized velar stops, both sets of sounds giving the dialects (including F) the effect of Polish or Russian. Some sort of laryngal stop, persisting in the valley dialects (including F) and represented by vowel-doubling, gave them the effect of Danish, or the Scotch English, in which t is replaced by a glottal catch.

Fayyumic was distinguished from the other up-river dialects in having (like B) a greater number of helping vowels and fewer harsh consonantal combinations. It was characterized by a sound which resembled both l and r, but chiefly the former; and this sound can

¹ The sound of خ in Cairo is even now more conservative than in classical Arabic.
Coptic Sounds

therefore without much doubt be identified with the dull cacuminal ı of American English, which resembles its ı. Its use of á (where S and B have ẹ) and é (where S and B have á) adds to the effect of American English. Examples: “John’s job lot of pots and bottles” would be pronounced džanz džab lat əv pats n batlz, and “Half laugh at calf,” hæf laef æt kæf.

Sahidic was distinguished from the other up-river dialects by having (like B) ọ where they have á, and á where they have é. This gives the effect of southern British English, in which the examples just cited would be rendered: džanz džab bət əv pats n batlz; hæf laef æt kæf.

Achmimic and sub-Achmimic had the American English vowels already noted in the case of F.

So much for the general phonetic character, the acoustic effect, of the several dialects. It may be useful at this point to state the probable values of the individual Coptic letters as employed by the different dialects:


<table>
<thead>
<tr>
<th>B</th>
<th>F</th>
<th>S</th>
<th>A₂</th>
<th>A</th>
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<tbody>
<tr>
<td>k</td>
<td>ƙ, g</td>
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<td>n</td>
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<tr>
<td>ε</td>
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<tr>
<td>η</td>
<td>ē?</td>
<td>ē?</td>
<td>ē?</td>
<td>ē?</td>
</tr>
<tr>
<td>B</td>
<td>F</td>
<td>S</td>
<td>Aₜ</td>
<td>A</td>
</tr>
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<tr>
<td>i</td>
<td>i, j</td>
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<td>o</td>
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<td>ου</td>
<td>ου, w</td>
<td>ου, w</td>
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<tr>
<td>ο</td>
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</tr>
</tbody>
</table>

The Coptic letters which do not appear in this list have been omitted because they are merely doublets or monograms of those in the list. They are υ, α, χ, ψ, Ψ, Φ. (In all but the B dialect the letters χ, φ, ϕ are monograms; but they are included in the table because in B they are not monograms.)

υ interchanges with ι in Greek words quite commonly; in Coptic words less commonly. The reason for this difference is that Greek words are carelessly spelled, at least in our manuscripts, while Coptic words are more carefully spelled, according to a fixed orthography. At the time of literary fixation the spelling of Coptic words was doubtless phonetically accurate; but the spelling of the Greek words was never an accurate picture of their actual pronunciation by the Copts, for the Copts took over the Greek words from the Hellenistic world, while they pronounced them doubtless according to the limitations of the Coptic phonetic system. The variability in the orthography of Greek words in Coptic is due, therefore, to its arbitrary character, from the Coptic point of view. The reason for the free interchange of υ and ι is that υ is simply a doublet of ι, and represents no sound of its own. υ could find no employment in the up-river dialects because they had no voiced stops. If B did have voiced stops, it did not see fit to employ υ to represent one of them.

α interchanges with τ in Greek words quite commonly; in Coptic words, very rarely, and then only in relatively poor manuscripts. The case is parallel to that just described. α represents no sound of its own.

χ occurs in Greek words only, its employment in Coptic words being the extreme of barbarism. When so employed it is a substitute for υ, and certainly a doublet of the latter, having no sound of its own.

ς is purely a monogram for ις, and ψ a monogram for ις. The supralinear stroke which is occasionally placed over these

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1 For υ in combination with ι see above, p. 80. Cf. Part I, Chap. II.
2 Part I, Chap. II.
characters stands for the one which would have been placed over \( \mathfrak{r} \) and \( \mathfrak{n} \). \( \mathfrak{t} \) is a monogram for \( \mathfrak{t} \).

The phonetic values given to the letters in the table are the summation of the whole argument thus far set forth, and should for the most part be intelligible in the light of that argument, but a few comments are necessary.

\( g, \ d, \ j \) are possible only on the assumption that B possessed fully voiced stops. \(^1\) \( f \), the denti-labial fricative, is inserted as a possible alternative for \( \phi \), the bilabial fricative, because the one very easily passes into the other, and may have done so in Coptic, though the original sound must have been a bilabial, like \( \beta \), since the two are constantly confused in manuscripts. \( \varsigma \) as an alternative value of \( \eta \) in some words depends upon whether or not the original \( \eta \) had in S and A\( _2 \) passed over into \( \dot{\varepsilon} \). \( \epsilon \) as the value of \( \eta \) is more doubtful than any other of the vowel equivalents. \( \eta \) was evidently different from \( i \) when Coptic was first written down, for the two are not confused in Coptic words. Their interchange in Greek words may be attributed to a growing itacism in the Greek of Egypt.

In the following transcriptions of Bohairic fully voiced stops, \( g, \ d, \ j \) have been employed, in accordance with the table in Part I, 32, but, of course, with the reservation made in Part I, 19 f. The reason for believing that voiced stops existed in Bohairic is that the letters \( \mathfrak{r}, \ \upsilon, \ \varsigma \), when they represent Egyptian voiced stops, \( g/\xi, \ d/\dot{d} \), under no circumstances change into \( \chi, \ \phi, \ \sigma \). \(^2\)

Evidently Bohairic \( \mathfrak{r}, \ \upsilon, \ \varsigma \) represent not only unaspirated half-voiced stops, \( g, \ d, \ j \), which need only aspiration to become \( \chi, \ \phi, \ \sigma \), but also fully voiced ones, which can never be aspirated. The habit of aspiration may have become inoperative, \(^3\) the aspirated forms may have perpetuated themselves, and the remaining half-voiced and fully voiced sounds may have fallen together. On the other hand, it might be urged that fully voiced stops, had they existed, would, in the case of \( g \) and \( d \), have been represented by the Greek letters \( \varepsilon \) and \( \varsigma \).

To attempt the transcription of connected texts in extinct dialects may be considered absurd; and it must be admitted that such reconstructions involve much restoration. But without some connected specimen texts the discussions and tables of sounds lack the needed illustration. Restoration has been employed in a dis-

\(^1\) Part I, 19, 20, 32.  \(^2\) Part I, 20, 21.  \(^3\) Part II, 89, note 2.
cussion of Demotic-Coptic relationships; and restoration has long been accepted in archaeology and paleontology.

First of all, a list of words must be given, to indicate as well as possible the sounds for which the symbols stand. There is danger in this; for the test words or key words may be variously pronounced, and the best illustrations that can be found may be too remote to be practical.

\( k, \ p, \ t \) are to be pronounced as in \( \text{köl, pöl, töl (coal, pole, toll)} \). They are voiceless stops, and they are naturally aspirated because they are in accented syllables.

\( \ddot{g}, \ \ddot{b}, \ \ddot{d} \) are to be pronounced as in \( \text{smögi, säbi, smadi (smoky, sappy, smutty)} \). They are voiceless stops, and they are naturally unaspirated because they are in unaccented syllables. In English, as in Bohairic, voiceless stops are aspirated in accented syllables, and unaspirated in unaccented syllables. But the pronunciation of \( \ddot{g}, \ \ddot{b}, \ \ddot{d} \) may be illustrated by south German \( \ddot{g}öö, \ \ddot{b}öl, \ \ddot{d}ön (Kohl, Pol, Ton) \). They are unaspirated, even though they are in accented syllables. In south German, as in the valley dialects of Coptic, voiceless stops are never aspirated. When \( \ddot{g}, \ \ddot{b}, \ \ddot{d} \) are followed by \( h \) the combination is, of course, to be pronounced as in \( \text{smöghöl, sæbhöl, póghöl (smoke-hole, sap-hole, pot-hole)} \), or as in \( \text{smöghöd, slæbhöd, hïghöd (smoke hard! slap hard! hit hard!)} \); and the effect is practically that of saying \( \text{smökööl, sæpöl, pótöl, smökäd, slæpäd, hitäd, because the addition of h to an unaspirated stop very nearly produces an aspirated one. But the result is not exactly the same, and the difference between ãgh, ãbh, ãh and k, p, t is quite perceptible in the last three examples, where the accent rests upon the second member of the combination.}

\( c \) is to be pronounced somewhat as \( tj \) in \( tjün (tune) \), but not quite; because \( c \) represents a single articulation, and the point of the tongue is placed against the inside of the lower front teeth, while \( tj \) represents a double articulation, and the tip of the tongue is placed against the inside of the upper front teeth, after which it is placed against the inside of the lower. \( tj \) is thus only a rough acoustic equivalent, given as a last resort in the absence of any example in the more familiar languages. \( j \) is to be pronounced somewhat as \( dj \) in \( djün (dune) \), and is the voiced counterpart of \( c \).

\( \ddot{j} \) is to be pronounced somewhat as \( dj \) in \( pësdjüs (posture) \), but not quite; because \( j \) represents a single articulation, and a different one, as in the case of \( c \) just discussed. \( c \) and \( j \) bear the

\(^{1}\) Griffith, 111, 238 f.
same relation to one another as k, p, t to ǧ, ḫ, ḫ. ǧ is the aspirated and ẖ the unaspirated stop.

ǧ is to be pronounced somewhat as ǧj in vægju’um (vacuum), but not quite; because ǧ represents a single articulation, and a different one, as in the case of c and ě. ǧ is exactly like ě, except that the bulge of the tongue in making ǧ is farther back than in making ě.

β and φ are voiced and voiceless bilabial fricatives. The sound in both cases is a fricative, like v and f, and yet made between the lips, like b and p.

s as in sip (seep), ȳ as in sǐp (sheep), ç as in German iç (ich), ḡ as in German aḥ (ach), h as in hip (heap), l as in German lip (lieb), l as in western American English wul (wool), r as in German runt (rund, with tip-tongue trill), m as in mıt (meet), n as in nıt (neat), j as in jet (yet), w as in wet (wet).

a as in German man (Mann) and ā as in German hän (Hahn), without distinction between a and ā. ē as in let (let), ē as in German tē (Tee), ĩ as in German șin (schein), ɔ as in British English ɔt (not), ọ as in German böhe (Bohne), u as in put (put), ū as in German hûn (Huhn).

Greek words, if pronounced as they are spelled, do not follow the laws of Coptic phonology governing compounds of similar length. They must, therefore, in actual speech have been broken up into smaller units, or else (and more probably) have undergone a shortening of their vowels so as to resemble the Coptic compounds. But, since the true state of affairs is unknown, they are in most cases transliterated quite mechanically.

Syllable division has been indicated only where necessary. Example: n-unû. Just how this syllable division was accomplished in pronunciation remains uncertain. There may have been some sort of accent, for example, upon the n, or there may have been a ɔ between it and the following vowel. The place of an accent has not been indicated. It is usually evident from the character or quantity of the vowel and from the meaning.

No parallel texts could be found for all five of the dialects, but John xi, 1–45 illustrates B, S, A₂, and A, and Matthew xiii, 24–40 illustrates B, F, and S. The former was taken from Till Gr. 287–296; the latter, from Horner Bok. I, 107 ff., Horner Sah. I, 128 ff., Till Fay. Chr. 12 ff. It is thought that these texts are readily available to most readers, and need not be printed here in Coptic letters. Unfortunately, Till does not indicate that very large parts
of the A text of John are conjectural. That fact should be stated, but it is really not a fatal objection to the employment of the text for present purposes.

**JOHN XI, 1–45**

B newnwajde ɛφɔnĩ jēlasarəs ɛbɔl ḥeŋætania ɓdīmĩ
S newnwάdə ʂоnε jēlasarəs ɛbɔl ḥnæʧhania ɓdĩmε
A ʂ newnwɛdə ʂоnε jēlasarəs əŋal ḥnæʧhania ɓdĩmε
A newnwɛdə ɛφɔnε jēlasarəs əŋal ḥnæʧhania ɓdĩmε

emmaria nemmarta ðessɔnĩ. netajdeɗe maria tɛ ðaćstɔhs
mmaria mnmarʤa ðessɔnε. ðajdeɗe maria ðenʤasqcęhs-
mmaria mnmarʤa ðessɔnε. ðejde maria ndasqahs-
mariham mnmarʤa ðessɔnε. ðejde mariham ðasqcęhs-

emɔcqs ɛmbisɔnɛn wɔh əʃfɔdĩ enneʃcaɿaw j ɛmbɛʃpɔj.
 hôjs nsag>n awɔ əʃfɔdneʃpɔwerɛɗe hmɛʃɔpɔj.
 hļajs nsag>n awɔ əʃfɔdneʃpuriɗe mɔʃɔpɔe.
 hļajs nsag>n awɔ əʃfɔdneʃpuriɗe hmɛʃɔpɔe.

tɛ enareƅessan lasarɔs ʂoŋi. awwɔrbũn harkp enenʃeʃsɔnĩ
ðaj enareƅessan lasarɔs ʂoŋe. awɔpwe ʂaryp nɡineʃsɔnε
ðẽ ðeʤeʃessan lasarɔs ʂoŋe. owjɔwe ʂaɽap fineʃsɔnε
ðej ðeʤeʃssan lasarɔs ʂoŋe. awɔpwe ʂap nɡineʃsɔnε

enʃũmi ewjɔ emmɔs jɛhɔcjs jɛʃũs pę ðeʤmeʃ ejmɔp
ewjɔ mmɔs jɛhɔis ishɛdɛ ʃόne nɡiʃɛdgmẽ
ewjɔ mmɔs jɛʃiʃɛdɛ ʃόne jɛʃɛdgmajjẽ
ewjũ mmɔs jɛhajk ɛsdɛ ʃόne ngiʃɛdgmajjẽ

ʃšõnĩ. eʃaʃoʃdɛmẽdɛ ɛnjeʃũs ɓeʃap ɓeʤajʃaɓi
mmpɔ. ndeʃeʃɔdɔmẽdɛ nɡiʃũs ɓeʃap ɓeʤiʃsɔnẽ
tmatɔ. ndeʃeʃɔdɔmẽdɛ jʃiʃũs ɓaʃap ɓeʃɛʃsɔnẽ
tmatɔ. ndeʃeʃɔdɔmẽdɛ ɓaʃap ɓeʃɛʃsõnẽ

enjuaɓĩ empnuanɛ alla ðəʃeʃow ² empndĩ hina eneʃɛci-ow
nneʃɛʃɔɿnɛ eʃmũ alla ðeʃeʃe-aw mbnûdẽ jegaʃ erekʃeʃerẽ
φɔr ethanol aʃmũ alla ðeʃeʃe-aw mbnûdẽ jegaʃ erekʃeʃerẽ
φɔr ethanol aʃmũ alla ðeʃeʃe-aw mbnûdẽ jegaʃ aʃaʃie-aw

¹ ji must be etymologically distinct from s ngi, for otherwise it would have the same form.
² The old laryngal, though it has vanished, has prevented the aspiration of h in the strong syllable. Therefore the law governing aspiration must have become inoperative before the disappearance of the laryngal.
enjebsiri enmuδi epde hiddes. jesusde naφmej emmartara
jieδaw epde higδφ. nerejesusde me mmartha
najieδaw aδal higδφ. nerejesus wοg mariaδe
nigibsera aδal higδφ. narejesusde mejje mmariham

nem maria ḍessoni nem lasars. ḍeφeun eδαφsδem jeφsoni
mn maria ḍessone mn lasars. ndereφsδm jeφsone
mn marδha ḍessone mn lasars. ndareφsδmdge jeφsone
mn marδha ḍssone mn lasars. ndareφsδmdge jeφsone

afσobi embima enafkẹ emmφ en-ehwansaw. menensapaj
φδlmen aφgọ nhφwansaw hmbma enepnhδφ. mnnsδsδe
φδlmen aφgọ nhφwansi nhmba eφphδφ. mnnsδsδe
φδlmen aφgű nhφwesu mbma eφphδφ. mnnsδs

hejaφ enepφmatδgęs jemarun edjiδean. hejow naφ
hejaφ neneφmaδhδgęs jemaronon edjiδaδa. hejaw naφ
baδep neneφmaδhδgęs jemanan edjiδaδa. baδew naφ
baδep neneφmaδhδgęs jemanan edjiδaδa. baδew neφ

enjeneφmatδgęs jeraβi δınu nawgδdi ensog enjenijudaj
nigineφmaδhδgęs jehrefβi denu nerenjudaj sıne
jimmaδhδgęs jeraβi δınu nerenjudaj sıne
nigineφmaδhδgęs jeraβi δınu nanjudaj sıne

ehione ejoq wohbalin knaeqenag emaw. aφerwo enjejues
nsahione ejo awoan gnabog emaw. aφwsδ ngiδesus
sagalehδ mhıone awoan gnabog amew. aφwsδ jijeδus
seqlone aråq awoan agnabog amq. aφwsδse ngiδesus

jememedsnaw en-unuan edke ḡenbehaw...
baφ jememmnndsnwoo n-unu hmbhehδw...
jememmnndsnsaws n-unu hmbhew...
baδφ jememmnndsnsaws n-unu hmbhwe...

...jesusde eδapφs eθbehiengod endeθefmũ entowde
...nadjesusde jψs eθbeθefmũ nede
...erejesusde jο mmmas eθbeθefmũ nede
...najesusde jψs eθbeθefmũ nejde
nawmewiye ṣeφps etšebiengod endebihinim. ṣeθe ḥeṣaf
awme'we šeφšēngod mōḇc. ṣeθe ajėsūs
newme'wehe šeφšērēhej ngādē ṣeṭeōc. ṣeθe ajėsūs
awme'we ū ŋōngađe mōhineg. ṣeθe ajėsūs

nōw enjejēsūs ḥen-uḥarrēsią jelasars apmū. wū ḏiraśi
jō's naw ḥn-uḥarrēsią jelasars apmū. awō ḏiraśe
jō's new ḥn-uḥarrēsią jelasars apmū. awō ḏireśe
jō's new ḥn-uḥarrēsią jelasars apmū. awū ḏireśe

eṭpatēnu hina endeđennahdi jenaj kē emmawanbe.
edšēdēwēn jēgas edeđēbisdewē jenej mmawanbe.
edšēdēne jēgase eređna-rēbdewē jenej mmēwen.
edšēdēne jēga's aţeđna-rēbdewē jenaj mmxanbe.

alla marn šarφ. ḥeṣetomas ūn pē edumūdi eṛφ
alla marn šarφ. ḥeṣeḥōmas ḥeṣawmuđe eṛφ
alla maran ša'raφ. ḥaṣeḥōmas ḥeṣarumūđe araφ
alla maran šaraφ. ḥaṣeḥōmas ḥeṣḥarumūđe araφ

jēdidims ennefšēpēr emmatēdēs jemaron hōn hina endēnmū
jēđidims nnefšērmadēhēdēs jemaron hōn jēēnēmū
jēđidims nnefšērmadēhēdēs jemaran hōn jēgase enamū
jēđidims nnefšēr mmađēhēdēs jemaran hū'ne jānamū

nemaφ. eḏaφ-ī ūn enjejēsūs aţeṃφ eṛφ ḥeṣeftōwē
nemaφ. nqereφ-īğe ngējēsūs aţhe eṛφ ḥeṣeφtōwē
tmaφ. nqereφ-īğe jījēsūs aţgine mmaφ eṛφ ḥeṣeφdawē
tmeφ. nqereφ-īğe ngīne mmaφ eṛφ ḥeṣeφdawē

eφkē ḥenbijemhaw. bētaniade nasheń ḥerūsālēm
eφhēbābhas. bēdhamiade neshēn ēhūn eḏhīerūṣālēm
hēbābhas. bēdhamiade neshēn ahūn aţhīerūṣālēm
eφē hēbābhas. bēdhamiade nashēn ahūn aţhīerūṣālēm

naw 15 ensadāj. umēšde eżl ēnnijūdaj neaw-īže
n-amnēq nsadāj. umēqšēde eżl hnnjūdaj neaw-īže
nnamnēq nsadāj. umēqšēde aţal hnnjūdaj neaw-īže
namnēq nsadāj. umīqšēde aţal hnnjūdaj neaw-īże
hamaria

šamarṣha mn

šaṃmarṣha mn

šamarṣha mn

edassōdem

marḏaḡe nḏeressōḏm

marḏaḡe nḏaressōḏm

marḏaḡe nḏaressōḏme

maṣ-a eṣol ehraʃ. mariade

maṣ-a eṣol hēḏ. mariade

maṣ-a aṣal hēḏ. mariače

eqni wḥ etnahdi

epaj. ṣejasnaʃ ṣebe cjs

ebaj. ṣejasnaʃ ṣese ḥbjṣ

anej. bạṣesnef ṣebe ḥjaʃ
dae nga nṃa ẹmına ẹsnh. ẹjanahdi
eqni eq ni ẹbešišew e(ra) ṣejañaghe
ebaj. ṣejasnaʃ ṣese ḥbjṣ anag ẹbiṣišew ẹjenañaghe
anej. bạṣesnef ṣebe ḥjaʃ anag ẹbiṣišew ẹjenañaghe
aṣeq. ṣejasnaʃ ṣebe ḥjaʃ anag ẹbiṣišew ẹjenañaghe
edawnaw emaria ṣeasdoṃ nwró as-i eṣol
ndeğerunaw emaria ṣeasdoṃw nḥ-ugbe ṣejañaghe
ndeğerunaw amaria ṣeasdoṃ nḣ-uglam ṣejañaghe
daṣerun aw mariham ṣeasdoṃ ,:, nglam ṣejañaghe
awmoše ẹmsō ẹwmi ẹsnañh₁ o ṣejañh₁ ebišhaw hina
awwaḥu ẹsō ẹwọ mmm ẹesnaṣo ẹṣol ẹba ẹba ẹba
awwaḥu ẹsō ẹwọ mmas ẹesnaṣo aṣal ẹba ẹba
awwaḥu ẹsō ẹwme ẹwe ẹesnaṣo ẹba ẹba

₁ ha- must be etymologically distinct from ša-, for otherwise it would have the same form.
PHONETIC CHARACTER OF COPTIC DIALECTS

enadešrimi emmaw. maria ūn edas-i ešima enerejėšus
jeesrimمري mmmw. mariağe nderes-i ešal ešma enerejėšus
arime. mariağe ndares-i ašal abma edejišės
jasrimennialm. mariahamğe ndares-i ašal abma edejišės

kē emmɔf woh edasnow erçf ashid's ehrēj hadennefcalawg
nhēdhf awō asnow erçf asnoj's hanefwerēde
nhēdhf awō asnew araφf asnaφs hanefurīde
nhēdhf snφ araφ asdeğs anefurēde

esçi emmos jēbaçis enagkē mbaţma narebașsn
esçi ɔmmxes jēbījs enegmbejma nerebașsn
esçi ɔmmasesf jēbaşjs negmbejma nerebașsn
esçi ɔmmasesf jēbağais nāghmbbejma narebașsn

namūanke. jēşus ūn edaφnaw ers esr̄imı nemmiğiøjųdaj
namūanke. jēşușge nderfnaw ers esr̄ime awō njūdağ
namūen. jēşușge nādaφnew aras esr̄ime awō njūdağ
namūenke. jēşușge nādaφnew aras esr̄ime awū njūdağ

edaw-i nemas ewrimi afemğah ɦenbiştnewma woh
edaw-i nmmas ewr̄ime afşdar dj hmbbeştnewma ndže
ndaw-i nmmas ewr̄ime afşdar dj hmbbeştnewma ndže
edaw-i nemes ewr̄ime afşdar dj hmbbeştnewma ndže

afştarqer woh jē şaf nōw jeeşadɛdentkaφ tön.
nneç-o'd awō jē şaf je-ndă qedęnḡaφ dọn.
nneçmagoğ nhēd awō jă şef je-ndă qedęnḡaφ dọ.
nneçşędå awō jă şef je-ndă qedęnḡaφ dọ.

jēşownaφ jēbaçis amū woh anaw woh anefbal diermē.
jeşawnaφ jēbījs amū ṣnaw. afɾımsi ngişesul.
jaʃewncf jēbaşjs amū ngnew. afɾımsi şijėsul.
jaʃeşncf jēbağais amū şn jēşusde naφrıms.

nawjo ūn ɔmmx enenijųdaj jẹanaw bōs φmej
newjọge ɔmmx şiŋinjųdaj jẹanaw ẹghe eneφme
newjọge ɔmmx şiŋinjųdaj jẹanew ẹghe eʃφmajje
nawjọge ɔmmx şiŋinjųdaj jẹan ẹghe eʃφmejje
COPTIC SOUNDS

emmɔ ... anaghe najemihɛ je-gsɔdem erj ensɛw niθɛn.
mmmɔ ... anaghe nejswn je-gsɔm erj nwajɛ ním.
mmaʃ ... anaghe disawne je-gsɔm araj nwajɛ ním.
mmaʃ ... anaghe naj slaughter je-gsɔmme araj nwajɛ ním.

ta eltɛbajmɛš edgɔdi erj ajps hina endunahdi
alla natasjɔ's edgɔmɛš'e edahearaŋfl ʃegas ewebsdɛwe
alla natasjɔ'ф edgɔmɛš'e edahe areŋfl ʃegase ewa-rɔbsdɛwe
alla ajɔps' edgɔmɛš'e edahe areŋfl ʃawnar-ʁbsdɛwe

jeendɔŋ bɛdalgawɔj. wɔh naj edaŋpdu afɔș
je-nɔδ bɛdalgąnmɔd. awɔ nəerfʃenaj afașgaʁ
je-nɔδhe ndagdɔnmɔd. awɔ nəarefʃnaj afașɡel
je-nɔδ bɛdalgąnmɔd. awɔ nej nəarefʃ'we afașgaʁ

eβɔl ʃen-unipdi ensmɛ jelasars amu eβɔl...
eβɔl hın-unig ɛnsmɛ jelasars amu eβɔl...
ɐɔal hın-unag ɛnsmɛ jelasars amu ɐɔal...
ɐɔal hın-unag ɛnsmɛ jelasars amu ɐɔal...

béjejəsus now jemadiwɔ emmɔ kaf eβɔl marefʃenaŋfl.
béjejəsunsaw jəbɔl eβɔl ndeqŋaŋfl nepɔŋfl.
bəjejəsunsnew jəbɔl ɐɔal ndeqŋaŋfl nepɔŋfl.
bəjejəsunsnew jəbɔl ɐɔal ʃeqŋaŋfl ϱpɔŋfl.

umɛs ūn endenijudaj nɛ egaw-i hamaria egawnaw
umɛsɛde eβɔl hınniudaj endaw-i šamaria nəerunaw
umɛsɛde ɐɔal hınniudaj ndaw-i ʃa'maria awɔ awnew
hahdə ɐɔal hınniudaj egah-i šamariham nəarunɔ
enę egφajdu awnahdi erφ.
eyeqndąfʒeφ awbisdɛwe erφ.
aeqndąfʒeφ aw̥bsdɛwe araŋφ.
aneqndąfʒeφ aw̥bsdɛwe araŋφ.

MATTHEW XIII, 24–40

B aŋkɔ ʃadɔdu eneq̩araqolə ɛφjɔ eμmɔs s-ni
F ʃeq̩alɔqolə 1 əŋʃes nɛw ehlej ɛφjɔ mmas ʃeq̩medella
S aŋkɔ nɔw ehraj neq̩araqolə ɛφjɔ mmas ʃeq̩medon

1 That r would survive in a small group of words only is very unlikely. Though written with p the sound must have been l.
enjeqmed-urc endenipæwi en-urômi e asleep-uric
ndemævwi as-śni nunlômi e epsidîi nunlalag
gëmdmë-er n-mbëwe e-urôme e apn n-uqroğ

enanef ënenephajhi. edawengdœde enjenirômi ap-î
enanûf edëpsôû. edeansimûde engaç ap-î
enanûf hraj hndepsoçê. hmbå愿望ndôdëde ngnirôme ap-î

enjebëfjâki apsipîi enhanendî ëhentmëði embiwô
ndëbëfjëjî1 apsipi nhënendîg ëhendmëdi mbswa
ngëbëfjaje apn n-ndëg ndmëde mbswa

wih apsê naaf. húde edëprôd enjebisô wih apdíâ upah
apamàši. hûde ndablûm lôd ap-èl-ûdëh
apeôg. ndërepçibôdë ngëbëgôçôs ap-ire

ôde awwônh ebo enjenîge-endëj. aw-îde
awwônh ebal njeni-endëg. aw-î
n-uqarôs ôde awwônh ebo ngîne-nôdëg. awdihiweyôjê
enjeniëfjajg endëbëinebjhi wih ëbëw jeënëcôj
njenihêl ndëbëbôçibôçôs ewjô mmas
ngi-nhmhal èbewôjs ewjô mmôs

më urç enanefan âgsôf ëhëndêgjih. jëmê n-uqalaâ enanûfem enaçedôf edëgôô. jëmê n-uqarôgan enanûf ëndçaçôf hraj hndeqsôçê.
edawîmî un ennajïge-endëj tôm. entôfî ëbëaf nôw
a'fôûmî ëg dön nnejendëg. ndôfđî ëbëef nêw
ndôpëhëge e-ndëg dön. ndôfđî ëbëaf naw

je-uçiî enrômî ëbëaf-erpej. entôwde ëbëw naf
je-uçiî njîmi ap-èlbej. nihielde ëbew nêô
je-ufajê nôrome ëndçaf-râj. ndôwde ëbew naf

jean kwôs enqenênæn enqensû. entôfî ëbëaf
je-èveôs ndëndgâmû. ëbëef
je-èveôçôg edèrenôg ndënswhu sëchûn. ndôfđî ëbëaf

1 ndô- must be etymologically distinct from Sahidic ngi, for, if not, it should have the same form.

w.
je-emmon mēhoqe ereqensōgi ennī-endēj
nēw je-mman mēhos ereqensōdqf nni-endēq
naw je-mman mēhoqe ereqensōwuh ehūn nne-nēg

enēqensōqī emihgēswq nemow. alla kaw marurōd
nēqensqēqem mibgeswq nemew. gēw nseajeq
nēqensbōṛ mmmaw mihgeswq. alōqin harow nseajeq

nemnuerēw šahēsw emibōsh. woh ḥenbēsw emibōsh
hi-usah šahēwajš mbōhs. awō hmbēwajš mbōhs
hi-usah šahēwajš mbōhs. awō hraj hmbēwajš mbōhs

ējēps ennicajsh ēsōgi ennī-endēj ēnāṛq
qinēqiansēmmi nnaqajahs nsēqawqew qni-endēq nsaqēq
qināqq's nnaqajps ēsōwq ehūn nqwṛq nne-nēq

woh moru enhannēqri ehīqhu ḥenbikrom. bīswqē
nsemañu nhenṣal qebāqhu hmbēqjōm. bswadē
nēqenmmoru nhenqol ehīqhu. ₇heswqē

twōqf ehūn eqa-abtēqē. afkō ḥadqjō enqēhaqalē
nsēqawqew ehūn eqa-abqēqēqē. qēbāqalē afqē qew ehēj
nēqenqswqew ehūn eqa-abqēqēqē. afqō nawn ehraj nqebaraqalē

ēfqo emmōj je-sōqī enqēqmeq-dqo endenqēwi en-unapri
ēfqō mmas qeñmedejla nqenemjēwi as-īni nnnēbēq
ēfqō mmas je-esñδon qngi-ñmnqerq mbēwēq ewbqalē

enqējlama ea-qurōmi cīds afsads ḥenbēqjōi.
nsēqelom eafqijq nje-ulōmi afsa hmbēqjōi.
ncldm eawrōme qīds afsa mmmrs hraj hnhēqfsoqē.

e-ugujimendē ebsl udeniqi jō déru. esōqē
ugujimendē eṣaḷ udeniqi jōq deḷu. hqadqē
qajmen ewgüjqēq ēnqerq jō déru. hqadqē

asqan-ajaj s-qj ennēqdi eniwqdi woh šassōqi
asqanōq qasqajew waqdi nībi awō šasqōbi
esqan-żwqane čas-rnq e-nwqjēq nsōqē

e-uqṣēn hōṣqē enṣe-q enṣenihalaqi endeqpe enqe-woh
nuqṣe hōṣqē nqenihalaqi nqēqēq nse-woh
ewnqēq nqṣe hōṣqē nṣe-q nqī-nhalāqi nqēq nse-woh
eṣennēṣja. ḛēbaraḥbē ḋafp
hijennēṣja. ḛēlababē ḋafesi mmas nemēw ḋafjō mmas
hnnēṣaḥbē. ḋafqā ṅawen ehraf ngebaraḥbē ḋafjō mms

s-ni enejimed-uṃ ṑde nipēw en-uṣemēr ews-usimi
jeṣmedēla nδenebhēwi as-īni nnusej ews-usimi
je-esṇṇōn nqidmnqer n-mbēwe e-uṣha ewsāshime

ćiḍφ askoḥφ ḋenqmd enśi ennōj ṣaḍeṣphiḍi dēṛφ cilṣemēr.
jiḍφ asḥaḥφ ḋnṣamq nṣi nnaečd ṣaṇeṣbwoṣeṣm ḋeṭeφ ʃisεj.
jiḍφ asḥaḥφ ḋnqmd nṣi nnjō ṣaṇeṣphiḍha ḋēφ.

njde dērū a-jēṣsū ṣdu ennimēs ḋenhanbaraḥbē ṣoh
nej ṣеЛu a-jēṣsū ṣjaw new ḋnheṇaḥbē awō
nj de rū a-fjum ngijejūs ḋnhenbarṣaḥbē n-mmēse awō

kōrīs ḍaraḥbē nafxai nemōwanē. hina eneṇφōg ews
aṣenḥaḥbē nnaṣφejas nēwnebē. ḡhos ṣφjōg ews
aṃḥaḥbē mḥφejas naw. ʃeφas eφejōg ews

enepē ḍafqφφ ews hidqφ embiḥbφbēdēs ews ḋafjō mms
nqebeṣeφφ ews nqebbēbēdēs
nqibēneṣawφφ ews hddmbeṣbēbēdēs ews ḋafjō mms

jeaṅwōn enrōj ḋenhanbaraḥbē ṣwh endasai ennē eḏhēb
jeaṅwōn enjō ḋnheṇaḥbē ṣnasej eneṇhēb
jeḍinawōn nroj ḋnhenbaraḥbē ṣdajō nmeṅhēb

isqen ḍgāḥabē embiḥsms. ḡḍe afkanimēs ews
jindgāḥabē mḥsms. ḡḍe afqemēsē ews
jindasōnq ews mḥsms. ḡḍe afqō mmbēsē

aφ̄-i eḥūn ebi-ēj. ṣwh aw-ī harrφ eneṇeφmatēdēs
aφ̄-i eḥūn ebej. aw-ī ʂalaf nqeneφmaqēdēs
aφ̄-i ehraj ebej. awdįeawoj ews nqineφmaqēdēs

ewō mms ġeṣbeṣiḥaraḥbē nan ews endeni-endoj

ewō mms ġeṣbōl nēn ews ṣnḥaḥbē nni-endoj

ewō mms ġeṣbōl erno ṣnḥaraḥbē nne-ndo̴j

endoṣņi. entqfē ḋaf-erwō ḥeṣaf ġebeṣiđi embiḥrṣ
nδeđōśi. ṣnaqfē ʰeṣeφ ġebeṣiđi ṣmęglaḥ
nδaṣē. ṣnaqfē a-fwōsb ews mms ġebeṣjō ewsęgō
etnanēf ḥērī emprōmiḥe. ḥījḥiḏeḥe ḫūṣmas. ḫīry
ēḏnanufē ḥēlī mḥlōmi. ḫōšiḏeḥe ḫūṣmas. ḫēḡlaḏ
ēḏnanufē ḥērē �kowski. ḫōṣeḥe ḫūṣmas. ḫēḡraḏe

etnanēf najne enišēri endēḏimēd-ur. niendēḏe nišēri
ēḏnanufē nešēli niḏmeḏella. niendēḏne nešēli
ēḏnanufē nišēre niḏmnd-er. ne-nḏēḏeṇe nišēre

endēḏiḏhōw. ḥījaiḏe edaḏsaḏu ḫīḏjaḏeḥsē. ḫi-ōshē ḫē
mḇōḏhaw. ḫējī niḏaḏseḏu ḫḏjaḏiḏsē. ḫōhsē ḫē
mḫnērēs. ḫjajē endaḏḫwē ḫḏjaḏiḏsē. ḫōhsē ḫē

ḏhaē endēḏaj-eneh. niĉaj-ōshē ni-aṅgelēs. emprēdī ūn
ḏsindēlia nḏebej-eōn. nejaj-ahsē ne-aṅgelēs. nḏhe ūn
ḏsindēlia mḇ-ajōn. njaj-hsδēnē n-aṅgelēs. nḏhe ě

ēsawsōgi enni-endēḏ endrē ṭwh ēnsērōjhu ḫēnḏikröm
nni-endēḏ ēsawḏōdu nsēḏghu ṭhmḏëlōm
ēsawsōwh ēhūn nne-ndēḏ ṭnsērōjhu hraj ṭn-ugōhē

ḫajrēḏi ḥetnašōbēi ḫēnḏhaē endēḏaj-eneh.
ḏejẽ ḥē ednēsōbēi ḫndsindēlia nḏebej-eōn.
ḏajẽ ḥē ednacōbē hraj ḫndsindēlia mḇ-ajōn.
CHAPTER III

DIALECTIC MISSPELLINGS IN SIXTH- AND SEVENTH-CENTURY THEBAN DOCUMENTS

Non-literary documents from the region of ancient Thebes and dating from the sixth and seventh centuries may be made to yield valuable evidence about the sounds of Coptic spoken there at that time.¹ Misspellings in a considerable number of these documents² are evidence that the speech of their writers was not the pure Sahidic aimed at, but some compromise with the dialect or dialects of that region, into which Sahidic had been imported. The misspellings include vulgarisms such as turn up occasionally in all the literary dialects and belong to no particular part of the country,³ archaic features characteristic of A and A₂, non-archaic features characteristic of A and A₃, and special Theban features. The last named are of course not confined to Thebes. Indeed “Theban” must be taken in a broad sense so as to include places to the north and south from which letters were brought to the Theban settlements, probably at no great distance.⁴

In attempting to interpret the misspellings mere scribal errors and idiosyncrasies must first be ruled out. Those that remain will indicate either the writer’s characteristic weaknesses or else the exaggerated opposite into which he falls in attempting to avoid them.⁵ Sometimes it is difficult or impossible to distinguish between error and overcorrection, but usually there is evidence or at least presumption in favor of the one or the other.

I. Vulgarisms

₅ for ⁴ occurs repeatedly in the verb ḫ₂, but rarely otherwise. ṣ became ṣ by voicing.

¹ Most of the illustrations are taken from Crum Epḥ, I, 236 ff. and verified in the original sources there named.
² Part II, 73. About one-eighth of the Epiphanius and Deir al-Bahari texts are impure, according to Crum Epḥ, I, 233.
³ These vulgarisms appear mostly in Greek words. What is their relationship to the same vulgarisms in contemporary Egyptian Greek?
⁴ Crum Epḥ, I, 235.
⁵ Part II, 60 ff.
r for ο and the reverse in Greek words occur quite commonly. This does not represent any peculiarity of pronunciation. Both letters stand for the one sound ḫ. Examples:

*ἀλαπί*  ἀλοκε  ὑατα
*ττίκι* (proper name)  πρακλαμα  νεπωθες (= κοινότης)
*σαρκαλιν*  νερατε  (= κεράτιον?)
παρασχειες  γομολοκε  νερικαμα
παρορινος  γρηγοτακι  μερσοτριος
πιναλια  νε (= και)  παραγαλες
πραματοσφορος  ναλικιον  προσωνιες

r for χ and the reverse in Greek words are very rare. This interchange may indicate that χ as well as r was pronounced ḫ in conformity with the phonology of all valley dialects, which have no aspirated stops. Examples:

*καλιοιον*  ποστριμπρα (= Pulcheria)  κχιαρι
*καλχικων*  κτοιεις  χατρον
κρια  εχετε  (= castrum)

p for ι occurs quite often, the reverse less often, mostly in Greek words, and is largely due to assimilation. This interchange indicates that the sound r or the letter p was preferred to the sound 1 or the letter ι, as at Eshmunain. Examples:

*αρομοφορος*  πρεποτ  κταλιος
*δεριαρις*  πρεποφορει  λιτλα
*πρι (= αλιε)*  ρηπι  μεχειλ
*παραμπερ* (proper name)  σχιαρι  (= σκυτάλη)
*κρινοπομος* (proper name)  τετρχοσ  παλλαλε
παρακαραρ  φαλιαριον  πλεςσε
*πατροιος* (proper name)  φερ  διλ
πορικ-  φολοκαρε (= φιλοκαλεί)

1 Part I, 14, 18 ff.; Part II, 85.  2 Part I, 19.  3 Crum Cph., I, 243.
DIALECTIC MISSPELLINGS

ποτριπια (＝Pulcheria) ἄρης άγμαν (proper name)
πραμε ἰαλαρως ἦανος (＝Kuriakos) (proper name)

η for ά or ρ in Greek words occurs very rarely. Appears to involve the question of the interchange of these three sounds in Egyptian. But η exchanges both with ι and with ρ in Egyptian Arabic. There seem to be only two examples:
ευθηνετ (＝συμβουλεύων) επιτόλον

II. Archaic Features

α for ο accented is the commonest of vocalic peculiarities. It is a characteristic of Achmimic-sub-Achmimic as well. Examples:

άμε παργσ σταργ
άεε πάερ (=ποσ) σταρπ
άμπ πάστ (=Πδώρ) μασιμ
άατ (=ατ) πάπαι (=παποι) μαξάς
άαλατ παταμιτις γαδατ
(＝ποταμίτης)

εύατε (=ευσσορέ, ράχατε) ράλαρ (=ράλσ)
(pledges)

ειανε πανε μαρμ
κάπς καλσς γετερταρτ
σάς (=σως) καςς (=μισστορτ)
λαμ καγς χαλα
μαειε ταμιςς μιατε
μανάμαν τιπας ςάλη
μανιες άνας ρατε (=ςορτε)
ναμ οταες ςάλαν

ε for ά accented is very common. It is often written η. It is a characteristic of Achmimic-sub-Achmimic also. Examples:

εμαγε (=αμαρτε) καδάλλας πριγγε
ερμε (=αλικ) ερμή πηρ
ερμίπ ρημή (=αμρε) πητε (=παστή)
πε (=mercy) καλά (=Assuan)

1 Part I, 54.
COPTIC SOUNDS

πεξεχις
ματαίσ ( = μίτας) σεχις
πετετε
ματαίσ ( = ματάας) σταίτες
σεντε
ή (dative)
σεσεχιν τίσε (genitive) σεσεντ
σεμερ
ηετε ( = ἡμας) σεσεκαί
σετ
πετέθ ( = Φιλα) σεσεθ

1 for α accented occurs only in πιν (absolute form) and in suffix forms of the verb ἔπει: ἔπει, ἔπει, ἔπει, ἔπει.

1 for ε accented and unaccented, and in Greek words, occurs frequently. It is often written ει. Examples:

κίμανος
ειγος ( = εγε, truly) πιεί-?
κιφεσος
ειωσονες
κικαθε
εεσ- (preposition)
λαγμον (plu. of λαγμα)
ειδη ( = ειδη)
μπερ
ειδλαχ (ιντος)
εις- (verbal pref.) μαρε-
εις- (verb)
εις (possessive)
ειζοτα
πιε-?
ειε- ( = ειε)
πιε-?
ειρειν
σιμα

ου for ευ half-accented occurs only in the possessive article of the third person plural. This is characteristic of Achimimic—sub-Achimimic as well: που-, του-, που-.

OVERCORRECTIONS

ο for α accented or half-accented is very common, as in manuscripts from the White Monastery, Esne-Edfu, and Elephantine. There can be no doubt that this is an overcorrection. It cannot be a dialectic peculiarity, because the verbal prefix of the second perfect, πτορ-, πτοφ-, is impossible even in the "ο-dialects," Sahidic and Bohairic, and is not supported by the vocalization of the first perfect in the same documents. It is quite evidently

1 Crum Ep., 1, 239; Wor. Frier, 122, 123; Crum ST, No. 91.
due to analogy with the forms of the independent personal pronoun, ἵτος, ἵτος. Examples:

ἀνάπθος ὁς (verb) ὁς (ὁς?) ὅς
ὅσσον (＝Katharōn) ὅσσον (＝ἀσσόν) ὅσσον
ὅστρων (＝castrum) ὅστο (＝artifex) ὅστο
ἀποτρήσ ἄποτρήσ ἄποτρήσ
ἀμοτε ἀμοτε ἀμοτε
ἀμαρτάς ἀμαρτάς (= dowry) ἀμαρτάς
ἱτος (verbal pref.) ἱτος (= dowry) (= ἱτος)

οὐ for ο accented (in Coptic words) is very common. When it occurs in Greek words it is evidence of the same tendency as οὐ for ω (see examples below). But when it occurs in Coptic words, with the single exception of οὐ, qualitative of ἄποτρήσ, it involves words which we know had the vowel ά:

κροτάς κροτάς κροτάς κροτάς

It would be surprising indeed if, in the region where we know that a prevailed against the Sahidic tendency of a to become o, it should, at the same time or in a local subdialect, pass over into o and beyond it into u. A subdialect may be expected to be a variety of local speech, exhibiting its general tendencies, not contravening them. A dialect having u for Sahidic o and primitive a would be ultra-Sahidic, in the sense that it would be expected to occur in the far north, the direction from which this change came.1 Where οὐ is written for Sahidic o it is a fair inference that the writer really pronounced an a in his natural dialect and, in trying to conform to the o-language of the schools, went too far and wrote an οὐ. It is, however, possible that, in his daily life, he tried to speak the o-language, and succeeded only in pronouncing an u. He would do that because his dialect had οὐ for ω, as we shall see below. Examples:

ἀμαρτάς ἀποτρήσ ἀποτρήσ (= μονογενής) ἀποτρήσ

1 Part II, 78. Unfortunately for purposes of comparison the peculiarity illustrated by κροτάς, etc., is confined to “Theban” documents.
COPTIC SOUNDS

αιανοτοσε = ποντς = εμοτ
ειπτροσιτη = ποτς = ειπτροσιτη
καοσολινη = ρτ (qual. of ειρη) = ειρη
κροτη = παντοκρατωρ = τοκρατωρ
γεροτε = ποταν ( = πότε) = ψοταλωμων
μοσνακτιριον = προςε

III. ACHMIMIC OR SUB-ACHMIMIC FEATURES

α for e unaccented and initial, or in the first syllable, is fairly common. Examples:

α- (preposition) = ανεε (= ενεε) = αποτ
ανδαλ = αναριτ (= North) = ανα-
αλαχικιοτε = απατζ = βαμπινε
αλατε = ανραϊ

ε for o accented and followed by w is common. Often written with h. Examples:

εριτ = τανεε = αιεε
κιτε

οτ for ω (o) accented and final is apparently common. Examples:

εοτ ( = εου, ass) = οτ ( = great) = έλλοτ
πισοτ ( = Ombos) = προτ (= winter) = ξοτ

This Achmimic–sub-Achmimic feature is extended to other positions in the word. Examples:

αιναλοτομα = οτρ = ροσμε
βικοτριπε = οτρα = ετεοτειε
ειοτ = ποζουι = Χρεοτε
νοτρ = ποττ = μοτι
μεσοτρι = ροιμε = κοστρι (proper name)

But apparently not where the vowel is doubled, a very important departure from the Achmimic rule.

OVERCORRECTIONS

e for α unaccented is common. Often written with h. Examples:

εμεε = (= αματε) = κελο ( = σαλο) = τεγο
εριτ ( = αριτ, perhaps) = περαι (proper name) = οσαρτς (wa’d-)
πριτ ( = perhaps) = τελο
Sometimes the vowel disappears, occasionally leaving a syllabic consonant. Examples:

τάο  λος (=αλος)  γυ (=γω, prep.)
τρκο  μ (=αν, neg.)  τεθο-ειτ
εκθρ (=εκτρη)  κας (=κας)  κα-ειτς

ω for στ accented and half-accented is common. Examples:

μογ  πογε  ω (=οτ, interrog.)
πογ  εμο  εμοτ-

In one case it is consonantal: εμο (=εοτο).

ο for στ accented and half-accented is common. Examples:

εγον  ποτε  ποκ (name?)
ιοτεμοε  πογ  εγοβιν (=Πουβητ)
ροι  ο (=οτ, article)  ερομος (=Rufinus)
μογ  ον (=ον)  εο (=εον-
νοβ  παθεμοοιοε  εποε (=last year)

Occasionally it is consonantal. Example: οαμβ. Or it stands for o plus the consonant στ. Examples:

επο ( = εποοτε)  ετοι  τηνοι

IV. SPECIAL THEBAN FEATURES

υ for ι in one instance: αυων (aiou), and the reverse in one instance: ιπαντε (ipante, a proper name). The sound of ι is perfectly stable and, when functioning as a consonant, can hardly have been anything but j. The sound of υ we have found to be Ꜳ; but, if palatalized, it would become Ꜳ, which is enough like j to account for confusion with it. Therefore it is υ which has become similar to ι and not the reverse. Also, the sound Ꜳ had become palatalized in the Theban dialect, at least in certain cases.

υ for ι in a few Coptic words, and the reverse in a few words, mostly Greek. Examples:

-ον  κλονε (=κλοοε)  σεωροε
πολυ  τρομπε  σιμιον
ωλη  ναε (=νεο, half)  πι- (prefix)

1 Part I, Chap. I.
2 In these examples the accent seems to have shifted backward to the first element of the compound word: θαπζε, θειζ-
3 See Grimm CG, Index.
Coptic Sounds

Here the value .setLevel, just obtained for .setLevel, coincides with the known value of .setLevel, corroborating the conclusion that the sound .setLevel has become palatalized.

for .setLevel in a few Coptic words, and the reverse in a few words, mostly Greek. Examples: .setLevel

**ἀλατίν** (=glass)  **τωίς**  **σέρων** (=κηρός?)

**βαλατρ**  **ἐπικομίον**  **σι** (=καί)

**κιν-** (=κιν-, “find”)  **ἐπολοστινος**  **σό**

**καλήν** (=καλήμ)  **ες**  **σούσμε** (=κοσόμμε, you wish)

**κο** (=κο)  **σάμοτα**  **σώλα** (=κολύεω)

**κοσμύ** (=κοσμύ, Cushite)  **σε**  **σώλα**

**κολάρ**  **σενομία**

(=κολώνια)

Since .setLevel and .setLevel both have the value .setLevel in regular Sahidic, this case is virtually the same as that preceding, and further strengthens the conviction that the sound .setLevel has been palatalized. Then all three letters, .setLevel, .setLevel, .setLevel, have the same value, .setLevel, in the Theban dialect.

**ς** for .setLevel and the reverse in many cases, where the Egyptian sound was .setLevel, .setLevel, .setLevel, .setLevel, or where we cannot identify the original. Examples:

**περγ** (=πορμ)  **σεργε** (=σωμ)  **ςτορ** (=ςτορ, necessity)

**παργ** (=a covering)  **ς-** (=ς, be able)  **ςαρ** (=ςαρ, price)

**κορφ**  **κομντ**  **ςε** (=ςε, to go)

**κιρ**  **κορπ**  **ςες-** (=ςες- prefix of relative perf.)

**καγδε** (=καγε)  **ςιςε** (=ςιςε)  **ςτερταρτ**

(=ςτερταρτ)

In normal Sahidic, .setLevel can arise from .setLevel or .setLevel, and .setLevel from .setLevel, .setLevel or .setLevel, but nothing else is possible. .setLevel In Theban, however, .setLevel can arise from .setLevel, and .setLevel from .setLevel or .setLevel, in defiance of the rules. Evidently forward palatalization has brought

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1. Part I, 40.
Dialectic Misspellings

₅, as well as ₆, to ₇, and has changed the breath-sound, ₂/₆, into ₇; and backward palatalization has brought ₇ to ₇. Both letters, ₇ and ₈, must then have had the same value, ₇, in certain words at least.¹

χ for ₉ and the reverse in a few cases:

καλχ (= καλίμ)  χερ- (= δήμ-)  πανμέ (proper name)

Since ₉ often has the value ₇, it appears that χ here also has the value ₇, not its Coptic value, ₉ (Bohairic) or ₉ or ₉² (Sahidic). Evidently χ has been reintroduced into Sahidic with its now (sixth-century?) current Greek value, ₇. χ had the value ₇ when it was first borrowed by the Copts, and never found much employment in Sahidic.

χ for ₇ in a few cases:

ἐβοκχ (= εβοκό)  πανχή  χο (= γο, a measure)

Here χ and ₇ have the value ₇, as in the two preceding cases.

α for ₉ is common. Examples:

αλπ( = ἀλπή)  χερ (= τιμερ)  ενον (= ενον)³

χελτέ  χη- (= τιμ-; the  χινοττε ( = μιττή, 300) daughter-) (proper name)³

In normal Sahidic occur regularly:

αξι(: = *αξι- < ατμή)

ζιν (= *ζινο < μινέ)

ζινο (= *ζινο < μινέ)

In Theban texts α may be reinforced by τ:

τανέ (= ανέ)  ταοτή (= 25)

Or τ may be absorbed by α:  ιαο (= τιαο).

We already know that ₉ may be ₇. ₉₉ must then stand for ₉₉, or even ₉₉, with backward palatalization of the τ (τ) into ₉.

¹ μαπ (= μαοτ) must have had ₅ in Old Egyptian because Achnimic has μαπ, but New Egyptian spells it with ₅. ₂μ (= μιμ) has ₅ in Old Egyptian, but Demotic spells it with ₅. These spellings indicate early palatalization of ₅. Cf. Part II, 77 f., 86.

² Part II, 100.

³ Crum CO, xx, note.
κ for τc in one case: γελαντε ( = γολοντες, holokatinos), and the reverse in one case: μαντε ( = μααμε). Since κ is ḥ, and τ may be ḥ, this combination, τc, may stand for ḥc; and this is easily confused with ḥ (κ). It might further be said that κ, like μμ in a similar combination, had the value of ζ; and this is made fairly certain by the next paragraph, though, of course, it is not unusual to find in any language that a palatal stop has become a dental affricate, and τc might stand for ζς.

κ for μμ and the reverse in a few words and in many proper names. Examples:

div- ( = με-, daughter)  κον-  ευ ( = εεε, behold!)

ταρα ( = μισοπ)  τεσειόμην  μεσρετ (proper name)

οεε ( = οτοεμμ)  πρεθε ( = πραιμε, joy, proper name)

Here κ and μμ appear to have the value ζ. If so, κ (s) has suffered backward palatalization.

τ for κ in one case: τριμνε ( = τΡΛΜΝΕ, τριμήνωρ). This indicates possibly that τ could be ḥ and κ could be ζ.

c for κ in κκ- and λακλεκ.

μμ for κ in με-, μην-, μονή, γεμμώκα.

κ for Χ in ἀρχεία. The last three cases are explained by the values already obtained: κ, μμ and Χ are ζ.

κ for σ in καω, καψημ, κακ.

κ for τσ in λακσμ (= λατ-σμ).

σ for κ in μεσεκ ( = μεξαεκ), ὄμορ, σα- ( = ακ-).

κ for ρ in ακτλεκ.

ρ for κ in καμ- ( = καμος, since), ωρν.

ρ for τ in αλεκαμ ( = Elizabeth).

τ for ρ in ταλικε ( = καλικέ, Callisthenes), ταλικε (καλικε? proper name).

The conclusion to be drawn from all the special Theban features thus far mentioned is that the regular process of forward palatalization had gone on so as now to affect words that had previously escaped: γ has in many more words, or in all words, become ζ.

1 Part I, Chaps. III, IV.
though still written for the most part with the letter ρ or ρ. Also the forward palatalization of η had proceeded so far as to include words having η from Egyptian η, which had previously escaped. On the other hand, a new process of backward palatalization had set in, changing θ into θ and s and š into ç. The confusion between θ and μ seems to show that the ç arising from forward palatalization and the ç arising from backward palatalization were identical. But, if they were, this does not often appear from the spelling. The two sets of palatals are not often confused as they are in the last seven examples. In any case it appears that the Coptic of the Theban district in the sixth and seventh centuries suffered an unusual degree and kind of palatalization. Palatalization of dentals cannot be observed in Egyptian. Instead it dentalized its palatals.

The Berlin manuscript of the Sahidic Psalter, bought at Thebes and dated by its editor at about 400, confines ρ with σ, ρ with χ, and τ with τη; also ρ with σ, τσ with σ, and τς with χ, exactly as do the Theban documents. Since the Berlin manuscript undoubtedly is early, such confusions must be ascribed to local peculiarity rather than to late deterioration. Certainly they did not exist in Sahidic as originally reduced to writing, for if they had, a very much simpler orthography would have been possible. No one goes to the trouble of inventing several characters for the same sound. But the Berlin Psalter exhibits side by side a general palatalization of velars (ρ/σ) and a confusion between the two sets of palatals (τ/σ), a thing which the present writer has never observed in any one Theban document. Unless the manuscript has been successively corrupted by two different scribes it would seem to show that both phonetic features could exist together in a single dialect at an early date. It would not seem necessary, then, to suppose two subdialects.

ç omitted or redundant. Examples:

µειλ (=εµειλ) oτωρ (=οτωρρ) γαρντ (=αρντ, perhaps)

ηλ (=εηλ) oτως (=οτω, news) γαναγωγες
ηλ =εηλ) oτως (=οτω, news) γαναγωγες

The well-known Cockney and Polish-Jewish habit of omitting or improperly inserting h in English is due to a natural absence of h and an effort to correct the defect, resulting in overcorrection.

1 Part I, Chap. VI.
2 Rahlfs. Its number is P 3259.
3 Part I, 31.
4 Faure, 90.
COPTIC SOUNDS

Weakness or absence of ḥ is undoubtedly a general tendency, not only in Sahidic, but also in other dialects. The misuse of ṣ in Theban documents therefore should be ascribed to weakness of ḥ, not to its redundancy, in the spoken language. The Berlin Psalter reveals weakness of ḥ. The Michigan Papyrus Inv. 1190§ exhibits the same in an extreme form. There can be no doubt that the scribe speaks a dialect in which ḥ is wholly absent. For him there is not the slightest difference between ṣ and ṣ, χ and χ, υ and νυ, and ω and ν. The papyrus is labeled “From Araba al-Madfuna” (Abydos), and appears to be old. It confuses χ with σ, and γ with ετ, in the manner of the Theban documents. The Chicago manuscript of Proverbs in Sahidic (Haskell Oriental Museum, No. 10485), of unknown date and provenance, but probably of the sixth century, and almost entirely without the Theban confusion of χ and σ, is strongly characterized by weakness of ḥ. Examples:

em- (= qem-) ṣa (= ṣa) epa (= eπa)
hts (= qths) mqt (= mqt) amate (= amate)
tis (= qths) oto (= oto) yotewe (= yotewe)
πυτ (= ⲧⲟⲣt)

Sometimes, though the ṣ is written, it is evidently not pronounced. Examples:

qareg pos (= qareg qareg na-
epos)
qareg pos gareg nep-
qaεp (= qaεp)

The weakness or absence of ḥ may be a Theban characteristic, or a characteristic of some region near, but not at, Thebes.

Doubling of vowels and consonants. Examples:

naa (= time) neqqiooyn aac ñsw
naan neqqiyn aang ñh
kaa ekiy miadat m-ñw
maada (= no) yyyñal naa n
naas (= of) eβo naa- níj
neaad eec naa- níj

1 St. Gr. 19, 20; Crum Eps., I, 245.
2 See pp. 145-150.
3 The statement about provenance is that of the Cairo dealer. Mr. H. I. Bell has dated the papyrus in the fifth or possibly even in the fourth century (report of July, 1922). His judgment is sustained by Crum’s dating (c. 330-340) of similar hands in Bell JC, 91 ff.
4 Wor. Prov.
co

woon

(= handful)

smoor

gmoor

eowte

goory

otoom

cotoom

xom

otipney

tampouste

mitte

mitte

mitte

mitte

egg-

pegw

cceia

Simplification of double vowels and consonants. Examples:

*ethwse  maxe  xot (= xoot, send)

Thus this is a characteristic of the Michigan papyrus and the Chicago manuscript of Proverbs. Examples:

xene- (= xe ene-)

xenei (= xe enei)

xerei (= xe ereei)

mox (= mmox)

mox (= mmox)

mox (= mmox)

omx (= mmox)

omx (= mmox)

omx (= mmox)

wexe (= wade)

wante (= wante)

wante

xunat (= xunat)

(w. = xunat)
The doubling and simplification occur with both vowels and consonants, and mostly without regard to etymology, as though the scribe's vernacular were abnormally rich or poor in doubled consonants and in laryngals. There would seem to be little doubt that it was the latter, since the reduction of doubled (i.e. long) consonants and loss of laryngals are quite conceivable, whereas the gratuitous doubling (lengthening) of consonants and introduction of laryngals is most improbable. Nevertheless a large number of cases of doubling have etymological justification, as will be seen at once by reference to their Egyptian originals. It is possible to hold the view that for the scribes of the Theban documents as well as of the Michigan papyrus and the Chicago manuscript all doubling was an orthographic convention. Nevertheless the fact that the Theban texts are given almost entirely to doubling, and the two other texts entirely and drastically to simplification, together with the fact that the doubling of the Theban texts is to a very large extent justified, leads rather to the conclusion that the Theban dialect was conservative, preserving ancient laryngals in many unusual words, whereas the unidentified dialect of the Michigan papyrus and the Chicago manuscript, in spite of other common features, had lost all its laryngals (in the manner of Bohairic) and all its doubled consonants. If this latter view is held one would have to suppose that the unidentified dialect was located at some distance from the region which furnishes the Theban documents, though still within the region characterized by weak h and the unusual palatalization.

1 ( = j) excrecent before initial e and lost before στ in the first syllable. Examples:

<table>
<thead>
<tr>
<th>ειδαχ</th>
<th>ειναχ</th>
<th>οτσιφ</th>
</tr>
</thead>
<tbody>
<tr>
<td>ειναχτηπε</td>
<td>ειεκακ</td>
<td>οτσαμηκ</td>
</tr>
</tbody>
</table>

στ ( = w) excrecent before initial ω and lost before ω, o in the first syllable. Examples:

<table>
<thead>
<tr>
<th>στωθηρ</th>
<th>στωθηρ</th>
<th>στομ</th>
</tr>
</thead>
<tbody>
<tr>
<td>στωθηρ</td>
<td>στωθηρ</td>
<td>στομ</td>
</tr>
<tr>
<td>στουμ</td>
<td>στουμ</td>
<td>στομ</td>
</tr>
<tr>
<td>στομ</td>
<td>στομ</td>
<td>στομ</td>
</tr>
<tr>
<td>στομ</td>
<td>στομ</td>
<td>στομ</td>
</tr>
</tbody>
</table>

These two cases should be considered together since both involve the question of vocalic attack (Vokalansatz). Evidently the
phonation is not initiated with a glottal stop but with a cognate consonant, j or ω, the two remaining phantom consonants or vowel supports. The first case might be called palatalization, and the second labialization, after Crum. The first case might be favored by the general condition of palatalization prevalent in Theban. But the second case shows that a broader principle is involved. Loss of i or ω in the position where it is not excrescent is doubtless due to overcorrection.

a for e (η) unaccented final occurs occasionally. Examples:

- ἀλάα
- εισάα (= έισετε)
- καλάα
- μίπα (= μεερέ)
- μέραα
- πα (dat. fem.)
- ρωμα
- εινα
- οτάεα (= οτοειε)

- γοίτα
- ανάκα (= ανάγκη)
- αιπάα
- είτα (= είτε)
- ειχαρίετα
- προσώπα
- εύχα
- μοσμάρα (name)
- ξεμα (= ξέμε)

Whether the sound intended by this α was an obscure or neutral vowel such as a or an intermediate vowel such as æ, cannot be determined. The modern arabized pronunciation of both α and e is often a, which may go back to æ, but the tradition is of small value.

ω (also written ḫ, o, ω) for e (οι) unaccented (or a syllabic consonant) is not uncommon. Examples:

- ποτ-
- ποτάω, ποτάω
- ποτασσε (name)
- ποταξή, ποταξή (utensil)
- ποτ-
- ποταμος, ποταμος

- τοσμοστ (place-name)
- φοτάμων, φοτάμων (name)
- μοτί- (= son of)
- κοταμην, κοταμην (utensil)
- πόταλο (πολάλο)

Here the sound must have been some obscure vowel like a.

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1 Jesp. 75 ff. Cf. Part I, Chap. VII.
3 Roch. 267 f.
e (or a syllabic consonant) for ı is frequent. Examples:

- ἀπε (cepts) ἐμ (prep.)
- ἐμε (know) ἐπε- etc. (demon.) ἐκατ-
- ἐγε (etc.) ἐγε- ( = take)
- ἐς ( = еςτί) ἐς- ( = ἔςτι, 1. pres.) *ἐς-*
- ἐς ( = еςτί) *ἐς-*

This is the opposite of an archaic feature previously noted.¹ We are dealing either with two subdialects having opposite tendencies, or with a single dialect in which there are both peculiarity and overcorrection. In the latter case it appears impossible to say which is which.

ω for αυ in certain common words. Examples:

- εἰω ( = εἰδατς, flax) πιο ( = time)
- μιω ( = μαξα, mother) πιο ( = to them)
- μμιω ( = there) εἰο ( = two)
- πιο ( = see)

These forms are not Achmimic, which in all examples but the sixth has ο. Nor are the sub-Achmimic, which in all examples has ευ. But the second example occurs with ο also; and the second, fifth, and seventh, with οτ.

m for b and n occurs rarely. Examples:

- φολαμοιον ( = neze) μεσε ( = neze)
- m sometimes springs from Egyptian b.² New Egyptian m is sometimes used to represent Canaanish b.³

m for n and the reverse. Examples:

- μαν- ( = μας, to my) μαμιμοσ ( = μαμας)
- μιε- ( = μιες) γιμ- ( = гим)
- μιμητι ( = μαμητι)

Certainly the last two are cases of scribal confusion merely.

c for γ and the reverse. Examples:

- κωπρις κεπ ( = λογηΓ) ταχα
- λακαρος τα ( = εκες, fut. fem.) τιο
- μαρτιψες αλεζε ( = ἀλλάσσεω) πρωτομον
- κακαριας αποταζε τεμπηζε

This merely shows that γ had no special sound of its own.

o for φ in one case only: οεκρομια. The confusion would occur between the Greek values only. Cf. the case of χ for γ.⁴

¹ Part II, 102. ² Sif. Gr. 15. ³ Burck., I, 22. ⁴ Part II, 107.
In the foregoing list of Theban peculiarities there are a number in which directly opposite tendencies have been noted. Sometimes they can be plausibly explained as tendency and overcorrection; sometimes they can be equally well accounted for as invading tendencies from other regions, presumably farther up or down the river. To settle such questions, to locate the true foci of contradictory “Theban” characteristics, to analyze further such a complex phenomenon as excessive palatalization, it would be highly desirable to examine documents representing the true local speech of different places up and down the Nile. But the difficulty of doing so is evident. The place where a document was purchased, or unearthed, or received, or from which it was sent, the citizenship and nativity of the scribe, are seldom known; and when known are not conclusive evidence of the representative character of the document. Furthermore, such documents are not all of the same length, nor do they occur in the same quantity in different places; they are in varying degree conventional or familiar, and are obviously written by persons differing widely in education. Under these circumstances statistical tabulation based upon frequency of occurrence would be impossible, and anything short of statistical calculation would be unsuitable for tabulation. Nevertheless something may be learned by comparing the few documents having salient characteristics and a definite geographical connection.

The peculiar use of o for a is quite as strongly evidenced in the homilies copied at Esne\(^1\) as in Theban documents. For Elephantine the material is scanty, but the trait appears in two ostraca, where ἠὔοτ is written for ἠἄνοτ\(^2\) and ᾗο- for ἁο-.\(^3\) On the other hand, it does not appear anywhere north of Thebes. The region of this peculiarity must, therefore, be from Thebes southward. Incidentally, since the general change of a to o belongs to the northern end of the valley and to the Delta,\(^4\) certainly not to the middle portion of the valley, this excessive change of a to o in the southern end of the valley can hardly be regarded as anything but an overcorrection.\(^5\)

Under the caption of palatalization were included: 1, palatalization in a larger number of words, or in all words; 2, backward palatalization; 3, confusion between both sets of palatals. The first of these appears in the Elephantine ostraca last cited, in which ᾗο- is written for ᾗα-, and in the Esne homilies mentioned above,

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1 Wor. Freer, 115, 123; see above Part II, 81, 102 f. 2 Crum ST, No. 91. 3 Crum ST, No. 333. 4 Part I, 58; Part II, 78. 5 Part II, 102.
where occur **nose** ( = *nokrt*), **komyt** ( = *towrom*), **kome** ( = *towne*). It also appears to the north of Thebes in an ostracon from Koptos in which occur **nes-** ( = *nok-*), **tes-** ( = *tew-*), **tata-** ( = *towat-*), **nata** or **kata** ( = *towat-*), **tak** ( = *takata*). But it has practically disappeared by the time we reach Abydos, and in its place has appeared No. 3: **nok** ( = *no*), **xin** ( = *tine*), **xor** ( = *towir*), **thor** ( = *towor*), **thor** ( = *towor*), **thir** ( = *tir*), to judge by the Michigan papyrus, Inv. No. 1190, from Araba al-Maduna. The same confusion can be slightly detected in the Chicago manuscript of Proverbs (κάσε = κάσε, σάμε = σάμε), which probably belongs to the region of Abydos, since it has in a remarkable degree the weak *h* and the simplification of doubled letters, characteristic of the Michigan papyrus. It can also be detected in the Vienna Psalter fragments (νοκ = νοκ) which, in spite of the doubt expressed as to its traditional provenance, may very well have come from the general latitude (if not the region) of Achmim, since it shares in the simplification of doubled letters, characteristic of Abydos, but not in weakness of *h*. The texts from Eshmunain and from Antinoe (?) show no remarkable irregularity or confusion in palatalization. When we reach the general region of Minya again the third type of palatalization: **nokata** ( = *nokata*), **st** ( = *st*), **teko** ( = *tew*), **teneto** ( = *teweteto*), unfortunately in a rather late (eighth-century) text. For al-Qais (?) there is in the Meletian letters the one and doubtful case: **sis** ( = *sis*). The weakening of the phenomenon as one moves northward is all the more remarkable in view of the fact that it is a salient and fundamental Bohairic characteristic, and ought to grow stronger toward the north. In conclusion, the irregular palatalization of *k*, represented by the interchange of *n* and *s*, appears to belong to the entire valley south of and including Koptos; whereas the confusion of front and back palatals, represented by the interchange of *x* and *s*, belongs to Abydos and to a less extent to regions farther north. Both peculiarities appear in Theban documents, but the latter is not strongly marked. The two peculiarities do not appear in the same Theban document. But they do appear together in the early

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1 *Crump ST*, No. 246.
2 *Crump* for *quod* in *mich. Pap. Inv. 1190*, Recto, Col. 2, l. 26; see pp. 145-150.
3 Bessey, 37 (Ps. cvii, 2). But note on same page *n/f* in *siosps*.
4 See below.
5 *Crump ST*, No. 184.
6 *Bell JC*, 92 ff.
7 *Kroll KT*, No. 116; *Audineus*, 471 f., 201 f.
8 *Part I*, 1, 24, 26.
9 Part II, 105 f.
Berlin Psalter.¹ This would seem to show that the second peculiarity has invaded Thebes as the speech of individuals or in letters from Abydos and beyond. The Berlin Psalter would then be explained as coming from a region sharing both peculiarities, and located somewhere between Koptos and Abydos, or as resulting from superimposed influences transmitted by more than one scribe.

Weakness or absence of ḫ is scarcely visible in the Esne homilies: ʿosọrɔ̀ (＝εσωρώτ), ṣαρν (＝ἀρν). There is a trace in one of the Elephantine ostraka:³ petnigw (＝πετνίγθ), and none in the ostracon from Koptos. But when, proceeding northward, we reach Abydos, the phenomenon attains its maximum, if we are to judge by the Michigan papyrus and the Chicago Proverbs, from which examples have already been given. A more frequent absence of ḫ could hardly be imagined. There is no evidence for the latitude of Achmim in the Vienna Psalter fragments. At Eshmunain the trait is attested by No. 1123 of the British Museum catalog:³ γμωσον (＝ξμωσον), εμαχαι (＝μοιοι), γµηρ (＝πηρ), οταυο (＝τωο), οτωκε (＝σωικ), εγελ (＝εηαι), λωςες (＝βοηθης), but not by the Eshmunain ostracon.⁴ From the Antinoë (?) ostracon⁵ comes the example: λη (＝ελοη). The trait appears decidedly in the region of Minya:⁶ πτναγει (=πτναηι), ταγε (＝ται), εης (＝εης), εης (＝εης), τογο (＝τογω), though not at al-Qais(?). From this evidence it appears that ḫ was weak throughout the northern part of the valley, but especially at Abydos. Theban documents showing this characteristic are, therefore, probably connected with places to the north, especially Abydos.

Doubling of letters is about as characteristic of the Esne homilies as of the Theban documents:

<table>
<thead>
<tr>
<th>Greek</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>οτωκε</td>
<td>= conceive</td>
</tr>
<tr>
<td>οτηνε</td>
<td>οτωσογ</td>
</tr>
<tr>
<td>οτρινε</td>
<td>τωοσε</td>
</tr>
<tr>
<td>γιοοε</td>
<td>εδήμη</td>
</tr>
</tbody>
</table>

An Elephantine ostracon⁷ furnishes a single example: ωωκ (=ωκ). But to the north of Thebes no evidence appears. Doubling, then, appears to be a trait of Thebes and places farther south. Undoubtedly to a large extent it is an actual speech trait and not merely an idiosyncrasy of spelling.

¹ Part II, 109.
² Crum ST, No. 333.
³ Crum Cat., BM.
⁴ Crum ST, No. 172.
⁵ Krall KT, No. 116.
⁶ Crum ST, No. 184.
⁷ Crum ST, No. 333.
COPTIC SOUNDS

Simplification in the Esne homilies is rare, as it is in the Theban documents: 獗 (＝ירוג), מַרְיוֹ (＝מַרוֹ), תַּ (＝תַר). There is no evidence for Koptos. But at Abydos it reaches its height, to judge by the Michigan papyrus and the Chicago Proverbs, from which examples have already been given.¹ It is equally strong in the Vienna Psalter fragments. The editor has given a long list.² At Eshmunain the peculiarity can be traced faintly:  countryCode(＝םודר), countryCode(＝םדר), countryCode(＝םדר), countryCode(＝םדר).³ Near Minya there is still evidence:  countryCode(＝מַר), countryCode(＝מַר), countryCode(＝מַר).⁴ Note that the simplification in the Chicago Proverbs and in the Vienna Psalter fragments affects mostly the vowels and in large measure indicates actual loss of laryngals; whereas in other documents it affects doubled consonants or doubled vowels without reference to laryngals. Simplification seems, then, to be a tendency at Abydos and Achmim (?), indicating loss of laryngals. It appears, however, at other places, both north and south of Thebes, indicating no more than the omission of a repeated sound or letter.

Excrescence or omission of  countryCode (＝ו) before  countryCode appears more definitely at Esne⁷ than at Thebes:  countryCode, countryCode, countryCode, countryCode, countryCode. It appears nowhere to the north of Thebes except in a doubtful reading in the ostracon Uncertainly assigned to Antinoë:⁸  countryCode. It is probable, then, that the characteristic centers to the south of Thebes.

Unaccented  countryCode for  countryCode (or no vowel) appears south of Thebes:  countryCode (=פַּתָל) in the Esne homilies, and  countryCode (=רָ) in an Elephantine ostracon.⁹

The Esne homilies show to a remarkable degree two features which are not especially prominent at Thebes: the disappearance of the very short vowel e, resulting, with certain combinations, in the syllabic use of a consonant; and the interchange of a and  countryCode. The first of these is characteristic of valley speech¹⁰ as opposed to that of the Delta. The second is mentioned in the grammars as a characteristic of late and poor manuscripts.¹¹ Although these texts date from the tenth century the first feature is almost certainly

¹ Part II, 110.
² Crum Cat. BM, No. 1123.
³ Kroll KT, No. 116.
⁴ Wor. Freer, 289, 276, 286, 305, 283.
⁵ Crum ST, No. 327.
⁶ Part II, 112.
⁷ Wor. Freer, 289, 276, 286, 305, 283.
⁸ Crum ST, No. 184.
⁹ Crum ST, No. 172.
¹⁰ Part I, Chap. I.
¹¹ St. Gr. 27.
regional rather than degenerative, and the second, very probably so. Examples:

\[\begin{align*}
\beta- \text{ (= epe-)} & \quad \eta\sigma\iota\alpha \text{ (= e}\iota\sigma\iota\alpha) \\
\tau\beta- \text{ (= etep-)} & \quad \kappa\epsilon\nu\tau\nu \\
\sigma\rho\mu\iota\nu\alpha \text{ (= e}\rho\mu\gamma\nu\epsilon\iota\alpha) & \quad \kappa\eta\tau\rho\nu\omicron \\
\beta\rho\alpha\tau\iota\kappa\iota \text{ (= e}\rho\gamma\alpha\tau\iota\kappa\iota) & \quad \pi\tau- \quad \psi- \\
\tau\rho- & \quad \nu\alpha- \text{ (= nes-)} \\
\tau\pi- & \quad \pi\nu \text{ (= m}\nu \text{)} \\
\mu\alpha\nu\pi\omicron\nu\alpha \text{ (= coo} \nu\nu) & \quad \sigma\nu\tau\omicron\nu\alpha, \sigma\nu\tau\omicron\nu\alpha \text{ (= coo} \nu\nu) \\
\varepsilon- & \quad \kappa\rho\pi\nu\omicron \text{ (= ce} \rho\nu\nu \text{)} \\
\tau\rho\delta- & \quad \sigma\tau\omicron\nu\iota \text{ (= coo} \nu\nu) \\
\kappa\theta\iota\pi\nu \text{ (= coo} \nu\nu) & \quad \iota\alpha \kappa\omega \text{ (= 'Ar\beta\beta\alpha\kappa\omicron\nu)} \\
\end{align*}\]

In spite of the scarcity and uncertainty of the evidence it seems possible to divide the valley into two regions with respect to broad phonetic differences in the sixth and seventh centuries and later: 1, from Koptos southward; and 2, from Abydos northward. They may be contrasted thus:

\[\begin{align*}
\text{Confusion of } \kappa \text{ and } \sigma & \quad \text{Confusion of } \alpha \text{ and } \sigma \\
\text{Doubling} & \quad \text{Simplification of double letters} \\
\text{Disappearance of } \epsilon, \text{ the} & \quad \text{Weakness of } \omicron \\
\text{helping vowel in many} & \quad \text{combinations} \\
\text{Disappearance or redundancy of } \sigma & \quad \text{of } \omicron \text{ before } \omega \\
\text{Confusion of } \kappa \text{ and } \sigma & \quad \text{Confusion of } \alpha \text{ and } \sigma \\
\end{align*}\]

A consistent and reasonable picture can be formed of the phonetic character of Regions 1 and 2. In No. 1 all velar stops had become palatalized; the old laryngal had been preserved, and possibly new and analogous doublings had developed; the consonantal character had increased; through relaxation of the lips \(\omega\) before \(\delta\) had disappeared, and \(\beta\) had become \(\omicron\). In No. 2 the existing palatal stops had become identical; the old laryngal had disappeared, and double sounds of all sorts were reduced to single sounds; \(\omicron\) was weak or had been given up. The first two of these characteristics are also found in Bohairic and might be ascribed to a gradual spread of Delta characteristics in later times; but they are equally well explained as a parallel development.

Finally, the important observation can be made that in the valley from Abydos (inclusive) northward Sahidic in the sixth and
seventh centuries and later was developing along the lines of Bohairic; while from Koptos (inclusive) southward Sahidic showed no such tendencies, but on the contrary was maintaining or exaggerating ancient features (doubling, consonantism) and following developments of its own (sweeping palatalization of n). Certain other features (e.g. relaxation of the lips) may be very ancient, or they may be later developments. Not all of the peculiarities which met at Thebes can be thus accounted for, as, for example, the backward palatalization of dentals, which does not grow out of either set of tendencies, and which may belong to the unknown region between Koptos and Abydos.

Before closing this chapter mention should be made of the curious so-called “Old Fayyumic” texts of the early fourth century, acquired in 1927 by Carl Schmidt for the Staatsbibliothek in Hamburg, according to his statement in *Zeitschrift für neutestamentliche Wissenschaft*, xxx (1931), 288.¹

The dialect is rightly called Fayyumic, because it has the usual characteristics of that group. Not only does Λ appear for p generally, but the p maintains itself in the same few words.

\(\Psi\) stands for Bohairic \(\Psi\)or\(\Psi\), regularly abbreviated to \(\Psi\), and equivalent to Fayyumic *\(\Psi\)or\(\Psi\)*. This abbreviation, \(\Psi\), shows literary dependence upon Bohairic. The texts must, therefore, be placed as late as the eighth century, or the Bohairic fixation as early as the fourth.²

These texts are Biblical and therefore of serious literary character. Nevertheless they exhibit in an extreme degree the inconsistencies of semi-illiterate documents. For example: \(\Psi\) for \(\Psi\), and \(\Psi\) for \(\Psi\) or \(\Psi\). In the last example o for \(\Psi\) is without parallel anywhere.³ It suggests slow dictation or the laborious spelling of a translator into a rude dialect.

The use of \(\Psi\) for \(\Psi\) where the original Egyptian sound was, or should be, \(\Psi\) is not a Fayyumic characteristic, but a regular Bohairic, and a sporadic sixth- or seventh-century Sahidic. One. Examples:

<table>
<thead>
<tr>
<th>Text</th>
<th>F</th>
<th>B</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\Psi)</td>
<td>(\Psi)</td>
<td>(\Psi)</td>
<td>(\Psi)</td>
</tr>
<tr>
<td>(\Psi)</td>
<td>(\Psi)</td>
<td>(\Psi)</td>
<td>(\Psi)</td>
</tr>
<tr>
<td>(\Psi) (strict)</td>
<td>(\Psi)</td>
<td>(\Psi)</td>
<td>(\Psi)</td>
</tr>
</tbody>
</table>

¹ Professor Schmidt has kindly placed at my disposal a transcript of Ecclesiastes i, i–ii, 10. The following remarks are based upon these twenty-eight verses only.

² Part II, 67; *MER*, i, 112.

³ Syllabic \(\Psi\) has given way to an obscure vowel.
DIALECTIC MISSPELLING

The use of χ for υυ where the original Egyptian sound was η is not a Fayyumic characteristic. Example:

<table>
<thead>
<tr>
<th>Text</th>
<th>F/B</th>
<th>S</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>χομ</td>
<td>υυομ</td>
<td>υυοις</td>
<td>υονε</td>
</tr>
</tbody>
</table>

The use of χ for υυ where the original Egyptian sound was ζ is not a Fayyumic characteristic. Example:

<table>
<thead>
<tr>
<th>Text</th>
<th>F/B/S</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>ναμωντ (also ναμαντ)</td>
<td>ναμωντ</td>
<td>ναμωντ</td>
</tr>
</tbody>
</table>

Taken together these two cases indicate that χ was the value of both χ and υυ, a sixth- or seventh-century Theban characteristic.¹ But note that χ was probably a value of υυ in the original Sahidic region.²

Omission, redundance, and displacement of χ, no doubt due to weakness of η in pronunciation, though a tendency in different dialects,³ is not in this extreme form a Fayyumic characteristic. Examples:

- en- for S/F υυοντ
- ηαλας for S ηαρος, F υαλας
- γεμιρεξ for S ιυαρεξ, F εμιρεξ
- μιρτ for S ηαρτ
- ουωςθ for S ζωωςθ

Weakness of η is observed in sixth- or seventh-century Theban Sahidic documents, and probably belongs to the region from Abydos northward.⁴ In the absence of full information as to provenance and date no explanation can be attempted. Purely internal evidence would indicate that these texts have some abnormal history; that they do not represent any early Fayyumic dialect, but a mixture of dialects. If they were indeed written in the early fourth century, they might still be explained as some regional or individual mixture of influences; and these influences would have to be dated much earlier.

¹ Part II, 106 f. ² Part II, 77. ³ St. Gr. 19, 20. ⁴ Part II, 110, 117.
CHAPTER IV

TESTIMONY OF ARABIC WORDS IN COPTIC IN THE
NINTH OR TENTH CENTURY

As a spoken language Coptic overlapped with Arabic from
soon after the conquest of Egypt by the Arabs in the year 641
to somewhere between the tenth ¹ and sixteenth ² centuries. The
pronunciation of Arabic is well known through a reliable native
tradition, and Egyptian vernacular Arabic has survived until the
present day. This being so, transliterations of Arabic words into
Coptic letters ought to give the current values of those Coptic
letters at the time of the transliterations. But where languages
overlap, the situation is not always the same. There is always a
period of compromise, and usually in the end a surrender. At no
time apparently does a population command the phonetic systems
of two different languages. This at least appears to be the case
in the United States. Accordingly, as the Copts became familiar
with Arabic their sounds must have become arabized. But one
cannot know the precise situation. As has been said, ³ the Coptic-
Arabic transliterations are of three kinds, representing three
stages: 1, Coptic in full vitality, but taking up Arabic words;
2, Coptic still a living language, but Arabic in Coptic letters also
used; 3, Coptic a dead language, represented in Arabic letters.
To the first period belong the medical text of Chassinat ⁴ and the
alchemistic text of Stern. ⁵ To the second period belong the text
of Casanova ⁶ and that of Sobhy. ⁷ To the third period belong
Galtier’s liturgical texts in Arabic characters. ⁸ The documents of
the first period, about the ninth or tenth century, show, I think,
no Arabic influence upon the sounds. They come from Mashaich,
opposite Girga, and from Sohag, just west of Achmim. Those of
the second and third periods are so palpably under the influence of
Arabic that they are useless for the study of Coptic sounds. The
vowels are those of Arabic. With the steady decay and arabization
of Coptic has grown up a conventional system of transliteration. ⁹
In modern times the pronunciation of Coptic in the services of the
church is probably as remote from the pronunciation of third-
century Coptic as the pronunciation of Hebrew in a modern

¹ White WN, I, xxvi. ² Sif. Gr. 1. ³ Part I, 3, 5. ⁴ Ch.
⁵ St. ⁶ Cas. ⁷ Sob. Mar. ⁸ Gal.
⁹ Part I, 5, 6, and references.
synagogue (Ashkenazic or Sephardic) is remote from that of pre-Hellenistic Palestine. The Ashkenazic Hebrew phonology is German-Polish; the Sephardic is Spanish-Arabic. It is impossible to reconcile in either case the historical evidence with the modern situation unless one recognizes that fact. The present writer believes that the texts of Chassinat and Stern are the latest reliable evidence that can be used.

The medical text published by Chassinat was found at Mashaich (Lepidentopolis), opposite Girga, in 1892–93. The editor dates it in the ninth or tenth century. The dialect is Sahidic. Although Mashaich is in one of the eastern pockets,\(^1\) there is at this late date only slight evidence of Achmimic. The scribe was probably bilingual, but one cannot say whether his sounds were pure Coptic or some sort of compromise. He reproduces the actual pronunciation of the Arabic words rather than their fixed orthographic form. Thus for \(\text{alburām}\) he writes \(\text{αρκωλυμ}\), which is evidently \(\text{arbūlm}\), from \(\text{arbūlam}\), a dialectic form involving metathesis of \(r\) and \(l\) as well as of quantity, and for \(\text{qaranful, naλανιορp}\). And yet he writes \(\text{χεριψα}\) in orthographic imitation of \(\text{κατς}\).

Chassinat makes the mistake of thinking at times that his Arabic words in Coptic letters are transliterations. Usually they are not; they are records of the spoken word. This misunderstanding has led to the further mistake of treating the words as classical Arabic. They are colloquial. That fact alone enables one to remove the worst obstacles. In colloquial Arabic, for example, there are no final long vowels in open syllables; and in colloquial one must make allowance for great variation in the short vowels of foreign words, particularly names of drugs, that do not fit into the noun morphology of the language. Too much value must not be attached to correspondences. For \(\text{asfar} (=\text{yellow})\) we find not only \(\text{ακιβα}\) but also \(\text{ακιβαπ}, \text{ακιβαλ}\) and \(\text{ακιβαλ}\). The scribe was evidently not always sure of the proper equivalents. And yet his very vacillation is a proof of his desire to represent what he heard or thought he heard, and not the fixed Arabic orthography.

Classical Arabic represents but three vowels, \(u, i, \) and \(a\). These occur both short and long, and the length does not much modify the quality.\(^2\) But the character of neighboring consonants does modify the quality.\(^3\) Basic \(\text{a}\) may be heard as \(\text{a}, \text{a}, \) or \(\text{u}\) in southern British English \(\text{calf, father, law}\). Basic \(i\) is modified but slightly,

\(^1\) Part II, Map 2.  \(^2\) Diphthongs \(\text{au}, \text{ei}\) are really \(\text{aw, aj}\).  \(^3\) See the exhaustive study in \(\text{Ga rdner, Chap. VII.}\).
and basic ubah perhaps not at all. Egyptian vernacular Arabic follows all these changes, and in addition makes ə and e out of the classical aw and aj, and an obscure vowel, a, out of any short vowel in a syllable of minimum accent. The result is that Arabic has a very small number of vowels, and these are much influenced by consonants and by accent.

Coptic represents its vowels by the Greek letters α, ε, ι, ο, ου, οω. In modern Greek α = α, ε = ε, ι = ι, ο and ου = ω, οω = ω. There is no evidence of any change in the phonetic values of α, ε, ι, ο, ου since classical times. Even ω, though long, may always have had the open sound which it now has, since ο + α > ω. In the course of time it stood for sounds intermediate between this ω and its final value, i. When the Copts borrowed the Greek letters, ι was distinct from ι, and the two are not confused in Coptic words at any period of the language. But before long the two must have become identical in Greek, because they are constantly interchanged in Greek and in the Greek words in Coptic. It follows that the sounds of the two letters were not very far apart even at the beginning of the Coptic period; and ι must have had the sound ə rather than ə. It is not necessary to suppose that the Copts took over Greek letters with exactly their current Greek values, but only their approximate ones. Even sounds ordinarily identified in two languages are rarely actually identical. That is the case, for example, when Persian or Turkish is written in Arabic letters. It is not likely that Coptic and Greek vowels were identical. Still, the Coptic vowels must have been enough like the Greek ones for which the letters stood to justify the employment of the letter in each case. There is no apparent reason for doubting the approximate correctness of the ordinary Erasmian Greek values for all of the Coptic vowels. Even ω should probably be pronounced ə rather than ə, for the latter sound is abnormal as a counterpart of the short vowel ə, and not to be assumed for Coptic without a special reason. Finally, Coptic, in contrast with Arabic, has a large number of apparently fixed vowels. They are fixed because, so far as we can see, consonants and accent in earlier stages of the language had produced their effect and then ceased to be any longer operative. Some of the consonants indeed had disappeared. The particularly disturbing

1 Suggested by my colleague, Professor Bonner.
2 In both cases fusion with the open vowel a has made the other vowel more open.
velarized (u-resonance) emphatics of Arabic probably never existed in Egyptian.¹

The text of Chassinat shows a certain amount of Greek influence in choosing v instead of r to represent Arabic غ, e.g. in قمان, دماج, or ٍ instead of ṭ to represent Arabic س, e.g. in امهامي. But the phenomenon is too irregular to admit of any conclusions. Late Greek letter values appear in most Coptic manuscripts in the spelling of Greek loan words. Perhaps the letter values thus obtained occasionally influenced the choice of letters to represent Arabic sounds.

### Vowel Correspondences

<table>
<thead>
<tr>
<th>Arabic Word</th>
<th>Coptic Spelling</th>
<th>Arabic Sign</th>
<th>Arabic Sound</th>
<th>Coptic Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>الامون</td>
<td>الؤمون</td>
<td>ّ</td>
<td>a</td>
<td>e</td>
</tr>
<tr>
<td>نيديل</td>
<td>نيدي</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>فلامييا</td>
<td>فلامييا</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>غرايي</td>
<td>عرائل</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>المدعد</td>
<td>مدعد</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>صفر</td>
<td>صفر</td>
<td>&quot;</td>
<td>&quot;</td>
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<tr>
<td>صدل</td>
<td>صدل</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>ماميران</td>
<td>ماميران</td>
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<tr>
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<tr>
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<td>حليت</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>زنجيل [رلنجيل]</td>
<td>زنجيل [رلنجيل]</td>
<td>&quot; (?)</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
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<td>صبر</td>
<td>صبر</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
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<tr>
<td>مَلْج</td>
<td>مَلْج</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>اندرازي ²</td>
<td>اندرازي ²</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

¹ Part I, 35. ² Final vowel is short in colloquial and when word stands alone.
<table>
<thead>
<tr>
<th>ARABIC WORD</th>
<th>COPTIC SPELLING</th>
<th>ARABIC SIGN</th>
<th>ARABIC SOUND</th>
<th>COPTIC LETTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ارعني١</td>
<td>αρμενει</td>
<td>ى</td>
<td>i</td>
<td>eι</td>
</tr>
<tr>
<td>النقرس النقوي٢</td>
<td>ανθιπρε</td>
<td>i</td>
<td>i-ι</td>
<td>ι</td>
</tr>
<tr>
<td>ماميران</td>
<td>μμιραπ</td>
<td>ى</td>
<td>i</td>
<td>ι</td>
</tr>
<tr>
<td>نيس</td>
<td>λαβνε</td>
<td>''</td>
<td>''</td>
<td>n</td>
</tr>
<tr>
<td>افليهما</td>
<td>ακλημια</td>
<td>i</td>
<td>i</td>
<td>ι</td>
</tr>
<tr>
<td>افليميا</td>
<td>ακλημια</td>
<td>i</td>
<td>i</td>
<td>ι</td>
</tr>
<tr>
<td>تميي</td>
<td>οοοια</td>
<td>''</td>
<td>''</td>
<td>u</td>
</tr>
<tr>
<td>نوط</td>
<td>νοτε</td>
<td>''</td>
<td>''</td>
<td>oσ</td>
</tr>
<tr>
<td>دار قنغل</td>
<td>δαρονταλοτα</td>
<td>''</td>
<td>''</td>
<td>oσ</td>
</tr>
<tr>
<td>قنغل</td>
<td>καλανγοτρ</td>
<td>''</td>
<td>''</td>
<td>oσ</td>
</tr>
<tr>
<td>فلقة</td>
<td>κολλαο</td>
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<td>o</td>
<td>o</td>
</tr>
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<td>المجر</td>
<td>δρμουρ</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
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<td>δωωοτ</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
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<td>εεεινα</td>
<td>o</td>
<td>o</td>
<td>oσ</td>
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<td>داروف</td>
<td>δερονταε</td>
<td>o</td>
<td>o</td>
<td>oσ</td>
</tr>
<tr>
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<td>o</td>
<td>o</td>
</tr>
<tr>
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<td>δεκαρωο</td>
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<td>o</td>
<td>o</td>
</tr>
<tr>
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<td>w</td>
<td>w</td>
<td>oσ</td>
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<tr>
<td>نورق</td>
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<td>(o)υ</td>
<td>(o)υ</td>
<td>(o)υ</td>
</tr>
<tr>
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<td>σταυμπ</td>
<td>(o)υ</td>
<td>(o)υ</td>
<td>(o)υ</td>
</tr>
<tr>
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<td>νοτε</td>
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<td>none</td>
<td>—</td>
</tr>
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<td>''</td>
<td>''</td>
<td>—</td>
</tr>
<tr>
<td>ميُش</td>
<td>γηθυ</td>
<td>''</td>
<td>''</td>
<td>—</td>
</tr>
<tr>
<td>مَلَح</td>
<td>μηθε</td>
<td>''</td>
<td>''</td>
<td>—</td>
</tr>
<tr>
<td>صَرَر</td>
<td>σαυπ</td>
<td>i (?)</td>
<td>i (?)</td>
<td>—</td>
</tr>
<tr>
<td>نوشاب</td>
<td>ποομαται</td>
<td>''</td>
<td>''</td>
<td>—</td>
</tr>
<tr>
<td>هندي</td>
<td>ηπτη</td>
<td>''</td>
<td>''</td>
<td>—</td>
</tr>
<tr>
<td>خَجَل</td>
<td>χογελ</td>
<td>none</td>
<td>none</td>
<td>e</td>
</tr>
</tbody>
</table>

¹ Final vowel is short in colloquial and when word stands alone.
² Second form is the better known.
Testimony of Arabic Words

Analysis reveals the equivalents to the ear of the Coptic scribe to have been as follows:

<table>
<thead>
<tr>
<th>COPTIC</th>
<th>ARABIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>١</td>
<td>ج, ی, ی</td>
</tr>
<tr>
<td>٢</td>
<td>ی, ی ا</td>
</tr>
<tr>
<td>٣</td>
<td>i, a/أ</td>
</tr>
<tr>
<td>٤</td>
<td>a/أ, a/أ, د</td>
</tr>
<tr>
<td>٥</td>
<td>ع</td>
</tr>
<tr>
<td>٦</td>
<td>ع, ی</td>
</tr>
<tr>
<td>٧</td>
<td>ع, ی, ی</td>
</tr>
</tbody>
</table>

Note that the vowels fall into two groups, one containing the a-vowels and i-vowels, the other the u-vowels. There is overlapping in the function of letters within each group, but none between the groups. The scribe clearly reflects the Arabic situation in which the middle group of vowels (represented by ی, ی) suffers “inclination” (ینالا) in the direction of the front group (represented by ١, ٢), and “thickening” (تام) or resistance to “inclination.”

The latter involves, in combination with “emphatic” consonants, a change of the normal Arabic vowel a into u, which is a movement in the direction of u. But a never moves as far in the direction of u as it does in the direction of i. Its inclination is naturally toward i.

The scribe uses the Coptic letters أ, ی, ی, ی for the a/i-group, and ع, ع, ی for the u-group.

Of the letters أ, ی, ی, ی it will be seen from the table that ی stands for the highest and farthest front of the Coptic vowels, أ for the lowest, ی for the highest and farthest back; and that ی, ی and ع, ع represent intermediate positions. No difficulty is encountered with the letters أ, ی, ی. They stand for some close approximation to أ, ی, and ع, respectively, the Erasmian Greek values employed generally by Coptic scholars. But the letters أ, ی and ع are problematic.

Since our scribe writes نور for نور and صميم for صميم it is certain that his Arabic did not have the د which in all Egyptian dialects has now taken the place of the original diphthong ع؛ and, that being the case, it did not have the ی which by a parallel development has taken the place of the original diphthong د. Since د and ی do not arise in Arabic in any other

1 The Qamis of al-Firuzabadi gives the definition: "تام is enlargement, and abandonment of ينالا."

w.
way, the Arabic of the scribe had no ő and no ȩ to be represented in Coptic letters. Then o and ω do not stand for Arabic ő, and e and h do not stand for Arabic ě.

o and ω together represent Arabic u and ū, the o being short and therefore probably more open than the ω which is long or short. o and ω in the Coptic of the scribe may have been sufficiently close vowels to share with őt the function of representing Arabic u and ū.1 If so, this would be a survival of the Achmimic, sub-Achmimic, and Theban tendency to use őt for ω. In A and A3 őt stands for Sahidic ω when final or doubled;2 and in Theban documents őt often stands for ω, or (by overcorrection) ω/ű for őt.3 Of course, o and ω may have had the values ơ and ő and have been pressed into service for the representation of Arabic u and ū, even though őt was also used for that purpose.

e and h together represent Arabic a, ā, i, ī, the e being more open than the h because it cannot quite stand for ī. Even the most extreme application of the Arabic principle of “inclination” would not bring original a to a point where it could be reasonably represented by the Coptic letters e and h. These letters must by this time have been used with a variety of values, just as letters are notoriously used in English spelling, and for similar reasons. Theban documents confuse e with a,4 on the one hand and with i5 on the other. They employ h for a;6 and most scribes, under the influence of later Greek, confuse h with i.7 Through the confusions arising from the contradictions of Sahidic orthography and local dialectic pronunciation, to say nothing of cross-associations with Greek, the letters e, h acquired contradictory values. e stood for a/a, e, i, and h for a/a, ē, ī. These values completely explain the employment of e and h to represent the Arabic vowels a, ā, i, ī.

To summarize, the vowels in Chassinat’s document are already under the influence of cross-associations. These appear not in Coptic words, where official orthography controls spelling, but in the rendering of foreign words, where the scribe is thrown upon his own resources. In this document emerges for the first time that vocalic irrationality which characterizes the transliterations of Coptic into Arabic characters and the modern native pronunciation of Coptic in the Mass.8

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1 But not close enough to represent w.
2 Till Dial. 9.
3 Part II, 104, 105.
5 Part II, 104.
6 Part II, 124.
7 Part II, 124.
8 Part I, 4.
The suprilinear stroke\(^1\) indicates generally the absence of vowel in Arabic words. In three cases there is actually in the conventional Arabic form a short vowel, but even here it is possible that the Egyptian vernacular Arabic had no vowel and that the sonorous or syllabic element was a consonant. In one example, to be sure, an \(\varepsilon\) appears instead of \(\ddot{a}\), seemingly in support of the current theory that the two are identical. But since there is no vowel sound in the Arabic original, we must conclude that \(\varepsilon\) is a phonetic substitution for \(\ddot{a}\) on the part of the Coptic scribe. Egyptian vernacular (in contrast to Palestinian and Syrian) prefers to have no helping vowel between the second and third consonants in words of the qat\(\text{i}\), qit\(\text{i}\), qut\(\text{i}\) type. But in especially hard combinations a helping vowel might be introduced even by Egyptians, particularly when writing the word slowly.

It is difficult to see any difference between \(\text{חֶלֶט} \) and \(\text{כָּלְטָה} \), \(\text{חֶבֶל} \) and \(\text{כָּבָל} \), \(\text{חֶלֶב} \) and \(\text{כָּלְבָּה} \), \(\text{חֶלֶב} \) and \(\text{כָּלְבָּה} \). Probably in all these cases the suprilinear stroke stands for absence of vowel, not a helping vowel;\(^2\) except of course that it sometimes stands where a helping vowel, or a full vowel, ought to be, to judge from Arabic originals or from the Bohairic forms. The question remains though: Did the scribe pronounce vowels, or syllabic consonants? One may easily slip back and forth between the two according to circumstances. Thus the English word \(\text{battle} \) may be pronounced \(\text{bætl} \) or \(\text{bætəl} \), depending upon the speed with which it is uttered. The most obvious reason for not writing a vowel letter is that one does not pronounce a vowel. If under other circumstances one pronounces a vowel, then the vowel appears in writing. The fact that \(\varepsilon\) may appear as a variant for \(\ddot{a}\) does not prove that they are equivalent; it merely proves that they stand for similar situations in actual pronunciation.

### CONSONANT CORRESPONDENCES

<table>
<thead>
<tr>
<th>ARABIC WORD</th>
<th>COPTIC SPELLING</th>
<th>ARABIC SIGN</th>
<th>ARABIC SOUND</th>
<th>COPTIC LETTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>בורק</td>
<td>נַפַּח</td>
<td>ב</td>
<td>b</td>
<td>n</td>
</tr>
<tr>
<td>אָבֶשׁ</td>
<td>אַמַּח</td>
<td>„</td>
<td>„</td>
<td>n</td>
</tr>
<tr>
<td>זֶזֶל</td>
<td>כָּוָמָח</td>
<td>„</td>
<td>„</td>
<td>n</td>
</tr>
<tr>
<td>לֶבֶשׁ</td>
<td>לָפוֹנַך</td>
<td>„</td>
<td>„</td>
<td>b</td>
</tr>
</tbody>
</table>

\(^1\) Part I, Chap. I.  
\(^2\) Part I, 13.
<table>
<thead>
<tr>
<th>ARABIC WORD</th>
<th>COPTIC SPELLING</th>
<th>ARABIC SIGN</th>
<th>ARABIC SOUND</th>
<th>COPTIC LETTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>النَّبَرَم</td>
<td>ḏrymlm</td>
<td>ﺏ</td>
<td>ﺏ</td>
<td>ṣ</td>
</tr>
<tr>
<td>أَصْفَر</td>
<td>ḏcf</td>
<td>ﻑ</td>
<td>ﻑ</td>
<td>ṣ</td>
</tr>
<tr>
<td>أنَّدراي</td>
<td>ṣndr</td>
<td>ﺩ</td>
<td>ﺩ</td>
<td>ṭ</td>
</tr>
<tr>
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<td>smt</td>
<td>ﻁ</td>
<td>ﻁ</td>
<td>ṭ</td>
</tr>
<tr>
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<td>ḏcwtdt</td>
<td>ﻅ</td>
<td>ḏ</td>
<td>ṭ</td>
</tr>
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<td>ض</td>
<td>ṭ</td>
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</tr>
<tr>
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<td>ﺕ</td>
<td>ﺕ</td>
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<td>ﺕ</td>
<td>ﺕ</td>
<td>ṭ</td>
</tr>
<tr>
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<td>ṣmtn</td>
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<td>ﺙ</td>
<td>ṭ</td>
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<tr>
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<td>ṣdymr</td>
<td>ﺡ</td>
<td>ḏ</td>
<td>ṡ</td>
</tr>
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<td>ﻙ</td>
<td>ṡ</td>
</tr>
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<td>ق</td>
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<td>ṡ</td>
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<td>غ</td>
<td>ṭ</td>
<td>ṡ</td>
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<td>ṣmrtn</td>
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<td>ﺱ</td>
<td>ṡ</td>
</tr>
<tr>
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<td>ﺥ</td>
<td>ﺥ</td>
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<td>ﻡ</td>
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<td>ﻥ</td>
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<td>ﻝ</td>
<td>ṡ</td>
</tr>
<tr>
<td>الأَحْمَرْ</td>
<td>ṣmrntt</td>
<td>ﻡ</td>
<td>ﻡ</td>
<td>ṡ</td>
</tr>
</tbody>
</table>

1 Sounds accompanied by an u-resonance. 2 So pronounced now in this region.
The labials are not difficult to explain. Naturally ndata (b) corresponds to Arabic b, since Arabic has no b and Sahidic has no b. p does not enter into the question, since neither Sahidic nor Arabic has a p; and q (p) does not occur in these transcriptions. Equally natural is the use of q (q) to represent Arabic f. h (b), having no equivalent or near equivalent (v) in Arabic, is not really needed; and divides its services between representing Arabic b and Arabic f, though never Arabic u/w. Evidently the scribe's h resembled both b and f; and for this the assumed value, b, will do very well. It did not resemble u/w, as h does in the Esne texts. q for Arabic b occurs only in the word ḥ-raš, which appears to be thoroughly assimilated to the Coptic language, since it can take an indefinite article on top of the Arabic definite article (επαρχωμεν), and is very much transformed. The equivalence is not a regular one. Evidently the original Arabic word has been lost sight of. ḥ-raš is a Coptic word, and h and q are often confused in Coptic words.

Among the dental stops the correspondence is exactly what would be expected. t/q (q) stand for the unaspirated Arabic stops, d, t, d, without regard to their being voiced (d, d) or voiceless (t), or their being emphatic (d, t) or ordinary (d). t and a are interchangeable. But the aspirated Arabic stop, t, is never represented by either t or a. It is represented by e, a monogram in Sahidic for t, and the sign in Bohairic for t. The assumed values for t, a, e are therefore justified.

Between the palatal, velar, and uvular stops the correspondence is satisfactory. Classical Arabic dz or vernacular j is represented by s and r, though not by a. This means that s had become indistinguishable from a, rendering the latter unnecessary, and both of them indistinguishable from r in some words. The value of all three letters was therefore j or even dž. Or else s, and r in some words, were pronounced dz, and the Arabic sound also was dz. This would explain why a (j) was not used; but it would require an Arabic value otherwise unknown, midway in evolution between

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Part I, Chap. II and p. 32; Part II, 87.
the g of Cairo and the j of modern middle Egypt, and not derivable from Classical Arabic dż. Furthermore, ς and ρ had become confused in this region even in the sixth or seventh century. The probable values, therefore, of ρ, ς and palatalized r in the ninth or tenth century in this part of Egypt were j or qż.

Arabic k is represented by r, which shows that r was not always palatalized, and by x, which shows that x was still the aspirated stop, k. The unaspirated stop, q, is always represented by r and never by x. Evidently x indicates an aspirated, and r an unaspirated and, in many words, an unpalatalized sound which could only be g. The assumed values are thus confirmed.

Arabic g is represented by v, but there is only one instance of occurrence of that sound. It is natural that g should be represented by either r or v, and there is probably no reason for using v in this instance. If there was a reason it was of course the current Greek value, g.

The fricatives, z, s, š, ṣ, h, h, h, are represented by Coptic letters, quite in accordance with the values that have been assumed for them. e (s) stands for Arabic s, but also for z and š, since there is no more appropriate Coptic letter for these foreign sounds. šh stands for Arabic š, but also for h, or more probably c, showing that the letter šh in Sahidic had the value ġ as well as š. z (h) stands for Arabic h and h as well as h, since there is no more appropriate letter for these sounds. But the normal sound of ġ must have been weak, for it is omitted in the word ᶠαλλ (“properly ṣaλλ”) even though the Arabic original had h. Evidently this word has been naturalized in the Coptic language, and the scribe has lost contact with the Arabic original.

Of the group commonly called nasals and liquids, m stands for Arabic m and n for n. Ł, n and p are all used to represent Arabic l; and p and Ł represent Arabic r. Without doubt, then, the assumed values for m and n are correct, though Ł and p present some difficulty. Though the interchange of l and n is common in Egyptian vernacular Arabic, as well as in Egyptian and Coptic, the interchange of l and r is Egyptian and Coptic only. According to present evidence, the two sounds were still very much alike in the tenth century, and very much more alike than the Arabic sounds l and r. If that is true the Coptic sounds are not accurately expressed by the phonetic symbols l and r, but rather by l (as in western American English, wool) and j (as in

1 Part II, 115 f. 2 Part II, 77, 86, 106 f. 3 Part I, 54. 4 Ibid.
burr, according to the same dialect), sounds which can scarcely be distinguished by a German ear.  

Stern's alchemic text from Sohag, not far from Achmim and the famous White and Red monasteries, has been modestly dated by its editor in the thirteenth or fourteenth century; but Chassinat is undoubtedly right in placing it only a short time after his own medical treatise. The rendering of Arabic words is, as he remarks, a little more fixed and regular. At the same time the Coptic shows dissolution. Traces of ancient Achmimic coloring are discernible in the rendering of Arabic ù by oo. As in Chassinat's text, the Arabic words are derived from the vernacular, not the classical. Following are the correspondences peculiar to this text:

- n is not used for Arabic ã.
- ơ is not used for Arabic ù except in the word ù (and').
- Long vowels can be represented by the doubling of a letter.
- ã appears as ăă, and ù as oo.
- ă and ă are never used to represent b.
- v and a have passed out of use.
- ă never stands for dē/đ.
- ă never stands for h.
- χ may stand for h.
- Ç is never lost.
- n and p never represent Arabic l.

These peculiarities indicate greater familiarity with Arabic sounds, and consequently better observation of them; more experience in rendering Arabic sounds by Coptic letters, and less tentative use of the latter, leading to the elimination of unnecessary letters. But χ is used with its current Greek value. All trace of the laryngals has disappeared, and a double vowel means merely a long one. There is less confusion among the nasals and liquids. ã is not irregularly palatalized. Ç has disappeared. h is never weak or absent. These last four features are probably due to the fading away of old dialectic coloring, and a growing conventionality and fixity in the values of Coptic letters, due to a greater dependence upon school tradition. And yet these values have not been affected by Arabic ones.

To sum up the evidence from the texts of Chassinat and Stern, it may be said that it corroborates the values of the Coptic letters which were obtained in all the previous part of the inquiry.

1 Part II, 83 ö.
CHAPTER V

LATE BOHAIRIC-ARABIC LETTER VALUES

After the tenth century the available evidence relates to Bohairic, not to Sahidic; and it is of little or no value, because Coptic was giving way to Arabic, and transliteration was becoming more conventional.

The Cambridge University Library Ms. Add. 1886, 17, published by Casanova,¹ and the Cairo Ms. No. 45, published by Sobhy,² belong to a single manuscript, embodying an edificatory work, written in the Arabic language, but in Coptic letters. It is probably later than the texts of Chassinat and of Stern, because in those texts Arabic had got no further than supplying loan words to the learned vocabulary of a Coptic writer, whereas here it has become the writer's medium of expression; and because here the transliteration is less naive and experimental. Casanova dates his text (and thereby the text of Sobhy, which he did not know) in the tenth century; but Evelyn-White dates the text of Sobhy and that of Casanova (the relationship between which he had discovered) in the thirteenth or fourteenth century.³ The latter position is held to be necessary because the manuscript is of paper, and because the script is late. There may be difference of opinion on the age of the writing, but not on the age of paper manuscripts. Paper was used by the Arabs from the middle of the eighth century, and a rather large number of manuscripts on paper dated in the ninth and tenth centuries still exist.⁴ It would therefore seem perfectly possible to place the Casanova-Sobhy text early in the interval between the tenth and the thirteenth century. This was precisely the period when, according to Evelyn-White,⁵ Coptic was giving way to Arabic in Nitria.

Galtier's Coptic text in Arabic letters must be still later. Transliteration has become completely conventional. Coptic words are

² Sob. Mac.
³ White WN, I, 231, xlv. ⁴ E.g.: Leyden University Library, No. 298, of A.D. 866; British Museum Ms. Or., No. 2600, of A.D. 960; Leipzig University Library Ms. D.C. 33, of A.D. 990; Vatican Library Ms. Cod. Arab., No. 18, of A.D. 993.
⁵ White WN, I, xxvi.
even translated into Arabic. The letter σ has received its modern value, ġ. Even the clergy were by this time ignorant of the Coptic alphabet, for the text is evidently designed for instruction in the pronunciation of the ritual. The system is closely related to the modern conventional pronunciation of the clergy. Galtier is therefore probably right in saying that his text belongs to the fourteenth century or later.

Study of these late Coptic-Arabic texts can yield no evidence as to the pronunciation of early Coptic in any dialect. It can only show how the modern native pronunciation came about. The present writer has already set forth his understanding of this process. The inquiry may fittingly close with analysis of these late Bohairic-Arabic values and the modern pronunciation.

The Casanova-Sohby text represents a form of Arabic that is neither colloquial (as in the Chassinat text) nor classical, but the pedantic compromise now called "modern literary." All final short vowels disappear. The tanwīn or nunation is usually dropped, but occasionally represented by two oblique lines (in imitation of Arabic) or, in the accusative, by en, α, ε. The pedantic school pronunciation of ẓ as z may be observed in māṣir (مَضْرَعُ) in ḥāni (حَنِي), en al (إِنْالَ). The, as Casanova has observed. On the other hand, there are the colloquial forms nāl (نَالَ) (=classical نَالَ), nās (نَاسَ) (=classical نَسَ), en nār (=classical انْلَهَ), en nār (=classical انْلَهَ).

Not all the letters of the Bohairic dialect are used. n (except in M), ω, ψ (p), σ (e) are dropped, evidently because they are not needed to represent Arabic sounds. Also the monograms 陜, ψ, 〈 are omitted.

ς (t) and χ (k) are used with their proper old Bohairic values, and μ (m), α (d), ζ (z) with their current Greek ones, because they are needed for the more precise rendering of Arabic sounds.

Certain letters receive a superscript Arabic letter as a diacritical mark, to show more precisely their pronunciation:

\[ \text{ς, θ, ρ, ρ, τ, τ, τ, χ, χ, μ, μ, μ, μ} \]

\[ {\text{ς, θ, ρ, ρ, τ, τ, τ, χ, χ, μ, μ, μ, μ}} \]

1 Part I, 5 ff.
2 Part II, 127.
3 ζ was not used in the Chassinat text.
Arabic vowels are represented with but very little latitude or overlapping:

<table>
<thead>
<tr>
<th>COPTIC</th>
<th>ARABIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>i, ı</td>
</tr>
<tr>
<td>e</td>
<td>i, a/ā</td>
</tr>
<tr>
<td>a</td>
<td>a/ā</td>
</tr>
<tr>
<td>o</td>
<td>u, ū</td>
</tr>
<tr>
<td>o̞</td>
<td>ū</td>
</tr>
</tbody>
</table>

ı occurs only in the combination ı́ı (ı̞ı̞). o̞ never stands for w.

Arabic consonants also are represented with very little latitude or overlapping. Except in the cases of ṭ/ṭ, n/urnished c/ẓ, a single Coptic letter is chosen for a certain function, though of course it often has several functions to perform, because Arabic has more sounds than Coptic.

The distinctions which the writer is careful to observe are not Coptic ones but Arabic: not unaspirated and aspirated but voiced and voiceless. So ṭ/ṭ stands for t, ũ, the voiceless stops, the first of which is aspirated, the second not; ƙ stands for d, the voiced stop; c stands for (voiceless) s, ʂ, only rarely for z; ẓ stands for (voiced) z, ʐ.

<table>
<thead>
<tr>
<th>COPTIC</th>
<th>ARABIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>b</td>
</tr>
<tr>
<td>ƙ</td>
<td>w (never b or f)</td>
</tr>
<tr>
<td>ʂ</td>
<td>f (never b)</td>
</tr>
<tr>
<td>ṭ/ṭ</td>
<td>t, ť</td>
</tr>
<tr>
<td>ƙ</td>
<td>d</td>
</tr>
<tr>
<td>ƙ</td>
<td>dż</td>
</tr>
<tr>
<td>ƙ</td>
<td>k, q (never dż)</td>
</tr>
<tr>
<td>ƙ</td>
<td>k</td>
</tr>
<tr>
<td>ƙ</td>
<td>ǧ (rare)</td>
</tr>
<tr>
<td>c</td>
<td>s, ʂ, z</td>
</tr>
<tr>
<td>ṭ/ṭ</td>
<td>z, ẓ</td>
</tr>
<tr>
<td>š</td>
<td>š (never ť)</td>
</tr>
<tr>
<td>ŋ</td>
<td>ť</td>
</tr>
<tr>
<td>ŋ</td>
<td>ť (never ť, never weak)</td>
</tr>
<tr>
<td>ŋ</td>
<td>m</td>
</tr>
<tr>
<td>ŋ</td>
<td>n (never 1)</td>
</tr>
<tr>
<td>ŋ</td>
<td>l (never r)</td>
</tr>
<tr>
<td>ŋ</td>
<td>r (never l)</td>
</tr>
</tbody>
</table>
The Galtier text is written in consonantal Arabic characters, without vowel points except in very rare instances. Therefore ı may stand for ά, ε (or the Bohairic prosthetic vowel\(^1\)), and ή;² υ may stand for ι, ι, υ; ο may stand for ο, ο, ο, ο, ο, ο. The last two equations indicate probably that Egyptian vernacular had by this time developed φ and ω out of αι and αυ;³ but perhaps ε is being used in quite a mechanical way for all the back rounded vowels, and ι for all the front vowels. Quantity is disregarded:

The Coptic consonants are represented by the nearest Arabic equivalents. Arabic phonetic laws, and sometimes also the peculiarities of the vulgar Arabic of Cairo, have influenced the choice of signs. Greek has influenced the values of the Coptic signs which underlie the Arabic equivalents. ι does not have to be represented because apparently it still did not exist in Coptic.

<table>
<thead>
<tr>
<th>COPTIC</th>
<th>ARABIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>َ</td>
<td>b</td>
</tr>
<tr>
<td>ٓ</td>
<td>b, f (Greek influence)</td>
</tr>
<tr>
<td>٣</td>
<td>w</td>
</tr>
<tr>
<td>٥</td>
<td>f, w</td>
</tr>
<tr>
<td>٦</td>
<td>d, ٦ (with ُ or َ, Arabic influence)</td>
</tr>
<tr>
<td>٨</td>
<td>d, ٨ (often written ١, vulgar Arabic influence; with ُ, Arabic influence)</td>
</tr>
<tr>
<td>١</td>
<td>t, ١ (with ُ, Arabic influence)</td>
</tr>
<tr>
<td>٢</td>
<td>ِ٣ (؟, ُ (vulgar Cairene Arabic influence)</td>
</tr>
<tr>
<td>٤</td>
<td>ُ (vulgar Cairene Arabic influence)</td>
</tr>
<tr>
<td>٥</td>
<td>k</td>
</tr>
<tr>
<td>٦</td>
<td>k, h, š (last two, Greek influence)</td>
</tr>
<tr>
<td>٧</td>
<td>h</td>
</tr>
<tr>
<td>٨</td>
<td>š</td>
</tr>
<tr>
<td>٩</td>
<td>s, š (with ُ, Arabic influence)</td>
</tr>
<tr>
<td>١</td>
<td>m</td>
</tr>
<tr>
<td>١</td>
<td>n</td>
</tr>
<tr>
<td>١</td>
<td>l</td>
</tr>
<tr>
<td>١</td>
<td>r</td>
</tr>
</tbody>
</table>

The modern liturgical pronunciation of Coptic is set forth by Kircher, Petraeus, Tuki, Stern, Rochomontelx, Prince, and Sobhy

\(^1\) Part I, 12 f.  \(^2\) Part II, 125.  \(^3\) Part II, 127 f.
(in two articles), as sketched in the Introduction. The statements of the first three, digested and illuminated by the fourth, are too well known to require restatement here.

Rochemonteix shows great understanding of his subject, and his individual method of representing the sounds is unambiguous. He collected his materials in the principal Coptic centers of Upper Egypt in the years 1876–77. His method was to write down a text from dictation and later to pronounce the text from his transcription, allowing his instructors to correct him. He thinks that he is dealing with an Upper Egyptian tradition. The Copts, so he says, are punctilious in their pronunciation, though few understand the sense. They cultivate the art of liturgical reading. Nevertheless he discovers that they affect an air of erudition, particularly by introducing Greek pronunciations of certain letters. The influence of cantillation is to distort the vowels. There are divergent pronunciations of the same word by the same person. As a whole the language has an arbitrary and confused pronunciation. The Egyptian peasant has dull ears. The Arabic three-vowel system, and the vernacular Arabic habit of neglecting the vowels for the consonants, have made the vowel system poor and indecisive.

Analysis of Galtier's text and Rochemonteix's record and discussion shows that the modern pronunciation is derivable from Arabic transliterations such as Galtier's, without assuming that any true Coptic tradition had survived, in all cases but the following:

\( \hat{a} \) does not have the Arabic sound \( w \), but that of bilabial fricatives, ranging from \( \beta \) through \( u \) and \( o \) to complete disappearance. Furthermore, when final (less regularly when at the end of a syllable), even when followed by a consonant, it becomes \( b \). This, says Rochemonteix, is a characteristic of Bishari and other Hamitic languages, affecting all final stops. What he describes is a habit of failing to explode the stops under such circumstances.

\( \chi \), strangely enough, does not share these peculiarities, according to Rochemonteix. But the fact that \( G\alpha l \) represents \( \chi \) sometimes by Arabic \( w \) would seem to indicate that it was a bilabial fricative at that time, or a still more open sound.

\( \nu, \alpha, \epsilon \) are not influenced by the neighborhood of the velar vowel \( \bar{a} \), as they would be if under the influence of Arabic.

\( \chi \) and \( \alpha \) may have the value \( j \) (or possibly \( \chi \), for the description of \( R\)och. is not clear), which is not a sound belonging to classical

1 Part I, 2 f.
Arabic or to the vernacular Arabic of the Delta, but to the spoken Arabic of Upper Egypt at the present time. It need not be a Coptic survival.

σ in the case of one teacher had the value Ϝ, which is not an Arabic value, but perhaps a surviving trait of the old value, Ꝋ.

Ϝ is sometimes very weak, not an Arabic trait but a characteristic of certain Theban documents.²

ι sometimes nasalizes a vowel, even disappearing afterwards. Not an Arabic characteristic.

ο may have the values ου and α; ω may have the value α; ωυ may have the value ου. There is nothing in Arabic to account for these.

The monograph of Prince attempts to show that ancient local dialectic variations are still evident in the pronunciation of the imported Bohairic liturgy. Modern pronunciation is not a slovenly corruption but "the traditionally correct pronunciation of their religious language." "No one can reasonably assert that Arabic has had any (sic!) influence on the pronunciation of the church language." "There can be no doubt that in Upper Egypt the Bohairic is still uttered as if it were Sahidic."²² Proceeding from the latter standpoint he calls the Upper Egyptian pronunciation of Bohairic simply "Sahidic." Nevertheless he admits the "Hellenizing Cairo style," "the vagary of the Assuan cantillator," "musical causes" for the distortion of vowels. "It is curious that the name of ι in Assuan is Vi, with a strong medial aspirate (sic!). I was unable, however, to hear this sound in any word, although it may exist."²⁴ Prince knew of Rochemonteix's article, but he made no use of it. Merely to have read it would have made his own article unnecessary and, indeed, impossible. On the other hand, evidence from the Coptic-Arabic texts has been introduced uncritically. In view of these imperfections all evidence from this article should be used with caution. According to Prince:

σ is always pronounced ν (in Roch., b, f).

ᾶ in Lower Egypt is ν. In Upper Egypt it is w, except at the end of a word, where it is v (in Roch., , u, ɔ, nonregional; at the end of a word, b).

Ϝ is always and everywhere h (in Roch., h only, and that often very weak).

ο is ο, ω, υ (in Roch., ο, ω, υ, υο, υ).
Coptic Sounds

ω is ṭ (in Roch., Ϝ, ẖ, υ, ῦ, υ).

σ is ῦ in Lower Egypt, ou in Upper Egypt (in Roch., υ, ῦ, Ϝ, ẖ, υ).

The disagreements between the accounts of Prince and Rochemonteix, considering that they are both based upon personal observations, conducted within twenty-five years of each other, are such as to create the impression that the observation was not entirely accurate, or that the Copts were endeavoring to give more accurate information than they possessed. Anyone acquainted with the modern synagogal pronunciation of Hebrew knows how difficult it would be to set down its phonetic rules. The present writer is prepared to agree with the position taken by Rochemonteix, except that he would define the “Upper Egyptian tradition,” and all Coptic tradition, as a group tradition which is without guarantee of historical accuracy. Perhaps Rochemonteix in the end means no more than that. Even the non-Arabic features of Rochemonteix’s account are not necessarily true inheritance from pre-Arabic times.

The variable bilabial, β/γ/δ, appears to be a late development of β, the value we have accepted for ḥ, and δ interchanges with σ in late and poor manuscripts. It certainly is not Arabic of any kind. But if the present sound is υ in Lower Egypt (w in Upper Egypt), as Prince reports, the tradition amounts to little, for υ is neither an Arabic nor a Coptic sound but an exaggeration (Prince gives ṭ the value υ).

b, as the value of Upper Egyptian ḥ when final, is nowhere foreshadowed in any of the Coptic evidence. Prince heard it as v (sic!).

γ, according to Gal., appears to have been a bilabial, and therefore Coptic. But neither Rochemonteix nor Prince observed this peculiarity, if indeed it still exists.

That τ, ς, c are not influenced by ḥ, as they would be in Arabic, may be due to Upper Egyptian Arabic dialect. Neither Rochemonteix nor Prince observed the matter, one way or the other.

ṣ or ṣ, as a value of ς and υ, may be due to Upper Egyptian Arabic.

ς, as the value of σ, may be an affectation or the survival of an intermediate stage in the degeneration of ṣ into the modern ṣ.

1 Part II, 84.

2 Part II, 118.
Weakness of h would be a Coptic survival were it not that Prince, in opposition to Rochemonteix, here reports h as always and everywhere the value of g. The latter value is not Coptic. It would appear to be an affectation.

For the vowels Rochemonteix and Prince offer many values of which there is no evidence in the past, and the values are not always the same. They appear to be affected by cantillation.

Sobhy wrote two articles on Coptic pronunciation. In the first he mentions the articles by Rochemonteix and by Prince, but says that he has not consulted them. In the second article, written four years later, he does not mention them, and in the interval seems not to have consulted them. His thesis is that Copts pronounce both Coptic and Arabic in a peculiar way. The uneducated priest "has the inherent power of forming the sounds of the different characters in the language of his forefathers." "Indeed he pronounces the Arabic language itself as if it were Coptic. Often and often this fact struck me while I was at Church, standing at a distance from the officiating priest, when it was impossible for me—and I believe for many others—to decide whether he was chanting in Arabic or Coptic." Others may say that "the Coptic language has ceased to be spoken, but in my opinion it has never done so." It turns out however that by "spoken" he means nothing more than ritual use. "Coptic has come to be read and pronounced exactly as it is written." "The Church pronunciation of Coptic is the same all over Egypt," except in Girga, and in Alexandria (where a mutilated Greek pronunciation has been introduced by people ignorant of Greek). The Patriarch, the Bishop of Fayyum and the Bishop of Khartum, "Each one of them dictated it separately and by comparison I found the three versions absolutely the same." "All the priests who have not adopted the modern artificial method of Coptic pronunciation utter most of their words as if they were spelt according to the Sahidic dialect."

The present writer, if he understands Sobhy, does not believe that anyone has the inherent power of forming the sounds of the different characters in the language of his forefathers. The case of Coptic pronunciation cannot be settled in that simple way. If Copts do pronounce Arabic peculiarly, their peculiarities are not necessarily of old Coptic origin, but may be due to their community life throughout a number of centuries. Transmission of a ritual

1 Sob. and BIF, XIV (1918), 51 ff.
language that has ceased to be used in everyday life does not constitute "speaking" it. Coptic has emphatically not come to be pronounced exactly as it is written, if we are to believe the evidence preceding Sobhy. If it is the same all over Egypt, Rochemonteix and Prince labored in vain. It is incredible that Sahidic pronunciation of Church-Bohairic should prevail all over Egypt, including the Delta. The soundest observation that Sobhy has made is that the introduction of an ignorantly mutilated Greek pronunciation is to be deprecated.

In his second article Sobhy reaffirms his belief in the identity of Upper and Lower Egyptian pronunciation, and adds: "Je voudrais montrer aujourd'hui que cette prononciation devait être identique à celle des temps anciens." But of what period and of what part of the country is he speaking? He attempts to prove that the modern pronunciation of Coptic is the true ancient one by citing certain Coptic loan words in vulgar Arabic and showing that the Arabic spelling is precisely the one demanded by the modern Coptic pronunciation. A far easier explanation, and one which Rochemonteix discovered, is that the modern Coptic pronunciation is hardly more than the pronunciation of a conventional Arabic-letter transcription. This is perfectly plain, for example, in the case of τεοπυνος, pronounced according to Sobhy "Gawargios." It is impossible to derive such a pronunciation from the Greek original, but it is easily derived from جاورجيوس, a transliteration which I find in Abcarius' English-Arabic Dictionary, 1907, 439. Sobhy tries to show that certain mistakes in manuscripts are due to modern pronunciation, but the assumption is unnecessary.

The following letter values are peculiar to Sobhy:

\[ \text{αι (not final) is always ā, never w. This is certainly due to slow cantillation. Extra syllables are created.} \]
\[ \text{α before front vowels is dž, and before back vowels is g. This appears to be the Cairene Arabic value of ġ, which is g, but affected by its vowels in a way well recognized for language in general, though not for Coptic or Arabic.} \]
\[ \text{α when it corresponds to Sahidic σ is g. This rule is incompatible with the preceding one, and, if valid, must refer to a different part of the country. It appears to be a genuine Sahidic survival of the difference between α and σ, though the value of the latter has been changed from ġ to g.} \]

\[ \text{1 Sob. 17.} \]
\( \sigma \) is \( t\tilde{s} \), and not \( \tilde{s} \). Of course, \( t\tilde{s} \) is an older value than \( \tilde{s} \), which was common even in the time when Galtier's text was written down, and its preservation is remarkable. But it is not the oldest value.

\( \chi \) before front vowels is \( t\tilde{s} \), an innovation.

The evidence gathered by Rochemonteix, Prince, and Sobhy could not serve as the starting point for an investigation of the sounds of the old Coptic literary dialects. It is basically Bohairic, but also strongly arabicized. It is conventional, and at the same time subject to affectations. It is self-contradictory and irrational. Scholarship has been justified in regarding it with suspicion.
SUPPLEMENTARY TEXT

MICHIGAN PAPYRUS INV. 1190

Since this unpublished papyrus is frequently cited in Chapter III it has been reproduced here together with a transcription into normal Sahidic and with the necessary expansions and corrections.

The papyrus is about 11\(\frac{1}{2}\) inches square. A stiff, thick, coarse pen was used, and the writing is accordingly stiff and unshaded. It is of a sort often encountered in magical texts but not confined to these. Whether the rudeness of the hands is due to primitive-ness or the ineptitude of ignorant persons whose only literary activity was the mechanical reproduction of forbidden formulas for the use of the vulgar, would seem in the case of the magical texts to be a matter of doubt. A number of letters in rude handwriting can be dated in the middle of the fourth century or slightly earlier.\(^1\)

A fragmentary papyrus of undetermined content and belonging certainly to the second century\(^2\) reveals the same sort of writing. It is perhaps safe to say that this writing is non-professional and at the same time rather old. Inv. 1190, if it represents the speech of Abydos, can hardly be older than the fifth century; for Abydos lies well within the region having a sub-Achmimic background, and the papyrus shows no effects of this.

Recto, Col. 1

\[\text{επικαλεσθαι φαντασματιαν παντωσεται γαρ εμερων\}
\[\text{νευματοπητης επικαλεσθαι\}
\[\text{ροτυμησεται επικαλεσθαι\}
\[\text{ερωτηματα και επικαλεσθαι\}
\[\text{ερωτηματα και επικαλεσθαι\}
\[\text{οσποιολαλλασεντερη\]

\(^1\) Bell J.C, 91 (see Plate III) and references.

\(^2\) Discovered by the Michigan expedition at Dimē in 1932 with Greek documents bearing dates the latest of which is A.D. 193, and temporarily numbered 31/1—112 D/P (26).
Coptic Sounds

Σετέρημε: Σετί του ενεργημενήν
προσμα: Νινευθολυπην

οιρή: Νεεσον μονηλα[μ]νος

15 ΑΕΕΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟΟ0
ΜΙΧΙΓΑΝ ΠΑΠΥΡΟΣ

τοι: τίς: οθρίππησιναυσίδομεν
1ον ετησαρτ[ν]γνυθα: ίδι: ποιοσ
ιτετυμοι: οικείαπιστεύοιο:
τηνπεραμάθωρε[ν]απ[ω]
προσωπόσιμοχρον[α]οικείο
το[ν]ξενον: θεμών:

15 ολ'παναπεμφελος ετ]
[πορφίρι]

τεθάρη

20 ειλήνα: ιτα[ρ]τάτα στοιχείο
χος: ναμενε: πετέπτο
ο[τ'ι]γενεσίαποςειδολ: εξ
ιτοντιομενειαν: ετεν
ευρηπηκε: κακείαποιμόειν

25 νειναί: εξ: θεμοτεπαρτ
ν· τιμερελίπταιοδουλεταινα
εικονεπείλεταιεκεώ
ευπαρταρατοςκοπαμενε:
εα: μαγεί: Κερείναλεβενθεμώ

30 τετιό: παιςκαλεσσαλος: ερε
τετια: ίδι: μπαλέμφησιςον
εχεπτανμαυετεν: ιατά
θεμος: εφοςεπεστορ: ετ
επεμοριστοιε: ίδι: μπαλε

35 ιοροτ: ιτετιοτεξεμοος
εφοςεπερηθ: πεσομοί: η
eποξεπαροπιπεσιον
τοπερεμεμεστιμέδος

Verso

θεμ: χωτενπίλοναρχη
αμπελότοπενεμεμούαλ:
ομαδριθοστριαθρονοτει:
κοστριθοζοτολακοφοτει

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COPTIC SOUNDS

Below the text and at right angles to it ωωωωωω appears seven times repeated in one column and five times in another column. Below these is η with ο joined to its right lower extremity. A horizontal line follows, and below this are “ring-signs,” the letter ṁ (ValueChanged?) three times, ñ in normal position three times, more “ring-signs,” and finally ṅ.

TRANSCRIPTION

τενυδειν λιμον απρακ πνοσ διπελοε εταγε ραττυ πιάντων λιπρ

πετερη βεγοτεια τητος λιπρ ετρποτασε επηρ

ιθε εκει 3 μα κα τινι1 λιπον

εκεμοοτπι2

πρατ ιε εκεμοοτπι

πλαμ ιε εκε σαλπι

ππεπε εκεβολυ εβολ

πνευ εκεποπι

πνον ηολασα εκετρητυ10 οοε

πυντο επετρηηα

ηπετα εκετρητυλ εβολ

οσετιε εεετ εκεποπι ηπεσηπ ποτιναμ πειεμε εβολ ππεσηιε

1 Bohairic word. 2 Redundant.
ΜΙΧΙΓΑΝ ΠΑΠΥΡΟΣ

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Ἰντιάντο Μων ἡμεῖς ὀμοῦν αὐτοῖς ἄλλα ἀλλὰ σαῦρον ἐπεστίριν εὑρίσκοντες ἣδειν ἐνόησεν τοῖς ἀράοις ἄφημα διὰ στοιχεία εἰς ἱερὰν καὶ ἠδομένων τὸ περὶ πάντων ἤδον ἔφη 

ἐξῆς ἐπεστίριν ποιήσας ὑπὲρ ἰδίος ἐπεστίριν ἦπερ ἐμεῖς ἐμεῖνεν ἐμεῖνεν ἐμεῖνεν ἐπέστρεψαν ἔρημος ἂν ἄρα τὸν τοὺς ἄνεξον ἐπεστίριν ἦπερ 

 {*ἐπεστίριν*} ἔρημος ἂν ἄρα τὸν τοὺς ἄνεξον ἠδομένων τὸ περὶ πάντων ἤδον ἔφη 

ἔρημος ἂν ἄρα τὸν τοὺς ἄνεξον ἠδομένων τὸ περὶ πάντων ἤδον ἔφη 

Άνεξον τὸν τοὺς ἄνεξον ἠδομένων τὸ περὶ πάντων ἤδον ἔφη 

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Περὶ πάντων τὸν τοὺς ἄνεξον ἠδομένων τὸ περὶ πάντων ἤδον ἔφη 

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Περὶ πάντων τὸν τοὺς ἄνεξον ἠδομένων τὸ περὶ πάντων ἤδον ἔφη 

Περὶ πάντων τὸν τοὺς ἄνεξον ἠδομένων τὸ περὶ πάντων ἤδον ἔφη 

Περὶ πάντων τὸν τοὺς ἄνεξον ἠδομένων τὸ περὶ πάντων ἤδο

1 See Part II, 116.
5 ἵναν ἔργας ἐξήγησεν ἐπὶ ἑαυτῷ ἢ ἢν ἦσαν ὠρθοὶ ἣν ἤτερα ὑπὸ ἀπαγγέλλοντα ὑπηρέτης
πάντως ὑπακύπτεις ἡμῶν ὑπερεστήθης ἐκακών ἰππερὸ ῶν ἔργον ἐγέρας ἐσπερικάμενον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεον ἄλλοπλεο

1 The conjunctive can be used with a change of subject.
APPENDIX

SOME BIOLOGICAL FACTORS INVOLVED IN COPTIC SOUND-CHANGES*

BY

DR. HIDE SHOHARA

The statements made in this appendix concerning the probable character and "causes" of sound-changes in Coptic are based upon the assumption that all language (including in the term both form and meaning) is an integrated series of life-serving processes. These processes are both mechanical (i.e. passive, mass movements of tissue) and physiological (metabolic). The physiological processes are now widely recognized by physiologists as being chiefly electro-chemical or, more exactly, electro-dynamic (and therefore physical) in character. Examples of the mechanical processes are the shifting movements of the tongue, diaphragm, and the like. Examples of the electro-chemical are the nervous and muscular metabolism which brings about such mass translation of tissue. As regards meaning (i.e. ideas and feelings), we have no way of demonstrating whether they are aspects, properties, results, concomitants, or causes of the metabolic processes taking place in the nervous, muscular, and glandular systems.

This attitude toward language is here assumed because it appears to be the only one which permits the study of linguistic phenomena upon a strictly objective basis, and in particular on the basis of the biological and physical sciences.

* Linguistic science has experienced considerable extension of its subject-matter and the development of new and highly specialized methods of research. These changes have been so great that it has become increasingly difficult for any individual to command all the resources and results of linguistic study. For several years the Department of General Linguistics of the University of Michigan has been investigating the dynamic processes of language from the biological standpoint with reference to the evolutionary development of specificity of structure and function. In my doctoral dissertation (unpublished) I worked out, under the direction of Professor Clarence L. Meader, in 1933, a detailed application of Professor J. H. Muyskens' view of the genesis of articulatory movements. Professor Worrell requested me to examine his findings from the standpoint of my special studies, in the hope that I might discover objective reasons for some, at least, of the sound-changes which he supposes to have occurred in Coptic and Egyptian. As a result I have written this appendix. I am much indebted to Professor Meader for his assistance with the details of its preparation, and to Professor Muyskens for reading the manuscript and for valuable suggestions.

1 I.e. historical changes.

2 In the final analysis the difference between mechanical and physiological processes may turn out to be merely quantitative.
Except for the fact that these language (communicative) processes are not directly but indirectly life-serving, they are not fundamentally different in general purpose or in general character from walking, hunting, till ing the soil, or any other direct life-serving function of the human organism or other animal organism. They consist, on the one hand, of the interaction between certain forces (molar and molecular) within the body and others outside the body and, on the other, between two or more different forces (molar and molecular) wholly within the body. The traditional notion, that language is an activity of certain special organs of the body (larynx or "voice box," tongue, etc.), is no longer tenable. Although certain organs may perhaps be said to play a more conspicuous part or perhaps a more direct part in communicative acts, yet the total organism is so completely integrated that all parts are more or less involved in every instance of communication. This fact lends great complexity to all linguistic problems.

If we regard language in this way as a biological science, the "causes" of sound variation are to be sought in the character of the relations existing between those systems of interacting forces of which language consists. Although very great advances have been made by physicists and physiologists in our knowledge of these processes, their application to the interpretation of linguistic problems remains still an almost untouched field; the problems of speech pathology are the ones to which chief attention has been given.

In attempting to apply the biological method of interpretation to the Coptic language, we are confronted by those limitations, which attend the investigation of all problems arising outside the living vernaculars, namely, absence of evidence necessary to establish the exact character of the muscular movements and the nervous and glandular processes involved. In the investigation of the living vernaculars we have at our service recording instruments of great accuracy, but in dealing with all languages no longer used as vernaculars we have to be content with approximate estimates based upon the interpretation of indirect and often uncertain evidence.

In the present instance the character of the muscular movements under discussion is deduced (with a close degree of approximation) from Worrell's findings concerning the character of the Coptic sounds and their shifts.
"SYLLABIC" CONSONANTS

Those who have accustomed themselves to confuse sounds with letters and to think of them in terms of the definitions of the traditional grammars, believing, for example, that "there are five vowels, a, e, i, o, u (and sometimes w and y)," and that "all other sounds are consonants," find difficulty in realizing that there is no absolute line of demarcation between vowel and consonant. Whatever standard we may take as a basis of classification, we shall find that the distinction between vowel and consonant is arbitrary. Certainly the presence of phonation (voice) cannot be taken as an exclusive property of vowels, because phonation characterizes many consonants. On the other hand, the absence of phonation cannot be taken as the characteristic of consonants, since we have both voiced consonants and whispered vowels. If we treat the question topologically and observe the so-called "positions" of the vowels and consonants (though such a way of regarding it is inaccurate), it is not possible to say that the vowels are "open" sounds and the consonants "closed," since the consonant š is more "open" than the vowel i. If we consider their "syllable-forming" functions, we get still more at sea, since many of the consonants, both voiced and voiceless, serve to carry the main stress of the "syllable" in which they occur. All that we can say is that in proportion as the vocal tube is wider, more open, and freer for the passage of sound waves, the more in general the sound partakes of vowel quality. On the other hand, the more obstructed and constricted (even to the extent of complete occlusion) the passage is, not only interfering with free issuance of phonative vibrations (voice), but also engendering more or less audible fricative and explosive sounds, the more the sound partakes of consonantal character. We have, so to speak, a long sliding scale. At one end stand the clear, resonant vowels, like, for example, the a in father, or even ou in rove (in the last part of ou, however, there is audible frictional sound), and at the other end stands the faint glottal explosive, the aleph of Hebrew and the Old Greek spiritus lenis. Between the two extremes nearer the "vowels" are l, m, n, ſ. Farther toward the consonant end are v, z, and the other voiced spirants. Still farther from the "pure" vowels are the voiceless stops and voiceless spirants. Of all the so-called vowels, i, as in machine, stands nearest to the consonants. Even when not very emphatically pronounced it is accompanied by a frictional sound
and is attended by a distinct frictional component (ç)\(^1\) when vigorously uttered. Accordingly, we must not be at all surprised to find some “consonants” performing functions more commonly performed by vowels.

The so-called consonant r as pronounced in American English may have all the distinctive characteristics of a vowel. (1) It may be (and usually is) voiced, i.e. it is pronounced with attending phonation, as are all vowels (except, of course, whispered vowels), and this gives it a distinct resonant quality which makes it stand out more clearly as a sound than do most of the consonants, e.g. the stops (explosives) t, k, p, g, d, b (in which the sound is somewhat obscured by the occlusion of the oral passage). Furthermore, when the r and the vowel are pronounced either immediately before or after a vowel, it is impossible to draw any line between them. (2) It is a continuant, i.e. capable of prolongation, and for this reason may be more prominent auditorially than brief explosives, and by virtue of its voiced character more prominent than even s, s, p, or b, although the high pitch of these last sounds gives them a degree of audibility greater than they would have if they were as low pitched as the r. (3) It is the least constricted of all the consonants, and hence has the least muffled sound. The consonants z, ç, ñ, dʒ vie with it in acoustic prominence, but in practice are usually less prominent, because the r when adjacent to them is usually pronounced (in mid-western American at least) with greater energy output, as, e.g., in the word adjourn (adʒɔrn). The quality of the r, when long and stressed, as in adjourn, hurry, burn (in which the u and ou are silent\(^2\)) closely resembles that of a in but (mid-western American) and the obscure vowel a (shewá), except that it is longer and has a certain amount of frictional noise commingled with it. In other words, it functions as a vowel.

What is true of r is also true of the consonant l, except that the latter is usually found in the less strongly stressed parts of a word in English and is made with a slightly greater degree of constriction of the oral passage. The nasals m, n, ñ are even more obscure, owing to the complete or (in the case of the

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\(^1\) It is the presence of this frictional component that explains the development of French e from earlier i or I at the beginning of such words as espèrá, from Latin sperare.

\(^2\) This can easily be appreciated by direct observation in these three words. From the conclusion of the dʒ (j) and b to the initial movements of the n, the tongue remains motionless. Hence there is only one sound—the r.
n) nearly complete closure of the oral passage. Nevertheless their vowel character is undeniable.

The philological arguments set forth by Worrell in Part I, Chapter I, in favor of the view that the Coptic (principally Sahidic) consonants ğ, ā, ū, ā, p, c, y, q, g are in some words “syllabic,” the first five in both accented and unaccented syllables, the last four (“the less audible”) in unaccented syllables only, seem quite cogent.

The term “syllabic” implies that there is such a thing as a syllable. It cannot mean that there are certain parts of a word or of a phrase marked off distinctly from the adjacent parts, as they are marked off in print by a hyphen. On the contrary, the succession of the movements and flow of sound in a sentence is continuous, except as it is now and then marked by a brief cessation of sound or by pauses in movement. In ordinary conversation there is no such thing as a separation of words into parts called syllables. There is, however, a continuous variation in the acoustic prominence of the rapidly flowing sounds, so that there occurs a continual alternation of more and less prominent sounds, which give an impression of discontinuity, on the basis of which it is possible to pronounce the sentence arbitrarily as a succession of distinctly isolated groups of movements and sounds, each of which shall either contain, or consist of, one acoustically prominent sound. But this is done at the cost of considerable alteration of the normal character of the movements. The grammarians have carried this process of arbitrary analysis to an extreme. The term “syllabic consonant” is applied to certain sounds which have been traditionally classified as consonants, but which have characteristics that often result in their being pronounced with greater prominence than the preceding or following consonants, or, in philological language “bearing the main stress of the syllable.” Besides l, m, n, r (which are the most “vocalic” of the consonants) the voiced

1 The contact of the tongue with the palate and teeth is not always complete in the case of n. Kymograph records frequently show a flow of air from the mouth during the pronunciation of n.

2 A very important contribution to the problem of the syllable was made by John H. Muyskens in his doctoral dissertation, The Hypha; the Smallest Aggregate of Speech Movement Analyzed and Defined, Vox, Band I, Heft II (May, 1931), 1-55. In it there is introduced a new conception of the “unit of speech” under the term “hypha” or “physiological syllable.” The process of swallowing is a series of successive dilatations and constrictions of the alimentary tract due to the serial, alternating contraction of circular and longitudinal muscles. Speech “articulations,” as they are popularly called, are precisely of this same type of neuro-muscular processes in a much more highly specific form. The hypha is the series of processes occurring from the instant of one constriction (or occlusion) to the next succeeding one.
continuants (fricatives) v, z, ẓ, ḏ may also become prominent as compared with the adjacent sounds and thus may be designated as "syllabic" in the same sense. Even the sharp (high-pitched) voiceless spirants f, s, ʃ, ɕ, h may have this sort of prominence if adjacent to brief unvoiced explosives; but the contrast between the prominence of such adjacent sounds is slight and this, along with their voicelessness, places them near, if not beyond, the vanishing line of "syllabic" consonants. This situation, of course, holds true in a fuller sense in unaccented than in accented syllables. Though, therefore, it is possible, by carefully controlling one's muscular movements and paying close attention to the sounds, to give them distinctly appreciable "syllabic" value, yet in ordinary usage, when one is devoting but slight attention either to the control of his muscular movements or to his auditory sensations, these small differences would not be noticed, and hence would not serve as clearly differentiated symbols of nervous states (ideas and feelings). Similarly, and for the same reasons, vowel sounds intermediate in value between i and i, e and e, e and e, etc., though commonly occurring, are seldom recognized as part of the English sound system. They lie below the threshold of clear automatic discrimination, i.e. they are not practical. This is not true of the voiced spirants. For example, in Russian the preposition v, in, ordinarily pronounced similarly to v in vote, when immediately preceding an initial voiced (sonant) sound, gives the effect of distinct vowel u when preceding another v, e.g. v vodu, into the water, pronounced uvodu, and thereby becomes distinctly "syllabic." It is quite conceivable that WithEmailAndPassword and complexContent were similarly pronounced, the syllabic ʰ bearing a resemblance in pitch to the u in American put. The accumulation of consonants is made still more marked in Coptic by the occurrence of vowelless prefixes and suffixes, e.g. n, ẓ, c, ˒n (rovdr, ṭegy). Considerable contribution to the same end is made by the oft-occurring simplification of sound-groups through the disappearance of the vowels originally found in the extensively used proclitic and enclitic (and hence weakly pronounced) demonstrative pronouns, auxiliary verbs, nouns, relative pronouns, and other words, such as n (nax), ˒n ( akşam), ˒n ( ご覧), ˒n ( ご覧), ˒n ( ご覧). The most striking fact involved in the accumulation of consonants thus brought about is that the consonants n, m, n, r far exceed all others in frequency of occurrence. Of the four sounds, m and n belong to the i, m, n, r group, which are best fitted of all
consonants for "syllabic" use. To one who is familiar with the physiological conditions of phonetic change it seems unlikely that the accentual conditions in Coptic stopped short at merely "weakening" the unaccented vowel, without also bringing about its complete loss, since such physiological conditions involve processes which, once set into action, continue to function unless inhibited by opposing conditions developing later. There is no evidence in Sahidic of the existence of such opposing conditions.

The loss of the vowel is due to several biological factors. One of them is the rhythmic character of the energy output during speech, which consists of a continual alternation of larger and smaller discharges of energy known as dynamic or "stress" accent. The smaller discharge of energy is manifested not only by a lesser extent of muscular contraction producing air waves of lesser amplitude, but also by a lesser degree of tonicity of muscle tissue producing air waves of lower frequency. Both these factors contribute to produce an auditory effect of lesser intensity in a portion of discourse following immediately upon an energetically pronounced portion. This variation comes out in our kymograph records showing the musical pitch of the two i-vowels in the word Berber in the two American, mid-western pronunciations: bi bi and bi bi. Both e's have become "silent." In the second pronunciation the accent is arbitrarily reversed. Four records of the first pronunciation taken in immediate succession yield the following tone frequencies:

<table>
<thead>
<tr>
<th>First syllable (accented)</th>
<th>Second syllable</th>
</tr>
</thead>
<tbody>
<tr>
<td>141^d. v.s.</td>
<td>120 d. v. s.</td>
</tr>
<tr>
<td>140</td>
<td>140</td>
</tr>
<tr>
<td>130</td>
<td>140 (142)^e</td>
</tr>
<tr>
<td>135</td>
<td>130</td>
</tr>
<tr>
<td><strong>Average 136</strong></td>
<td><strong>Average 132</strong></td>
</tr>
</tbody>
</table>

^1 Owing to the "all-or-none" characteristic of katabolic process which constitutes the nerve current, a nerve fiber is exhausted every time a katabolic process (nerve impulse) occurs in it, and time must therefore elapse for its recovery by anabolism before it can again put forth its full energy. The activity of muscle fibers is similar.

^2 All the records here referred to were made expressly for this appendix and exhibit American mid-western (Michigan) pronunciation.

^3 This is the frequency of the d below middle c in the musical scale.

^4 "d. v. s." means: "double vibrations per second."

^5 The pitch of a vowel usually varies considerably during its pronunciation. Accordingly, the figures added in parenthesis give the highest (or lowest) frequencies in the air waves of the given vowel. Of course, if the word concluded an interrogative sentence the pitch of the final i, though weakly stressed, would be higher than that of the first i. It must not be forgotten that every movement (or sound) is physiologically a portion of a dynamically interacting system. Therefore it both influences and is influenced by the other parts of the system. The words in the table were pronounced in isolation, and thus have a form which differs slightly from that which would appear in other situations.
Four records of successive pronunciations of the same word with arbitrarily reversed accent show the following frequencies:

<table>
<thead>
<tr>
<th>First syllable</th>
<th>Second syllable (accented)</th>
</tr>
</thead>
<tbody>
<tr>
<td>126 (124) d. v. s.</td>
<td>131 d. v. s.</td>
</tr>
<tr>
<td>127 (120)</td>
<td>131 (125)</td>
</tr>
<tr>
<td>113 (119)</td>
<td>125 (122)</td>
</tr>
<tr>
<td>109 (120)</td>
<td>116</td>
</tr>
</tbody>
</table>

Average 118  Average 125

This table is especially instructive in that it shows that the distinction between the accented and unaccented i is not absolute but only relative, since unaccented i (140 d. v. s.) in the third pronunciation is higher in pitch than accented i (130 and 135 d. v. s.) in the third and fourth pronunciations, whereas the unaccented i's (126 and 127 d. v. s.) in the fifth and sixth pronunciations are higher than the accented i's (125 and 116 d. v. s.) in the last two pronunciations. In five of the eight cases the pitch of the accented vowel is higher; in two it is the same, while in only one it is lower.

Similar records of ti ti and ti ti give the following figures:

<table>
<thead>
<tr>
<th>First syllable</th>
<th>Second syllable</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) ti ti</td>
<td>160 d. v. s.</td>
</tr>
<tr>
<td>(2) ti ti</td>
<td>135</td>
</tr>
</tbody>
</table>

The corresponding variations in amplitude are represented in these data by the curve recording the volume and pressure of the air emission of the consonants b and t, showing that the consonant and the vowel are a dynamic unit, or, put in another way, that the intensity of at least the early portion of the vowel sound is determined in part by the energy of the explosion of the consonant.

Observe in the tables above that the pitch of the syllable preceding the accent differs less from that of the accented vowel (i or I) than does the pitch of the vowel following the accent. This is significant for two reasons: (1) It corresponds to the fact that in many languages (e.g. English, German, Latin, and Coptic) the vowel following the stressed syllable often disappears entirely, and is always much reduced in intensity and altered in quality, as in modern English stone (from Old English stane) and Latin conficio (from consult), respectively; (2) It helps to explain why in English the vowel following the accent more frequently disappears than that preceding the accent,1 and in Russian the syllable

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1 Compare American profess (a common mid-western pronunciation) with pfess (much less common).
immediately preceding the accented vowel is acoustically more prominent than the second syllable before the accent, i.e. in ko-lo-ko-la, bells. (Each of the last three syllables is pronounced more energetically than its predecessor.) This is also consistent with Muyskens' findings.¹

Precisely the same situation is shown in our record of the imperative sentence Turn over! (pronounced tinovi, with the main stress on o and secondary on the first i).

Pitch of i in turn 261 d. v. s.
Pitch of i in over 114° d. v. s.

Other records which we have show no absolute difference in pitch or amplitude between “syllabic” i and consonant i. They are records of such words as barbarous, containing both consonantal and “syllabic” i. This is true also of l, both consonantal and “syllabic.” In our records it is not possible to distinguish sharply the duration of the consonant i because it is always either preceded or followed by a vowel to which there is always a gradual transition of wave-form, which makes any dividing point between them quite arbitrary.

It is well known that in some American and English dialects, owing to the weak energy output following the accent in such words as Berber and barber, the movements of the i have undergone an entirely different modification, namely, a “defricativization” (if one may be pardoned for a new word). The energy output is not sufficient to raise the tongue high enough to cause a distinctly audible friction, so that we hear only the voice-component of the i (ova or ova).

The explanation of these rhythmical alternations of strong energy output with weaker lies chiefly, of course, in the nature of the metabolic processes in nerve, muscle, and gland. Nerve activity and muscle activity consist of the electro-chemical transformations of energy. With every nerve current and with every muscular contraction energy is liberated; the substance (protoplasm) of the nerve and muscle is in part destroyed, and time is required for its restoration before another maximum liberation of energy can take place. This process of rehabilitation is much slower in

¹ Showing that the consonant preceding the accented vowel is more energetically pronounced than that following the same vowel.
² The unusually wide difference between accented and unaccented i is due to the fact that the last i was pronounced as though it concluded a declarative sentence and, accordingly, is unusually low pitched.
muscle tissue than in nerve tissue, and hence the time required
for restoration (technically called the period of recovery) is much
less in nerve than in muscle. This alternation in the extent of
energy output is a fundamental characteristic of all life processes,
including speech, and is a physiological basis of rhythm. In the
English language these strong energy outputs, marked by loudly
pronounced sounds corresponding to main accents, succeed one
another at a rate of about one per second. This is also about the
average duration of the human step in walking. A “quick march”
in the U.S. Army is regulated at 2 steps of 30 inches each per
second, which corresponds to a rate of about a mile in 17\(\frac{1}{2}\) minutes.
An average gait carries a person a mile in between 20 and
25 minutes. The latter period corresponds to a speed of 5 feet
per second, or about 2 long steps; the former 3.3 feet per second,
or about 1.6 steps per second. This rhythm is not confined to
humans. A horse in chewing opens and closes its jaws at about
the same rate. The “leisure-loving” cow chews her cud a little
more slowly. All these facts point to a rhythmical alternation of
less and more extensive katabolic activity as one factor at least
which enters into the physiological explanation of the loss of the
unaccented vowel, especially of that one which immediately follows
the accent, and, less frequently (cf. p. 159), of that immediately
preceding the accent. Eventually this rhythmical alternation must
be regarded as an example of Newton’s law that action and reaction
are equal and opposite in direction. The moment that the balance
of protoplasmic forces within the cell is disturbed the process of
restoration of equilibrium sets in. In Part I, p. 13, Worrell asserts
that the murmurvowel, in the sense of shewa, cannot receive the
accent. This, of course, is true of Hebrew. There is no reason,
however, why in general an extremely short, obscure, vowel cannot
be accented if adjacent to the less audible consonants. It does in
fact occur in mid-western American pronunciation: hurry (hær),
worry (wæri), etc. Of course one might argue that the term
“murmurvowel” should be applied only to the unaccented form;
but one would be equally justified in calling the unaccented e in
settee (seti) a different vowel from the accented e in better (bɛtɪ).
Furthermore, unaccented æ in energetically pronounced discourse
may be louder than accented ə in a less vigorously pronounced
environment. As stated above (p. 158) in the case of ə, the differ-
ence between them is purely relative, since each sound must be
treated as an inseparable element of the particular dynamic system
in which it is found, i.e. as a part of a particular Gestalt. Consistent with this argument, shewa may have existed in Sahidic in accented syllables, although it is of course possible arbitrarily to define the shewa as a faint, unaccented vowel.

Similarly, there appear to be no cases of accented, syllabic ı, m or n in mid-western American, yet their pronunciation presents no difficulties. It is possible to pronounce plmn (Pullman) without special effort, as also mndtn (mundane) and kmstak (Comstock), and the Sahidic Copts may have followed a like practice. The pronunciation plmn would in all probability be heard as pulmn, the normal mid-western pronunciation. Coptic  mı may quite easily be pronounced ı or ıı,

1 with either whispered or voiced ı, and, if voiced, either faint or loud, and either prolonged or clipped short.

In the cases of mı, mı, mı, mı, and other words having the superior horizontal stroke, one should hesitate to assert that either the murmur vowel or the syllabic consonant prevailed in pronunciation to the exclusion of the other at any given period in Coptic. It must be borne in mind that the murmur vowel may be pronounced with an unlimited number of variations in loudness and duration, from the prolonged, loudly pronounced ı, to an utterance so faint and brief that the listener would not hear it at all. We may safely assume that the pronunciations of different individuals differed and that even the same individual pronounced the words differently under different circumstances, so that sometimes a full ı might be heard, sometimes a faint one, and sometimes nothing but a syllabic consonant.

Let us take the case where a vowel has been lost, leaving two consonants in juxtaposition, in such a sound group as mı mı (ıbı). A situation then arises which may be compared with what occurred in Attic Greek when n disappeared before ti in the third person plural of the verb, and in the feminine form of the present participle in *-ont, and before ts in the nominative masculine of the same participle. *-onti becomes -ouri; *-ontia becomes oura, and *-onts becomes -ouv. The established habit of pronouncing a sound group over a certain period of time is main-

1 Both pronunciations involve syllabic ı. The two ı’s in the latter alternative mean only that the pronunciation of ı is prolonged, the earlier part of it being louder.

2 Though in practice the doubling of the vowel in these and similar words may well have been an attempt to represent the duration of the syllabic b, m, n, or r sound after the disappearance of ı, since those who “dropped” the ı were doubtless unaware that they had done so.
tained, and what is lost by the disappearance of the consonant is made good by the increased duration of the vowel, the rhythmical distribution of energy being thus maintained. Now, if the vowel is lost, which we are assuming to be the case in Coptic, a similar compensating prolongation of the consonant would serve the same end, i.e. the maintenance of approximately the same duration for the entire group. This would hold true mainly, of course, of continuants, such as ्र, Ṽ, Ṽ, ṽ, ṽ, ḷ, ṽ, ṽ, $q$; but even in the case of the stop consonants, Ṽ (v), Ṽ (x) and Ṽ, Ṽ (= Ṽq), the closure may be maintained for an appreciable period before the explosion takes place. This may perfectly well have taken place in Coptic, and the result would be that the given consonants would assume a degree of prominence corresponding to what philologists have been accustomed to call "syllabic." But again it must be borne in mind that this quantitative prominence, like the other characteristics of speech sounds, is only relative; and if the tempo of utterance be notably increased it will be considerably reduced, so that the "syllabic" character might partly or even entirely disappear. This is particularly apt to occur when a group of consonants is both preceded and followed by a vowel, as is the group Ṽ in Joh. III, 5, Ṽυ offences Ṽυ Ṽυνέμενα, which, rapidly spoken, would almost certainly become Ṽυννυनυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυनυνυνυνυνυنυνυνυνυνυনυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυンυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυνυনυνυνυνυνυνυνυнυνυνυнυνυνυνυνυνυンυνυνυνυνυнυνυนυнυνυνυνυнυнυンυνυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυνυнυнυнυнυнυнυнυнυнυнυнυนυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυνυνυнυнυнυνυнυνυンυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυнυνυнυнυнυнυнυнυнυнυнυнυนυнυνυнυнυνυнυнυนυнυนυнυнυнυнυнυнυнυнυнυнυнυнυнυนυнυนυнυнυнυнυнυنυнυнυнυнυнυнυ nir.

1 It was certainly true of Coptic, as of all other languages, that there were no interruptions or pauses between words any more than there were between the adjacent sounds of a word. The normal sentence is one continuous flow of muscular contractions and sounds.
DEASPIRATION AND DEAFFRICATION

It is necessary to distinguish between the two cases: (1) aspirates, which consist of an explosive (stop) consonant followed immediately by an h-sound, which is usually thought of by Indo-Germanic philologists as produced by the constriction of the glottis (either the entire glottis or the cartilaginous part); (2) affricates, in which the explosive is followed by a spirant produced by the friction of the air against the approximated surfaces in the same region in which the occlusion of the stop is made. Since in the two cases the fricative components are produced by entirely different groups of muscular movements, they present different anatomical and physiological problems. It should be noted that all stops must be followed by at least a very brief fricative produced in the same region in which the stop is made, because time is required for the chink between the separating surfaces to become so wide that no audible frictional sound occurs. Accordingly, there must be a fricative sound, so-called spirant, however faint and brief, following every stop consonant. Every stop consonant is, therefore, an affricate to a greater or less degree. This is true even of stops that form the first component of aspirates, such as Sahidic Φ, Χ, Ω (=ν, ρ, τα).²

The form and extent of this opening and the rapidity with which it is produced and widened varies greatly in the case of each stop consonant (1) with the adjacent (i.e. the preceding and following) movements, (2) with the individual speaking, and (3) with the varying energy and speed of utterance in the consonant on different occasions by the same individual. The loudness of the sound is determined objectively by four factors: (1) the density and velocity of the outflowing stream of air; (2) the area of the cross-section of the opening in the region in which the contact has just been made; (3) the area of the inner surfaces of passage upon which the frictional disturbance of the air occurs; and (4) resonance. The density and velocity of the flow of air is determined, of course, (1) primarily by the energy of the contraction of the thoracic cavities and the lungs as they expel the air;³

1 Indicated by the dotted lines in Figure 2.
2 Incidentally these facts suggest that the Greek aspirates became spirants τ, λ, ρ, not so much “by passing through the stage of affricates” as by the omission of the glottal constriction, while at the same time palatal, dental, or labial occlusion is rendered incomplete by the influence of the preceding and following vowels.
3 The energy with which the air is expelled may, of course, be greatly augmented by the contraction of the muscles in the walls of the abdomen.
(2) secondarily by the area of the horizontal cross-section of the glottis, since only a small amount of the air can pass through the glottis in a given time if it is only a very narrow slit, whereas a large amount can pass if it is somewhat opened (as in normal unobstructed expiration), or opened to its maximum extent (as in vigorous inspiration). Consequently the puff of air following a voiced explosive is less voluminous than that following a voiceless explosive. However, this particular difference between the voiced and voiceless (sonant and surd) explosives is only relative, and therefore its effect on the fricative is only relative. Accordingly, the distinction which Worrell makes\(^1\) between the accented and unaccented syllables is on the whole fully justified, although a voiced stop emphatically pronounced may be attended by a louder fricative sound than a voiceless explosive less emphatically uttered. In the word beautiful, for example, the spirant immediately following the voiced b may be louder than that following the voiceless t. The speech records of the Laboratory of General Linguistics and Speech of the University of Michigan often show this to be the case.

The acoustic prominence of these frictional sounds is slight; in fact, they are among the faintest of all speech sounds, as is evidenced by their extensive use in whispering. The patterns of nervous structure and function are correspondingly less firmly established, not only because of the low intensity of the acoustic elements, but also because constrictions involve less extensive stimulation of the tactual sensory nerves than do contacts, and the neural patterns are correspondingly less likely to be stable. The sounds have so little intensity that one frequently (perhaps usually) does not even hear them. Even less noticeable are the variations which occur in these sounds. How many people are aware of the difference in sound between the k in Carl and the k in kick, or even of the difference between the initial sounds of choke, chicken? How many know whether they say apill (up hill) or apil (without the h)?

We have been accustomed to regard the voiceless stop as one in which the phonation begins at or after the instant of the explosion. The records of actual speech, however, show much variation in the time of onset of phonation. Sometimes it begins even during the closure of what has been called traditionally a voiceless stop. Actually this gives the stop a partly voiced character.

\(^1\) Part I, 17.
Other variations show the onset of voice just at the moment of explosion, or later.

Though this rather wide variation in articulation exists in mid-western American, it is quite conceivable that the Copts developed a greater degree of precision in this particular, so that, as Worrell suggests, the voicing of the stops in Sahidic in both stressed and unstressed syllables (and in Bohairic in unstressed syllables) habitually began approximately at the instant of the explosion, yielding voiceless, unaspirated stops, or, in Worrell’s nomenclature, half-voiced stops. This “anticipatory” action contributes to the reduction of the intensity of the fricative component of the voiceless stop, and gives it a spirant character more closely resembling a voiced stop. It is this phenomenon which Worrell has in mind when he reluctantly introduces the new technical term “half-voiced,” and incidentally gives a new definition to the term “voiceless” by including as one of the characteristics of voicelessness the presence of an immediately following voiceless glottal spirant. Here the present writer considers that precision and definiteness have been sacrificed, and processes merged which had better be held apart.

Light will be thrown upon the matter, if we examine closely certain characteristics of movements involved in the production of speech sounds:

(1) The tongue is actively engaged in the production of all speech sounds, whether vowels or consonants. Consisting, as it does, of a considerable mass of muscular and connective tissues run through with veins, arteries, nerves, and ducts, it has to be transported from region to region of the mouth, as needed for the individual sounds. Sometimes the distance traveled is longer, sometimes shorter. Sometimes one part of the tongue may be actively engaged in the execution of movements for one sound while at the same time another part of the tongue is executing movements for another sound; in which case each part of the tongue is influenced by the momentary condition of the others. The larynx is likewise actively engaged in the production of nearly all the speech sounds, whether vowels or consonants, voiced or voiceless. The vocal folds, like the tongue, are masses of tissue which require time for transportation and adjustment. Both tongue and larynx ordinarily follow the shortest route in passing between such regions and making such adjustments; and along that route the character of the movement is definitely determined by the
goal to be reached, which is popularly spoken of as the following sound. The same general relationships exist in the movements of the lips, jaws, velum, and pharyngeal wall.

(2) Nervous activity is much quicker than muscle activity. According to recent measurements, the speed of propagation of the nerve impulse in man may be as high as 125 meters (above 400 feet) per second. The speed of propagation of the metabolic processes in the gastrocnemius muscle of the frog is about eight feet per second. In the case of human muscle fiber it may be somewhat higher, reaching as much as eleven feet per second. Furthermore, the development of sensations and feelings appears to be connected chiefly with metabolic (i.e. atomic and molecular) processes, whereas muscular activity requires mass translation of tissue as well. It takes from one eighth to one eleventh of a second for a muscle to contract and then relax ready to contract again. It follows that a nerve can deliver impulses to a muscle considerably more rapidly than a muscle can execute the corresponding movements. Thus the nerves can transmit the motor impulses of a subsequent "sound" to the tongue, larynx, or other speech organ before the movements of the preceding sounds have been completed. The result will be that the movements of the following sound will be initiated while the movements of the preceding sound are in progress. The latter, then, will be modified or entirely omitted. This phenomenon often takes place within one and the same organ, e.g. the tongue. Since the tongue consists of several systems of muscle fibers running in various directions, each system is capable of activity somewhat independent of the rest, and since the movements of the tongue are brought about in part by the extrinsic muscles, i.e. those having their origins outside the tongue (also capable of independent contraction), it is evident that one part of the tongue may be engaged in executing the movements of one sound while another part may be executing the movements of the following sound. This phenomenon can also take place when different organs, e.g. the tongue and the larynx, produce the succeeding sounds. That is why most cases of assimilation (so-called) are cases of "progressive" assimilation. "Half-voicing" is merely such an anticipation of a following voiced sound before the auditory effect of the preceding sound has been produced. Kymograph records of the mid-western American show that such anticipation is a very common phenomenon of that dialect. This is probably true of all languages.
Regarded physiologically a voiceless stop consonant consists of a complicated series of processes: (1) contraction of certain groups of muscles of the vocal tract and relaxation of their antagonists, bringing the oppositely adjacent walls of the passage into contact (occlusion) in some particular region; (2) simultaneous action of the velar and pharyngeal muscles closing the isthmus pharyngonasalis and thus preventing the passage of air through the nostrils; (3) abduction of the vocal folds\(^1\) by the contraction of the posterior cricoarytenoid muscles; (4) contraction of the lung tissues producing the positive air pressure behind the point of closure;\(^2\) (5) contraction of certain groups of muscles breaking the occlusion.\(^3\)

Physiologically this last process concludes the consonant. The puff of air that ensues is a purely mechanical result of the muscular movement, which at the instant of the break (even if not before it) begins to be influenced by the nervous impulses which release the movements producing the following sounds. Thus the specific muscular contractions constituting the break are usually, if not always, affected by the succeeding movements. The puff of air immediately following the break comprises at least two distinctly different types of air waves: (\(\text{i}\)) a brief succession of low-frequency waves rapidly diminishing in amplitude, which result from the sudden blow struck by the released air upon the air just anterior to the region of the break; (\(\text{ii}\)) continuous (maintained) vibrations of fairly even amplitude resulting from the friction of the air against the wall of the passage thus opened. If the force of the outlasting air is sufficiently great, a frictional sound will also be produced at the glottis (whether cartilaginous or muscular). In this way a combined affricate and aspirate is produced, i.e. an affricate overlapped by an aspirate sound. If, however, the anticipatory innervation affects also the intrinsic laryngeal muscles, the vocalization (i.e. vibrations of the vocal folds) of a succeeding voiced sound will begin at, or even before, the instant of the break. The force of the explosion, and the following spirant, will thereby be greatly reduced and the latter almost entirely eliminated.

\(^1\) If they are not already separated.

\(^2\) In some cases it happens that the vocal folds are kept closed, so that the contraction of the lungs, even if it occurs, does not materially affect the density of the air in the mouth and the pharynx. By the elevation of the larynx, the jaw, and the tongue, and (in the case of bilabial stops) by the closure of the lips, the oral and pharyngeal air may then be condensed to a pressure exceeding that of atmospheric air. This might be called “mouth pressure.”

\(^3\) The following pages will be made clearer by occasional references to Figures 2 and 3.
KEY TO FIGURE 2

1. Thyroid cartilage
2. Cricoid cartilage
3. Arytenoid cartilages (not seen in the median section)
4. Corniculate cartilages (not seen in the median section)
5. Vocal lips (ledges or folds)
6. Glottis. (The cartilaginous glottis is located at the dotted line to the right)
7. False vocal "cords"
8. Epiglottis. (The dotted line is the line of its right edge)
9. Hyoid bone
10. Uvula
11. Velum (soft palate. The lines of dashes show the position of the uvula, velum and pharyngeal wall when the nasal port is closed in making the stop consonants)
12. Rear wall of the pharynx
13. Oesophagus
14. Trachea
15. Adam's apple
15a. Thyroid gland
16. Lower jaw bone
17–20. First to fourth cervical vertebrae
21. Nasal cavity
22, 23. Hard palate
24. Upper incisor
25. Lower incisor
26. Upper lip
27. Mouth cavity
28. Mylohyoid muscle
29. Geniohyoid muscle
30. Genioglossus muscle
31. Superior longitudinal muscle fibers
32. Nostril
33, 34. Muscles of the lips
35. Septum of the tongue

NOTE.—The location of parts not in the median line is shown by dotted lines. The digastricus, stylohyoid muscles, and the infrahyoid muscles (the sternohyoid, thyrohyoid, sternothyroid, and omohyoid), since they are laterally located, do not show in the figure.
Fig. 2. Sagittal section (front to back) through the nose, mouth, and neck
If we revert now to the question of nomenclature, we can scarcely see the appropriateness of designating the complicated succession of sounds that follow such anticipatory innervation as a part of the preceding consonant. The explosive portion is certainly the result of the movements of the break, but, as was just suggested, the character of the ensuing frictional sound will be influenced by the motor innervation of the sound that follows.

If the following sound is voiceless and energetic (as it may be in Coptic, as well as in other languages, when the consonant is energetically pronounced), there will be an acoustically distinct and rather voluminous flow of air following the break. The auditory effect may be such as to justify the application of the word "aspirate" to it and the immediately preceding stop; but the latter should be regarded as a distinct additional sound. On the other hand, it commonly happens that, when the explosive is followed by a vowel, or a voiced consonant, the vocal lips, influenced by the anticipatory innervation, begin to emit voice (phonation) at the instant of or even before the break. This phonation is acoustically much more prominent than the spirant which it accompanies, and should be regarded as a part of the following vowel or voiced consonant, since in reality the frictional noise is "drowned out" by the phonation. If the anticipated phonation begins before the break, we should consider that the preceding consonant has been assimilated to the following vowel or consonant. If the phonation begins at the instant of the break, the processes following the break should be regarded as belonging to the succeeding sound.

A simple way of putting the situation would then be:

1. If there is phonation during the period of closure of a stop consonant, it is voiced.

2. If there is no phonation, it is voiceless: either

   a. energetic, if strongly accented, in which case it approaches or actually reaches the affricate stage, or, if the movement of the break is rapid and the rush of air is sufficiently violent, a glottal, laryngeal, epiglottal, or pharyngeal spirant may follow the explosion, and we have a voiceless aspirate; or

1 It must not be forgotten that even a break may be influenced by the anticipatory innervation. For example, at the conclusion of a sentence before a pause the break of a consonant is usually entirely absent.

2 It regularly happens in mid-western American.

3 The discussion has, of course, no application to stop consonants which conclude sentences. In the case of such consonants no break occurs.
(ð) weak, either (aa) because the phonation of the following vowel or voiced consonant diminishes the rush of the spirant air that follows the break, in which case we have an un aspirated voiceless stop, or (bb) because it is weakly pronounced, and so lacks a frictional supplement, even though the larynx does not phonate. Even the voiced stop, if pronounced with sufficient energy, may be followed by a fricative (voiced or voiceless). The mid-western American energetic voiceless stops are affricates.

Still another difficulty arises if we call "half-voiced" those stops which are voiceless and followed by a voiceless sound, but pronounced so feebly that no distinctly audible frictional sound ensues (see Part I, 17).

If we apply these foregoing facts to the explanation of Coptic sound-changes, it is clear at once that the deaspiration of the voiceless consonants (predicated loc. cit.) is in perfect harmony with the continually present tendency of the neuro-muscular system to execute muscular movements ahead of time. The physiological processes undoubtedly operate this way in all languages.¹ The modifications of muscular activity produced by this process become more extensive with the increase in the tempo of the processes. Sahidic is said by those who should know to give evidences of having been pronounced with unusual rapidity.² Furthermore, an examination of the environment of Sahidic unaspirated voiceless stops shows that in Ev. Joh. III, 5–21, Apok. El. 35–40, and Ep. Phil. 1 (all reprinted in Till Gr.) ᴿ is followed by a voiced sound³ in 88 per cent. of all occurrences. Such a preponderance of cases in which the stop is followed by a voiced sound favors the deaspiration as described above.

When we turn to those cases in which an Old Egyptian voiced stop has become aspirated, we find a phenomenon not so easy to explain.

As was just pointed out, the phonation characterizing the vowel immediately following an affricate or an aspirate may begin by anticipation at or before the instant of the explosion. This action in itself prevents the occurrence of an affricate or aspirate sound

¹ Not only in spoken language, but in written and gesture languages as well, and in fact in all forms of muscular activity which involve successive contractions of different groups of muscles.
² ᴹ in Gr. is not included.
except in the case of very energetically pronounced vowels, in
which case the fricative sound would be voiced, and simultaneous
with the vowel, and therefore distinctly different from the Coptic
aspirate.

The presence of a vowel immediately following an originally
aspirated or affricate stop contributes in other ways also to de-
affrication and deaspiration. The deaffrication is brought about
by the speeding up of the movement of the break, thus increasing
rapidly the distance between the opposite surfaces. This has the
effect of cutting down the fricative to an extremely brief and
scarcely audible sound. The deaspiration is brought about in
the case of glottal, laryngal, and pharyngeal aspiration not only
(1) by reducing the velocity of flow of air because of the narrowing
or closure of the glottis but also (2) by converting the voiceless
fricative into a more faintly voiced fricative, which, being pro-
nounced simultaneously with the vowel, mingles with it and
becomes practically inaudible, and lastly (3), in the case of pharyn-
geal and laryngeal aspirates, by the widening of the oropharynx
and laryngopharynx and the vestibulum of the larynx by the
anticipatory upward and forward tongue movements of the vowel.
The deaspiration is thus an incidental result, a by-product of the
voicing of the consonant, and is therefore to be explained as a
result of the conditions which bring about the voicing. This is
a specific case of the anticipation of speech sounds like that explained
on pages 165 f., above.

The fact that in Sahidic both vowels and aspiration are lost,
whereas in Bohairic they are retained, suggests that some common
cause or causes contributed to both deaspiration and loss of vowels.

PALATALIZATION

By palatalization is meant in this appendix the transfer of the
region of contact of the tongue either forward or backward until
the middle third of its dorsum comes into contact with or lies
closely (at the moment of greatest constriction) opposed to the
rear three fifths of the surface of the hard palate. By “closely
opposite” is meant such a degree of approximation as characterizes
the consonants ũ (German Pech), ० (N. German lägen), and the
vowels i (machine) and ĩ (bit). The other palatal consonants made
in this region are ɵ and ō, with their corresponding affricates.

1 Produced in the cartilaginous glottis. 2 See Figure 3.
Fig. 3. Sagittal section through the hard and soft palates
Possibly e (German Thee) should be added, although in this case the dorsum of the tongue moves through a somewhat lower region. With these belongs the palatalized i (λ in embroglio), having a constriction slightly less than Ϝ (German ich), and in the prepalatal, alveolar, or dental region, and lateral in character instead of medial, so that it could have little or no influence in effecting palatalization. The articulations š (shell) and ż (pleasure) are also prepalatal, i.e. the region of greatest constriction lies in the anterior two fifths of the palate; but that part of the dorsum of the tongue which lies below the middle region of the palate moves through as high a region as it does in the case of the vowel e. The tongue movements by which all these sounds are produced bear a close family resemblance. (1) Those which constitute the closure ("make") of the midpalatal stop (explosive) are made by the elevation of the body of the hyoid bone by the synergic action of the digastricus, mylohyoideus, geniohyoideus, and stylohyoideus, the infraphyoid muscles being in a state of relaxation. The upward movement of the body of the hyoid carries the mass of the tongue upward. This upward movement of the tongue is perhaps aided by the contraction of the styloglossus, particularly the posterior fibers, which draw the sides of the tongue up against the inner surface of the upper lateral teeth. At the same time the transverse fibers of the tongue in the middorsal region contract and cause the central area of the dorsum to bulge upward against the central region of the palate. (2) The explosion ("break") of the midpalatal explosive is caused by the relaxation of these muscles and the contraction of their antagonists. (3) The midpalatal fricative c and j (yes) show the same movements, but differ mainly in that the transverse fibers of the tongue do not contract so extensively. (3a) The vowels i and 1 are produced by the same tongue movement as c and j, the contraction being slightly more extensive in the case of the vowel i. (4) The prepalatal fricatives š and ż are produced by the same muscular contraction as c and j, only slightly less extensive, and in addition a contraction of the superior longitudinal fibers of the tongue and the anterior fibers of the genioglossus forming a shallow channel in the tongue blade below the alveolae and (or) the prepalate.

1 Consideration of the accessory movements of the lower jaw and lips is intentionally omitted in the interest of brevity.
2 See Figure 2.
3 The tips of the greater horns remain motionless.
4 This symbol represents a sound produced by varying degrees of constriction, yielding sometimes a pronounced hissing sound and sometimes a mere breathing.
This analysis reveals kinship of these articulations when examined from the point of view of muscular movements. If the innervation tracts were examined, a correspondingly close neurological kinship would appear.

This description of the articulation movements of palatal sounds assumes that these sounds initiate a sentence and are preceded by a pause in which the mouth remains slightly open and the tongue lies relaxed upon the floor of the mouth. In the great majority of cases the movements that culminate in given sounds develop out of the movements of the sounds immediately preceding. For example, the movements that produce the k in Atkinson are very different from those which produce the k in Okra. The movements required for the pronunciation of any sound vary more or less extensively with the type of environment in which it stands. However, as a rule, the same kinship of movements will be found to exist between the movements of all the foregoing sounds in each different type of environment; for example, the movements required for the pronunciation of o<, o<, oi, oi, etc., will show a decided kinship, although these movements will be distinctly different from either those described above or those required in the combinations t<, t$, ti, ti, etc.

Most philologists in discussing palatalization speak only of the vowel i as having a distinct palatalizing effect on adjacent vowels. It is apparent, however, from this close relationship in movements that, if the presence of an i facilitates the process of palatalization, then not only the vowel i, but the whole group of palatal sounds just discussed must be considered as facilitating the same process. As a matter of fact, we have in Coptic distinct evidence of a close relationship between the three articulations r, s, z, and the vowels and consonants that follow them, as appears in the following table:

<table>
<thead>
<tr>
<th>Followed by</th>
<th>R</th>
<th>S</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>a, o, e, or a</td>
<td>82</td>
<td>26</td>
<td>143^1</td>
</tr>
<tr>
<td>e, e</td>
<td>5</td>
<td>74</td>
<td>39</td>
</tr>
<tr>
<td>i (ei)</td>
<td>56</td>
<td>15</td>
<td>161^2</td>
</tr>
<tr>
<td>r, u, c, m, or p</td>
<td>41</td>
<td>7</td>
<td>21</td>
</tr>
</tbody>
</table>

^1 Eight cases of ταυ; 5 of μαςις; 13 of ενυος, ετυος, νησις, ηνυος, ηνυος.
^2 Thirty-three cases of κς.
^3 There are only 7 cases of σ followed by a consonant, and they are the initial consonants of the following word. There are 32 cases of κ followed by a consonant (4 of them beginning the next word) and 40 cases of Κ followed by a consonant (12 of them beginning the next word).
These tables show clearly a predominance of the palatal vowels following ơ and ơ, but not for r. ơ shows a lesser degree of frequency of a succeeding "high" vowel. Such effect as the following vowel may have exerted is explained on the principle mentioned on pages 165 f.

Another factor, however, may be mentioned as being of probably as much importance as an explanation of palatalization, whether of a front or back consonant. Palatalization may be the result of a tendency of later acquired movements to revert to more primitive forms of movements. The midpalatal spirants and stops are characterized by movements through a region corresponding closely to that through which the tongue operates in the extremely primitive act of sucking and the initial movements of swallowing. Palatalization may be in reversion to this older form of movements from which the midpalatal consonant conceivably developed. Such a conversion is a biological phenomenon of widespread occurrence, one form of which is atavism.
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