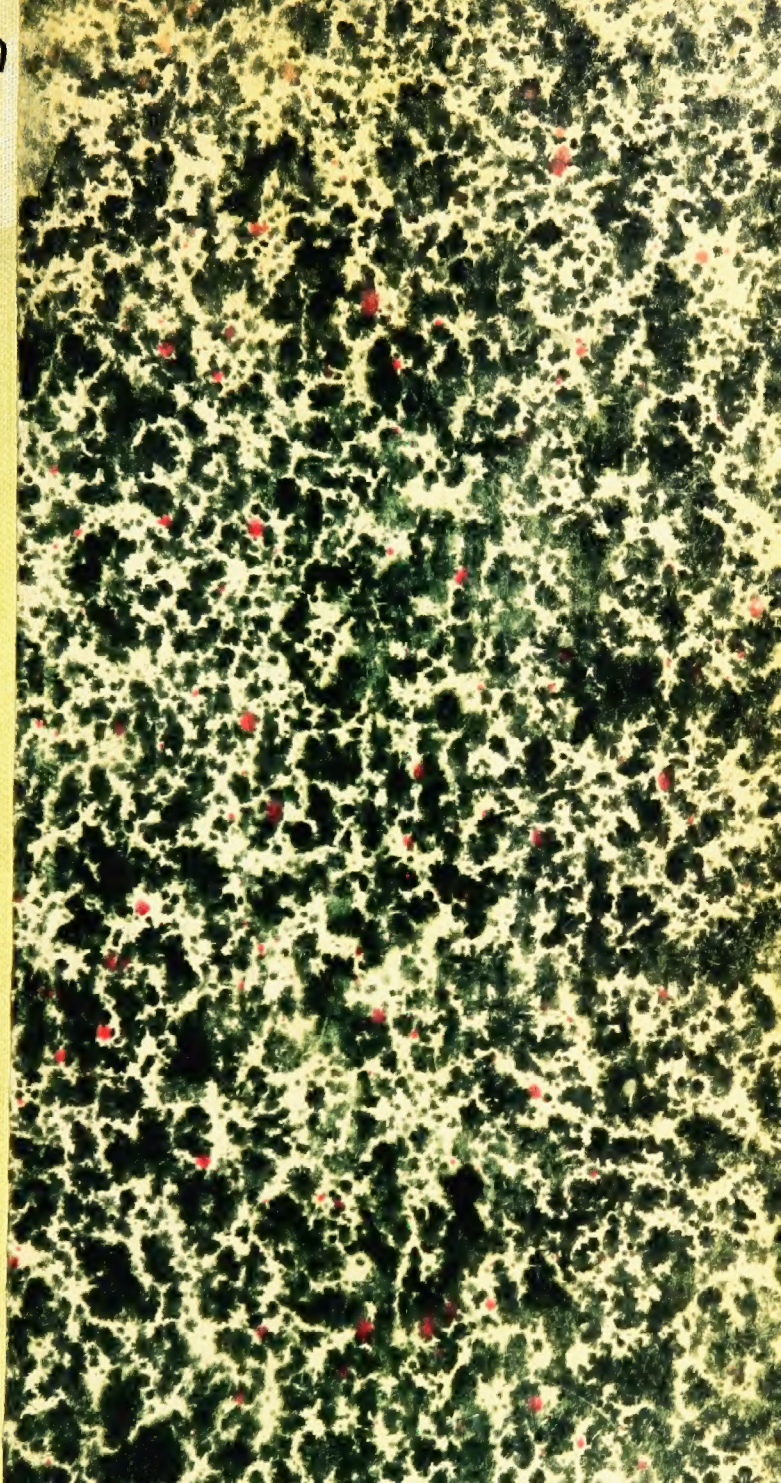
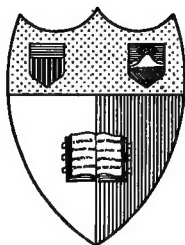


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# CHINESE PHONOLOGY,

AN

ATTEMPT TO DISCOVER THE SOUNDS

OF THE

ANCIENT LANGUAGE

AND

*TO RECOVER THE LOST RHYMES*

**OF CHINA**

BY

**Z. VOLPICELLI :**

LATE BURSAR, ROYAL ASIATIC COLLEGE OF NAPLES,  
HON. LIBRARIAN, CHINA BRANCH ROYAL ASIATIC SOCIETY.

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On ne peut se flatter d'avoir le dernier mot d'une théorie, tant qu'on ne peut pas l'expliquer en peu de paroles à un passant dans la rue.

Chasles (*Aperçu-Historique sur l'Origine et le Développement des Méthodes en Géométrie*, p. 115.)

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PRINTED AT THE "CHINA GAZETTE" OFFICE.

SHANGHAI 1896.



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# INTRODUCTION.

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THE publication of this essay is mainly due to the encouragement of Mr. A. von Rosthorn: during a discussion on the second series of Rhyme-Tables contained in the introduction of K'ang-hsi's Dictionary, I communicated certain views which I had long held on an obscure point in those important tables. My opinions were considered by Mr. von Rosthorn of sufficient importance to induce me to undertake an exhaustive enquiry on the different dialects of China with the material industriously collected by Mr. Parker and inserted in Mr. Giles' Dictionary. The first results of my studies are contained in the following pages.

I have carried on my investigation on a novel plan, but if philology is one of the Natural Sciences, it cannot be excepted from the general treatment accorded to the class: the collection of numerous specimens and their comparison, with the application of mathematics (at least in the elementary form of statistics) become indispensable for the discovery of general laws underlying phenomena.

SHANGHAI, 1896.

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*To the Memory*

OF

STANISLAS JULIEN.

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## PART I.

### RESULTS OBTAINED BY FORMER SINOLOGUES.

**T**HE first author to treat systematically of the sounds of the Chinese language was Marshman, in his "Dissertation on the Characters and Sounds of the Chinese Language" published at Serampore in 1809. His views were very advanced for his time, and he was the first to point out the analogy between the Sanscrit alphabet and the initials of the Chinese phonetic system: he studied very carefully the sound tables in K'ang-hsi's Dictionary, and he reproduced the native views on the subject, only venturing to suggest the probable existence of the sonants *g, d, b*, etc., in the ancient language. He also showed the phonetic analogies between Chinese, Siamese, Burmese and Thibetan. It is a pity that Marshman stopped at the first series of tables in K'ang-hsi, if he had pushed on to the second set of Rhyme-Tables, which are more ancient and fuller, we should doubtless have owed some valuable discoveries to his keen intuition and clear judgment. His arrangement of the phonetic elements of the Chinese language is lucid and methodical, and well worth studying by any one undertaking similar enquiries.

The next writer to furnish material for the study of Chinese phonology was Julien in his "*Méthode pour déchiffrer et transcrire les noms Sanscrits, etc.*". His object was to reduce to a system the various characters employed by the Chinese for rendering Sanscrit sounds, but incidentally his researches threw light on the ancient sounds

of the language. But we owe much more to him: the method he employs of converging a knowledge of Sanscrit, of Chinese, and the information contained in the old Buddhist alphabets, on a problem which had hitherto baffled solution, is of the highest order of scientific research, and may be held up as a model for investigations on such subjects. I have the fortune of coming after him, and am able to adapt his method to the solution of a similar problem.

Dr. Edkins may be considered the author who has treated the subject most exhaustively. He studied the dialects, the old dictionaries, Julien's transcriptions and K'ang-hsi's Rhyme-Tables for the old sounds, and from these different points of view he was able to collect evidence for establishing, almost in every case, the value of the old initials, and of the nasal and consonantal terminations: he also made valuable contributions to the theory of tones. These were very important results for one man to achieve, and his success probably encouraged him to advance those theories in general philology by which he is better known. These bold speculations have diverted attention from the less showy but substantial work which he has done for the philology of the Chinese dialects; but time will bring a juster appreciation, and on the latter will rest the solid basis of his future fame.

We have shown how far Dr. Edkins advanced, but he refrained from investigating the ancient vowels, as their "variations are much more complex" and "vowels are the most evanescent parts of words, easily become modified, and an exact orthographic representation of their nicer shades cannot be obtained." (1)

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(1) Williams' Syllabic Dictionary, Introduction Sec. V. Old Sounds of the Chinese characters.

The next names which occur are those of Dr. Chalmers and Parker, who have both accumulated vast material for the students of Chinese phonology, the former by his arrangement of the rhymes of the Shih-Ching has furnished data for the study of the language at a very early period, while the latter, by giving in Giles' Dictionary, the pronunciation of each character in nine different dialects, besides Corean, Japanese and Annamese, all romanised on a uniform plan, affords the means of investigating Chinese by the methods of comparative philology, which hitherto had been impossible, owing to the want of a common basis on which to establish comparison. I have derived, as I shall explain later, all my material from Mr. Parker, and this essay may be considered as the first outcome of his laborious researches on the dialects of China.

It will be useful to resume what has been achieved and state the present condition of the question.

*The Initials.* Their old value may be considered as established in almost every case, because though Parker refuses to admit the general existence of sonants, they are supported by the analogy of K'ang-hsi's Rhyme-Tables with the Sanscrit alphabet, by the Sanscrit-Chinese alphabets quoted by Julien, and by their existence at the present day in several dialects of China and in the Japanese and Annamese pronunciation of Chinese characters. And what renders the latter facts more cogent is, that as I shall show, these sonants appear in modern dialects and languages, for characters which are placed in K'ang-hsi's tables under initials which correspond to Sanscrit sonants.

*The Nasal and Consonantal Terminations* in the old language are also well established by the modern dialects in the South.

*The Vowels and Diphthongs.* These are very little known, as Dr. Edkins, the greatest worker in the field of ancient Chinese philology, admits they cannot be exactly represented.

*Native Literature on the subject.* - This has been little studied, even the valuable introductory matter in K'ang-hsi's Dictionary, so easily accessible to everyone, has been much neglected. Marshman only took up the first set of Rhyme-Tables, which are based on a comparatively modern pronunciation; the second set which go back much further, have only been cursorily examined by Dr. Edkins, who probably could not spare time, and had to depend solely on his Chinese *Lettré*, who compiled lists of characters and compared them with the "Kwang-yun" and the second set of Rhyme-Tables.<sup>(1)</sup>




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(1) Dr Kühnert has studied these tables, but though his views are ingenious his knowledge of the language at the time was insufficient for such a task. He misunderstands phrases, and his residence in the country was too short for acquiring adequate phonetic material. (See Journal. Academie der Wissenschaften Phil. Hist., CXXII. Band Wein, 1890.)

## PART II.

## METHOD PURSUED IN THIS ENQUIRY.

IT now behoves me to show the method I have employed in verifying the results obtained by my predecessors, and in attempting to advance a step further in the difficult problem of the ancient Sounds of the Chinese characters.

I started from the principle that it was necessary for an adequate solution, to bring to bear on the problem, evidence afforded by ancient sources and modern dialects, that this evidence should converge on the same phonetic material, and that the latter should be so extensive as to ensure the discovery of a law not disturbed by casual irregularities.

To satisfy these conditions, I took as basis of my work the second set of Rhyme-Tables (24 in all) in K'ang-hsi. These tables can be traced back to the Sung Dynasty and probably date earlier, about 1,000 or 1,500 years ago, a period when the Chinese paid much attention to the sounds of their language, and when they secured the collaboration of Sanscrit scholars, trace of whose work is discerned in the arrangement of the tables. This is the period which has been generally studied, as Dr. Edkins assigns his *old sounds* inserted in Williams' Syllabic Dictionary to 1,200 years ago: it is also the furthest period to which we can extend our researches for the present. Besides it probably represents the state of the language before it had undergone great changes due to the Tartar conquests.

These tables are arranged according to 15 terminations (they are said to be 16, but two are amalgamated together), some of which are also subdivided into open (開口), and closed (合口) sounds, the latter being differentiated from the former by the insertion of a *u* as *Kuan* from *Kan*, *Kuen* from *Ken*, etc. Some of the terminations are single, either open (開口); or closed (合口), in which case they have only one table.

Each table is divided into four divisions, each of which contains characters in the four tones. The initials are placed at the head of each table so that all the characters in one column have the same initial. The rhymes are placed in a column at the left of each table, so that all the characters in the same line have the same tone and final. The complete table contains 23 columns (there are 36 initials, but 13 of these are in double series, 2 for each column) and 16 lines: of course there are not characters filling always each column or line, and in some tables one or more columns or lines are destitute of characters. This means that given theoretical combinations of initial final and tone did not exist practically in the language.

A glance at these tables in K'ang-hsi will make the above summary description perfectly clear, and the reader will find that the terminations (攝), the initials, and the tones are perfectly easy to understand, what will puzzle him at first, are the four divisions disposed horizontally in four tiers, one under the other. They have nothing to do either with tone, initial, or termination and their meaning is not apparent.

Many years ago, when studying these Tables with the valuable assistance afforded by the directions given in the introduction to Williams' Syllabic Dictionary by

Dr. Edkins, I came to the conclusion that, as they could not mean any change in tone, initial or termination, they must indicate a change in the *vowel* and that they expressed the various vocalisations with a common termination. This would not affect the rhyme, as different ones are given for each division. By a summary examination of the characters under each division, with their pronunciation, according to the Southern dialects, I concluded that they were used to express the simple vowels: *o, a, e, i*, (as in Sir T. Wade's Romanisation). 'I did not pursue the subject, because I thought the conclusion was sufficiently proved, but latterly, as my opinion was challenged by a friendly critic, who desired complete evidence for such an assumption, I proceeded with the following enquiry.

In these tables, I had a phonetic material of over 4,000 characters systematically arranged according to initials, vowels, finals and tones. Each of these characters, at the early period I have alluded to, had been placed in such a position that it had a whole series of other characters similar to it in one of the above mentioned particulars, Here I had ready formed classes of similar specimens carefully collected and arranged by the Buddhist missionaries, worthy scientific predecessors of their modern Christian brethren, who had first given China a system of recording and preserving sounds. I thought I could not better undertake the study of Chinese phonology than by taking it up where it had been left by our Aryan kinsmen, those devoted bonzes, perhaps the only foreigners, if we except a few modern Christian priests and missionaries, who have ever acquired a deep knowledge of this strange language so replete with difficulties.

I determined to follow up the dialectal variations of each class, according as I wished to consider, the initial, the vowel, or the termination. For this purpose, all the characters in the tables were written out, according to initials in single column, on large sheets of paper, then I searched for each character in Giles' Dictionary, and wrote out in 12 columns, by the side of it, the different sounds assigned by Parker to the 9 dialects and 3 languages<sup>(1)</sup>. Some of the characters (rare ones) could not be found in the Dictionary, and others had not the sounds marked down for all the dialects; but on the other hand, some characters had several forms for each dialect, and as duplicates or vulgar forms have paramount value for philological purposes, I recorded them all. I thus collected a vast material of over 40,000 sounds on which to base my enquiry. It was a most laborious work<sup>(2)</sup>, which I do not think I could undertake again, and which I was sorely tempted several times to give up: but the work already accomplished, which would have been wasted if left incomplete, deterred me from such a pusillanimous course.

Such a vast mass of material threatened to overwhelm me, and it required patience and thought to render it manageable, I had to sift and resift before I could condense results, and bring them into a clear and compact form so as to be easily shown and not occupying too much space.

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(1) Only in the case of Japanese have I departed from the sounds given by Parker: he gives the modern pronunciation, which is a corrupted form of the older one preserved in the orthography which I have followed. Taken in this light, the evidence afforded by Japanese is of the highest order, as it is the only ancient pronunciation of which we have a clear written record.

(2) I am so much indebted to the patient industry of Parker that I feel disinclined to find fault even in detail with his valuable work, but his frequent omissions of dialectal forms, which are placed under another character (which is not even referred to by number) have enormously increased my difficulties.

Though my original object had been to investigate only the value of the ancient vowels, I determined to utilise the large material I had laboriously accumulated, to verify the conclusions reached by my predecessors in the matter of initials and terminations.

As I had arranged the four thousand odd characters according to initials, (an arrangement to facilitate the use of Giles' Dictionary, which naturally is also so arranged) it was easy to follow up the variations of each initial in the various dialects and languages. The comparative table of initials is the result of this first investigation.

The enquiry into vowels and terminations, by which latter word I denote, throughout this essay, only the terminal vowels (in case of a diphthong), nasals, and consonants of Chinese monosyllables, and which together with the medial vowel or diphthong constitute what is generally called final, which latter word I also use in the commonly received sense, was far more difficult.

Firstly, because I had to examine them together, secondly because the vowel variations were far more complex,<sup>(1)</sup> and thirdly because the phonetic material at my disposal was already arranged by initials. I had to sift and resift the whole mass of sounds, and by successive tabular arrangements, I at last reached the results which will be found further on. The results published are the 6th tabular arrangements which I had to adopt to be able to mould the material into a manageable shape.

Now that I have explained the method pursued, I can proceed with the investigation and the results it seems to authorise.

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(1) An initial seldom presents more than 6 or 7 variations, while a final generally gives 30 or 40 in the different dialects examined.

## PART III.

PHONETIC ELEMENTS OF MODERN  
DIALECTS. \*

**A**S the object of this enquiry is to bring the evidence of modern dialects, and of ancient phonetic arrangements to converge upon the same facts, it will be necessary to rearrange the former according to the plan of the latter, so that they may be investigated in a parallel way. I therefore shall arrange all initials according to K'ang-hsi's order, and vowels, diphthongs and terminations according to the same system.

It will be useful to premise some considerations on the elements we have to examine. Chinese monosyllables by native philologers are divided into two parts, initial and final. But for a closer investigation it will be sometimes necessary to effect a further division. Chinese sounds, according to our alphabetical abstractions, are composed of two or three elements: either of a consonant and vowel simple; or of a consonant followed by two vowels, *i, e*, a diphthong; or by a vowel and a nasal; or by a vowel and a consonant (in the *Ju Sheng* of the Southern dialects), or adopting the technical meaning I give to the word termination, a Chinese monosyllable is composed either of a consonant and a vowel, or of a consonant, vowel, and termination. There are apparent exceptions to this rule, as in some cases the sound consists only of a vowel simple, or followed by a nasal or consonant, no initial being manifest; but if we adopt the views of Arabic grammarians, we shall consider the vowel to be preceded

TABLE OF INITIALS OF CHINESE DIALECTS.

|              | GUTTURALS.     | DENTALS.      |                | LABIALS.          | SIBILANTS.          |  |          |     |     |     |     |     |     |     | ASPIRATES. | LIQUIDS. |   |    |   |  |
|--------------|----------------|---------------|----------------|-------------------|---------------------|--|----------|-----|-----|-----|-----|-----|-----|-----|------------|----------|---|----|---|--|
|              |                | Simple.       | Palatal.       |                   | Simple and Palatal. |  |          |     |     |     |     |     |     |     |            | L        | J | Jr | R |  |
|              | K K' G (Gh) Ng | T T' D (Dh) N | Ch Ch' C C' Dj | P P' B (Bl) M F V | Ts Ts' Dz S Z       | Tsr <sup>(1)</sup> Tsr' <sup>(1)</sup> Tsz Tsz' Sr <sup>(1)</sup> Sh Sz Zz | H W Y Hs | L   | J   | Jr  | R   |     |     |     |            |          |   |    |   |  |
| Canton.....  | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 23       |   |    |   |  |
| Hakka .....  | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 22       |   |    |   |  |
| Foochow ...  | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 16       |   |    |   |  |
| Wenchow...   | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 31       |   |    |   |  |
| Ningpo.....  | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 34       |   |    |   |  |
| Yangchow...  | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 24       |   |    |   |  |
| Weihien ...  | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 25       |   |    |   |  |
| Tengchow...  | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 20       |   |    |   |  |
| Kiukiang...  | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 22       |   |    |   |  |
| Nanking ...  | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 20       |   |    |   |  |
| Peking ..... | " "            | " "           | " "            | " "               | " "                 | " "  | " "      | " " | " " | " " | " " | " " | " " | " " | " "        | 21       |   |    |   |  |

<sup>(1)</sup> These are true cerebrals.

|                |  |
|----------------|--|
| Canton.....    |  |
| Hakka .....    |  |
| Foochow .....  |  |
| Wenchow.....   |  |
| Ningpo.....    |  |
| Yangchow ..... |  |
| Weihien .....  |  |
| Tengchow ..... |  |
| Kiukiang.....  |  |
| Nanking .....  |  |
| Peking.....    |  |

|                |       |
|----------------|-------|
| Canton.....    | ou, o |
| Hakka .....    | "     |
| Foochow .....  | "     |
| Wenchow.....   | "     |
| Ningpo.....    | "     |
| Yangchow ..... | "     |
| Weihien .....  | "     |
| Tengchow ..... | "     |
| Kiukiang ..... | "     |
| Nanking .....  | "     |
| Peking.....    | "     |

TABLE OF FINALS OF CHINESE DIALECTS.

|                | ong on om oŋ ouñ oudg oan | ang an am aŋ aañ aing aung aöng | êng ên êm eng en em eñ eing ein eiñ | ing | ing in im ĩng ion iang ian iam iaŋ ieng ien iem ieñ |
|----------------|---------------------------|---------------------------------|-------------------------------------|-----|---|
| Canton.....    | " "                       | " "                             | " "                                 | " " | " "   |
| Hakka.....     | " "                       | " "                             | " "                                 | " " | " "   |
| Foochow .....  | " "                       | " "                             | " "                                 | " " | " "   |
| Wenchow.....   | " "                       | " "                             | " "                                 | " " | " "   |
| Ningpo.....    | " "                       | " "                             | " "                                 | " " | " "   |
| Yangchow ..... | " "                       | " "                             | " "                                 | " " | " "   |
| Weihien .....  | " "                       | " "                             | " "                                 | " " | " "   |
| Tengchow ..... | " "                       | " "                             | " "                                 | " " | " "   |
| Kiukiang ..... | " "                       | " "                             | " "                                 | " " | " "   |
| Nanking .....  | " "                       | " "                             | " "                                 | " " | " "   |
| Peking.....    | " "                       | " "                             | " "                                 | " " | " "   |

TABLE OF VOWELS OF CHINESE DIALECTS.

| TS.      |       |                   |    |    |    | ASPIRATES. |   |   |    | LIQUIDS. |   |    |   |    |
|----------|-------|-------------------|----|----|----|------------|---|---|----|----------|---|----|---|----|
| Palatal. |       |                   |    |    |    |            |   |   |    |          |   |    |   |    |
| T'sz     | T'sz' | Sr <sup>(1)</sup> | Sh | Sz | Zz | H          | W | Y | Hs | L        | J | Jr | R |    |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 23 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 22 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 16 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 31 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 34 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 24 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 25 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 20 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 22 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 20 |
| "        | "     | "                 | "  | "  | "  | "          | " | " | "  | "        | " | "  | " | 21 |

cerebrals.

|               | ou, | o, | ê, | a, | aea, | e, | ö, | ï, | i, | u, | ü, |
|---------------|-----|----|----|----|------|----|----|----|----|----|----|
| Canton.....   | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Hakka.....    | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Foochow.....  | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Wenchow.....  | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Ningpo.....   | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Yangchow..... | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Weihien.....  | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Tengchow..... | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Kiukiang..... | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Nanking.....  | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |
| Peking.....   | "   | "  | "  | "  | "    | "  | "  | "  | "  | "  | "  |

TABLE OF DIPHTHONGS OF CHINESE DIALECTS.

|               | ou, oui, oi | ao, au, aui, aiu, ae, aö, ai | êo, eu, ei, | ioa, io, ioi, ia, iau, iae, iai, ie, ieu,iei, iöe, iu | ui | üoa, üo, üe, üei, üi | öü, öe |
|---------------|-------------|------------------------------|-------------|---|----|----------------------|--------|
| Canton.....   | "           | "                            | "           | "   | "  | "                    | "      |
| Hakka.....    | "           | "                            | "           | "   | "  | "                    | "      |
| Foochow.....  | "           | "                            | "           | "   | "  | "                    | "      |
| Wenchow.....  | "           | "                            | "           | "   | "  | "                    | "      |
| Ningpo.....   | "           | "                            | "           | "   | "  | "                    | "      |
| Yangchow..... | "           | "                            | "           | "   | "  | "                    | "      |
| Weihien.....  | "           | "                            | "           | "   | "  | "                    | "      |
| Tengchow..... | "           | "                            | "           | "   | "  | "                    | "      |
| Kiukiang..... | "           | "                            | "           | "   | "  | "                    | "      |
| Nanking.....  | "           | "                            | "           | "   | "  | "                    | "      |
| Peking.....   | "           | "                            | "           | "   | "  | "                    | "      |

TABLE OF FINALS OF CHINESE DIALECTS.

| ên êm eng en em eñ eing ein eiñ | ing | ing in im ïng iong ion iang ian iam iañg ieng ien iem ieñ iein iung iun | ung un um uing | üng ün üan üen üeñ üein üing ün üik üung | öng ön öñ öung öün |    |
|---------------------------------|-----|---|----------------|--|--------------------|----|
| "                               | "   | "   | "              | "  | "                  | 18 |
| "                               | "   | "   | "              | "  | "                  | 21 |
| "                               | "   | "   | "              | "  | "                  | 16 |
| "                               | "   | "   | "              | "  | "                  | 5  |
| "                               | "   | "   | "              | "  | "                  | 19 |
| "                               | "   | "   | "              | "  | "                  | 8  |
| "                               | "   | "   | "              | "  | "                  | 11 |
| "                               | "   | "   | "              | "  | "                  | 11 |
| "                               | "   | "   | "              | "  | "                  | 10 |
| "                               | "   | "   | "              | "  | "                  | 13 |
| "                               | "   | "   | "              | "  | "                  | 13 |

by a *Hamzeh* (corresponding to the *Spiritus Lenis* of the Greeks) or in other words, by a slight effort to emit the breath which is a rudimentary consonant<sup>(1)</sup>. Thus such apparent exceptions will be included in the general rule.

I shall now commence my analysis of the modern dialects of China, by giving first the elements which they possess: initials, vowels, diphthongs and finals, arranged according to the plan derived from Sanscrit, followed by native philologers, and illustrated in the tables of K'ang-hsi. For the Southern dialects, I have dissected the various syllabaries published by Mr. Parker, and for the Northern (with the exception of "Yangchow" where I have followed the same author) I have subjected to a similar process the valuable sound table published by Dr. Mateer in his "Mandarin Lessons." I thus can give a comparative view of 11 different dialects.

A glance at the foregoing tables will discover at once two important facts: the complete and harmonious series of initials in the Wenchow and Ningpo dialects, and the not less remarkable set of vowels, diphthongs, and finals in the Canton dialect. In the latter, the vowels form a few natural diphthongs, and join with the three<sup>(2)</sup> terminations *ng*, *n*, *m*, to give a regular set of finals. The numerous finals formed by the diphthongs commencing with *i* such as *ia*, *ie*, etc., are absent in Cantonese, and as this is the dialect which agrees best with the ancient rhymes, we must be led to suspect that these numerous diphthongs are derived from simpler forms, in which an *i* has been inserted by euphonic necessities, consequent to the change of value in the initials through phonetic decay.

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(1) This conventional consonant will be marked \*

(2) I leave out the terminations *k*, *t*, *p*, found in the *Ju Sheng* of the southern dialects, because according to the views of the native philologers, whose system I follow, they are but shortened abrupt forms of *ng*, *n*, and *m*,

## PART IV.

PHONETIC ELEMENTS OF THE RHYME-  
TABLES OF K'ANG-HSI.

## INITIALS.

The four thousand odd characters contained in the above tables are arranged, as we have said, under 36 initials. These are divided into 9 classes, which generally correspond to similar ones in the Sanscrit alphabet, which thus becomes a precious auxiliary for determining their value at the time when the tables were compiled. We subjoin the nine classes with remarks when necessary :

- 1st Class Gutturals K. K'. G. Ng. (same as Sanscrit.)  
 2nd ,, Dentals T. T'. D. N. ( ,, ,, ,, )  
 3rd ,, Cerebrals T(*r*). T(*r*). D(*r*). N(*i*).<sup>(1)</sup> ( ,, ,, ,, )

This class was pronounced with the tip of the tongue against the palate as if to pronounce *r*. The dentals T. T'. D. N. being uttered with the tongue in the above position, became respectively something between T, Ch, Tr-T' Ch'Ts—D, Dj, Dz, Dr—N, Ni, all of which sounds are found separately in various dialects and in Annamese<sup>(2)</sup>.

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(1) I adopt the system of indicating cerebralisation by an *r* in brackets, because it shows the position of the tongue; of course the *r* must not be trilled. Dr. Edkins is wrong in considering the characters of this class as palatals; Julien's alphabets show they were used for Sanscrit cerebrals.

(2) These sounds can be paralleled by the Syllabarium Ratatarum of Thibetan (given by Giorgio) and by certain sounds in Dr. Mateer's Sound Table in his Mandarin Lessons.

SKELETON TABLE SHOWING VALUE OF K'ANG-HSI'S INITIALS.

| 9TH CLASS. |          | 8TH CLASS. |       | 6TH CLASS.<br>7TH " |       | 4TH CLASS.<br>5TH " |          | 2ND CLASS.<br>3RD " |      | 1ST CLASS. |      |   |   |   |   |   |   |   |  |  |  |
|------------|----------|------------|-------|---------------------|-------|---------------------|----------|---------------------|------|------------|------|---|---|---|---|---|---|---|--|--|--|
| 日來         | 險        | 邪          | 心     | 從                   | 清     | 精                   | 明        | 並                   | 滂    | 幫          | 泥    | 定 | 透 | 端 | 疑 | 邪 | 溪 | 見 |  |  |  |
| Jr L       | Y * H Hh | 禪          | 審     | 狀                   | 穿     | 照                   | 微        | 奉                   | 敷    | 非          | 娘    | 澄 | 徹 | 知 |   |   |   |   |  |  |  |
|            |          | Z S        | Dz    | Ts'                 | Ts    | Ts                  | M B P' P | N                   | D    | T' T       |      |   |   |   |   |   |   |   |  |  |  |
|            |          | Z(r) S(r)  | Dz(r) | Ts(r)'              | Ts(r) | Ts(r)               | M B P' P | N(r)                | D(r) | T(r)'      | T(r) |   |   |   |   |   |   |   |  |  |  |
|            |          | "          | "     | "                   | "     | "                   | W V F' F | "                   | "    | "          | "    | " | " | " |   |   |   |   |  |  |  |
|            |          | Z S        | Dz    | Ts'                 | Ts    | Ts                  | M B P' P | N                   | D    | T' T       |      |   |   |   |   |   |   |   |  |  |  |

韻



4th Class. Labials (strong) P. P'. B. M (same as Sanscrit.)

5th ,, ,, (weak) F. F.' V. W. (absent.)

This class is generally derived from the preceding 4th class by the insertion of a *u* :

6th Class. Sibilants Ts. Ts'. Dz. S. Z. (partially represented in Sanscrit)

7th ,, (cerebral) Sibilants Ts(*r*). Ts(*r*)'. Dz(*r*). S(*r*). Z(*r*) (absent in Sanscrit.)

This, like the third class, was pronounced with the tip of the tongue against the palate, as if to pronounce *r*, and the sibilants Ts. Ts'. Dz. S. Z. by cerebralisation became something like Tsr. Tsr', Dzs. Sr. Zr<sup>(1)</sup>.

8th Class Aspirates. Hh. H. \*. Y.

The sounds of this class, with the exception of Hh and Y, are very difficult to determine, and I give them with diffidence as I am unfortunate enough to disagree with such an authority as Dr. Edkins.

9th Class L. Jr.

For the second, I prefer the sound Jr. to J commonly given, because the class would correspond to the half vowels *ri* and *li* of Sanscrit, and because Jr. may more easily change into N. Jr. J. which occur so often in dialects and in Japanese.

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(1) See note on preceding page.

The 3rd, 5th, and 7th classes are not marked as separate ones in the Tables under consideration, but are placed respectively under the 2nd, 4th, and 6th classes. But they can be no confusion, because K'ang-hsi gives directions for discriminating between them.

We have already stated that each table of K'ang-hsi is divided into four Divisions, each containing four lines of characters in the different tones. Now that dictionary teaches that characters with initials of the 2nd and 6th classes can only be found in the I and IV Divisions, while characters of the 3rd and 7th classes are only found in the II and III Divisions.

Characters with initials of the 5th Class are found only in the III Division, and mostly in the Tables with closed sounds (合口).<sup>(1)</sup>

A table is attached, showing how these different initials have changed in the various dialects and languages which have formed the basis of the present enquiry. As it would have taken too much space to give each dialect separately, four groups have been formed :

Canton, Hakka, and Foochow marked *S*; Wenchow, and Ningpo marked *W N*; Yangchow, Mid-China, Ssüch'uan and Peking, marked *CN*; and Corean, Japanese, and Annamese marked *L*. The latter have often been separated by a hyphen.

To show the relative frequency with which sounds occur in a group of dialects, I have arranged them in a regular succession, those most commonly found being placed

<sup>1</sup> Schlegel and Kühnert both mistake the meaning of a simple phrase of K'ang-hsi giving directions for this class, which would have become evident if they had critically examined the Rhyme Tables. Much learning was wasted in supporting the two mistaken views. (See Journal Akademie der Wissenschaften CXXII, CXXXI).

COMPARATIVE TABLE SHOWING DIALECTAL CHANGES IN K'ANG-HSI'S INITIALS.

| K'ANG-HSI.  | S.                 | W. N.                        | C. N.                       | L.<br>COREAN-JAPANESE-ANNAMESE.   |
|-------------|--------------------|------------------------------|-----------------------------|-----------------------------------|
| K.....      | K.                 | K, Ch, Tsz, Dj, Hs, Y,*      | K, Ch, Tsz, Dj, Hs, Y,*     | K.                                |
| K'.....     | K, H, Ng, Y,*      | K, Ch, dj, h, g, hs,*        | K, Ch, Ts, Dj, H, Ng, Y, W. | K, H.                             |
| G.....      | K.                 | G, Dj, c, d.                 | Ch, K.                      | K—G—G.                            |
| Ng .....    | Ng, Y, W, * H.     | Ng, Y, W, * H.               | Ng, N, L, j, jw.            | * W, Y, H—G, K—Ng.                |
| T.....      | T, ch.             | T, D, tsz, dz, ch, dj.       | T, ch, ts.                  | T, d, sh, ch, hs, tr.             |
| T(r) .....  | Ch, t, ts.         | Ts, Dz, t, ch, dj, c, s, ts. | Ch, Ts, t, tsz.             | Ch, t, d, tr, s, hs, sh.          |
| T' .....    | T', ch.            | T', d, ts, ch.               | T'.                         | T, d, ch, j, tr.                  |
| T'(r).....  | Ch, ts, t.         | Ts, t, d, ch, dz, dj, c.     | T, ch, ts, c.               | T, D, ch, dj.                     |
| D.....      | T, ch, s.          | D, t, dz.                    | T, ch, ts, c.               | T, D, ch, dj.                     |
| D(r) .....  | Ch, t, sh, ts, s.  | Dz, dj, z, j, ts, ch, tsz.   | Ch, Ts, sh, hs, t, ch, sz.  | D, Ch, Tr, t, s, hs.              |
| N .....     | N, L, ng, y.       | N, ng, ny, z, j.             | N, L, j.                    | N, D, T, j, y.                    |
| N(i) .....  | N, L, ng, ny, y,*  | N, ng, y, j, z.              | N, L.                       | , D, T, y, j.                     |
| P .....     | P, f, h, m.        | P, B, f, v, h.               | P, f.                       | P—H, f—T, f.                      |
| F .....     | F, h, p.           | F, v, h, p.                  | F.                          | F.                                |
| P' .....    | P, h, f, m.        | P, B, V.                     | P.                          | P, H, B, f, t.                    |
| F' .....    | F, h, p.           | F, p, h, b.                  | F.                          | P—H—F, b.                         |
| B .....     | P, f, b, m.        | B, P, v.                     | P.                          | P—H, B, f—B, t, f.                |
| V .....     | F, p, h.           | V, f, b, w.                  | F.                          | P—F, H, B—F, b.                   |
| M.....      | M.                 | M.                           | M.                          | M—M, B—M, j.                      |
| W .....     | M, N,*             | V, m, w.                     | W, m.                       | M—M, B, f—V, f.                   |
| Ts .....    | Ts, ch.            | Ts, ch, dz, z.               | Ts, ch, tsz.                | Ch—S, Sh, z, j—T, tr.             |
| Ts(r) ..... | Ch, Ts.            | Ts, ch, j, z.                | Ts, Ch.                     | Ch—S, Z—Tr, Ch, t.                |
| Ts' .....   | Ts' ch, s.         | Ts', ch', dz.                | Ts', Ch'.                   | Ch—S, sh, z—T, tr, s, h.          |
| Ts'(r)..... | Ch, Ts, s.         | Ts, Ch, dz, z.               | Ts, Ch.                     | Ch, s—S, Sh, t—Hs, S, t.          |
| Dz .....    | Ts, Ch, s, tsz.    | Dz, Z, ts, dj.               | Ts, Ch, tsz.                | Ch,—S, Sh, Z, Dj—T, Tr, hs.       |
| Dz(r) ..... | Ch, Ts, Sh.        | Dz, Z, j, ts, s, sh.         | Ts, Ch, sh, s, hs.          | Ch, S—S, Z, J—T, Tr, hs, s.       |
| S.....      | S, ts, sz.         | S, hs, sh, ts.               | S, Hs, ts.                  | S, ch—S, Sh—Ts.                   |
| S(r).....   | Sh, S, Ch, Ts.     | S, sh, z, dj, ts.            | S, Sh, hs.                  | S, ch—S, Sh—S, T.                 |
| Z.....      | Ts, S, ch, tsz.    | Z, dz, dj, j, y.             | Hs, s, tsz, ch, y, i.       | S—Sh, dj, z—T, d, j.              |
| Z(r).....   | Sh, s, ch.         | Z, Dz, j, dj.                | Sh, ch, ts, hs.             | S, ch—Sh, z, dj—T, hs, j.         |
| Hh .....    | H, h, f, w, y.     | H, K, hs, f, w, y,*          | H, Hs, K, y.                | H, k—K, w, g—H, K.                |
| H .....     | H, k.              | * W, Y, h, k, ng.            | H, Hs, y, k.                | H, k—k, G, w, y—H, k, g, j.       |
| * .....     | Y,*                | Y, W,*                       | Y, W, * ng, h.              | Y, W, * h—Y W—Y, W, ñ, ng, lu, n. |
| Y.....      | Y, w, * h, ch, t.  | Y, h, w, hs.                 | Y, w, i, h, hs.             | Y W* —Y W* —V, J, g.              |
| L.....      | L.                 | L, n.                        | L, n.                       | NR Y—R—L n.                       |
| Jr .....    | Y, l, n, ny, i, w. | Z, J, n, ng, dz, y.          | J, n, l, ug, y, erh, w.     | NY* —N, J, z, sh—N, Ñ, Ny.        |

N.B.—The sign \* means absence of initial.



to the left in capital letters, while those found rarely are placed to the right in small type.

From the table of initials of the different dialects of China, it appeared that Wenchow and Ningpo possess a very complete series: the present comparative table shows that their initials correspond closely to the theoretical initials of Kang-hsi. It will also be seen that the sonants are supported by Japanese and Annamese.

### VOWELS DIPHTHONGS AND FINALS.

It will make the subject clearer, and render comparisons more systematic, if inverting the chronological order, I premise the phonetic elements of the ancient language which I have obtained as the final results of my investigation.

The hypothetical reconstruction of these ancient phonetic elements is given on the next page.

## HYPOTHETICAL PHONETIC ELEMENTS OF THE ANCIENT LANGUAGE.

### VOWELS.

o, ê, <sup>(1)</sup> a, e, é, i (perhaps short i and ï) u, ü.

### DIPHTHONGS.

oo, oi, ou;  
ao, <sup>(2)</sup> ai, au;  
eo, ei, éi, eu;  
io, ii, iu.

### FINALS.

oang, on, om, êng, ên;  
aang, ang, an, am;  
eang, eng, en, em, éng, én, ém;  
iang, ing, in, im, (perhaps in with a short i);  
ung, üng.

---

(1) I adopt this spelling because it is followed by Parker, but the sound is really the Italian *o stretto*.

(2) This is represented as *éo* by Wade and Parker, but I cannot follow such an extraordinary combination for a sound so naturally rendered by the Italian diphthong *ao* which gives the two vowels uttered. As the vowel system of Wade is based on Italian, the spelling of that language has a right to be preferred.

As will be seen at a glance, this system of vowels diphthongs and finals, is very simple, corresponds to Cantonese and Hakka, and, as will be shown later on, agrees with the 24 Tables of K'ang-hsi, explaining each of them without the occurrence of duplicates which deface the reconstruction of the ancient finals attempted by other authors.

It is now necessary to compare these theoretical elements, with those found in the dialectal variations of the 4,000 characters of K'ang-hsi's Rhyme-Tables, in the way we have already done with the initials. But as I have already pointed out, it is a far more difficult task: the variations of vowels, diphthongs and terminations are so complex, that they cannot be reduced to a system, compared and judged by mere observation, however diligent and reiterated. The mind cannot master hundreds and thousands of forms, and judge of their relative importance. It becomes indispensable to have recourse to figures, those convenient symbols which enable us to reason about facts whose multiplicity would baffle us if approached without their assistance, I decided to form a series of statistical tables.

To economise labour I omitted all the *Ju Sheng* sounds, as they could be readily constructed whenever the sounds in the other tones were ascertained. Whenever a final possessed two tables, for open and closed sounds, I only considered the former, because the latter could be deduced as a corollary from the table of open sounds once it was determined: after these deductions I still had over 22,000 sounds to analyse. This residuum was dissected, and by six consecutive series of tables, reduced to condensed statements of the relative frequency with which any

given final sound occurs in any of the Tables of K'anghsi, pronounced according to nine different dialects and the three foreign languages. Up to the last set of tables I kept the sounds divided into the same four groups which I gave in the Comparative Table of Initials, but the tables were too cumbersome and presented such difficulty for printing, that I had regretfully to condense them into a single statement for all the dialects and languages given by Parker. This curtailment hides many important facts, the conservative tendency of certain linguistic groups and the facile phonetic decay of others, become neutralised and lost in the general mass. But even with these disturbing causes, the action of general laws is still apparent.

In the tables which follow, the Roman numbers at the top of each column indicate the Divisions of the table, I. meaning the upper one, and IV. the lowest. The arabic numerals in the different columns indicate the number of times any final occurs, and to know their just relative importance, they must always be referred to the total at the bottom of each column: they are the numerators of fractions whose denominator is the total. In another column, the same number may have a different relative value owing to the difference in the total.

It may be objected that statistics are inapplicable to such phenomena, because in philology exceptions often are of the highest value, and irregularities may indicate lost forms, but I do not pretend to give an *absolute* value to my figures, nor should I decide in favour of a vowel or a diphthong by a simple addition like a political division in Parliament. I use figures, because they are the only symbols that can render manageable such an unwieldy

mass, they can condense evidence and render it clear. The reasoning on such evidence is not affected by their use, and can proceed with the customary canons of the science.

My general principle for drawing conclusions from the material accumulated and arranged, has been to subordinate everything to the plan on which the Rhyme-Tables of K'ang-hsi were undoubtedly constructed. I have asked from figures only a clue to show the nature of the arrangement, I have not followed blindly the indications of an arithmetical majority; whenever the Tables required that a difference should be found between two finals, I have taken guidance even from numerical minorities.

In the comparative study of the fifteen terminations of K'ang-hsi, at first, I found much difficulty in keeping some of them distinct; my hypothesis that the 4 Divisions (四等) corresponded to the four vowels *o, a, e, i*, seemed to multiply the number of finals, and give a larger number than the nature of the language consented. But a diligent study of terminations, arranged according to natural groups, enabled me to distinguish finer degrees of vowel differentiation.<sup>(1)</sup>

I shall therefore present my tabular material, and the conclusions I draw from it, divided, when ever possible, in groups of two or three terminations; most of these groups had already been formed by native philologists, and may either be found mapped out in K'ang-hsi, immediately preceding the 2nd set of Rhyme-Tables, or may be surmised by the ancient arrangement of the 24 Tables which was different from that given in K'ang-hsi. This latter point will be discussed later. Only in one case have I ventured to form a group of my own.

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<sup>1</sup> I thus discovered the narrow vowels and the " series.

N.B.—In the Tables illustrating the Terminations, for brevity and clearness, I omit the vowel in all but the first form; for the successive ones only the terminal consonants or vowels are given.

### 1st Termination.

(1ST AND 2ND TABLES OF K'ANG-HSI.)

This has both open and closed sounds, and is contained in the 1st and 2nd Tables of K'ang-hsi. It may be characterised as a simple vowel ending, because out of a total of 2,263 dialectal forms collated, only 3 in the Wenchow and Ningpo dialects end in a feeble nasal peculiar to that region. We must now examine how the vowel varies in the 4 Divisions.

#### I. DIVISION

The vowel *o* is well established: a glance at the Table will show that out of 730 forms 433 contain that vowel.

#### II DIVISION.

Here also the vowel *a*, given by my hypothesis, is well established, as it appears in 509 out of the 646 different sounds.

#### III DIVISION.

The hypothetical vowel *e*, is also represented in a majority of cases, as it occurs either simple, or in a diphthong 252 times out of the total 433.

#### IV DIVISION.

If we take into account all the diphthongs containing the letter *i*, it will be found in a majority of cases, but if we consider the diphthongs *ia*, *iau*, *ie*, etc., as they probably are, corrupt forms of *a*, *au*, *e*, then the vowel *e*, is the one represented in the majority of forms. This would bring us to the same result as the III Division which is not

1ST TERMINATION.

|          | (OPEN SOUNDS). |     |     |     |
|----------|----------------|-----|-----|-----|
|          | I              | II  | III | IV  |
| o— ..... | 332            | 77  | 22  | 1   |
| a .....  | 22             | ... | 1   | ... |
| u .....  | 69             | 3   | 4   | ... |
| uñ ..... | ...            | 2   | ... | ... |
| ñ .....  | 1              | ... | ... | ... |
| ê— ..... | 1              | 10  | 4   | 3   |
| a— ..... | 202            | 460 | 58  | 68  |
| u .....  | 12             | ... | ... | ... |
| e .....  | 2              | ... | 3   | 2   |
| i .....  | 13             | 2   | 1   | 3   |
| êo ..... | 4              | ... | ... | ... |
| e— ..... | 6              | 19  | 141 | 81  |
| i .....  | ...            | 3   | 2   | 2   |
| ö— ..... | ...            | 1   | 28  | 13  |
| e .....  | 1              | ... | ... | ... |
| i— ..... | 4              | ... | 1   | 8   |
| i— ..... | 3              | 12  | 29  | 57  |
| o .....  | 1              | ... | 2   | 1   |
| au ..... | ...            | ... | ... | 2   |
| a .....  | 10             | 47  | 45  | 49  |
| ae ..... | ...            | ... | 1   | ... |
| e .....  | 8              | 3   | 72  | 141 |
| ei ..... | ...            | ... | 1   | 4   |
| öe ..... | ...            | 1   | ... | 1   |
| y— ..... | ...            | ... | 12  | 9   |
| ü .....  | ...            | ... | ... | 1   |
| ö .....  | ...            | ... | 3   | 4   |
| u— ..... | 36             | 1   | 1   | ... |
| ü— ..... | ...            | ... | ... | ... |
| o .....  | 3              | 5   | 1   | ... |
| a .....  | ...            | ... | ... | 1   |
| e .....  | ...            | ... | 1   | 3   |
|          | 730            | 646 | 433 | 454 |



logical, therefore to differentiate the two last Divisions, and bearing in mind that the vowel *i*, (or *y*), appears rarely in the three first, and in many cases in the IV Division we may safely assume it as the characteristic vowel of this Division.

N.B.—For facility of calculation, and in the present uncertainty about the primitive forms, I shall consider every diphthong as belonging to each of its constituent vowels, and reckon it with both.

### 2nd, 3rd, and 4th Terminations.

These terminations are grouped together in K'ang-hsi, and their similarity justifies such a proceeding, the characteristic trait is the nasal *ng*: out of 4,472<sup>(1)</sup> sounds, 3,276 end with *n*, *ng*, or *ng* and 488 end in *u*, most of which are Japanese renderings of this nasal: *n* only claims 385 and other miscellaneous terminations only 323 sounds.

### 2nd Termination.

(3RD AND 4TH TABLES OF K'ANG-HSI).

This termination has only three divisions, the first is wanting.

#### II DIVISION.

The vowel should be *a*: out of 606 dialectal sounds 238 contain *a*, 188 contain *e* and *ï*, (which I consider as the mute *e* of the French) and 144 *o* and *ê*.

#### III DIVISION.

This should have the vowel *e*: out of 536 sounds only 101 give the hypothetical vowel, while *i* appears in 353.

(1) This total does not agree with the addition of the totals in the appended Table, because some sounds have been omitted in the latter.

## IV DIVISION.

This should be *i*: out of 795 sounds, 617 give that vowel.

The vowel *i* is given in both III and IV Divisions, but there is a larger average in the latter, while *e* appears more frequently in the former.

**3rd Termination.**

(5TH AND 6TH TABLES OF K'ANG-HSI).

This may be considered to have only two Divisions, because the II. only contains 3, and the IV only 7 characters, exclusive of *Ju Sheng*.<sup>(1)</sup>

## I DIVISION.

Out of 465 sounds 236 give *o* and *é*, as the latter predominates, I consider the vowel to have been a narrow *o*, such as exists in French and Italian.

## III DIVISION.

Out of 481 sounds, *e* appears in 92, and *i* in 261. By analogy with the preceding Div. this was probably a narrow *e*, as also exists in French and Italian.

**4th Termination.**

(7TH TABLE OF K'ANG-HSI).

This termination only contains closed sounds, and forms therefore a different series with the vowels *u*, and *ü*, (*u + e*).

## I. DIVISION.

Out of 565 sounds, 467 contain the vowel *u*.

---

(1) The *Ju-Sheng* characters have little importance, as they are often repeated in different Tables.

2ND TER-  
MINATION.

3RD TER-  
MINATION.

4TH TER-  
MINATION.

|               | (OPEN SOUNDS.) |     |     | (OPEN SOUNDS) |     | (CLOSED SOUNDS.) |     |
|---------------|----------------|-----|-----|---------------|-----|------------------|-----|
|               | II             | III | IV  | I             | III | I                | III |
| o— .....      | 2              | ... | ... | 2             | ... | 3                | 1   |
| ng, ñg .....  | 9              | 3   | ... | 4             | ... | 43               | 46  |
| ñ .....       | 1              | ... | ... | ...           | ... | ...              | ... |
| ung.....      | 3              | 1   | ... | 4             | ... | 43               | 11  |
| u .....       | ...            | ... | ... | 57            | 13  | 49               | 23  |
| a .....       | 1              | ... | ... | ...           | ... | ...              | ... |
| êng .....     | 89             | 34  | 12  | 129           | 49  | 13               | 23  |
| n .....       | 38             | 28  | 3   | 40            | 32  | ...              | ... |
| a— .....      | ...            | ... | ... | 1             | ... | ...              | ... |
| ng, ñg .....  | 93             | 26  | 22  | 31            | 8   | 1                | 1   |
| ung.....      | 3              | ... | ... | ...           | ... | ...              | ... |
| u .....       | 37             | 6   | 5   | 6             | 3   | 3                | 4   |
| öng.....      | ...            | ... | ... | 1             | ... | 7                | 4   |
| ing.....      | 39             | 13  | 17  | 5             | 3   | ...              | ... |
| i .....       | ...            | 1   | ... | 9             | ... | ...              | ... |
| e .....       | 26             | ... | 2   | 2             | ... | ...              | ... |
| äng .....     | ...            | ... | ... | 23            | 11  | ...              | ... |
| e— .....      | ...            | 6   | ... | 2             | ... | ...              | ... |
| ng .....      | 29             | 9   | 17  | ...           | 2   | ...              | ... |
| n .....       | 19             | 1   | 8   | 18            | ... | ...              | ... |
| u .....       | ...            | ... | ... | ...           | 12  | ...              | 4   |
| ing.....      | 24             | 12  | 24  | 19            | 17  | ...              | 1   |
| i .....       | 6              | 34  | 56  | ...           | 8   | ...              | ... |
| ö— .....      | ...            | 1   | ... | 4             | ... | 1                | ... |
| ng .....      | 8              | 21  | 49  | ...           | 3   | 15               | 4   |
| ñ .....       | ...            | ... | 3   | ...           | ... | 1                | ... |
| üng.....      | ...            | ... | ... | ...           | ... | 1                | 7   |
| i— .....      | ...            | ... | ... | ...           | 16  | ...              | ... |
| ng .....      | 88             | ... | ... | 24            | 32  | ...              | ... |
| a .....       | ...            | ... | ... | ...           | 2   | ...              | ... |
| i— .....      | ...            | 1   | ... | ...           | 13  | ...              | ... |
| ng .....      | ...            | 208 | 400 | 9             | 161 | 4                | 1   |
| n .....       | 21             | 44  | 72  | ...           | 35  | ...              | ... |
| ong.....      | 1              | 1   | 2   | ...           | ... | 1                | 1   |
| ou .....      | ...            | ... | ... | ...           | 30  | 6                | 24  |
| ang.....      | 7              | 36  | 45  | ...           | 6   | 2                | ... |
| au .....      | 33             | 28  | 46  | ...           | 9   | ...              | 1   |
| ae .....      | ...            | 3   | ... | ...           | ... | ...              | ... |
| eng.....      | 2              | ... | ... | 3             | ... | ...              | ... |
| en, eñ.....   | ...            | ... | 5   | ...           | ... | ...              | ... |
| êo .....      | ...            | ... | ... | ...           | ... | ...              | 1   |
| eu .....      | ...            | ... | 1   | ...           | ... | ...              | 3   |
| oe .....      | ...            | ... | ... | ...           | ... | ...              | 1   |
| öng .....     | 12             | 17  | 4   | ...           | ... | ...              | ... |
| ei .....      | ...            | ... | 1   | ...           | ... | ...              | ... |
| ung .....     | ...            | ... | ... | ...           | 4   | ...              | 55  |
| u, uu .....   | ...            | ... | ... | 4             | 3   | 3                | 32  |
| y— .....      | 1              | 1   | ... | ...           | ... | ...              | ... |
| ng .....      | 14             | ... | ... | ...           | ... | ...              | ... |
| u— .....      | ...            | ... | ... | 34            | ... | 40               | 11  |
| ng .....      | ...            | ... | ... | 34            | 7   | 329              | 400 |
| n .....       | ...            | ... | ... | ...           | 1   | ...              | ... |
| ü— .....      | ...            | 1   | ... | ...           | ... | ...              | 5   |
| ng, ung ..... | ...            | ... | 1   | ...           | 1   | ...              | 43  |
| ong .....     | ...            | ... | ... | ...           | ... | ...              | 1   |
| oa .....      | ...            | ... | ... | ...           | ... | ...              | 18  |
|               | 606            | 536 | 795 | 465           | 481 | 565              | 726 |



### III. DIVISION.

Out of 726 sounds we have 512 giving *u*, but we have also 67 with *ü* (which does not appear in the last Division) and 87 with *iu*, which is an easy corruption from *ü*.

### 5th, 6th, and 7th Terminations.

These are grouped together by K'ang-hsi, and though the last one differs from the two former, it is useful to keep them together as they form a parallel to the group we have just examined.

The two first may be considered to have had the termination *i*, because out of 3,464 modern dialectal forms 2,122 have this termination.

### 6th Termination.

(10TH AND 11TH TABLES OF K'ANG-HSI.)

For uniformity it is better to commence with this one.

#### I. DIVISION.

Here the vowel *o*, is represented only in about 14%, while *a*, occurs in more than 55% of the sounds.

#### II. DIVISION.

Here the vowel *a*, appears in about 74% of the total.

#### III. DIVISION.

Here the vowel *e*, occurs in over 54% of the total.

#### IV. DIVISION.

The hypothetical vowel *i*, appears as first or only sound in over 55% of the total: no account has been

taken of those sounds, where *i* appears as the second vowel, because then it might be the *i* of the termination.

### 5th Termination.

(8TH AND 9TH TABLES OF K'ANG-HSI.)

As there are only 21 characters in the I Div. and 11 in the II. Div., exclusive of *Ju Sheng*, and as some of these are printed in smaller type, and are not found in older works, we may confine our attention to the remaining Divisions.

### III. DIVISION.

Out of 726 sounds, the vowel *e*, appears only in 237 nearly a third, while *i*, occurs in 467, I think the vowel must have been originally an *ê fermé* of the French phonetic system. This Div. is a parallel to the III Div. of 3rd Termination.

### IV. DIVISION.

Here the vowel *i*, occurs in about 75% of the total. It may have been a shorter *i* than the one of IV Div. 6th Termination.

### 7th Termination.

(12TH TABLE OF K'ANG-HSI.)

In the II. Div. there are only 12 characters, and in the IV. Div. only 18, and as there are no rhymes we may safely neglect these two Divisions.

### I. DIVISION.

This should have the vowel *u* as the 7th termination has only closed sounds: the hypothesis is borne out by over 71 % of the modern dialectal sounds, as out of 721 sounds 514 contain this vowel.

## 6TH TERMINATION.

5TH TER-  
MINATION.7TH TER-  
MINATION.

|               | (OPEN SOUNDS.) |     |     |     | (OPEN SOUNDS) |     | (CLOSED SOUNDS.) |     |
|---------------|----------------|-----|-----|-----|---------------|-----|------------------|-----|
|               | I              | II  | III | IV  | III           | IV  | I                | III |
| o— .....      | 11             | 10  | 1   | 1   | 1             | ... | 142              | 51  |
| i .....       | 54             | 1   | ... | 1   | 1             | ... | ...              | ... |
| ui .....      | 11             | ... | ... | ... | ...           | ... | ...              | ... |
| u .....       | 4              | ... | ... | ... | ...           | ... | 122              | 15  |
| un .....      | ...            | ... | ... | ... | 1             | ... | ...              | ... |
| a .....       | ...            | ... | 1   | ... | 1             | ... | ...              | 1   |
| ng, n .....   | ...            | ... | ... | ... | 2             | ... | ...              | 1   |
| ê— .....      | 1              | 1   | 6   | 4   | 1             | 5   | ...              | 39  |
| ü .....       | ...            | ... | ... | ... | ...           | ... | 3                | ... |
| ng .....      | 13             | ... | ... | ... | 5             | ... | ...              | ... |
| n .....       | ...            | ... | ... | ... | ...           | ... | 1                | ... |
| a— .....      | 31             | 97  | 1   | 1   | 3             | ... | 17               | 6   |
| i .....       | 285            | 196 | 22  | 102 | 11            | 14  | 1                | ... |
| iu .....      | ...            | ... | ... | ... | ...           | ... | 1                | ... |
| u .....       | 1              | ... | ... | ... | ...           | ... | 2                | ... |
| ui .....      | 3              | ... | ... | ... | ...           | ... | ...              | ... |
| ing .....     | 1              | ... | ... | ... | ...           | ... | ...              | ... |
| e .....       | 47             | 41  | 2   | 24  | 5             | 3   | ...              | ... |
| ng .....      | 3              | 1   | ... | ... | 2             | ... | ...              | ... |
| êoh .....     | 2              | ... | ... | ... | ...           | ... | ...              | ... |
| ă— .....      | ...            | ... | ... | 1   | ...           | ... | ...              | ... |
| ng .....      | 2              | ... | ... | ... | ...           | ... | ...              | ... |
| aa .....      | ...            | 1   | ... | ... | ...           | ... | ...              | ... |
| e— .....      | 92             | 51  | 33  | 80  | 11            | 13  | ...              | 7   |
| i .....       | 54             | 10  | 15  | 58  | 60            | 40  | 1                | 4   |
| u .....       | ...            | 1   | ... | ... | ...           | ... | 2                | ... |
| ing, n̄ ..... | 5              | ... | ... | ... | ...           | ... | ...              | ... |
| ng, n .....   | 3              | 1   | ... | 3   | 12            | ... | ...              | ... |
| ö— .....      | 2              | 1   | 3   | 3   | 2             | 1   | 1                | 21  |
| i .....       | ...            | ... | ... | ... | 2             | ... | ...              | ... |
| ü .....       | ...            | ... | ... | 1   | ...           | ... | 2                | 37  |
| n, n̄ .....   | ...            | ... | ... | 1   | ...           | ... | ...              | 2   |
| ï— .....      | 4              | 6   | 28  | 5   | 123           | 5   | 17               | 72  |
| i .....       | ...            | 1   | 1   | ... | 13            | 2   | ...              | ... |
| ng .....      | 1              | ... | ... | ... | ...           | ... | ...              | ... |
| i— .....      | 20             | 21  | 51  | 329 | 445           | 243 | ...              | 39  |
| u .....       | ...            | ... | ... | ... | 3             | ... | ...              | 3   |
| o .....       | ...            | ... | 1   | ... | ...           | ... | 4                | 42  |
| oi .....      | 2              | ... | ... | ... | ...           | ... | ...              | ... |
| ou .....      | ...            | ... | ... | ... | 1             | ... | ...              | ... |
| a .....       | ...            | ... | ... | ... | 1             | 1   | ...              | 7   |
| ai .....      | ...            | 13  | ... | 1   | ...           | ... | ...              | ... |
| ae .....      | ...            | ... | ... | ... | 1             | ... | ...              | ... |
| ei .....      | 4              | ... | ... | 3   | 1             | 3   | ...              | ... |
| e .....       | 2              | 15  | 19  | 25  | 7             | 10  | ...              | ... |
| ng .....      | 1              | ... | ... | 1   | 3             | ... | ...              | ... |
| n .....       | ...            | 2   | ... | 4   | ...           | ... | ...              | ... |
| u— .....      | 1              | ... | ... | ... | ...           | ... | 386              | 281 |
| i .....       | 14             | 1   | ... | 1   | 1             | 1   | ...              | ... |
| ng .....      | ...            | ... | ... | ... | 1             | ... | 2                | ... |
| n .....       | ...            | ... | ... | ... | 5             | ... | ...              | ... |
| ü— .....      | ...            | ... | ... | 1   | 1             | ... | 17               | 249 |
| e .....       | 1              | ... | ... | ... | ...           | ... | ...              | 1   |
| o .....       | ...            | ... | ... | ... | ...           | ... | ...              | 1   |
|               | 675            | 471 | 184 | 650 | 726           | 341 | 721              | 879 |

## 8TH TERMINATION.

## 11TH TERMINATION.

(OPEN SOUNDS.)

(OPEN SOUNDS)

|               | I   | II  | III | IV  | I   | III | IV  |
|---------------|-----|-----|-----|-----|-----|-----|-----|
| o— .....      | 6   | ... | ... | ... | 1   | ... | 1   |
| n .....       | 26  | 4   | 4   | ... | 19  | 9   | 1   |
| ng.....       | 1   | 1   | 3   | 3   | ... | 1   | ... |
| un.....       | ... | ... | 1   | ... | 6   | 1   | ... |
| ung .....     | ... | ... | ... | 1   | ... | ... | ... |
| u .....       | 1   | ... | ... | ... | ... | ... | ... |
| a .....       | 1   | ... | ... | ... | ... | ... | ... |
| ên .....      | ... | 14  | 12  | 9   | 44  | 134 | 39  |
| ng.. .....    | ... | 4   | ... | ... | 15  | 9   | ... |
| i .....       | ... | ... | ... | ... | 1   | ... | ... |
| a.....        | 26  | 37  | ... | ... | 6   | ... | ... |
| n .....       | 284 | 236 | 57  | 4   | 15  | ... | ... |
| ng .....      | 36  | 30  | 4   | 1   | 9   | 21  | 14  |
| m.....        | ... | 2   | ... | 1   | ... | ... | ... |
| ung .....     | ... | ... | ... | ... | 2   | ... | ... |
| u .....       | 1   | ... | 1   | ... | ... | ... | ... |
| ing .....     | ... | 5   | ... | 3   | 2   | ... | ... |
| i .....       | ... | ... | ... | ..  | 2   | ... | ... |
| e .....       | ... | 1   | ... | ... | 2   | ... | ... |
| êo .....      | 1   | ... | ... | ... | ... | ... | ... |
| aa— .....     | 33  | 24  | 1   | ... | 6   | ... | ... |
| n, ñ.....     | 25  | 29  | ... | 1   | 2   | ... | ... |
| ãn .....      | ... | 1   | ... | ... | 6   | ... | ... |
| e—.....       | ... | 2   | 2   | 7   | 3   | ... | 1   |
| n .....       | 6   | 41  | 107 | 184 | 10  | 11  | 12  |
| ng, ñ .....   | ... | 7   | 2   | 13  | ... | ... | 1   |
| ing, iñ ..... | 16  | 7   | 4   | 15  | 1   | 8   | 8   |
| i .....       | ... | 3   | 4   | 6   | ... | ... | ... |
| ö—.....       | 4   | ... | 1   | ... | 4   | ... | ... |
| n .....       | ... | 5   | 28  | 35  | ... | 3   | 2   |
| ng, ñ .....   | ... | 1   | 2   | 1   | ... | 1   | ... |
| m.....        | ... | ... | ... | ... | ... | ... | 1   |
| üng.....      | ... | ... | ... | ... | ... | 3   | ... |
| in .....      | ... | ... | ... | ... | 4   | 10  | ... |
| ng .....      | ... | ... | 2   | 1   | ... | 13  | ... |
| i—.....       | ... | 1   | ... | 2   | ... | ... | 2   |
| n .....       | ... | 4   | 9   | 7   | 7   | 139 | 149 |
| ng.....       | ... | 3   | 1   | 6   | 2   | 73  | 76  |
| m.....        | ... | ... | ... | ... | ... | 1   | 1   |
| ong, on.....  | ... | ... | 3   | 2   | ... | 1   | ... |
| an.....       | ... | 4   | ... | ... | ... | ... | ... |
| ang .....     | 1   | 8   | 2   | 4   | 3   | 8   | 1   |
| en.....       | ... | 21  | 90  | 190 | ... | ... | 21  |
| eng, eñ.....  | 2   | 7   | 57  | 82  | 6   | 7   | 10  |
| eu.....       | 7   | ... | ... | ... | ... | 4   | ... |
| e .....       | 2   | 3   | 32  | 49  | ... | 2   | 4   |
| ei.....       | 2   | 2   | 30  | 48  | ... | 1   | 4   |
| ön.....       | 5   | ... | 10  | 26  | ... | 1   | 3   |
| öe.....       | ... | ... | ... | ... | ... | 1   | ... |
| un.....       | ... | ... | ... | ... | ... | 4   | 1   |
| ung .....     | ... | ... | ... | ... | ... | 2   | ... |
| u .....       | ... | ... | ... | ... | ... | 1   | ... |
| y n.....      | 2   | 4   | 33  | 52  | ... | 1   | 5   |
| ue.....       | 1   | ... | ... | ... | ... | ... | ... |
| n .....       | ... | 1   | 3   | ... | 2   | 5   | 8   |
| ng.....       | ... | ... | ... | ... | ... | 1   | 1   |
| ü—.....       | ... | 1   | ... | ... | ... | ... | ... |
| n .....       | ... | ... | ... | ... | ... | 2   | ... |
| ng.....       | ... | ... | ... | ... | 2   | 8   | ... |
| an.....       | ... | ... | ... | 1   | ... | 1   | ... |
| e .....       | 10  | 1   | 1   | 1   | ... | 1   | ... |
|               | 499 | 514 | 506 | 755 | 182 | 488 | 366 |

## III. DIVISION.

This should be *ü*: it appears in 288 sounds nearly a third, and though *u*, appears a little oftener, still we may consider *ü* as established, because there must have been some difference between the I and III Divisions.

The 7th Termination has no nasal attached, so that like in the 1st Termination the vowel is also the final.

## 8th and 11th Terminations.

K'ang-hsi groups the 8th with the 9th, but it is wrong, and contrary to the primitive arrangement of the Tables, I follow that and the similarity in the ending.

The 8th and 11th Terminations contain 3,383 dialectal sounds, of which 2,266 end in *n*, 6 in *m*, 695 in *ng* or *ñ*, and 416 in miscellaneous vowels and consonants. We may therefore assume *n*, to have been the common terminal sound.

## 8th Termination.

(13TH AND 14TH TABLES OF K'ANG-HSI.)

## I. DIVISION.

The hypothetical vowel *o*, occurs only in a little over 7% of the total, while *a*, appears in over 81%.

## II. DIVISION.

The vowel *a*, appears in over 72% of the total.

## III. DIVISION.

The vowel *e*, is established by over 73% of the total.

## IV. DIVISION.

The vowel *i* occurs in 62% but *e* or *ö* appear in over 87% of the total (of course diphthongs like *ie* or *yö* appear in both classes)

## 11th Termination.

(18TH AND 19TH TABLES OF K'ANG-HSI.)

## I. DIVISION.

The vowel *o*, appears in nearly half the dialectal sounds, but principally as *é*, which is the *o stretto* of the Italian language.

## III. DIVISION.

The vowel *e*, appears only in about 13% while *i*, occurs in 50% probably it was a narrow *e*, like the one in the III Division of 3rd, and 5th Terminations.

## IV. DIVISION.

The vowel *i* is established by over 75% of the total. It was probably a short *i*, to distinguish it from the one of the IV Division of 8th Termination.

## 9th and 10th Terminations.

Out of 2,357 sounds 642 end in *m*, 896 in *n*, 461 in *ng*, and 358 in miscellaneous vowels and consonants; though *m* is in a minority, we must prefer it, because it nowhere appears in such numbers, and because it is necessary to distinguish these two Terminations from the two we have just examined<sup>(1)</sup>.

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(1) Of course the termination *m*, is strongly confirmed by the Southern dialects, and its existence in the old language well established by Dr. Edkins. It is therefore interesting to test the accuracy of my method, on a conclusion already known.

9TH TERMINATION.

10TH TER.

|               | (OPEN SOUNDS.) |     |     |     | (Or. So.) |
|---------------|----------------|-----|-----|-----|-----------|
|               | I              | II  | III | IV  | III       |
| o— .....      | 3              | ... | ... | ... | 1         |
| m .....       | 10             | 2   | ... | ... | ...       |
| n .....       | 31             | 5   | 10  | 3   | 26        |
| ng, n .....   | ...            | ... | ... | ... | 8         |
| u .....       | 1              | ... | ... | ... | 1         |
| a .....       | ...            | ... | ... | ... | 1         |
| em .....      | 3              | ... | 6   | 3   | 81        |
| n .....       | 17             | ... | 4   | ... | 63        |
| ng .....      | 1              | ... | ... | ... | ...       |
| a— .....      | 29             | 21  | 5   | 15  | ...       |
| m .....       | 106            | 65  | 22  | 11  | 1         |
| n .....       | 143            | 102 | 51  | 3   | 10        |
| ng .....      | 32             | 20  | 5   | ... | 33        |
| ing .....     | ...            | ... | 1   | 2   | ..        |
| i .....       | ...            | 2   | ... | ... | ...       |
| e .....       | ...            | 1   | ... | ... | ...       |
| ung .....     | ...            | ... | ... | ... | 1         |
| u .....       | ...            | ... | ... | ... | 3         |
| at— .....     | 20             | 13  | 7   | 6   | 1         |
| ñ .....       | 16             | 15  | 2   | 10  | 1         |
| e— .....      | 1              | 1   | 8   | 22  | ...       |
| m .....       | 3              | 1   | 2   | 3   | 8         |
| n .....       | 4              | 28  | 61  | 75  | 5         |
| ng, ñ .....   | ...            | 2   | 7   | 13  | 8         |
| ing .....     | 18             | 4   | 4   | 4   | 18        |
| i .....       | ...            | 4   | 6   | 7   | ...       |
| u .....       | ...            | ... | ... | 1   | 2         |
| o— .....      | 21             | 5   | ... | 1   | 1         |
| m .....       | 1              | 1   | 25  | 27  | ...       |
| n .....       | ...            | 2   | 1   | ... | ...       |
| ü .....       | 1              | ... | ... | ... | ...       |
| im .....      | ...            | ... | ... | ... | 13        |
| i— .....      | 1              | 10  | 2   | 10  | ...       |
| m .....       | ...            | 1   | 4   | 5   | 64        |
| n .....       | 1              | ... | 2   | ... | 117       |
| ng .....      | 1              | ... | 2   | 1   | 103       |
| am .....      | 1              | 9   | 10  | 25  | ...       |
| ang .....     | ...            | 4   | 3   | 4   | 13        |
| au .....      | ...            | ... | ... | ... | ...       |
| a .....       | ...            | 1   | 6   | 2   | ...       |
| em .....      | ...            | 5   | 27  | 28  | ...       |
| eng, eñ ..... | 1              | 10  | 40  | 50  | 5         |
| eu .....      | 2              | 23  | 30  | 76  | ...       |
| e .....       | ...            | 8   | 23  | 34  | 2         |
| ei .....      | ...            | 2   | 11  | 22  | ...       |
| öm .....      | ...            | 1   | 4   | 8   | ...       |
| u .....       | 1              | 1   | ... | ... | 1         |
| y— .....      | ...            | 1   | ... | 4   | ...       |
| m .....       | 1              | 2   | 22  | 30  | ...       |
| u— .....      | 4              | ... | ... | ... | ...       |
| m .....       | 1              | ... | ... | ... | ...       |
| ün .....      | ...            | ... | ... | ... | ...       |
| oa .....      | ...            | ... | ... | ... | 1         |
|               | 475            | 372 | 413 | 505 | 592       |



## 9th Termination.

(15TH AND 16TH TABLES IN K'ANG-HSI.)

The vowel *o* appears in about 13%, while *a* occurs in over 73% of the total.

### II DIVISION.

The vowel *a* appears in about 68% of the total.

### III DIVISION.

The vowel *e* occurs in over 60% of the total.

### IV DIVISION.

The vowel *i* appears in 59%, but *e* in over 74%.

## 10th Termination.

(17TH TABLE OF K'ANG-HSI.)

In the I Division there are only 2 characters, in the II only 12, and in the IV only 16, exclusive of *Ju Sheng*; we may therefore confine our attention to the III Division.

### III DIVISION.

The vowel *e*, appears in only about 10%, while *i*, occurs in over 51%. It may have been a narrow *e* like the one in the III Divisions of 3rd, 5th, and 11th Terminations.

## 12th and 13th Terminations.

These are only apparently separated, because all the characters of the former are found in the latter, either in the table for open, or in that for closed sounds. We shall therefore only examine the latter Termination.

## 13th Termination.

(21ST AND 22ND TABLES OF K'ANG-HSI.)

Out of 1,624 sounds 1,452 end in *ng* (or *au*, *iau*, etc., which are the Japanese equivalents for this nasal) 2 in *n*, and 170 in miscellaneous vowels and consonants, we may therefore assume *ng* to have been the final nasal, as we have found in the 2d, 3rd, and 4th Terminations. There must, however, be some difference in the vowels, and as the simple ones are exhausted, I suggest the hypothesis that a termination *ang* was added to the four characteristic vowels of the 4 Divisions, producing the finals *oang*, *ang* (*aang*), *eang*, *iang*. Let us see how existing facts bear on this hypothesis.

### I. DIVISION.

The two vowels of the hypothetical form, *o* and *a* appear respectively in over 37% and 60% of the total, but as they commonly appear in this Division with all Terminations, no stress can be laid on the fact.

### II. DIVISION.

Here the vowel *a*, appears in 55% of the total, but it does so everywhere, and we cannot tell whether in this instance it is long.

### III DIVISION.

The vowel *e* appears in over 21% and *a* in over 65% of the total: the last figure is important, because the vowel *a* rarely appears in the III Division: with all other Terminations it occurs from 1 to 30% with an average under 14%. We may consider the hypothesis verified by this Division

# 13TH TERMINATION.

(OPEN SOUNDS.)

|               | I   | II  | III | IV  |
|---------------|-----|-----|-----|-----|
| o .....       | 3   | 6   | ... | ... |
| ng .....      | 98  | 24  | 47  | ... |
| ñg, ñ .....   | 39  | 10  | 12  | ... |
| ung.....      | 36  | 11  | 5   | 1   |
| u.....        | 6   | 27  | 3   | ... |
| a.....        | 43  | 3   | 2   | ... |
| a .....       | 1   | 4   | ... | ... |
| ng .....      | 284 | 58  | 170 | 13  |
| ñg .....      | 4   | 1   | 6   | ... |
| ung .....     | 12  | 3   | 1   | ... |
| u.....        | 52  | 25  | 22  | 15  |
| öng.....      | ... | 1   | ... | ... |
| e.....        | 2   | ... | 7   | ... |
| äng .....     | 1   | ... | ... | ... |
| ö .....       | ... | 1   | ... | ... |
| ng .....      | 10  | 4   | 86  | 28  |
| in .....      | ... | ... | ... | 1   |
| ong.....      | ... | 3   | 53  | 28  |
| o.....        | ... | ... | ... | 1   |
| oa .....      | ... | ... | ... | 1   |
| ang, añg..... | 1   | 30  | 105 | 71  |
| au .....      | ... | ... | 49  | 19  |
| ae .....      | ... | 2   | 40  | 14  |
| öng.....      | ... | 1   | ... | ... |
| en .....      | ... | ... | ... | 1   |
| eu .....      | ... | ... | ... | 1   |
| öe .....      | ... | ... | ... | 1   |
| u .....       | ... | ... | ... | 1   |
| ng .....      | 1   | 9   | ... | ... |
| ong.....      | ... | 1   | ... | ... |
| ü oa .....    | 1   | ... | ... | ... |
| ong.....      | ... | 2   | ... | ... |
|               | 594 | 226 | 608 | 196 |



## IV DIVISION.

The two vowels *i*, and *a*, occur respectively in over 70 and 67%, not only, but the finals *iang*, *iang*, *iau*, *iae* appear in over 53% of the total. The hypothesis is fully borne out by this Division

## 14th and 15th Terminations.

These are not grouped together in K'ang-hsi, and in the old arrangement they were also kept apart, but I think I am justified in treating them as forming a group. They have in common a vowel termination, which with the characteristic vowels of the Divisions forms diphthongs. It is very difficult to distinguish between the terminal vowels of the two, but I think I am justified in advancing what follows.

I consider that in the 14th termination an *o*, was added to the four characteristic vowels, forming the diphthongs *oo*, *ao*, *eo*, *io*. In the 15th termination I think a *u*, was added to the same vowels forming the diphthongs *ou*, *au*, *eu*, *iu*. The modern dialectal sounds show that these views are probably correct.

## 14th Termination.

(23RD TABLE OF K'ANG-HSI.)

## I DIVISION.

The vowel *o*, appears in over 43% but the vowel *u*, appears in over 60%.

## II DIVISION.

The vowel *a*, appears in over 57% of the total, the termination *o*, appears in over 30% but *u* appears as termination in over 64% of the total.

## III DIVISION.

The vowel *e*, occurs in 28°/° while *i*, in 61°/° of the total. Terminal *o*, is represented by 22°/°, terminal *u*, by 68°/°.

## IV DIVISION.

The vowel *i*, appears in 72°/° of the total. Terminal *o*, represents 21°/°, terminal *u*, 67°/°.

## 15th Termination.

## (24TH TABLE OF K'ANG-HSI)

## I. DIVISION.

The vowel *o*, appears in over 42°/° *a*, and *e*, in about 19°/°. Terminal *u*, appears in 67°/°, terminal *o*, in 8°/°.

## II. DIVISION.

The vowel *a*, appears only in 24°/°, while *o*, or *ɛ*<sup>(1)</sup> in 30°/°. Terminal *u*, appears in 76°/°; terminal *o*, in 5°/°.

## III. DIVISION.

The vowel *e*, appears only in 8°/°, while *i*, in 30°/° and *o*, in 22°/°.

Terminal *u* appears in 77°/°, terminal *o*, in 8°/°.

## IV. DIVISION.

The vowel *i*, appears in over 56°/°. Terminal *u* appears in over 90°/°. Terminal *o*, only in 7°/°.

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(1) The tendency of the diphthong *au* is to become *o*. It is worthy of remark that K'ang-hsi has no rhymes to this Division.

14TH TERMINATION.

15TH TERMINATION.

|           | (OPEN SOUNDS.) |     |     |     | (OPEN SOUNDS.) |     |     |     |
|-----------|----------------|-----|-----|-----|----------------|-----|-----|-----|
|           | I              | II  | III | IV  | I              | II  | III | IV  |
|           | o—.....        | 51  | 37  | 27  | 30             | 14  | 1   | 11  |
| u .....   | 88             | 11  | 4   | 5   | 162            | 21  | 111 | 14  |
| ui.....   | ...            | ... | ... | ... | ...            | 1   | ... | ... |
| a .....   | 131            | 101 | 27  | 17  | 1              | ... | 5   | 4   |
| i .....   | ...            | ... | ... | ... | ...            | 2   | ... | ... |
| un.....   | 1              | ... | ... | ... | ...            | ... | ... | ... |
| ung ..... | 1              | ... | —   | ... | ...            | ... | ... | ... |
| ê—.....   | ...            | ... | ... | 1   | ...            | ... | ... | ... |
| u .....   | 1              | 1   | 2   | 3   | 33             | 4   | 5   | 4   |
| o .....   | ...            | ... | ... | 1   | 33             | 5   | 30  | 5   |
| a—.....   | 2              | 18  | ... | 3   | ...            | 1   | 1   | ... |
| u .....   | 283            | 278 | 105 | 48  | 95             | 17  | 66  | 39  |
| iu.....   | ...            | 1   | 3   | 2   | 14             | 3   | ... | 1   |
| i .....   | ...            | ... | ... | 1   | 1              | 3   | 1   | ... |
| n .....   | 3              | ... | ... | ... | ...            | ... | ... | ... |
| e—.....   | 2              | 3   | 3   | 2   | ...            | 1   | 3   | ... |
| u .....   | 2              | 30  | 45  | 56  | 58             | 12  | 24  | 13  |
| i .....   | ...            | 1   | ... | ... | ...            | 4   | ... | ... |
| ing ..... | 2              | ... | ... | ... | ...            | ... | ... | ... |
| ö—.....   | ...            | ... | ... | ... | 1              | 1   | ... | ... |
| ü .....   | 2              | 3   | ... | 1   | 41             | 7   | 4   | 1   |
| e .....   | 45             | 3   | 3   | 6   | 4              | ... | 5   | 1   |
| ï—.....   | ...            | ... | ... | 1   | 3              | ... | ... | ... |
| u .....   | 1              | ... | ... | ... | 2              | 4   | 17  | 6   |
| o .....   | ...            | ... | 2   | ... | ...            | ... | ... | ... |
| ng .....  | ...            | ... | ... | ... | ...            | ... | 1   | ... |
| i—.....   | ...            | ... | ... | 11  | 2              | ... | ... | 1   |
| u .....   | 2              | 3   | 45  | 55  | 7              | 8   | 218 | 165 |
| ou.....   | ...            | 3   | 2   | ... | ...            | ... | ... | 2   |
| o .....   | 5              | 14  | 17  | 22  | ...            | ... | ... | 1   |
| oa.....   | 2              | 20  | 59  | 73  | ...            | ... | 1   | 4   |
| êo.....   | 1              | ... | ... | 1   | ...            | ... | 12  | 12  |
| ao.....   | ...            | 1   | ... | 3   | ...            | ... | ... | ... |
| au.....   | 8              | 42  | 115 | 202 | ...            | 3   | 13  | 13  |
| a .....   | ...            | ... | 3   | 7   | ...            | ... | ... | ... |
| eu.....   | 4              | 12  | 75  | 80  | 3              | 1   | 6   | 7   |
| œ .....   | 1              | 2   | 39  | 38  | ...            | ... | 1   | 4   |
| ei .....  | ...            | ... | ... | ... | ...            | 1   | ... | ... |
| u—.....   | 3              | ... | 3   | 6   | 95             | 9   | 188 | 71  |
| i .....   | ...            | ... | ... | ... | ...            | 2   | 1   | ... |
| ng.....   | ...            | ... | ... | ... | 1              | ... | ... | ... |
| ü—.....   | 1              | ... | ... | 1   | 5              | ... | 1   | ... |
| o .....   | ...            | 4   | ... | ... | ...            | ... | ... | ... |
| e .....   | 2              | ... | ... | 2   | ...            | ... | ... | ... |
| n .....   | 1              | ... | ... | ... | ...            | ... | ... | ... |
| eñ.....   | 1              | ... | ... | ... | ...            | ... | ... | ... |
|           | 646            | 588 | 579 | 678 | 575            | 111 | 725 | 370 |



If we compare the same Divisions of the 14th and 15th Terminations, we shall find that though terminal *u*, predominates in both, there is a much larger number of terminal *o*, in the former: this fact seems to support the hypothetical distinction.

We can resume the results of the preceding reasoning in a tabular form, in which the sign \* indicates where the theory has a majority, - where it has a minority, and o indicates when a Division has no character or so few that it may be neglected.

|              | I Division. | II Division. | III Division. | IV Division. |
|--------------|-------------|--------------|---------------|--------------|
| 1st. Ter., * | *           | *            | *             | -            |
| 2nd „ 0      | *           | *            | -             | *            |
| 3rd „ *      | 0           | -            | -             | 0            |
| 4th „ *      | 0           | -            | -             | 0            |
| 5 „ „ 0      | 0           | -            | -             | *            |
| 6 „ „ -      | *           | *            | *             | *            |
| 7 „ „ *      | 0           | *            | *             | 0            |
| 8 „ „ -      | *           | *            | *             | -            |
| 9 „ „ -      | *           | *            | *             | -            |
| 10 „ „ 0     | 0           | -            | -             | 0            |
| 11 „ „ *     | 0           | -            | -             | *            |
| 13 „ „ -     | *           | *            | *             | *            |
| 14 „ „ -     | *           | -            | -             | *            |
| 15 „ „ *     | -           | -            | -             | *            |
| *==6         | 7           | 6            |               | 7 total 26   |
| -==5         | 1           | 8            |               | 3 „ 17       |

Twenty-six Divisions are in favour, and 17 against the hypothesis, all doubtful cases I have considered negative.

The adjoining Table shows the Rhyme-Tables in the old order, and gives the finals according to the hypothesis advanced. The Tables thus appear as a Syllabary of the sounds of the ancient language.

I now may resume the arguments in favour of the theory.

1st. The hypothesis resists the severe ordeal of being tried by the whole mass of phonetic specimens, and it holds good in the majority of cases, notwithstanding all the disturbing influences of so many dialects, several very corrupt.

2nd. Even in the Tables where one or more of the hypothetical vowels do not occur in the majority of cases, it will be noticeable that they always have a tendency to appear in the place assigned to them by my theory. If *o* does not represent the majority of any I Div. it will be seen always to appear there strongest, and gradually to dwindle away in the other Divisions. The same happens with each other vowel: *i* if not occurring in a majority of the sounds of any IV Division, is seen to appear principally there, and only sporadically in the others.

3rd. The numerical evidence is still stronger if we confine our attention to the Southern dialects, especially Cantonese:

4th. It is also supported by the authority of Chiang-yung and other native philologists, whose obscure meaning seems to be explained by my hypothesis<sup>(1)</sup>. Chinese philologists not having an alphabet, lack symbols to represent abstract

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(1) Chiang Yung (江永) says:

一等大二等次大  
三等細四等尤細

The Rhyme-Tables of K'ang-hsi arranged in the old order and with the finals resulting from the present investigation.

| Number of Table |                   | Finals.                    |
|-----------------|-------------------|----------------------------|
| 4               | 通 (Closed Sounds) | ung, ũng.                  |
| 12              | 江 (Open           | ) aang.                    |
|                 | (Closed           | ) uang.                    |
| 5               | 止 (Open           | ) éi, ĭ.                   |
|                 | (Closed           | ) wéi, uĩ.                 |
| 7               | 遇 (               | ) u, ũ.                    |
| 6               | 蟹 (Open           | ) oi, ai, ei, ĭ.           |
|                 | (Closed           | ) uoi, uui, uei, uĩ.       |
| 11              | 臻 (Open           | ) ên, én, ĩn.              |
|                 | (Closed           | ) uên, uén, uĩn.           |
| 8               | 山 (Open           | ) on, an, en, ĩn.          |
|                 | (Closed           | ) uon, uan, uen, uĩn.      |
| 14              | 効 (Open           | ) oo (ō) ac, éo, io.       |
| 1               | 果 (               | ) o, a, e, ĭ.              |
|                 | (Closed           | ) uo, ua, ue.              |
| 13              | 宕 (Open           | ) oang, aang, eang, iang.  |
|                 | (Closed           | ) uoang, uang, ueang.      |
| 3               | 曾 (Open           | ) êng, éng.                |
|                 | (Closed           | ) (too few to be noticed.) |
| 2               | 梗 (Open           | ) ang, eng, ing.           |
| 15              | 流 (               | ) ou, au, eu, iu.          |
| 10              | 深 (               | ) ém.                      |
| 9               | 咸 (               | ) om, am, em, im.          |



sounds, and it is almost impossible for them to communicate such abstract conceptions to others at least by writing. If they succeed in having clear views on phonology, they cannot impart them, except verbally to their immediate disciples.

5th. It is confirmed by certain sounds in the Wei-hien dialect as given by Dr. Mateer in his "Mandarin Lessons." There, as I have mentioned, one finds the sounds Tsr, Tsr', for characters, which are found in K'ang-hsi's Tables under cerebral sibilant initials, showing that in Weihien they keep a trace of these cerebrals. In Mateer's Sound Table these sounds occur only with the vowels *a*, and *e*, exactly as they should do according to my hypothesis.

6th. The hypothesis agrees perfectly with the old arrangement of the Tables, it explains the meaning of the 攝 and 等 (Termination and Division), and of the different groups, and produces a harmonious system which agrees almost in detail and always in spirit with the present system of finals in the Canton dialect.

7th. The suggestion that the Rhyme-Tables of K'ang-hsi are a complete Syllabary of the ancient language is supported by every reason of probability and historical analogy. We know that Indians collaborated at the compilation of these tables, and a syllabary is the natural idea for all people who have been accustomed to use an alphabet. It is also the method pursued by the Indian Buddhists and their disciples in other countries. In Japan we have all the syllables of the language arranged (in the *go ju on*) by vowels, in the following succession *a, i, u, e, o*, which is the order of the Sanscrit alphabet: the same system and order is found in Thibetan. Far from being astonished at finding a syllabary shadowed out even now in

the Tables of K'ang-hsi, we ought to be surprised if the contour were hidden by the mists of time.

If the results of this essay have, as I hope, advanced our knowledge of the ancient phonology, and enable us to distinguish clearly those ancient Rhymes which the Chinese have laboured for ages to discover, and have been obliged gradually to throw away as their knowledge became dimmer, it is a conclusive proof that without the early use of an alphabet and the clear notions it gives, it is impossible to discuss phonetic questions. I cannot flatter myself that, in a question which has occupied the keenest intellects of China through many ages, I have not been perhaps preceded by others, but through the absence of alphabetical abstractions and the want of their convenient symbols, the ideas of Chinese authors have been rather hazy and they were utterly incapacitated from communicating their results to the world.

I close this essay with a table of Rhymes according to the Kuang-yün. These are not all given in K'ang-hsi's Rhyme-Tables, and when given, are often differently combined: they probably represent a pronunciation which was already antiquated when the tables were compiled, and only preserved in poetry, where obsolete forms are maintained in all languages. The results of the general investigation on K'ang-hsi's Rhyme-Tables were, therefore, not alone sufficient to discriminate all the rhymes of the Kuang-yün. I had to supplement the conclusions arrived at with the formulas given by native philologers for using the *fan-ch'ieh* system. The sounds given in the next Table represent the results (carefully weighed) obtained by these different methods.



# 廣韻

# 廣韻

平 上 去 入

平 上 去 入

|            |   |   |   |   |
|------------|---|---|---|---|
| ung ...    | 東 | 董 | 送 | 屋 |
| (ung)? ... | 冬 | 腫 | 宋 | 沃 |
| üng ...    | 鍾 |   | 用 | 燭 |
| aang ...   | 江 | 講 | 絳 | 覺 |
| ī ...      | 支 | 紙 | 寘 |   |
| éi ...     | 脂 | 旨 | 至 |   |
| ei ...     | 之 | 止 | 志 |   |
| uéi ...    | 微 | 尾 | 未 |   |
| ü ...      | 魚 | 語 | 御 |   |
| (ü)? ...   | 虞 | 麌 | 遇 |   |
| u ...      | 模 | 姥 | 暮 |   |
| ī ...      | 齊 | 霽 | 祭 |   |
| ui ...     | 佳 | 蟹 | 泰 |   |
| ai ...     | 皆 | 駭 | 卦 |   |
| uoi ...    | 灰 | 賄 | 夬 |   |
| oi ...     | 咍 | 海 | 隊 |   |
| én ...     | 真 | 軫 | 廢 | 質 |
| uén ...    | 諄 | 準 | 震 | 術 |
| ǎn ...     | 臻 |   | 稕 | 櫛 |
| uén ...    | 文 | 吻 | 問 | 物 |
| īn ...     | 殷 | 隱 | 焮 | 迄 |
| uen ...    | 元 | 阮 | 願 | 月 |
| uên ...    | 魂 | 混 | 恩 | 沒 |
| ên ...     | 痕 | 狠 | 恨 |   |
| on ...     | 寒 | 旱 | 翰 | 曷 |
| uon ...    | 桓 | 緩 | 換 | 末 |
| uan ...    | 刪 | 潛 | 諫 | 黠 |

|             |   |   |   |   |
|-------------|---|---|---|---|
| an ...      | 山 | 產 | 禪 | 鑿 |
| īn ...      | 先 | 銑 | 霰 | 屑 |
| en ...      | 仙 | 獮 | 線 | 薛 |
| io ...      | 蕭 | 篠 | 嘯 |   |
| eo ...      | 宵 | 小 | 笑 |   |
| ao ...      | 肴 | 巧 | 效 |   |
| oo ...      | 豪 | 皓 | 號 |   |
| o ...       | 歌 | 噲 | 箇 |   |
| uo ...      | 戈 | 過 | 果 |   |
| a ...       | 麻 | 馬 | 禡 |   |
| eang ...    | 陽 | 養 | 漾 | 藥 |
| oang ...    | 唐 | 蕩 | 宕 | 鐸 |
| ang ...     | 庚 | 梗 | 映 | 陌 |
| (uang)? ... | 耕 | 耿 | 諍 | 麥 |
| eng ...     | 清 | 靜 | 勁 | 昔 |
| ing ...     | 青 | 迥 | 徑 | 錫 |
| éng ...     | 蒸 | 拯 | 證 | 職 |
| êng ...     | 登 | 等 | 嶝 | 德 |
| eu ...      | 尤 | 有 | 宥 |   |
| ou ...      | 侯 | 厚 | 候 |   |
| iu ...      | 幽 | 黝 | 幼 |   |
| ém ...      | 侵 | 寢 | 沁 | 緝 |
| om ...      | 覃 | 感 | 勘 | 合 |
| (uom)? ...  | 談 | 敢 | 闞 | 盍 |
| em ...      | 鹽 | 琰 | 豔 | 葉 |
| im ...      | 添 | 忝 | 忝 | 帖 |
| am ...      | 咸 | 儼 | 釅 | 洽 |
| em ...      | 銜 | 殫 | 陷 | 狎 |
| uem ...     | 嚴 | 檻 | 鑑 | 業 |
|             | 凡 | 范 | 梵 | 乏 |

(1) In these three groups it seems that the characters have been mixed up, as in the same line one finds the vowels *e* and *a*.

N.B.—Doubtful forms have been put in brackets.





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