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Counting Systems of North American Indians

Helen F. Stevenson

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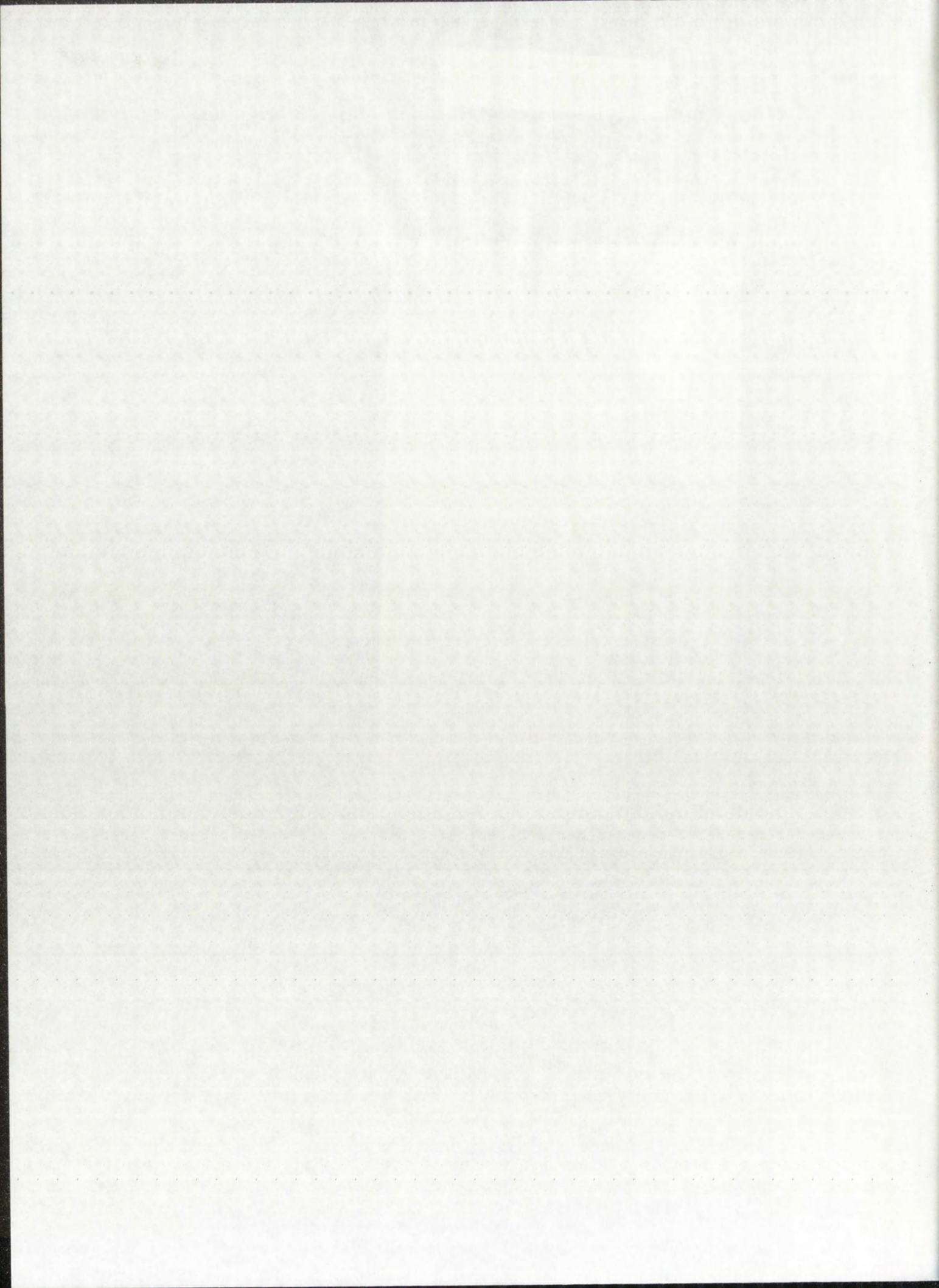
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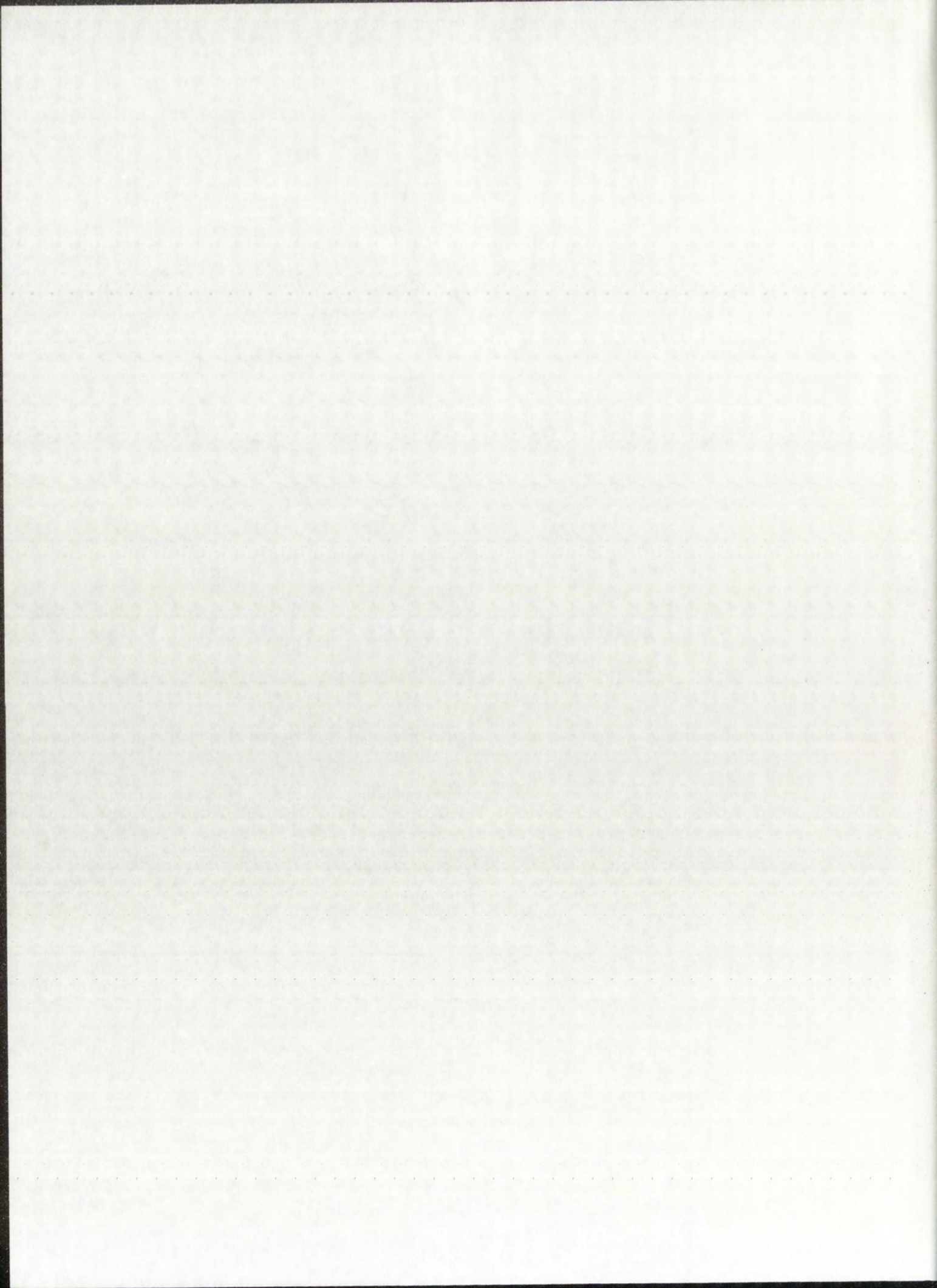


COUNTING SYSTEMS
OF
NORTH AMERICAN INDIANS

by
Helen F. Stevenson

A Thesis
Submitted in partial fulfillment of the
Requirements for the Degree of
Master of Arts in Anthropology

University of New Mexico
1940



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This thesis, directed and approved by the candidate's committee, has been accepted by the Graduate Committee of the University of New Mexico in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

F. P. Hammond
DEAN

May 27, 1940
DATE

Thesis committee

W. W. Hill
CHAIRMAN

Donald W. Brand

Harold D. Larsen

UNM

The first section of the report is devoted to a description of the work done during the year. This section is divided into two parts, the first of which deals with the work done in the laboratory and the second with the work done in the field.

RESULTS

The first result is that the work done in the laboratory during the year has been very satisfactory.

The second result is that the work done in the field during the year has been very satisfactory.

The third result is that the work done in the laboratory during the year has been very satisfactory.

The fourth result is that the work done in the field during the year has been very satisfactory.

The fifth result is that the work done in the laboratory during the year has been very satisfactory.

TABLE OF CONTENTS

	PAGE
CHAPTER I, INTRODUCTION	1
Purpose of the Study	1
Definition of Terms.	2
Pair or Binary System	2
Ternary System.	3
Quaternary System.	4
Quinary System.	4
Hexad or Senary System	5
Decimal System.	6
Vigesimal System	6
CHAPTER II, REVIEW OF THE LITERATURE.	8
CHAPTER III, METHOD OF PROCEDURE	14
CHAPTER IV, NUMERAL SYSTEMS OF CALIFORNIA	17
Number Words of California Tribes	36
CHAPTER V, COUNTING SYSTEMS OF THE SOUTHWEST	64
Number Words of Southwestern Tribes	71
CHAPTER VI, COUNTING SYSTEMS OF THE BASIN- PLATEAU AREA.	89
Number Words of Great Basin-Plateau Tribes	93
CHAPTER VII, NUMERAL SYSTEMS OF OTHER NORTH AMERICAN AREAS	100
I. Northwest Coast	100
II. Eskimo	104

TABLE OF CONTENTS

CHAPTER I. INTRODUCTION 1

CHAPTER II. THE HISTORY OF THE SYSTEM 10

CHAPTER III. THE THEORY OF THE SYSTEM 20

CHAPTER IV. NUMERICAL SYSTEMS OF CALIFORNIA 30

CHAPTER V. NUMERICAL SYSTEMS OF THE SOUTHWEST 40

CHAPTER VI. NUMERICAL SYSTEMS OF THE NORTH 50

CHAPTER VII. NUMERICAL SYSTEMS OF THE NORTH AMERICAN AREA 60

CHAPTER VIII. NUMERICAL SYSTEMS OF THE NORTH AMERICAN AREA 70

CHAPTER IX. NUMERICAL SYSTEMS OF THE NORTH AMERICAN AREA 80

CHAPTER X. NUMERICAL SYSTEMS OF THE NORTH AMERICAN AREA 90

	PAGE
III. The Plains	106
IV. The Mackenzie Area	111
V. Eastern United States	112
Number Words of Other North American Areas .	121
CHAPTER VIII, CONCLUSIONS	158
BIBLIOGRAPHY	162

100

101 The first part of the book is devoted to a general

102 introduction to the subject of the book.

103 The second part of the book is devoted to a

104 detailed study of the various aspects of the

105 subject.

106 The third part of the book is devoted to a

107 summary of the main results of the book.

108 The fourth part of the book is devoted to a

109 discussion of the various aspects of the

110 subject.

111 The fifth part of the book is devoted to a

112 summary of the main results of the book.

113 The sixth part of the book is devoted to a

114 discussion of the various aspects of the

115 subject.

116 The seventh part of the book is devoted to a

117 summary of the main results of the book.

118 The eighth part of the book is devoted to a

119 discussion of the various aspects of the

120 subject.

121 The ninth part of the book is devoted to a

122 summary of the main results of the book.

123 The tenth part of the book is devoted to a

124 discussion of the various aspects of the

125 subject.

126 The eleventh part of the book is devoted to a

127 summary of the main results of the book.

128 The twelfth part of the book is devoted to a

TABLES

	PAGE
Table I, Numeral Systems of California Tribes. . .	34
Table II, Numeral Systems of North American Tribes outside of California	119

FIGURES

Figure I, Numeral Systems of California. . .	Pocket
Figure II, Numeral Systems of North America. . .	Pocket

1962

Table I. General system of California. (Continued)

Table II. General system of California. (Continued)

Table III. General system of California. (Continued)

Table IV. General system of California. (Continued)

CHAPTER I

INTRODUCTION

PURPOSE OF THE STUDY

The following paper is a study of the numeral systems of North American Indian tribes. Not only the basic systems of counting are considered but, also, the recording devices, the words used for basic numbers with their concrete meanings, "magic" or "pattern" numbers and their relationship, if any, to the system of numeration. Not all of this material is recorded for every tribe; therefore only in so far as material is available is the study complete.

The object of the study is to examine the recorded data on numeration systems and to show the extent of correlation with linguistic and cultural areas of North America. For this purpose, a survey and correlation of the literature on the above subject was made. This survey also shows the tribes or areas where this material has not been recorded in the ethnological literature.

The southwestern portion of North America is treated in detail. An effort was made to exhaust the literature on California, the Southwest and the Basin-Plateau area. The data on the rest of North America represent a sampling of the literature for illustrative and comparative material.

The bibliography is as complete as opportunity permitted and is annotated to show sources in which data on

CHAPTER I

INTRODUCTION

STATEMENT OF THE PROBLEM

The following study is a study of the musical systems of North America. It is not only the basic systems of composition and performance but also the historical aspects of the music and its development in North America.

The purpose of this study is to examine the recorded data on musical systems and to show the extent of correlation with historical and cultural aspects of North America. For this purpose, a survey and comparison of the literature on the subject was made. This survey also shows the types of areas where this material has not been recorded in the ethnological literature.

The southeastern portion of North America is treated in detail. An effort was made to exhaust the literature on California, the Southwest and the Basin-Pitman areas. The data on the rest of North America represent a sampling of the literature for illustrative and comparative material.

The bibliography is arranged in alphabetical order of author and is intended to give sources of information related to the subject of this study.

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numeration are treated fully or partially, or not at all. A supplementary bibliography is appended which lists sources not available to the author but known to include relevant material.

No attempt is made to determine the origins and development of number systems and number words since it is believed that this is a controversial question to which no final answer can be given.

DEFINITION OF TERMS¹

Pair or Binary System. A pair system is one which has unanalysable words for one and two; the subsequent number words are formed by addition to the pair. In North America there are many examples where four is formed by a word meaning "twice two" or where four contains the root for two but the roots for three and five show no evidence of derivation from two. Examples of this are the Yokuts,² Kato,³ Chumash, Salinan and Costanoan⁴ in California,

1. W. Schmidt, "Numbers and Systems," Encyclopedia Britannica, 14th edition, vol. 16, pp. 610-615, 1929.

2. A. L. Kroeber, "The Yokuts Language of South Central California," University of California Publications in North American Archaeology and Ethnology, vol. 2, no. 5, p. 230, 1907.

3. P. E. Goddard, "Elements of the Kato Language," University of California Publications in North American Archaeology and Ethnology, vol. 11, no. 1, p. 36, 1912.

4. A. L. Kroeber, "Languages of the Coast of California South of San Francisco," University of California Publications in North American Archaeology and Ethnology, vol. 2, no. 2, p. 49, 1904.

Information presented in this report is not intended
to be used for the design of a system which will
not require the use of a computer. It is intended
to be used as a guide in the design of a system
which will require the use of a computer.

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1. W. R. Shoup, "Numbers and Systems," Reverend
Publications, Ltd. Series, Vol. 1, pp. 110-111, 1937.
2. A. H. Fowler, "The Yuki Language of Southern
California," University of California Publications
in North American Linguistics and Ethnology, Vol. 2, No. 2,
pp. 1-10, 1934.
3. F. B. Goddard, "Elements of the Yuki Language,"
University of California Publications in North American
Linguistics and Ethnology, Vol. 11, No. 1, p. 30, 1912.
4. A. H. Fowler, "Languages of the Coast of
California," University of California Publications
in North American Linguistics and Ethnology,
Vol. 2, No. 2, p. 11, 1934.

Hopi⁵ and Taos⁶ in the Southwest, Haida⁷ on the Northwest Coast and Northern Sahaptin⁸ of the Great Basin area. This seems to represent a reduplicative or multiplicative principle rather than direct derivation from the word for two, since the other digits are distinct and unanalysable.

Ternary System. This is a system based on three. In North America only doubtful traces are found in the multiplicative formation of six (twice three) among the Haida,⁹ in the Beaver dialect of Athapascan¹⁰ and in Yuma¹¹ which shows mixed ternary (six equals two times three, nine equals three times three) and quaternary (eight equals two times four) formation of number words. Here again the principle operating seems to be simple multiplication rather than

5. E. S. Curtis, The North American Indian, vol. 12, p. 249, 1922.

6. J. P. Harrington, "An Introductory Paper on the Tiwa Language, Dialect of Taos, New Mexico," American Anthropologist, n.s., vol. 12, no. 1, p. 30, 1910.

7. J. R. Swanton, "Haida," Bureau of American Ethnology Bulletin 40, pt. 1, p. 270, 1911.

8. M. Jacobs, "A Sketch of Northern Sahaptin Grammar," University of Washington Publications in Anthropology, vol. 4, no. 2, p. 240, 1931.

9. J. R. Swanton, op. cit., p. 270.

10. P. E. Goddard, "Beaver Dialect," American Museum of Natural History Anthropological Papers, vol. 10, no. 6, p. 437, 1917.

11. L. L. Conant, "Primitive Number Systems," Annual Report of the Smithsonian Institution for 1892, p. 590, 1893.

derivation from a basic number three.

Quaternary System. This system forms numbers above four by composition; for example, five equals four plus one, seven equals four plus three, etc. This system is a striking feature of California culture, found nowhere else in the United States. One dialect of Yuki, the Round Valley, has this system with no trace of quinary, decimal or vigesimal.¹² Above eight the system becomes octonary; the next basic number is sixty-four.¹³ Only the Chumash and Salinan use an analogous quaternary method but they derive eight from four and then use sixteen as the next basic number.¹⁴ The Southern Wintun tend to count by fours to twenty.¹⁵

Quinary System. This is a system based on fives; in its pure form which occurs only in Arawak, ten equals two hands, twenty-five equals five hands, claims Father Schmidt.¹⁶ The Seminole, according to MacCauley,¹⁷ have a

12. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 668, 1907.

13. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, p. 176, 1925.

14. Ibid., p. 878.

15. Ibid., p. 359.

16. W. Schmidt, "Numbers and Systems," Encyclopedia Britannica, 14th edition, vol. 16, p. 614, 1929.

17. C. MacCauley, "The Seminole Indians of Florida," Bureau of American Ethnology Annual Report for 1883-1884, vol. 5, p. 525, 1887.

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quinary system but he is probably in error since eleven is pa-lin-hum-kin or "ten one" and twenty is pa-li-ho-ko-lin or "two tens". Thus the system appears to become decimal above ten. The Southern Seminole system is pure decimal.¹⁸ The Aleuts count by a quinary system,¹⁹ and the Gabrielino and Luiseno of California also use this system.²⁰ The Coos²¹ and the Siuslawan²² are reported as having systems quinary in origin but now decimal above ten.

Hexad or Senary System. This system is based on six and sometimes develops into a duodecimal system. In North America there is only one doubtful reference to it. The Cree and Chippeway supposedly both had an originally "seximale" system. Then the tribes separated, the Cree became decimal and when the two groups were reunited the Chippeway took over the Cree system, but retained for one hundred their former word for sixty, ningotwak. This word does contain ningot, the stem for six. The Cree word for

18. See list of number words, p. 149.

19. L. L. Conant, "Primitive Number Systems," Annual Report of the Smithsonian Institution for 1892, p. 583, 1893.

20. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-77, 1925.

21. L. Frachtenberg, "Coos," in Bureau of American Ethnology Bulletin 40, pt. 2, p. 403, 1922.

22. L. Frachtenberg, "Siuslawan," in Bureau of American Ethnology Bulletin 40, pt. 2, p. 586, 1922.

It may be noted that the probability of a system being in a state is proportional to the number of particles in that state. This is the Boltzmann distribution. The Boltzmann distribution is a special case of the more general Gibbs distribution. The Boltzmann distribution is a special case of the more general Gibbs distribution. The Boltzmann distribution is a special case of the more general Gibbs distribution.

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1. See list of numbered words, p. 125.

2. J. L. Cantrell, "Relative Rate System," Journal of the American Statistical Association, 1952, p. 257, 258.

3. J. L. Cantrell, "Relative Rate System," Journal of the American Statistical Association, 1952, p. 257, 258.

4. J. L. Cantrell, "Relative Rate System," Journal of the American Statistical Association, 1952, p. 257, 258.

5. J. L. Cantrell, "Relative Rate System," Journal of the American Statistical Association, 1952, p. 257, 258.

hundred is mitâtat-o-mitano, which appears to be "ten tens".²³

Decimal System. Father Schmidt includes in his definition of decimal the systems in which the numbers of the second pentad are formed by combination with the word for five, by the pair method or by subtraction, and the "pure" system in which there is no division of the decad into two pentads, and, therefore, no compound numerals from one to ten.²⁴ However, in this paper, the former will be referred to as Quinary-Decimal, the latter as Decimal. The latter is common in all the high cultures of the words; it is also widespread over North America.²⁵

Vigesimal System. This system has twenty for its basic number, but it is never found in a "pure" form.²⁶ It is often combined with the quinary to form the Quinary-Vigesimal. In North America it is characteristic of the

23. L. Adam, "Le Cree et le Chippeway," International Congress of Americanists, Session 1, pt. 2, p. 135, 1875.

24. W. Schmidt, "Numbers and Systems," Encyclopedia Britannica, 14th edition, vol. 16, p. 614, 1929.

25. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 671, 1907.

26. L. L. Conant, "Primitive Number Systems," Annual Report of the Smithsonian Institution for 1892, p. 593, 1893.

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entire Eskimo area,²⁷ of the Nahuatlan area,²⁸ and of parts of California.²⁹ However, it is not present east of the Rockies with the exception of the Caddoan tribes.³⁰ More rarely it is combined with the decimal to form the Decimal-Vigesimal. The Takelma have this type of system.³¹

27. A. R. Nykl, "The Quinary-Vigesimal System of Counting in Europe, Asia and America," Language, vol. 2, no. 3, 1936, p. 167.

28. C. Thomas, "Numeral Systems of Mexico and Central America," Bureau of American Ethnology Annual Report for 1897-98, vol. 19, pt. 2, p. 866, 1900.

29. R. B. Dixon and A. L. Kroeber, op. cit., p. 664.

30. W. C. Eells, "Number Systems of the North American Indians," Unpublished Ms., p. 125, 1911.

31. E. Sapir, "Notes on the Takelma Indians of Southwestern Oregon," American Anthropologist, n.s., vol. 9, no. 2, p. 266, 1907.

entire Eskimo area, but of course
of California. However, it is not present east of the
Rockies and the majority of the Eskimo tribes. Some
... 1949-50 is combined with the Eskimo as from the Eskimo
Alaskan. The Eskimo have this type of Eskimo.

57. A. R. E. B. The Eskimo-Venedic System of
Counting in Europe, Asia and America. *Language*, vol. 2,
no. 3, 1925, p. 127.

58. C. F. Johnson. *Language Systems of Mexico and Central
America*. *Journal of American Linguistics*, vol. 19,
1947-48, pt. 3, p. 555, 1947.

59. R. S. Dixon and A. L. Kroeber, eds. *Journal of
American Linguistics*, *Number 3*, pt. 1, 1931.

60. E. E. B. *Notes on the Eskimo Language of
Bering Strait*. *Journal of American Linguistics*, vol. 19,
no. 3, 1947, 1947.

CHAPTER II

REVIEW OF THE LITERATURE

The most comprehensive survey of the subject is that by Cyrus Thomas, "Numeral Systems of Mexico and Central America," Annual Report of the Bureau of American Ethnology for 1897-98, vol. 19, pt. 2, pp. 859-955, 1900. This paper gives analyses of Mexican and Central American systems with comparative material on the Southwest and the Antilles. However, the emphasis is on Nahuatl and Mayan groups. H. Pittier de Fabrega in "Numeral Systems of the Costa Rican Indians," American Anthropologist, n.s., vol. 6, pt. 4, pp. 447-58, 1904, criticizes Thomas' material on the Southern Central American systems, though he does not comment on his treatment of Mayan and Nahuatl systems.

The next extensive work is Number Systems of North American Indians, submitted by Walter Crosby Eells to the University of Chicago Department of Mathematics in 1911 as a thesis for the degree of Master of Arts. Eells' work was superficial and disorganized. Moreover, his interest was mathematical rather than cultural or linguistic; there are errors throughout the thesis and in the bibliographic references. Many pages are occupied with worthless speculations as to origins of counting and of various systems of counting. Often words for ten million or a billion are given in Indian languages which are suspiciously high numbers to put in the mouths of groups who rarely needed

547 OF THE LITERATURE

The first extensive work in the study of the subject is that by J. J. Taylor, *Journal of the Bureau of American Ethnology*, vol. 1, pt. 1, pp. 1-100, 1900. This paper gives a list of the names of Central and South American languages and the names of the languages spoken in the various regions. However, the emphasis is on Central and South American languages. Taylor's paper in *Journal of the Bureau of American Ethnology*, vol. 1, pt. 1, pp. 1-100, 1900, contains Taylor's list of the names of Central American languages, though it does not cover the treatment of Mayan and Aztec languages. The next extensive work is *Journal of the Bureau of American Ethnology*, vol. 1, pt. 1, pp. 1-100, 1900, submitted by Walter Hensley to the University of Chicago Department of Anthropology in 1911 as a thesis for the degree of Master of Arts. Hensley's work was important and influential. However, his list was not published in a journal or linguistic; there are errors throughout the thesis and in the bibliography. Many pages are occupied with worthless specimens as to origins of existing and of various systems of counting. The list for the Mayan or Aztec languages given in Latin languages with the exception of the names of the various languages of Central America.

numbers above one hundred, or one thousand at most. It is possible that early recorders expanded the systems beyond the number words actually given by the Indian informants. An alternative explanation of the high numbers recorded for primitive groups is the desire of the natives themselves to show off their knowledge. Thus they will invent words for numbers beyond the limits of their own systems. The Choctaw words for million, mil yan chuffa, and billion, bil yan chuffa, are obviously coined expressions (chuffa is one).¹

Roland B. Dixon and A. L. Kroeber published a detailed article in the American Anthropologist, n.s., vol. 9, no. 4, pp. 663-690, 1907, on "Numeral Systems of the Languages of California". Dr. Kroeber in "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, Table 10, pp. 876-77, 1925, and in the ethnographic sketches of the tribes describes their numeral systems fully.

A. R. Nykl in "The Quinary-Vigesimal System of Counting in Europe, Asia and North America," Language, vol. 2, no. 3, pp. 165-73, 1926, discusses the wide distribution of this system from Alaska along the Pacific coast and south to the Orinoco and Amazon, and attempts to

¹ I. L. L. Conant, The Number Concept; its Origin and Development, p. 85, 1923.

numbered above and numbered, to the extent of page 12 in
possible that early research was required for system design
the amount of work required. It is not possible to determine
the amount of work required in terms of person-years or
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is related to the amount of knowledge. This may well be true for
many systems. The amount of knowledge is related to the amount
of work required. It is not possible to determine the amount
of work required in terms of person-years or man-hours.

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A. R. Nelson in "The Computer-Vocabulary System of
Computing in English, Latin and Greek" (1977, Language
vol. 2, no. 2, pp. 155-75, 1977) discusses the
development of this system from Alaska along the Pacific
coast and north to the Yukon and the Arctic, and attempts to
J. L. Nelson, "The Computer Vocabulary System of
Computing in English, Latin and Greek"

refute the McGee and Gatschet theory of "the barefoot origin of the vigesimal system" by noting its presence among the Alaskan and Greenland Eskimo. Nykl's argument (footnote 13, p. 167) is that "the Eskimo probably brought the idea of vigesimal counting with them from a warmer climate on the Asiatic continent". A more convincing argument is the fact that the Eskimo do not wear their clothes in the house and their toes are available for counting. Almost the entire article, like the above-mentioned dissertation by Eells, is concerned with origins of numeral systems and the conclusions are equally worthless.

Levi L. Conant published in 1896 a book, The Number Concept; its Origin and Development; its contents are substantially the same as the material presented in two previously published articles. In one, "The Origin of Numeral Words," Proceedings of the American Association for the Advancement of Science, vol. 43, pp. 349-50, 1894, he states that all counting begins with the fingers but that all number words are not originated from the names of the fingers since many systems have only two or three primary numeral stems on which all other number words are formed by addition to these stems. The second article, "Primitive Number Systems," Annual Report of the Smithsonian Institution for 1892, Washington, 1893, pp. 583-94, is a more extensive paper. In it, he states that the concept or

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sense of numbers is a universal human trait but that in some cases the development of counting extends only as far as ten. Grimm, who says the names of all numeral words arise from the fingers, is wrong, says Conant. This is true, for example, of groups who have only one or two actual number words but express up to twenty by using "one man", "both hands" and like expressions. But the Yuma of Colorado have a mixed ternary and quaternary system and by reduplication of three and four produce six and eight. This has no connection with names of fingers. He also cites Trumbull (page 590) on the Arikara, who are believed (by Trumbull) to have once counted by pairs, the odd numbers having been added later.

There are two general articles by McGee, "Primitive Numbers," Annual Report of the Bureau of American Ethnology for 1897-98, vol. 19, pt. 2, pp. 825-47, 1900, and "The Beginnings of Mathematics," American Anthropologist, n.s., vol. 1, pt. 3, pp. 646-74, 1899. Both are concerned with the origin of mathematics from alchemism, mysticism and the like. He notes the native capacity of birds, mammals and insects for numbers and compares it to that of lowly tribes such as Australians, Tasmanians and Brazilians who could count only to two, three or four.² From this innate

² W. G. McGee, "Primitive Numbers," Bureau of American Ethnology Annual Report for 1897-98, vol. 19, pt. 2, p. 833, 1900.

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... and insects for numbers and compares it to that of...
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... could count only to two, three or four. From this...

E. W. C. Hooper, "Primitive Numbers," Journal of
American Ethnology Annual Number for 1897-99, vol. 19, pt. 2,
p. 225, 1900.

capacity, came mysticism, astrology and alchemism, bringing with them the concept of abstract numbers and the development of mathematics.

In a paper in the American Anthropologist, n.s., vol. 35, no. 3, 1933, Walter Hough discusses "The Origin and Development of Metrics". His thesis, as presented on pages 449-450 in summary, is: Units are at first simple and supply primitive needs. Later they become more exact and expand into systems but no records are kept. The Union of numbers and metrics has become an important medium for intellectual grasp of the intangible. In primitive societies numbers are specific things, i.e., ten may be "ten fingers". Numbers grow out of a finger count and there are no abstract numbers. The first records kept were personal and grew out of property ownership. With more communication and exchange, counting became more important and number systems expanded, but truly abstract systems were a late development.

In the American Anthropologist, o.s., vol. 7, pt. 2, 1894, Daniel G. Brinton takes up five pages (168-73), theorizing about the "Origin of Sacred Numbers". He states that the most common are three and four.³ Three, he says, belongs to the abstract, imaginary world; four belongs to the

3. Ibid., p. 834, McGee says four and six are the most common.

concrete, objective world. These two become important everywhere as sacred numbers due to the "psychic unity of mankind". They are developed differently by different cultures.

Aside from the valuable, comprehensive papers by Thomas and by Dixon and Kroeber, and the less useful thesis by Eells, there are no general surveys of the subject. The shorter articles mentioned are all preoccupied with mystic origins or are so general that their conclusions break down under careful investigation.

CHAPTER III

METHOD OF PROCEDURE

The only possible method of procedure in such a study of numeral systems is to examine the ethnological and linguistic literature on North America for the required data. The best sources of complete information are the more comprehensive ethnologic or ethnographic monographs and the linguistic studies of various tribes. The early geological and geographical surveys and the railroad surveys often contain vocabularies, and many vocabularies are published in Curtis, *The North American Indian*, 20 vols., Cambridge, 1907-1930. The shorter ethnological papers and the reports of early travelers and traders are of less value. The linguistic studies list the numeral words and sometimes describe the system used in counting. The latter is often self-evident from a study of the structure and meaning of the words used. The Chukchee number words are listed below as an example.¹

1. Enné[́]n; n'cé^én
2. ñi[́]räq
3. ñi[́]róq
4. ñi[́]ra'q
5. mI[́]LIñên, meaning "hand"
6. Ennan'mI[́]LIñên
7. ñêra[́]-mILIñên

1. W. Bogaras, "Chukchee," in Bureau of American Ethnology Bulletin 40, pt. 2, p. 837, 1922.

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8. am-ñiro'otkên, meaning "just the third"
9. qon'a'çinkên amingitkau'kE'lên, meaning "one behind"
10. mIngI'tkên, meaning "belonging to the hands"
11. mIngItIk Enne'n'párol
15. kilhI'nkên, meaning "foot"
20. gli'kkin, meaning "a man"
100. mIlInqlé'kkên, meaning "five twenties"

The system is derived from manual concepts. The word "to count" means, literally, "to finger" and the system is quinary-vigesimal.

The ethnological studies are more useful for a discussion of recording devices, "pattern" numbers and systems of counting. "Pattern" numbers are not always recorded in ethnological works but must be obtained by analysis of myths, tales and rituals. This is obviously a separate study in itself and such material can be included here only when direct statements of the ritual number are included in the ethnological literature.

Occasionally the more general articles yield theoretical discussion or even specific data through illustrative use of various systems.

Once the data is gathered it is grouped, for convenience in presentation, according to culture areas. The data on California is most complete and will be discussed first. There follows a description of the systems in use in the Southwest and Northern Mexico, and in the Great Basin-Plateau area. Briefer discussions of the systems of the Northwest Coast, Eskimo area, Great Plains and the

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Eastern United States are found in Chapter VII. A tabulation of the types of systems used in the various areas and a distribution map of the systems show the negative correlation with linguistic and culture areas. A separate map and table of the systems of California are included.



CHAPTER IV

NUMERAL SYSTEMS OF CALIFORNIA

The California area is the most interesting in North America due to the variety of systems used and their apparent lack of correlation with linguistic groupings. The California tribes utilize every system known elsewhere in North America and the octonary, quaternary, and decimal-quinary systems besides.

Very often in primitive groups where the number words have a concrete, descriptive meaning rather than an abstract, empirical meaning as in our own system, the counting sense is correspondingly undeveloped and clumsy. In California this is not the case; all the tribes which are known counted into the hundreds,¹ many, like the Pomo,² into the thousands.

The systems found in California are the quinary, quinary-decimal, quinary-vigesimal, decimal, vigesimal, quaternary and octonary. The most common method of formation of number words from primary stems is duplicative; quinary systems depend mainly on addition and subtraction for formation of supplementary number words.³

1. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 664, 1907.

2. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 256-57, 1925.

3. Ibid., p. 668.

THE SYSTEMS OF CALIFORNIA

The first step in the study of the systems of California is to determine the basic units of the system. These units are the words and phrases which are used in the system. The next step is to determine the relationships between these units. This is done by examining the context in which the units are used. The third step is to determine the functions of the units. This is done by examining the effects of the units on the system. The fourth step is to determine the structure of the system. This is done by examining the organization of the units. The fifth step is to determine the dynamics of the system. This is done by examining the changes in the system over time. The sixth step is to determine the evolution of the system. This is done by examining the historical development of the system. The seventh step is to determine the future of the system. This is done by examining the trends in the system.

W. H. D. Dixon and A. C. Kroeber, "Systems of the Languages of California," *American Anthropologist*, n.s., vol. 9, no. 4, p. 554, 1907.

W. H. D. Dixon and A. C. Kroeber, "Systems of the Languages of California," *American Anthropologist*, n.s., vol. 9, no. 4, p. 554, 1907.

The tendency in California is for contiguous areas to have similar systems regardless of linguistic affiliations. Although the words themselves may or may not be borrowed the method of numeral formation may be directly borrowed from, or influenced by, a neighboring tribe.

The Athapascan peoples in California fall into two divisions according to systems of counting. The northern groups, including Tolowa,⁴ Hupa,⁵ and Chilula, have pure decimal systems as do Athapascan groups elsewhere; the southern groups, including Sinkyone, Wailaki,⁶ and Kato,⁷ have quinary-decimal systems. The Bear River Athapascans count by fives and tens, motioning with their hands.⁸ The system appears to be decimal⁹ with seven possibly derived from two and eight from four. It may be that the observer was confused by the counter's use of his fingers. In Hupa, the words up to ten are unanalysable but in Wailaki and Kato the stems for one, two, three, and four are combined with five to form the numbers from six to nine. Above ten the

4. See list of number words, p. 38.

5. See list of number words, p. 37.

6. See list of number words, p. 36.

7. See list of number words, p. 36.

8. G. Nomland, "Bear River Ethnography," University of California Anthropological Records, vol. 2, no. 2, p. 116, 1938.

9. See list of number words, p. 38.

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systems are regularly decimal.¹⁰ In Hupa, ten, minLûñ, means "enough for it", eleven, means "ten by its side again one", twenty is "twice ten".¹¹ They count to one thousand or more, says Goddard,¹² but elsewhere¹³ he states that one hundred is the highest number. The Hupa use different numeral forms to count things and persons.¹⁴ Kato has the quinary system, which is rare in Athapascan languages; diñ kût, four, of the nearby Athapascans is replaced by nakk^ε nakk^ε, or "twice two". The first three stems remain the same.¹⁵ This may be due to the influence of their Yuki neighbors, who reduplicate two to form four. The ritual numbers of the Hupa and Chilula are five and ten; that of the Sinkyone is five.¹⁶ Phonetic analogy, especially of the

10. It should be noted that an accurate analysis of a system can not be made with only the numbers from one to ten.

11. P. E. Goddard, "The Morphology of the Hupa Language," University of California Publications in American Archaeology and Ethnology, vol. 3, p. 32, 1905.

12. Loc. cit.

13. P. E. Goddard, "Athapascan (Hupa)," in Bureau of American Ethnology Bulletin 40, pt. 1, p. 149, 1911.

14. See list of number words, p. 37.

15. P. E. Goddard, "Elements of the Kato Language," University of California Publications in American Archaeology and Ethnology, vol. 11, no. 1, p. 36, 1912.

16. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-77, 1925.

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11. E. E. Gordon,
Department of Zoology,
University of California

12. J. E. Gordon,
American Biology Bulletin

13. See list of numbers
14. J. E. Gordon,
University of California
and Zoology, vol. 11, no.

15. A. J. Kester,
California, Bureau of Entomology
pp. 270-71, 1928.

numbers for two and three is common in the California Athapascan languages as it also is in the case of the Shoshonean, rurok, Shastan, Chimariko, Pomo, Wiyot, Washo, Esselen, Wappo Yuki, Yuman and Wintun.¹⁷ All the north-western California tribes count on their fingers and commonly use a stick as a marker for ten; only the Kato and Nongatl count also on their toes.¹⁸ The Hupa, Chilula, Mattole and nato also use a stick marker for one hundred.¹⁹ The Tolowa keep a time count by breaking a small stick every day.²⁰ The Sinkyone count on their fingers in series of fives; the highest number one informant could remember was forty and he thought they did not count any higher.²¹

The Algonquian Wiyot use numeral classifiers, or suffixes, -helel or -welel on numbers from five to ten and from twenty to forty. In fifty, sixty, seventy, eighty,

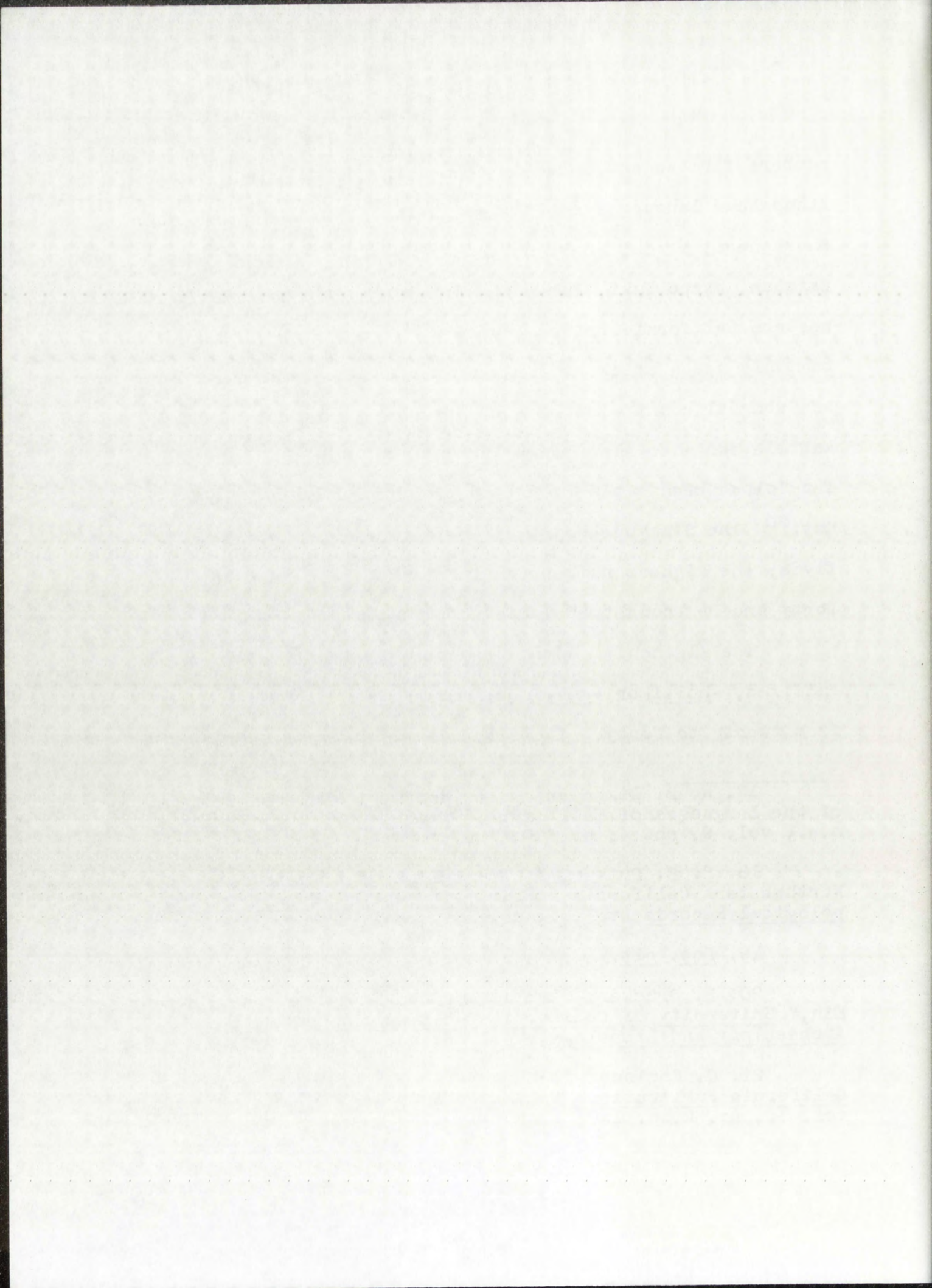
17. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 670, 1907.

18. H. E. Driver, "Culture Element Distributions: X, Northwestern California," University of California Anthropological Records, vol. 1, no. 1, p. 342, 1939.

19. Loc. cit.

20. P. Drucker, "The Tolowa and Their Southern Oregon Kin," University of California Publications in American Archaeology and Ethnology, vol. 36, no. 4, p. 240, 1937.

21. G. Nomland, "Sinkyone Notes," University of California Publications in American Archaeology and Ethnology, vol. 36, no. 2, p. 159, 1935.



and ninety, the suffix is repeated.²² The word for five is derived from we's meaning hand.²³ The system is decimal as is the Yurok system.²⁴ Both groups have ritual numbers of five and ten.²⁵ The Yurok and Modoc also use classifying suffixes which is rare in California.²⁶ The Wiyot use fourteen classes of numbers.²⁷ The Lutuami or Modoc ritual number is five, their system of counting quinary-decimal.²⁸

The Yukian family is the most diversified of all the California groups. The Yuki proper have quaternary system of counting,²⁹ while the Coast Yuki and Wappo have a quinary-

22. A. L. Kroeber, "The Languages of the Coast of California North of San Francisco," University of California Publications in American Archaeology and Ethnology, vol. 9, no. 3, p. 401, 1911. See also list of number words, p. 39.

23. Loc. cit.

24. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-77, 1925.

25. Loc. cit.

26. A. L. Kroeber, 1911, op. cit., p. 423.

27. G. Reichard, "Wiyot Grammar and Texts," University of California Publications in American Archaeology and Ethnology, vol. 22, no. 1, p. 85, 1925.

28. A. L. Kroeber, 1925, op. cit., pp. 876-77.

29. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, pp. 666-67, 1907.

and history, the article is repeated in the book for the first time. It is a historical study of the California Indians, and is one of the best of its kind. It is a study of the Indians as they were, and not as they are now. It is a study of the Indians as they were in California, and not as they were in other parts of the world. It is a study of the Indians as they were in California, and not as they were in other parts of the world.

27. A. L. Kroeber, "The Languages of the Coast of California," University of California Publications in American Linguistics, vol. 1, no. 1, pp. 1-10, 1923.

28. A. L. Kroeber, "The Languages of the Coast of California," University of California Publications in American Linguistics, vol. 1, no. 1, pp. 1-10, 1923.

29. A. L. Kroeber, "The Languages of the Coast of California," University of California Publications in American Linguistics, vol. 1, no. 1, pp. 1-10, 1923.

30. A. L. Kroeber, "The Languages of the Coast of California," University of California Publications in American Linguistics, vol. 1, no. 1, pp. 1-10, 1923.

31. A. L. Kroeber, "The Languages of the Coast of California," University of California Publications in American Linguistics, vol. 1, no. 1, pp. 1-10, 1923.

decimal, and the Huchnom a quinary-vigesimal system.³⁰ There are traces of this quaternary system in other California languages, but often only in the derivation of eight from four. The Round Valley Yuki system is the only example of a complete quaternary system in North America. However, the Chumash and Salinan have an analogous octonary system.³¹ The causes of the diversity in the group are to be seen in the varied significance of the numbers, actions and objects referred to in the different dialects in numbers above three.³² The numbers below three are the same in all the dialects. The Round Valley Yuki count by the spaces between their fingers, placing two twigs in each space. It is very difficult for them to count without the twigs.³³

30. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-77, 1925; also A. L. Kroeber, "The Languages of the Coast of California North of San Francisco," University of California Publications in American Archaeology and Ethnology, vol. 9, no. 3, p. 368, 1911.

31. R. B. Dixon and A. L. Kroeber, 1907, op.cit., p. 667; also A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, p. 176, 1925.

32. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 670, 1907.

33. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, p. 176, 1925.

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They know they have ten fingers but do not know the number of fingers and toes together, though they readily mention the number of spaces between the. They have only three true numeral words: one, pa^hwi; two, opi; three molmi. Others are descriptions of the process of counting; thus, from four on, "two forks", "middle in", "even chilki", "even in", etc.³⁴ The Yuki ritual number is four, the Wappo is two.³⁵ The Wappo have words only for one to one hundred, says Radin,³⁶ contrary to Kroeber's above-mentioned statement that tribes of California counted into the hundreds. The Wappo used sticks in counting; their neighbors, the Pomo counted higher and used knotted strings as well as sticks.³⁷ The Wappo word for twenty, hopi h^h'l, means "two sticks", for one hundred hai's'h^hl, "ten sticks".³⁸

The Shastan and Yana count by a quinary-decimal

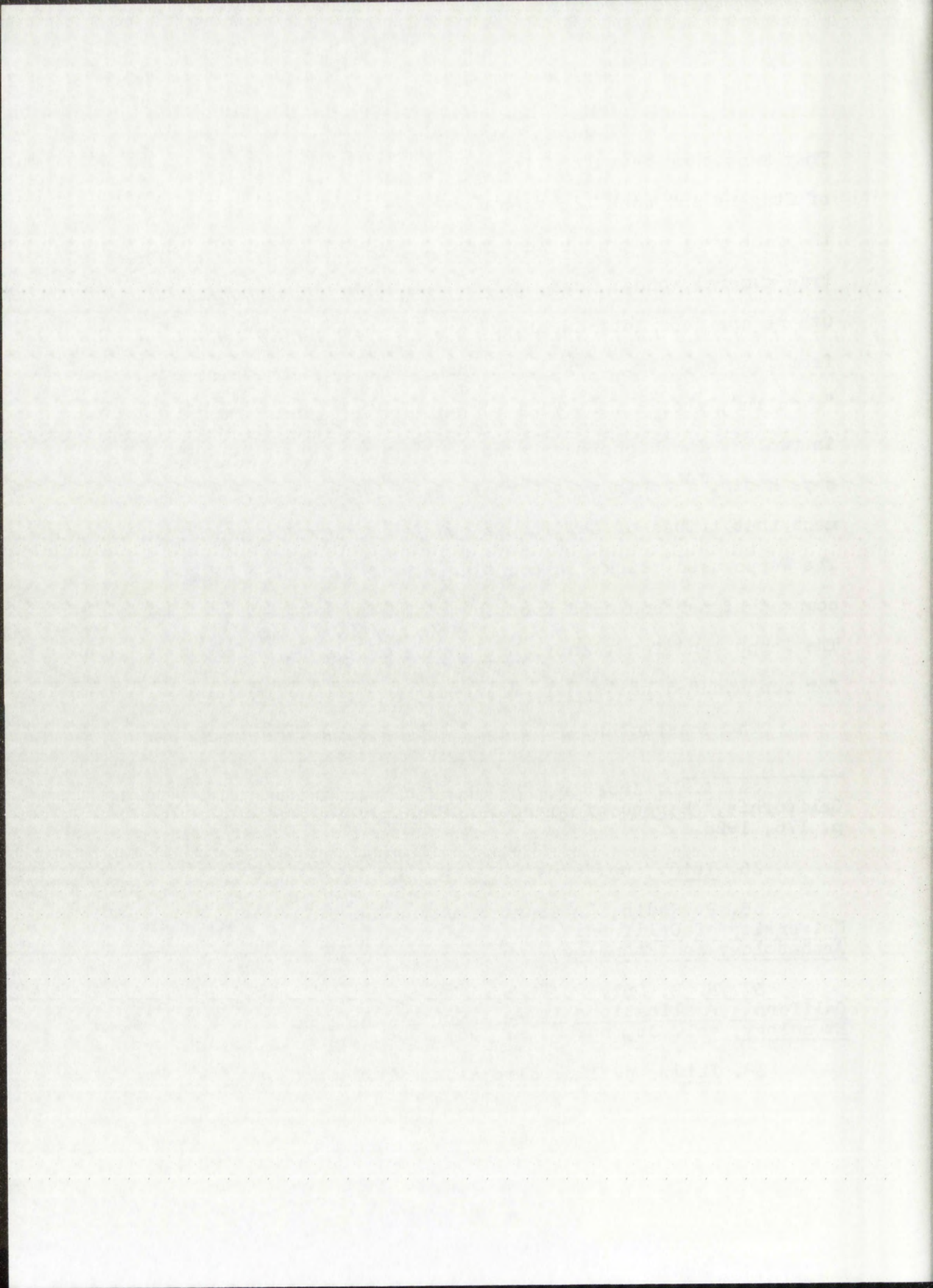
34. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, p. 176, 1925.

35. Ibid., pp. 876-77.

36. P. Radin, "A Grammar of the Wappo Language," University of California Publications in American Archaeology and Ethnology, vol. 27, p. 138, 1929.

37. H. E. Driver, "Wappo Ethnography," University of California Publications in American Archaeology and Ethnology, vol. 36, no. 3, p. 195, 1936.

38. Ibid., p. 196; also Radin, 1929, op. cit., p. 138.



system;³⁹ the Shastan ritual numbers are five and ten.⁴⁰ The Karok⁴¹ and Chimariko⁴² follow the same system. The Yana ritual number is four.⁴³

The Pomo formerly had a quinary-vigesimal system which has, in the higher numbers, given way to the decimal systems of their neighbors.⁴⁴ There are variations within the group, however. The Northeastern Pomo have a decimal system throughout;⁴⁵ some of their number words are borrowed from the

39. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 671, 1907; also E. W. Gifford and S. Klimek, "Culture Elements Distributions:II, Yana," University of California Publications in American Archaeology and Ethnology, vol. 37, no. 2, p. 83, 1936.

40. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-77, 1925.

41. Loc. cit.

42. R. B. Dixon, "The Chimariko Indians and Language," University of California Publications in American Archaeology and Ethnology, vol. 5, no. 5, p. 334, 1910.

43. E. W. Gifford and S. Klimek, "Culture Elements Distributions:II, Yana," University of California Publications in American Archaeology and Ethnology, vol. 37, no. 2, p. 83, 1936.

44. A. L. Kroeber, "The Languages of the Coast of California North of San Francisco," University of California Publications in American Archaeology and Ethnology, vol. 9, no. 3, p. 332, 1911.

45. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 256-57, 1925.

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Wintun.⁴⁶ The Southern Pomo have a quinary system to ten, a decimal system to twenty, and a vigesimal count from there on.⁴⁷ The Southeastern Pomo use a decimal system; some of their number words are borrowed from the Patwin.⁴⁸ The Eastern Pomo system is quinary-vigesimal. The higher numbers with their meanings are as follows:⁴⁹

80. dol-a-xai	"four sticks"
100. lema-xai	"five sticks"
200. haeagal-a-xai	"ten sticks"
300. xomka-mar-a-xai	"fifteen sticks"
400. kali-xai	"first (big) stick"
500. kali-xai-wina-lema-xai	"four hundred and five sticks"
800. xotc-guma-wal	"two (big) sticks"
2400. tsadi	"big stick"
3600. hadagal-com	"ten (missing)"
4000. hadagal	"ten (big) sticks"

There are two methods for counting large numbers of beads. The older method involves the use of a small stick for every eighty beads. Five of these mark four hundred and then a larger stick replaces the five small ones. The newer way is to use a small stick for every hundred beads and a large one for four hundred. The count then proceeds in units of four hundred up to four thousand, using ten large sticks. They

46. E. W. Gifford and A. L. Kroeber, "Culture Element Distribution: IV, Pomo," University of California Publications in American Archaeology and Ethnology, vol. 37, no. 4, p. 190, 1937.

47. Kroeber, 1925, op. cit., pp. 256-57.

48. Gifford and Kroeber, 1937, op. cit., pp. 148, 190.

49. E. M. Loeb, "Pomo Folkways," University of California Publications in American Archaeology and Ethnology, vol. 19, no. 2, p. 230, 1926.

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continue in this way to forty thousand which is "big twenty" or xai-di-lema-xai.⁵⁰ There is a myth told of a bear shaman who gave forty thousand beads in sympathy for a death which he caused.⁵¹ They do not divide but handle numbers well otherwise.⁵² The Northern and Central Pomo have decimal systems. All have a ritual number of four; the Central Pomo have eight in addition.⁵³

The Washo use a quinary system to ten and then change to decimal. There are numeral classifiers to distinguish the count of persons and of animals.⁵⁴

The Esselen system is strictly quinary; six to nine are formed by the numbers for one to four plus the suffix -walanai, eleven to nineteen by the numbers for one to nine plus the suffix -kelenai.⁵⁵

50. Ibid., pp. 229-230.

51. S. A. Barrett, "Pomo Bear Doctors," University of California Publications in American Archaeology and Ethnology, vol. 12, no. 11, p. 449, 1917.

52. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 256-57, 1925.

53. E. W. Gifford, and A. L. Kroeber, "Culture Element Distribution: IV, Pomo," University of California Publication in American Archaeology and Ethnology, vol. 37, no. 4, pp. 148, 159, 1937.

54. A. L. Kroeber, "The Washo Language of East Central California and Nevada," University of California Publications in American Archaeology and Ethnology, vol. 4, no. 5, p. 299, 1907.

55. A. L. Kroeber, "Languages of the Coast of California South of San Francisco," University of California Publications in American Archaeology and Ethnology, vol. 2, no. 2, p. 62, 1904.

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The Salinan system is "multiplicative quaternary"⁵⁶ as determined by Dixon and Kroeber.⁵⁷ Six is formed from three, eight from four, four from two, three-fours equal twelve and three-fives form fifteen.⁵⁸ The count is by fours up to sixteen, and continues by sixteens.⁵⁹ This is another of the systems which is found only in this group and among the Chumash in North America. In an earlier work, Kroeber classes both Chumash and Salinan as decimal with no trace of quinary or vigesimal.⁶⁰ From the list of numbers⁶¹ this appears to be more true of Salinan than Chumash; in later papers,⁶² however, both are classed as octonary or quaternary. The Chumash count is exactly like the Salinan.

56. J. A. Mason, "The Ethnology of the Salinan Indians," University of California Publications in American Archaeology and Ethnology, vol. 10, no. 4, p. 135, 1912.

57. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 668, 1907.

58. See list of number words, p. 48.

59. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-77, 1925.

60. A. L. Kroeber, "Languages of the Coast of California South of San Francisco," University of California Publications in American Archaeology and Ethnology, vol. 2, no. 2, pp. 40 and 49, 1904.

61. See list of number words, p. 49.

62. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 66, 1907; also A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-77, 1925.

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The Yuman groups vary slightly; the Kamia have a decimal system⁶³ as do the Chemehuevi.⁶⁴ The Yuma, Mohave and Diegueno are listed by Kroeber as quinary-decimal⁶⁵ but the Desert Diegueno and Yuma, according to Drucker,⁶⁶ have a decimal system. The Kamia count on their fingers; one informant said the count started with the thumb, another said with the little finger.⁶⁷ The Mohave ritual number is four, referring to the cardinal directions; the Diegueno more commonly have three as a sacred number in ritual, and four in myths. Four is associated with the cardinal directions.⁶⁸ The Mohave have more sense of numbers than most California Indians; they use figures accurately in conversation and easily add or subtract numbers below one hundred, without using counters or tallies.⁶⁹

The Northern Wintun count is decimal-vigesimal; the

63. E. W. Gifford, "The Kamia of the Imperial Valley," Bureau of American Ethnology Bulletin 97, p. 64, 1931.

64. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-877, 1925.

65. Loc. cit.

66. P. Drucker, "Culture Element Distributions: V, Southern California," University of California Anthropological Records, vol. 1, no. 1, p. 26, 1937.

67. Gifford, op. cit., p. 64.

68. Kroeber, op. cit., pp. 876-77.

69. Ibid., p. 780.

The first
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men can count ordinarily to sixty, the women only to five or ten. Only one informant could count easily to one thousand and understand the vigesimal system involved. They have no words for one third and one fourth but tcan means one half and also one of two. Five, tcanse, is one hand or one half of both hands. Six equals three on both hands, eight means four on both hands. Lolokit, seven, means "pointer". Nine, kεtamελεs, means "one missing from ten". Ten, tikeλεs, is said by Powers⁷⁰ to mean "none lacking". Twenty, k'εtεwintu, means "one person". The numbers from one to nine are decimal. From twenty up there are two systems: the decimal, used ordinarily for persons; the vigesimal, used for rare objects such as clam-shell discs. They are, however, more or less interchangeable. Twenty, kεtam sak, one hundred, sεmanot, and one thousand, kεtεwita, are terms used of clam shell discs. Curtis says these terms are also used by the Southern Wintun.⁷¹ It is possible that to the southern place of origin of the clam-shell discs may also be traced the terms used in counting them.⁷²

70. S. Powers, "Tribes of California," United States Geographical and Geological Survey of the Territories, Contributions to North American Ethnology, vol. 3, p. 233, 1877.

71. E. Curtis, The North American Indian, vol. 14, p. 227, 1924.

72. C. DuBois, "Wintu Ethnography," University of California Publications in American Archaeology and Ethnology, vol. 36, no. 1, p. 70, 1935.

from our point of view, the name is the same. The name is the same as in the case of the first... and therefore the algebraic system involved. There have been several papers on this subject. The first paper is by...

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The Southern Wintun, like the northern group, have in their system one of the rare examples of the subtractive principle of numeral word formation. They also, like their northern relations, derive the word for six from three.⁷³ In the south, beads are counted by units of eighty, the series running four, twenty, eighty, three hundred twenty. The tendency of the Southern Wintun is to count by fours.⁷⁴ This may be due to the influence of the Yuki although this influence has not been apparent on the closer Northern and Central Wintun. The Central Wintun count on a basis of fives; the Southern group has a quinary-vigesimal system.⁷⁵ The Southern Wintun ritual number is four and it is related to the cardinal directions.⁷⁶

The Mountain and the Southern Maidu count by a quinary-decimal system. The ritual number of the Mountain Maidu is five which refers to the cardinal directions.⁷⁷ The Hill Maidu have a quinary-decimal system with a tendency to

73. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, pp. 666-68, 1907.

74. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, p. 359, 1925.

75. Ibid., pp. 876-77.

76. Loc. cit.

77. Loc. cit.

The following table shows the results of the experiments in which the effect of the concentration of the solution on the rate of reaction was studied. The results are given in the following table.

The rate of reaction was found to increase with the concentration of the solution. This is shown by the fact that the rate of reaction is higher in the more concentrated solutions than in the less concentrated ones.

The following table shows the results of the experiments in which the effect of the temperature on the rate of reaction was studied. The results are given in the following table.

The rate of reaction was found to increase with the temperature. This is shown by the fact that the rate of reaction is higher at higher temperatures than at lower temperatures.

The following table shows the results of the experiments in which the effect of the surface area of the solid reactant on the rate of reaction was studied. The results are given in the following table.

The rate of reaction was found to increase with the surface area of the solid reactant. This is shown by the fact that the rate of reaction is higher when the surface area of the solid reactant is larger than when it is smaller.

The following table shows the results of the experiments in which the effect of the concentration of the catalyst on the rate of reaction was studied. The results are given in the following table.

The rate of reaction was found to increase with the concentration of the catalyst. This is shown by the fact that the rate of reaction is higher when the concentration of the catalyst is higher than when it is lower.

The following table shows the results of the experiments in which the effect of the pressure on the rate of reaction was studied. The results are given in the following table.

The rate of reaction was found to increase with the pressure. This is shown by the fact that the rate of reaction is higher at higher pressures than at lower pressures.

count vigesimally above twenty; their ritual numbers are four and five. The Valley Maidu have a quinary-vigesimal system and a ritual number of four.⁷⁸ The Maidu count beads by tens and do not measure them as the Yokuts and Miwok do.⁷⁹

The Miwok have another of the systems found only in California. It is decimal to ten, quinary to twenty and then changes to vigesimal.⁸⁰ This is true only of the Central and Northern groups in the interior; the western, southern and northern coastal groups and the southern interior groups have decimal systems.⁸¹

The Costanoan systems are decimal in the north and quinary-decimal in the south. The sacred number is five.⁸² The Rumsen of Carmel Mission have a quinary system.⁸³ The Monterey word for five, hale-is, means "one hand".⁸⁴ The Santa Clara words for seven, eight, and nine, kenetc, osatis, and telektic, are like kene, osa, and teleka, the words

78. Loc. cit.

79. Ibid., p. 399.

80. Ibid., p. 666.

81. Ibid., pp. 876-77.

82. Loc. cit.

83. A. L. Kroeber, "Languages of the Coast of California South of San Francisco," University of California Publications in American Archaeology and Ethnology, vol. 2, no. 2, p. 62, 1904.

84. A. L. Kroeber, "The Chumash and Costanoan Languages," University of California Publications in American Archaeology and Ethnology, vol. 9, no. 2, p. 248, 1910.

counting system

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for one, two and three of the Central Miwok.⁸⁵

The Yokuts have a decimal system, but four, hat-pañi, contains two, poñoi; and five, yüt-cinüt, contains one, yet. All others up to ten are unanalysable. Eleven to nineteen are formed by the addition of the suffix -am to the words for one to nine. One hundred means "ten counts". There are varied forms for cardinal and ordinal numbers.⁸⁶ They measure beads by the circumference of the hand. The sacred number of the Central Yokuts is six; the southern group have three, six and twelve as ritual numbers.⁸⁷

Nearly all the Shoshonean groups of California have decimal systems of counting. The exceptions are the quinary systems of the Luiseño,⁸⁸ Gabrieliño,⁸⁹ Cupeño,⁹⁰ and the Desert, Pass and Mountain Cahuilla.⁹¹ The Serrano use the

85. Loc. cit.

86. A. L. Kroeber, "The Yokuts Language of South Central California," University of California Publications in American Archaeology and Ethnology, vol. 2, no. 5, p. 230, 1907.

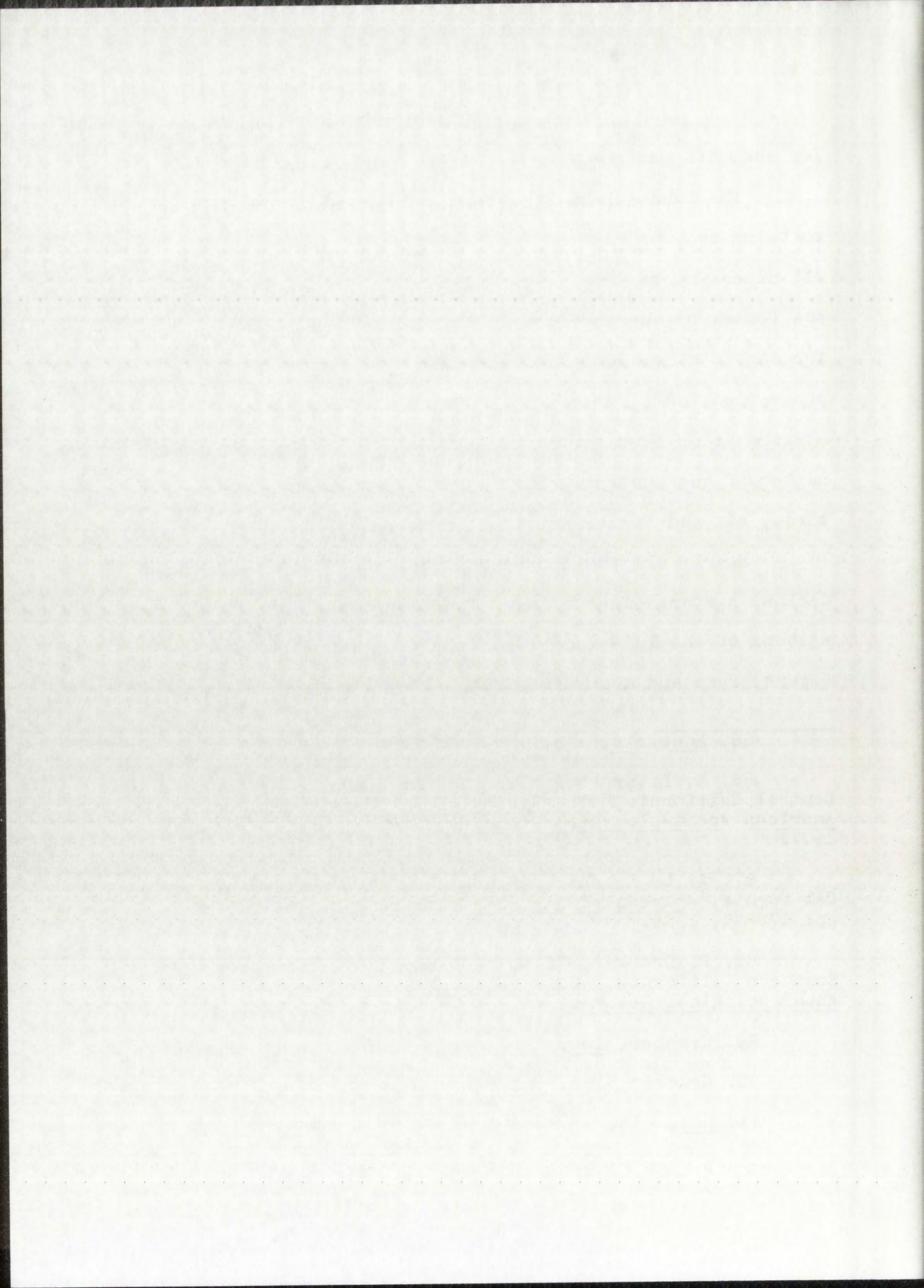
87. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-77, 1925.

88. P. Drucker, "Culture Element Distributions:V, Southern California," University of California Anthropological Records, vol. 1, no. 1, p. 26, 1937.

89. Kroeber, loc. cit.

90. Drucker, loc. cit.

91. Loc. cit.



decimal system above ten.⁹² The Serrano unit of measure for string beads, a pahu, equals one and one third yards and such a string is worth twenty-five cents.⁹³ The ritual numbers of the Gabrielino are four, eight and six, of the Luiseño, three and four.⁹⁴ Kelly's Surprise Valley Paiute informant thought that in the old days they did not count beyond ten.⁹⁵ One half is na'mukwai, anything smaller is tü'tsi, meaning "piece". Nine is sümü'kadao'p or one plus eight; eleven, sümü'maspok, means "out, over". Twenty, waha'mano, is "two-ten". Six includes three and Kelly says this suggests a quinary system, but the system appears to be decimal.⁹⁶ In Tübatulabal, the count is by ten⁹⁷ and ordinals are formed by the addition of the suffix -ami to the cardinals.⁹⁸

Figure I and Table I present the above material in condensed form.

92. A. L. Kroeber, "Handbook of the Indians of California," Bureau of American Ethnology Bulletin 78, pp. 876-77, 1925.

93. R. Benedict, "A Brief Sketch of Serrano Culture," American Anthropologist, n.s., vol. 26, no. 4, p. 389, 1924.

94. Kroeber, loc. cit.

95. I. Kelly, "Ethnography of the Surprise Valley Paiute," University of California Publications in American Archaeology and Ethnology, vol. 31, no. 3, p. 156, 1932.

96. See list of number words, p. 61.

97. Kroeber, loc. cit.

98. C. Voegelin, "Tubatulabal Grammar," University of California Publications in American Archaeology and Ethnology, vol. 34, no. 2, p. 178, 1935.

desired species above 1000' and below 1000' of water
for water bodies, a high, low, and intermediate water levels
and such a series is used to determine the relative
numbers of the different species, etc. etc.

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TABLE I

NUMERAL SYSTEMS OF CALIFORNIA TRIBES

<u>Name of Tribe</u>	<u>Unit of Count</u>		
	<u>1-10</u>	<u>10-20</u>	<u>20 up</u>
Tolowa	10	10	10
Hupa	10	10	10
Chilula	10	10	10
Sinkyone	5	10	10
Wailaki	5	10	10
Kato	5	10	10
Bear River Ath.	5(?)	10	10
Wiyot	10	10	10
Yurok	10	10	10
Modoc	5	10	10
Yuki	4	8	8(to 64)
Coast Yuki	5	10	10
Wappo	5	10	10
Huchnom	5	5	20
Shastan	5	10	10
Yana	5	10	10
Karok	5	10	10
Chimariko	5	10	10
Northeastern Pomo	10	10	10
Southern Pomo	5	10	20
Southeastern Pomo	10	10	10
Eastern Pomo	5	5	20
Northern Pomo	10	10	10
Central Pomo	10	10	10
Washo	5	10	10
Esselen	5	5	?
Salinan	4(to 16)	16	16
Chumash	4(to 16)	16	16
Kamia	10	10	10
Mohave	5	10	10
Diegueño	5	10	10
Yuma	10	10	10
Desert Diegueño	10	10	10
Northern Wintun	10	10	10, 20
Southern Wintun	5, 4	5, 4	20
Central Wintun	5	5	?
Mountain Maidu	5	10	10
Southern Maidu	5	10	10
Hill Maidu	5	10	10, 20

Index

- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia
- Florida
- Georgia
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Vermont
- Virginia
- Washington
- West Virginia
- Wisconsin
- Wyoming

TABLE I (continued)

<u>Name of Tribe</u>	<u>1-10</u>	<u>10-20</u>	<u>20 up</u>
Valley Maidu	5	5	20
Central Miwok	10	5	20
Northern Miwok	10	5	20
Coast Miwok	10	10	10
Southern Miwok	10	10	10
Northern Costanoan	10	10	10
Southern Costanoan	5	10	10
Yokuts	10	10	10
Luiseno	5	10	10
Gabrieliño	5	10	10
Cupeño	5	10	10
Desert Cahuilla	5	10	10
Pass Cahuilla	5	10	10
Mountain Cahuilla	5	10	10
Serrano	5	10	10
Chemehuevi	10	10	10
Fernandeno	10	10	10
Tübatulabal	10	10	10

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Valley
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V
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X
Y
Z

WAILAKI GROUP

Kato (Dixon and Kroeber, 1907, p. 673)

- | | |
|--------------|-------------------------|
| 1. Laxa | 8. bûn-tak |
| 2. naka | 9. bûn-nakanaka |
| 3. tak | 10. laL-baûñ |
| 4. naka-naka | 15. laL-baûñ-biL-lasane |
| 5. lasane | 20. naka-dûñ-laLbaûñ |
| 6. bûn-Laxa | 50. lasane-dûñ-laLbaûñ |
| 7. bûn-naka | |

Kato (Goddard, 1912, p. 36)

- | | |
|--|--|
| 1. La ha ^ε | 7. yīban na ^ε kk ^ε |
| 2. na ^ε kk ^ε | 8. yīban tak' |
| 3. tak' | 9. yīban nakka nakka |
| 4. na ^ε kk ^ε na ^ε kk ^ε | 10. la ^ε Lba ^ε ûn |
| 5. la ^ε sa nī | 20. na dûn la ^ε Lba ^ε ûñ |
| 6. yīban La ^ε ha ^ε | 30. ta dûn |

Wailakki (S. Powers, 1877, p. 116)

- | | |
|-----------------|-------------------|
| 1. Klai'-hai | 6. kūs'-lak |
| 2. nok'-ah | 7. kūs'-nak |
| 3. tok | 8. kūs'-tak |
| 4. tenkh'-ah | 9. kūs'-tenkh'-ah |
| 5. tus-kul'-lah | 10. kwang-en'-ta |

Table 1

1. Data
2. Results
3. Discussion
4. Conclusions
5. References
6. Appendix
7. Index

Table 2

1. Data
2. Results
3. Discussion
4. Conclusions
5. References
6. Appendix
7. Index

Table 3

1. Data
2. Results
3. Discussion
4. Conclusions
5. References
6. Appendix
7. Index

HUPA GROUP

Hupa (Goddard, 1905, p. 32)
(Used for inanimate objects)

- | | |
|------------|------------------------|
| 1. La | 7. x̄ kit |
| 2. nax | 8. ke nim |
| 3. tak | 9. m̄k k̄s tau |
| 4. d̄nk | 11. minL̄n̄ m̄ wa naLa |
| 5. tcw̄ la | 20. na dim minL̄n̄ |
| 6. x̄s ten | 200. na x̄t dik kin |

Hupa (Goddard, 1905, p. 33)
(Used for persons and animals)

- | | |
|---------------|--------------------|
| 1. Lū w̄n̄ | 6. x̄s t̄n̄ |
| 2. na nin | 7. x̄ kit din |
| 3. ta k̄n̄ | 8. ke nim min |
| 4. d̄n̄ kin | 9. m̄k k̄s tau win |
| 5. tcw̄ la ne | 10. min L̄n̄ ne |

WIRE REPORT

From [illegible] to [illegible]
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TOLOWA GROUP

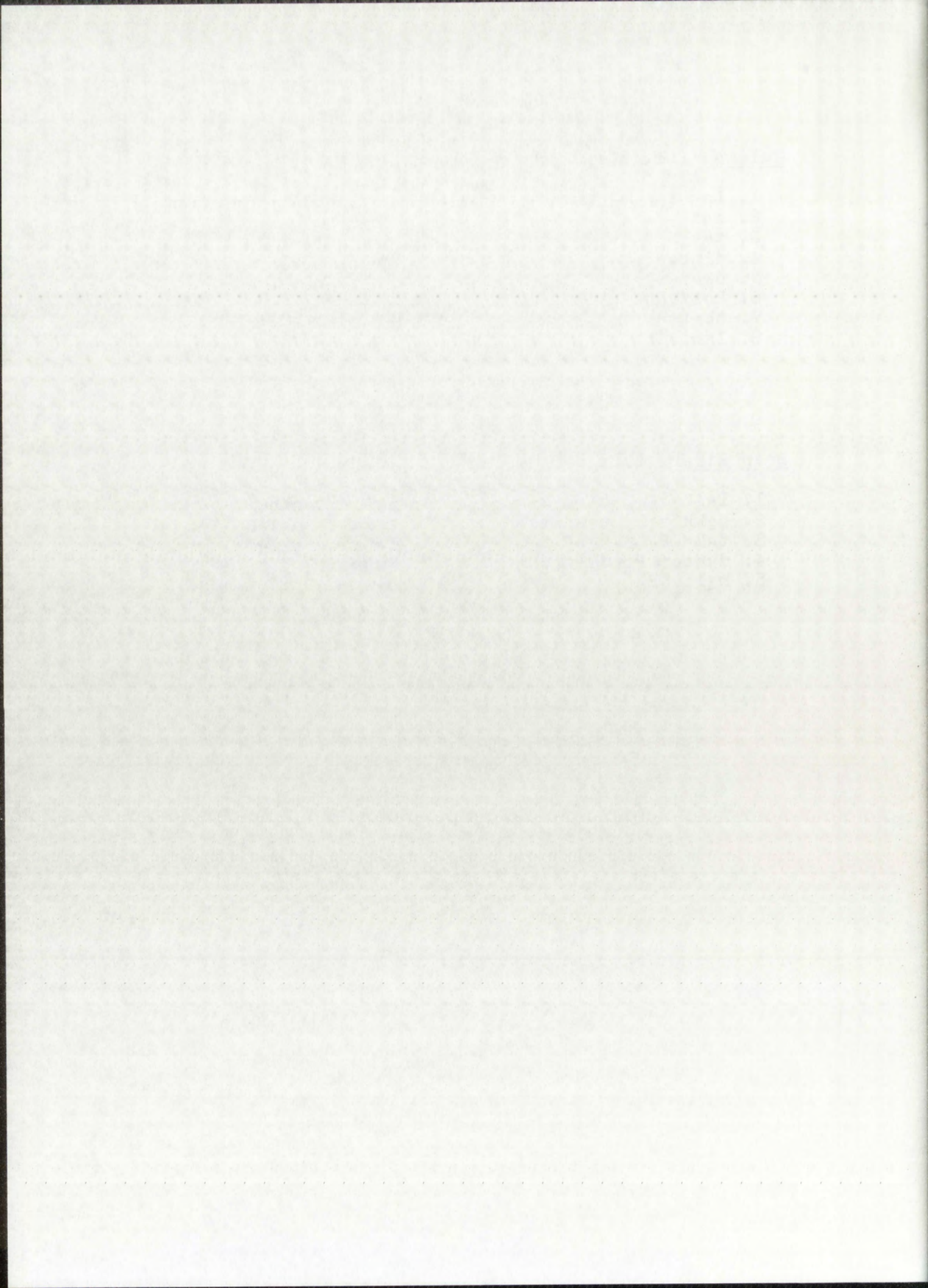
Tolowa (Dixon and Kroeber, 1907, p. 673)

- | | |
|-------------|----------------------|
| 1. La | 9. La-ûndui |
| 2. nax | 10. nesûn |
| 3. tak | 15. cwela-tcata |
| 4. dintce | 20. na-de-nesûn |
| 5. cwela | 50. cwela-nesûn |
| 6. kostanne | 100. La-atcûn |
| 7. tcete | 200. na-din-La-atcûn |
| 8. lanisût | |

BEAR RIVER GROUP

Bear River (Goddard, 1929, pp. 313-323)

- | | |
|-----------------------|------------------------|
| 1. ʔaiha'P, taiha'B | 6. xalla bantaP |
| 2. nakk'a'P, nakaPe | 7. bakk'at nakεB |
| 3. tak'aP, dak'aP | 8. ʔεbadɪntcεPe |
| 4. dantc'εP, di'ntcεB | 9. ʔasgot'B |
| 5. halla'P | 10. nεsiyanP, siyan Pe |



ALGONKIN FAMILY

Yurok (Dixon and Kroeber, 1907, p. 674)

- | | |
|----------------------|------------------------|
| 1. qore ^u | 8. knewetek |
| 2. niih | 9. qrerermeq |
| 3. naxkceih | 10. werh erwerih |
| 4. tsoneh | 15. meru nemi tsam |
| 5. merotsameh, meru | 20. nemi-werh |
| 6. qoxtseu | 50. merutsi-werh |
| 7. tserucek | 100. werh erwitsi-werh |

Wiyot (Kroeber, 1911, p. 413)

- | | |
|-------------------|--------------|
| 1. gō' t-, gū' ts | 6. dekLi-luk |
| 2. rit-, ritw | 7. hālu |
| 3. rik-, rikw | 8. hiowita |
| 4. riaw, rām | 9. mece-rok |
| 5. we's-ag'- | 10. ru-lok |

Wiyot (Dixon and Kroeber, 1907, p. 674)

- | | |
|------------------|------------------------|
| 1. kotser | 8. hiowitaw-elel |
| 2. riter | 9. mercerokw-elel |
| 3. riker | 10. rulok-heler |
| 4. riawer | 20. ritava-helel |
| 5. wesak-elel | 50. wesohela-weler |
| 6. tekleluk-elel | 100. kotses-wani-heler |
| 7. haLow-elel | |

Patawat (S. Powers, 1877, p. 99)

- | | |
|-------------|----------------|
| 1. koh'tseh | 6. chil-o'-keh |
| 2. di'-teh | 7. â-tloh |
| 3. di'-keh | 8. i-wit |
| 4. di'-oh | 9. sri-ro'-keh |
| 5. weh'-sah | 10. lo-kel' |

ALPHABETICALLY

Year 1900-1909

- 1. 1900
- 2. 1901
- 3. 1902
- 4. 1903
- 5. 1904
- 6. 1905
- 7. 1906
- 8. 1907
- 9. 1908
- 10. 1909

Year 1910-1919

- 1. 1910
- 2. 1911
- 3. 1912
- 4. 1913
- 5. 1914
- 6. 1915
- 7. 1916
- 8. 1917
- 9. 1918
- 10. 1919

Year 1920-1929

- 1. 1920
- 2. 1921
- 3. 1922
- 4. 1923
- 5. 1924
- 6. 1925
- 7. 1926
- 8. 1927
- 9. 1928
- 10. 1929

Year 1930-1939

- 1. 1930
- 2. 1931
- 3. 1932
- 4. 1933
- 5. 1934
- 6. 1935
- 7. 1936
- 8. 1937
- 9. 1938
- 10. 1939

YUKIAN FAMILY

Round Valley Yuki (Dixon and Kroeber, 1907, p. 674)

- | | |
|--|----------------------------------|
| 1. pa ^h -wi | 7. milas-ko |
| 2. op-i | 8. paum-pat, mipat-al-a-wa |
| 3. molm-i | 9. hutcam-pa ^h wi-pan |
| 4. o-maha ^h t, op-maha ^h t | 10. hutcam-opi-sul |
| 5. hui-ko | 15. mikasko-sul |
| 6. mikas-tcil-ki | 20. omaha ^h t-hui-poi |

Coast Yuki (Dixon and Kroeber, 1907, p. 674)

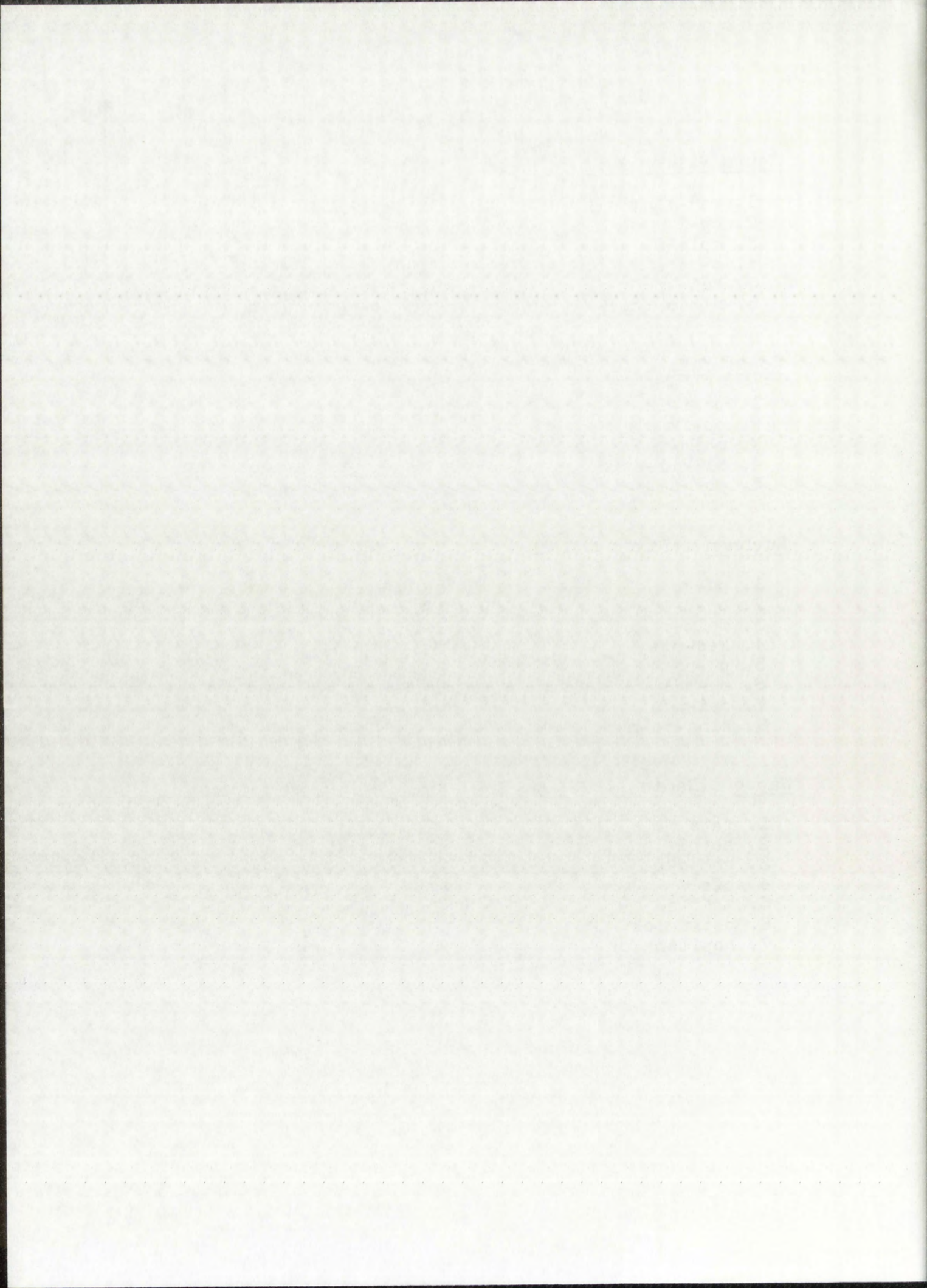
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|----------------|-------------------|
| 1. powi-ik | 6. pou-tit |
| 2. op-ik | 7. ope-tot |
| 3. molm-ik | 8. molme-tit |
| 4. hilkil-opik | 9. hilkil ope-tit |
| 5. pow-pat | 10. popate-tit |

Huchnom (Dixon and Kroeber, 1907, p. 674)

- | | |
|----------------|--------------------|
| 1. pu-we | 9. helpiso-putal |
| 2. op-e | 10. helpiso-humate |
| 3. molm-e | 15. a'lau' |
| 4. kes-ope | 20. pu-al-yak |
| 5. pu-putc | 50. misau-mom-alya |
| 6. pu-tal | 100. pu-al |
| 7. opi-nun | 200. ope-al |
| 8. kina-sa-nun | |

Wappo (Radin, 1929, p. 138)

- | | |
|-----------------------|------------------------|
| 1. pa ^h wa | 8. hopi'han |
| 2. ho'pi | 9. pa'walak, pa'wak |
| 3. ho'poka | 10. maha'lts, mahai's |
| 4. óla | 11. mahai's pawéls'wan |
| 5. ka't'a | 20. hopihó'l |
| 6. patana'ok | 50. ka't.ahól |
| 7. hopitsna'ok | 100. hai's.hól |



SHASTAN GROUP

Achomawi (Dixon and Kroeber, 1907, p. 678)

- | | |
|------------|-------------------------------|
| 1. hamis | 8. hadame-lil ^h |
| 2. haq | 9. malusi-dudjiku hamis-antji |
| 3. tsasdi | 10. malusi |
| 4. hadama | 15. malusi-edelad-atumi |
| 5. latu | 20. haq-el-malusi, masis |
| 6. mas-uts | 50. lat-il malusi |
| 7. haq-uts | 100. malus-el malusi |

Atsugewi (Dixon and Kroeber, 1907, p. 678)

- | | |
|------------------|-----------------------|
| 1. tsutsatstsi | 7. hoki-put-saki |
| 2. hoki | 8. kiski-put-saki |
| 3. kiski | 9. tciwi-rap-saki |
| 4. haq-kau | 10. tcuw-iksii |
| 5. harapakina | 15. harapakina-i wawi |
| 6. tciu-put-saki | 20. hok -ne-tcuwiksii |

Shasta (Dixon and Kroeber, 1907, p. 678)

- | | |
|---------------------|-----------------------------------|
| 1. ts'amo | 7. xokwa-wateha |
| 2. xokwa | 8. xatski-wateha |
| 3. xatski | 9. irahaya-wateha |
| 4. irahaya, idahaya | 10. e'tse-hewi |
| 5. e'-tsa | 20. xokwa-id e'tsehewi |
| 6. tso-wateha | 100. e'tsi idu-wad-idu' e'tsehewi |

INDEX

INDEX OF NAMES AND PLACES

1. Adams	10
2. Adams	10
3. Adams	10
4. Adams	10
5. Adams	10
6. Adams	10
7. Adams	10
8. Adams	10
9. Adams	10
10. Adams	10

INDEX OF SUBJECTS

1. Adams	10
2. Adams	10
3. Adams	10
4. Adams	10
5. Adams	10
6. Adams	10
7. Adams	10
8. Adams	10
9. Adams	10
10. Adams	10

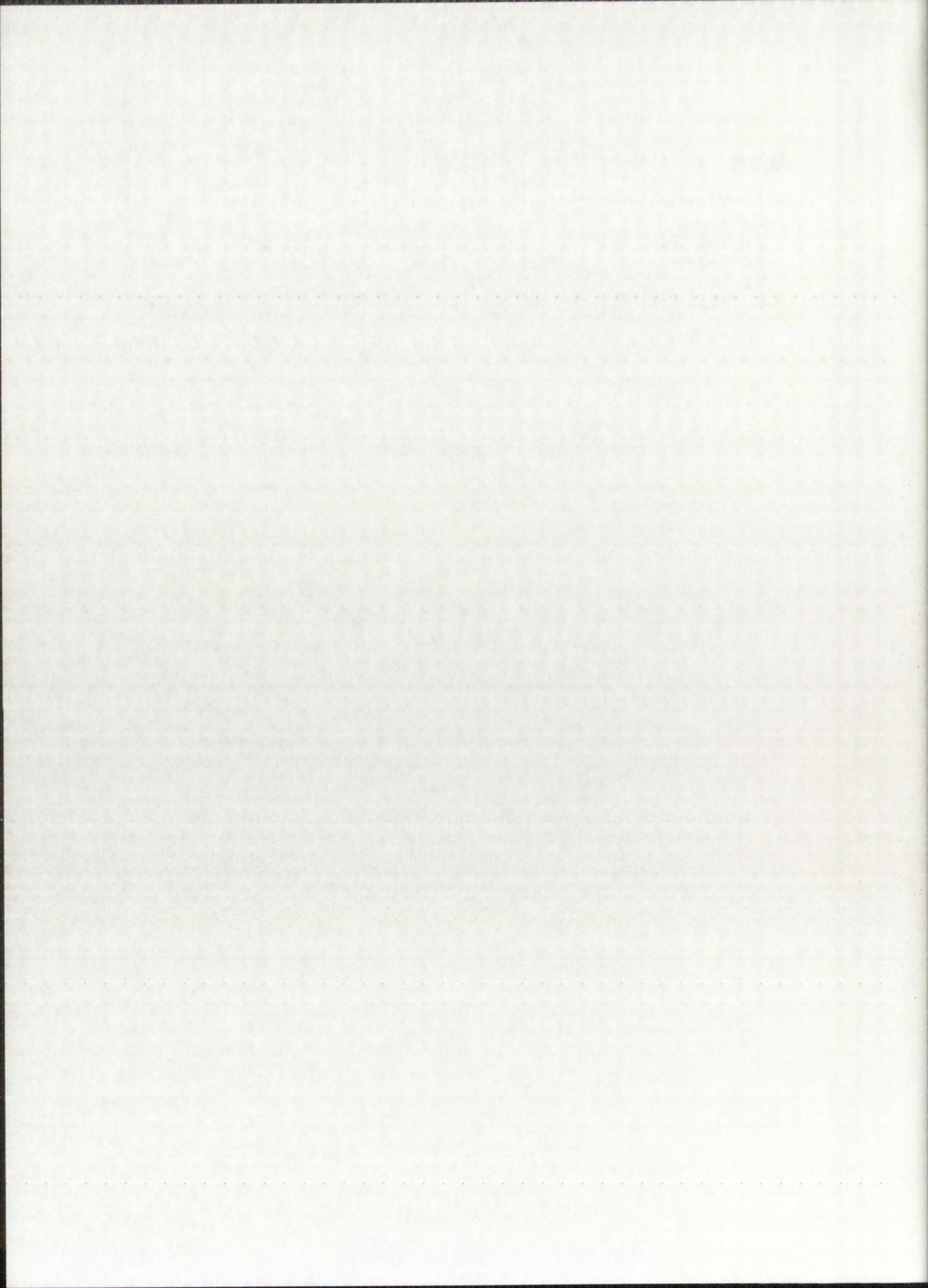
INDEX OF REFERENCES

1. Adams	10
2. Adams	10
3. Adams	10
4. Adams	10
5. Adams	10
6. Adams	10
7. Adams	10
8. Adams	10
9. Adams	10
10. Adams	10

KAROK

Karok (Kroeber, 1911, p. 433)

- | | |
|-------------|---------------------|
| 1. yisa | 7. axa-kinivkir |
| 2. axak | 8. kwira-kinivkir |
| 3. kwirāk | 9. trop-aticram |
| 4. pis | 10. trahiara |
| 5. trop | 20. axak-a trahiara |
| 6. kirivkir | |



CHIMARIKO

Chimariko (Dixon and Kroeber, 1907, p. 674)

- | | |
|-----------------|------------------------------|
| 1. p'un | 9. p'un-tcigu |
| 2. xoku | 10. saan-p'un |
| 3. xodai | 15. tsanehe-risut |
| 4. kuigu | 20. xoku-mtun saanp'un |
| 5. tsanehe | 50. tsanehe-mtun saanp'un |
| 6. p'un-tcibum | 100. bucua-p'un bucua-n-xoku |
| 7. xoku-cbum | |
| 8. xodai-tcibum | |

CONTENTS

Chapter I. Introduction 1

Chapter II. The History of the Subject 10	Chapter III. The Principles of the Subject 20
Chapter IV. The Methods of the Subject 30	Chapter V. The Applications of the Subject 40
Chapter VI. The Future of the Subject 50	Chapter VII. The Conclusion 60

POMO GROUP

Northern Pomo (Dixon and Kroeber, 1907, p. 676)

- | | |
|-------------|----------------------|
| 1. tca | 9. kowal-com |
| 2. ko | 10. kowal-tek |
| 3. subu | 15. komat-tek |
| 4. tak | 20. tca-hma-tek |
| 5. cal | 50. kowali-subu-te |
| 6. tsadi | 100. cal-te, cal-hai |
| 7. koba | 200. kowal-hai |
| 8. koko-dol | |

Central Pomo (Dixon and Kroeber, 1907, p. 676)

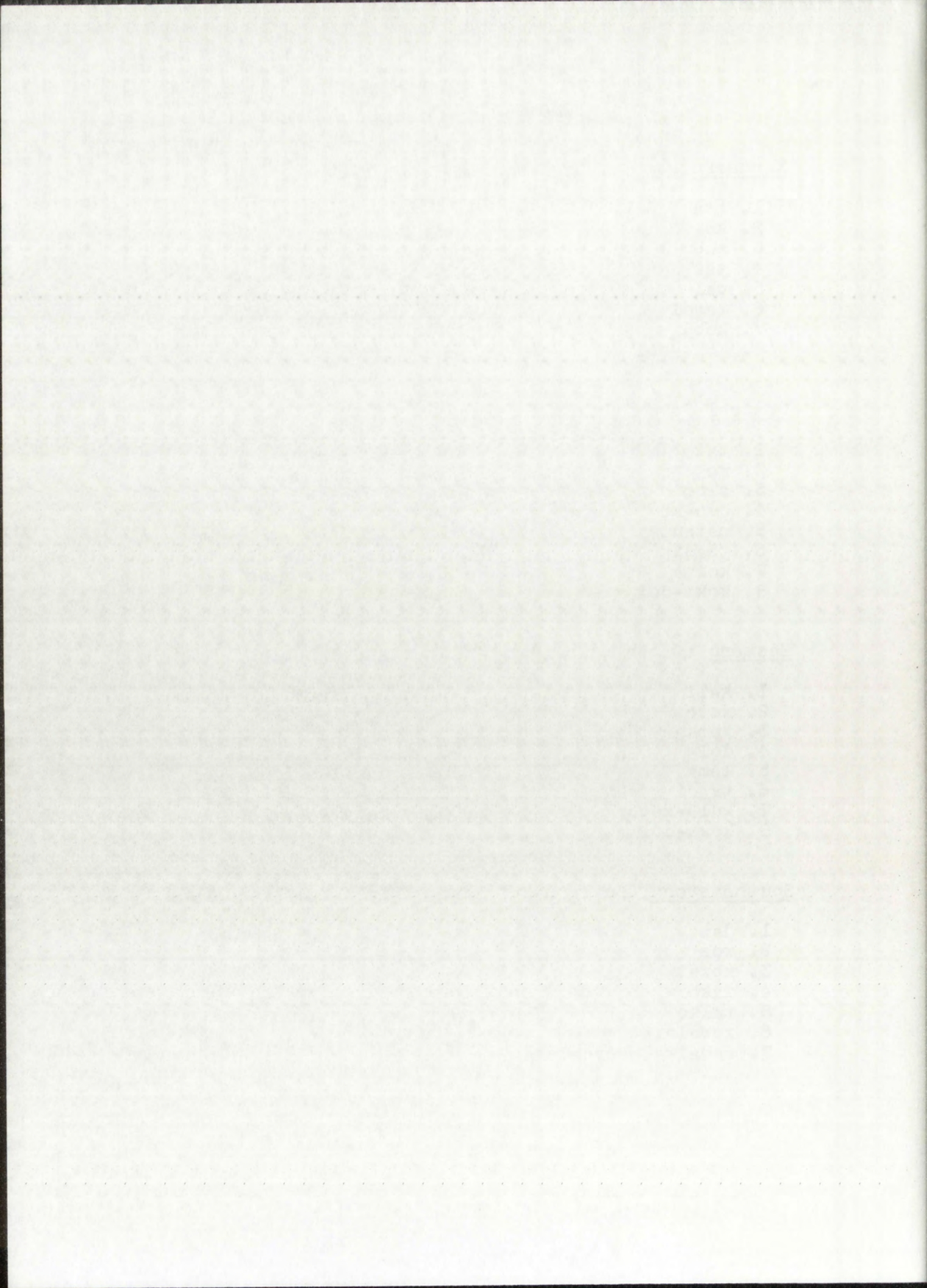
- | | |
|-------------|------------------------|
| 1. tato | 9. namilka-com |
| 2. ko | 10. namilka-tek |
| 3. sibo | 15. komat-tek |
| 4. duo-ko | 20. tca-hma-tek |
| 5. natsui | 50. namilka-wi-sibo-te |
| 6. tsadi | 100. natsui-hai-tek |
| 7. koina | 200. namilka-tek-hai |
| 8. koko-dol | |

Eastern (Clear Lake) Pomo (Dixon and Kroeber, 1907, p. 676)

- | | |
|--------------|-------------------------|
| 1. kali | 9. hadagal-com |
| 2. xote | 10. hadagal-tek |
| 3. xomka | 15. xomka-mar-tek |
| 4. dol | 20. xai-di-lema-tek |
| 5. lema | 50. hadagal-e-xomka-xai |
| 6. tsadi | 100. lema-xai |
| 7. kula-xote | 200. hadagal-e-xai |
| 8. koka-dol | |

Southeastern (Lower Lake) Pomo (Dixon and Kroeber, 1907, p. 676)

- | | |
|-----------------------|------------------------|
| 1. dan | 8. panamusta, dan-widi |
| 2. xos | 9. xut-pacem |
| 3. xoxat | 10. pacem |
| 4. dako | 15. pacem-ke-talko |
| 5. talko | 20. ete-kai |
| 6. xowaloxat | 50. talko-tal-pacem |
| 7. sebaita, serpateta | |



Southwestern Pomo (Dixon and Kroeber, 1907, p. 676)

- | | |
|------------|------------------------|
| 1. ku | 9. tcatco |
| 2. ko | 10. tca-coto |
| 3. sibo | 15. si-hma-tek |
| 4. mitca | 20. tca-hma |
| 5. tuco | 50. coto-hma |
| 6. lan'tca | 100. ko-hai-tcacoto-ko |
| 7. lau'-ko | 200. ko-hai-tcahma-ko |
| 8. komtca | |

Southern Pomo (Dixon and Kroeber, 1907, p. 676)

- | | |
|------------|------------------|
| 1. t'ca | 9. tcatco |
| 2. ako | 10. tca-cuto |
| 3. misibo | 15. si-hma-tik |
| 4. mi'tca | 20. tca-hma-tik |
| 5. tuco | 50. tuco-hai |
| 6. lan-tca | 100. tcacuto-hai |
| 7. lat-ko | 200. ako-hai |
| 8. komtca | |

Northeastern Pomo (Dixon and Kroeber, 1907, p. 676)

- | | |
|--------------|------------------|
| 1. tcaki | 6. tca-deika |
| 2. kon | 7. tcumalan |
| 3. kutc'aka | 8. cehawi-tca |
| 4. kalkoton | 9. na'kata |
| 5. tc'a-ucon | 10. celawi-tcaki |

Northwestern State - Illinois and Snyder, 1901, p. 575

1. ...	1. ...
2. ...	2. ...
3. ...	3. ...
4. ...	4. ...
5. ...	5. ...
6. ...	6. ...
7. ...	7. ...
8. ...	8. ...
9. ...	9. ...
10. ...	10. ...

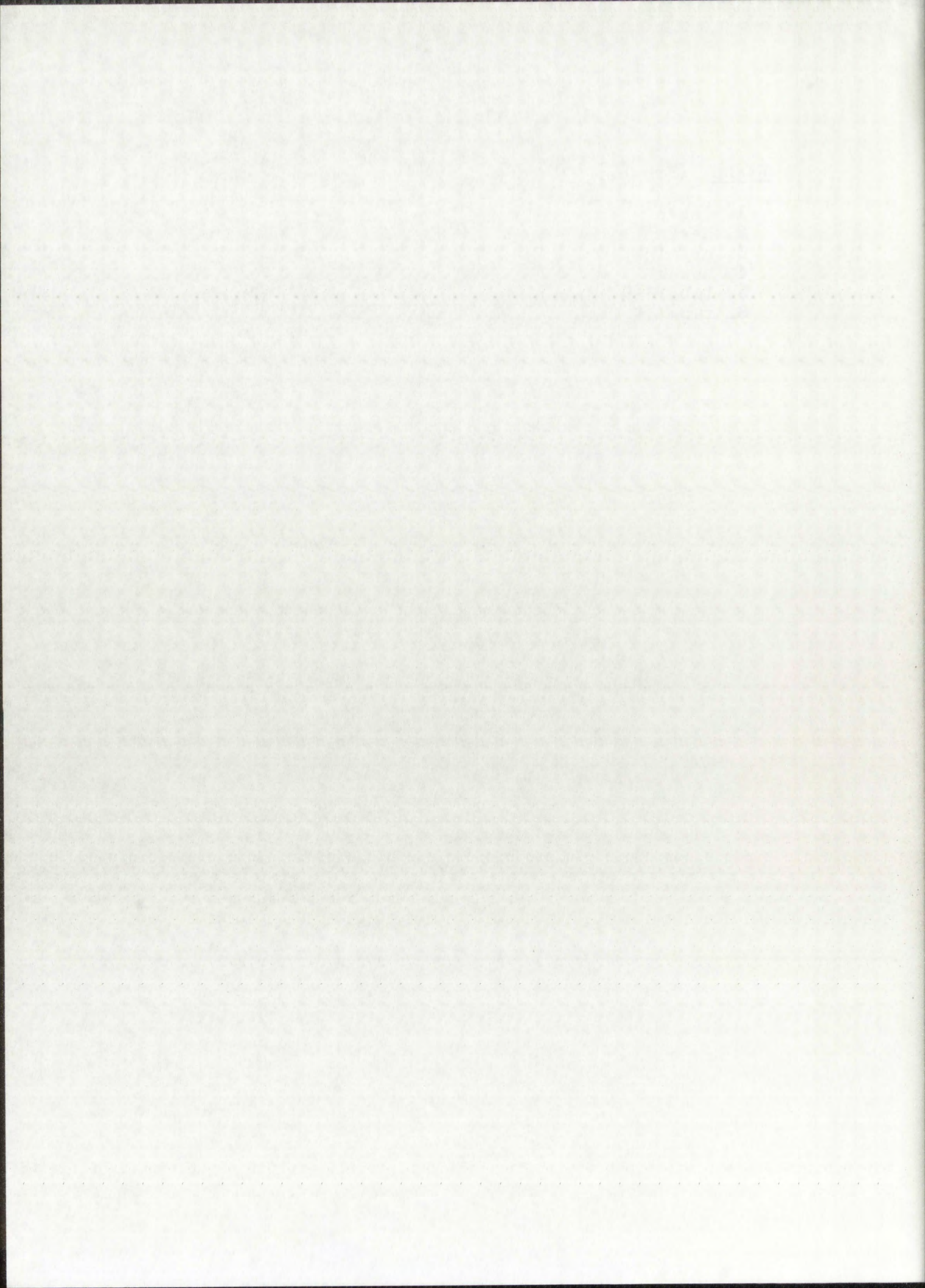
Northwestern State - Illinois and Snyder, 1901, p. 576

1. ...	1. ...
2. ...	2. ...
3. ...	3. ...
4. ...	4. ...
5. ...	5. ...
6. ...	6. ...
7. ...	7. ...
8. ...	8. ...
9. ...	9. ...
10. ...	10. ...

WASHO

Washo (Kroeber, 1907 c, p. 299)

- | | |
|----------------|------------------------------|
| 1. lak'a | 7. tubaldE heskeñ |
| 2. heskeñ | 8. hawāawa |
| 3. helmiñ | 9. tubaldi ida hawa |
| 4. hawa | 10. lak'a mütsumi |
| 5. tubaldiñ | 12. lak'a mütsumi 'da heskeñ |
| 6. tubaldE lak | 100. la'mütsumi' mütsumi |



ESSELEN

Esselen (Duflot de Mofras as cited in Kroeber, 1904, p. 51)

- | | |
|-------------|----------------|
| 1. pek | 6. pegualanai |
| 2. oulhaj | 7. kulakulanai |
| 3. koulep | 8. kounailepla |
| 4. kamakous | 9. kakouslanai |
| 5. pemakala | 10. tomoila |

Esselen (Kroeber, 1904, p. 61-62)

- | | |
|----------------|--|
| 1. pek | 7. xulax-walanai |
| 2. xulax | 8. xulep-walanai |
| 3. xulep | 9. xamaxus-walanai or
xamax-walanai |
| 4. xamaxus | 10. tomoila |
| 5. pemaxala | 11. pek-kelenai |
| 6. pek-walanai | 12. xulax-kelenai |

Section: Index of Names as listed in Report, 1950

1. [Name]	1. [Name]
2. [Name]	2. [Name]
3. [Name]	3. [Name]
4. [Name]	4. [Name]
5. [Name]	5. [Name]
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8. [Name]	8. [Name]
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10. [Name]	10. [Name]

Section: Index of Names, 1951-1952

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3. [Name]	3. [Name]
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5. [Name]	5. [Name]
6. [Name]	6. [Name]
7. [Name]	7. [Name]
8. [Name]	8. [Name]
9. [Name]	9. [Name]
10. [Name]	10. [Name]

SALINAN GROUP

San Antonio (Dixon and Kroeber, 1907, p. 683)

- | | |
|------------|-----------------------|
| 1. ki-tol | 9. teta-tsol |
| 2. kakice | 10. tsoe |
| 3. Lapai | 11. tso-sok-tol |
| 4. ki-ca | 12. Lapai-kca |
| 5. ult-ao | 13. Lapaikca-t-ek-tol |
| 6. pai-nel | 14. wococo |
| 7. te | 15. Lapai-ult-ao |
| 8. ca-nel | 16. kpec |

San Antonio (J. A. Mason, 1912, p. 134)

- | | |
|-------------|------------------------|
| 1. t'ol | 7. te' |
| 2. ka'k'cu | 8. caa'neL |
| 3. kLa'pai | 9. te'tet'o'e |
| 4. k'i'ca' | 10. t'o'e |
| 5. o/Lt'au | 11. t'o'e-ta'x-t'oL |
| 6. paya'neL | 12. t'o'e-ta'x-ka'k'cu |

San Miguel (J. A. Mason, 1912, p. 134)

- | | |
|------------|-----------------|
| 1. toix | 6. paya'teL |
| 2. ka'kec | 7. t'e'p |
| 3. La'paiL | 8. ca't'eL |
| 4. ke'ca' | 9. te'tet'o'paL |
| 5. olta'to | 10. t'o'paL |



CHUMASH GROUP

San Luis Obispo (Hale as cited in Kroeber, 1910,
p. 265)

- | | |
|----------------------|---------------------------|
| 1. tsxumu, tcumu | 7. ksua nice |
| 2. ecin | 8. ckomo |
| 3. mica | 9. cumo-tcimaxe, skumotci |
| 4. paksi | 10. tuyimili |
| 5. tiyewi | 11. tiwapa |
| 6. ksua sya, ksukuya | |

Santa Ynez (Kroeber, 1910, p. 265)

- | | |
|--------------|--------------|
| 1. paka | 7. yitimasöx |
| 2. ickom | 8. malawa |
| 3. masöx | 9. tspa |
| 4. ckumu | 10. tciya |
| 5. yitipakas | 11. telu |
| 6. yitickom | |

Santa Barbara (Hale, Loew, and Portola as cited in
Kroeber, 1910, p. 265)

- | | |
|--------------|----------------------|
| 1. paka | 7. yitimasex |
| 2. ickomo | 8. malawa |
| 3. masex | 9. tspa |
| 4. ckumu | 10. kel-ckomo, kecko |
| 5. yitipaka | 11. tulu, keilu |
| 6. yitickomo | |

San Buenventura (Kroeber, 1910, p. 265)

- | | |
|--------------|--------------|
| 1. paket | 6. yitickom |
| 2. ickom | 7. yitimasöx |
| 3. masöx | 8. malawa |
| 4. ckumu | 9. tspa |
| 5. yitipaket | 10. kackom |

Santa Cruz Island (Limmeno as cited in Kroeber, 1910,
p. 265)

- | | |
|--------------|-------------|
| 1. ismala | 7. sitmasex |
| 2. ictcum | 8. malawa |
| 3. masex | 9. spa |
| 4. ckumu | 10. kackum |
| 5. sitisma | 11. telu |
| 6. sitictcum | |

GENERAL INDEX

San Juan Islands - 1890-1891

- 1. San Juan
- 2. San Pedro
- 3. San Carlos
- 4. San Miguel
- 5. San Francisco
- 6. San Juan
- 7. San Pedro
- 8. San Carlos
- 9. San Miguel
- 10. San Francisco

San Juan Islands - 1892-1893

- 1. San Juan
- 2. San Pedro
- 3. San Carlos
- 4. San Miguel
- 5. San Francisco
- 6. San Juan
- 7. San Pedro
- 8. San Carlos
- 9. San Miguel
- 10. San Francisco

San Juan Islands - 1894-1895

- 1. San Juan
- 2. San Pedro
- 3. San Carlos
- 4. San Miguel
- 5. San Francisco
- 6. San Juan
- 7. San Pedro
- 8. San Carlos
- 9. San Miguel
- 10. San Francisco

San Juan Islands - 1896-1897

- 1. San Juan
- 2. San Pedro
- 3. San Carlos
- 4. San Miguel
- 5. San Francisco
- 6. San Juan
- 7. San Pedro
- 8. San Carlos
- 9. San Miguel
- 10. San Francisco

San Juan Islands - 1898-1899

- 1. San Juan
- 2. San Pedro
- 3. San Carlos
- 4. San Miguel
- 5. San Francisco
- 6. San Juan
- 7. San Pedro
- 8. San Carlos
- 9. San Miguel
- 10. San Francisco

YUMAN FAMILY

Diegueño (Wheeler Survey as cited in Dixon and Kroeber, 1907, p. 683)

- | | |
|----------------|-----------------------|
| 1. khink | 8. niok-hamuk |
| 2. oak | 9. ni-tchibab |
| 3. hamok | 10. selgh-iamat |
| 4. tchibabk | 11. nie-khin |
| 5. selkh-akai | 12. niekhvab gushbaib |
| 6. niu-gushbai | 20. selgh-hoak |
| 7. niok-hoak | |

Kamia (Gifford, 1931, p. 64)

- | | |
|----------------------|-----------------------------------|
| 1. shit | 10. sahum |
| 2. wok | 11. maishit |
| 3. muk | 12. maiwok |
| 4. ^s baup | 13. maikamuk |
| 5. tarup | 14. maisbaup |
| 6. kumpuk | 20. sahum ^a wok |
| 7. ^u akai | 21. sahum ^a wokmaishit |
| 8. uk | 30. sahum ^a muk |
| 9. imkamuk | 100. sahumkasahum |

Yuma (Curtis, vol. 2, 1908, p. 127)

- | | |
|---------------|----------------------------|
| 1. ar-sén-tík | 9. hom-ha-mók |
| 2. ha-vík | 10. sa-hók |
| 3. ha-mók | 11. sa-hók maik ar-sén-tík |
| 4. chüm-póp | 15. sa-hók maik sar-ráp |
| 5. sar-ráp | 20. sa-hók a ha-vík |
| 6. hom-hók | 50. sa-hók a sar-ráp |
| 7. pa-kyék | 100. sa-hók a sa-hók |
| 8. si-pók | |

Mohave (Curtis, vol. 2, 1908, p. 126)

- | | |
|-------------------------|--|
| 1. ar-sén-tík | 10. tha-ráp ^k -ha-vík |
| 2. ha-vík | 11. tha-ráp ^k -havík ar-sén-tík |
| 3. ha-mók | |
| 4. chüm-póp | 15. havík tha-ráp ^k ni-thók |
| 5. tha-ráp ^k | 20. tě-kū-thó-cha ha-vík |
| 6. máik ar-sén-tík | 50. tě-kū-thó-cha tha-ráp ^k |
| 7. máik-a ha-vík-a | 100. tě-kū-thó-cha tha-ráp ^k ha-vík |
| 8. máik-a ha-mók-a | |
| 9. ha-la-thú-yě | |

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11-11-20

WINTUN DIALECTS

Wintu (Du Bois, 1935, p. 70)

- | | |
|-------------|------------------|
| 1. k'etem | 7. lolokit |
| 2. palal | 8. setlawi |
| 3. panuL | 9. ketemles |
| 4. tlawi | 10. tikles |
| 5. tcanse | 11. k'ete klomit |
| 6. serpanuL | |

Southern (Cache Creek) Wintun (Dixon and Kroeber, 1907, p. 675)

- | | |
|---------------|-----------------------|
| 1. ete-ta | 7. serp-uteta |
| 2. pampu-ta | 8. pan-emusta |
| 3. punul-ta | 9. pan-emus-teta |
| 4. emus-ta | 10. pampa-sem-ta |
| 5. ete-sem-ta | 50. etesem-pampusemta |
| 6. ser-pul-ta | |

Southern Patwin (Dixon and Kroeber, 1907, p. 675).

- | | |
|----------------|--------------------|
| 1. ete-ta | 8. pan-emux-ta |
| 2. pampa-ta | 9. panem-ete-ta |
| 3. punul-ta | 10. pampa-sem-ta |
| 4. emus-ta | 20. ete-kai |
| 5. ete-sem-ta | 50. Lematin-poshai |
| 6. sere-puh-ta | 100. etesemkai |
| 7. serp-ete-ta | |

Central Wintun (Dixon and Kroeber, 1907, p. 675)

- | | |
|-------------|----------------|
| 1. ketet | 7. tcumih |
| 2. palel | 8. tse-Lawit |
| 3. panoh | 9. cema-ketet |
| 4. Lawit | 10. cema |
| 5. tcancem | 20. ketet-tcak |
| 6. se-panoh | |

Northern Wintun (Dixon and Kroeber, 1907, p. 675)

- | | |
|---------------|--------------------|
| 1. ketem | 8. se-Lawi |
| 2. palet | 9. ketem-ilis |
| 3. panoh | 10. tiqelis |
| 4. Lawi | 20. kete-wintun |
| 5. tsanssem | 50. tsanse-tiqelis |
| 6. sere-panoh | 100. kete semhanot |
| 7. loloqi | 200. pal semhanot |

THE NEW DICTIONARY

Winnipeg, Manitoba, 1907

1. Winnipeg	1. Winnipeg
2. Winnipeg	2. Winnipeg
3. Winnipeg	3. Winnipeg
4. Winnipeg	4. Winnipeg
5. Winnipeg	5. Winnipeg
6. Winnipeg	6. Winnipeg
7. Winnipeg	7. Winnipeg
8. Winnipeg	8. Winnipeg
9. Winnipeg	9. Winnipeg
10. Winnipeg	10. Winnipeg

Winnipeg, Manitoba, 1907

1. Winnipeg	1. Winnipeg
2. Winnipeg	2. Winnipeg
3. Winnipeg	3. Winnipeg
4. Winnipeg	4. Winnipeg
5. Winnipeg	5. Winnipeg
6. Winnipeg	6. Winnipeg
7. Winnipeg	7. Winnipeg
8. Winnipeg	8. Winnipeg
9. Winnipeg	9. Winnipeg
10. Winnipeg	10. Winnipeg

Winnipeg, Manitoba, 1907

1. Winnipeg	1. Winnipeg
2. Winnipeg	2. Winnipeg
3. Winnipeg	3. Winnipeg
4. Winnipeg	4. Winnipeg
5. Winnipeg	5. Winnipeg
6. Winnipeg	6. Winnipeg
7. Winnipeg	7. Winnipeg
8. Winnipeg	8. Winnipeg
9. Winnipeg	9. Winnipeg
10. Winnipeg	10. Winnipeg

Winnipeg, Manitoba, 1907

1. Winnipeg	1. Winnipeg
2. Winnipeg	2. Winnipeg
3. Winnipeg	3. Winnipeg
4. Winnipeg	4. Winnipeg
5. Winnipeg	5. Winnipeg
6. Winnipeg	6. Winnipeg
7. Winnipeg	7. Winnipeg
8. Winnipeg	8. Winnipeg
9. Winnipeg	9. Winnipeg
10. Winnipeg	10. Winnipeg

Winnipeg, Manitoba, 1907

1. Winnipeg	1. Winnipeg
2. Winnipeg	2. Winnipeg
3. Winnipeg	3. Winnipeg
4. Winnipeg	4. Winnipeg
5. Winnipeg	5. Winnipeg
6. Winnipeg	6. Winnipeg
7. Winnipeg	7. Winnipeg
8. Winnipeg	8. Winnipeg
9. Winnipeg	9. Winnipeg
10. Winnipeg	10. Winnipeg

MAIDU DIALECTS

Northwestern, Konkau (Dixon and Kroeber, 1907, p. 679)

- | | |
|----------------|------------------------|
| 1. wikte | 8. tsöye-tsoko |
| 2. pene | 9. tsöye-ni-masoko |
| 3. sapu | 10. ma-tsoko |
| 4. tsöye | 15. hiwali |
| 5. ma-tsani | 20. maidu-k-wökö |
| 6. sai-tsoko | 50. matsok-ni sapwi-ma |
| 7. matsan-pene | 100. matseni-ma |

Northwestern, Mooretown (Dixon and Kroeber, 1907, p. 679)

- | | |
|--------------|----------------------|
| 1. wikte | 7. topwi |
| 2. pene | 8. pen-tcoi |
| 3. sapwi | 9. peliom |
| 4. tsöye | 10. ma-tsoko |
| 5. ma-wika | 15. matsokom mawikom |
| 6. sai-tsoko | 20. penim nokom |

Northeastern, Genesee (Dixon and Kroeber, 1907, p. 679)

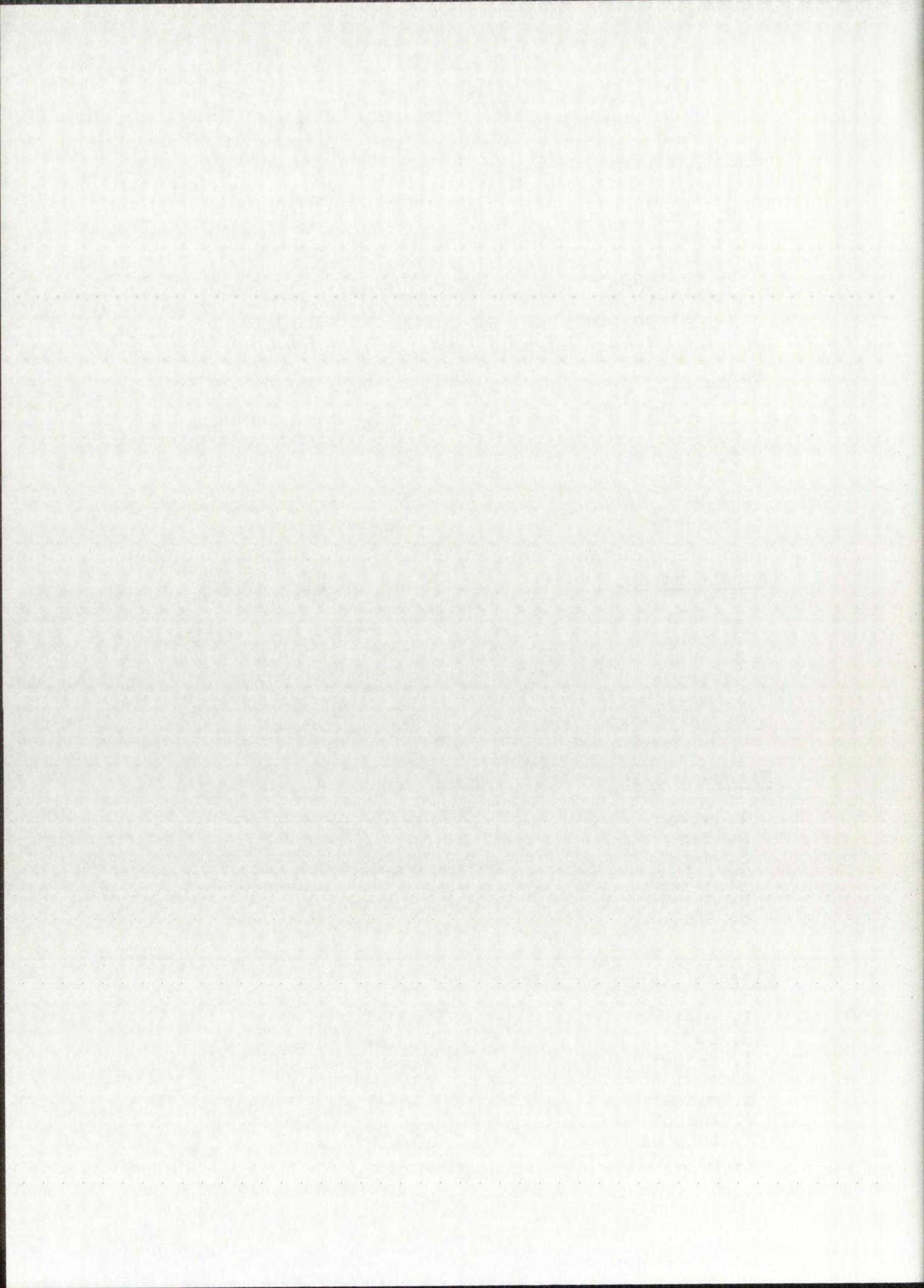
- | | |
|--------------|----------------------|
| 1. suti | 7. topwi |
| 2. pene | 8. pen-tcöi |
| 3. sapu | 9. peliom |
| 4. tsöye | 10. ma-tsoko |
| 5. ma-wika | 15. masok-na mawikem |
| 6. sai-tsoko | 20. penem masoko |

Nisenan, Spanish Flat (Dixon and Kroeber, 1907, p. 679)

- | | |
|-----------|----------------|
| 1. wite | 7. topwi |
| 2. pen | 8. pen-tcöi |
| 3. sapwi | 9. pen-lio |
| 4. tsöye | 10. ma-tsani |
| 5. ma-wik | 15. hiwal |
| 6. tombo | 20. kom maiduk |

Nisenan (Kroeber, 1929, p. 289)

- | | |
|-----------------------|---------------------|
| 1. wükte' | 9. pe'l'io' |
| 2. pe ^h | 10. ma' tcam |
| 3. sa'pwi | 11. ho'woto' |
| 4. tcüi | 12. pe'noto' |
| 5. ma'wu ^k | 15. hi'w'al |
| 6. túmbo' | 20. wüktem ma'idük |
| 7. to'p'ui | 50. la'wik ma' tcam |
| 8. pe'ntcui | |



MIWOK

Plains (Dixon and Kroeber, 1907, p. 680)

- | | |
|-----------|------------|
| 1. kenatü | 6. temepu |
| 2. oyoko | 7. kenekak |
| 3. teloko | 8. kawinta |
| 4. oiceko | 9. woe |
| 5. kacoko | 10. ekuke |

Amador (Dixon and Kroeber, 1907, p. 680)

- | | |
|-------------------------|-----------------|
| 1. luti | 9. wo'e |
| 2. otiko | 10. naatca |
| 3. tolokocu | 15. yuali |
| 4. oyisa | 20. naa |
| 5. macoka | 50. otikmama |
| 6. temoka | tomeakü naatcai |
| 7. kenekak ^u | 100. macok-mumu |
| 8. kawinta | |

Tuolumne (Dixon and Kroeber, 1907, p. 680)

- | | |
|-------------------------|-----------------|
| 1. kene | 9. woe |
| 2. otiko | 10. naatca |
| 3. tolokocu | 15. yuali |
| 4. oyisa | 20. naa |
| 5. macoka | 50. otikmumu |
| 6. temoka | naatca heyi |
| 7. kenekak ^u | 100. macok-mumu |
| 8. kawinta | |

Coast, Western and Southern (Dixon and Kroeber, 1907, p. 680)

- | | |
|-------------|--------------------|
| 1. kene | 8. osuya |
| 2. osa | 9. tunutas |
| 3. teleka | 10. kitsis |
| 4. huya | 20. osa-gitcis |
| 5. kenekus | 50. keneku-gitcis |
| 6. patcitak | 100. gitcis gitcis |
| 7. semlawi | |

Coast, Northern (Dixon and Kroeber, 1907, p. 680)

- | | |
|-------------|---------------------|
| 1. kene | 7. semlawi |
| 2. ota | 8. otaya |
| 3. teleka | 9. kenen-helak |
| 4. otota | 10. ukukutsi |
| 5. kedeko | 20. ota-tumai |
| 6. patsadat | 100. ukukutsi-tomai |

INDEX

Section 1: [Illegible Title]

- 1. [Illegible]
- 2. [Illegible]
- 3. [Illegible]
- 4. [Illegible]
- 5. [Illegible]

Section 2: [Illegible Title]

- 1. [Illegible]
- 2. [Illegible]
- 3. [Illegible]
- 4. [Illegible]
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- 7. [Illegible]
- 8. [Illegible]

Section 3: [Illegible Title]

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- 2. [Illegible]
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- 4. [Illegible]
- 5. [Illegible]
- 6. [Illegible]
- 7. [Illegible]
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Section 4: [Illegible Title]

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- 3. [Illegible]
- 4. [Illegible]
- 5. [Illegible]
- 6. [Illegible]
- 7. [Illegible]
- 8. [Illegible]

Section 5: [Illegible Title]

- 1. [Illegible]
- 2. [Illegible]
- 3. [Illegible]
- 4. [Illegible]
- 5. [Illegible]

COSTANOAN

Santa Clara (Mengarini as cited in Kroeber, 1910,
p. 248)

- | | |
|-----------|-------------|
| 1. emxem | 6. caken |
| 2. utin | 7. kenetc |
| 3. kapan | 8. osatis |
| 4. katoac | 9. telektic |
| 5. micur | 10. wec |

Santa Cruz (Cornelias as cited in Kroeber, 1910,
p. 248)

- | | |
|-----------|-------------|
| 1. empetc | 6. saken |
| 2. uthin | 7. tupuituk |
| 3. kaphan | 8. usatis |
| 4. katuac | 9. neuku |
| 5. micur | 10. iec |

San Juan Bautista (de la Cuesta as cited in Kroeber,
1910, p. 248)

- | | |
|--------------------|--------------|
| 1. emetca, hemetca | 6. makitci |
| 2. ut-xin | 7. t'akitci |
| 3. kapxan | 8. taitimin |
| 4. ut-it, karwas | 9. paki |
| 5. parwe | 10. tansakte |

Mutsun (J. A. Mason, 1916, p. 439)

- | | |
|------------------------------------|---------------------------------|
| 1. emet̄tca, emet̄ka,
hemet̄tca | 6. nakitci |
| 2. ut̄xin, ust̄xin | 7. takitci |
| 3. kapxan | 8. taitimin |
| 4. usit, ut̄it | 9. watsu, pak-i |
| 5. parues, parnes | 10. tanat̄, tansa-kte,
matsu |

Monterey (Kroeber and A. Taylor as cited in Kroeber,
1910, p. 489)

- | | |
|------------|------------------|
| 1. imxala | 6. hale-caken |
| 2. utis | 7. utxomai-caken |
| 3. kapes | 8. hapxa-is-cak |
| 4. utitim | 9. pak |
| 5. hale-is | 10. tantsa |

CONTENTS

James Earl Ray (born 1928, died 1999)

- | | |
|--|--------------|
| 1. Birth | 1. 1928 |
| 2. Early life | 2. 1930-1940 |
| 3. Military service | 3. 1946-1950 |
| 4. Post-war activities | 4. 1950-1959 |
| 5. Move to London | 5. 1959-1960 |
| 6. Meeting with Eric Starvo Galt | 6. 1960-1961 |
| 7. Assassination of Dr. Martin Luther King Jr. | 7. 1968 |
| 8. Arrest and conviction | 8. 1969 |
| 9. Imprisonment | 9. 1969-1999 |
| 10. Death | 10. 1999 |

James Earl Ray (born 1928, died 1999)

- | | |
|--|--------------|
| 1. Birth | 1. 1928 |
| 2. Early life | 2. 1930-1940 |
| 3. Military service | 3. 1946-1950 |
| 4. Post-war activities | 4. 1950-1959 |
| 5. Move to London | 5. 1959-1960 |
| 6. Meeting with Eric Starvo Galt | 6. 1960-1961 |
| 7. Assassination of Dr. Martin Luther King Jr. | 7. 1968 |
| 8. Arrest and conviction | 8. 1969 |
| 9. Imprisonment | 9. 1969-1999 |
| 10. Death | 10. 1999 |

James Earl Ray (born 1928, died 1999)

- | | |
|--|--------------|
| 1. Birth | 1. 1928 |
| 2. Early life | 2. 1930-1940 |
| 3. Military service | 3. 1946-1950 |
| 4. Post-war activities | 4. 1950-1959 |
| 5. Move to London | 5. 1959-1960 |
| 6. Meeting with Eric Starvo Galt | 6. 1960-1961 |
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| 9. Imprisonment | 9. 1969-1999 |
| 10. Death | 10. 1999 |

James Earl Ray (born 1928, died 1999)

- | | |
|--|--------------|
| 1. Birth | 1. 1928 |
| 2. Early life | 2. 1930-1940 |
| 3. Military service | 3. 1946-1950 |
| 4. Post-war activities | 4. 1950-1959 |
| 5. Move to London | 5. 1959-1960 |
| 6. Meeting with Eric Starvo Galt | 6. 1960-1961 |
| 7. Assassination of Dr. Martin Luther King Jr. | 7. 1968 |
| 8. Arrest and conviction | 8. 1969 |
| 9. Imprisonment | 9. 1969-1999 |
| 10. Death | 10. 1999 |

James Earl Ray (born 1928, died 1999)

- | | |
|--|--------------|
| 1. Birth | 1. 1928 |
| 2. Early life | 2. 1930-1940 |
| 3. Military service | 3. 1946-1950 |
| 4. Post-war activities | 4. 1950-1959 |
| 5. Move to London | 5. 1959-1960 |
| 6. Meeting with Eric Starvo Galt | 6. 1960-1961 |
| 7. Assassination of Dr. Martin Luther King Jr. | 7. 1968 |
| 8. Arrest and conviction | 8. 1969 |
| 9. Imprisonment | 9. 1969-1999 |
| 10. Death | 10. 1999 |

Rumsen, Carmel Mission (Kroeber, 1904, p. 76)

- | | |
|-------------|-----------------|
| 1. imxala | 6. halecaken |
| 2. ut'is | 7. utxomaicaken |
| 3. kapes | 8. kapxaiscak |
| 4. uut'itim | 9. pak |
| 5. haleis | 10. tautsa |

Soledad (Hale as cited in Kroeber, 1910, p. 248)

- | | |
|------------|--------------|
| 1. himitsa | 6. imin-ukca |
| 2. utshe | 7. ut-ukca |
| 3. kapxa | 8. taitemi |
| 4. utcit | 9. watso |
| 5. parwac | 10. matsoso |

San Jose (Kroeber, 1910, p. 248)

- | | |
|-----------|-----------|
| 1. himen | 4. katwac |
| 2. utsin | 5. micur |
| 3. kaphan | 6. saken |

1. J. J. ...
2. ...
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6. ...
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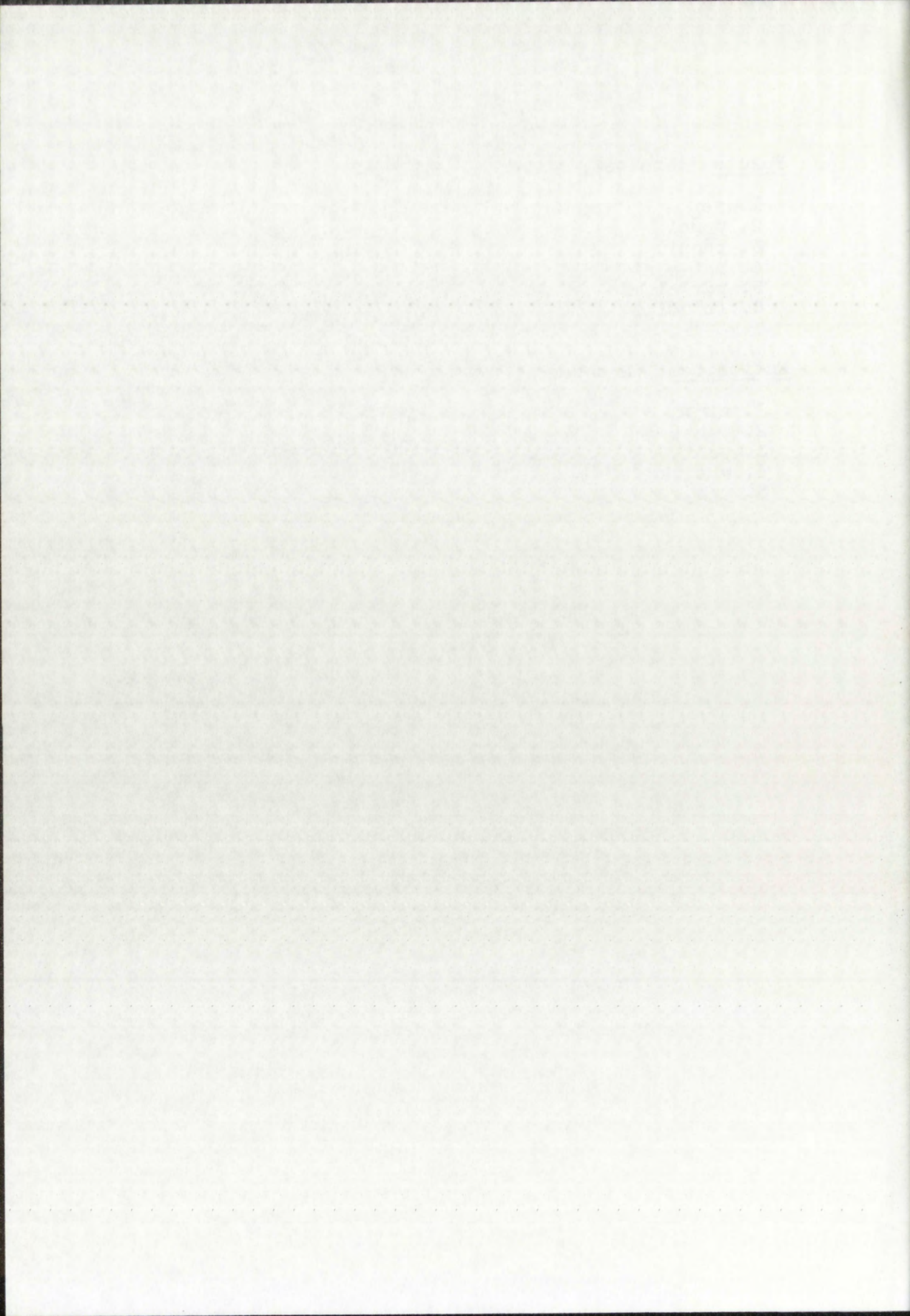
YOKUTS

Yokuts (Kroeber, 1907d, p. 231)

- | | |
|--------------|----------------|
| 1. yet | 7. nomtcin |
| 2. poñoi | 8. mu' noc |
| 3. cōopiu | 9. nōnip |
| 4. hat-paṅi | 10. t-ieu |
| 5. yūt-cinut | 11. yetc-am |
| 6. tc'udipi | 100. yet pitc' |

Entimbitch (Kroeber, 1907a, p. 71)

- | | |
|------------|------------|
| 1. cimū | 6. nāpai |
| 2. wahaī | 7. dātciwi |
| 3. paḥi | 8. wōcui |
| 4. watsikw | 9. wanūk |
| 5. manūk | 10. cīwanü |



LUISEÑO-CAHUILLA GROUP

Luiseno (Kroeber, 1907a, p. 71)

- | | |
|----------|----------|
| 1. supul | 4. wasa |
| 2. we' | 5. mahar |
| 3. pahai | |

Cahuilla (Kroeber, 1907a, p. 71)

- | | |
|----------------|------------------|
| 1. supli | 6. kwanama-supli |
| 2. wi' | 7. kwana-mawi |
| 3. pa' | 8. pitaba |
| 4. witcu | 9. dawitcu |
| 5. nama-kwanon | 10. namitcumi |

Cahuilla (Kroeber, 1909a, p. 237)

- | | |
|---------------------------|----------------------|
| 5. namu-qwan-añ | 11. peta-supli |
| 6. qwan-supli | 12. peta-wi' |
| 7. qon-wi' | 16. peta-qwan-supli. |
| 8. qon-pa' | 20. wis namitcumi |
| 9. qon-witcu, qon-witciw' | 30. pas namitcumi |



GABRIELINO GROUP

Fernandeño (Kroeber, 1907a, p. 71)

- | | |
|-----------|-----------------------------|
| 1. puku' | 6. pabahi |
| 2. wehe' | 7. kutsaka- ^v ya |
| 3. pahai | 8. wèswetsa |
| 4. watsa' | 9. mākōuö |
| 5. maha'r | 10. wehesmahar |

Gabrielino (Kroeber, 1907a, p. 71)

- | | |
|-----------|---------------------------|
| 1. puku' | 6. pabahi (?) |
| 2. wehe' | 7. pukubai ^v i |
| 3. pahí | 8. wehebai ^v a |
| 4. watca' | 9. baic |
| 5. maha'r | 10. wehecmahar |

RESEARCH GROUP

RESEARCH GROUP

RESEARCH GROUP

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1. ...
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RESEARCH GROUP

RESEARCH GROUP

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4. ...
5. ...

SERRANO GROUP

Gitanemuk (Kroeber, 1907a, p. 71)

- | | |
|-----------|----------------|
| 1. haukup | 6. pabahi |
| 2. wo | 7. gwatska-wik |
| 3. bahi | 8. wa'watsa |
| 4. watsa | 9. makawik |
| 5. mahatc | 10. we'mahadj |

Mohineyam (Kroeber, 1907a, p. 71)

- | | |
|-----------|-----------|
| 1. haukup | 4. wadja |
| 2. wahi | 5. mahatc |
| 3. bahi | |

Serrano (Kroeber, 1909a, p. 254)

- | | |
|---------------|--------------------|
| 1. haukup | 8. wa'wutc |
| 2. wor | 9. ma'ku'ik |
| 3. pahí | 10. war-maha'tc |
| 4. watca | 11. pupa haupk |
| 5. maha'tc | 12. pupa wör |
| 6. pa'ahai | 20. wöhö wörmahatc |
| 7. watc'ku'ik | 30. pahí wörmahatc |

GENERAL INDEX

Alphabetical Index, 1907, p. 11

1. ...	2. ...
3. ...	4. ...
5. ...	6. ...
7. ...	8. ...
9. ...	10. ...

Alphabetical Index, 1908, p. 12

1. ...	2. ...
3. ...	4. ...
5. ...	6. ...

Alphabetical Index, 1909, p. 13

1. ...	2. ...
3. ...	4. ...
5. ...	6. ...
7. ...	8. ...
9. ...	10. ...
11. ...	12. ...
13. ...	14. ...
15. ...	16. ...
17. ...	18. ...
19. ...	20. ...
21. ...	22. ...
23. ...	24. ...
25. ...	26. ...
27. ...	28. ...
29. ...	30. ...

UTE-CHEMEHUEVI GROUP

Chemehuevi (Kroeber, 1907a, p. 71)

- | | |
|----------------------|----------------------|
| 1. cuy' | 6. na ^v a |
| 2. waix | 7. mukwic |
| 3. pai | 8. nats |
| 4. watc ^w | 9. yuwip' |
| 5. manöx | 10. maciu |

Kawaiisu (Kroeber, 1907a, p. 71)

- | | |
|-----------|----------------------------|
| 1. cui | 6. na ^v ahai |
| 2. waihai | 7. nòmats |
| 3. pehei | 8. nansu ^v tsui |
| 4. watsui | 9. cūkumac |
| 5. munugi | 10. mōmaciu |

Agua Caliente (Kroeber, 1907a, p. 71)

- | | |
|-------------|-------------------|
| 1. suplawat | 4. witcu |
| 2. wi' | 5. anañax namaqwe |
| 3. pa' | 10. namadulwanut |

THE CHURCH OF THE

MEMBERSHIP LIST (1970-1971)

1. Mrs. J. H. Smith	1. Mrs. J. H. Smith
2. Mr. J. H. Smith	2. Mr. J. H. Smith
3. Mrs. J. H. Smith	3. Mrs. J. H. Smith
4. Mr. J. H. Smith	4. Mr. J. H. Smith
5. Mrs. J. H. Smith	5. Mrs. J. H. Smith
6. Mr. J. H. Smith	6. Mr. J. H. Smith
7. Mrs. J. H. Smith	7. Mrs. J. H. Smith
8. Mr. J. H. Smith	8. Mr. J. H. Smith
9. Mrs. J. H. Smith	9. Mrs. J. H. Smith
10. Mr. J. H. Smith	10. Mr. J. H. Smith

MEMBERSHIP LIST (1971-1972)

1. Mrs. J. H. Smith	1. Mrs. J. H. Smith
2. Mr. J. H. Smith	2. Mr. J. H. Smith
3. Mrs. J. H. Smith	3. Mrs. J. H. Smith
4. Mr. J. H. Smith	4. Mr. J. H. Smith
5. Mrs. J. H. Smith	5. Mrs. J. H. Smith
6. Mr. J. H. Smith	6. Mr. J. H. Smith
7. Mrs. J. H. Smith	7. Mrs. J. H. Smith
8. Mr. J. H. Smith	8. Mr. J. H. Smith
9. Mrs. J. H. Smith	9. Mrs. J. H. Smith
10. Mr. J. H. Smith	10. Mr. J. H. Smith

MEMBERSHIP LIST (1972-1973)

1. Mrs. J. H. Smith	1. Mrs. J. H. Smith
2. Mr. J. H. Smith	2. Mr. J. H. Smith
3. Mrs. J. H. Smith	3. Mrs. J. H. Smith
4. Mr. J. H. Smith	4. Mr. J. H. Smith
5. Mrs. J. H. Smith	5. Mrs. J. H. Smith
6. Mr. J. H. Smith	6. Mr. J. H. Smith
7. Mrs. J. H. Smith	7. Mrs. J. H. Smith
8. Mr. J. H. Smith	8. Mr. J. H. Smith
9. Mrs. J. H. Smith	9. Mrs. J. H. Smith
10. Mr. J. H. Smith	10. Mr. J. H. Smith

MONO-BANNOCK GROUP

Mono, Northfork (Kroeber, 1907a, p. 71)

- | | |
|---------------|------------------------|
| 1. cimú | 6. na ^v ahi |
| 2. waha-t | 7. datsiwi |
| 3. pahi | 8. wociwi |
| 4. watsikwi-t | 9. gwanigi-t |
| 5. maniki | 10. ciwano-t |

Mono, Inyo (Kroeber, 1907a, p. 71)

- | | |
|-------------------------|-----------------------|
| 1. ciwi | 6. na ^v ai |
| 2. wahi | 7. tatsiwi |
| 3. pahi | 8. wociwi |
| 4. watsin ^{wi} | 9. wanūki |
| 5. manōgi | 10. cōwano |

Northern Paiute, Paviotso (Steward, 1938, p. 274)

- | | |
|--------------------------|--------------|
| 1. sūmū ^{'u} | 6. na':wai |
| 2. wahi' | 7. ta'tsui |
| 3. pahi' | 8. wa'sūi |
| 4. watsin ^{'wu} | 9. kwanu'k' |
| 5. manū'gi | 10. su':wano |

Bannock (Steward, 1938, p. 274)

- | | |
|--------------|----------------------------------|
| 1. sūwū'yu | 6. na':paihi ^{'u} |
| 2. wahi'yu | 7. nata'kwatsu-kwi ^{'u} |
| 3. pahi'yu | 8. nai'watsukwi ^{'u} |
| 4. watsū'kwi | 9. suwo'kodoop |
| 5. manū'gi | 10. su'uwanoyu |

Surprise Valley Paiute (Kelly, 1932, p. 156)

- | | |
|---------------------------------|------------------------------|
| 1. sūmū'yü | 8. wa'kadao·p, |
| 2. waha'yü | nāmi-watsikwi ^{yü} |
| 3. pahi'yü | 9. sūmū/kadao·p |
| 4. watsi'kwi ^{yü} | 10. sūmū'-mano ^{'u} |
| 5. ma·ni'gi ^{'yü} | 11. sūmū'-maspok |
| 6. na',pahi ^{'yü} | 20. waha'mano |
| 7. nata'kwasikwi ^{'yü} | 100. sūmū-kwa'it |

North Carolina - (1950-1951)

- 1. ...
- 2. ...
- 3. ...
- 4. ...
- 5. ...

North Carolina - (1950-1951)

- 1. ...
- 2. ...
- 3. ...
- 4. ...
- 5. ...

North Carolina - (1950-1951)

- 1. ...
- 2. ...
- 3. ...
- 4. ...
- 5. ...

North Carolina - (1950-1951)

- 1. ...
- 2. ...
- 3. ...
- 4. ...
- 5. ...

North Carolina - (1950-1951)

- 1. ...
- 2. ...
- 3. ...
- 4. ...
- 5. ...

SHOSHONI-COMANCHE GROUP

Panamint (Steward, 1938, p. 274)

- | | |
|---------------|-------------------|
| 1. su'yu | 6. navahai'yu |
| 2. waha'yu | 7. no'' müzi |
| 3. pehe'yu | 8. manüwatsu' |
| 4. watsu'wiyu | 9. su'kumüsa wiyu |
| 5. manügi'yu | 10. mu'musu'iyu |

Shikaviyam (Kroeber, 1907a, p. 71)

- | | |
|---------------|-----------------------|
| 1. cewi-te | 6. nã ^v ai |
| 2. waha-te | 7. datsuwi-du |
| 3. pahi-t | 8. wocuwi-du |
| 4. watsuwi-du | 9. wanöki-t |
| 5. manögi-du | 10. ciwano |

SECRET - CONFIDENTIAL

Reference: [illegible]

- 1. [illegible]
- 2. [illegible]
- 3. [illegible]
- 4. [illegible]
- 5. [illegible]

Reference: [illegible]

- 1. [illegible]
- 2. [illegible]
- 3. [illegible]
- 4. [illegible]
- 5. [illegible]

KERN RIVER BRANCH

Tübatulabal (Kroeber, 1907a, p. 71)

- | | |
|--------------|---------------|
| 1. tciits | 6. napai |
| 2. wo | 7. nomtsin |
| 3. pai | 8. nabuntsiña |
| 4. nanau | 9. laaki |
| 5. mahitsiña | 10. amhaisiña |

Bankalachi (Kroeber, 1907a, p. 71)

- | | |
|-----------|--------------|
| 1. tsiits | 4. nanau |
| 2. wo | 5. mahitsiña |
| 3. pāhi | 6. napai |

NEW RIVER

General Ledger (Arabic) 1900

1. Balance
2. To
3. By
4. Balance

General Ledger (Arabic) 1901

1. Balance
2. To
3. By

CHAPTER V

COUNTING SYSTEMS OF THE SOUTHWEST

The Keresan pueblos all have a pure decimal system.¹ This is evident from the lists of number words on pages 71 and 72. It will be noted that in many cases the words for hundred and thousand have been replaced by the Spanish ciento and mil. Another interesting acculturation note concerns a ceremonial ball game played at Santo Domingo. The young boys call the score in English but the men still use Keres.² The ceremonial numbers are four and seven for all the Keresan pueblos.³ The Hopi, like other Shoshoneans, have a decimal count; above four or five hundred the Hopi concept of numbers is vague.⁴ The Tewa groups also have decimal systems,⁵ including the Hano group who live on First Mesa.⁶ The Tiwa, including Isleta, Isleta del Sur and

1. Spencer, April, 1940, personal communication.

2. Goggin, March 27, 1940, personal communication.

3. L. Spier, "Problems Arising from the Cultural Position of the Havasupai," American Anthropologist, n.s., vol. 31, no. 2, Table I, pp. 213-23, 1929.

4. E. Curtis, The North American Indian, vol. 12, p. 249, 1922.

5. J. P. Harrington, "A Brief Description of the Tewa Language," American Anthropologist, n.s., vol. 12, no. 4, p. 499, 1910.

6. See list of numbers, p. 74.

CONSTITUTIONAL PRINCIPLES OF THE GOVERNMENT

The first part of the chapter discusses the historical development of the government, tracing its roots back to the early colonial period. It highlights the influence of British constitutional principles and the role of the Magna Carta in shaping the American political system. The text emphasizes the importance of the separation of powers and the protection of individual liberties.

The second part of the chapter focuses on the structure of the government, detailing the powers and responsibilities of the three branches: the executive, the legislative, and the judicial. It discusses the process of electing the President and the role of Congress in passing laws. The chapter also covers the structure of the federal courts, including the Supreme Court and the lower federal courts.

The third part of the chapter addresses the relationship between the federal government and the states. It discusses the concept of federalism and the division of powers between the national and state governments. The text explores the role of the states in the federal system and the impact of federalism on the development of the United States.

1. Federalism, 1040, personal communication.
2. Federalism, 1040, personal communication.
3. Federalism, 1040, personal communication.
4. Federalism, 1040, personal communication.
5. Federalism, 1040, personal communication.
6. Federalism, 1040, personal communication.

Taos, all have decimal systems. The Taos words for two and four, three and five, eight and nine are etymologically related. Six means "piece". There are seven classes of numerals with words for numbers up to one hundred. There are two fractions, piã nãiti, one half, and ha lapia nãiti, anything smaller than a half.⁷ The sacred number of the Taos Indians is five as it is in other Tanoan pueblos.⁸ It implies a sense of compulsion, achievement or certainty. Four is considered the "true" number. Six is found in folktales in reference to the cardinal directions and twelve is favored in time of war by the Tiwa.⁹ The Jemez ritual number is four; The fourfold feint is common in all pueblos.¹⁰ The Jemez also have a decimal system¹¹ and so did the Piro.¹²

7. J. P. Harrington, "An Introductory Paper on the Tiwa Language, Dialect of Taos, New Mexico," American Anthropologist, n.s., vol. 12, no. 1, pp. 30-31, 1910.

8. E. C. Parsons, "Taos Pueblo," General Series in Anthropology, no. 2, p. 105, 1936; also Parsons, Pueblo Indian Religion, p. 368, 1939.

9. E. C. Parsons, Pueblo Indian Religion, p. 369, 1939.

10. Loc. cit., also E. C. Parsons, "Pueblo of Jemez," Papers of the Southwestern Expedition, no. 3, p. 84, 1925.

11. See list of number words, p. 77.

12. J. P. Harrington, "Notes on the Piro Language," American Anthropologist, n.s., vol. 11, no. 4, pp. 578-79, 1909.

The Zuni have the only pueblo deviation from the decimal system. They count by fives, according to Bunzel.¹³ This seems to hold true only to ten, however, after which the system becomes decimal. Ten means "hands and all", aste'm'pa. Eleven, aste'm'pa t'opa'yäktö, is "ten one on top of". Twenty is twice ten and one hundred is ten "hands". Only one set of numbers is used for all things, animate and inanimate. Further evidence of the decimal system is in the day count, which is kept by notching a stick, with the tenth notch a little longer. Thus the "pekwin" records "days by decades".¹⁴ Ten is a favored number in the Shalako. The tally cord is counted decimally, ten shrines are visited during the year-long preparation for the ceremony and there are ten Koyemshi clowns who participate in the ceremony. Ten is also a favored number in Acoma ceremonials.¹⁵

All the Southwestern Athapascans use decimal systems as is evident from the lists of Navajo and Apache words.¹⁶ The first four Navajo numbers differ little from the other Athapaskan languages. The numerals follow the object as is

13. R. Bunzel, "Zuni," in Handbook of American Indian Languages, pt. 3, p. 503, 1933-38.

14. E. C. Parsons, "Notes on Zuni," Memoirs of the American Anthropological Association, vol. 4, nos. 3 and 4, p. 296, 1917.

15. E. C. Parsons, Pueblo Indian Religion, p. 369, 1939.

16. See lists of number words, pp. 80 and 81.

the case with other adjectives. The only exception to this rule is in counting money when the numeral precedes the noun. They count on the fingers beginning with the little finger of the left hand, continuing to the thumb and repeating this process with the right hand. The fingers of the open hand are turned down as the counting is done. Numbers above two thousand are not often used.¹⁷

The Yumans of the Southwest also have decimal systems. The Havasupai system functions decimally, though six, seven and eight are derivatives of one, two and three. They use counters in games but do not count with their fingers nor use mnemonic devices.¹⁸ The Southeastern Yavapai count on their fingers, but not on their toes.¹⁹ The Tonto and Hualapai also have decimal systems; it may be noted in the lists of Tonto numbers²⁰ that seven and eight are derived from six. On page three above, the Yuma mixed quaternary and ternary is described. This is the only exception to the Yuman decimal systems in the Southwest.²¹ The Yuman ritual number is

17. Franciscan Fathers, An Ethnologic Dictionary of the Navaho Language, pp. 76-77, 1910.

18. L. Spier, "Havasupai Ethnography," American Museum of Natural History Anthropological Papers, vol. 29, pt. 3, p. 166, 1928.

19. E. W. Gifford, "The Southeastern Yavapai," University of California Publications in American Archaeology and Ethnology, vol. 29, no. 3, p. 247, 1932.

20. See list of number words, pp. 82 and 83.

21. See list of number words, p. 82, (Cuchan).

The case with other algorithms, the only exception to this rule is in...
 This is in...
 The first...
 process with the...
 the...
 and...
 counters in...
 the...
 fingers, but not...
 also...
 On page three...
 is described...
 and...
 the...

17. Handwritten notes on the... of the... language, pp. 1-10, 1910

18. Handwritten notes on the... of the... language, pp. 1-10, 1910

19. W. Gifford, "The... of the... University of California Publications in Linguistics, Vol. 1, 1931, pp. 1-10, 1931"

four.²² The Lower California Kiliwi group has a quinary system to ten and above that it is apparently decimal.²³ Clavigero reports that the Cochimi have only four numbers but for five they say naganna tejueg ignimel or "one entire hand". Above five, those who are smart say "five and one", etc. Ten is naganna ignimbal demuejueg or "all the hands". Fifteen is "all the hands and one foot", twenty, "all the hands and feet". The system is obviously quinary and this, says Clavigero, is as far as they go.²⁴ Baegert says that any number beyond six in Lower California is simply "much" and that many peoples count only to three.²⁵

The northern Mexican groups vary somewhat, with decimal systems among the Pima and Papago,²⁶ a mixed system among the Tarahumara,²⁷ and the disappearance of decimal

22. L. Spier, "Cultural Relations of the Gila River and Lower Colorado Tribes," Yale University Publications in Anthropology, no. 3, p. 21, 1936.

23. See list of number words, p. 83.

24. S. E. Lake and A. A. Gray, translators, Clavigero's History of Lower California, p. 88, 1937.

25. C. Rau, "Partial Translation of Nachrichten von der Amerikanischen Halbinsel Californien, by Jacob Baegert," Annual Report of the Smithsonian Institution for 1864, p. 388, 1872.

26. See lists of number words, p. 86.

27. W. C. Bennett and R. M. Zingg, The Tarahumara, pp. 350-351, 1935.

systems in the south where they give way to vigesimal systems.²⁸ Mexico has practically no native languages showing a decimal system,²⁹ except in the northern Sonoran group.

The Opata count appears to be decimal to ten, although seven, eight and nine are derived numbers.³⁰ Seven is apparently six and one, eight is two times four, and nine is ten minus one. In Tarahumara, eight is derived from four, suggesting four as a base.³¹ Ten is from makó meaning "to grasp with the fist".³² Above ten the system is decimal which is probably due to the influence of the priests.³³ Ordinals add the suffix -sa to the cardinals. The suffix -na implies many parts, i. e., malina means "in five parts".

28. C. Thomas, "The Vigesimal System of Numeration," American Anthropologist, o. s., vol. 9, no. 4, pp. 409-410, 1896.

29. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n. s., vol. 9, no. 4, p. 671, 1907.

30. See list of numbers, p. 85.

31. W. Bennett and R. Zingg, The Tarahumara, p. 350, 1935.

32. Ibid., p. 351.

33. Ibid., p. 351, footnote 3, refers to "Jose Ferrero, S. J., Pequena Gramatica Y Diccionario Castellano-Tarahumara, pp. 12-13". As no date is given the author was unable to determine if the reference is to Pequena gramatica y diccionario de la lengua Tarahumara, Mexico, 1920, or to Diccionario Tarahumar-Castellano, Mexico, 1924.

... in the ... they give ...
 ... the ...
 ... the ...
 ... the ...
 ... the ...
 ... the ...
 ... the ...
 ... the ...

28. J. H. Greenberg, "The Linguistic System of Noun Classification," *Journal of Linguistics*, 6:2, 1970, pp. 209-210.

29. J. H. Greenberg and A. J. Greenberg, "Numerical Systems of the Languages of California," *American Anthropologist*, n.s., vol. 6, no. 4, p. 671, 1904.

30. The ...

31. ...

32. ...

33. ...

34. ...

35. ...

36. ...

37. ...

38. ...

39. ...

40. ...

41. ...

42. ...

43. ...

44. ...

45. ...

46. ...

47. ...

48. ...

49. ...

50. ...

51. ...

52. ...

53. ...

54. ...

55. ...

56. ...

57. ...

58. ...

59. ...

60. ...

61. ...

62. ...

63. ...

64. ...

65. ...

66. ...

67. ...

68. ...

69. ...

70. ...

71. ...

72. ...

73. ...

74. ...

75. ...

76. ...

77. ...

78. ...

79. ...

80. ...

81. ...

82. ...

83. ...

84. ...

85. ...

86. ...

87. ...

88. ...

89. ...

90. ...

91. ...

92. ...

93. ...

94. ...

95. ...

96. ...

97. ...

98. ...

99. ...

100. ...

One half is naci/paci.³⁴ The Varohio numerals are much like the Tarahumara and the system is probably the same.³⁵

The Seri system appears to be quinary-vigesimal.³⁶ The Yaqui and Mayo numbers are recorded only to ten but they are of quinary formation to ten and in all likelihood, continue so to twenty and then become vigesimal.³⁷ The Cahita number words are similar to the Yaqui and Mayo. Ten is "twice five" and twenty means "the body" which suggests a quinary system.³⁸ The Nahuatlan and Mayan numbers are included as examples of true Mexican quinary-vigesimal systems.³⁹

34. Ibid., p. 351.

35. See list of number words, p. 87.

36. See list of number words, p. 87.

37. See list of number words, p. 85.

38. See list of number words, p. 87.

39. See list of number words, p. 88.

KERES

Laguna (Curtis, vol. 16, pp. 279-80)

- | | |
|------------------------------|----------------------------|
| 1. ís-k ^a | 9. maí-yo-ka |
| 2. tyg | 10. kats |
| 3. chē-mi | 11. kats=ís-k ^a |
| 4. tyán-na | 12. kats=tyo |
| 5. ta'-ma | 20. tyo=ya-kats |
| 6. schis-s ^a | 50. ta'-ma=wa=kats |
| 7. maí=tyan-na | 100. kats=i'-wa=kats |
| 8. ko-ko'-mi-sh ^a | |

Cochiti (Curtis, vol. 16, pp. 279-80)

- | | |
|-------------------------|-------------------------------|
| 1. ís-k ^a | 9. mah-ya-ko |
| 2. tyúh-mi | 10. k'ats! |
| 3. chám-í | 11. ís-k ^a tsi-tsa |
| 4. tyán-na | 12. tyúh tsi-tsa |
| 5. táh-m ^a | 20. tyí=k'ats |
| 6. schis-h ^a | 50. táh-ma=wa=k'ats |
| 7. maí=tyan-na | 100. k'ats=i-wa=k'ats |
| 8. kó-ko-mi-syē | |

Silla (Wheeler, 1879, pp. 457-61)

- | | |
|-----------------------|------------------------------|
| 1. ishk' | 9. ma-yuka |
| 2. tio-ā ^a | 10. gats |
| 3. tchi-am | 12. gats-tio-ume |
| 4. gi-a'na, tia'n | 20. tio-a ^e -gats |
| 5. ta-ama | 50. tam-aua-gats |
| 6. sh-tsis | 100. gats-aus-gats |
| 7. may-tyam | 1000. ishk' mil |
| 8. ko'-go-mish | |

Section I: General Information

- 1. Introduction
- 2. Objectives
- 3. Scope
- 4. Definitions
- 5. Abbreviations
- 6. References
- 7. Acknowledgments
- 8. Appendixes

Section II: Detailed Information

- 1. Chapter 1
- 2. Chapter 2
- 3. Chapter 3
- 4. Chapter 4
- 5. Chapter 5
- 6. Chapter 6
- 7. Chapter 7
- 8. Chapter 8
- 9. Chapter 9
- 10. Chapter 10

Section III: Additional Information

- 1. Glossary
- 2. Bibliography
- 3. Index
- 4. Appendix A
- 5. Appendix B
- 6. Appendix C
- 7. Appendix D
- 8. Appendix E
- 9. Appendix F
- 10. Appendix G

Santo Domingo (White, 1935, p. 200)

- | | |
|----------------|---------------------|
| 1. i'ck'a | 9. mai'yak'o |
| 2. Dyu'm' | 10. k'ats' |
| 3. Tca'm' | 11. i'ck'atsitcra |
| 4. G'ya'n' | 20. Dyuyak ats |
| 5. Da'm' | 50. Damawak'ats' |
| 6. stci'sa | 100. k'atsiwak'ats' |
| 7. mai'Dyana | 1000. i'ck'ami'li |
| 8. k'ok'omicya | |

Santo Domingo (White, 1935, p. 201)
"Old Way" of counting.

- | | |
|-----------|------------|
| 1. i'ck'a | 6. witsi |
| 2. Bictca | 7. G'a't' |
| 3. wai | 8. Bawany' |
| 4. yoc | 9. makwεlε |
| 5. G'ana | 10. k'aki' |

State of Illinois, 1852

1. 1852	1. 1852
2. 1852	2. 1852
3. 1852	3. 1852
4. 1852	4. 1852
5. 1852	5. 1852
6. 1852	6. 1852
7. 1852	7. 1852
8. 1852	8. 1852
9. 1852	9. 1852
10. 1852	10. 1852

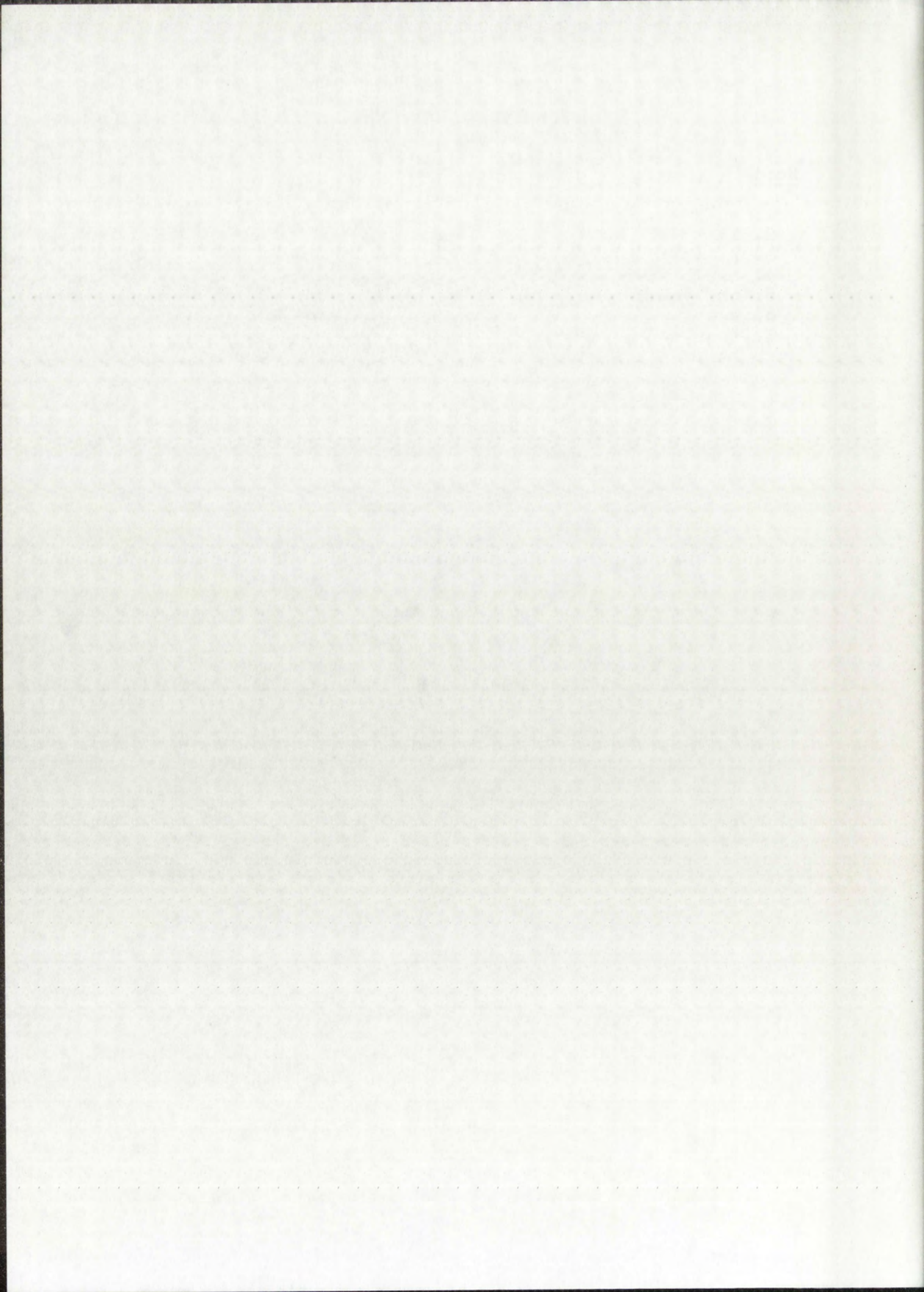
State of Illinois, 1853

1. 1853	1. 1853
2. 1853	2. 1853
3. 1853	3. 1853
4. 1853	4. 1853
5. 1853	5. 1853
6. 1853	6. 1853
7. 1853	7. 1853
8. 1853	8. 1853
9. 1853	9. 1853
10. 1853	10. 1853

SHOSHONEAN

Hopi (Curtis, v. 12, 1922)

- | | |
|----------------|---------------------------|
| 1. su'-kya-a | 8. na'-na-lö |
| 2. lö-yö-mü | 9. pē-vē |
| 3. pa'-yo-mü | 10. pák-tū |
| 4. na-lö-yö-mü | 11. pak=súk=si-kya-tū |
| 5. chí-vo-tū | 20. sū'-nat |
| 6. na'-va-yi | 50. chí-yo=si-kyi=pak-tū |
| 7. tasn-a-ē | 100. pa-qút=si-kyi=pak-tū |



TEWA

San Ildefonso (Curtis, vol. 17, 1926)

- | | |
|---|--|
| 1. wi | 9. haw ^l -nu ⁿ -u ⁿ |
| 2. wi' -yē | 10. tā' -ā ⁿ |
| 3. po' -yē | 11. tā=ri=wi' |
| 4. yā' -nu ⁿ -u ⁿ | 12. tā=ri=wi' -yē |
| 5. pa ⁿ -nu ⁿ -u ⁿ | 20. we=tā ⁿ -ā ⁿ |
| 6. si | 50. pa ⁿ -nā ⁿ tā' -ā ⁿ |
| 7. tsē | 100. tā-gi ⁿ =tā' -ā ⁿ |
| 8. ka' -vē | |

San Ildefonso (J. P. Harrington, 1909, p. 578-79)

- | | |
|---------------------------|---|
| 1. wi, we ^h pi | 8. k ⁿ ábe |
| 2. wiy ^e | 9. hwa ⁿ nu |
| 3. poye | 10. tā ⁿ ā ⁿ |
| 4. yonu | 11. tā ⁿ ā ⁿ diwi |
| 5. p'ānu | 12. tā ⁿ ā ⁿ diwiye |
| 6. si | 20. wetā ⁿ ā ⁿ |
| 7. tse | |

Tewa, Moqui Mesa (Wheeler, 1879, pp. 457-61)

- | | |
|------------------|---|
| 1. vuy-i | 8. ka-ve |
| 2. vuy-ye, vu-ye | 9. kve-no |
| 3. poy-ye | 10. te ⁿ e ⁿ |
| 4. sho-no | 12. te ⁿ -e ⁿ -vu-ye |
| 5. pa-no | 20. vuy-u-te ⁿ -e ⁿ |
| 6. shi | 50. pa-non-te ⁿ -e ⁿ |
| 7. tché | 100. te-gin-te ⁿ -e ⁿ |
| | 1000. mil (Spanish) |

TABLE

TABLE I. (continued)

1	100	100
2	100	100
3	100	100
4	100	100
5	100	100
6	100	100
7	100	100
8	100	100
9	100	100
10	100	100

TABLE II. (continued)

1	100	100
2	100	100
3	100	100
4	100	100
5	100	100
6	100	100
7	100	100
8	100	100
9	100	100
10	100	100

TABLE III. (continued)

1	100	100
2	100	100
3	100	100
4	100	100
5	100	100
6	100	100
7	100	100
8	100	100
9	100	100
10	100	100

TIWA

Taos (Curtis, vol. 16, 1926, p. 272)

- | | |
|-------------------------|--|
| 1. wā-mū ^ˀ | 8. hwi-li |
| 2. wi-i-na | 9. hwi-a |
| 3. pā-yo-a | 10. tā ^ˀ -gū-ti-ma ^ˀ |
| 4. wi-ā-na ^ˀ | 11. tā ^ˀ =wā-mū ^ˀ |
| 5. pān-yo-a | 20. wi-tā ^ˀ |
| 6. mā-hli | 50. pān-yo-tā ^ˀ |
| 7. cho | 100. tā ^ˀ =tā ^ˀ =tā ^ˀ =te-ē |

Taos (J. P. Harrington, 1909, p. 578-79)

- | | |
|------------------------------------|---|
| 1. wema | 8. hwili |
| 2. wū ^ˀ na ^ˀ | 9. hwi ^ˀ na ^ˀ |
| 3. payua | 10. tēm |
| 4. wiānu | 11. tā ^ˀ k'ötima, tā ^ˀ wema |
| 5. p'anyua | 12. tā ^ˀ wu ^ˀ na ^ˀ |
| 6. ma ^ˀ Li | 20. wita ^ˀ |
| 7. tsuu | 100. tā ^ˀ tēla wemsiena |

Isleta (J. P. Harrington, 1909, p. 578-79)

- | | |
|-----------------------|--|
| 1. wim | 8. hwidi |
| 2. wisi | 9. hū ^ˀ na ^ˀ |
| 3. patco | 10. ti ^ˀ dehem |
| 4. wieu | 11. ti ^ˀ wim |
| 5. p anto | 12. ti ^ˀ wisi |
| 6. ma ^ˀ Li | 20. witi ^ˀ |
| 7. ^ˀ cuu | 100. ti ^ˀ witati ^ˀ |

Isleta (Wheeler, 1879, pp. 457-61)

- | | |
|--------------|---------------------|
| 1. uim-a | 9. hō-a |
| 2. ui-se | 10. ti-te-hem |
| 3. ba-tcho-a | 12. ti-ui-se |
| 4. ue-an | 20. ui-ti |
| 5. pan-to | 50. pan-to-ti |
| 6. mā-tli | 100. ti-ui-ta-ti |
| 7. tcho-o | 1000. mil (Spanish) |
| 8. hue'-re | |

Isleta del Sur (J. P. Harrington, 1909, p. 578-79)

- | | |
|---------------------|--------------------------|
| 1. wim | 7. t ^u cu |
| 2. wisi | 8. hwi <i>di</i> |
| 3. patcua | 9. hw ^{ne'} |
| 4. weua | 11. ti ^m wim |
| 5. p'antua | 12. ti ^w wisi |
| 6. ma ^{Li} | 20. witi ⁿ |

Taos (J. P. Harrington, 1910a, p. 31)

- | | |
|-----------------------|--------------------------------------|
| 1. wä ^{ma} | 7. t ^u |
| 2. wi ^{'ina} | 8. x ^{ili} |
| 3. pajüä | 9. X ⁱ ^ä |
| 4. wiä ^{na} | 10. tä ^{ma} |
| 5. p'anjüä | 20. witä ⁿ |
| 6. ma ^{ti} | 100. tä ⁿ tä ⁿ |



TOWA

Jemez (J. P. Harrington, 1909, p. 578-79)

- | | |
|--------------------------------------|---|
| 1. p'u ⁷ | 8. hól |
| 2. wic | 9. hu ⁷ L |
| 3. táχ | 10. tá ⁷ |
| 4. wi! | 11. tá ⁷ p'u ⁷ |
| 5. p'i ⁷ t ⁵ o | 12. tá ⁷ wic |
| 6. mi ⁷ styí | 20. wiyuta ⁷ |
| 7. sôL | 100. ta ⁷ na ⁷ wi ⁷ kwátà ⁷ |

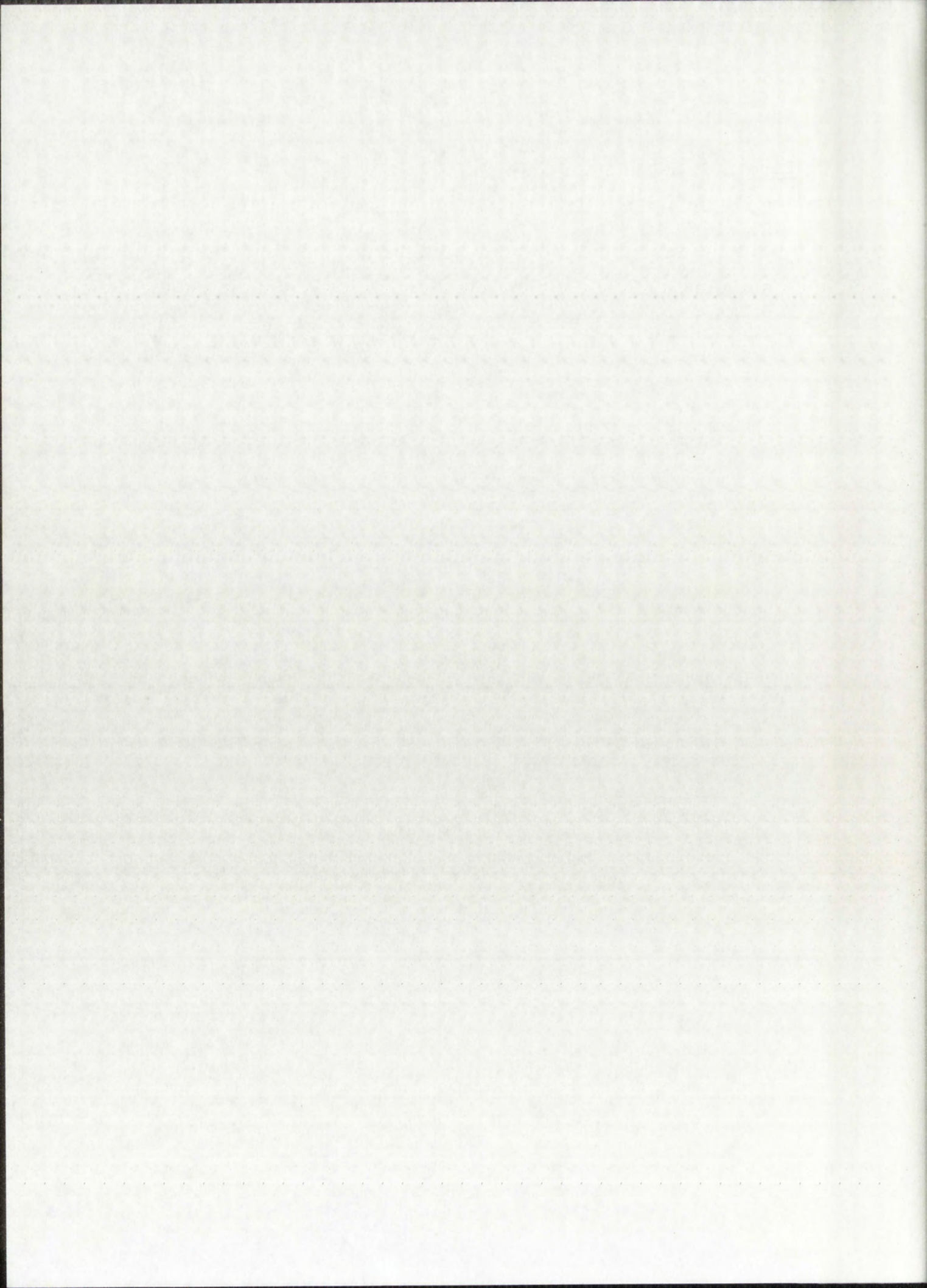
Jemez (Wheeler, 1879, pp. 457-61)

- | | |
|--------------|---------------------|
| 1. pû | 9. hol |
| 2. vue sh | 10. tá |
| 3. tā | 12. tāvue'sh |
| 4. vil | 20. vue'sh-tā |
| 5. pen-to | 50. pen-to-kva-tā |
| 6. miesh-tye | 100. tā-nao-kva-tā |
| 7. so-u-la | 1000. mil (Spanish) |
| 8. fol | |

PIRO

Piro (J. P. Harrington, 1909, p. 578-79)

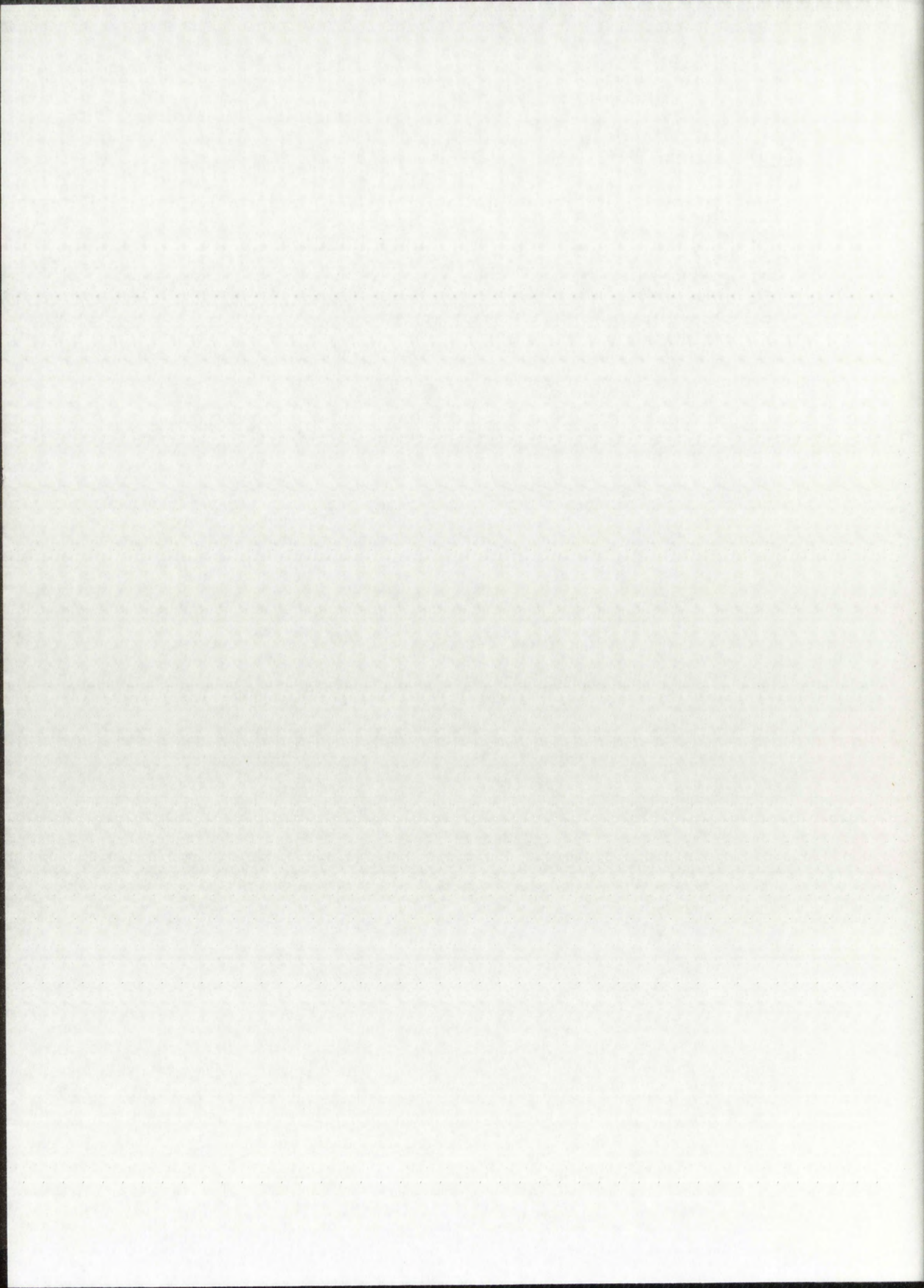
- | | |
|------------|--------------------|
| 1. eu-i-yu | 8. hui-li-yu' |
| 2. wi'yu | 9. hua-weh |
| 3. mōu-tu | 10. tēn-yo |
| 4. we-no | 11. tēn-u-i |
| 5. au-tao | 12. tēn-wi-yu |
| 6. ma-seu | 20. tēn-te-yo |
| 7. tsu-wuh | 100. tēn-na-te-leo |



ZUNI

Zuni (Bunzel in Handbook of American Indian Languages,
vol. 3, 1933-38, p. 503)

- | | |
|--------------|--------------------------|
| 1. t'opa | 8. ha'elekä |
| 2. kivil'i | 9. tenalekä |
| 3. ha'i | 10. aste'm ʔa |
| 4. a'witen | 11. aste'm ʔa t'opa yäto |
| 5. apte | 20. kwilikän aste'm ʔa |
| 6. t'opalekä | 100. asi'aste'm ʔa |
| 7. kwililekä | |



ATHAPASCAN

Apache (Curtis, vol. 1, pp. 142-43)

- | | |
|---------------|---------------------|
| 1. hla'-i | 9. ngus-tá -i |
| 2. na'-ki | 10. gu'-nēz-na |
| 3. ta-gi | 11. hla-za'-ta |
| 4. di'"-i | 12. na-ki-za'-ta |
| 5. āsh-tlá'-i | 15. āsh-tlá-a'-ta |
| 6. gus-taŋ | 20. na-dín |
| 7. gus-tsi-gi | 50. āsh-tlá -dín |
| 8. tsá -bi | 100. gu'-nēz-na-dín |

Jicarilla (Curtis, vol. 1, pp. 142-43)

- | | |
|---------------|---------------------|
| 1. hla'-i | 9. nkus-ta'-i |
| 2. na'-ki | 10. ku'-nēz-ni |
| 3. ka'-i | 11. hla-i-za |
| 4. di'"-i | 12. na-ki-za |
| 5. āsh-tlē | 15. āsh-tlē-za |
| 6. kus-kūn | 20. na-tín |
| 7. kus-tsit-i | 50. āsh-tlē -tin |
| 8. tsa'-bi | 100. ku'-nēz-ni-tin |

Navaho (Curtis, vol. 1, pp. 142-43)

- | | |
|--------------|-------------------|
| 1. hla'-i | 9. nāas-dai |
| 2. na'-ki | 10. nēz-na |
| 3. ta | 11. hla-zā'-ta |
| 4. di" | 12. na-ki-zā'-ta |
| 5. āsh-dla | 15. ash-dla-ā'-ta |
| 6. has-ta'" | 20. na-di'" |
| 7. tsósts-éd | 50. āsh-dla-di'" |
| 8. tse'-bi | 100. nēz-na-di'" |

White Mountain Apache (Allen, 1886, p. 258)

- | | |
|-------------|---------------|
| 1. duschlai | 6. gon táu |
| 2. nakée | 7. goosélty |
| 3. tágy | 8. saybée |
| 4. dingy | 9. goostái |
| 5. schlai | 10. gooneznún |

Nabajo (Petitot, 1875b, p. 21)

- | | |
|----------|------------|
| 1. thlay | 4. tin |
| 2. naché | 5. ichla |
| 3. tra | 10. neznán |

Joseph

- 1. 1845
- 2. 1846
- 3. 1847
- 4. 1848
- 5. 1849
- 6. 1850
- 7. 1851
- 8. 1852

Michael

- 1. 1853
- 2. 1854
- 3. 1855
- 4. 1856
- 5. 1857
- 6. 1858
- 7. 1859
- 8. 1860

Thomas

- 1. 1861
- 2. 1862
- 3. 1863
- 4. 1864
- 5. 1865
- 6. 1866
- 7. 1867
- 8. 1868

John

- 1. 1869
- 2. 1870
- 3. 1871
- 4. 1872
- 5. 1873

James

- 1. 1874
- 2. 1875
- 3. 1876

Arivaipa (Wheeler, 1879, pp. 457-61)

- | | |
|------------------------|--------------------|
| 1. dā-tlǎ | 8. sē-pi |
| 2. na-gē | 9. 'n-go-sta |
| 3. ta-gē, ka-gē | 10. 'n-ēz-nun |
| 4. ti-ē | 12. nā-gē-dā-tā |
| 5. est-lī | 20. nā-tin |
| 6. go-sto ⁷ | 100. ko-nēz-na-tin |
| 7. gū-sted-ē | |

Navaho (Franciscan Fathers, 1910, pp. 77-78)

- | | |
|---------------|----------------------------|
| 1. daʔai' | 11. lǎts'áda |
| 2. nǎkhi' | 12. nakhits'áda |
| 3. tǎá' | 15. áshdla'áda |
| 4. di | 20. nádin |
| 5. áshdla' | 50. ashdládin |
| 6. hastqa' | 100. neznádin |
| 7. tsǒstsid | 1000. neznádi neznádin or |
| 8. tsebi | daʔaidi míl |
| 9. nahast'ai' | 2000. nádin di neznádin or |
| 10. nezna' | nakhí di míl |

STANDARD OPERATING PROCEDURE

- 1. Purpose
- 2. Scope
- 3. Definitions
- 4. Responsibilities
- 5. Procedure
- 6. References
- 7. Revision History

1. PURPOSE

The purpose of this procedure is to establish a standard method for the performance of the task described in the title of this procedure. This procedure is intended to be used by all personnel performing this task.

The scope of this procedure is limited to the task described in the title of this procedure. It does not cover other tasks or activities.

The definitions of the terms used in this procedure are as follows:

- Task: The specific activity to be performed.
- Personnel: All employees performing the task.
- Standard: The required level of performance.

The responsibilities of the personnel performing this task are as follows:

- Personnel performing the task must follow the procedure exactly as written.
- Personnel performing the task must report any deviations or problems to their supervisor.
- Personnel performing the task must maintain accurate records of their work.

The procedure for performing this task is as follows:

- Step 1: Prepare the work area.
- Step 2: Gather the necessary materials.
- Step 3: Perform the task according to the instructions.
- Step 4: Inspect the work for quality.
- Step 5: Complete the task and report the results.

The references for this procedure are as follows:

- Company Policy Manual
- Quality Management System
- Standard Operating Procedure Manual

The revision history of this procedure is as follows:

- Version 1.0: Initial release.
- Version 1.1: Revised to include new materials.
- Version 1.2: Revised to include new safety precautions.

YUMAN

Yavapai (Gifford, 1932, p. 247)

- | | |
|--------------|------------------|
| 1. shiti | 8. moketispe |
| 2. kwake | 9. halthuia |
| 3. moki | 10. wavi |
| 4. hopa | 11. wavshiti |
| 5. thadape | 20. kwakwa-kwavi |
| 6. tisape | 50. thadepewavi |
| 7. kwaktispe | 100. sihonasiti |

Havasupai (Spier, 1928, p. 165)

- | | |
|--------------|-----------------|
| 1. isi'ta' | 7. xuwagacpě'K |
| 2. xuwa'ga' | 8. humugěcpě'K |
| 3. hūmu'ga' | 9. halēθu'ia |
| 4. Lop'a' | 10. viwa'ava' |
| 5. θēt'a'pa' | 20. wavahua'ga; |
| 6. tacpě' | xua'gavuwa'ga' |

Hualapai (Oscar Loew in McGee, 1898, p. 305)

- | | |
|----------------|------------------|
| 1. sitik | 8. hamu'geshpek |
| 2. hovak | 9. halathu'ig |
| 3. hamok | 10. vua ruk |
| 4. hoba' | 12. hovaktia'lik |
| 5. hata'buk | 20. vavahovak |
| 6. tasbek | 30. vavahamok |
| 7. hoa'geshpek | |

Cuchan (Whipple in House Executive Document No. 91,
1856, p. 99)

- | | |
|----------------------|-----------------|
| 1. sin, asi-én-tic | 6. hum-hook' |
| 2. ha-wick, ha-vick' | 7. path-caye' |
| 3. ha-mo'ok | 8. chip-hook' |
| 4. cha-póp | 9. ham-La-mook' |
| 5. se-rap' | 10. sah-hook' |

Cochimi (Clavigero, 1789, translated by Lake & Grey,
1937, p. 88)

- | | |
|------------------|----------------------|
| 1. tejueg | 5. naganna tejueg |
| 2. goguo' | ignimel |
| 3. kambia' | 10. naganna'ignimbal |
| 4. magacu bugua' | demuejueg |

YUAN

Yuanpei (Hollard, 1935, p. 247)

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|-----------|-----------|
| 1. white | 6. white |
| 2. black | 7. white |
| 3. white | 8. white |
| 4. black | 9. white |
| 5. black | 10. white |
| 6. black | 11. white |
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Yuanpei (Hollard, 1935, p. 194)

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Yuanpei (Hollard, 1935, p. 202)

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| 4. black | 9. white |
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Yuanpei (Hollard, 1935, p. 202)

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| 1. white | 6. white |
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| 4. black | 9. white |
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| 13. black | 18. white |
| 14. black | 19. white |
| 15. black | 20. white |
| 16. black | 21. white |
| 17. black | 22. white |
| 18. black | 23. white |
| 19. black | 24. white |
| 20. black | 25. white |

Yuanpei (Hollard, 1935, p. 202)

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| 1. white | 6. white |
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Cochimi (W. M. Gabb in McGee, 1898, p. 304)

- | | |
|--------------------------|---------------------------------|
| 1. chaqui | 6. <i>ich</i> kyum-kabiak |
| 2. kooak | 7. chaquera-vampai |
| 3. kabiak | 8. nyaki-vam-wapai |
| 4. <i>ich</i> kyum-kooak | 9. qua ^{ch} era-vampai |
| 5. nyaki-vam-pai | 10. nyavani-chaqui |

Kiliwee (W. M. Gabb in McGee, 1898, p. 304)

- | | |
|-------------------|-------------------------|
| 1. mesig | 9. m sigg-tkmat |
| 2. hooak | 10. chepam-me-sig |
| 3. hamiak | 11. mesigg-mal-ha |
| 4. nmok | 12. hooak-mal-ha |
| 5. sol-chepam | 20. chepam-hooak |
| 6. m'sigg-eleepai | 50. mesigg quin-guedit- |
| 7. hooak-eleepai | sol-chepam |
| 8. hamiak-eleepai | |

Tonto (Wheeler, 1879, pp. 457-61)

- | | |
|-----------------|---------------------|
| 1. si-si-shi-ti | 8. mo-gesh-be |
| 2. ua-ke | 9. hal-se-ye |
| 3. mo-ke | 10. uave |
| 4. hō-ba | 12. uave-uake |
| 5. sa-ta-bé | 20. uake-uave |
| 6. gesh-be' | 100. gu-tes-non-tin |
| 7. hoa'-gesh-be | |

Tonto (J. B. White and Oscar Loew in McGee, 1898, p. 305)

- | | |
|----------------|---------------|
| 1. sisi, shiti | 8. mogeshbe |
| 2. uake | 9. halseye |
| 3. moke | 10. uave |
| 4. hōba | 12. uave-uake |
| 5. satabé | 20. uake-uave |
| 6. geshbé | 30. moke-uave |
| 7. hoageshbe | |

Appendix (L. N. Galt in Nelson, 1955, p. 304)

- | | |
|-------------------|-------------------|
| 1. 100000-100000 | 1. 100000-100000 |
| 2. 100000-100000 | 2. 100000-100000 |
| 3. 100000-100000 | 3. 100000-100000 |
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| 7. 100000-100000 | 7. 100000-100000 |
| 8. 100000-100000 | 8. 100000-100000 |
| 9. 100000-100000 | 9. 100000-100000 |
| 10. 100000-100000 | 10. 100000-100000 |

Appendix (L. N. Galt in Nelson, 1955, p. 304)

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|-------------------|-------------------|
| 1. 100000-100000 | 1. 100000-100000 |
| 2. 100000-100000 | 2. 100000-100000 |
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| 5. 100000-100000 | 5. 100000-100000 |
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| 8. 100000-100000 | 8. 100000-100000 |
| 9. 100000-100000 | 9. 100000-100000 |
| 10. 100000-100000 | 10. 100000-100000 |

Appendix (Whitman, 1919, pp. 137-38)

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|-------------------|-------------------|
| 1. 100000-100000 | 1. 100000-100000 |
| 2. 100000-100000 | 2. 100000-100000 |
| 3. 100000-100000 | 3. 100000-100000 |
| 4. 100000-100000 | 4. 100000-100000 |
| 5. 100000-100000 | 5. 100000-100000 |
| 6. 100000-100000 | 6. 100000-100000 |
| 7. 100000-100000 | 7. 100000-100000 |
| 8. 100000-100000 | 8. 100000-100000 |
| 9. 100000-100000 | 9. 100000-100000 |
| 10. 100000-100000 | 10. 100000-100000 |

Appendix (J. E. White and Carter, Iowa in Nelson, 1955, p. 305)

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|-------------------|-------------------|
| 1. 100000-100000 | 1. 100000-100000 |
| 2. 100000-100000 | 2. 100000-100000 |
| 3. 100000-100000 | 3. 100000-100000 |
| 4. 100000-100000 | 4. 100000-100000 |
| 5. 100000-100000 | 5. 100000-100000 |
| 6. 100000-100000 | 6. 100000-100000 |
| 7. 100000-100000 | 7. 100000-100000 |
| 8. 100000-100000 | 8. 100000-100000 |
| 9. 100000-100000 | 9. 100000-100000 |
| 10. 100000-100000 | 10. 100000-100000 |

Cocopa (Lumholtz, 1912, p. 375)

- | | |
|-----------|--------------------|
| 1. ushít | 9. xamxamúk |
| 2. xuvók | 10. shahúk |
| 3. xamúk | 11. magshít |
| 4. supöp | 12. magxuvók |
| 5. sheráp | 20. shahúk vök |
| 6. xamxúk | 50. shahúk sheráp |
| 7. paxka | 100. shahúk shahúk |
| 8. supxúk | |

1789
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SONORAN

Opata (Kroeber, 1934, pp. 19-20)

- | | |
|--------------------|------------|
| 1. se ⁱ | 4. nā'goi |
| 2. gô'di | 5. ma'ki |
| 3. bêidu | 6. busa'ni |

Opata (Pimentel in Thomas, 1900, p. 867)

- | | |
|-------------|----------------------|
| 1. se, seni | 7. seni-bussani, |
| 2. gode | seni qua bussani |
| 3. veide | 8. go nago |
| 4. nago | 9. kimakoi |
| 5. mazirs | 10. makoi |
| 6. bussani | 20. seuri, seneurini |

Yaqui (Kroeber, 1934, pp. 19-20)

- | | |
|------------|--------------|
| 1. sê'nu | 6. vū'sani |
| 2. (g)vôi | 7. vōvu'sani |
| 3. mba'ki | 8. vōhna'iki |
| 4. Mna'iki | 9. mbā'tani |
| 5. ma'mni | 10. vōhmamni |

Mayo (Kroeber, 1934, pp. 19-20)

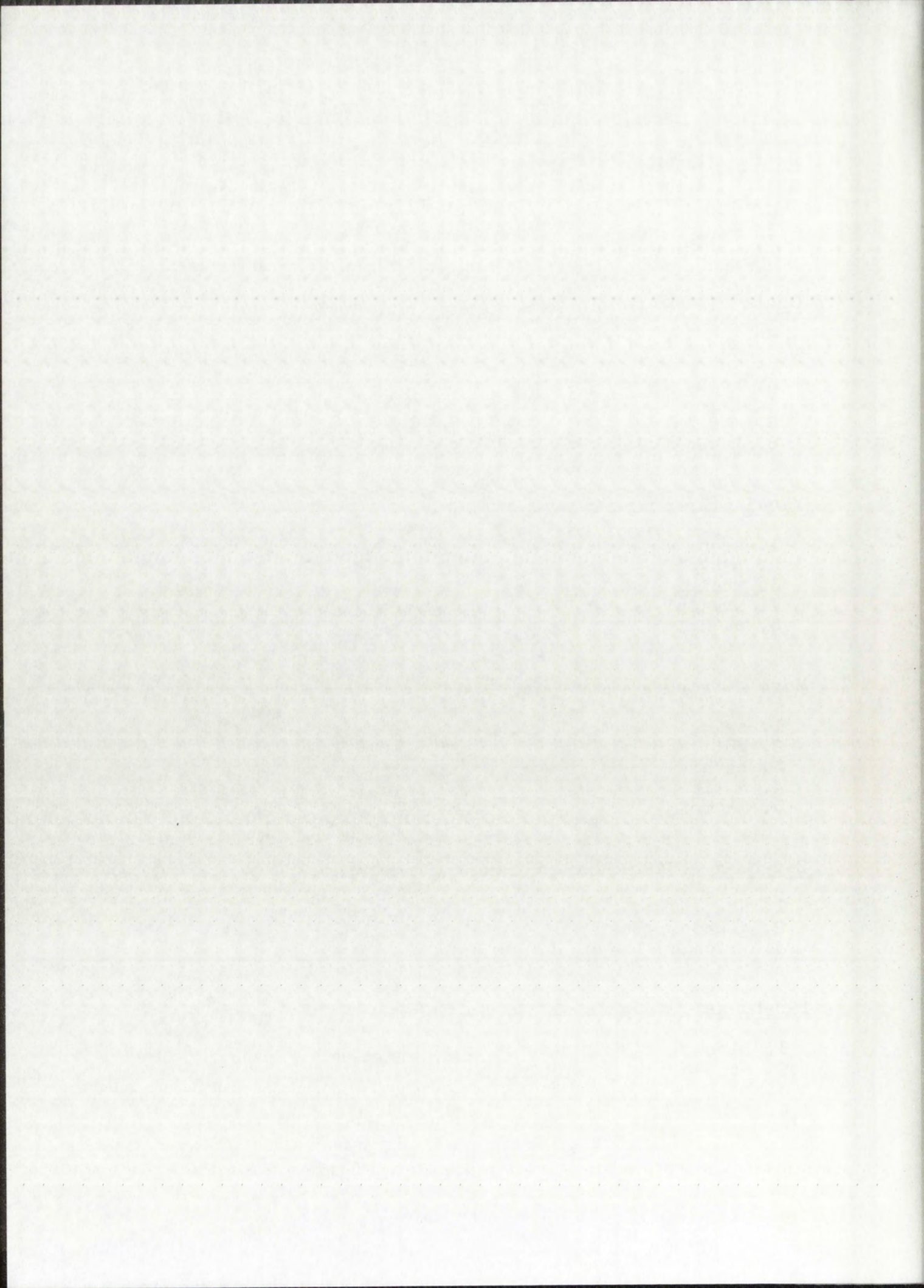
- | | |
|-----------|---------------|
| 1. se'nu | 6. bū'sani |
| 2. gōi | 7. goibū'sani |
| 3. ba'hi | 8. go'n-aiki |
| 4. na'iki | 9. ba'tani |
| 5. ma'mni | 10. gō'mami |

Tepehuan (Charencey and Brinton in Brinton, 1891,
p. 337)

- | | |
|---------------------|-----------|
| 1. uma, huma, homad | 4. maukao |
| 2. gokado, gaok | 5. chetam |
| 3. veicado, baech | |

Tarahumar (Kroeber, 1934, pp. 19-20)

- | | |
|--------------|-----------------|
| 1. bire | 6. usani-qui |
| 2. oca, ocua | 7. quichao-co |
| 3. beiquia | 8. osanahuo -co |
| 4. nahuo -co | 9. quimacoi-qui |
| 5. mari -qui | 10. macoi-qui |



Tarahumari (Charencey and Tellechea in Thomas, 1900, p. 868)

- | | |
|----------------------------|-------------------------------------|
| 1. bire, pile, sinepi | 7. kichao, quichauco |
| 2. oca, oka, guoca | 8. ossanagroc, okanako, osana-guoco |
| 3. beica, baica, beiquia | 9. kimakoi, quimacoiqui |
| 4. nagueoca, naguo | 10. makoe, macoiqui |
| 5. mariki, marika, mariqui | 20. osamacoi |
| 6. pussaniki, usaniqui | |

Pima (Charencey and Hale in Thomas, 1900, p. 868)

- | | |
|--------------------------------|------------------------|
| 1. youmako, humac | 6. tchu-ut, tsautep |
| 2. houak, kouak, kce ko | 7. wawa, bubak |
| 3. vaik, vaiko | 8. kikig |
| 4. kick (?), kiik | 9. umu-tchiko, hu-mukt |
| 5. pouitas, huitas, khekhtaspe | 10. wistima |
| | 20. kuko-wistima |

Papago (Curtis, vol. 2, 1908, p. 122)

- | | |
|--------------|----------------------------|
| 1. hu'-ma-ko | 9. o'-much |
| 2. kâk | 10. wus-tũ-mâm |
| 3. vaihk | 11. ka'-mĩ hu'-ma-ko |
| 4. ki'-ihk | 15. ka'-mĩ hu'-tũsp |
| 5. hu'-tũsp | 20. kâk-hâ wũs-tũ-mâm |
| 6. cho'-otp | 50. hũr-tũsp-hâ wũs-tũ-mâm |
| 7. wũ'-wũk | 100. hu'-ma-ko si'-ant |
| 8. ki'-kik | |

Tableau des dépenses et recettes de l'exercice 1900

1. Dépenses générales	1.000.000
2. Dépenses spéciales	2.000.000
3. Recettes générales	3.000.000
4. Recettes spéciales	4.000.000
5. Excédent	5.000.000

Tableau des dépenses et recettes de l'exercice 1901

1. Dépenses générales	1.000.000
2. Dépenses spéciales	2.000.000
3. Recettes générales	3.000.000
4. Recettes spéciales	4.000.000
5. Excédent	5.000.000

Tableau des dépenses et recettes de l'exercice 1902

1. Dépenses générales	1.000.000
2. Dépenses spéciales	2.000.000
3. Recettes générales	3.000.000
4. Recettes spéciales	4.000.000
5. Excédent	5.000.000

Cahita (Charencey and Eustaquio in Thomas, 1900,
p. 868)

- | | |
|------------------|-------------------------|
| 1. senu | 7. uobusani |
| 2. uoi | 8. uonaequi |
| 3. vahi, bei bey | 9. batani |
| 4. naequi | 10. uomamni |
| 5. mamni | 11. uomamni aman senu |
| 6. busani | 20. tacahua, senu-tacua |

Varohio (Kroeber, 1934, pp. 19-20)

- | | |
|------------|----------------|
| 1. pire' | 6. pusani |
| 2. ok'a' | 7. woiwu'sani |
| 3. paika' | 8. ôsana'-wo |
| 4. nawo'n' | 9. bātani' |
| 5. mariki' | 10. osama'rikî |

Seri (McGee, 1898, p. 303)

- | | |
|-------------|----------------------------|
| 1. tō'xun | 8. pākwū |
| 2. ghā'kum | 9. ksókhun ^z |
| 3. pha'um | 10. khóhnūt ^z |
| 4. sâ'hkūm | 20. ũntçkō'k |
| 5. kwa'etūm | 50. ũntçkóitum |
| 6. nahpsuk | 100. ũntçgūnt ^t |
| 7. kahkwū | |

Tarahumara (Bennett and Zingg, 1935, p. 350)

- | | |
|---------------|------------------------------|
| 1. bilé | 8. osánaó |
| 2. okwa, oka' | 9. kimakói-ki |
| 3. beka' | 10. makói-ki |
| 4. naó | 11. makói bilé, |
| 5. mari-ki | makoi wamina bilé' |
| 6. usani-ki | 20. osá makói |
| 7. kitcáo-ko | 21. osa' makói wamina' bilé' |

Table 1 (Continued) - 1950

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Table 2 (Continued) - 1950

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Table 3 (Continued) - 1950

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Table 4 (Continued) - 1950

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Nahuatl (Thomas, 1900, p. 866)

- | | |
|-------------|---------------|
| 1. ce | 6. chiqua-ce |
| 2. ome | 7. chic-ome |
| 3. yei, ei | 8. chicu-ei |
| 4. nauí | 9. chico-nauí |
| 5. macuilli | 10. matlactli |

Maya (Thomas, 1900, p. 861)

- | | |
|-----------|-----------------|
| 1. han | 11. buluc |
| 2. ca | 12. lahca |
| 3. ox | 13. oxlahun |
| 4. can | 14. canlahun |
| 5. ho | 15. holahun |
| 6. uac | 16. uaclahun |
| 7. uuc | 17. uuclahun |
| 8. uaxac | 18. uaxaclahun |
| 9. bolon | 19. bolonlahun |
| 10. lahun | 20. hunkal, kal |

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CHAPTER VI

COUNTING SYSTEMS OF THE BASIN-PLATEAU AREA

The Plateau Shoshoneans all have decimal systems as is apparent from the lists of numbers, page 93. The data on the Southern Paiute is most complete and is typical of the entire area.¹ The system is decimal. The first three stems are primary, four is based on two, five is derived from the word for hand, six is "two threes", seven is based on six. Eight reduplicates four, nine means "nearly ten". Ten means "just" and twenty is "two tens". A comparison of these forms with the Northern Ute numbers shows the lack of variation in the area.

The Klamath numbers for one to six, nine and ten are individual stems. Seven is based on two and eight on three. "This suggests a quinary and decimal basis. From twenty on, the Klamath count by tens, by addition to the previous unit for the units in between, as in English. The term used for all the fingers is luga wa'wals, for the toes, petco'mnEluga-wa'wals, and for the fingers and toes together, na'sat. The ordinals are not used in counting the fingers; they do not say "first finger" but mention it by name. The toes are counted in the same way as the fingers.² The names of the

1. E. Sapir, "The Southern Paiute Language," Proceedings of the American Academy of Arts and Sciences, vol. 65, no. 1, pp. 262-63, 1930.

2. L. Spier, "Klamath Ethnography," University of California Publications in American Archaeology and Ethnology, v. 30, p. 223, 1930.

fingers are as follows: tk!o'po, thumb; spě'lwís, fore-finger; dōt klū'měni, middle finger; k!ō'ptc!alũm sīnō'kstīs, ring finger; and k!ō'ptc!a, little finger.³ There are no numeral classifiers.⁴ Gatschet says there are classifiers in both Modoc and Klamath to show the shape of the object counted,⁵ but this statement was specifically checked by Spier and the results were repeatedly negative.⁶ That there is no mention of classifiers in Northern Sahaptin⁷ supports Spier's evidence.

The Wailatpuan Molala have a decimal system.⁸ The Sahaptin groups use the decimal counting system. The Yakima⁹ derive eight from four but the other numbers up to ten are unanalysable. The Umatilla form six, seven and eight by combinations of five with one, two and three.

3. Ibid., p. 219.

4. Ibid., p. 223.

5. A. S. Gatschet, "Klamath Indians of Southwestern Oregon," United States Geographical and Geological Survey Of the Territories, Contributions to North American Ethnology, vol. 2, pts. 1 and 2, p. 523, 1890.

6. L. Spier, May 9, 1940, personal communication.

7. M. Jacobs, "A Sketch of Northern Sahaptin Grammar," University of Washington Publications in Anthropology, vol. 4, no. 2, 240, 1931.

8. See list of number words, p. 95.

9. Jacobs, loc. cit.

Twenty is "two-ten" and one hundred "ten-ten".¹⁰ The Nez Perce have the same forms as the Umatilla.¹¹

The Salishan tribes of the Plateau have decimal numeral systems.¹² Lillooet, like other Salishan dialects, has numeral classifiers.¹³ The Southern Okanagon measure by arm length and by span of thumb. The day count is kept by use of a knotted string with two knots for every two hundredth day. The system of count is decimal.¹⁴ The Sanpoil and Nespelem¹⁵ of the Okanagon group also have decimal systems. The Flathead use strings as mnemonic devices, or notched tools or strings of beads.¹⁶ The Kalispel have two series of numerals, one for things or animals, another for persons or for animals when conceived of as human beings. The word for one is different in the two sets of numbers.

10. Loc. cit.

11. See list of words, p. 96.

12. See list of words, pp. 97, 98, 99.

13. C. Hill-Tout, "Report on the Ethnology of the Stlatlum (Lillooet) of British Columbia," Journal of the Royal Anthropological Institute, vol. 35, pp. 166-68, 1905.

14. L. Spier, editor, "The Sinkaitk or Southern Okanagan of Washington," General Series in Anthropology, no. 6, pp. 69-70, 1938.

15. V. Ray, "The Sanpoil and Nespelem, Salishan Peoples of Northeastern Washington," University of Washington Publications in Anthropology, vol. 5, p. 224, 1932.

16. H. Turney-High, "The Flathead Indians of Montana," Memoirs of the American Anthropological Association, no. 48 p. 25, 1937.

The rest of the second set are derived from the first, by addition of the prefix c-.¹⁷ Numerals may be used as adjectives, nouns or prepositions. The prepositional forms may be inflected as verbs. The first ordinal number is essi'it; the other ordinals are the subjunctive forms of the cardinal numbers preceded by the particle tu-.¹⁸ The Coeur d'Alene count on their fingers, beginning with one by putting the right index finger on the point of the little finger of the left hand and continuing to the thumb which is five. Then they reverse hands and begin with the little finger of the right hand and go on to ten which is the thumb. The closed hands are placed beside each other and shaken once for ten, twice for twenty, and so on.¹⁹

The Kutenai system is apparently decimal; the only derived number from one to ten is eight, which is derived from four. Eleven is ten, i'tuo, plus one; fifteen is ten plus five, i-tuom-hla-yi'ku. Fifty is yt-kun'uo, which is probably "five tens".²⁰

17. See list of number words, p. 97.

18. H. Vogt, "The Kalispel Language," Det Norske Videnskaps, pp. 43-44 and 69, 1940.

19. J. Teit, "The Salishan Tribes of the Western Plateaus," Bureau of American Ethnology Annual Report for 1927-28, vol. 45, pp. 148-49, 1930.

20. See list of number words, p. 95.

The first of the records are dated 1911 and 1912.

1. The first of the records are dated 1911 and 1912.

2. The second of the records are dated 1913 and 1914.

3. The third of the records are dated 1915 and 1916.

4. The fourth of the records are dated 1917 and 1918.

5. The fifth of the records are dated 1919 and 1920.

6. The sixth of the records are dated 1921 and 1922.

7. The seventh of the records are dated 1923 and 1924.

8. The eighth of the records are dated 1925 and 1926.

9. The ninth of the records are dated 1927 and 1928.

10. The tenth of the records are dated 1929 and 1930.

11. The eleventh of the records are dated 1931 and 1932.

12. The twelfth of the records are dated 1933 and 1934.

13. The thirteenth of the records are dated 1935 and 1936.

14. The fourteenth of the records are dated 1937 and 1938.

15. The fifteenth of the records are dated 1939 and 1940.

16. The sixteenth of the records are dated 1941 and 1942.

17. The seventeenth of the records are dated 1943 and 1944.

18. The eighteenth of the records are dated 1945 and 1946.

19. The nineteenth of the records are dated 1947 and 1948.

20. The twentieth of the records are dated 1949 and 1950.

21. The twenty-first of the records are dated 1951 and 1952.

22. The twenty-second of the records are dated 1953 and 1954.

23. The twenty-third of the records are dated 1955 and 1956.

24. The twenty-fourth of the records are dated 1957 and 1958.

25. The twenty-fifth of the records are dated 1959 and 1960.

SHOSHONEANS

Northern Paiute (Steward, 1938, p. 274)

- | | |
|---------------|--------------|
| 1. sümü 'u | 6. na 'wai |
| 2. wahi' | 7. ta' tsūi |
| 3. pahe' | 8. wā' sūi |
| 4. watsin 'uu | 9. kwanu'k' |
| 5. manū 'gi | 10. su' wano |

Bannock (Steward, 1938, p. 274)

- | | |
|--------------|---------------------------------|
| 1. sūwū 'yu | 6. na' paihi ^y |
| 2. wahi'yu | 7. nata'kwatsu-kwi ^y |
| 3. pahī'yu | 8. nai'watsukwi ^y |
| 4. watsū'kwi | 9. suwo'kodoop |
| 5. manū 'gi | 10. su' uwanoyu |

Southern Paiute (Sapir, 1930, pp. 262-63)

- | | |
|------------------------|-------------------------|
| 1. cv- | 7. nava'Ikavai- |
| 2. wa- | 8. wa'a'WA'cūwi- |
| 3. pai- | 9. cu(W)a' rayəmA'cūwi- |
| 4. WA'tcū'wi- | 10. təyə'm'A'cūwi- |
| 5. man'i- ^y | 20. wa' mA'cūwi |
| 6. nava'i- | |

Northern Ute (Smith, 1940, personal communication)

- | | |
|------------------------|--------------------------------|
| 1. su'is | 11. tarum' su' i'ni suk'us |
| 2. wai' i'ni | spik'arat |
| 3. p'ai' i'ni | 12. tarum' su' i'ni wai' spik' |
| 4. w'cvu' i'ni | arat |
| 5. mana'gini | 20. wam' su' i'ni |
| 6. navai' i'ni | 40. w'cvu' i' tarum' su' i'ni |
| 7. navai' kav' i'ni | 100. su' k'us' mir |
| 8. w'au' c'u' i'ni | 1000. tarum' su' i'ni suk'us' |
| 9. suar' rūm' su' i'ni | mir |
| 10. tarum' su' i'ni | |

KLAMATH

Klamath (Spier, 1930, pp. 222-223)

- | | |
|---------------|----------------------------|
| 1. nas | 9. nōtsk'ā'ēks |
| 2. lap | 10. te'ēwūnīp |
| 3. Enda'n | 11. na'sial'E |
| 4. wuni'p | 15. tu'nīpial'E |
| 5. tu'nīp | 20. la'pūni te'ēwūnīp |
| 6. nō tsksōpt | 50. tunīpni te'ēwūnīp |
| 7. la'pksōpt | 100. te'ēwūnīpni te'ēwūnīp |
| 8. da'nksōpt | |

STATE

1900-1901 (1901-1902) (1902-1903)

Year	1900-1901	1901-1902	1902-1903
1. Total	100	100	100
2.
3.
4.
5.
6.
7.
8.
9.
10.

WAILATPUAN

Molala (Curtis, vol. 8, 1911, p. 197)

- | | |
|------------------------|---------------------------------|
| 1. na ^h g-a | 8. măt-pit-ha |
| 2. lăp-ka | 9. la-kint-shi-atks |
| 3. măt-ka | 10. lăk-nan |
| 4. pip-a | 11. na ^h g-a-wak-hlě |
| 5. pi-kũ-u | 20. la-pim-lăk-nan |
| 6. na-pit-ha | 50. pi-kim-lăk-nan |
| 7. la-pit-ha | |

KUTENAI

Kutenai (Curtis, vol. 7, 1911, p. 176)

- | | |
|---------------|-----------------------|
| 1. o'-ke | 9. kai-i-kĩ-tuo |
| 2. as | 10. i-tuo |
| 3. kahl-ssa | 11. i-tuom-hla-o'-ke |
| 4. ha'tsa | 15. i-tuom-hla-yi'-ku |
| 5. yi'-ku | 20. ai'-i-wo |
| 6. in-mis-sa | 50. yi-kun-uo |
| 7. wis-ta'hla | 100. i-tu-un-uo |
| 8. wo-hwa'tsa | |

WALLEN

Waller - (Census, vol. 2, 1910, p. 147)

1. no. 1	1. no. 1
2. no. 2	2. no. 2
3. no. 3	3. no. 3
4. no. 4	4. no. 4
5. no. 5	5. no. 5
6. no. 6	6. no. 6
7. no. 7	7. no. 7
8. no. 8	8. no. 8
9. no. 9	9. no. 9
10. no. 10	10. no. 10
11. no. 11	11. no. 11
12. no. 12	12. no. 12
13. no. 13	13. no. 13
14. no. 14	14. no. 14
15. no. 15	15. no. 15
16. no. 16	16. no. 16
17. no. 17	17. no. 17
18. no. 18	18. no. 18
19. no. 19	19. no. 19
20. no. 20	20. no. 20

WALLEN

Waller - (Census, vol. 2, 1910, p. 147)

1. no. 1	1. no. 1
2. no. 2	2. no. 2
3. no. 3	3. no. 3
4. no. 4	4. no. 4
5. no. 5	5. no. 5
6. no. 6	6. no. 6
7. no. 7	7. no. 7
8. no. 8	8. no. 8
9. no. 9	9. no. 9
10. no. 10	10. no. 10
11. no. 11	11. no. 11
12. no. 12	12. no. 12
13. no. 13	13. no. 13
14. no. 14	14. no. 14
15. no. 15	15. no. 15
16. no. 16	16. no. 16
17. no. 17	17. no. 17
18. no. 18	18. no. 18
19. no. 19	19. no. 19
20. no. 20	20. no. 20

SAHAPTIN

Umatilla (Jacobs, 1931, p. 240)

- | | |
|---------------|----------------------------|
| 1. na'xc | 7. tu'sxas |
| 2. ni'pt | 8. paʁat'uma·D |
| 3. mə'tad | 9. t'sm ə'st |
| 4. pi'ni·pt | 10. pu'təmd |
| 5. pa'xad | 100. puta'BtīD, na'xcputa' |
| 6. ptə'x ninc | BtīD, puta'Btit |

Yakima (Curtis, vol. 7, 1911, p. 176)

- | | |
|-----------------|-----------------------|
| 1. nahsh | 9. tsū-mūskt |
| 2. nipt | 10. po'tūmt |
| 3. mū-tat | 11. po'tūmt-ko-nahsh |
| 4. pi'nipt | 15. po'tūmt-ko-pa'hāt |
| 5. pa'hāt | 20. nīp-tit |
| 6. ptā'hni-nīsh | 50. pā-hap-tit |
| 7. tós-hās | 100. pú-tap-tit |
| 8. pa-ha-to-mát | |

Nez Perces (Curtis, vol. 8, 1911, p. 194)

- | | |
|-------------|-----------------------|
| 1. nakts | 8. oi-ma'tat |
| 2. lē-pīt | 9. ku'its |
| 3. mi-tát | 10. pu'timt |
| 4. pi'līpt | 11. pu-timt-wah-nákts |
| 5. pa'hūt | 20. lē-ēp-tit |
| 6. oi-lákts | 50. pā-kap-tit |
| 7. oi-nāpt | 100. pú-tap-tit |

Finalis (Lecura, 17)

1. 10-10-10
2. 10-10-10
3. 10-10-10
4. 10-10-10
5. 10-10-10
6. 10-10-10
7. 10-10-10
8. 10-10-10
9. 10-10-10
10. 10-10-10

Finalis (Lecura, 18)

1. 10-10-10
2. 10-10-10
3. 10-10-10
4. 10-10-10
5. 10-10-10
6. 10-10-10
7. 10-10-10
8. 10-10-10
9. 10-10-10
10. 10-10-10

Finalis (Lecura, 19)

1. 10-10-10
2. 10-10-10
3. 10-10-10
4. 10-10-10
5. 10-10-10
6. 10-10-10
7. 10-10-10
8. 10-10-10
9. 10-10-10
10. 10-10-10

SALISH

Kalispel (Vogt, 1940, p. 44)
(Numerals used for inanimate objects)

- | | |
|-------------|-------------|
| 1. nku' | 6. tagən |
| 2. 'esel | 7. sisp'a! |
| 3. če'te(s) | 8. he'e'nəm |
| 4. mus | 9. x̄x̄anūt |
| 5. cil | 10. 'u'pən |

Kalispel (Vogt, 1940, p. 44)
(Numerals used for persons)

- | | |
|---------------------------|-----------------------|
| 1. čina'(qs) | 6. čtagən |
| 2. česél (< čə'ese'l) | 7. čsispəl |
| 3. čče'če'te(s) | 8. čhe'enəm |
| 4. č'musəms (< č-mus-mus) | 9. čx̄x̄anūt |
| 5. čcil cəl | 10. čə'u'pən (čóupən) |

Spokan (Curtis, vol. 7, 1911, p. 186)

- | | |
|---------------|----------------------|
| 1. ní-ku'-u | 9. hā-hā-nút |
| 2. ū-sěl | 10. úpn |
| 3. chě-ě-hlěs | 11. úpn-ěhl-ní-ku'-u |
| 4. mus | 15. úpn-ěhl-tsil |
| 5. tsil | 20. ě-sěl-li-úpn |
| 6. ta'-kūn | 50. tsil-chhli-úpn |
| 7. sí-spīl | 100. ní-kā-ā-kén |
| 8. hā-ā-nīm | |

Flathead (Curtis, vol. 7, 1911, p. 186)

- | | |
|-------------|-------------------------|
| 1. ᵐ-kó-o | 9. h-hā-nót |
| 2. ě-sěhl | 10. opn |
| 3. chě-hlē | 11. ópn-ěhl-n-ko'ó |
| 4. mos | 15. ópn-ěhl-tsihl |
| 5. tsihl | 20. ě-ěhl-u, ě-sěhl-ópn |
| 6. ta'-kūn | 50. tsihl-chí-hlu-u' |
| 7. sí-spětl | 100. ᵐ-kā-ā-ke |
| 8. hě-ě-nīm | |

Table 1. (continued) (continued)

1	100
2	100
3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100

Table 2. (continued) (continued)

1	100
2	100
3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100

Table 3. (continued) (continued)

1	100
2	100
3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100

Table 4. (continued) (continued)

1	100
2	100
3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100

Wenatchee (Curtis, vol. 7, 1911, pp. 186-87)

- | | |
|-----------------|----------------------|
| 1. naks | 8. tu-win |
| 2. tkō-is | 9. ha-nót |
| 3. tka-hlás | 10. hūtl-hūtlk |
| 4. mu-sus | 11. al-náks |
| 5. tsi-likst | 15. al-tsi-likst |
| 6. hō-tsu-mákst | 20. sa-li-hūtl-hūtlk |
| 7. si-spūlk | |

Sinkiuse (Curtis, vol. 7, 1911, pp. 186-87)

- | | |
|-----------------|-----------------------|
| 1. naks | 7. si-spūlk |
| 2. tū-ka-us | 8. tu-win |
| 3. ka-hlás | 9. ha-ha-nót |
| 4. mo-shūs | 10. hūtl-hūtl |
| 5. chí-likst | 11. hūtl-hūtl-al-náks |
| 6. ho-chí-mákst | |

Okinaken (Gibbs and Dall, 1877, p. 262)

- | | |
|---|---|
| 1. nāks | 8. te'-mikhl |
| 2. es-sil' | 9. h ^h kh-h ⁿ n- ⁿ nót |
| 3. ka-tlis' | 10. o ^o pen-ikst |
| 4. mōs | 12. o ^o pen-iks't't ^o la-sil' |
| 5. che-likst | 20. as-i-la o ^o pen-ikst |
| 6. ta-h ^m - ^k kst | 100. h ^h atch-e-chikst |
| 7. sis-pil-lik | |

Colville (Curtis, vol. 7, 1911, pp. 186-87)

- | | |
|----------------|---------------------------|
| 1. naks | 8. ti-míhl |
| 2. ū-sil | 9. ha-ha-nót |
| 3. kǎ-hlís | 10. ópn-ikst |
| 4. mus | 11. ópn-ikst-hl-náks |
| 5. tsi-likst | 15. ópn-ikst-hl-tsi-likst |
| 6. ta-kūm-ikst | 20. ū-sil-ópn-ikst |
| 7. si-spūlk | 100. hū-tsi-tsikst |

Nespilim (Curtis, vol. 7, 1911, pp. 186-87)

- | | |
|----------------|-------------------------|
| 1. naks | 8. ti-míhl |
| 2. a-sil | 9. ha-ha-nót |
| 3. ka-hlís | 10. ópn-ikst |
| 4. mos | 11. ūhl-náks, ópn-ikst- |
| 5. tsi-likst | ūhl-náks |
| 6. ta-ka-mikst | 20. a-sil-ópn-ikst |
| 7. si-spūlk | |

Verzeichnis (Gemein, vol. 7, 1911, pp. 128-37)

1. ...	1. ...
2. ...	2. ...
3. ...	3. ...
4. ...	4. ...
5. ...	5. ...
6. ...	6. ...
7. ...	7. ...
8. ...	8. ...
9. ...	9. ...
10. ...	10. ...
11. ...	11. ...
12. ...	12. ...
13. ...	13. ...
14. ...	14. ...
15. ...	15. ...
16. ...	16. ...
17. ...	17. ...
18. ...	18. ...
19. ...	19. ...
20. ...	20. ...

Verzeichnis (Gemein, vol. 7, 1911, pp. 128-37)

1. ...	1. ...
2. ...	2. ...
3. ...	3. ...
4. ...	4. ...
5. ...	5. ...
6. ...	6. ...
7. ...	7. ...
8. ...	8. ...
9. ...	9. ...
10. ...	10. ...
11. ...	11. ...
12. ...	12. ...
13. ...	13. ...
14. ...	14. ...
15. ...	15. ...
16. ...	16. ...
17. ...	17. ...
18. ...	18. ...
19. ...	19. ...
20. ...	20. ...

Verzeichnis (Gemein, vol. 7, 1911, pp. 128-37)

1. ...	1. ...
2. ...	2. ...
3. ...	3. ...
4. ...	4. ...
5. ...	5. ...
6. ...	6. ...
7. ...	7. ...
8. ...	8. ...
9. ...	9. ...
10. ...	10. ...
11. ...	11. ...
12. ...	12. ...
13. ...	13. ...
14. ...	14. ...
15. ...	15. ...
16. ...	16. ...
17. ...	17. ...
18. ...	18. ...
19. ...	19. ...
20. ...	20. ...

Verzeichnis (Gemein, vol. 7, 1911, pp. 128-37)

1. ...	1. ...
2. ...	2. ...
3. ...	3. ...
4. ...	4. ...
5. ...	5. ...
6. ...	6. ...
7. ...	7. ...
8. ...	8. ...
9. ...	9. ...
10. ...	10. ...
11. ...	11. ...
12. ...	12. ...
13. ...	13. ...
14. ...	14. ...
15. ...	15. ...
16. ...	16. ...
17. ...	17. ...
18. ...	18. ...
19. ...	19. ...
20. ...	20. ...

Verzeichnis (Gemein, vol. 7, 1911, pp. 128-37)

1. ...	1. ...
2. ...	2. ...
3. ...	3. ...
4. ...	4. ...
5. ...	5. ...
6. ...	6. ...
7. ...	7. ...
8. ...	8. ...
9. ...	9. ...
10. ...	10. ...
11. ...	11. ...
12. ...	12. ...
13. ...	13. ...
14. ...	14. ...
15. ...	15. ...
16. ...	16. ...
17. ...	17. ...
18. ...	18. ...
19. ...	19. ...
20. ...	20. ...

Shooswap (Gibbs and Dall, 1877, p. 262)

- | | |
|-------------|--------------|
| 1. nux | 6. takumkist |
| 2. isseil | 7. seispilk |
| 3. katleis | 8. teemilh |
| 4. moas | 9. hughunoot |
| 5. cheilixt | 10. opunkst |

1. 1812	1. 1812
2. 1817	2. 1817
3. 1812	3. 1812
4. 1817	4. 1817
5. 1812	5. 1812
6. 1817	6. 1817
7. 1812	7. 1812
8. 1817	8. 1817
9. 1812	9. 1812
10. 1817	10. 1817

CHAPTER VII

NUMERAL SYSTEMS OF OTHER NORTH AMERICAN AREAS

PART I NORTHWEST COAST

Pure decimal systems above and below ten occur in the areas of Salishan stocks.¹ This is true of the Coastal as well as of the interior groups as may be seen by the lists of number words on pages 121 and 122. The Eastern and Western Sanetch, Squamish, Cowichan, Nanaimo, Pentlatch, Comox, Sliamun, Klahuse, Homalco and Sechelt are recorded as having decimal systems² and there is no evidence that the other Coastal Salish groups show any variation from the pattern. The Klallam,³ Sechelt and Squamish⁴ use notched sticks or posts to aid them in counting high numbers. The other Coast Salish use knotted strings.⁵ The Klallam measure by finger widths, hand spans, fathoms and paces; distances greater than these are simply "near" or "far".

1. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 672, 1907.

2. H. Barnett, "Culture Element Distributions: IX, Gulf of Georgia Salish," University of California Anthropological Records, vol. 1, no. 5, p. 250, 1939.

3. M. Eells, "The Twana, Chemakum and Klallam Indians of Washington Territory," Annual Report of the Smithsonian Institution for 1887, p. 646, 1889.

4. Loc. cit.

5. H. Barnett, op. cit., p. 250.

NUMERICAL SYSTEMS OF OTHER NORTH AMERICAN LANGUAGES

THE IROQUOIS LANGUAGES

The Iroquois languages above and below are given in the

order of their geographical position. This is done to show the

relation of the Iroquois group as a whole to the other

languages of the region. The Iroquois languages are

Algonquian, Delaware, Shawnee, Seneca, Cayuga, Oneida,

Onondaga, Mohawk, Tuscarora, and the extinct languages

of the Iroquois group. There is no evidence that the

other Central Algonquian groups show any variation from the

pattern. The Iroquois, Seneca and Onondaga, are noted

as being in close relation to the other Iroquois. The

other Central Algonquian languages are noted as being

separated by larger distances, both space and time,

from those which are simply "near" or "distant".

1. J. H. Greenberg and A. L. Greenberg, "Numerical Systems

of the Languages of California," *Journal of Linguistics*,

Vol. 1, No. 1, 1965.

2. J. H. Greenberg, "The Numerical Systems of the Languages

of the Iroquois Group," *Journal of Linguistics*, Vol. 1,

No. 1, 1965.

3. J. H. Greenberg, "The Numerical Systems of the Languages

of the Iroquois Group," *Journal of Linguistics*, Vol. 1,

No. 1, 1965.

They are vague and inaccurate in measurements and in time count.⁶ Their number sense is equally undeveloped for they do not know how to multiply but use repeated additions for this purpose.⁷ Numeral classifiers are used; for the Siciatl, partitive, ordinal, adverbial and distributive numerals are listed.⁸

Of the Wakashan peoples, the Kwakiutl and Koskimo have decimal systems.⁹ The number words of the Clayoquot dialect of Nootka, on analysis, give evidence of a quinary-vigesimal system. The word for twenty means "one person", one hundred is "five times twenty". The numbers for eight and nine are formed by subtraction from ten.¹⁰

In other areas on the Northwest Coast the quinary-decimal system occurs. The Northwest Coast Athapascan Tututni possess the Athapascan characteristic of using a

6. E. Gunther, "Klallam Ethnography," University of Washington Publications in Anthropology, vol. 1, no. 5, p. 227, 1927.

7. M. Eells, "The Twana, Chemakum and Klallam Indians of Washington Territory," Annual Report of the Smithsonian Institution for 1887, p. 646, 1889.

8. C. Hill-Tout, "Report on the Siciatl of British Columbia, a Coast Division of the Salish Stock," Journal of the Royal Anthropological Institute, vol. 34, p. 69, 1904.

9. H. Barnett, "Culture Element Distributions:IX, Gulf of Georgia Salish," University of California Anthropological Records, vol. 1, no. 5, p. 250, 1939.

10. E. Curtis, The North American Indian, vol. 11, p. 202, 1916; also see list of number words, p. 123.

decimal system of counting. Twelve is "ten and two", twenty, "two times ten", one hundred, "ten times ten".¹¹

The Siuslaw, or Lower Umpqua, and the Coos have such systems. The systems are decimal above ten but were of quinary origin and remain quinary below ten.¹² In both there are only five stems; the numbers for six to nine are compound but the second elements are difficult to explain. In Umpqua it is possible that they may be: six, "one (finger) up", seven, "two (fingers) up", etc.¹³ There are no ordinal forms in this language. There are words up to one thousand but they never count that high.¹⁴ In Coos, there are suffixes for ordinal, multiplicative, and distributive numbers.¹⁵

Chinookan dialects, including Chinook, Cathlamet and Wishram appear to have decimal systems.¹⁶

The Chimmesyan Nass and Tsimshian appear to have a

11. E. Curtis, The North American Indian, vol. 13, pp. 250-51, 1924.

12. L. Frachtenberg, "Coos," in Bureau of American Ethnology Bulletin 40, pt. 2, p. 586, 1922.

13. L. Frachtenberg, "Siuslawan (Lower Umpqua)," in Bureau of American Ethnology Bulletin 40, pt. 2, pp. 403 and 586, 1922.

14. Ibid., p. 588.

15. L. Frachtenberg, "Coos," in Bureau of American Ethnology Bulletin 40, pt. 2, p. 403, 1922.

16. See list of number words, p. 126.

...of the system of counting, twelve is "two and two",
 twenty, "two times ten", and hundred, "ten times ten."
 The Chinese, on the other hand, and the Greeks
 and Romans, the systems are decimal above ten but were
 of binary origin and remain binary below ten. In
 fact there are only five terms: the numbers for six to nine
 are borrowed but the system is binary. The Chinese, on the
 other hand, in regard to the numbers that they use, six
 "one and one", seven, "one and two", etc. There
 are no original terms in this language. There are some
 to the Chinese but they never count that high. In fact,
 though the Chinese use decimal, multiplicative, and binary
 terms.

Chinese numerals, including Chinese, Japanese
 and Korean appear to have decimal systems.
 The Chinese, Japanese and Korean appear to have a

11. H. G. Oertel, The North American Indians, vol. 12,
 pp. 250-251, 1902.
 12. J. Franzenberg, "Zwei", in Journal of American
 Ethnology Bulletin 40, pt. 2, p. 252, 1912.
 13. J. Franzenberg, "Zwei", in Journal of American
 Ethnology Bulletin 40, pt. 2, pp. 252
 and 253, 1912.
 14. Ibid., p. 252.
 15. J. Franzenberg, "Zwei", in Journal of American
 Ethnology Bulletin 40, pt. 2, p. 252, 1912.
 16. See list of number words, p. 125.

quinary-decimal or quinary-vigesimal system. The number six is derived from three, seven contains two, eight contains three, nine contains five. Eleven is "ten plus one" and twenty, in Nass dialect, includes ten, which seems to indicate a decimal system above ten.¹⁷ The Tsimshian use different sets of numbers for objects, persons and possibly for salmon.¹⁸

The Tlingit system is based on fives; five, ke djin, means "hand up", ten, djîn'kât, is "hand across", twenty, Lē'qa, is "one man". One hundred, kédjîn qa, appears to be five twenties.¹⁹

The Haida system has become decimal since white contact. The English word, hundred, has replaced their old term for this number.²⁰ The system was probably originally quinary since six and eight are derived from three and four, and ten is derived from five. The word lagwat is used in

17. See list of number words, p. 127.

18. G. Gibbs and W. Dall, "Comparative Vocabularies," United States Geographical and Geological Survey of the Territories, Contributions to North American Ethnology, vol. 1, pt. 1, p. 151, 1877.

19. G. Furnhelm, "Notes on the Natives of Alaska," United States Geographical and Geological Survey of the Territories, Contributions to North American Ethnology, vol. 1, p. 112, 1877; also J. R. Swanton, "Tlingit," in Bureau of American Ethnology Bulletin 40, pt. 1, p. 198, 1911.

20. J. R. Swanton, "Haida," in Bureau of American Ethnology Bulletin 40, pt. 1, p. 270, 1911.

counting blankets at a potlatch and means "a twenty" which is further evidence of an original quinary-vigesimal system.²¹

The Chimakuan system is difficult to analyse. The numbers for six, seven and eight all contain two, and nine is ten minus one. Apparently there are only five primary stems which leads one to suspect a quinary system.²²

The Takelma have a system which functions decimally with an admixture of vigesimal. It is developed from an older quinary or even tertiary system, since only the first three numbers, and possibly the fifth, are etymologically distinct.²³ Four is "two-two", five means "being in front", six, seven and eight are, respectively, "one, two and three fingers in". Ten is "two hands" and eleven, "ten one on top of". One hundred may mean one male person, referring to the highest number of tattoo marks permitted.²⁴

PART II ESKIMO

All the Eskimo have a quinary-vigesimal system of counting. The Unalit are cited by Nelson, as typical of all

21. E. Curtis, The North American Indian, vol. 11, pp. 208-209, 1916.

22. See list of number words, p. 130.

23. E. Sapir, "Notes on the Takelma Indians of South-western Oregon," American Anthropologist, n.s., vol. 9, no. 2, p. 267, 1907.

24. Ibid., pp. 265-66.

with whom he came in contact except the Aleutians.²⁵ The Eskimo are quick in the use of numbers up to two or three hundred, but they must have the objects before them to count. They group the objects by twenties.²⁶ They count on their toes and fingers, and numbers words are descriptive of the process. Eleven, ät-khakh-tök, means "it goes down", sixteen, gûkh-tök, means "it goes over". These are especially used by slow and ignorant persons when building twenty by successive one to five counts. There are regular number words which may be used. Ten, ko-lín', comes from ko-hli', meaning "upper half of the body". Twenty includes yuk, man, and infers "man completed". Forty, mäl-û-ghu-i-pí-äk, is "two sets of animal paws" and four hundred, yu-i-näm yum i-pí', is "twenty sets of man's paws". There are two sets of numbers used interchangeably;²⁷ one refers to fingers, the other is used for things. There are different forms for ordinal, multiplicative and distributive numerals.²⁸ Nunivak numbers are likewise based on the fingers and toes. The twenty digits form "one complete", ni-piá'; forty is

25. E. Nelson, "The Eskimo about Bering Strait," Bureau of American Ethnology Annual Report for 1896-97, vol. 18, pt. 1, p. 235, 1899.

26. Ibid., p. 236.

27. See list of number words, pp. 132 and 133.

28. E. Nelson, op. cit., pp. 237-38.

will also be found in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

... in the ... of the ...

"two completes".²⁹ In the West Greenland dialect twenty means "a man brought to an end".³⁰ There is so little variation in the Eskimo group that no further comment is necessary. Lists of number words will be found on pages 132 to 134. A list of Hershel Island trade jargon numbers will be found on page 134 along with a list of Mackenzie Eskimo words for comparison. The peoples of Northeastern Asia use a quinary-vigesimal system like that of the Eskimo³¹ but the Aleuts use a quinary system of counting.³²

PART III THE PLAINS

The most complete reference on the Plains area is a discussion of the Assiniboin counting system. "All these prairie tribes count by decimals and no other way", says Denig.³³ The Assiniboin numbers up to ten are unanalysable. The numbers from eleven to nineteen are formed by akka'i plus

29. E. Curtis, The North American Indian, vol. 20, p. 276, 1930.

30. W. Thalbitzer, "Eskimo," in Bureau of American Ethnology Bulletin 40, pt. 1, p. 1048, 1911.

31. W. Bogaras, "Chukchee," in Bureau of American Ethnology Bulletin 40, pt. 2, pp. 837-38, 1922; also see list of Chukchee numbers, pp. 14-15 above.

32. L. Conant, "Primitive Number Systems," Annual Report of the Smithsonian Institution for 1892, p. 583, 1893.

33. E. Denig, "Indian Tribes of the Upper Missouri," Bureau of American Ethnology Annual Report for 1928-29, pp. 418-420, 1930.

the words for one to nine. Twenty, wixche' mmene noompa, is "ten-two", fifty is wixchemmene zaptah or "ten-five". They may count to five thousand or, at most, to ten thousand. Mechanically they can count higher but they do not realize greater amounts. They call million "ten hundred thousand". They can not multiply or subtract uneven sums without the aid of small sticks. They are easily confused when counting. They begin with the little finger of the left hand and then go to the thumb of the right and count rapidly from one to one hundred if not interrupted. Their accounts with traders and all other transactions were on the basis of buffalo robes, which served as a medium of exchange. In figuring, they use only a single stroke to indicate one; no symbols, commas or crosses are used.³⁴ The Dakota numbers are very like the Assiniboin.³⁵ Woyawa tabka or "the great count" is given as their word for million.³⁶ The Teton and Yanktonai numbers are likewise similar to the Assiniboin words. The Mandan, Hidatsa and Apsaroka are very similar to each other and are somewhat like the Assiniboin. The Omaha and Oto, although they also have decimal systems have number words which differ from the rest of the Siouan numbers. The Mandan ceremonial

34. Loc. cit.

35. See list of number words, p. 136.

36. S. Riggs, "Dakota Grammar, Texts and Ethnography," United States Geographical and Geological Survey of the Territories, Contributions to North American Ethnology, vol. 9, p. 47, 1893.

number is four.³⁷ The Hidatsa believe there are four souls in each human being.³⁸

The Caddoan tribes of the Plains have quinary-vigesimal systems.³⁹ There are minor variations in word derivation. In Hueco, seven and eight contain two and three; in Pawnee eight is "twice four". The reduplication of four to form eight is a common trait in this group. There is little data available on the Caddoan groups but the fact that their systems deviate from the decimal type common to all other Plains tribes may be confirmed by an examination of the lists of number words, pages 140 and 141.

A list of Karankawa numerals appears on page 142. Four seems to be derived from two, six from four and two, seven from two and five (?), and nine is obviously "one (lacking to) ten". However, the series is faulty and no conclusions can be drawn.⁴⁰ The Tonkawa, which may be re-

37. J. O. Dorsey, "A Study of Siouan Cults," Bureau of American Ethnology Annual Report for 1889-1890, vol. 11, p. 513, 1894.

38. Ibid., p. 517.

39. R. B. Dixon and A. L. Kroeber, "Numeral Systems of the Languages of California," American Anthropologist, n.s., vol. 9, no. 4, p. 672, 1907; also W. Eells, "Number Systems of the North American Indians, Unpublished Master's Thesis, p. 125, 1911.

40. A. S. Gatschet, "The Karankawa Indians," Peabody Museum of Harvard University Papers, vol. 1, no. 2, pp. 137-150, 1891.

number is 1000. The number below 1000 is 1000.

in the same way.

The number below 1000 is 1000.

There are three numbers in the list.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

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The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

The number below 1000 is 1000.

lated to Coahuiltecan, is another extinct language of Texas. The system has four primary stems, one, two, three and five. It functions decimally. The other numbers up to ten are based on cik, ten. One hundred, ce'ndo'we'icbax, is from Spanish ciento plus Tonkawa "one". One thousand is, similarly, ce'ndo'a'la cikbax, ciento and "ten".⁴¹ The San Antonio of Texas,⁴² another extinct Texan group, has an interesting set of number words.⁴³ Three is two plus one, six is three times two, seven is four plus two plus one. Eight is four times two, nine four plus five, and ten, five times two. The only unanalysable forms are one, two, four, five and twenty.

The Kiowa have a pure decimal system; the only derived word from one to ten is eight, which is formed from four.⁴⁴

The Algonquian Piegan and Blackfoot have decimal systems like other Plains tribes, with four, as usual, multiplied by two to form eight.⁴⁵ The number four has special significance in Blackfoot thought. To dream something

41. H. Hoijer, "Tonkawa," in Handbook of American Indian Languages, pt. 3, p. 121, 1933-38.

42. Gallatin as cited in C. J. Thomas, "Numeral Systems of Mexico and Central America," Bureau of American Ethnology Annual Report for 1897-98, vol. 19, pt. 2, p. 881, 1900.

43. See list of number words, p. 142.

44. See list of number words, p. 142.

45. See list of number words, pp. 143 and 144.

... to ...

... and ...

... the ...

... of ...

... in ...

... of ...

... the ...

... of ...

... in ...

... of ...

... the ...

... of ...

... in ...

... of ...

... the ...

... of ...

... in ...

... of ...

... the ...

... of ...

... in ...

... of ...

... the ...

... of ...

... in ...

... of ...

... the ...

four times is considered "powerful medicine". The fourth request for a thing is seldom refused. When picking up a ceremonial bundle, three feints are made and the bundle is picked up the fourth time.⁴⁶ Seven is also an important ritual number.⁴⁷ They had ordeals with the numbers three, seven and ten playing an important part. Three was considered lucky, four evil, and seven and one hundred perfect numbers.⁴⁸ The Cheyenne have a pure decimal system, lacking even the derived form of eight. Petter says they add one, two, three and four to five to form the numbers for one to nine, but there seem to be no trace of this in the number words.⁴⁹ The Arapaho have a decimal system with only the eighth number derived from four.⁵⁰ The sacred numbers are four, five and seven. Seven is less frequent than four and five appears only as a derivative of four, in the sense

46. C. Wissler, "Ceremonial Bundles of the Blackfoot Indians," American Museum of Natural History Anthropological Papers, vol. 7, pt. 2, p. 247, 1912.

47. C. Wissler, "The Social Life of the Blackfoot Indians," American Museum of Natural History Anthropological Papers, vol. 7, pt. 1, p. 45, 1911.

48. J. L'Heureux, "Ethnological Notes on the Astronomical Customs and Religious Ideas of the Chokitapia or Blackfeet Indians, Canada," Journal of the Royal Anthropological Institute, vol. 15, pp. 302-303, 1886.

49. R. Petter, "Sketch of the Cheyenne Grammar," Memoirs of the American Anthropological Association, vol. 1, pt. 6, p. 461, 1905-1907; also see list of number words, pp. 143 and 144.

50. See list of number words, p. 144.

of the center of four.⁵¹ The Gros Ventres have a pure decimal system with no derived words below ten.⁵² The Cree likewise use the decimal system but the word for eight is twice four.⁵³

PART IV MACKENZIE AREA

The Sarci system is decimal with eight derived from four the only non-primary stem up to ten.⁵⁴ The Beaver dialect derives six from two and three, eight from four, and nine means "almost ten".⁵⁵ All Athapascans have decimal systems above ten but a few use quinary systems below ten.⁵⁶ In Chipewyan, six is "again three" but the system is decimal. Classifiers are used to form two sets of numbers, one for things, one for people. The French word mil has replaced the native word for one thousand.⁵⁷ The Atnatanas of Copper

51. A. L. Kroeber, "The Arapaho," American Museum of Natural History Bulletin 18, pt. 4, p. 412, 1907.

52. See list of number words, p. 143.

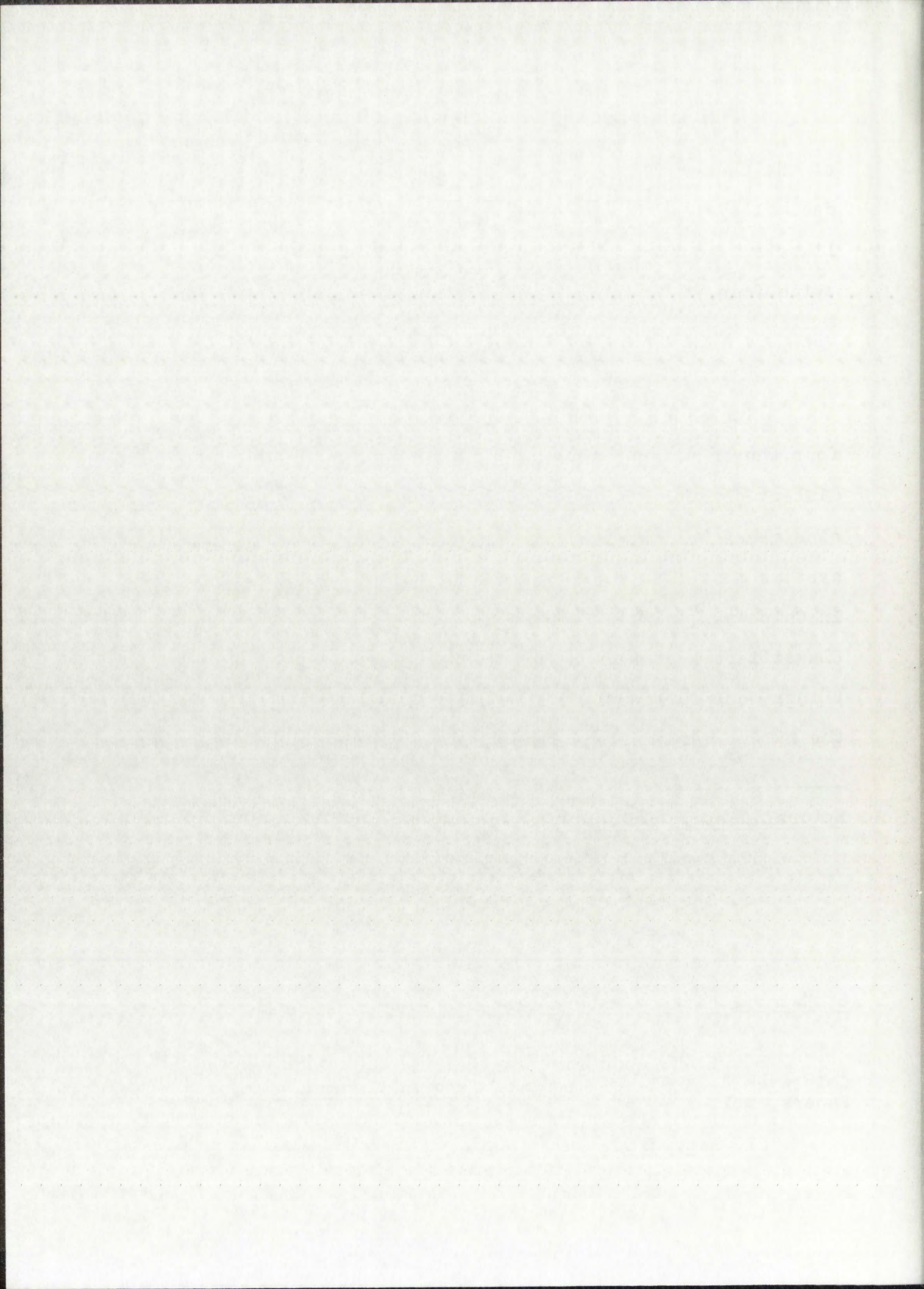
53. See list of number words, p. 145.

54. See list of number words, p. 146.

55. P. E. Goddard, "Beaver Dialect," American Museum of Natural History Anthropological Papers, vol. 10, no. 6, p. 437, 1917.

56. P. E. Goddard, "Analysis of Cold Lake Dialect, Chipewyan," American Museum of Natural History Anthropological Papers, vol. 10, pt. 2, p. 115, 1917.

57. Loc. cit.



River also have a decimal system.⁵⁸ The Kutchin of Peel River count on their fingers but there is no mention of this for other groups.⁵⁹ All the Northern Athapascans have very similar number words and systems as may be seen from an examination of the number word lists, pages 146 and 147.

PART V EASTERN UNITED STATES

The Eastern Siouan groups, like the Sioux of the Plains, have decimal numeral systems. In Catawba, Tutelo and Winnebago, all the words below ten are primary stems.⁶⁰ In Ofo, eight contains three.⁶¹ The Catawba have two forms of numbers. The shorter form is used for simple counting; the longer has a predicative function.⁶² The longer form is listed on page 135. The short form is the same minus the -re or -re'.⁶³ The numbers for eleven to nineteen add the unit numbers and haksare, meaning "adding", to ten. Twenty

58. See list of number words, p. 147.

59. C. Osgood, "Contributions to the Ethnography of the Kutchin," Yale University Publications in Anthropology, no. 14, p. 91, 1936.

60. See list of number words, pp. 135 and 139.

61. See list of number words, p. 135.

62. A. S. Gatschet, "Grammatic Sketch of the Catawba Language," American Anthropologist, n.s., vol. 2, no. 4, p. 534, 1900.

63. Loc. cit.

They also have a list of words... The number of words...
The number of words...
The number of words...

The number of words...
The number of words...

The number of words...
The number of words...

The number of words...
The number of words...

The number of words...
The number of words...

The number of words...
The number of words...

The number of words...
The number of words...

The number of words...
The number of words...

The number of words...
The number of words...

is "ten-two". One hundred is "big ten".⁶⁴

The Muskogean systems are all decimal.⁶⁵ The Chickasaw mark on the ground in straight lines for units, with a cross for ten.⁶⁶ This is confirmed by Eakens in Schoolcraft⁶⁷ and he adds that they also use their fingers in counting. The Muskogee word for "stone" or "building material", tahre, is the word for two in Cherokee and ishke, five, is the Muskogee word for "mother".⁶⁸ The Choctaw use bundles of sticks in keeping the day count. They play ball games with twelve point scores.⁶⁹ The Natchez count only to ten and then begin again with one. They say "two-ten", "three-ten", etc. up to "ten-ten". After that they say tallabe meaning "so many I can't count them any more".⁷⁰ The Seminole can count indefinitely and, claims

64. Ibid., p. 535.

65. J. R. Swanton, "Social Organization and Social Usages of the Indians of the Creek Confederacy," Bureau of American Ethnology Annual Report for 1924-25, vol. 42, p. 453, 1928.

66. J. Adair, History of the American Indians, p. 81, 1930.

67. J. R. Swanton, op. cit., p. 453.

68. J. Adair, op. cit., p. 82.

69. J. R. Swanton, "Source Material for the Social and Ceremonial Life of the Choctaw Indians," Bureau of American Ethnology Bulletin 103, p. 44, 1931.

70. J. R. Swanton, "Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico," Bureau of American Ethnology Bulletin 43, p. 108, 1911.

MacCauley, the system is quinary.⁷¹ This may be so below ten, but above ten it becomes decimal.⁷² The Micosuki Seminole and the Hitchiti have pure decimal systems.⁷³

The Iroquois also have decimal numeral systems.⁷⁴ Four is the fundamental sacred number of the Cherokee, seven is used occasionally and twelve is used in ball games. The use of seven is probably a new concept traceable to the seven day week or possibly to the seven remaining clans. There is a tendency to use twenty-four plants in brewing medicine for certain diseases and there is a twenty-four day period of tabu after childbirth. Four women must attend at a birth. They claim this is a North Carolina state law.⁷⁵

The Tawasa and Timucua have decimal systems. The words for nine contain four in both systems.⁷⁶ The Yuchi have a decimal system; the numeral words are adjectival in form. Eleven means "ten one laid over". One hundred, ict'εt'ε',

71. C. MacCauley, "The Seminole Indians of Florida," Bureau of American Ethnology Annual Report for 1883-1884, vol. 5, p. 525, 1887.

72. See list of number words, p. 149.

73. See list of number words, p. 149.

74. See list of number words, p. 150.

75. J. Mooney, "The Swimmer Manuscript, Cherokee Sacred Formulas and Medicinal Prescriptions," Bureau of American Ethnology Bulletin 99, p. 52, 1932.

76. See list of number words, p. 151.

...the system of ...
...has been ...
...the ...

...the ...
...is ...

...the ...
...has been ...
...the ...
...the ...

...the ...
...has been ...
...the ...

...the ...
...has been ...

...the ...
...has been ...

...the ...
...has been ...

...the ...
...has been ...

is "road one"; one thousand, ict'a'at'ε', means "road big one".⁷⁷ In Atakapa, the word for eight, himato'l tsik, is from four, himato'l tsēts.⁷⁸ The system appears to be decimal. The Beothuc numbers as listed on page 154 seem to be decimal, but they may not be the aboriginal numbers.

The Montagnais have a decimal system but the number words are digital in origin, as follows:⁷⁹

1. inl'are	"the end is bent"
2. nak'e	"another is bent"
3. t'are	"the middle is bent"
4. dinri	"there are no more except this"
5. se-sunla-re	"the row on the hand"
6. elkke-t'are	"three from each side"
7. t'a-ye-oyertan inl'as dinri	"there are still three of them" or "on one side there are four of them"
8. elkke-dinri	"four on each side"
9. inla-ye-oyert'an	"there is still one more"
10. onernan	"finished on each side"
11. onernan inl'are ttcharidhel	"one complete and one"
12. onernan nak'e ttcharidhel	"one complete and two"

As mentioned above, page 5, there are theories that the Chippewa once had a senary system, which is born out in the word for one hundred, ningot wâk, which contains the stem

⁷⁷. G. Wagner, "Yuchi," in Handbook of American Indian Languages, pt. 3, p. 346, 1933-38.

⁷⁸. See list of number words, p. 152.

⁷⁹. L. Conant, The Number Concept, its Origin and Development, p. 53, 1923.

The "word one" and "number one" are "one" and "one".

and "one" in various, the word "one" is "one" and "one".

There is a "one" and "one" in the "one" and "one".

The "one" and "one" are "one" and "one" in the "one" and "one".

but they are not the "one" and "one" in the "one" and "one".

The "one" and "one" are "one" and "one" in the "one" and "one".

words are "one" and "one" in the "one" and "one".

The "one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

"one" and "one" are "one" and "one" in the "one" and "one".

As mentioned above, page 1, there are theories that...

Chapters once had a number system which is part of the...

word for "one" and "one" which contains the same...

The "one" and "one" are "one" and "one" in the "one" and "one".

The "one" and "one" are "one" and "one" in the "one" and "one".

The "one" and "one" are "one" and "one" in the "one" and "one".

The "one" and "one" are "one" and "one" in the "one" and "one".

for six, ningot.⁸⁰ The system is now decimal. The Chippewa use notched sticks as memory devices. They measure time, distance and quantity with references to the body or to manifestations of nature.⁸¹ The Sauk and Fox can count to one thousand, which they call "a big hundred" and many individuals can count to ten thousand. They make no marks to represent numbers.⁸² Forsyth states, "The Sauk and Foxes and I believe all other Indians count decimally".⁸³ William Jones classes the Fox system as quinary to ten and changing to decimal above ten.⁸⁴ However, from the number words, Forsyth is correct in considering them decimal.⁸⁵ The Penobscot and Abenaki count by tens.⁸⁶ The Micmac system is capable of indefinite expansion, says Hagar.⁸⁷ He does not

80. L. Adam, "Le Cree et le Chippeway," International Congress of Americanists, Session 1, pt. 2, p. 136, 1875.

81. F. Densmore, "Chippewa Customs," Bureau of American Ethnology Bulletin 86, p. 173, 1929.

82. Forsyth in E. H. Blair, The Indian Tribes of the Upper Mississippi Valley and Region of the Great Lakes, vol. 2, p. 221, 1912.

83. Ibid., p. 244.

84. W. Jones, "Algonquian (Fox)," in Bureau of American Ethnology Bulletin 40, pt. 1, p. 857, 1911.

85. See list of number words, p. 157.

86. See list of number words, p. 155.

87. S. T. Hagar, "A Melange of Micmac Notes," American Association for the Advancement of Science Proceedings, vol. 44, p. 258, 1895.

mention the type of system but it may be assumed to be decimal. They use maize grains to assist them in counting.⁸⁸ The Lenape make painted or scratched records on wood or peeled trees. They measure by "steps" and by "as long as the back" which is a yard or less and equals a wampum string of one hundred beads.⁸⁹ The Delaware, Kickapoo, Mohegan, Narragansett, Massachusetts, Natick and Pamunkey all have decimal systems.⁹⁰ The Shawnee enumerate by tens. One hundred is tepāāwaa, one thousand, metōthenee, ten thousand, metōthenee metōthenee tepāāwaa. They have no idea of addition, multiplication, subtraction or division except on a very limited scale.⁹¹ The emphasis on number twelve as a sacred number of the Coastal Algonquians is due to independent origin within the area since it is not found among the Central Algonquians nor among the Iroquois.⁹² The use of

88. Loc. cit.

89. M. R. Harrington, "A Preliminary Sketch of Lenape Culture," American Anthropologist, n.s., vol. 15, no. 2, p. 230, 1913.

90. See lists of number words, pp. 155, 156 and 157.

91. Trowbridge in Kinietz and Voegelin, "Shawnese Traditions," Occasional Contributions from the Museum of Anthropology of the University of Michigan, no. 9, p. 38, 1939.

92. R. Flannery, "An Analysis of Coastal Algonquian Culture," Catholic University of American Anthropological Series, no. 7, p. 187, 1939.

seven as a sacred number among the Micmac, Penobscot, Cherokee and Iroquois⁹³ is certainly or almost certainly due to European influence.⁹⁴ The Iroquois place more emphasis on three or four.⁹⁵

93. Ibid., p. 160, footnote 74.

94. Ibid., p. 179.

95. J. N. B. Hewitt in Flannery, op. cit., p. 160.

... as a matter of fact among the ...
... and ... is certainly ...
... the ... of ...

... 1915, p. 100, footnote 74.
... 1914, p. 100.
... 1915, p. 100, footnote 74.

TABLE II

NUMERAL SYSTEM OF NORTH AMERICAN TRIBES OUTSIDE OF CALIFORNIA

<u>Name of Tribe</u>	<u>Unit of Count</u>		
	<u>1-10</u>	<u>10-20</u>	<u>20 up</u>
Keresan Pueblos	10	10	10
Acoma	10	10	10
Laguna	10	10	10
Santo Domingo	10	10	10
Hopi	10	10	10
Tanoan Pueblos	10	10	10
Taos	10	10	10
Isleta	10	10	10
Jemez	10	10	10
Zuni	5	10	10
Southwestern Ath.	10	10	10
Navajo	10	10	10
Apache	10	10	10
Southwestern Yumans	10	10	10
Yavapai	10	10	10
Havasupai	10	10	10
Yuma	3, 4(?)	3, 4(?)	10(?)
Kiliwi	5	10	10
Cochimi	5	5	?
Pima, Papago	10	10	10
Opata	10	?	?
Tarahumara	4(?)	10	10
Seri	5	5	20
Yaqui, Mayo	5	5(?)	?
Plateau Shoshoneans	10	10	10
Northern Paiute	10	10	10
Southern Paiute	10	10	10
Klamath	10	10	10
Molala	10	10	10
Sahaptin	10	10	10
Interior Salish	10	10	10
Lillooet	10	10	10
Sanpoil, Nespelem	10	10	10
Flathead	10	10	10
Kutenai	10	10	10
Coast Salish	10	10	10
Klallam	10	10	10
Cowichan	10	10	10
Sechelt	10	10	10
Kwakiutl	10	10	10

TABLE II (continued)

<u>Name of Tribe</u>	<u>1-10</u>	<u>10-20</u>	<u>20 up</u>
Nootka	5	5	20
Suislaw	5	10	10
Coos	5	10	10
Chinook	10	10	10
Chimmesyan	5	10, 20	10, 20
Tlingit	5	5	20
Haida	5, 10	10	10
Chimakuan	5	?	?
Takelma	10	10	10, 20
Eskimo	5	5	20
Aleut	5	5	5(?)
Plains Sioux	10	10	10
Assiniboin	10	10	10
Dakota	10	10	10
Mandan, Hidatsa	10	10	10
Caddoans	5	5	20
Pawnee	5	5	20
Arikara	5	5	20
Tonkawa	10	10	10
Kiowa	10	10	10
Plains Algonquian	10	10	10
Piegan	10	10	10
Cheyenne	10	10	10
Arapaho	10	10	10
Northern Athapascans	10	10	10
Sarci	10	10	10
Beaver	10	10	10
Chipewyan	10	10	10
Eastern Sioux	10	10	10
Catawba	10	10	10
Tutelo	10	10	10
Ofo	10	10	10
Muskhogean	10	10	10
Muskhoge	10	10	10
Natchez	10	10	10
Seminole	5(?)	10	10
Iroquois	10	10	10
Tawasa, Timucua	10	10	10
Atakapa	10	10	10
Beothuk	10	10	10
Eastern Algonquians	10	10	10
Montagnais	10	10	10
Chippewa	10	10	10
Penobscot	10	10	10
Shawnee	10	10	10

Table 11 (continued)

Year of Survey	1960	1961	1962
Alaska	10	10	10
Arizona	10	10	10
California	10	10	10
Colorado	10	10	10
Connecticut	10	10	10
Delaware	10	10	10
District of Columbia	10	10	10
Florida	10	10	10
Georgia	10	10	10
Idaho	10	10	10
Illinois	10	10	10
Indiana	10	10	10
Iowa	10	10	10
Kansas	10	10	10
Kentucky	10	10	10
Louisiana	10	10	10
Maine	10	10	10
Maryland	10	10	10
Massachusetts	10	10	10
Michigan	10	10	10
Minnesota	10	10	10
Mississippi	10	10	10
Missouri	10	10	10
Montana	10	10	10
Nebraska	10	10	10
Nevada	10	10	10
New Hampshire	10	10	10
New Jersey	10	10	10
New Mexico	10	10	10
New York	10	10	10
North Carolina	10	10	10
North Dakota	10	10	10
Ohio	10	10	10
Oklahoma	10	10	10
Oregon	10	10	10
Pennsylvania	10	10	10
Rhode Island	10	10	10
South Carolina	10	10	10
South Dakota	10	10	10
Tennessee	10	10	10
Texas	10	10	10
Utah	10	10	10
Vermont	10	10	10
Virginia	10	10	10
Washington	10	10	10
West Virginia	10	10	10
Wisconsin	10	10	10
Wyoming	10	10	10

SALISHAN

Twana (M. Eells, 1887, p. 644-45)

- | | |
|--------------|---------------|
| 1. da-kûs | 6. i-a-pá-chí |
| 2. es-sa-lí | 7. tu-kôs |
| 3. chó-ús | 8. tú-ka-chí |
| 4. bú-sús | 9. hawillá |
| 5. tsa-liwés | 10. opa-dích |

Twana (Curtis, vol. 9, 1913, p. 190)

- | | |
|--------------|----------------------|
| 1. dá-kas | 9. hwül |
| 2. ũ-sa-li | 10. o-pi-dích |
| 3. cha-as | 11. o-pi-dích-hwütł- |
| 4. bu-sas | ti-da-kas |
| 5. sts-hwas | 20. súb-tláh |
| 6. yū-pá-chí | 50. cht'sts-hwas |
| 7. tú-kús | 100. cht'pál-ô-lūs |
| 8. tú-ka-chí | |

Cowichan (Curtis, vol. 9, 1913, p. 191)

- | | |
|--------------|------------------------|
| 1. nŭ-tsa | 8. tē-tsūs |
| 2. yí-sél-la | 9. tuh |
| 3. hli'hw | 10. a-pün |
| 4. ha-á-sün | 11. a-pün-ets-i-sél-la |
| 5. hlká-tsís | 20. tsqush |
| 6. tham | 50. hlká-tsühl-shá |
| 7. tsa-qūs | 100. ná-tsa-wüts |

Cowlitz (Curtis, vol. 9, 1913, p. 190)

- | | |
|--------------|-----------------------|
| 1. u'-tsūs | 8. tsa'-mos |
| 2. sál-li | 9. tuh |
| 3. ka'-hli | 10. pa'-nachs |
| 4. mus | 11. tal-o'-tsūs |
| 5. tsi'-lats | 20. tsüm-tümh' |
| 6. ta-hüm | 50. tsi'-likshl-tümh' |
| 7. tsops | 100. pa'-nikshl-tümh' |

Shoalwater Bay (Curtis, vol. 9, 1913, p. 190)

- | | |
|-------------|-------------------------|
| 1. paw | 8. tsa'-mos |
| 2. sal | 9. tu'h |
| 3. chá-'hl | 10. pa'nchs |
| 4. mos | 11. tal-paw |
| 5. tsi'lchs | 20. tsüm-tó-msh |
| 6. si'-tích | 50. tsi'lch-tíhl-tū'msh |
| 7. tsops | 100. pa'nch-tíhl-tū'msh |

INDEX

Index (N. 101, 1913, p. 1-10)

1. de-101	101
2. de-102	102
3. de-103	103
4. de-104	104
5. de-105	105
6. de-106	106
7. de-107	107
8. de-108	108
9. de-109	109
10. de-110	110

Index (N. 102, 1913, p. 1-10)

1. de-101	101
2. de-102	102
3. de-103	103
4. de-104	104
5. de-105	105
6. de-106	106
7. de-107	107
8. de-108	108
9. de-109	109
10. de-110	110

Index (N. 103, 1913, p. 1-10)

1. de-101	101
2. de-102	102
3. de-103	103
4. de-104	104
5. de-105	105
6. de-106	106
7. de-107	107
8. de-108	108
9. de-109	109
10. de-110	110

Index (N. 104, 1913, p. 1-10)

1. de-101	101
2. de-102	102
3. de-103	103
4. de-104	104
5. de-105	105
6. de-106	106
7. de-107	107
8. de-108	108
9. de-109	109
10. de-110	110

Index (N. 105, 1913, p. 1-10)

1. de-101	101
2. de-102	102
3. de-103	103
4. de-104	104
5. de-105	105
6. de-106	106
7. de-107	107
8. de-108	108
9. de-109	109
10. de-110	110

Quinault (Curtis, vol. 9, 1913, p. 190)

- | | |
|----------------|----------------------------|
| 1. paw | 8. tsa'-mus |
| 2. sa'l-li | 9. tū-gwiuh |
| 3. cha'-ū-hla | 10. pa'-na-kis |
| 4. mus | 11. tal-paw |
| 5. tsi'-la-kis | 20. tsūm-tu'-mish |
| 6. si'-ta-cha | 50. tsi'-laks-tahl-tu-mish |
| 7. tsu'-ups | 100. pa'-naks-tahl-tu-mish |

Quinault (Olson, 1936, p. 179)

- | | |
|----------------|---------------------------|
| 1. pa'uh, powh | 8. tsa'mos |
| 2. sa'lih | 9. tā'gwixu |
| 3. tca'āla | 10. pa'naks |
| 4. mo.'s | 15. ta'ltsi'laks |
| 5. tse'laks | 20. tsānto'mic |
| 6. se'tatcā | 100. panakstatomic |
| 7. tso'ps | 1000. panakspanakstatomic |

Belhoola (Gibbs and Dall, 1877, pp. 278-79)

- | | |
|-----------------|----------------------------|
| 1. s'm-ma'-o | 8. kehtl-nose' |
| 2. kl-nose' | 9. keesh-ma'-o |
| 3. as-moose' | 10. ts-kel-lāākt |
| 4. mose | 12. itl-pee'-atlnatl-nose' |
| 5. tsee'hw | 20. klo-ah'-sleekt |
| 6. tuch-hohtl' | 100. ts-kel-lakt'-t'leekt |
| 7. as-k't-lumm' | |

Siciatl (Hill-Tout, 1904, p. 69)

- | | |
|-------------|---------------------|
| 1. pāla | 9. tūqūiq |
| 2. tēmicin | 10. opEn |
| 3. tcātlas | 11. opEn ita pāla |
| 4. mōs | 20. sām̄pca |
| 5. cēlatcis | 50. cīlātca |
| 6. t'Equm | 100. tEsāwitc |
| 7. tsōtcis | 1000. opEn tEsāwitc |
| 8. tEātcis | |

Chehalis (Boas, 1935, p. 105)

- | | |
|--------------|-------------------|
| 1. o'ts's | 7. ts'ə'ps |
| 2. sa'le | 8. tsa'mos |
| 3. tca.'la | 9. ta'wx* |
| 4. mo's | 10. pa'nates |
| 5. tse.lātcs | 100. pa'ntcsto'mc |
| 6. t'axām | |

WAKASHAN

Kwakuitl (Boas, 1921, pp. 1439 ff.)

- | | |
|-----------------------|---|
| 1. εnEm | 8. maigunaɪ |
| 2. ma ^ε ɪ | 9. εnā ^ε nEmap!enk' |
| 3. yūdux ^κ | 10. nEqa |
| 4. mō | 12. gäg·iwāla (?) |
| 5. sek' a | 20. maɪtsEmgustā |
| 6. q!EL! | 40. mōsgEmg`ustā |
| 7. āLEbō | 100. g·ēx sōg·ug·Eyōx ^ε sayōk ^κ |

Koskimo (Kwakuitl) (Curtis, vol. 10, 1915, p. 335)

- | | |
|---------------------------|-------------------------|
| 1. nūm | 8. mahl-ku-náhl |
| 2. ma ^h hl | 9. na'-nū-ma |
| 3. yu' -túhw | 10. lash-tu' |
| 4. mu | 11. nū-ma-ki-yu |
| 5. si ^h -kya | 20. mahl-tsūm-kyus-tā |
| 6. kā ^h -tla | 50. si-kyas-kūm-kyus-tā |
| 7. a ^h -tli-pu | 100. la'-kyínt |

Bel-bella (Gibbs and Dall, 1877, p. 151)

- | | |
|----------------|----------------------|
| 1. men-noh' | 8. yoht-hohs' |
| 2. mah'lo | 9. maa-mi-ni |
| 3. yo' -tohk | 10. ai-k' yūs |
| 4. mohk | 11. men-nee' -a-gi-o |
| 5. ske-auk' | 20. maam-lis-kūm-ah |
| 6. kut-la'-ohk | 100. o-pūn-is-teh-is |
| 7. mat-laus | |

Clayoquot (Nootka) (Curtis, vol. 11, 1916, p. 202)

- | | |
|-------------------------|-----------------------|
| 1. tsa-wāk | 10. hai-yu' |
| 2. a'-tlū | 11. tsa-wu-mu'hla-pi |
| 3. kats-tsa | 20. tsa-kéts |
| 4. mu | 50. a-tluík-ā-ha- |
| 5. su ^h -chě | ísh-hai-yu' |
| 6. nu-pu' | 100. su-chiūk |
| 7. atl-pu' | 1000. su-chě-pi-tuūk- |
| 8. a-tlū-qūhl | hai-yúūk |
| 9. tsa-wa-qūhl | |

Makah (Curtis, vol. 11, 1916, p. 202)

- | | |
|---------------|--------------------|
| 1. tsúk-wak | 8. a-klās-ub |
| 2. athl | 9. tsúk-wá-sub |
| 3. wi | 10. klühw |
| 4. buh | 11. klühw-ish-áthl |
| 5. shu'ch | 20. tsuk-éts |
| 6. chéüh-pahl | 100. shuch'eük |
| 7. athl-pu | |

March (Cont'd), Vol. 12, 1916, p. 1021

100. 1000-001	100. 1000-001
99. 1000-002	99. 1000-002
98. 1000-003	98. 1000-003
97. 1000-004	97. 1000-004
96. 1000-005	96. 1000-005
95. 1000-006	95. 1000-006
94. 1000-007	94. 1000-007
93. 1000-008	93. 1000-008
92. 1000-009	92. 1000-009
91. 1000-010	91. 1000-010
90. 1000-011	90. 1000-011
89. 1000-012	89. 1000-012
88. 1000-013	88. 1000-013
87. 1000-014	87. 1000-014
86. 1000-015	86. 1000-015
85. 1000-016	85. 1000-016
84. 1000-017	84. 1000-017
83. 1000-018	83. 1000-018
82. 1000-019	82. 1000-019
81. 1000-020	81. 1000-020
80. 1000-021	80. 1000-021
79. 1000-022	79. 1000-022
78. 1000-023	78. 1000-023
77. 1000-024	77. 1000-024
76. 1000-025	76. 1000-025
75. 1000-026	75. 1000-026
74. 1000-027	74. 1000-027
73. 1000-028	73. 1000-028
72. 1000-029	72. 1000-029
71. 1000-030	71. 1000-030
70. 1000-031	70. 1000-031
69. 1000-032	69. 1000-032
68. 1000-033	68. 1000-033
67. 1000-034	67. 1000-034
66. 1000-035	66. 1000-035
65. 1000-036	65. 1000-036
64. 1000-037	64. 1000-037
63. 1000-038	63. 1000-038
62. 1000-039	62. 1000-039
61. 1000-040	61. 1000-040
60. 1000-041	60. 1000-041
59. 1000-042	59. 1000-042
58. 1000-043	58. 1000-043
57. 1000-044	57. 1000-044
56. 1000-045	56. 1000-045
55. 1000-046	55. 1000-046
54. 1000-047	54. 1000-047
53. 1000-048	53. 1000-048
52. 1000-049	52. 1000-049
51. 1000-050	51. 1000-050
50. 1000-051	50. 1000-051
49. 1000-052	49. 1000-052
48. 1000-053	48. 1000-053
47. 1000-054	47. 1000-054
46. 1000-055	46. 1000-055
45. 1000-056	45. 1000-056
44. 1000-057	44. 1000-057
43. 1000-058	43. 1000-058
42. 1000-059	42. 1000-059
41. 1000-060	41. 1000-060
40. 1000-061	40. 1000-061
39. 1000-062	39. 1000-062
38. 1000-063	38. 1000-063
37. 1000-064	37. 1000-064
36. 1000-065	36. 1000-065
35. 1000-066	35. 1000-066
34. 1000-067	34. 1000-067
33. 1000-068	33. 1000-068
32. 1000-069	32. 1000-069
31. 1000-070	31. 1000-070
30. 1000-071	30. 1000-071
29. 1000-072	29. 1000-072
28. 1000-073	28. 1000-073
27. 1000-074	27. 1000-074
26. 1000-075	26. 1000-075
25. 1000-076	25. 1000-076
24. 1000-077	24. 1000-077
23. 1000-078	23. 1000-078
22. 1000-079	22. 1000-079
21. 1000-080	21. 1000-080
20. 1000-081	20. 1000-081
19. 1000-082	19. 1000-082
18. 1000-083	18. 1000-083
17. 1000-084	17. 1000-084
16. 1000-085	16. 1000-085
15. 1000-086	15. 1000-086
14. 1000-087	14. 1000-087
13. 1000-088	13. 1000-088
12. 1000-089	12. 1000-089
11. 1000-090	11. 1000-090
10. 1000-091	10. 1000-091
9. 1000-092	9. 1000-092
8. 1000-093	8. 1000-093
7. 1000-094	7. 1000-094
6. 1000-095	6. 1000-095
5. 1000-096	5. 1000-096
4. 1000-097	4. 1000-097
3. 1000-098	3. 1000-098
2. 1000-099	2. 1000-099
1. 1000-100	1. 1000-100

COOS

Coos (Frachtenberg, 1922a, p. 403)

- | | |
|----------------|------------------------------|
| 1. yîxē' / | 8. yîxē' ahāī |
| 2. yûxwā' | 9. yûxwā' ahāī |
| 3. yî'psEn | 10. Lep!qa' nî |
| 4. he'cL'L | 11. Lep!qa' nî yîxē' ū' qtsī |
| 5. kat'E' mis | 20. yûxwā' ka |
| 6. yîxē' wîeq | 50. kat'E' mîska |
| 7. yûxwā' wîeq | 100. yîxē' nî'k'î'n |

SIUSLAWAN

Siuslawan (Frachtenberg, 1922b, p. 586)

- | | |
|--------------------------------|---|
| 1. aɣ ^ə q | 9. a'ɣ ^ə qxa't |
| 2. xā'ts!ū | 10. kîx ^ɛ s |
| 3. cî'n ^ə x | 11. kî'x ^ɛ s "ɣa'ɣ ^ə q |
| 4. xā'ts!ūn | 15. kî'x ^ɛ s "lxa'p' stca'
xwî'yu |
| 5. Lxa'p's | 20. xā ts!ūkîxe' stîm |
| 6. qa'tîmx | 50. Lxa'p's kîxe' stîm |
| 7. xā'ts!ū qtā'max | 100. kî'x ^ɛ s kîxe' stîm |
| 8. cî'n ^ə x qtā'max | |

Case (Numbered) 1922, p. 401

1. 1922	1. 1922
2. 1922	2. 1922
3. 1922	3. 1922
4. 1922	4. 1922
5. 1922	5. 1922
6. 1922	6. 1922
7. 1922	7. 1922
8. 1922	8. 1922
9. 1922	9. 1922
10. 1922	10. 1922

Case (Numbered) 1922, p. 402

1. 1922	1. 1922
2. 1922	2. 1922
3. 1922	3. 1922
4. 1922	4. 1922
5. 1922	5. 1922
6. 1922	6. 1922
7. 1922	7. 1922
8. 1922	8. 1922
9. 1922	9. 1922
10. 1922	10. 1922

CHINOOKAN

Chinook (Curtis, vol. 8, 1911, p. 203)

- | | |
|-----------------|------------------------|
| 1. iht | 8. qstuht-kin |
| 2. mōqst | 9. qai-itst |
| 3. hlun | 10. ta-hli-lam |
| 4. lakt | 11. tā-hli-lam-kun-iht |
| 5. kwanm | 20. mōqst-tláhl |
| 6. táhm | 50. kún-ni-mi-tláhl |
| 7. sín-nŭ-mōqst | 100. iht-i-ka-mú-nak |

Index (Order, vol. 6, 1911, p. 205)

1. Introduction	1
2. General	2
3. History	3
4. Literature	4
5. Science	5
6. Art	6
7. Religion	7
8. Social	8
9. Political	9
10. Economic	10
11. Educational	11
12. Miscellaneous	12
13. Appendix	13
14. Index	14

CHIMMESYAN

Tsimshian (Boas, 1911a, p. 396)

- | | |
|-------------|------------------|
| 1. k·!ā·k | 7. t!Epxâ'olt |
| 2. t!Epxâ'd | 8. q!andâ'olt |
| 3. gwant | 9. kstEmâ's |
| 4. txālp̄x | 10. k'ap |
| 5. k"stōns | 11. k'apdi g·ā·k |
| 6. q!â·lt | 20. k·edē'ol |

Nass (Boas, 1911a, p. 396)

- | | |
|-----------------------|-------------------------------|
| 1. k'·äk ^u | 7. t'Epxâ'Elt |
| 2. t'Epxâ't | 8. qandâ'Elt |
| 3. golā'nt | 9. k"stEmâ'e |
| 4. txālp̄x | 10. k'ap |
| 5. k"stēnc | 11. k'ap diK'·äk ^u |
| 6. q'â'Elt | 20. k'·ē'lbel wul k'ap |

MEMORANDUM

Subject: [Illegible]

[Illegible text]

Date: [Illegible]

[Illegible text]

TLINGIT

Tlingit (Swanton, 1911b, p. 198)

- | | |
|--------------|----------------------|
| 1. L ēq | 8. na'ts!kuducu |
| 2. dēx | 9. gucū'k |
| 3. nats!k | 10. djîñ kāt |
| 4. daq!ūñ | 11. djîñ kāt qaLēq! |
| 5. kē'djîñ | 20. Lē'qa |
| 6. Lē'ducu | 30. nats!ga djî'ñkat |
| 7. daxa'ducu | 100. kē'djîñ qa |

Kwan (Sitka) (Furnhelm, 1877, p. 112)

- | | |
|-----------------|-------------------------|
| 1. tlehk | 9. kūshuk' |
| 2. tekh | 10. ishinkat' |
| 3. natzk | 11. ishinkatlekh |
| 4. iahun' | 12. ishinkhateh |
| 5. ketshin' | 20. tleka |
| 6. iletūshū | 50. tatshka-katshinkhat |
| 7. iahatūshū' | 100. kitshinkha |
| 8. netzkatūshū' | |

INDEX

Alfred (Edward) 1870-1890

1870	1870-1875
1871	1875-1880
1872	1880-1885
1873	1885-1890
1874	
1875	
1876	
1877	
1878	
1879	
1880	
1881	
1882	
1883	
1884	
1885	
1886	
1887	
1888	
1889	
1890	

John (John) 1870-1890

1870	1870-1875
1871	1875-1880
1872	1880-1885
1873	1885-1890
1874	
1875	
1876	
1877	
1878	
1879	
1880	
1881	
1882	
1883	
1884	
1885	
1886	
1887	
1888	
1889	
1890	

HAIDA

Skidegate (Curtis, vol. 11, 1916, pp. 208-209)

- | | |
|-----------------|---------------------------|
| 1. shwán-sūn | 8. stan-sūn-hà |
| 2. stīn | 9. tlá-hlín-gi-shwán-gô |
| 3. hlhūn-uhl | 10. tlahl |
| 4. stūn-sūn | 11. tláhl-wa-gi-shwán-sūn |
| 5. tlá'hl | 20. tlá-le-stīn |
| 6. tl'hwíén-uhl | 50. tlá-le-tlá'hl |
| 7. tsi'gwa-ka | 100. la'guat-tlá'hl |

Masset (Curtis, vol. 11, 1916, pp. 208-209)

- | | |
|----------------|------------------------|
| 1. s'wán-sūn | 8. stan-sūn-a |
| 2. stūn | 9. tláhl-s'wán-sūn-gu |
| 3. hl'án-uhl | 10. tláhl |
| 4. stan-sūn | 11. tláhl-âq-s'wán-sūn |
| 5. tlehl | 20. tlá-li-stūn |
| 6. tlū-wūn-uhl | 100. la'gwa-tléhl |
| 7. jī-gua | |

Haida (Swanton, 1911c, p. 270)

- | | |
|--------------|-------------------------|
| 1. sgoā'nsīn | 8. sta'nsaŋxa |
| 2. stīn | 9. LaAłi'ngisgoansi'ngo |
| 3. ɬqu'nuɬ | 10. Lā'Ał |
| 4. stA'nsīn | 11. Lā'Ał wai'gīstīn |
| 5. Lē'íɬ | 20. la'guat sgoa'nsīn |
| 6. LgA'nuɬ | 100. la'guat Lē'íɬ |
| 7. djīguagā' | |

TABLE

Exhibits (Cases, Vol. 1, 1918, pp. 100-102)

1. Exhibit	100. Exhibit
2. Exhibit	101. Exhibit
3. Exhibit	102. Exhibit
4. Exhibit	103. Exhibit
5. Exhibit	104. Exhibit
6. Exhibit	105. Exhibit
7. Exhibit	106. Exhibit
8. Exhibit	107. Exhibit
9. Exhibit	108. Exhibit
10. Exhibit	109. Exhibit
11. Exhibit	110. Exhibit
12. Exhibit	111. Exhibit
13. Exhibit	112. Exhibit
14. Exhibit	113. Exhibit
15. Exhibit	114. Exhibit
16. Exhibit	115. Exhibit
17. Exhibit	116. Exhibit
18. Exhibit	117. Exhibit
19. Exhibit	118. Exhibit
20. Exhibit	119. Exhibit
21. Exhibit	120. Exhibit

Exhibits (Cases, Vol. 1, 1918, pp. 100-102)

1. Exhibit	100. Exhibit
2. Exhibit	101. Exhibit
3. Exhibit	102. Exhibit
4. Exhibit	103. Exhibit
5. Exhibit	104. Exhibit
6. Exhibit	105. Exhibit
7. Exhibit	106. Exhibit
8. Exhibit	107. Exhibit
9. Exhibit	108. Exhibit
10. Exhibit	109. Exhibit
11. Exhibit	110. Exhibit
12. Exhibit	111. Exhibit
13. Exhibit	112. Exhibit
14. Exhibit	113. Exhibit
15. Exhibit	114. Exhibit
16. Exhibit	115. Exhibit
17. Exhibit	116. Exhibit
18. Exhibit	117. Exhibit
19. Exhibit	118. Exhibit
20. Exhibit	119. Exhibit
21. Exhibit	120. Exhibit

Exhibits (Cases, Vol. 1, 1918, pp. 100-102)

1. Exhibit	100. Exhibit
2. Exhibit	101. Exhibit
3. Exhibit	102. Exhibit
4. Exhibit	103. Exhibit
5. Exhibit	104. Exhibit
6. Exhibit	105. Exhibit
7. Exhibit	106. Exhibit
8. Exhibit	107. Exhibit
9. Exhibit	108. Exhibit
10. Exhibit	109. Exhibit
11. Exhibit	110. Exhibit
12. Exhibit	111. Exhibit
13. Exhibit	112. Exhibit
14. Exhibit	113. Exhibit
15. Exhibit	114. Exhibit
16. Exhibit	115. Exhibit
17. Exhibit	116. Exhibit
18. Exhibit	117. Exhibit
19. Exhibit	118. Exhibit
20. Exhibit	119. Exhibit
21. Exhibit	120. Exhibit

CHIMAKUAN

Quilliute (Curtis, vol. 9, 1913, p. 198)

- | | |
|-------------------|-------------------|
| 1. wihl | 8. hla-wi'-ta-hli |
| 2. hla'-ô | 9. wihl-ta-hli |
| 3. qa'-al | 10. tóh-pa |
| 4. ba'-i-yas | 11. wihl-tsi-yu |
| 5. ta'-si | 20. hla-wás-ta |
| 6. chi-hla'-si | 50. tás-ta |
| 7. hla-wák-tsi-si | 100. chihl-tás-ta |

HAUKANEN

Journal of the Board of Directors, Vol. 9, 1918, p. 102

1. Wm. H. ...	1. Wm. H. ...
2. J. H. ...	2. J. H. ...
3. J. H. ...	3. J. H. ...
4. J. H. ...	4. J. H. ...
5. J. H. ...	5. J. H. ...
6. J. H. ...	6. J. H. ...
7. J. H. ...	7. J. H. ...
8. J. H. ...	8. J. H. ...
9. J. H. ...	9. J. H. ...
10. J. H. ...	10. J. H. ...

TAKELMA

Takelma (Sapir, 1907, p. 265)

- | | |
|----------------------|---------------------------------|
| 1. mi'c'εsga'ε | 10. íxdīl |
| 2. gā'p'ini' orgā'εm | 11. íxdīlmi'ε's ga'εgadāk |
| 3. xi' bini' | 20. yap'amí'ε's |
| 4. gangám | 30. xín íxdīl |
| 5. dēhal | 40. gangámûnixdīl |
| 6. ha'εimi'ε's | 100. t'eimi'ε's |
| 7. ha'εigā'εm | 400. gangámmûn'εt'eimi'ε's |
| 8. ha'εi' xín' | 2000. yap'amits'adau t'eimi'ε's |
| 9. ha'εigō' | |

TABLE

Table 1. (Cont.) 1971, p. 124

Year	Area	Value	Year	Area	Value
1971	1971	...	...
1972	1972	...	...
1973	1973	...	...
1974	1974	...	...
1975	1975	...	...
1976	1976	...	...
1977	1977	...	...
1978	1978	...	...
1979	1979	...	...
1980	1980	...	...
1981	1981	...	...
1982	1982	...	...
1983	1983	...	...
1984	1984	...	...
1985	1985	...	...
1986	1986	...	...
1987	1987	...	...
1988	1988	...	...
1989	1989	...	...
1990	1990	...	...
1991	1991	...	...
1992	1992	...	...
1993	1993	...	...
1994	1994	...	...
1995	1995	...	...
1996	1996	...	...
1997	1997	...	...
1998	1998	...	...
1999	1999	...	...
2000	2000	...	...
2001	2001	...	...
2002	2002	...	...
2003	2003	...	...
2004	2004	...	...
2005	2005	...	...
2006	2006	...	...
2007	2007	...	...
2008	2008	...	...
2009	2009	...	...
2010	2010	...	...
2011	2011	...	...
2012	2012	...	...
2013	2013	...	...
2014	2014	...	...
2015	2015	...	...
2016	2016	...	...
2017	2017	...	...
2018	2018	...	...
2019	2019	...	...
2020	2020	...	...
2021	2021	...	...
2022	2022	...	...
2023	2023	...	...
2024	2024	...	...
2025	2025	...	...
2026	2026	...	...
2027	2027	...	...
2028	2028	...	...
2029	2029	...	...
2030	2030	...	...

ESKIMO

Kotzebue (Curtis, vol. 20, 1930, pp. 273-76)

- | | |
|----------------------------|-------------------------------------|
| 1. a-tó-súk | 9. ko-lín-o-o-té-lít |
| 2. mg-lók | 10. ko-lít |
| 3. pin-a-yok | 11. ko-lít-a-to'-chím-ík |
| 4. si-sú-mut | 15. a-ki-me'ok |
| 5. ta-li-mut | 20. i-nu-in-yúk |
| 6. i-chúh-hrüt | 50. ma-hló-ki-pe'-ak-ko-li'-
ník |
| 7. ta-li-müt-mg'-o-ník | |
| 8. ta-li-müt=pin-a-su'-ník | 100. ta-li-müt-ki-pe'-ak |

West Greenland (Thalbitzer, 1911, 1048)

- | | |
|--------------------------|--------------------------------|
| 1. ataa ^w seq | 8. pinasaut |
| 2. marLuk, arLaa | 9. sisamat, qulaa'luat |
| 3. pinasut | 10. gult |
| 4. sisamut | 11. arqaneq |
| 5. täLLimat | 16. arFersaneq |
| 6. arFineq, arFiniLLit | 20. inuk naa ^w Loqo |
| 7. marLuk | 21. unna, unnisut |

Little Diomede (Curtis, vol. 20, 1930, pp. 273-76)

- | | |
|-----------------------------|------------------------------|
| 1. a-dô-si-ük | 9. ku-lin-u-té-lít |
| 2. ma-glük | 10. ku-lít |
| 3. pin-a-süt | 11. at-ka-nug-lít |
| 4. shi-ta-müt | 12. ma-glo-nün=at-ka-nug-lít |
| 5. ta-gli-müt | 20. i-núi-nük |
| 6. a-mi-ni-glít | 50. i-núi-nük=ma-gló-ku-lít |
| 7. mag-no-nün=a-mi-ni-glít | 100. ta-gli-müt=i-núi-nük |
| 8. pi-a-su-nün=a-mi-ni-glít | |

Unalit (Nelson, 1899, p. 235)

(Numerals used for fingers)

- | | |
|-----------------------|-------------------------------|
| 1. ā-tau'-tsík | 8. pīn-ai-yun-līgn |
| 2. māl'-û-ghûk, ai-pā | 9. ko-līn'-o-gho-tai'-līn'-ün |
| 3. pīn'-a'-shu-ük | 10. ko-līn' |
| 4. sta'-mík | 11. at-khakh-tök, ā-tau'-tsík |
| 5. tā-hli'-mík | 12. ai-pa, māl'-û-ghûk |
| 6. a-ghu-bīn'-ghûk | 50. māl'-û-ghu-i'-pī-äk ko- |
| 7. māl'-û-ghun-līgn | līn'-ík chip'-ī-hlu'-ku |

Country Council

- 1. 1-1-1911
- 2. 1-1-1911
- 3. 1-1-1911
- 4. 1-1-1911
- 5. 1-1-1911
- 6. 1-1-1911
- 7. 1-1-1911
- 8. 1-1-1911

West Country Council

- 1. 1-1-1911
- 2. 1-1-1911
- 3. 1-1-1911
- 4. 1-1-1911
- 5. 1-1-1911
- 6. 1-1-1911
- 7. 1-1-1911
- 8. 1-1-1911

Little Down Council

- 1. 1-1-1911
- 2. 1-1-1911
- 3. 1-1-1911
- 4. 1-1-1911
- 5. 1-1-1911
- 6. 1-1-1911
- 7. 1-1-1911
- 8. 1-1-1911

United Nations Council

- 1. 1-1-1911
- 2. 1-1-1911
- 3. 1-1-1911
- 4. 1-1-1911
- 5. 1-1-1911
- 6. 1-1-1911
- 7. 1-1-1911
- 8. 1-1-1911

Unalit (Nelson, 1899, p. 235)
(Numerals used for things)

- | | |
|-----------------|---------------------------|
| 1. a'-tau'-tsik | 5. tä-hli'-mün |
| 2. mä-l-u'-ghük | 6. a-ghu-biñ-lign |
| 3. piñ-ai'-yun | 11. ko-lá'-á-tau'-tsí muk |
| 4. sta'-mün | chí'-pi'-tök |

Nunivak (Curtis, vol. 20, 1930, pp. 273-76)

- | | |
|-------------------------|-----------------------------|
| 1. a-tô'-jih | 9. kúl-lan-u-un=ri-tá-rüt |
| 2. a'-pa | 10. ku'-la |
| 3. bin-ai'-yua | 11. ku'la=a-tô'-jih |
| 4. sta'-mi | 15. a-ki'-mi-ah |
| 5. tüh-shlí'-mi | 20. ju-i'-müh |
| 6. a-ho-i'-gril-glin | 50. mülh-rük-ni'-pia=ku'-la |
| 7. ma'-l 'gu-nihl-glin | 100. tüh-shlí'-mun-ni'-pia |
| 8. bin-ai'-yu-nihl-glin | |

Kaniag-mut Inuit (Gibbs and Dall, 1877, pp. 141-42)

- | | |
|---------------------|-------------------------|
| 1. a-hel' lokh' | 8. ing-il-lü-ling |
| 2. mal-l' hokh | 9. kot-lung-we |
| 3. ping-ai'-ün | 10. kwo'-ling |
| 4. kl-sta'-man | 11. at-hükh'-tok |
| 5. tüt-li-man | 20. shwi-nok |
| 6. akh-whint'-lin | 100. shwi-nok pe nai-yu |
| 7. mat-l' ho-hüg-en | |

Southwest Alaska Eskimo (Thalbitzer, 1911, p. 1048)

- | | |
|-----------------|-----------------------|
| 1. atauceq | 8. piñ ayunlixxin |
| 2. malruk | 9. qolnnunraata |
| 3. piñ ajun | 10. qoln |
| 4. stamen | 11. ataucimik cipLuku |
| 5. taLlimen | 15. akimiak |
| 6. arvinlixxin | 21. juinok ataucimik, |
| 7. malrunlixxin | cipLuku |

Kuskoquigmute (Bancroft, 1886, p. 580)

- | | |
|--------------|------------------|
| 1. atauchik | 6. akhvinok |
| 2. mal'khok | 7. ainaakhvanam |
| 3. painaivak | 8. pinaiviak |
| 4. t'chamik | 9. chtamiakvanam |
| 5. talimik | 10. kullnuk |

Unit 1 (1997, p. 101)
Materials used for this unit

- | | |
|--------------|--------------|
| 1. 1997-1998 | 1. 1997-1998 |
| 2. 1998-1999 | 2. 1998-1999 |
| 3. 1999-2000 | 3. 1999-2000 |
| 4. 2000-2001 | 4. 2000-2001 |

Unit 2 (1997, p. 102)

- | | |
|---------------|---------------|
| 1. 1997-1998 | 1. 1997-1998 |
| 2. 1998-1999 | 2. 1998-1999 |
| 3. 1999-2000 | 3. 1999-2000 |
| 4. 2000-2001 | 4. 2000-2001 |
| 5. 2001-2002 | 5. 2001-2002 |
| 6. 2002-2003 | 6. 2002-2003 |
| 7. 2003-2004 | 7. 2003-2004 |
| 8. 2004-2005 | 8. 2004-2005 |
| 9. 2005-2006 | 9. 2005-2006 |
| 10. 2006-2007 | 10. 2006-2007 |

Unit 3 (1997, p. 103)

- | | |
|---------------|---------------|
| 1. 1997-1998 | 1. 1997-1998 |
| 2. 1998-1999 | 2. 1998-1999 |
| 3. 1999-2000 | 3. 1999-2000 |
| 4. 2000-2001 | 4. 2000-2001 |
| 5. 2001-2002 | 5. 2001-2002 |
| 6. 2002-2003 | 6. 2002-2003 |
| 7. 2003-2004 | 7. 2003-2004 |
| 8. 2004-2005 | 8. 2004-2005 |
| 9. 2005-2006 | 9. 2005-2006 |
| 10. 2006-2007 | 10. 2006-2007 |

Unit 4 (1997, p. 104)

- | | |
|---------------|---------------|
| 1. 1997-1998 | 1. 1997-1998 |
| 2. 1998-1999 | 2. 1998-1999 |
| 3. 1999-2000 | 3. 1999-2000 |
| 4. 2000-2001 | 4. 2000-2001 |
| 5. 2001-2002 | 5. 2001-2002 |
| 6. 2002-2003 | 6. 2002-2003 |
| 7. 2003-2004 | 7. 2003-2004 |
| 8. 2004-2005 | 8. 2004-2005 |
| 9. 2005-2006 | 9. 2005-2006 |
| 10. 2006-2007 | 10. 2006-2007 |

Unit 5 (1997, p. 105)

- | | |
|---------------|---------------|
| 1. 1997-1998 | 1. 1997-1998 |
| 2. 1998-1999 | 2. 1998-1999 |
| 3. 1999-2000 | 3. 1999-2000 |
| 4. 2000-2001 | 4. 2000-2001 |
| 5. 2001-2002 | 5. 2001-2002 |
| 6. 2002-2003 | 6. 2002-2003 |
| 7. 2003-2004 | 7. 2003-2004 |
| 8. 2004-2005 | 8. 2004-2005 |
| 9. 2005-2006 | 9. 2005-2006 |
| 10. 2006-2007 | 10. 2006-2007 |

Kadiak (Bancroft, 1886, p. 580)

- | | |
|----------------|----------------|
| 1. alcheluk | 7. malchongun |
| 2. malogh | 8. inglulgin |
| 3. pingaien | 9. kollemgaien |
| 4. stamen | 10. kollen |
| 5. taliman | 11. alchtoch |
| 6. agovinligin | |

Malemute (Bancroft, 1886, p. 580)

- | | |
|-------------|--------------------------|
| 1. atowsik | 6. aghwinuleet |
| 2. malruk | 7. mahluditaghwinuleet |
| 3. pinyusut | 8. pinyusunilaghwinuleet |
| 4. setemat | 9. koolinotyluk |
| 5. telemat | 10. kooleet |

Mackenzie Eskimo (Stefansson, 1909, p. 232)

- | | |
|---------------------------|---------------------------|
| 1. a-tau-tcik | 8. piñatcut axrivaiuligut |
| 2. mal-lěr-ōk | 9. kō-lĩñ-il-li-at |
| 3. piñ-a-tcūt | 10. kōl-līt |
| 4. sīssa-mat sī-ta-m | 15. ak-kī-mi-ak |
| 5. tal-li-mat | 20. in-nū-iu-nak |
| 6. ax-rī-va-nī-lī-xit | 40. mallerok akkipia |
| 7. mallerok axrivaiuligut | 400. imuinnak akkipiak |

Hershel Island Trade Jargon (Stefansson, 1909, p. 232)

- | | |
|-------------------------|------------------------|
| 1. a-tau-sik | 8. tal-lī-mat-piñásut |
| 2. ma'lo, mal-lě-rō | 9. tal-lī-mat-sīssamat |
| 3. piñ-a-sūt | 10. kōl-līt |
| 4. sīs-sa-mat | 15. ak-kī-mī-a |
| 5. tal-lī-mat | 20. akkipia |
| 6. tal-lī-mat-a tau'sik | 40. malo-akkipia |
| 7. tal-lī-mat-malo | |

Yahia (Gannet), 1900, p. 200

- | | |
|---------|---------|
| 1. ... | 1. ... |
| 2. ... | 2. ... |
| 3. ... | 3. ... |
| 4. ... | 4. ... |
| 5. ... | 5. ... |
| 6. ... | 6. ... |
| 7. ... | 7. ... |
| 8. ... | 8. ... |
| 9. ... | 9. ... |
| 10. ... | 10. ... |
| 11. ... | 11. ... |

Yahia (Gannet), 1900, p. 200

- | | |
|---------|---------|
| 1. ... | 1. ... |
| 2. ... | 2. ... |
| 3. ... | 3. ... |
| 4. ... | 4. ... |
| 5. ... | 5. ... |
| 6. ... | 6. ... |
| 7. ... | 7. ... |
| 8. ... | 8. ... |
| 9. ... | 9. ... |
| 10. ... | 10. ... |
| 11. ... | 11. ... |

Yahia (Gannet), 1900, p. 200

- | | |
|---------|---------|
| 1. ... | 1. ... |
| 2. ... | 2. ... |
| 3. ... | 3. ... |
| 4. ... | 4. ... |
| 5. ... | 5. ... |
| 6. ... | 6. ... |
| 7. ... | 7. ... |
| 8. ... | 8. ... |
| 9. ... | 9. ... |
| 10. ... | 10. ... |
| 11. ... | 11. ... |

Yahia (Gannet), 1900, p. 200

- | | |
|---------|---------|
| 1. ... | 1. ... |
| 2. ... | 2. ... |
| 3. ... | 3. ... |
| 4. ... | 4. ... |
| 5. ... | 5. ... |
| 6. ... | 6. ... |
| 7. ... | 7. ... |
| 8. ... | 8. ... |
| 9. ... | 9. ... |
| 10. ... | 10. ... |
| 11. ... | 11. ... |

SIOUAN

Ofo (Swanton, 1909b, p. 485)

- | | |
|------------|----------------|
| 1. nū'fha | 6. akApé |
| 2. nū'p-ha | 7. fA'kumî |
| 3. tā'ni | 8. pA'tAnî |
| 4. tō'pa | 9. kî'shtAshga |
| 5. kifa' | 10. îftAptA' |

Catawba (Gatschet, 1900, p. 534)

- | | |
|-----------------------|-----------------------------|
| 1. dubé, nēpé, nepa'' | 8. dowēsaré |
| 2. no''prēre' | 9. wantcharēre' |
| 3. nomnēre' | 10. pitchinēre' |
| 4. porprēre' | 12. pitchin'nomnēre háksare |
| 5. poktrēre' | 20. pitchune nāpēre |
| 6. dipkrare' | 100. pitchin háro |
| 7. wassignurēre' | |

Biloxi (Dorsey and Swanton, 1912, pp. 169-297)

- | | |
|-----------|------------|
| 1. so'sa | 8. dani |
| 2. no''pa | 9. tckanē |
| 3. dani | 10. ohi |
| 4. topa | 12. ohi |
| 5. ksa' | 15. ohi |
| 6. akūxpē | 50. ohi |
| 7. no''pa | 100. tsipa |

Tutelo (Sapir, 1913, p. 296)

- | | |
|---------|--------------|
| 1. blōs | 6. agás |
| 2. nōs | 7. saku' |
| 3. nā | 8. pelāk' |
| 4. tū | 9. sek' |
| 5. bī | 10. bitska'' |

Tutelo (Frachtenberg, 1913, p. 475)

- | | |
|--------------------------|----------------------------|
| 1. no's | 7. sago'm, nī'li, yawenō'' |
| 2. kisé'g, kisé'n, no''p | 8. bala'ín, yawinō'n, |
| 3. sago'm | nihili |
| 4. tup, bala'ín | 9. kse'k, sagā' |
| 5. nī'swa | 10. butsk, gwīs, gwīten |
| 6. aka's, būz, niswā' | |

Table 1 (Continued)

1. ...
2. ...
3. ...
4. ...
5. ...

Table 2 (Continued)

1. ...
2. ...
3. ...
4. ...
5. ...
6. ...
7. ...

Table 3 (Continued)

1. ...
2. ...
3. ...
4. ...
5. ...
6. ...
7. ...

Table 4 (Continued)

1. ...
2. ...
3. ...
4. ...
5. ...

Table 5 (Continued)

1. ...
2. ...
3. ...
4. ...
5. ...
6. ...

Teton (Curtis, vol. 3, 1908, pp. 156-57)

- | | |
|-------------------------------|--|
| 1. wa ^h -zhi' | 9. na-pchi ^h -yu ^h -ka |
| 2. no ^h -pa | 10. wi-kche'-muna |
| 3. ya'-muni | 11. a-ke'-wa ^h -zhi |
| 4. to'-pa | 15. a-ke'-za-pta ^h |
| 5. za'-pta ^h | 20. wi-kche'-muna no ^h -pa |
| 6. sha'-kpe | 50. wi-kche'-muna-za-pta ^h |
| 7. sha-ko'-wi ^h | 100. o-pa'-wi ^h -ghe |
| 8. sha-gulo'-gha ^h | |

Yankton (Curtis, vol. 3, 1908, pp. 156-57)

- | | |
|------------------------------|--|
| 1. wa ^h -zhi | 9. na-pchi ^h -wa ^h -ka |
| 2. nu ^h -pa | 10. wi-kche'-muna |
| 3. ya'-muni | 11. a-ke'-wa ^h -zhi |
| 4. to'-pa | 15. a-ke'-za-pta ^h |
| 5. za'-pta ^h | 20. wi-kche'-muna-nu ^h -pa |
| 6. sha'-kpe | 50. wi-kche'-muna-za-pta ^h |
| 7. sha-ko'-wi ^h | 100. o-pa'-wi ^h -ghe |
| 8. sha-gudo'-ha ^h | |

Dakota (Riggs, 1893, p. 47)

- | | |
|-------------------------|---|
| 1. wa ^h ca' | 8. sahdoga ^h |
| 2. no ^h pa | 9. napci ^h swa ^h ka |
| 3. yamni | 10. wikcemna |
| 4. topa ^h | 20. wikcemna no ^h pa |
| 5. zapta | 100. opawi ^h ge |
| 6. sakpe ^h | 1000. kektopawi ^h ge |
| 7. sakowih ^h | 1,000,000. woyawa ta ^h ka |

Assiniboin (Curtis, vol. 3, 1908, pp. 156-57)

- | | |
|------------------------------|--|
| 1. wa ^h ch | 9. na ^h -pchu ^h -wa ^h -ka |
| 2. no ^h -pa | 10. wi-kche'-muna |
| 3. ya'-muni | 11. a-ke'-wa ^h -zhi |
| 4. to'-pa | 15. a-ke'-sa-pta |
| 5. sa'-pta | 20. wi-kche'-muna no ^h -pa |
| 6. sha'-kpe | 50. wi-kche'-muna-sa-pta |
| 7. sha-ko'-wi ^h | 100. o-pa'-wi ^h -he |
| 8. sha-kudo'-ha ^h | |

Assiniboin (Denig, 1930, pp. 418-20)

- | | |
|-----------------------|---------------------------|
| 1. washe'nah | 10. wixchemenah |
| 2. noom'pah | 11. akka'i washe |
| 3. yam'ine | 12. akkai noompah |
| 4. topah | 15. akkai zaptah |
| 5. ta'ptah | 20. wixche'mmene noompa |
| 6. sha'kpah | 50. wixchemmene zaptah |
| 7. shakkowee | 100. o-pah-wa-ghe |
| 8. sha'kkando'gha | 200. o-pah-wa-ghe noompa |
| 9. noo'mpchewo'oukkah | 1000. ko-ke-to-pah-wa-ghe |

Omaha (Maximilian in Thwaites, vol. 24, 1906, p. 285)

- | | |
|----------------|---------------|
| 1. miachtschēh | 6. schāh-peh |
| 2. nombáh | 7. péh-nombáh |
| 3. ráh-beneh | 8. péh-rābene |
| 4. túba | 9. schōnka |
| 5. sātōn | 10. chrābene |

Oto (Curtis, vol. 19, 1930, pp. 235-36)

- | | |
|--------------------------|--|
| 1. i-yu ^h -ki | 8. gle-la'-b'ni |
| 2. nu'-wē | 9. shūn-ke |
| 3. da'-nyi | 10. gle'-b'na |
| 4. do'-we | 11. gle'-b'na a-g'ni-yu ^h -ki |
| 5. tha'-tu ^h | 20. gle'-b'na nu'-wē |
| 6. sha'-gue | 50. gle'-b'na tha'-tu ^h |
| 7. sha'-ma | 100. gle'-b'na hu ^h -ya |

Osage (Maximilian in Thwaites, vol. 24, 1906, p. 299)

- | | |
|---------------|------------------------------------|
| 1. uīnchtschä | 9. grābena-tscheh-uīningkä' |
| 2. nomba' | 10. grābena |
| 3. lahbeni | 11. grābena-ahgenä-uächze |
| 4. toh-ba' | 20. grābena-nomba' |
| 5. sah-ta' | 100. grābena-hütanga |
| 6. schah-pe' | 1000. grābena-ito'-grābena-hütanga |
| 7. peh-umba' | |
| 8. kih-atóba | |

Osage (La Flesche, 1932, p. 229)

- | | |
|--|--|
| 1. wi ^h , wi ^h -xtsi | 8. ki-e'-do-ba |
| 2. tho ^h -ba' | 9. gthe'-btho ^h tsewi ^h |
| 3. tha'-bthi ^h | 10. gthe'-btho ^h |
| 4. do'-ba, du'-ba | 20. gthe'-btho ^h tho ^h -ba |
| 6. sha'-pe | 50. gthe'-btho ^h ç'a-to ^h |
| 7. pe'-tho ^h -ba | |

SIOUAN

Apsaroke (Curtis, vol. 4, 1909, p. 194)

- | | |
|-------------|--------------------------|
| 1. ha-wū-tū | 9. ha-wū-ta-pi |
| 2. nu-pa | 10. pi-dū-kūk |
| 3. na-wi | 11. ah-pū-wa-tuk |
| 4. sho-pa | 15. ah-pi-tsi-ū-hūk |
| 5. tsi-ū-hū | 20. nu-pa-pi-dū-kūk |
| 6. a-kū | 50. tsi-ū-hū-ū-pi-dū-kūk |
| 7. sa-pu-ū | 100. pi-dūk-i-sák |
| 8. nu-pa-pi | |

Hidatsa (Curtis, vol. 4, 1909, p. 194)

- | | |
|---------------|------------------------|
| 1. nu-wēt-tsa | 9. nu-wēt-tsa-hpi |
| 2. nu-pa | 10. pi-dhū-ka |
| 3. na-wi | 11. a-h-pi-nu-wēt-tsa |
| 4. to-pa | 15. a-h-pi-ki-h'u |
| 5. ki-hū | 20. nuh-pa-pi-dhū-ka |
| 6. á-ka-wa' | 50. ki-h'u-a-pi-dhū-ka |
| 7. shá-po | 100. pi-dhūk-i-h-ti-a |
| 8. nu-pa-h'pi | |

Mandan (Catlin, 1841, pp. 301-302)

- | | |
|----------------|-------------------------|
| 1. mah han nah | 9. mah pa |
| 2. nompah | 10. perug |
| 3. namary | 11. auga mahannah |
| 4. tohpa | 12. auga nompah |
| 5. kakhoo | 15. ag kak hoo |
| 6. kemah | 20. nompah perug |
| 7. koopah | 100. ee sooc mah hannah |
| 8. ta tucka | 1000. ee sooc perug |

Mandan (Curtis, vol. 5, 1909, pp. 174-75)

- | | |
|-----------------------|-----------------------------------|
| 1. ma-hána | 9. ma-hpē |
| 2. nu ⁿ p | 10. pi-dūk |
| 3. na-mini | 11. á-ka-ma-hána |
| 4. top | 15. á-ki-hò ⁿ |
| 5. ki-hò ⁿ | 20. nu ⁿ p-ha-pi-dūk |
| 6. ki-ma | 50. ki-hò ⁿ -ha-pi-dūk |
| 7. ky-pa | 100. hí ⁿ -suk-ma-ha |
| 8. tu-to-ki | |

Winnebago (James in Thwaites, vol. 27, 1906, p. 308)

- | | |
|----------------|------------------------|
| 1. jhing-ke-de | 7. sha-ko |
| 2. nope | 8. no-wunk |
| 3. tah-ne | 9. jhink-ich-os-co-ne |
| 4. chope | 10. kher-a-pun |
| 5. sach | 11. jhink-he-ra-sho-ne |
| 6. kuh-we | 12. nope-ash-o-ne |

1. thing-ka-ka	7. anna-ka
2. hoga	8. so-va-ka
3. lab-na	9. lina-ka-ka-ka
4. caga	10. lina-ka-ka
5. saka	11. lina-ka-ka-ka
6. ka-ka	12. lina-ka-ka-ka

CADDON

Pawnee (Whipple, 1856, pp. 67-68)

- | | |
|--------------------|----------------------------|
| 1. a-rish-co | 7. tsōw'-e-ta-te |
| 2. cho'sho, cho'so | 8. nai-ki-nūc-a-te |
| 3. tah'-with-co | 9. tan-i-ro-kat |
| 4. kith-nūc-o-te | 10. x's-ka-ni |
| 5. xs'tōw-e-o | 12. x'ka-ni-a-ni-ni-cho-so |
| 6. na-hi-tow | 20. a-ris-qui-ni-ke'-ri-co |

Hueco (Whipple, 1856, pp. 67-68)

- | | |
|----------------|---------------------------------|
| 1. cheos | 9. chosh-kit-te |
| 2. witz | 10. skit-te-was |
| 3. tōw | 11. witz-chitz-e-dach |
| 4. tah'-quitz | 12. steds-ki-shi' |
| 5. ish'-quitz | 50. witz-steds-ki-shi-tith-kitz |
| 6. ki'-ash | 100. squets-tetz-ki-sha |
| 7. ki-o'-whitz | 1000. teth-kitz |
| 8. ki-a'-tōw | |

Wichita (Curtis, vol. 19, 1930, p. 235)

- | | |
|----------------|---------------------------------|
| 1. chi-as | 9. chí-as-kin-ti |
| 2. wits | 10. is-ki-di-a'-wa-as |
| 3. tā | 11. chí-as-ti-ki-tūk |
| 4. ta-qits | 15. is-qi-its-tits-a-rās |
| 5. is-qi-its | 20. as-téts-k'si |
| 6. ki'-ē-hēs | 50. is-qéts-ti-is-qi-dī-a-wa-sū |
| 7. ki'-o-whits | 100. is-qits-ti-éts-k'si-a |
| 8. ki'-a-tā | |

Riccree (Catlin, 1841, 301-302)

- | | |
|--------------------|-------------------------|
| 1. asco | 9. nah e ne won |
| 2. pitco | 10. nah en |
| 3. tow wit | 11. ko tchee te won |
| 4. tchee tish | 15. tchee hoo nahen |
| 5. tchee hoo | 20. weetah |
| 6. tcha pis | 100. shoh tan |
| 7. to tcha pis | 1000. shoh tan tera hoo |
| 8. to tcha pis won | |

CATALOG

Volume 1 (1840-1850)

1. 1840-1841	1. 1840-1841
2. 1842-1843	2. 1842-1843
3. 1844-1845	3. 1844-1845
4. 1846-1847	4. 1846-1847
5. 1848-1849	5. 1848-1849
6. 1850	6. 1850

Volume 2 (1851-1860)

1. 1851-1852	1. 1851-1852
2. 1853-1854	2. 1853-1854
3. 1855-1856	3. 1855-1856
4. 1857-1858	4. 1857-1858
5. 1859-1860	5. 1859-1860

Volume 3 (1861-1870)

1. 1861-1862	1. 1861-1862
2. 1863-1864	2. 1863-1864
3. 1865-1866	3. 1865-1866
4. 1867-1868	4. 1867-1868
5. 1869-1870	5. 1869-1870

Volume 4 (1871-1880)

1. 1871-1872	1. 1871-1872
2. 1873-1874	2. 1873-1874
3. 1875-1876	3. 1875-1876
4. 1877-1878	4. 1877-1878
5. 1879-1880	5. 1879-1880

Arikara (Curtis, vol. 5, 1909, pp. 174-75)

- | | |
|-----------------------|------------------------------|
| 1. áh-ku | 9. no-hí-ni'-wan' |
| 2. pí-ti-kuh | 10. no-hí-ni |
| 3. tō-hw | 11. no-hí-ni'-na-áh-ku |
| 4. chí-tí-'sh | 15. no-hí-ni'-na-shí-hu |
| 5. shí-hu | 20. wi-tō |
| 6. tshá-pís | 50. pí-ti-kuh-ná-nu-no-hí-ni |
| 7. tō-hw-tshá-pís-wán | 100. shí-hu-ta'-nu |
| 8. tō-hw-tshá-pís | |

1. Introduction	1
2. The Real Number System	2
3. Operations on Real Numbers	3
4. Properties of Real Numbers	4
5. The Complex Number System	5
6. Operations on Complex Numbers	6
7. Properties of Complex Numbers	7
8. The Cartesian Plane	8
9. The Cartesian Plane	9
10. The Cartesian Plane	10
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99. The Cartesian Plane	99
100. The Cartesian Plane	100

Tonkawa (Hoijer, 1933-38, p. 121)

- | | |
|----------------|--------------------------|
| 1. we'ic-bax | 8. cigidye'ec |
| 2. gedai | 9. cik-we'ic-xw'e'l'a |
| 3. med'ic | 10. cik-bax |
| 4. cigid | 20. cikbax'a'la gedai |
| 5. gacgua | 100. ce'ndo we'icbax |
| 6. cikwa'lau | 1000. ce'ndo'a'la cikbax |
| 7. cikye'ecdau | |

Karankawa (Gatschet, 1891, pp. 137-165)

- | | |
|------------------|------------------|
| 1. nã'tsa | 6. hayo haikja |
| 2. haikja | 7. haikja nãtsa |
| 3. kaxáyi | 8. haika béhema |
| 4. hayo hákn | 9. haikja do'atn |
| 5. nã'tsa béhema | 10. do'atn hábe |

San Antonio of Texas (Gallatin in Thomas, 1900, p. 881)

- | | |
|--------------------|-----------------------------|
| 1. pil | 7. puguantzan co ajti c pil |
| 2. ajtê | 8. puguantzan ajte |
| 3. ajti c pil | 9. puguantzan co juyopamauj |
| 4. puguantzan | 10. juyopamauj ajte |
| 5. juyopamauj | 20. taiguaco |
| 6. ajti c pil ajte | |

Kiowa (Mooney, 1898, pp. 430-439)

- | | |
|--------------|------------|
| 1. págo | 6. mã'sá' |
| 2. páo | 7. pänsé |
| 3. yi'a | 8. yã''se |
| 4. yi'a'gyä' | 9. gã''se |
| 5. o'nto | 10. ga'kiñ |

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ALGONQUIAN

Cheyenne (Curtis, vol. 19, 1930, p. 235)

- | | |
|-----------|------------------------------|
| 1. noh' | 9. so-ót |
| 2. nih' | 10. ma-tót |
| 3. na'ha | 11. hot=noh' |
| 4. ne-if | 15. hot=no'hon |
| 5. no'hon | 20. as-téts-k'si |
| 6. no-sót | 50. no-ho' ^h -noh |
| 7. ní-sót | 100. noh-ma-tóth-noh |
| 8. no-nót | |

Gros Ventre (Say in Thwaites, vol. 27, 1905, p. 298)

- | | |
|--------------------------|------------------------------|
| 1. le-mois-so | 9. no-was-sap-pa |
| 2. no-o-pah | 10. pe-ra-gas |
| 3. na-me | 11. a-pe-le-mois-so |
| 4. to-pah | 12. a-pe-no-o-pah |
| 5. che- ^h hoh | 20. no-o-pah-pe-ra-gas |
| 6. a-ca-ma | 100. pe-ra-gas-ich-te-et |
| 7. chap-po | 1000. pe-re-gas-ich-te-et-a- |
| 8. no-pup-pe | cah-co-re |

Minnitarris or Gros Ventres (Meximilian in Thwaites, vol. 24, 1906, pp. 275-76)

- | | |
|-------------|------------------------------|
| 1. nowassá | 8. dúhpachpi |
| 2. dúpa | 9. nowassachpi |
| 3. náhwi | 10. piraká |
| 4. tohpa' | 20. dúchpa-pirakas |
| 5. kechu' | 50. kechóa-piraka |
| 6. akahua' | 100. pirikchtia |
| 7. scháchpu | 1000. pirakichtia-achkakóhri |

Piegán (Curtis, vol. 6, 1911, p. 171)

- | | |
|------------------|-------------------------|
| 1. tókoh-kam | 8. na'ni-so-o |
| 2. nó-to-kam | 9. pih-ksó |
| 3. ni-óksh-kam | 10. kie-pó |
| 4. ni-so-ó | 15. ni-si-tsi'-ku-pu-tu |
| 5. ni-si-tsi-yi | 20. na-tsi-pu |
| 6. na'-u | 50. ni-si-tsi-pu |
| 7. ih'-ki-tsi-ka | 100. kie-pi-pu |

Cheyenne (Curtis, vol. 6, 1911, p. 171)

- | | |
|-----------------|-----------------------------|
| 1. no'-ka | 8. na-noh'-to-a |
| 2. ni'-ha | 9. so-oh'-to-a |
| 3. na'-a | 10. ma-tóh'-to-a |
| 4. ne'-va | 11. ma-tóh'-to-a-oh't-no-ka |
| 5. no'-hon | 20. ni-so'e |
| 6. na-sóh'-so-a | 50. no-ho-no'e |
| 7. ni-soh'-to-a | 100. ma-toht-no'e |

Arapaho (Curtis, vol. 6, 1911, p. 171)

- | | |
|--------------------------|---------------------|
| 1. chā-sě'-chi | 8. nā'-sa-tah |
| 2. niss | 9. thi'-a-tah |
| 3. nā'-sa | 10. bā'-ta-tah |
| 4. yenn | 11. chā-se'-i-ni'-i |
| 5. ya-thán | 20. ni-sá-ū |
| 6. ni'-i-ta, ni'-i-ta-tá | 50. ya-tha-ya-ū |
| 7. ni'-i-sa-tah | 100. hā-hé-i |

Atsina (Curtis, vol. 5, 1909, pp. 174-75)

- | | |
|---------------|--------------------|
| 1. kya-the-ya | 9. an-ha-be-ta-tus |
| 2. nith-i-e | 10. be-ta-tus |
| 3. nath-i-e | 11. kye-the-in |
| 4. yan-a | 15. ya-ta-nin |
| 5. ya-tun | 20. ni-tho |
| 6. ne-tya-tas | 50. ya-tan-no |
| 7. ni-tha-tas | 100. be-ta-tu-tho |
| 8. na-tha-tas | |

Blackfoot (Catlin, 1841, pp. 301-302)

- | | |
|-----------------|--------------------------|
| 1. jeh | 10. kaypee |
| 2. nahtohk | 11. kaypee nay tchee |
| 3. no okskum | kopo-chee |
| 4. ne sooyim | 15. kaypee ne see tchee |
| 5. ne see tsee | kopo-chee |
| 6. nahoo | 20. natchip pee |
| 7. ekitchekum | 100. kaypee pee pee |
| 8. nah ne suyim | 1000. kaypee pee pee pee |
| 9. paex o | |

Chang (Guthrie, vol. 2, 1911)

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Chang (Guthrie, vol. 2, 1911)

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Chang (Guthrie, vol. 2, 1911)

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Chang (Guthrie, vol. 2, 1911)

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Cree (Adam, 1875a, p. 135)

- | | |
|---------------|-----------------------|
| 1. peyak | 7. tepakup |
| 2. niso, nijo | 8. ayenânew |
| 3. nisto | 9. kekâmitâtat |
| 4. newo | 10. mitâtat |
| 5. niyanan | 100. mitâtat-o-mitano |
| 6. nikotwâkis | |

Krih or Knistenau (Maximilian in Thwaites, vol. 27,
1905, p. 232)

- | | |
|-----------------|--|
| 1. pähek | 8. aehnaneu |
| 2. nehou | 9. kâhkametâtatt |
| 3. nisto | 10. mitahtat |
| 4. neo' | 20. nehsittano |
| 5. neanann | 100. mitahtat-tamittanoh |
| 6. nguttuahsick | 1000. kich-tche-mta-tach-
tommetano |
| 7. tâhpakup | |

1951, 1952, 1953, 1954, 1955

1. 1951
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4. 1954
5. 1955

1. 1951
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1951, 1952, 1953, 1954, 1955

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2. 1952
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4. 1954
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1. 1951
2. 1952
3. 1953
4. 1954
5. 1955

ATHAPASCANS

Beaver Dialect (Goddard, 1917b, p. 437)

- | | |
|---------------|-----------------------|
| 1. ī řatc'e' | 6. ę tc'it dī tc'e' |
| 2. ōñ Kitc'e' | 7. ta yū dī |
| 3. tāt c'e' | 8. ętc'it dī tc'e' |
| 4. dīyetc'e' | 9. k'al lūk K'ī tc'e' |
| 5. řatc'e dī | 10. k'i nī tc'i' |

Chipewyan Cold Lake Dialect (Goddard, 1917a, p. 115)

- | | |
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| 1. ī Lai | 8. aL K'e dī |
| 2. nake | 9. ī Lā tā ^ε |
| 3. ta, taGe | 10. hō nūn na |
| 4. dī Gī | 11. hō nan na e |
| 5. sasōla Gai ^ε , sōn la ^ε e | 20. nō nūn na |
| 6. aL k'eta Ge | 100. hō nūn na hō nūn na |
| 7. tō ta', tayewatā | 1000. mīl (French) |

Chipewyan (Curtis, vol. 18, 1928, p. 204)

- | | |
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| 1. i ^h -hla'ghi | 10. há-nén-na |
| 2. na'kē | 11. i ^h -hla'ghi=ch!a-ghé-thēhl |
| 3. thá'ghi | 20. ná-hā-nén-na |
| 4. dī ^h -ghi | 50. sa-sq ^h -la'hā-nén-na |
| 5. sa-so ^h -la'ghi | 100. há-nén-ne=hā-nén-na |
| 6. a ^h hl-kē=thá'ghi | 1000. i ^h -hla'ghi=de-chén-cháh |
| 7. thá'ya-wū-thá ^h | |
| 8. a ^h hl-kē=di ^h -ghī | |
| 9. i ^h hla'ghi=ya-wū-thá ^h | |

Sarci (Curtis, vol. 18, 1928, p. 213)

- | | |
|-------------------|-------------------|
| 1. tli-kaz-za' | 9. tlū-qu-yi-gha |
| 2. a-ki-yī | 10. ku-ni-zañ-ni |
| 3. tai-kī | 11. tli-kí=mi-ta |
| 4. di-ch!i' | 12. a-ka=mi-ta |
| 5. ku-zil-t!a | 20. a-ka=di |
| 6. kus-tan-ni | 50. ku-zil-t!a=di |
| 7. chish-ch!i-ti' | 100. ku-ni-za=di |
| 8. tlash=di'ch!i | |

APPENDIX

Section 1: (1927, 1928, 1929)

- 1. 1927
- 2. 1928
- 3. 1929
- 4. 1930
- 5. 1931
- 6. 1932
- 7. 1933
- 8. 1934
- 9. 1935
- 10. 1936

Section 2: (1937, 1938, 1939)

- 1. 1937
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Section 3: (1981, 1982, 1983)

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- 119. 2099
- 120. 2100

Atnatana (Allen, 1886, p. 258)

- | | |
|-------------|---------------|
| 1. suskái | 6. kistáu |
| 2. naytáyky | 7. konsárry |
| 3. tágy | 8. klahinky |
| 4. dinky | 9. zutlakwálo |
| 5. ahtzunny | 10. lahzún |

1	1951
2	1952
3	1953
4	1954
5	1955
6	1956
7	1957
8	1958
9	1959
10	1960

MUSKHOGEAN

Choctaw (Whipple, 1853-5 , pp. 63-64)

- | | |
|-----------------|---------------------------|
| 1. a chu-fa | 9. cha-ka-li |
| 2. tuk-lo | 10. po-ko-li |
| 3. tu-chi-na | 12. au-ah-tuk-lo |
| 4. ush-ta | 20. po-ko-li tuk-lo |
| 5. ta-hla-pi | 50. po-ko-li ta-hla-pi |
| 6. ha-na-li | 100. ta-hle-pa |
| 7. un-tuk-lo | 1000. ta-hle-pa si-pok-ni |
| 8. un-tu-chi-na | |

Cheerake (Adair, 1930, p. 81)

- | | |
|-------------|---------------------------|
| 1. soquo | 9. sohnáyra |
| 2. tahre | 10. skoeh |
| 3. choeh | 11. soatoo |
| 4. nankke | 12. tarátoo |
| 5. ishke | 20. tahre skoeh |
| 6. sootáre | 100. skoeh chooke |
| 7. karekóge | 1000. skoeh chooke kaiére |
| 8. suhnáyra | |

Chikkasah and Choktah (Adair, 1930, p. 82)

- | | |
|---------------|---------------------------|
| 1. chephpha | 9. chakkále |
| 2. toogálo | 10. pokoole |
| 3. tootchēna | 11. pokoole aawa chephpha |
| 4. oosta | 20. pokoole toogalo |
| 5. tathlābe | 100. pokoole tathleepa |
| 6. hannāhle | 1000. poloole tathleepa |
| 7. untoogālo | tathleepa ishto |
| 8. untoochēna | |

Muskhoge (Adair, 1930, p. 82)

- | | |
|--------------|---------------|
| 1. hommai | 6. eepáhge |
| 2. hokkóle | 7. hoolopháge |
| 3. tootchēna | 8. cheenēpa |
| 4. ohsta | 9. ohstápe |
| 5. chakápe | 10. pokóle |

Seminole, Hitchiti (Moore-Wilson, 1916, pp. 219-20)

- | | |
|-------------------|----------------------------|
| 1. hûm-kin | 9. os-ta-pa-kin |
| 2. ho-ko-lin | 10. pa-lin |
| 3. too-chin | 11. pa-lin-hum-kin-hum-kin |
| 4. os-tin | 20. pa-lin-ho-ko-lin |
| 5. chaw-kee-bin | 50. pa-lin-chaw-kee-bin |
| 6. a-pa-kin | 100. chope-kee-hum-kin |
| 7. ko-lo-pa-kin | 300. chope-kee-too-chin-ee |
| 8. chin-na-pa-kin | |

Seminole (MacCauley, 1887, p. 525)

- | | |
|----------------|---------------------|
| 1. hûm-kin | 7. ko-lo-pa-kin |
| 2. ho-ko-lin | 8. tci-na-pa-kin |
| 3. to-tci-nin | 9. os-ta-pa-kin |
| 4. os-tin | 10. pa-lin |
| 5. tsaq-ke-pin | 11. pa-lin-hûm-kin |
| 6. i-pa-kin | 20. pa-li-ho-ko-lin |

Seminole, Micosuki (Goggin, 1937, unpublished)

- | | |
|----------------|-------------------|
| 1. clamen | 11. clawaikin |
| 2. dōpelen | 12. tokolowaikin |
| 3. kōzeenen | 13. tozeenwaikin |
| 4. sheetaken | 14. sheetawaikin |
| 5. zakeepin | 15. zakupowaikin |
| 6. epakin | 16. epawaikin |
| 7. kōtopakin | 17. kolopawaikin |
| 8. toshnapikin | 20. pōkōtōlin |
| 9. ōshtajakin | 30. pokotisheenin |
| 10. ōkōlin | 40. pokosheetakin |

Section 1: (1900-1910)

- | | |
|---------------|---------------|
| 1. 1900-1901 | 1. 1900-1901 |
| 2. 1901-1902 | 2. 1901-1902 |
| 3. 1902-1903 | 3. 1902-1903 |
| 4. 1903-1904 | 4. 1903-1904 |
| 5. 1904-1905 | 5. 1904-1905 |
| 6. 1905-1906 | 6. 1905-1906 |
| 7. 1906-1907 | 7. 1906-1907 |
| 8. 1907-1908 | 8. 1907-1908 |
| 9. 1908-1909 | 9. 1908-1909 |
| 10. 1909-1910 | 10. 1909-1910 |

Section 2: (1910-1920)

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| 1. 1910-1911 | 1. 1910-1911 |
| 2. 1911-1912 | 2. 1911-1912 |
| 3. 1912-1913 | 3. 1912-1913 |
| 4. 1913-1914 | 4. 1913-1914 |
| 5. 1914-1915 | 5. 1914-1915 |
| 6. 1915-1916 | 6. 1915-1916 |
| 7. 1916-1917 | 7. 1916-1917 |
| 8. 1917-1918 | 8. 1917-1918 |
| 9. 1918-1919 | 9. 1918-1919 |
| 10. 1919-1920 | 10. 1919-1920 |

Section 3: (1920-1930)

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| 1. 1920-1921 | 1. 1920-1921 |
| 2. 1921-1922 | 2. 1921-1922 |
| 3. 1922-1923 | 3. 1922-1923 |
| 4. 1923-1924 | 4. 1923-1924 |
| 5. 1924-1925 | 5. 1924-1925 |
| 6. 1925-1926 | 6. 1925-1926 |
| 7. 1926-1927 | 7. 1926-1927 |
| 8. 1927-1928 | 8. 1927-1928 |
| 9. 1928-1929 | 9. 1928-1929 |
| 10. 1929-1930 | 10. 1929-1930 |

IROQUOIS

Iroquois (Adam, 1877, p. 245)

- | | |
|------------|--------------------|
| 1. enskat | 8. satekon |
| 2. tekeni | 9. tiohton |
| 3. ashen | 10. oieri |
| 4. kaieri | 11. enskat iawenre |
| 5. wisk | 20. tewasen |
| 6. iaiaak | 100. tewenniawe |
| 7. tsiatak | |

Tuskarora (Catlin, 1841, pp. 301-302)

- | | |
|-----------|--------------------------|
| 1. unji | 9. ni ruh |
| 2. nekty | 10. wutsuh |
| 3. au suh | 11. unjits kahar |
| 4. huntak | 15. wisk tskahar |
| 5. wisk | 20. na wots huh |
| 6. coyak | 50. wisk tiwotshuh |
| 7. jarnak | 100. kau yaustry |
| 8. nakruh | 1000. wutsu-kau yaustry. |

INDEX

INDEX (continued)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
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INDEX (continued)

1.
2.
3.
4.
5.
6.
7.
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9.
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TIMUCUAN

Tawasa (Swanton, 1929, pp. 450-51)

- | | |
|--------------|------------------|
| 1. yáñkfah | 6. mareékah |
| 2. eúksah | 7. pekétchah |
| 3. hóp-ho | 8. pekénahough |
| 4. checúttah | 9. pekétchcuttah |
| 5. márouah | 10. toómah |

Timucua (Swanton, 1929, pp. 450-51)

- | | |
|----------------|----------------|
| 1. yaha, yauka | 6. mareca |
| 2. yucha | 7. piqicha |
| 3. hapu | 8. piqinahu |
| 4. chequeta | 9. peqechaqeta |
| 5. marua | 10. tuma |

TIMURAH

Lawas (Lawan, 1900, pp. 10-11)

- | | |
|-----------|-----------|
| 1. Lawas | 1. Lawas |
| 2. Lawas | 2. Lawas |
| 3. Lawas | 3. Lawas |
| 4. Lawas | 4. Lawas |
| 5. Lawas | 5. Lawas |
| 6. Lawas | 6. Lawas |
| 7. Lawas | 7. Lawas |
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| 9. Lawas | 9. Lawas |
| 10. Lawas | 10. Lawas |

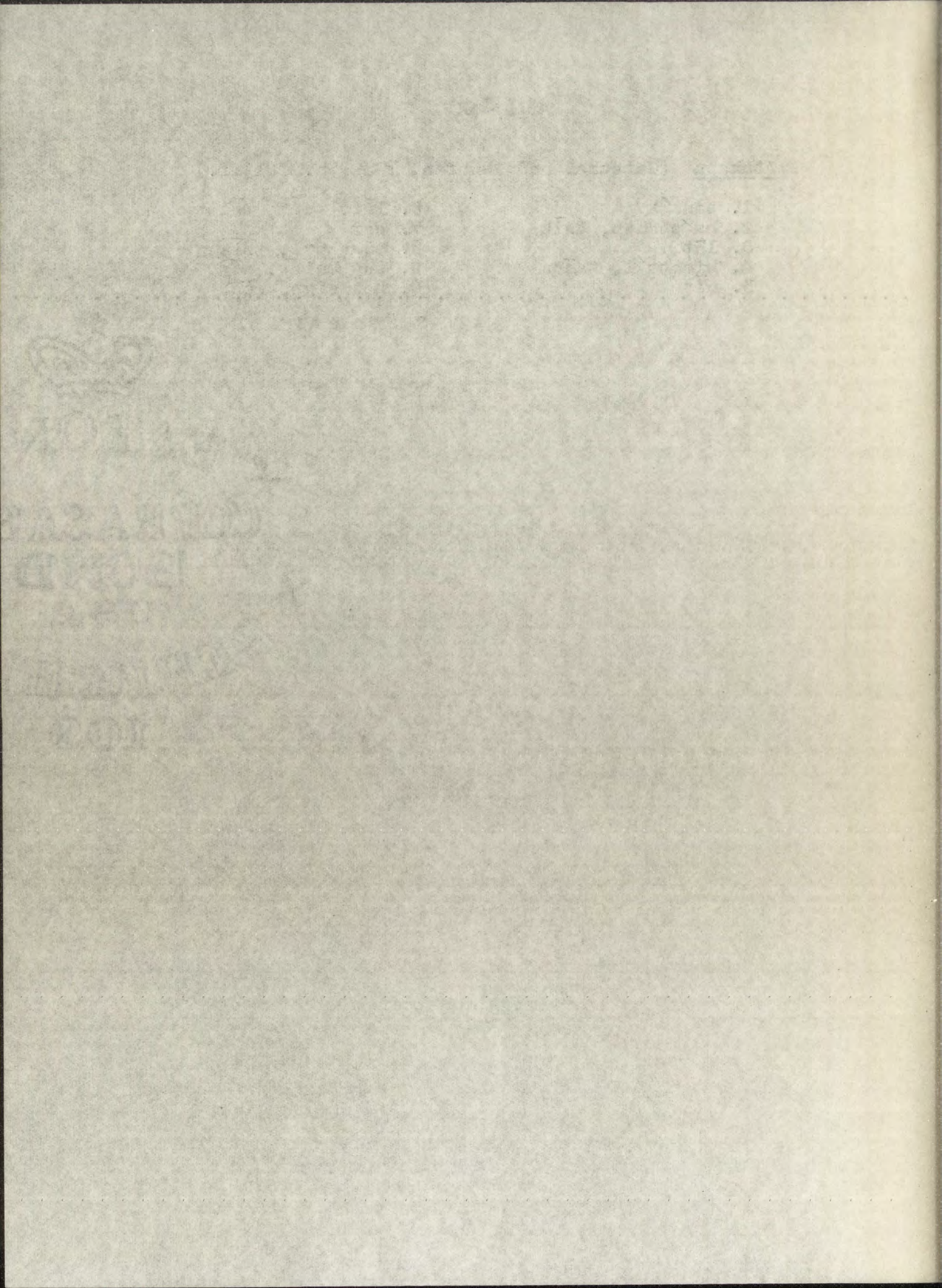
Lawas (Lawan, 1900, pp. 10-11)

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| 2. Lawas | 2. Lawas |
| 3. Lawas | 3. Lawas |
| 4. Lawas | 4. Lawas |
| 5. Lawas | 5. Lawas |
| 6. Lawas | 6. Lawas |
| 7. Lawas | 7. Lawas |
| 8. Lawas | 8. Lawas |
| 9. Lawas | 9. Lawas |
| 10. Lawas | 10. Lawas |

ATAKAPAN

Atakapa (Gatschet and Swanton, 1932, p. 161 ff.)

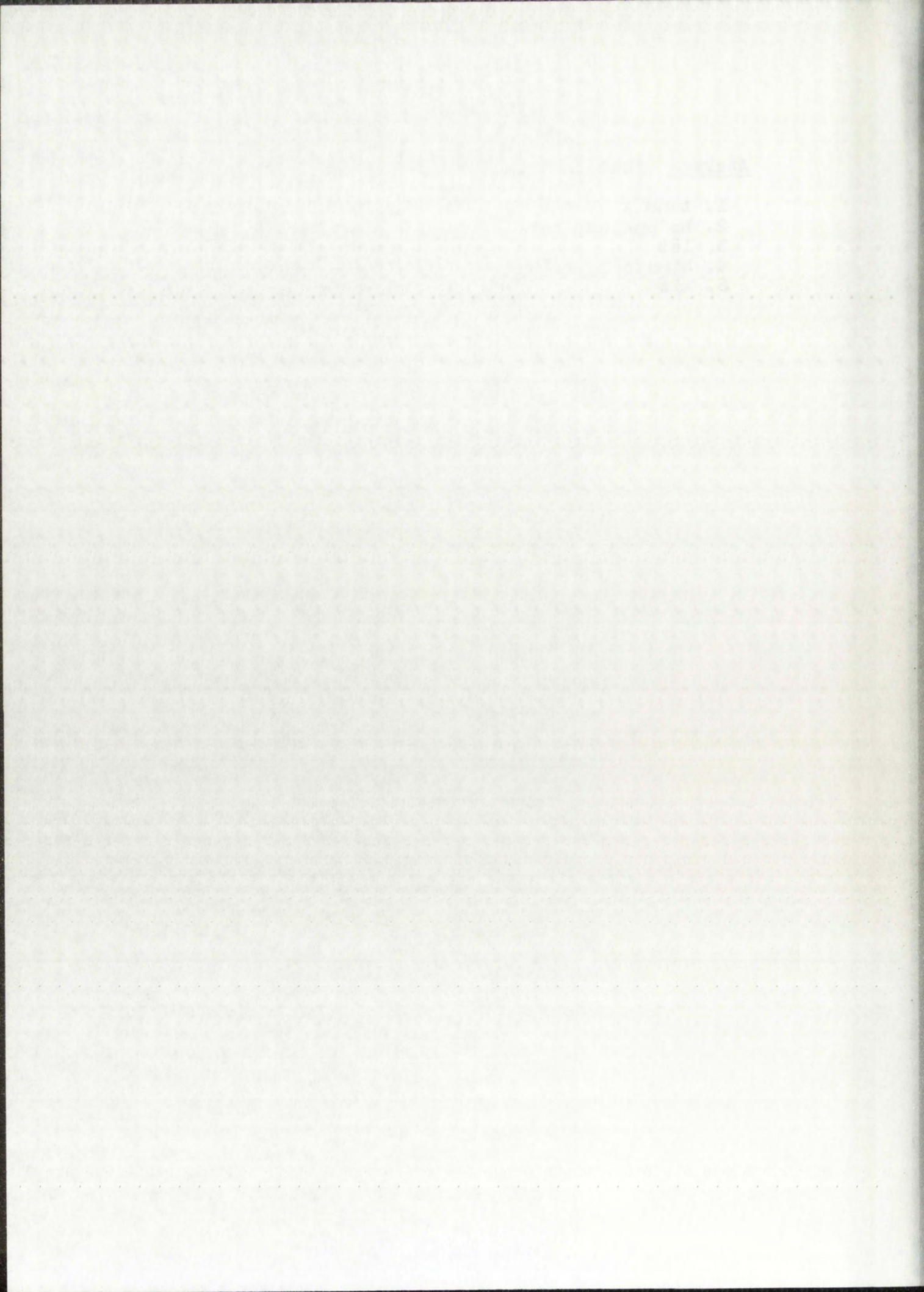
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|--------------------|----------------------|
| 1. tanu'k | 6. lāt, tsīk, tāl̄st |
| 2. ha'ppalst, tsīk | 7. pax |
| 3. lāt | 8. himato'l, tsīk |
| 4. himato'l, tsēts | 9. tegghuiaw, wōc |
| 5. nīt | 10. heissign, wōc |



UCHEAN

Yuchi (Wagner, 1933-38, p. 346)

- | | |
|-------------|--------------------|
| 1. hit'e' | 9. t'e'xKa |
| 2. na'w'e' | 10. laxPE' |
| 3. naKa' | 11. laxPehi't'e' |
| 4. TaYa' | 20. k'oxtangwe' |
| 5. tc'wahε' | 50. k'oxtatc'wahε' |
| 6. icdu' | 100. ic't'e't'e' |
| 7. laxdiu' | 1000. ic't'a'at'e' |
| 8. bifa' | |



BEOTHUK

Beothuc (Lloyd, 1875, p. 39)

- | | |
|--------------|---------------|
| 1. gathet | 6. rigadosic |
| 2. adasic | 7. o-o-dosook |
| 3. thedsic | 8. aadoosook |
| 4. abodoesic | 9. yeothoduc |
| 5. niheck | 10. theant |

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ALGONQUIAN

Montaignais (Adam, 1877, p. 245)

- | | |
|--------------------|-----------------------|
| 1. inl'ape' | 8. elkke'-din/pe' |
| 2. nak'e' | 9. inl'a-yi'-oyertan |
| 3. t'ape' | 10. onernan |
| 4. dinpi | 20. na-onernan |
| 5. se'-sunlape' | 50. se'-sunla-onernan |
| 6. elkke'-t'ape' | 100. onernan-onernan |
| 7. t'a-ye'-oyertan | |

Chippeway (Adam, 1877, p. 245)

- | | |
|------------------|-----------------|
| 1. bejig | 8. nigh-wasswi |
| 2. nij | 9. jang-wasswi |
| 3. nisswi | 10. mid-asswi |
| 4. niwin | 20. nij-tana |
| 5. nanan | 50. nani-midana |
| 6. ningot-wasswi | 100. nintgotwak |
| 7. nij-wasswi | |

Penobscot (Prince, 1902, p. 28)

- | | |
|-------------|-------------------|
| 1. pezukw | 8. nsözuk |
| 2. nis | 9. noli' |
| 3. na's | 10. medala |
| 4. iew | 11. nogwudonkaw |
| 5. nan | 15. nanonkaw |
| 6. mukw'dus | 20. nisinske |
| 7. tebauwus | 100. nogwudat'gwe |

Abenaki (Prince, 1902, p. 28)

- | | |
|--------------|------------------|
| 1. pazekw | 8. nsōñzek |
| 2. nis | 9. noliwi |
| 3. nas | 10. medala |
| 4. iaw | 11. ngwedoñkaw |
| 5. noñlan | 15. nononkaw |
| 6. ngwedoñz | 20. nisinska |
| 7. toñbawoñz | 100. ngwedat'gwa |

Narragansett (Prince and Speck, 1904, p. 20)

- | | |
|------------|-------------|
| 1. nquit | 6. qutta |
| 2. neesse | 7. enada |
| 3. nish | 8. shwosuck |
| 4. yoh | 9. paskugit |
| 5. nepanna | 10. puick |

Pamunkey (Pollard, 1894, p. 12)

- | | |
|--------------|-------------|
| 1. nikkut | 6. vomtally |
| 2. orijak | 7. talliko |
| 3. kiketock | 8. tingdum |
| 4. mitture | 10. yantay |
| 5. nahnkitty | |

Delaware (Whipple, 1853-54, pp. 59-60)

- | | |
|-----------------|--------------------------|
| 1. co'te | 8. hahsch |
| 2. ni'sha | 9. pes'co |
| 3. na-ha' | 10. te'len |
| 4. ne'e-wah | 12. te-len-oh-ni-sha |
| 5. pah-le'nah'k | 20. ni-shi'-na-ki |
| 6. cot'tasch | 50. pah-le-nah'kt-te-len |
| 7. ni'shasch | 100. te-len-tum-te-len |

Shawnee (Whipple, 1853-54, pp. 59-60)

- | | |
|------------------|-------------------------|
| 1. ne-co-ti | 8. t'tha-shik-thi |
| 2. ni-e-sui | 9. tcha-cat-thi |
| 3. t'thoui' | 10. met-a-thi |
| 4. ni-e-oui' | 12. kit-te-ni-e-sui |
| 5. ni-ah-la-mui | 20. ne-suoi-pit-a-ki |
| 6. ni-co-toi-thi | 50. yah-ba-noi-pit-a-ki |
| 7. ni-shaw-thi | 100. te-pe-e-weh' |

Natick (Trumbull, 1903, pp. 219-347)

- | | |
|--------------------|---------------------------|
| 1. nequt, pasuk | 8. shwosuk•tahshe |
| 2. neese, nees | 9. pask•ogun |
| 3. nishwe, nishweu | 10. piuk, piog |
| 4. yau, yauwe | 15. nab napanna |
| 5. napanna tahshe | 50. napanna tahshinchag |
| 7. nesâusuk tahshe | 90. pask•ogun tahshinchag |

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Sauk and Fox (Forsyth in Blair, vol. 2, 1912, pp. 243-44)

- | | |
|--------------------|---|
| 1. necouth | 11. mittausway necouth
a nif see |
| 2. neesh | 12. mittausway neshway
nifsee |
| 3. nefš | 20. neesh wap-pe-tuck |
| 4. ne-a-we | 100. necouth-wöck-qua |
| 5. nee-aw-noon | 1000. mittaus wöck-qua,
necouth kichi wöck |
| 6. ne-coth-wa-sick | 10, 000. mit-taus kichi |
| 7. no-wuck | |
| 8. nip-wash-ick | |
| 9. shauck | |
| 10. mit-taus | |

Fox (Jones, 1911, p. 857)

- | | |
|------------------------------|---|
| 1. ne'gut' | 9. cā'g ^a |
| 2. nī'cw' | 10. me'dāsw', kwī'tc' |
| 3. ne'sw' | 11. medāswi'negu't',
medāswinegutinesiw' |
| 4. nyā'w' | 20. nīwābitag |
| 5. nyā'naw' | 50. nyānanā'bit'Ag',
cegi'KANāw' |
| 6. ne'gutwāci'g ^a | 100. ne'gutwā'Kw ^e |
| 7. nō'hig ^a | |
| 8. ne'cwāci'g ^a | |

Kickapoo (Maximilian in Thwaites, vol. 24, 1906, p. 229)

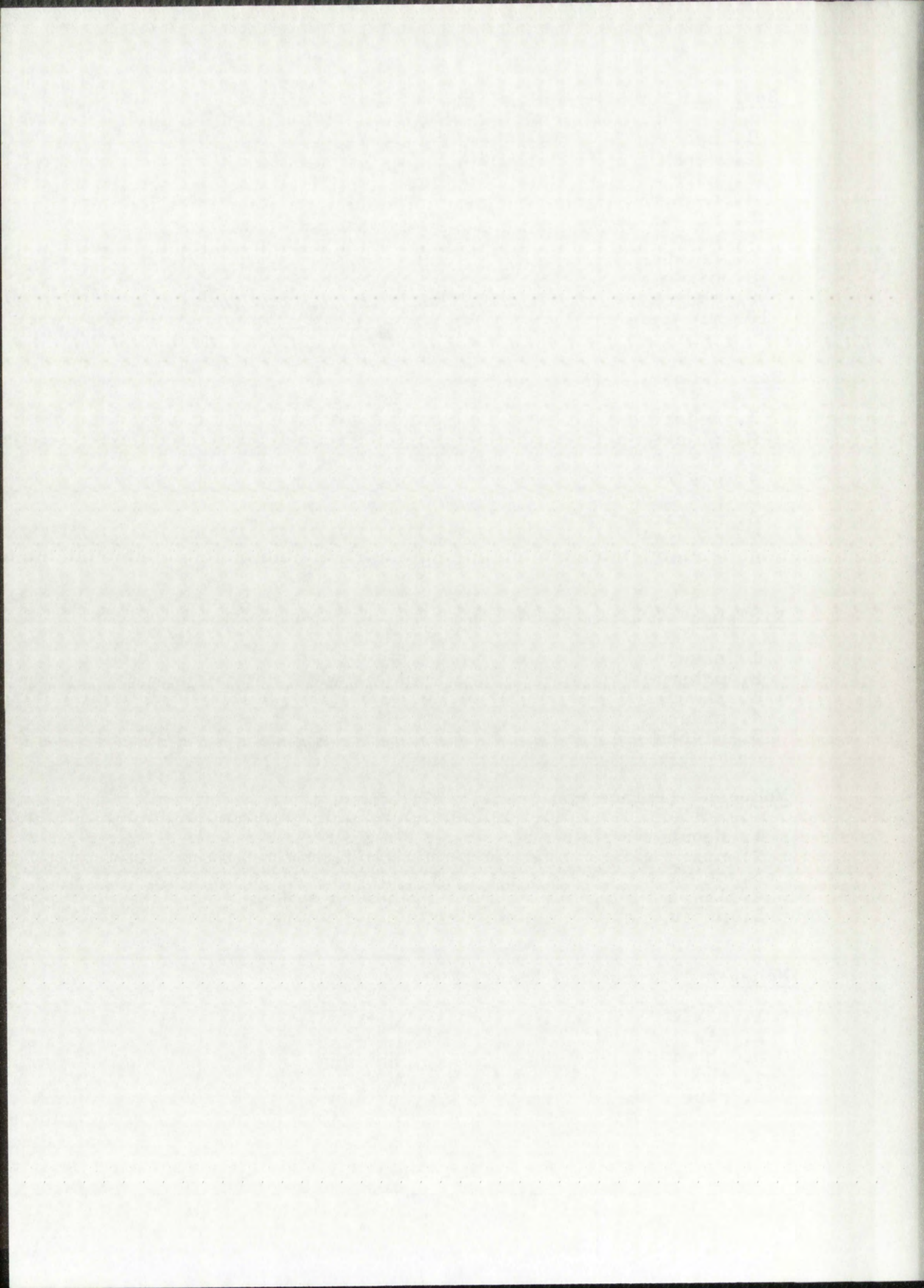
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|-----------|----------------|
| 1. nākút | 6. noiká |
| 2. níhsw | 7. nohiká |
| 3. nássue | 8. nessua-siká |
| 4. niāua | 9. schohaka |
| 5. nianan | 10. metaa-tue |

Mohegan (Prince and Speck, 1904, p. 20)

- | | |
|----------|-----------------|
| 1. neqút | 6. k'dūsk |
| 2. nīs | 7. nīzū'sh |
| 3. ch'wī | 8. cL'wī-ō'sk |
| 4. iāw | 9. bōzūkū Kwōng |
| 5. nīpāu | 10. bā'-Yōg |

Mohegan (Prince and Speck, 1904, p. 20)

- | | |
|----------|---------------|
| 1. nīk't | 6. nī'kūdūs |
| 2. nīs | 7. nī'zūsh |
| 3. ch'wī | 8. ch'hōns |
| 4. iāw | 9. bōzūkū'gōn |
| 5. nīpā | 10. bā'īōg |



CHAPTER VIII

CONCLUSIONS

The numeral systems of North American Indians show no correlation with culture areas. The entire United States east of the Rocky Mountains, except the areas of Eskimo and Caddoan peoples, is characterized by the use of decimal systems of numeration regardless of whether the culture is of Eastern Woodlands, Southeastern, or Plains type. The Eskimo and the Caddoan groups use quinary-vigesimal systems. The Southwestern area, with the possible exception of Zuni, shows solidly the use of the decimal system. In Mexico, only the northern groups use decimal systems; farther south they use quinary-vigesimal systems. The Great Basin-Plateau area is again solidly decimal. The Northwest Coast shows a mixed use of quinary and quinary-decimal systems; the Aleuts use a quinary system. The California tribes show the greatest diversity but with no apparent correlation with type of culture nor with linguistic divisions.¹

The survey for California shows that in the north the Athapascans use decimal systems. Progressing southward among the Athapaskan groups quinary-decimal systems appear; these are also used by the Shasta, Yana, Karok and Chimariko. The Round Valley Yuki, the Chumash and the Salinan use quaternary

1. Figures I and II (in pocket) show the distribution of numeral systems in California and the other North American areas, respectively.

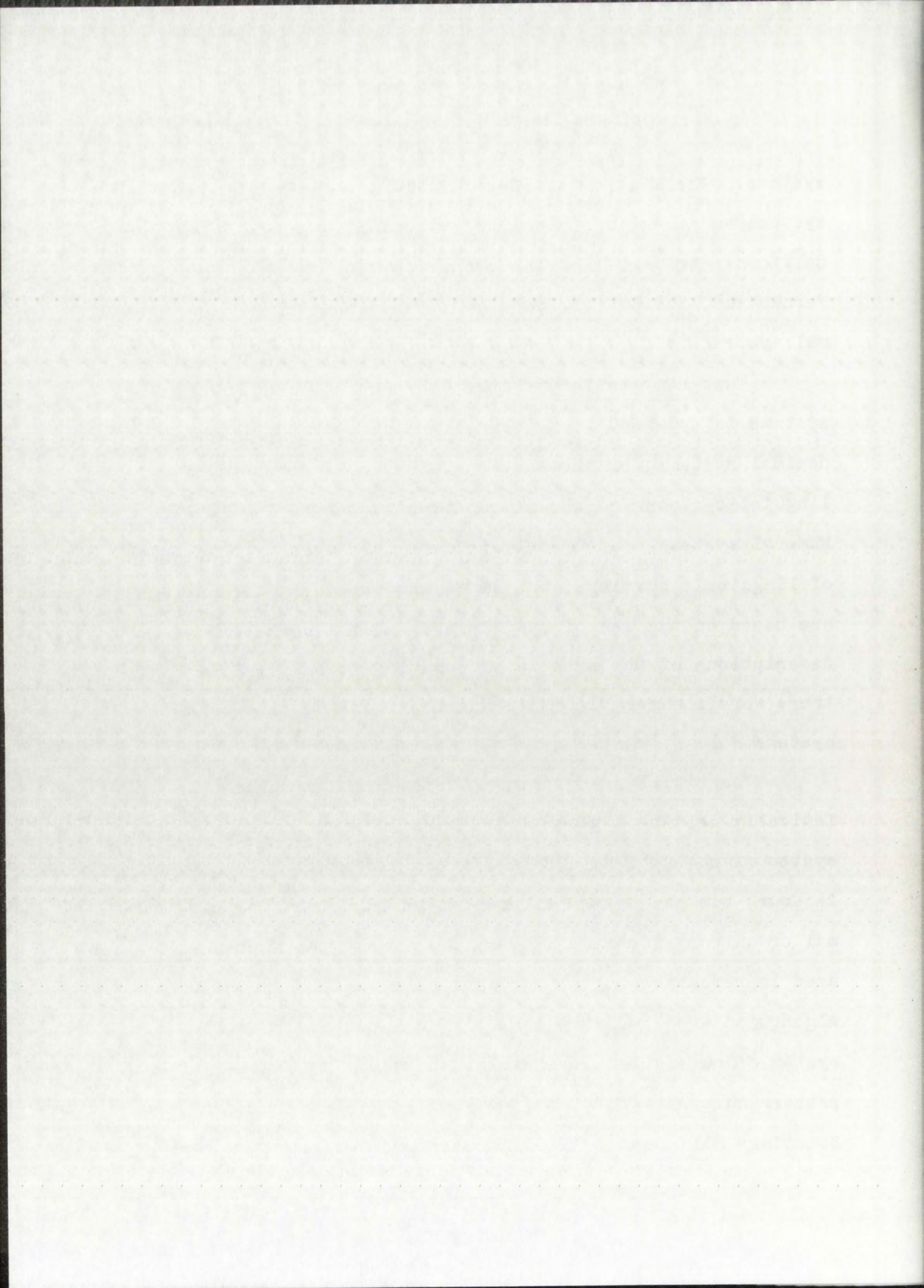
CONTENTS

The present chapter of this work is devoted to a study of the various systems of thought which have arisen in the history of the human mind. It is a study of the development of the human mind from its earliest beginnings to the present day. The systems of thought which are discussed in this chapter are the systems of the ancient Greeks, the systems of the medieval ages, the systems of the modern period, and the systems of the present day. The systems of the ancient Greeks are the systems of the pre-Socratic philosophers, the systems of the Socratic philosophers, and the systems of the Hellenistic philosophers. The systems of the medieval ages are the systems of the Scholastic philosophers, the systems of the Mystical philosophers, and the systems of the Reformers. The systems of the modern period are the systems of the Rationalists, the systems of the Empiricists, and the systems of the Idealists. The systems of the present day are the systems of the Positivists, the systems of the Pragmatists, and the systems of the Existentialists.

systems. The Huchnom and Coast Yuki have quinary-decimal systems and the Wappo a quinary-vigesimal system. The other California tribes, with the exception of the Gabrielino and Fernandeno, the Desert, Pass and Mountain Cahuilla, use decimal systems.

That linguistic divisions have no influence on numeral systems is apparent from the solid distribution of the decimal system over the eastern United States regardless of linguistic stock and the mixed distribution in California. Numeral systems and numeral words may be taken over in spite of linguistic barriers, but since many systems of counting are based on the use of the fingers and the words are descriptions of the process of counting it is possible that there were innumerable independent origins of particular systems.

The ritual or pattern numbers which are characteristically used by a given tribe have no correlation with the system of numeration. In California the usual ritual number is four, but the system of numeration may be quinary or decimal or quinary-vigesimal. Very frequently the number is used in reference to the cardinal directions. In the Coastal Algonquian area the most common ritual number is twelve, the system of numeration invariably decimal. The Basin-Plateau pattern number is five, the numeration system decimal. Sometimes different sets of numbers and different systems of



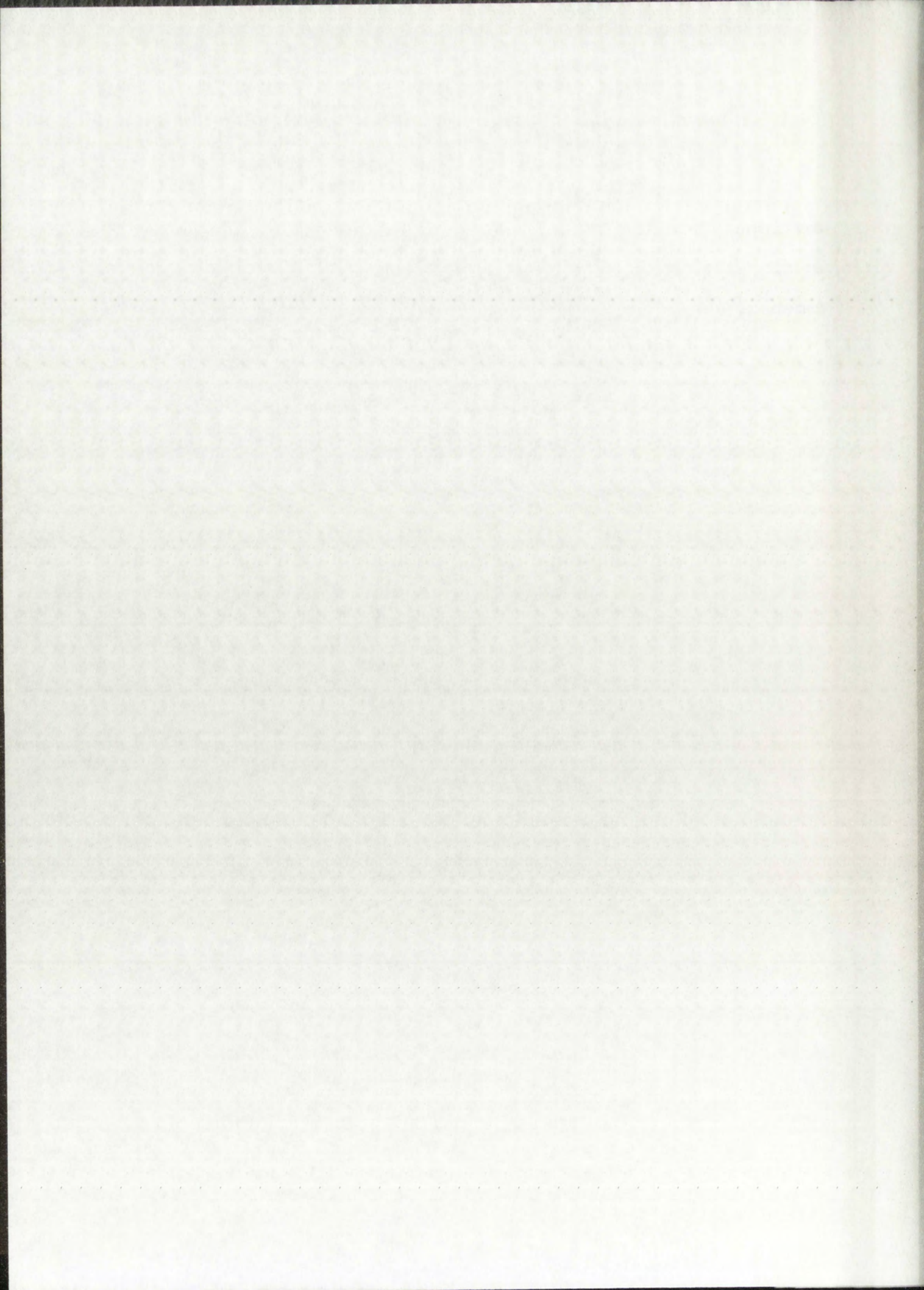
counting are used for sacred objects. For example, the Northern Wintun ordinarily count decimally above twenty but in counting sacred clam-shell discs they use a vigesimal system and a different set of number words.

It should also be noted that linear measurement systems do not fit in with counting methods. Ordinarily the system of measuring has reference to parts of the body and is vague and inexact.

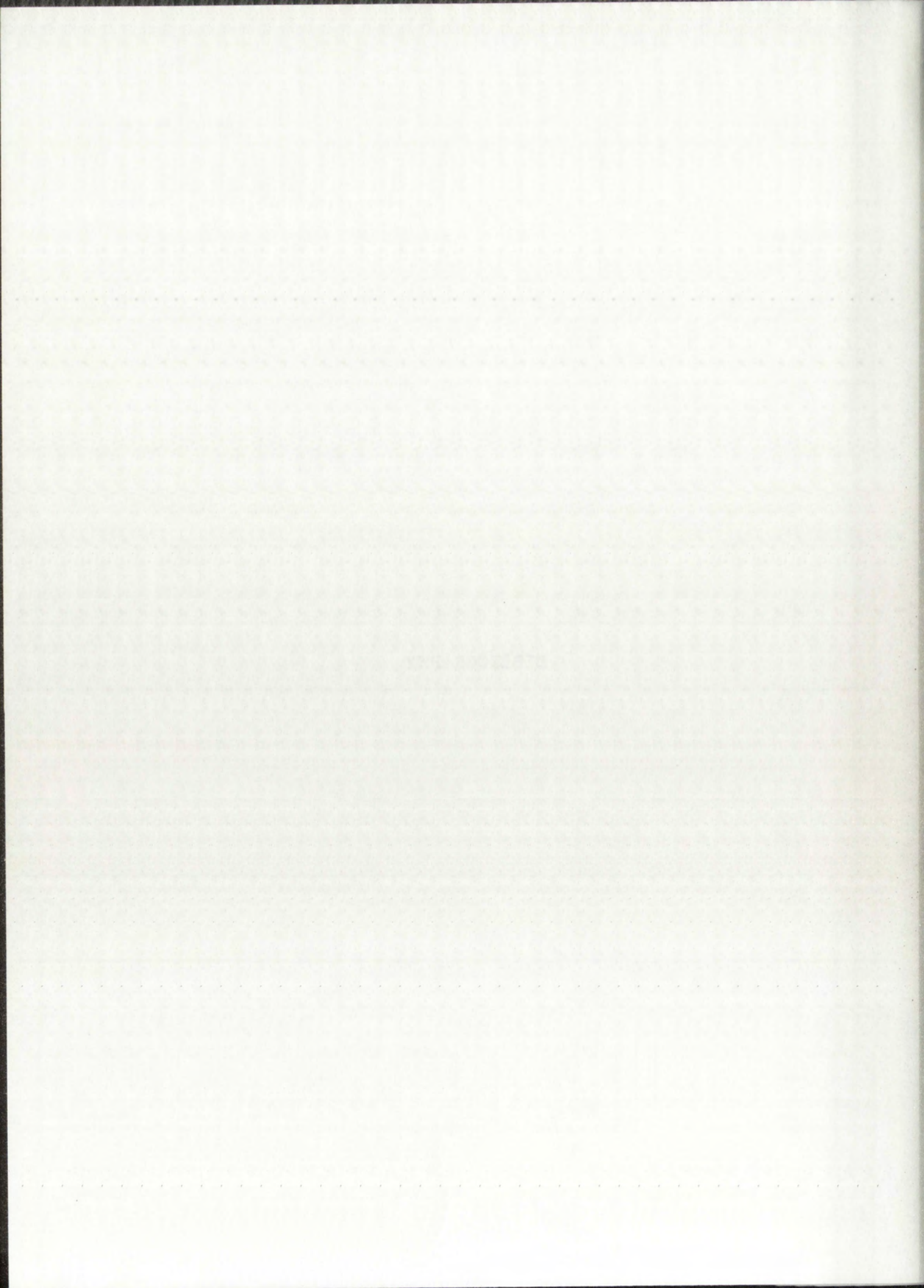
In many cases the influence of white culture has changed the aboriginal system of counting to a decimal system and even changed the words used in counting, as occurred in the case of the Haida. It is suggested that changes of this nature may be based on convenience in trade transactions.

The numeral words of many tribes obviously derive from descriptions of the process of counting on the fingers. The entire Eskimo system seems to be based on the use of the fingers and toes in counting. In the Southeastern area where decimal systems are used, the counting is accompanied by the use of small sticks or by marks on the ground. The eastern Pomo of California who use a quinary-vigesimal system, and the Yuki who have a quaternary system, also count with small sticks rather than with their fingers; the number words of both of these groups are descriptive reflections of the counting process.

However, the type of counting system which is developed from the use of the hands or any other device as an aid in counting seems to be an entirely accidental phenomenon.



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Section A of the bibliography includes all the sources actually used in writing the thesis.

Section B of the bibliography includes sources which were examined but had no data on the subject.

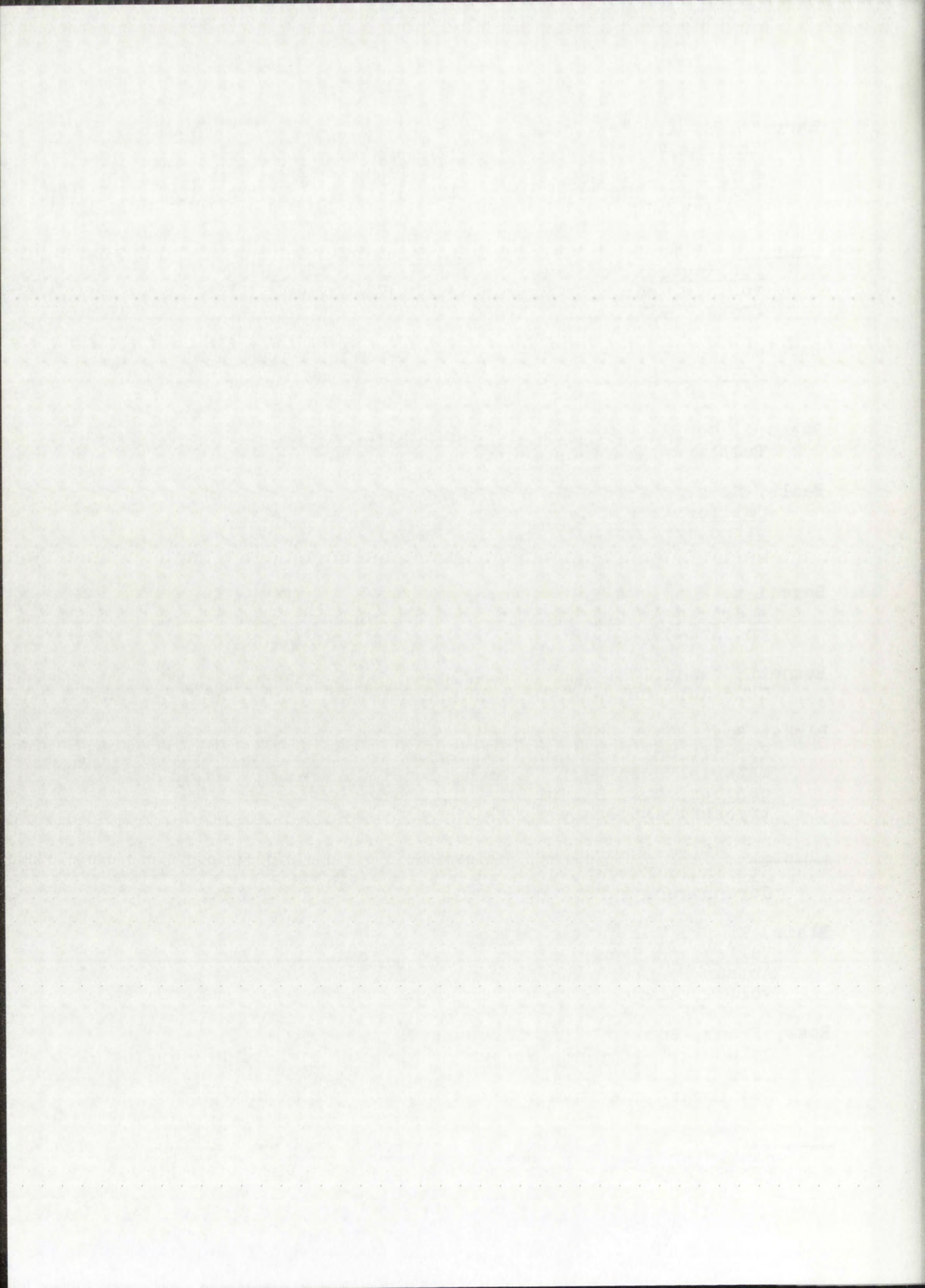
Section C of the bibliography lists sources which are known to include relevant data but which were unavailable to the author. Complete references could not be obtained for many items in this section.

Section 4 of the Bill of Rights contains all the
rights which are guaranteed to every citizen of the United States.
These rights are: the right of free speech, the right of free
press, the right of free assembly, the right of free petition,
the right of free religion, the right of free travel, the right
of free commerce, the right of free contract, the right of free
property, the right of free inheritance, the right of free
marriage, the right of free divorce, the right of free
education, the right of free employment, the right of free
labor, the right of free trade, the right of free
commerce, the right of free navigation, the right of free
commerce with foreign nations, the right of free
commerce with the States, the right of free
commerce with the Territories, the right of free
commerce with the Indian Tribes, the right of free
commerce with the United States, the right of free
commerce with the world.

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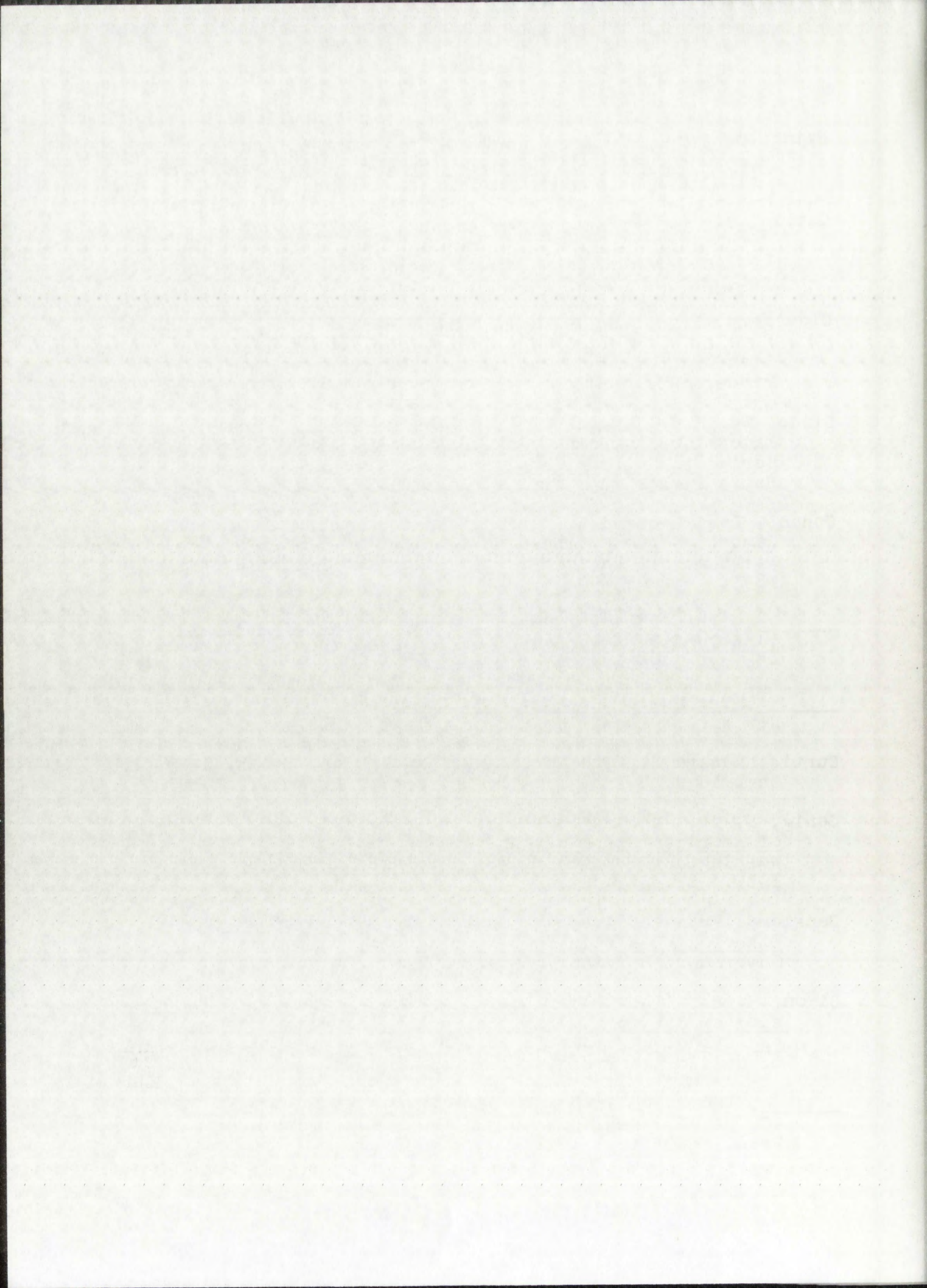
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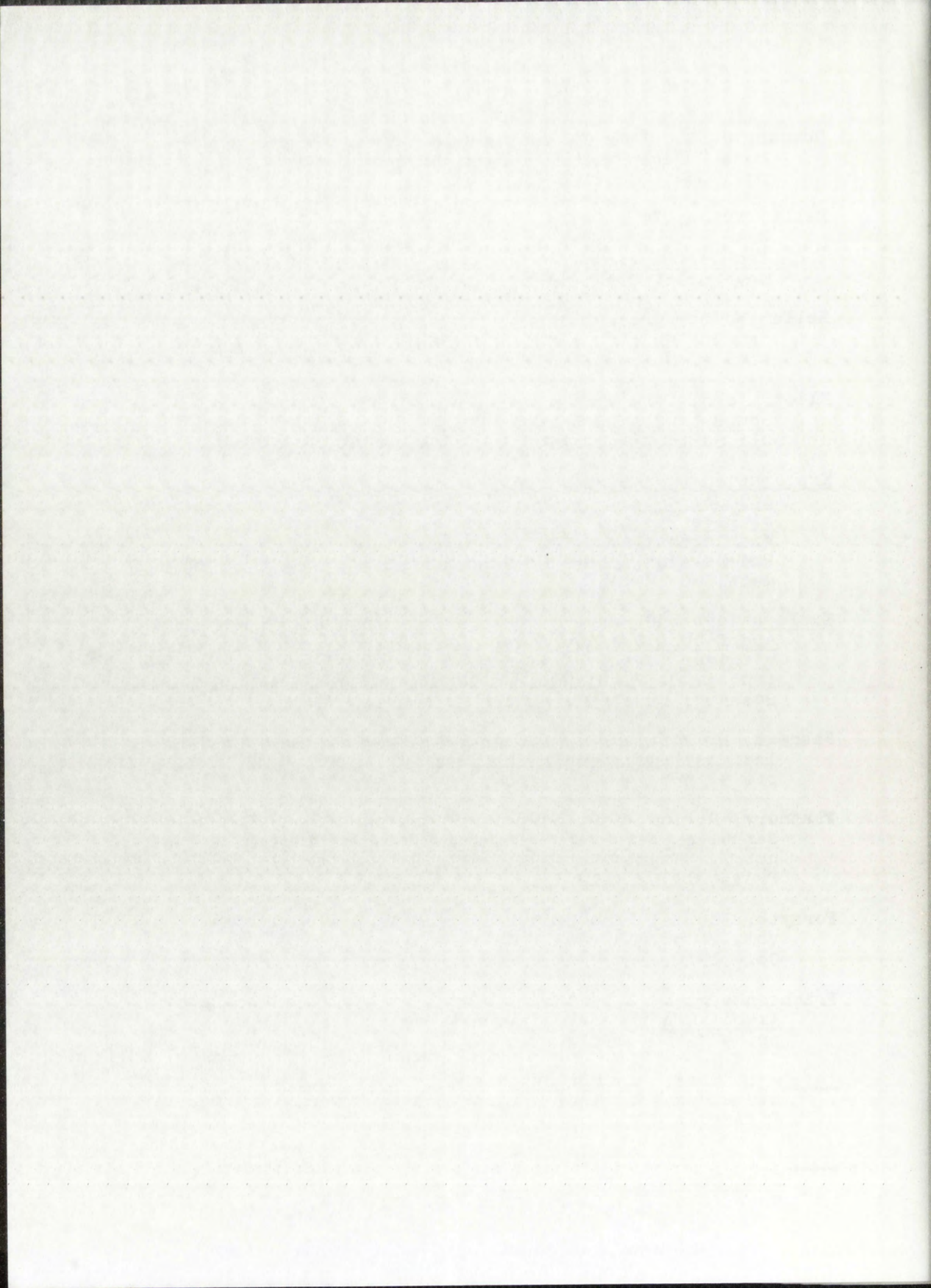
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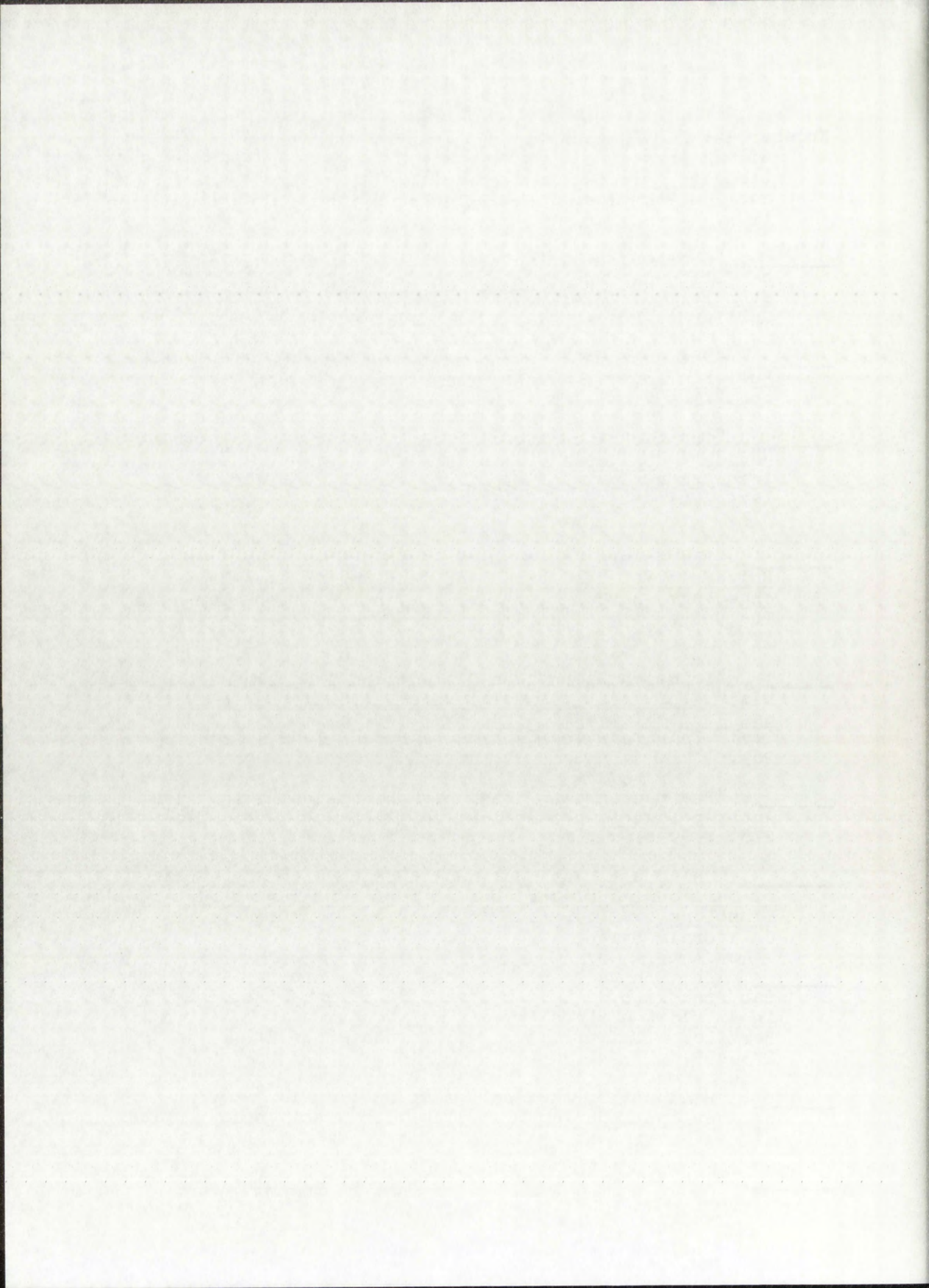
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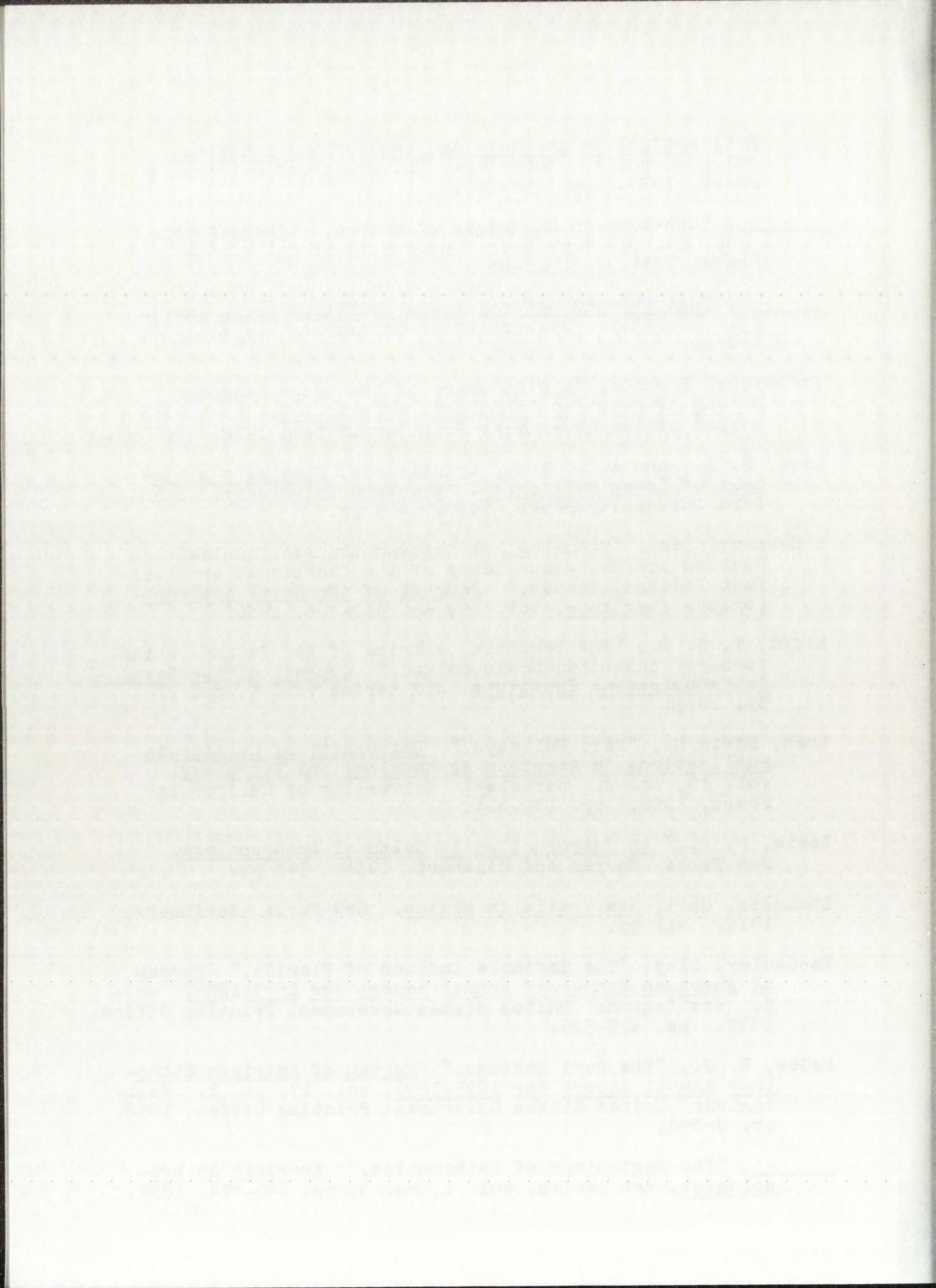
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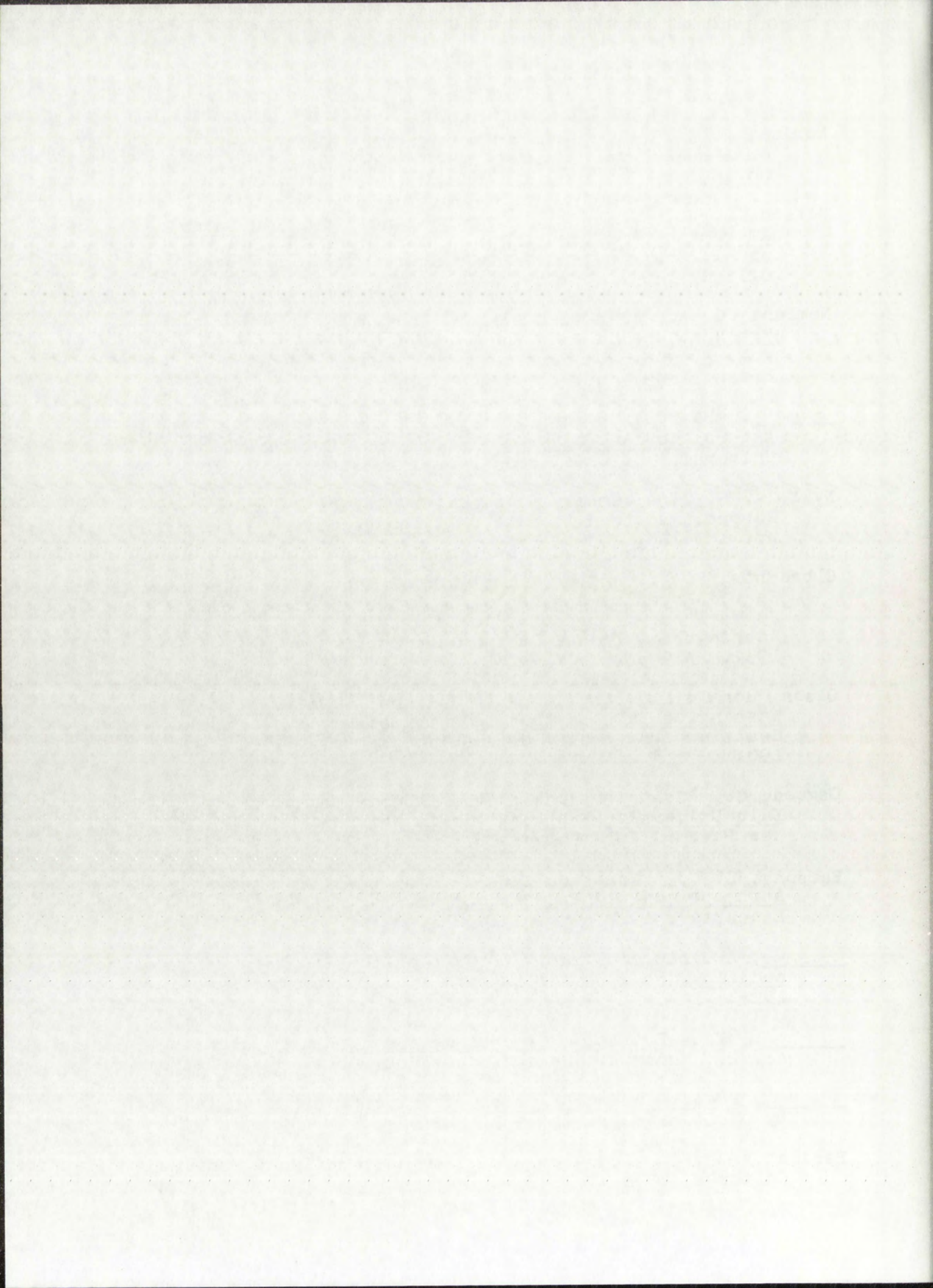
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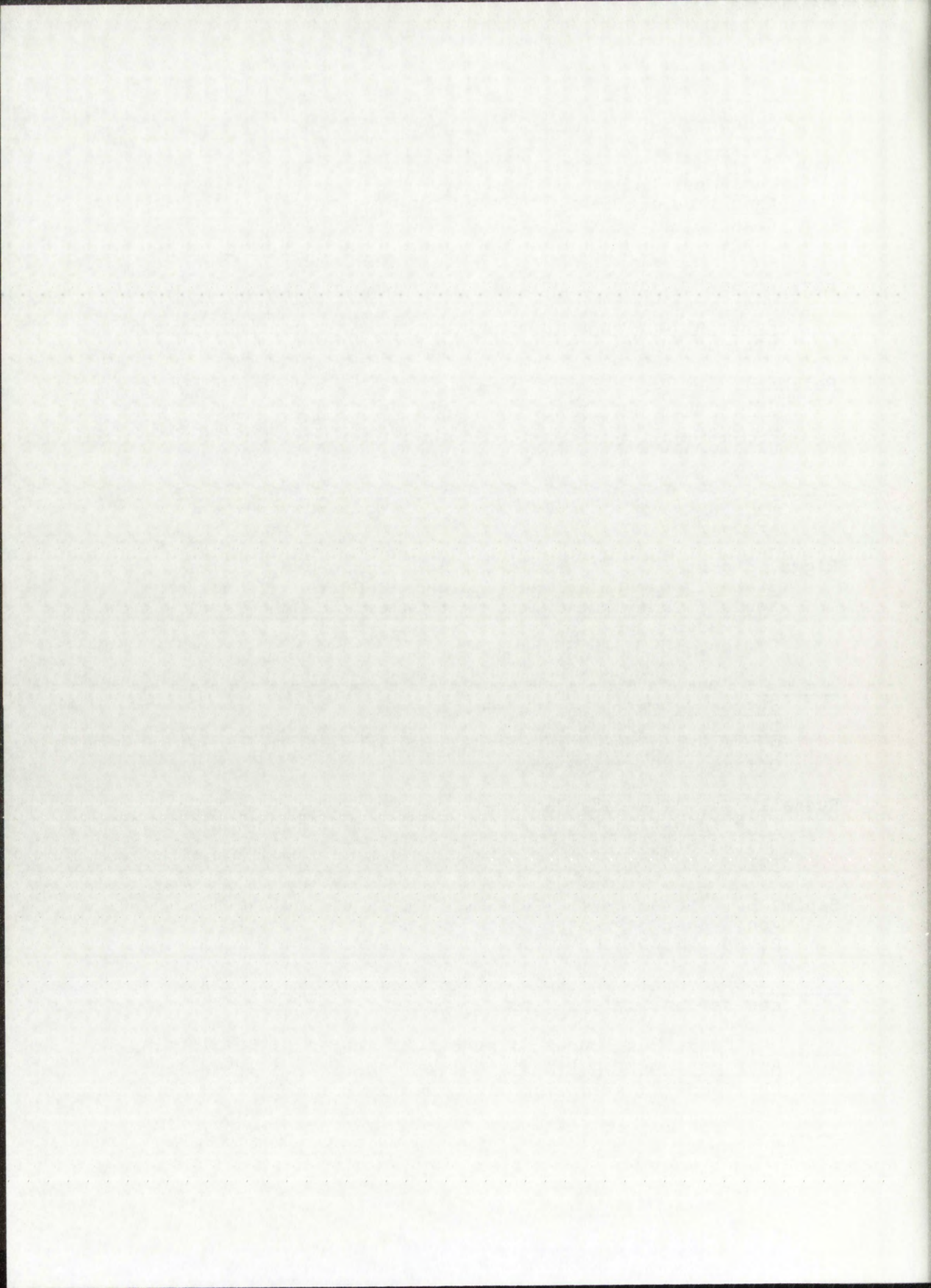
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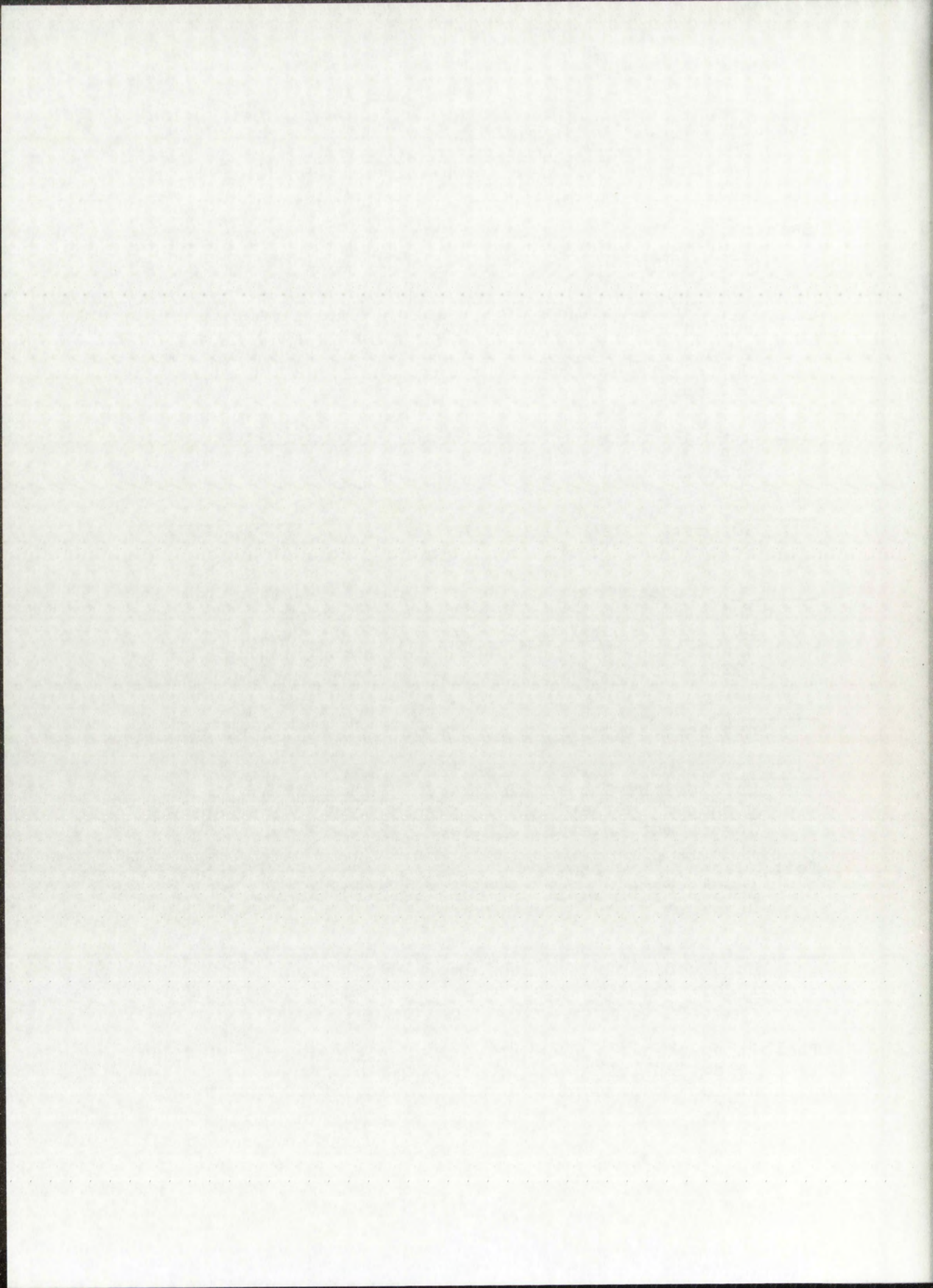
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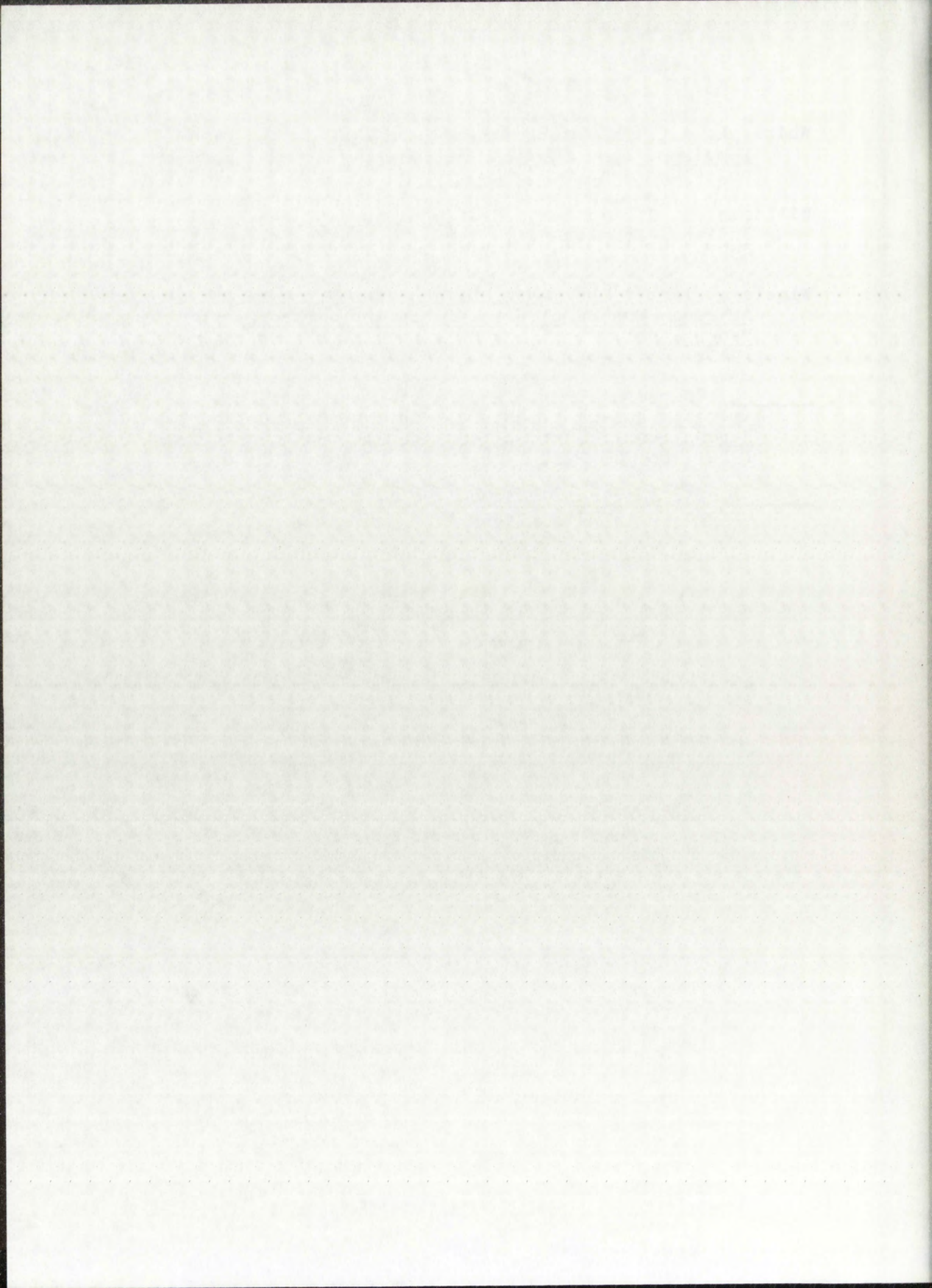
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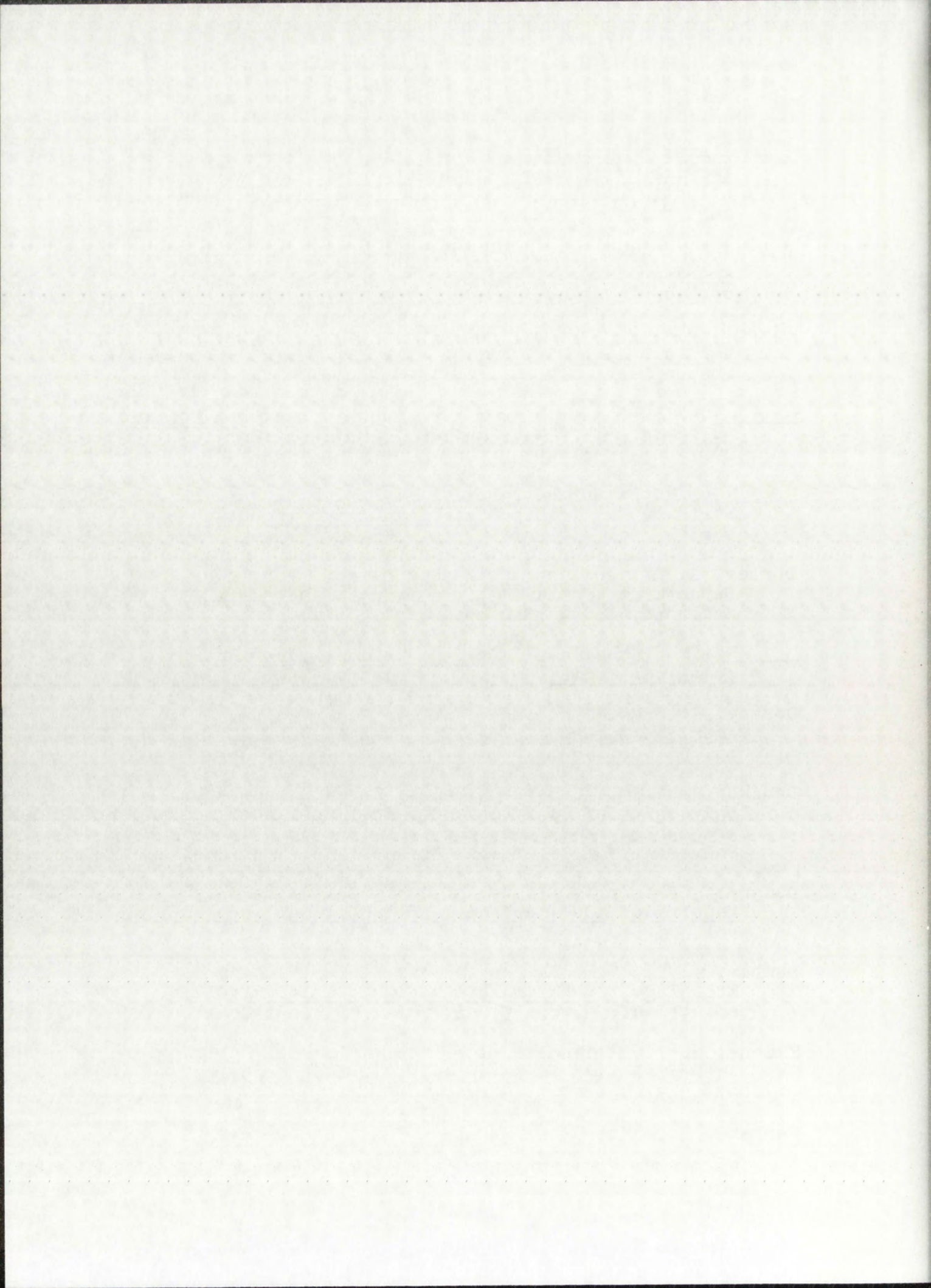
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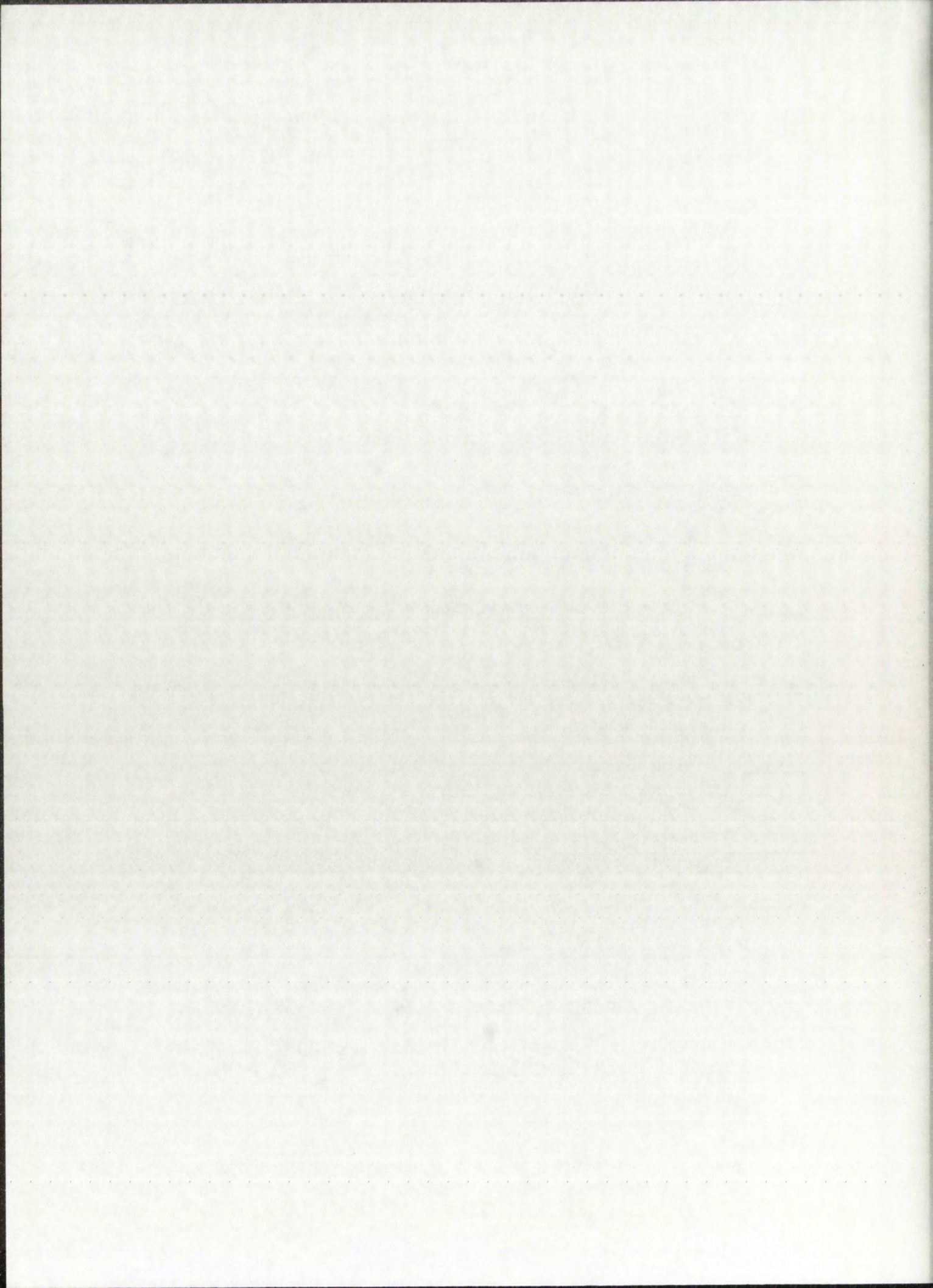
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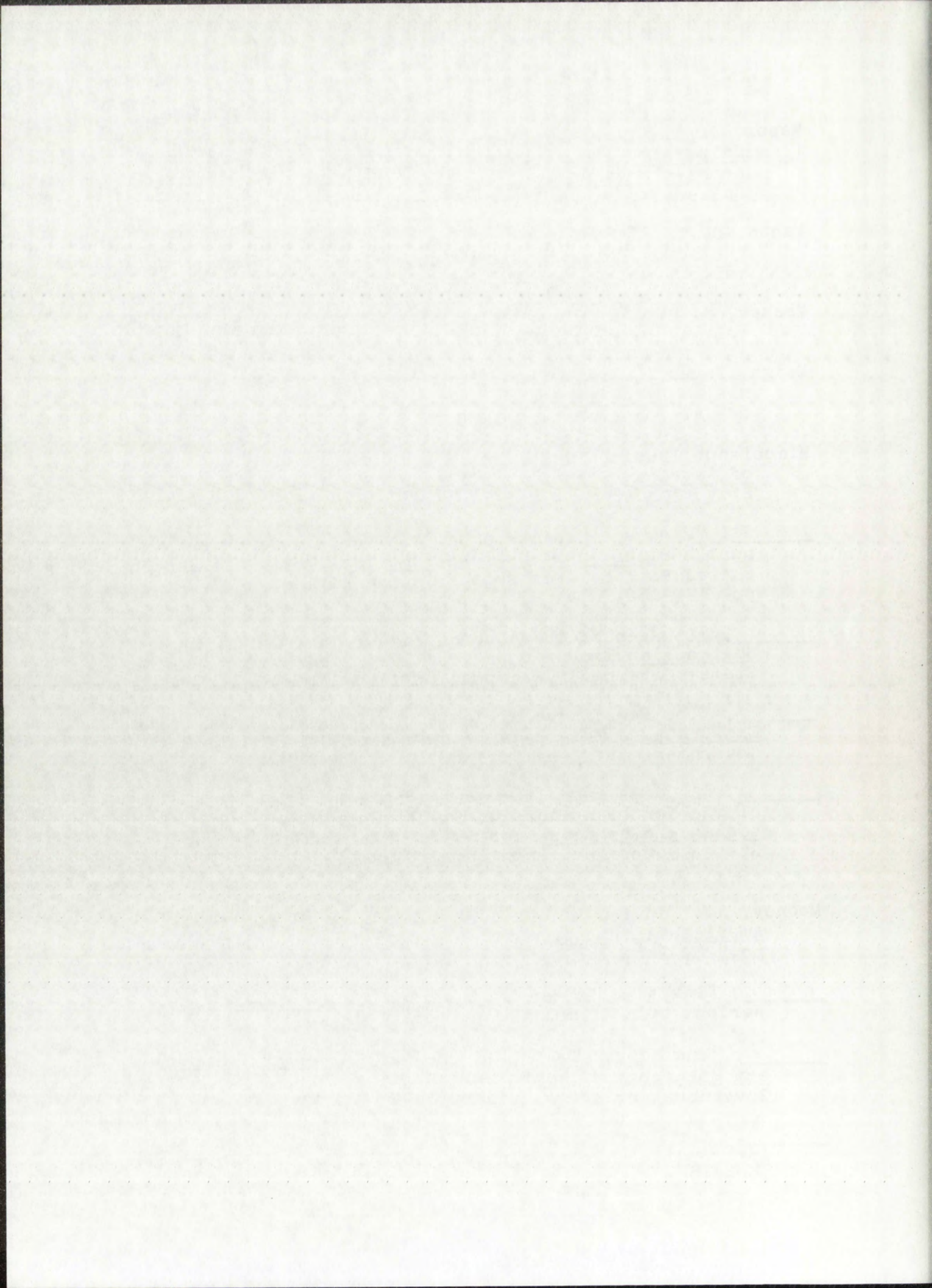
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195

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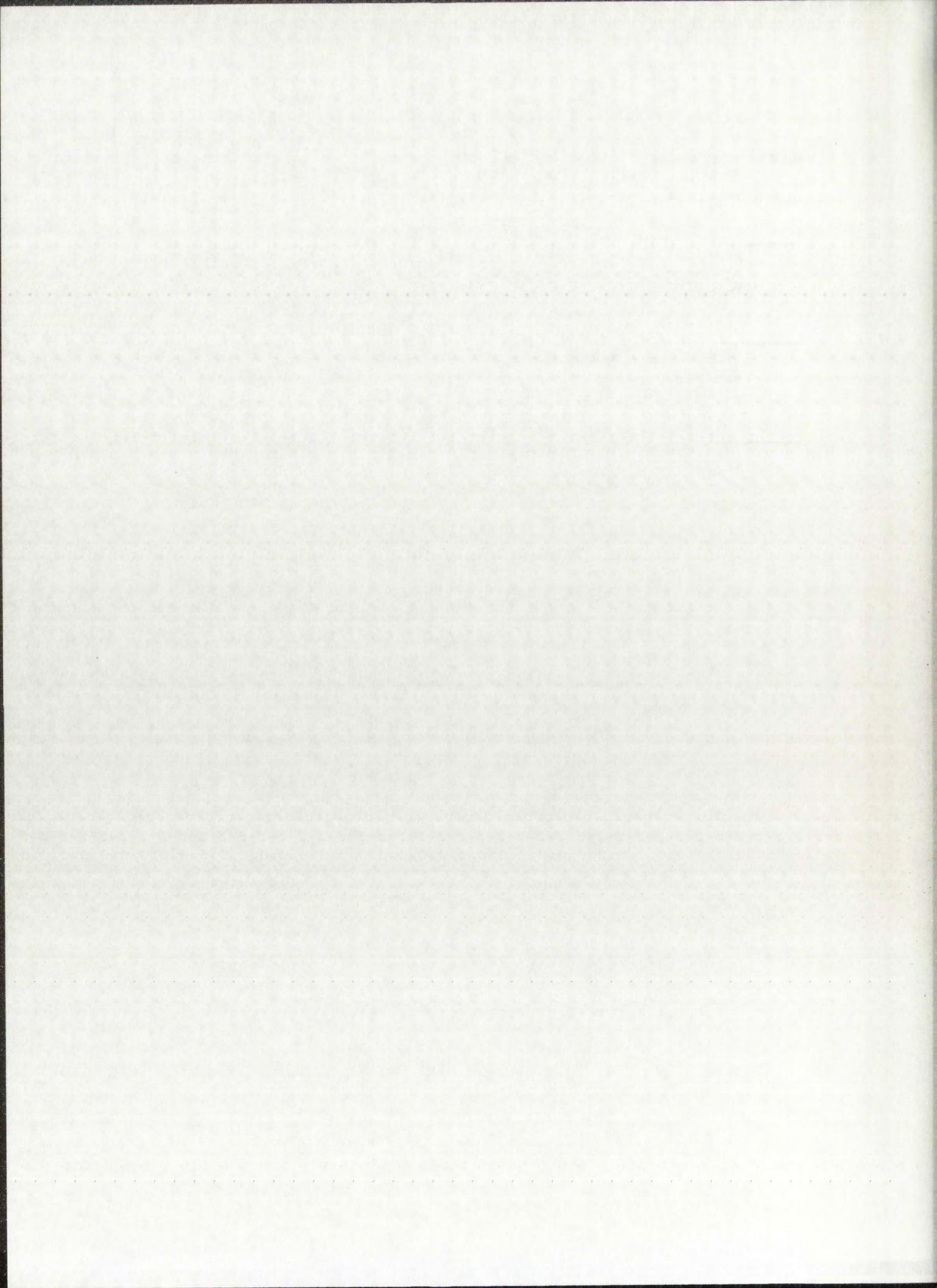
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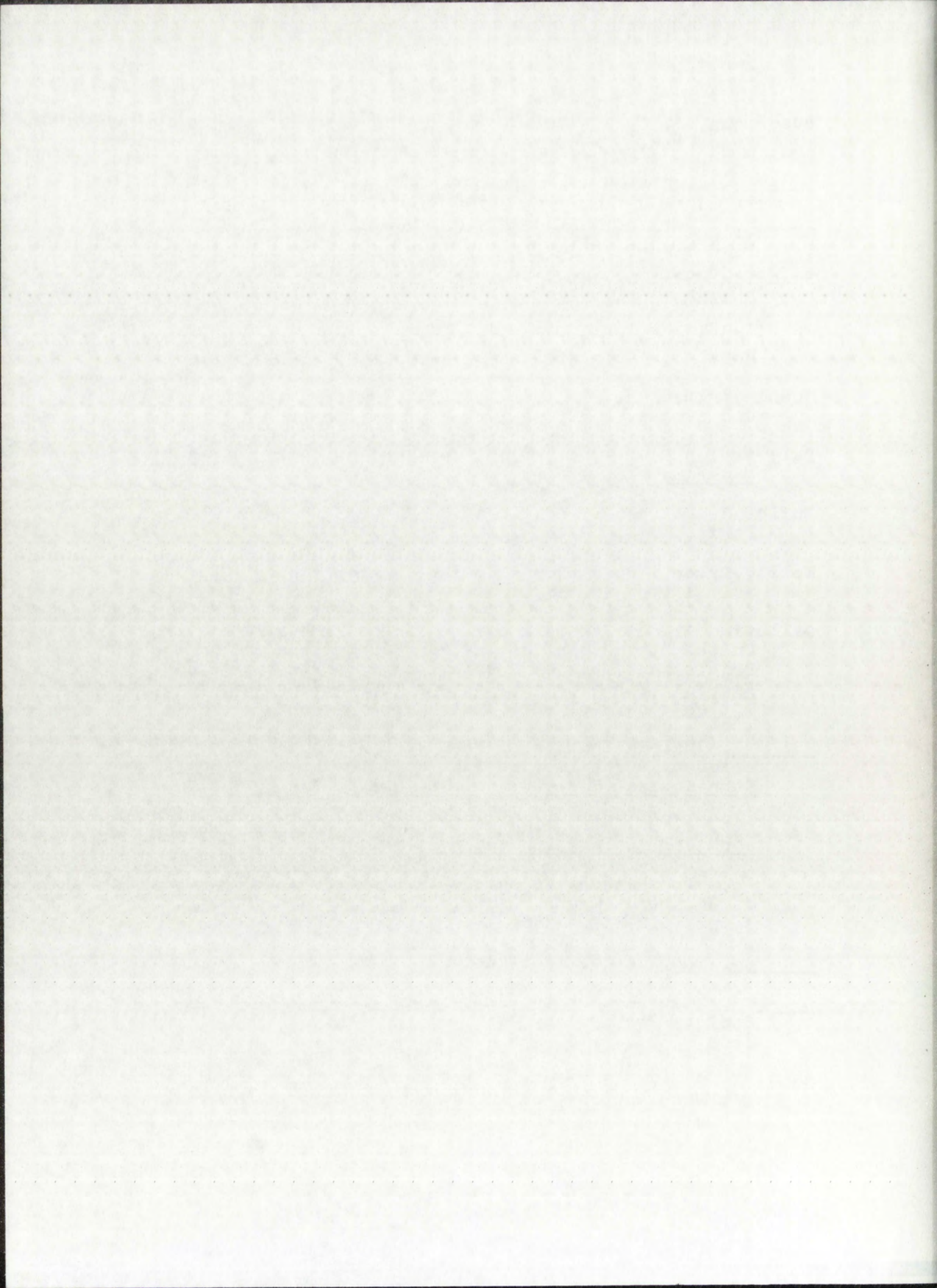
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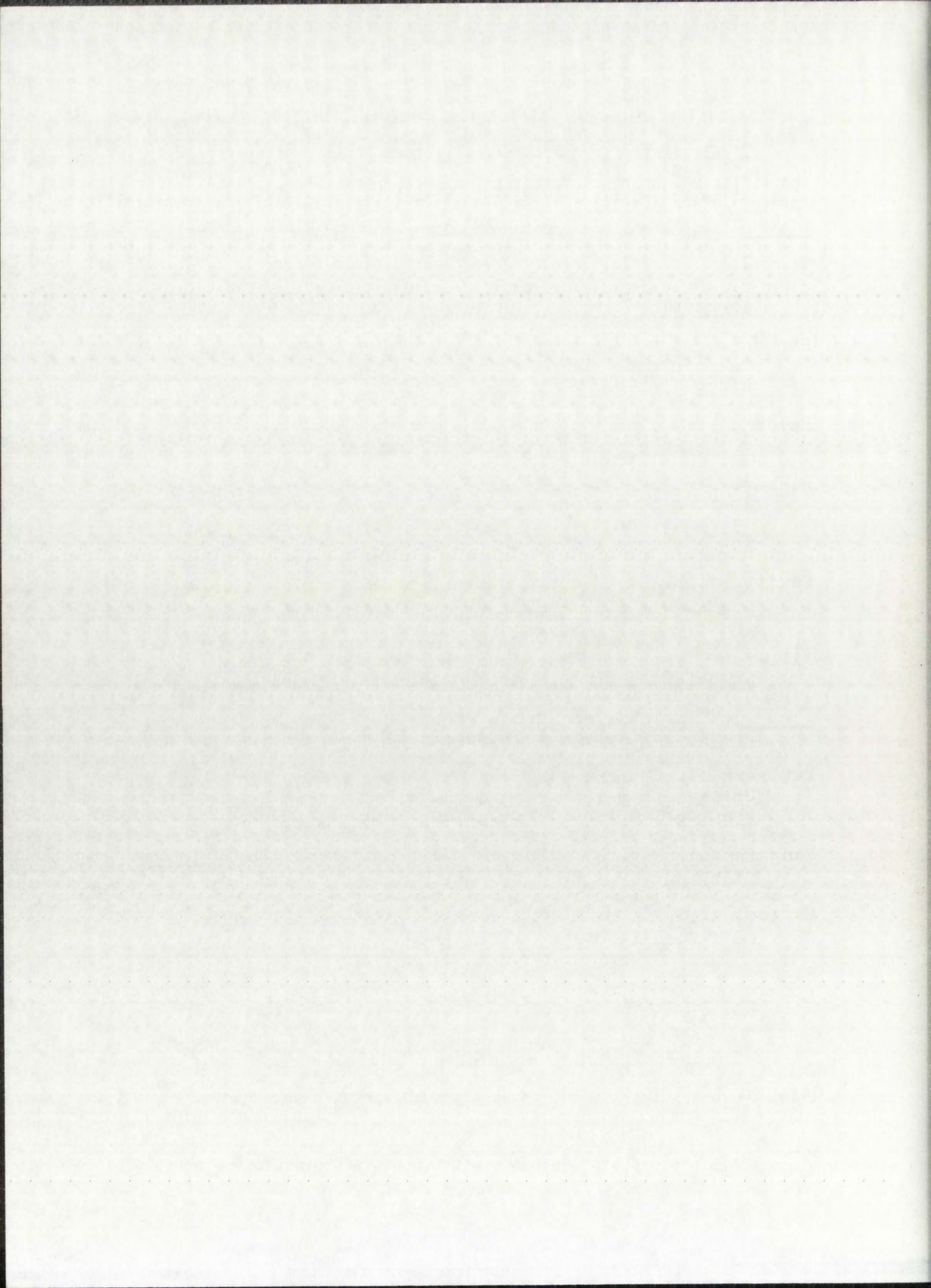
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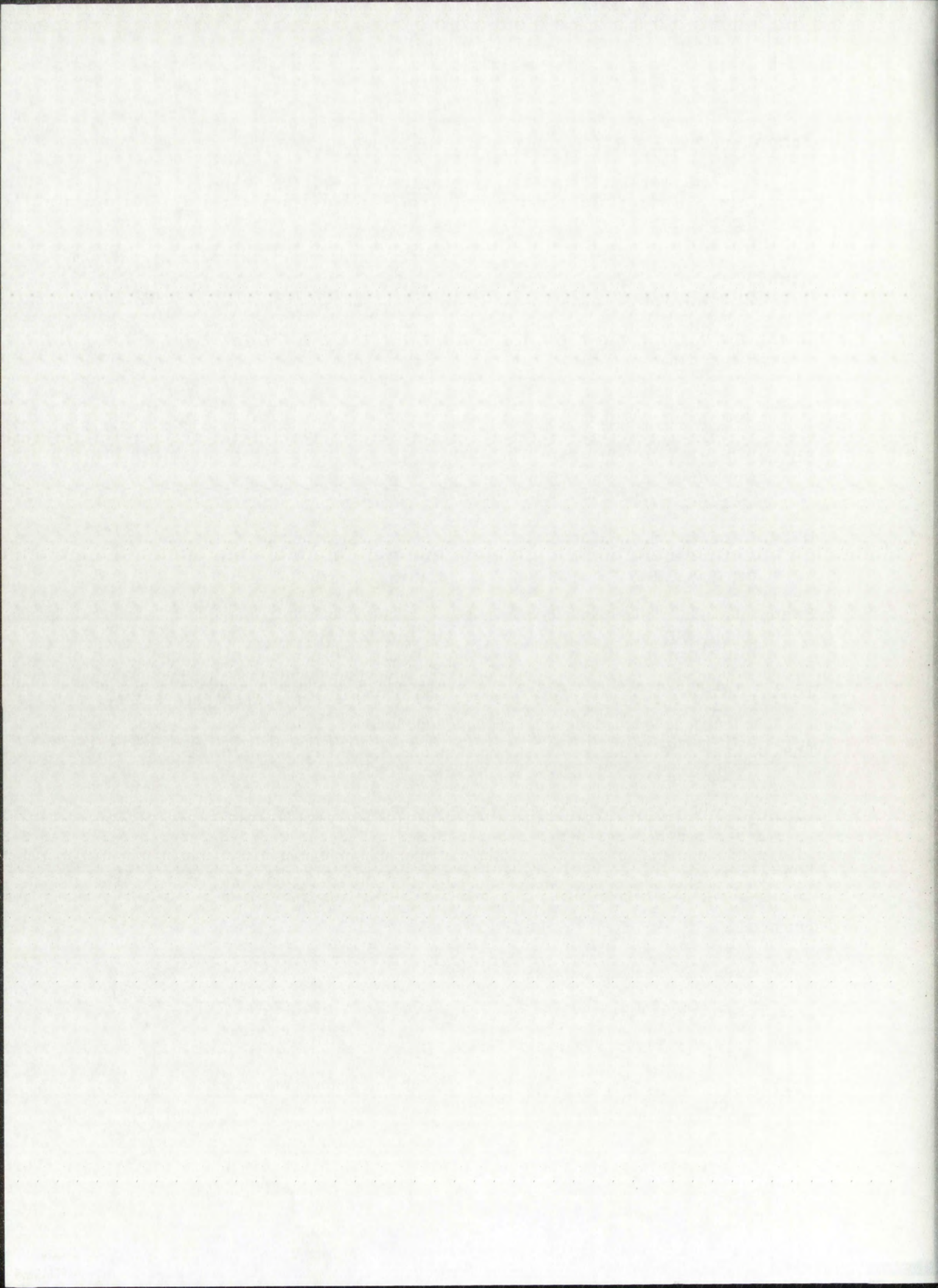
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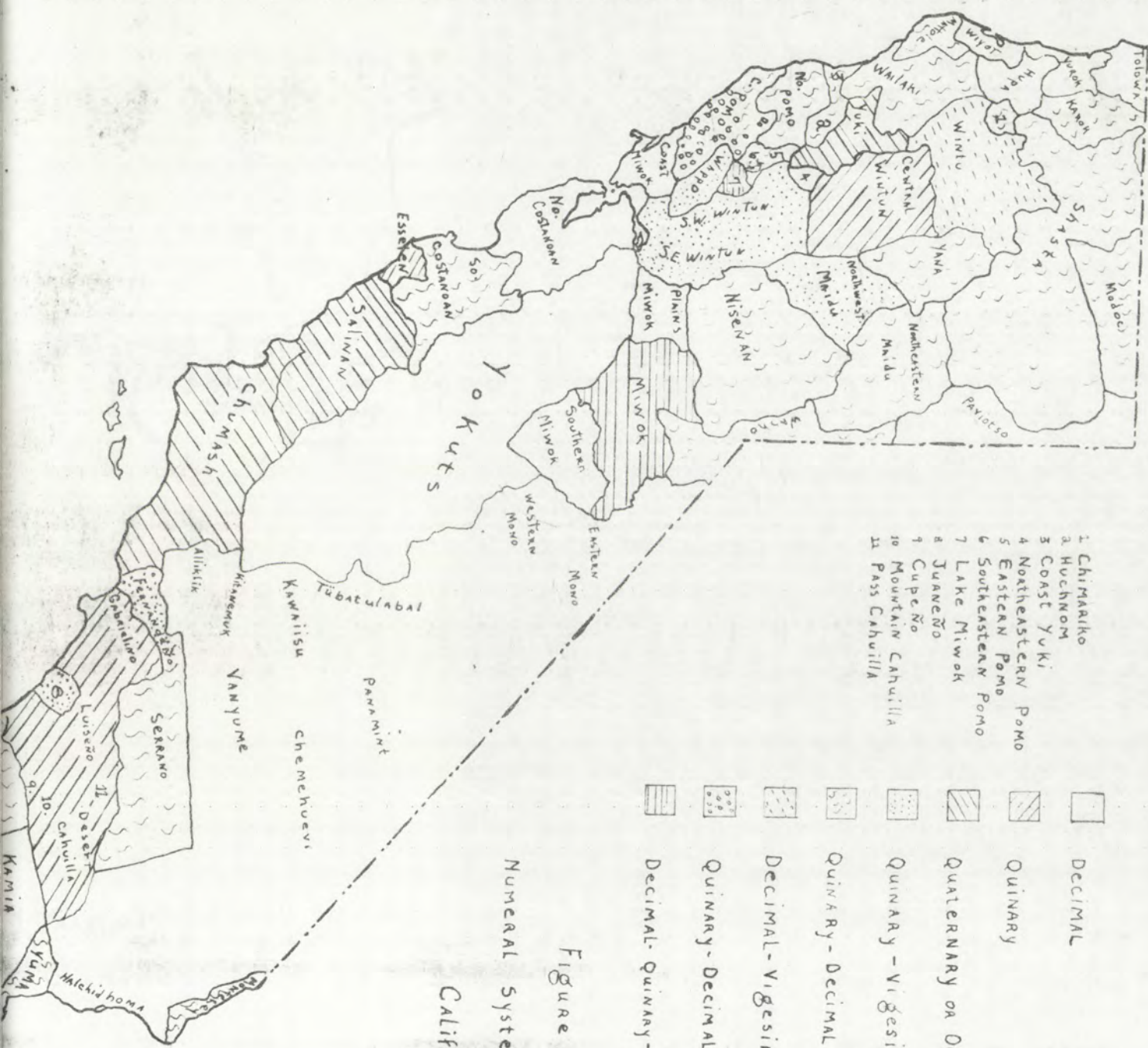
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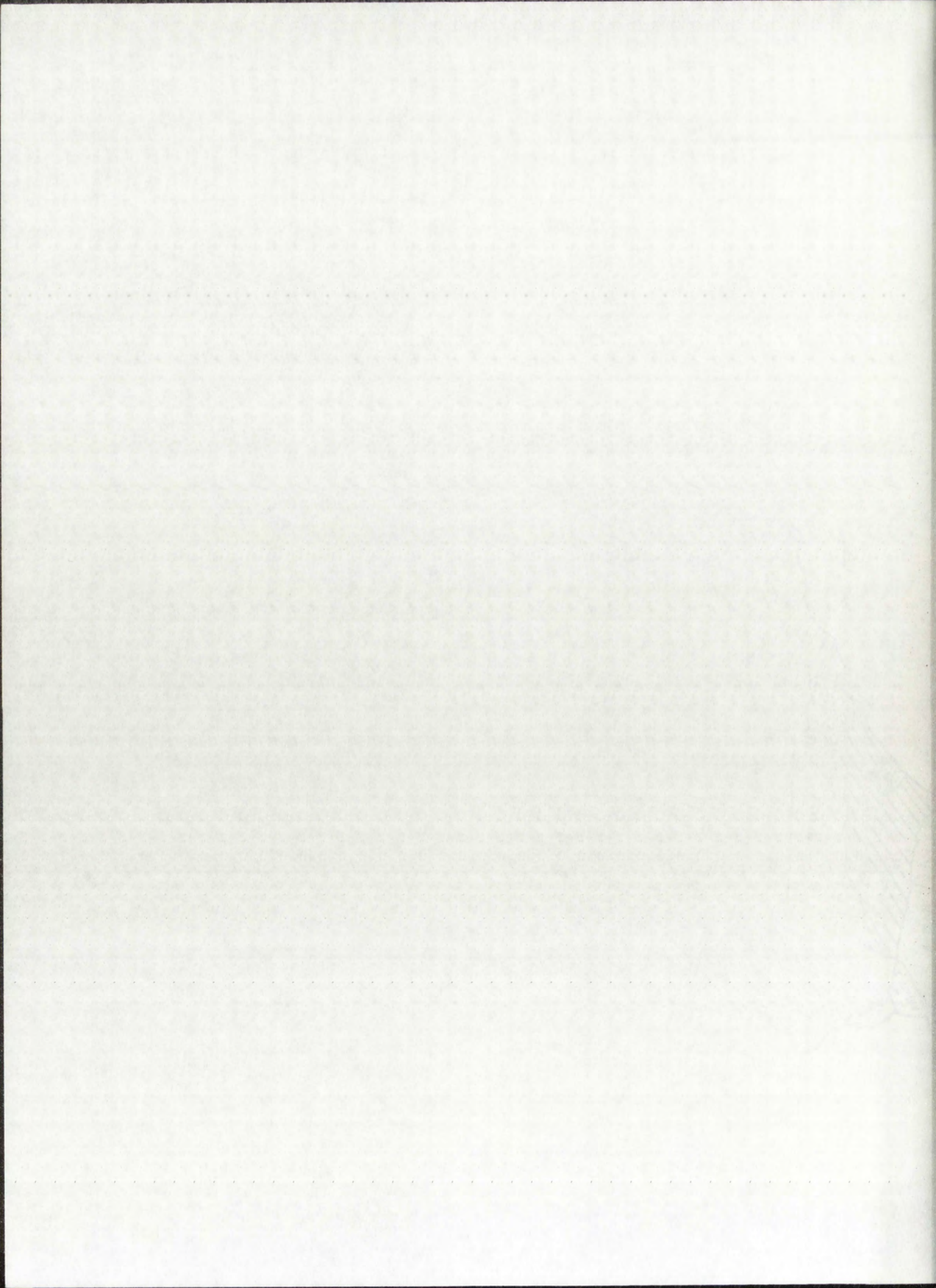
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- 1 Chimariko
- 2 Huchnom
- 3 Coast Yuki
- 4 Northeastern Pomo
- 5 Eastern Pomo
- 6 Southeastern Pomo
- 7 Lake Miwok
- 8 Junameño
- 9 Cupeño
- 10 Mountain Cahuilla
- 11 Pass Cahuilla

	DECIMAL
	QUINARY
	QUATERNARY OR OCTONARY
	QUINARY - VIGESIMAL
	QUINARY - DECIMAL
	DECIMAL - VIGESIMAL
	QUINARY - DECIMAL - VIGESIMAL
	DECIMAL - QUINARY - VIGESIMAL

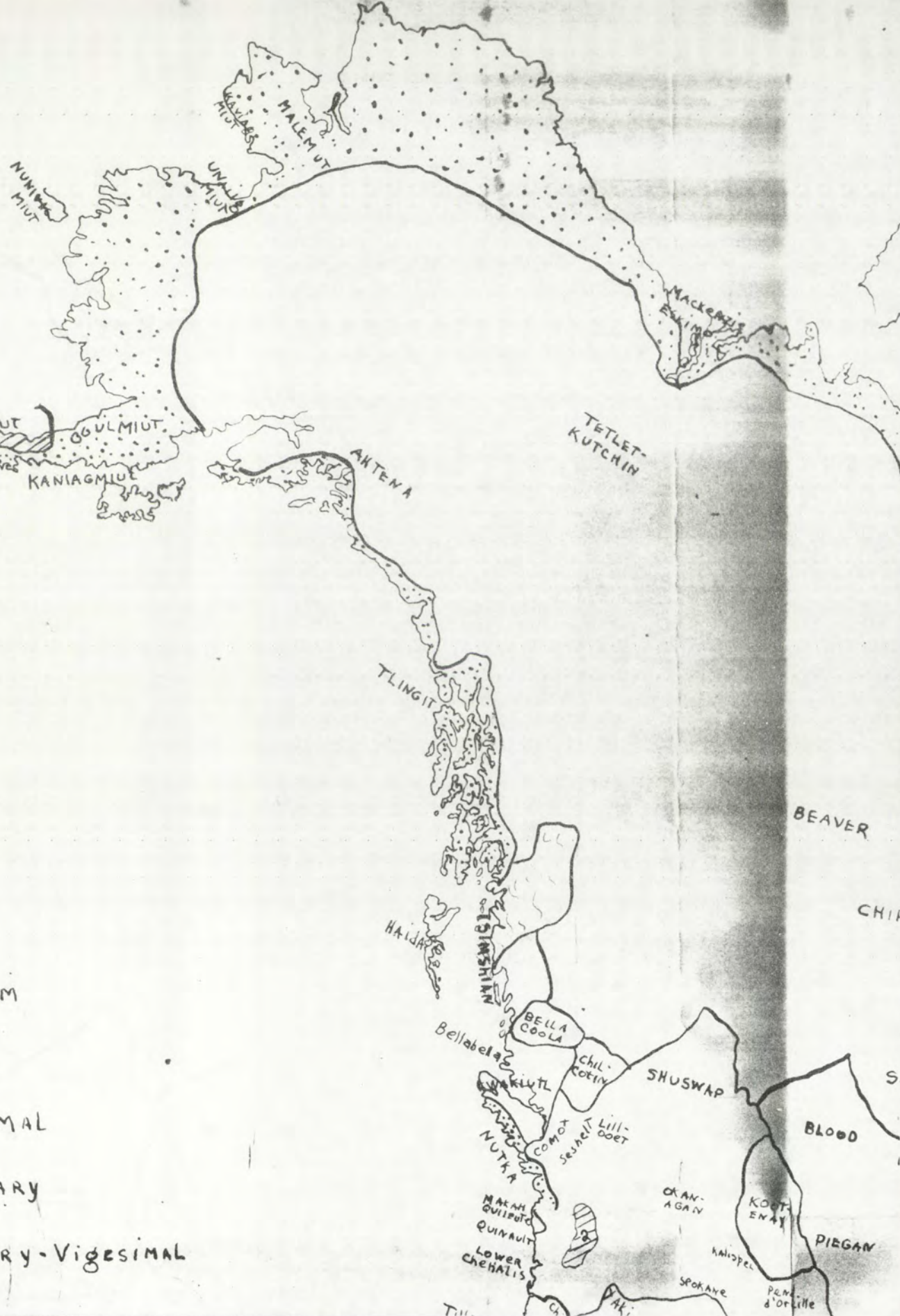
Figure 1.
 Numeral Systems of
 CALIFORNIA

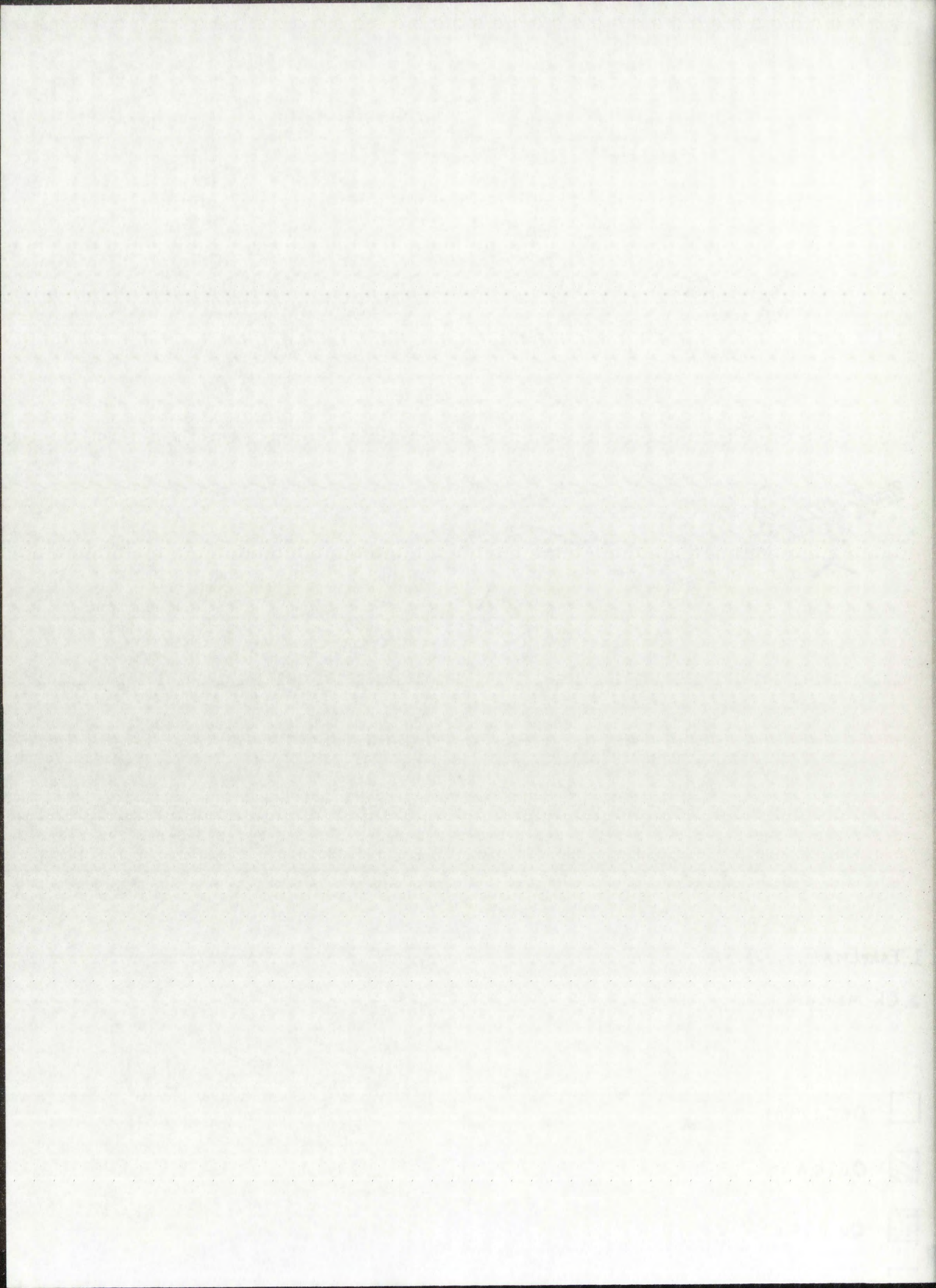


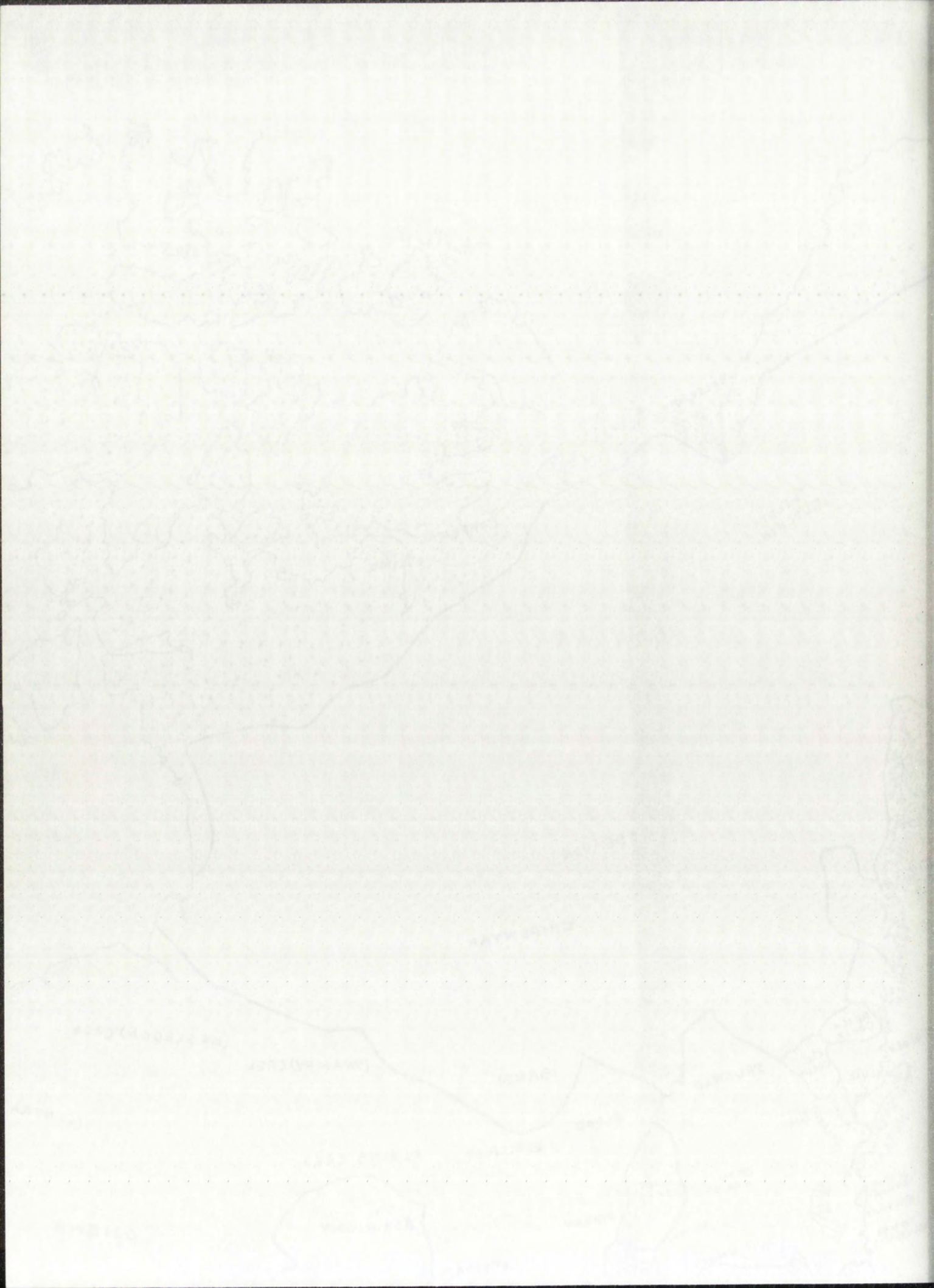


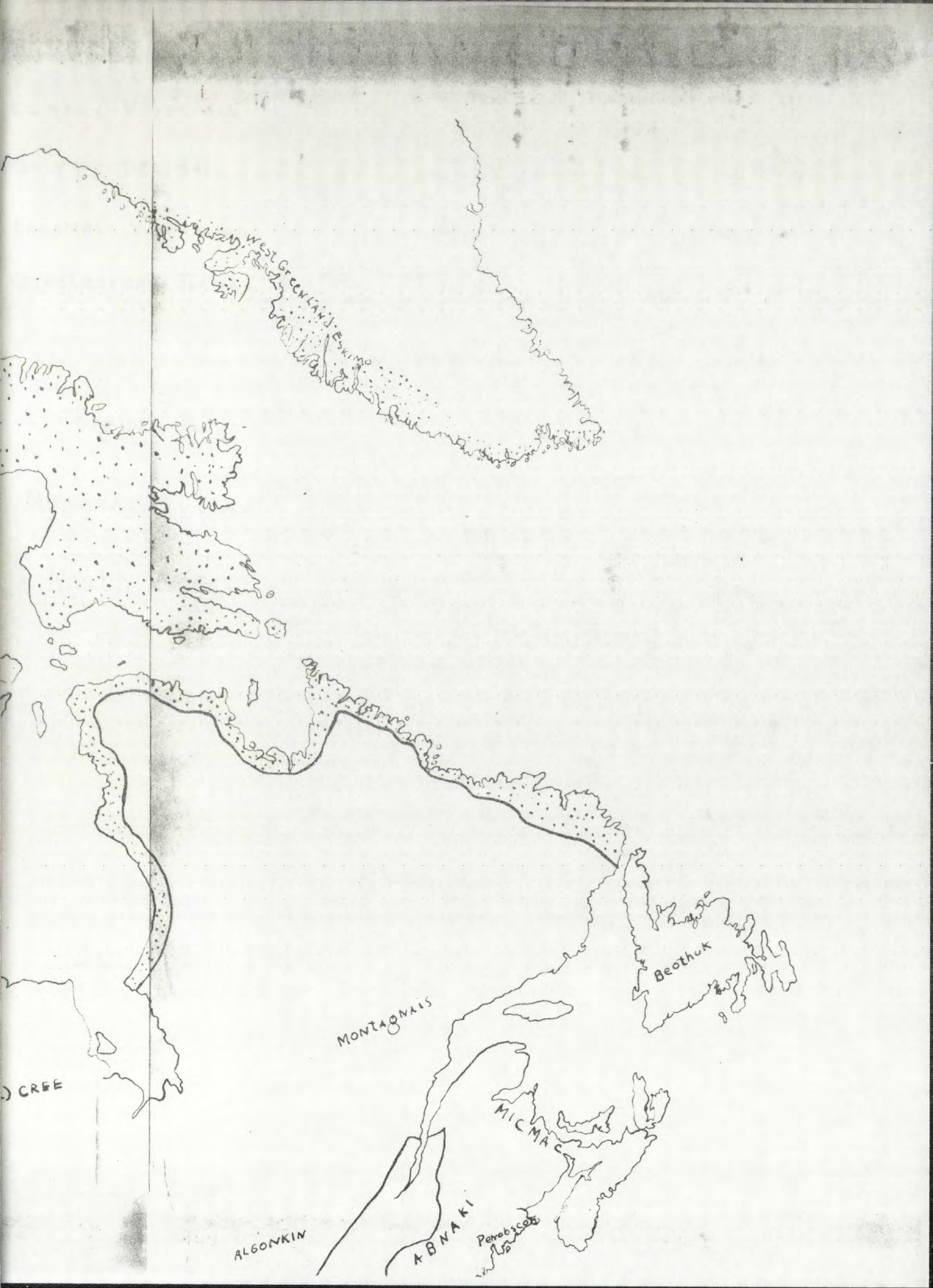
1. Takelma
2. Chimakum

- DECIMAL
- QUINARY
- QUINARY-VIGESIMAL









WEST GREENLAND ESKIMO

CREE

MONTAGNAIS

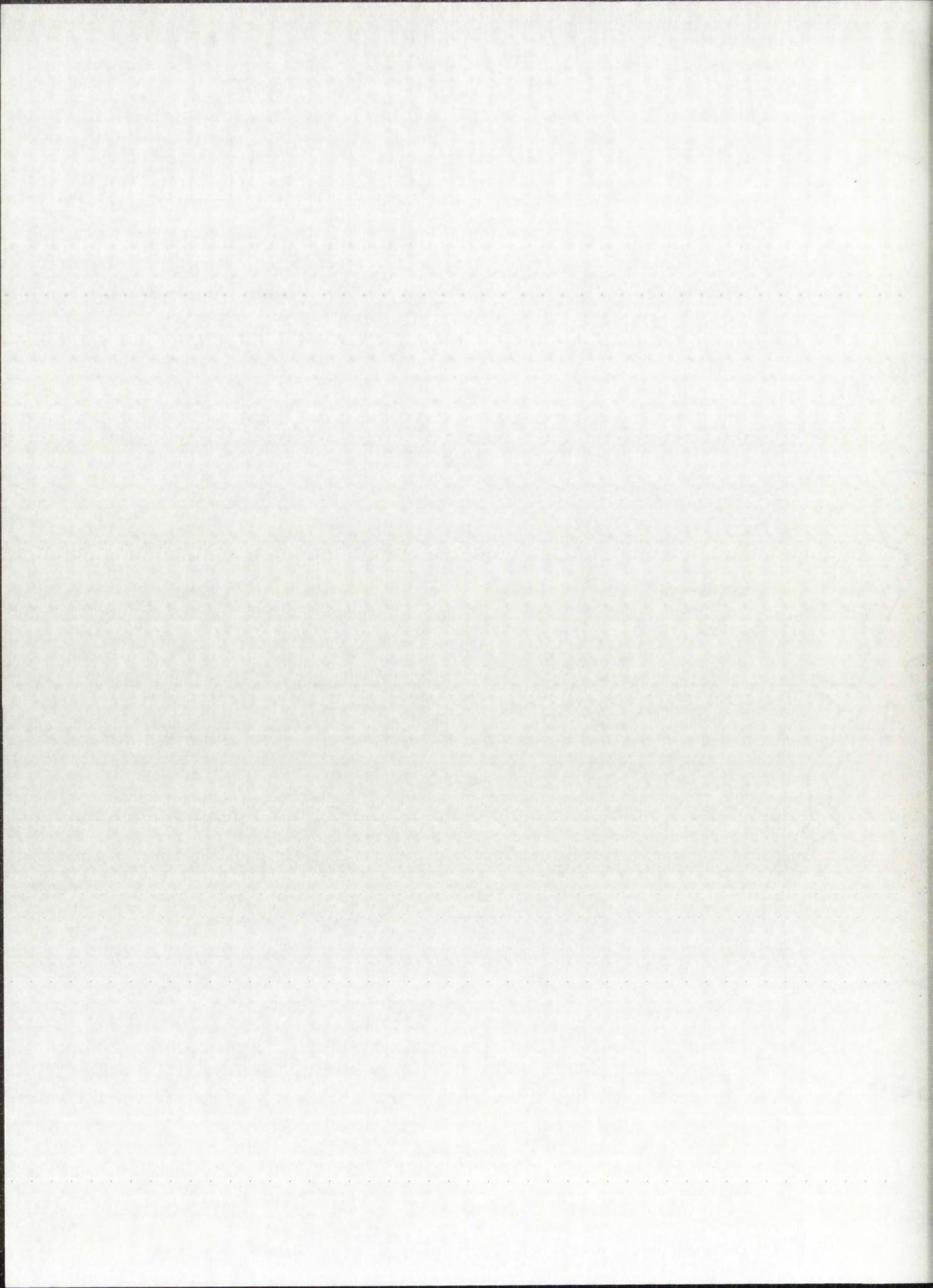
Beothuk

ALGONKIN

ABNAKI

PENOBSCOT

MICMAC



QUINARY

QUINARY-VIGESIMAL

QUINARY-DECIMAL

DECIMAL-VIGESIMAL

QUARTERNARY-TERNARY

Figure 2.

NUMERAL SYSTEMS
of

North America

