PSYCHOLOGICAL AND SOCIAL FACTORS IN CHILDREN'S STAMMERING

by

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Chapter 1

Introduction

1. Definition

Because of the particular nature of the problem with which this thesis deals, it is essential to introduce a working definition of stammering at the outset, so as to avoid any ambiguity. The following definition has been adopted:

> "Stammering is that disorder of speech behaviour in which the speaker suddenly, intermittently, and involuntarily interrupts his natural flow of speech by the manifestation of one or more of the following symptoms:
>
> 1) Reiteration of syllables, words or phrases
> 2) Prolonged articulation of sounds
> 3) Forced, laboured articulation."

Stammering may be accompanied by

> 4) Concomitant action of other muscles not normally connected with speech.

This definition is largely derived from Stein (1, pp. 109-110), but it conforms to the writings of the overwhelming majority of authorities on the subject today. Differences in terminology among previous writers have two sources: 1) the fact that no two stammerers behave in exactly the same fashion; and 2) the use of the term "Stuttering," which many authorities tried to assign a different meaning. Indeed, McAllister (2, p. xv) used "Stuttering" to mean what is now and hereafter called

"stammering;" she applied the latter term to all articulatory defects, e.g., dyslalia. The term "stuttering" is still more popular with many American writers even today, as denoting the condition defined above. Nevertheless, a recent Report of the Advisory Council in Scotland (3, P. 7) stated

> "...the terms "stuttering" and "stammering" describe the same defect,"

in full agreement with Boome and Richardson, (4, P. 8)

> "...on the inadvisability of differentiating between the terms. We prefer to adhere to the word "Stammering" as representative of all forms of the disorder."

The latter term will therefore be used throughout, as indicated above, except in quoting from certain writers who have used "stuttering;" but in all cases the two terms shall be considered to mean one and the same thing.

2. The Problem and The Proposed Approach.

The problem may be simply stated to be the occurrence of stammering as a speech disorder, which no therapist claims to be able to cure in all cases. Speech Therapists, physicians, psychologists, psychoanalysts and psychiatrists all admit varying incidences of failure in their treatment, and often ascribe their failures to a basic ignorance of stammering etiology.

Historically, most determinists have sought a single cause for stammering which might suggest a single line of therapy. Since this approach proved fruitless, the trend

in recent years has been towards a multi-causal theory of stammering, requiring different kinds of therapy suited to the particular case. This approach is shared by Burt (5, PP. 393-440), McAllister (2), Ward (6) and many others.

Recent trends in theories about stammering have been usefully summarized by Rumsey (7); the theories of 19 writers of the 19th Century are presented thus (ibid., P33):

Cause	No. of Writers	Remedy	No. of Writers
Voice	18	Voice	15
Breath	3	Breath	9
Nerves	2	Psychological	3
	23	Relaxation	1
			28

It is interesting to compare this table with the theories of 27 writers of the 20th Century (ibid., P. 71):

Cause	No. of Writers	Remedy	No. of Writers
Voice	11	Voice	21
Breath	6	Breath	7
Nerves	23	Psychological	13
	40	Relaxation	7
			48

Table 1.

Two trends are immediately obvious: 1) the steadily increasing emphasis on psychological factors in etiology and therapy; and 2) the increasing proportion of multi-causal and multi-remedial theories. In the 19th Century, 19 writers suggested 23 causes and 28 remedies; in the 20th

Century, 27 writers suggested 40 causes and 48 remedies.

Yet single-cause and single-remedy theories are still quite abundant. An analysis of 25 modern theories of stammering as summarized by Hahn (8) gives the following distribution:

Single cause and Single Treatment	11
Multi-Cause and Multi-Treatment	10
Single Cause and Multi-Treatment	3
Multi-Cause and Single Treatment	1
	25

Returning to a discussion of the problem itself, several viewpoints in regard to it have been adopted in this thesis:

1. The wide dispersion of stammering over the globe, together with the total absence of it in some communities (to be discussed later), leads to the conclusion that stammering may be caused by many factors, a combination of which may be operative in any particular case. This opinion is only further reinforced by an objective analysis of a large quantity of case-histories, which present a bewildering degree of difference in heredity and social experience from one case to another.

2. Theories based on many, possibly combining, causes are therefore a step in the right direction, for they not only take the above point into account, but also are flexible enough to adjust to the individual requirements of each stammerer's "unique" personality.

3. Such theories would be enormously aided by a

much greater knowledge of the facts regarding the incidence of stammering. Instead of being shackled to a single-cause theory, therapists with a broad viewpoint as to stammering etiology and therapy would be able to use new factual data on stammering to explore new causes which might suggest hitherto untried lines of therapy.

The approach of this thesis, therefore, will be to attempt to amass as many pertinent facts about stammering incidence as possible, and to apply them by drawing any inferences which may seem to be indicated. It is not hoped to "solve" a problem which has baffled mankind for centuries; the goal, however, is to contribute to the steadily increasing body of knowledge about stammering, so as to hasten the day when this crippling affliction will be unknown.

Many other sciences besides Psychology will be used throughout. Social Anthropology will be employed to evaluate the incidence of stammering among non-literate peoples. History will be used to study the degree of stammering incidence in earlier civilizations. Philology will offer a study of the words "stammer" and "stutter" in several languages, which will lead to

speculation about the development of the speech disorder to the degree required to give it a name. Sociology and Economics will help to guide the study in its examination of stammering incidence among the different socio-economic groups, the different kinds of social community in modern life, and the family analyses which must be made. Such a synthesis of the social sciences affords a new, possibly valuable, approach to the hitherto baffling problem of stammering.

Chapter 2

What is KNOWN about Stammering Incidence?

The aim of this survey is to elicit new, pertinent facts about stammering incidence. Yet these new facts will not exist in a vacuum; they must be related to those which have been already established. Thus, in accordance with traditional scientific method, another "link" in the chain of knowledge about stammering will be constructed; or to use another, more apt metaphor, another block will be added to the structure of data which has been already erected.

For this reason it is essential to summarize the facts now known about stammering incidence. This task will be undertaken in the current chaper.

1. Where and When Has Stammering Occurred?

It is not proposed to undertake a lengthy historical analysis of the problem of stammering. This has already been done by Appelt (9, pp. 1-16) and many others. Certain facts pertinent to the approach merit mention here, however. These include the noting of stammering incidence as far back as the early Egyptian civilization by Fletcher (10, p. 1). Hunt (11, p. 55) alleged that the following passages in the Scriptures indicate that the Hebrews also knew the affliction:

> "I am slow of speech and of a slow tongue."
> (Exod. Chap. IV, 10)
> "And the tongue of stammerers shall speak readily and plain."
> (Isaiah, Chap. XXXII, 4)

Greene (12, p. 2240) cited the following finding as additional evidence of stammering incidence among Biblical peoples:

> "Only recently Dr. Albright, a Haverford College archaeologist, brought from the ruins of the Biblical town of Beth Shemish a prayer on a small clay tablet reading as follows: 'Oh God, cut through the backbone of my stammering.'"

The difficulty with this kind of evidence is largely semantic: did the word(s) translated as "stammer" really have this meaning? Two kinds of error are possible: 1) where the translator actually misunderstands the nature of the defect in question; and 2) where the translator meant some other defect by the word "stammer" than the one understood here, since the word has only recently enjoyed any unanimity of meaning. (v. supra., p. 1)

In this connection, many writers have referred to stammering in the Greek and Roman civilizations; typical of these was Hunt (op.cit., p. 56 et seq.) who cited Herodotus, Aristotle, Hippocrates, Plutarch, Galen and Celsus in evidence. These assertions are examined in detail in Chapter 3; all that may properly be mentioned here is that the assumption of stammering incidence in the Greek and Roman civilizations is not as well founded as might be desired.

Due to lack of literature, the degree to which stammering occurred throughout the Middle Ages in Europe is uncertain. The analysis in Chapter 4 suggests that the incidence of stammering may have gradually increased during this period, until the disorder was finally unambiguously described by Mercurialis in 1584 (cited by Appelt, op. cit., p. 4). Surprisingly, no earlier writer has been found who actually described stammering beyond all doubt.

Shakespeare (13) is one of the earlier English literary writers to mention the condition (in As You Like It, 1600):

> "...stammer...as wine comes out of a narrow-mouthed bottle; either too much at once or none at all."

It may be assumed that speech behaviour is of such importance to man, that an abnormality as noticeable as stammering will be given a name in whatever language is spoken. On this basis, preliminary philological investigation of the origin and first uses of the words "stammer" and "stutter" in the English language are of some interest.

"Stammer," according to the Oxford English Dictionary, is of West Frisian origin, and has cognates in North Frisian, Old High German, Old English, Middle Low German and Middle Dutch. The earliest uses of the word in the meaning here understood are found to be c.1000, in

Prudentius Glosses in Germania, N. S. XI, 392/2, where the Latin "balbutit" is translated; and in 1050, Malchus in Assmann, Anglo-Saxon Homilies, XVIII, 380, used "Stomrize" in the present meaning of Stammer.

"Stutter" is much newer to our language, and the Oxford English Dictionary observes:

> "The last date of the appearance of the word in English is remarkable."

The earliest use of "Stut" is found to be 1388, and in the frequentative form, "Stutter" is not found until 1570. It is of Middle Dutch origin and has Swedish and Norwegian cognates.

The possibility exists that the people on this island did indeed stammer during the period from the end of the Roman occupation to the date 1000 mentioned above, but that reference to the disorder in those years can no longer be found. On the other hand, the failure to find any use of a word with the meaning of "stammer" in the voluminous literature of that period available to us, provokes speculation as to the existence of the condition at all. The question is probed in greater detail in Chapter 4.

In modern times the incidence of stammering is noted in almost all literate civilizations. Personal communications from such varying Nationals as Chinese, Burmese

and Nigerian all attest the incidence of stammering in these countries today. Fletcher (10, p. 58) refers to a study of over 150,000 Japanese children which showed stammering incidence to be similar to that found in Europe and the United States. Unfortunately only the latter two "civilizations," similar in so many respects have obtained valid statistical data on stammering incidence. These are examined below.

A critically important fact about stammering incidence that strikes the bio-socially oriented writer is that there are some peoples who have never stammered at all! Hildreth (14, p. 42) stated:

> "Stuttering is unknown among Indian and primitive tribes and there is no word for it in primitive languages. Bullen (15, pp. 1-88) found no cases of stuttering among New Guinea tribes, aboriginal tribes in Australia, and among polar Eskimos. It was found to be rare among the Navaho (North American Indians), occurring only in children who were sent to schools where reading and writing were taught. Teachers report no stuttering among Idaho Indians and no word for it in the language."

Yet there are some non-literate peoples who do stammer. Regarding these, only two references have been found in the literature: Sapir (16, p. 190, et.seq.) described stammering among the Nootka Indians of Vancouver Island, writing:

"A fifth, not uncommon speech defect among the Nootka is stuttering."

Lemert (30) described in some detail the stammering among the Nootka as well as among several neighbouring tribes.

These social anthropological reports are amplified and interpreted at length in Chapter 6. They deserve mention at this point only as part of an over-all view of stammering incidence.

Conclusions from Section 1:

1. The earliest civilizations believed to have stammered were the Egyptian and Biblical.

2. Many, though not all, non-literate civilizations have never known stammering, but peoples from these cultures may stammer if transplanted to a literate civilization.

3. Stammering is a cultural product. Enough evidence has been found to vitiate any "racial" or "national" theory of stammering incidence.

2. Emotional Disturbance and Stammering Incidence.

Most writers do agree on the overwhelming importance of emotional disturbance which lies at the heart of stammering incidence. Burt (5, P. 401) stated:

> "In the vast majority of cases, the real cause is mental rather than physical."

McAllister (2, P. 159) showed 103 out of 139 (74%) intensively studied case histories to be primarily due to a combination of emotional causes, and added that these were also present, though not of primary importance, in the balance of 36 cases, accompanied by organic abnormalities (19 cases), left-handedness (9 cases) and imitation (8 cases). Boome and Richardson (4) implied emotional disturbance to be the chief causative factor in the condition, and argued that relaxation of tension is one of the most important therapeutic aims. Stein (1, P. 127) called stammering

> "...a functional and psychogenic disorder,"

and dealt exhaustively with the various stages of mounting emotional tension which multiplies continually, in a virtually self-reinforcing fashion. Fletcher (10, P. 329) maintained:

> "It must be borne in mind that the emotional abnormality associated with stuttering is specific in character, in that it is (1) of the nature of a morbid social reaction, and (2) in that it does not arise in every type of social situation, but only in those in which the stutterer is called upon to respond to a certain kind of social demand through the medium of speech." (Italics Fletcher's)

The emotional life of all people is certainly largely influenced and regulated by the culture in which they live. No one would think of identifying the emotional life of a Chinese village community with that of the city of Birmingham. The differences exist not only in the content of the emotions (which stimuli produce behaviour expressing love, fear, anxiety, jealousy, etc.) but also in the form in which these emotions take expression. Granet (17, P. 333) described at length the rites of a particular Chinese funeral which differed substantially from ours, both in their significance and their structuring. The conventional nature of emotional life cannot be overemphasized; social culture determines emotional reactions, and is in turn affected by them.

This point must be understood in order to see why it is insufficient to stop at the family, in the search for elements affecting the emotional life of the child. Seeking psychogenic disturbances in stammering children, the approach here cannot follow the familiar dictum, "Go to the Family." The family does not exist in a vacuum; the parents and children are themselves very much affected and moulded by the entire culture of their civilization and their own particular relationships to it. Thus even the youngest infant is, from the date of its birth, a social product; as it develops, its personality (and any abnormalities of it)

can be understood only when viewed as both unique, and uniquely integrated with its particular society.

Conclusions From Section 2.

1. Emotional disturbance is associated with almost all stammering, generally in a causative relationship.

2. In seeking the causes of such emotional disturbance in a stammering child, the entire culture, as well as the family, must be examined. The family is, for the child, the point of leverage for the pressures of society.

3. How Much Stammering in "Western Civilization?"

As will be seen from the following table, most writers agree that the incidence of stammering varies around 1%. Fletcher (10, p. 56) estimated in 1928 on this basis that there were 250,000 stammering school children in the United States, and a total stammering population of 1,133,000. He cited (ibid., p. 86) 1920 government bulletins which counted 52,567 blind persons and 44,885 deaf-mutes, concluding (ibid.):

> "We will have to face the astonishing conclusion that there are more than ten times as many stutterers in the United States as there are of the blind and deaf-mutes."

Summary of Surveys on Stammering Incidence

Area	% Of Stammerers	Nos. Surveyed If Stated	Work Of	Source
6 American Cities	0.87	87,440	Conradi	Fletcher
Boston, Mass.	0.78		Hartwell	(10, pp. 54-55)
Denmark	0.61		Westergaard	"
", rural children	0.90)	212,000	Lindberg	"
", city children	0.74)		"	"
Hungary	1.02		Von Sarbo	"
Belgium	1.4		Rouma	"
Madison, Wisc.	0.72	5,000	Blanton	"
Grand Rapids, Mich.	2.64		Camp	"
Dunbartonshire	1.00			McAllister
Ayrshire	0.94			(2, p. 8)
Glasgow	1.00			"
London	1.1		Kerr	"
New York, N. Y.	1.52		"	"
Germany	1.6			Burt
Russia	1.7			(5, p. 364)
Italy	1.0			"
Spain	1.2			"
Nicosia, Cyprus	1.85	1,133	Chrysanthis	(21, p. 270)
Sweden	0.8-1.0			"
Rough Average	1.17%			

Table 2.

The work of the last writer (Chrysanthis) is interesting because it refuted a position taken by Nadoleczny (cited by Burt, 5, P. 365) to the effect that the higher incidence of stammering in Northern Europe is due (for some unmentioned reason) to the higher cephalic index in such countries as Denmark, Germany, etc, as compared with the lower cephalic indexes found in Southern Europe. Chrysanthis (op. cit.) quoted Stephanos (1884) and Gedeon (1931) as agreeing that Greek cephalic indexes are comparatively low, while the incidence of stammering in the 1133 Greek-speaking Cyprian children is comparatively high. Burt also (5, P. 365) found

> "...nothing in my case-histories to connect stammering with this (Nadoleczny's) cause."

Without giving statistical data, Boome and Richardson (4, P. 27) observed that stammering is

> "...rare in Rumania, Spain, Portugal and Italy" and "very common...in Germany and Poland."

The figures listed in Table 2 do indeed show lower incidences for Spain and Italy than Germany, Russia and Belgium; yet the figures given for Sweden and Denmark are actually lower than those cited for both Italy and Spain. No figures have been found for Poland, Rumania and Portugal. It seems reasonable to agree with the generalization of Boome and Richardson (ibid.) that stammering

> "...would appear to be partly influenced by climate and by the nature and degree of civilization...in different countries...

> "...Those countries whose people have fewer repressions and inhibitions, and consequently less mental conflict and nervous strain, will produce proportionately fewer stammerers."

On the other hand, statistics must be examined very cautiously for their significance, before conclusions of much value can be fairly drawn. Unanswerable questions of whether identical diagnostic criteria and statistical methods were used limit the usefulness of the cited surveys. The need for precisely coordinated and controlled surveys is obvious, but probably must be left to an international body under the aegis of the United Nations Organization.

Conclusions from Section 3.

1. The incidence of stammering throughout the world varies from nil up to a maximum of two percent; in Europe and the United States, it varies slightly around one percent. Thus an enormous number of people are sufferers from the affliction.

2. Reliable and comparable data are difficult to obtain; those that are available suggest that "the way of life" of a culture or nation may in some way be a function of stammering incidence.

4. Socio-Economics and Stammering Incidence.

That social-economic elements may be a function of stammering incidence, is not an idea original with this study. McAllister (2, PP. 8-9) pointed out that this consideration is indeed relevant:

> "The high percentage of speech disability in Glasgow is not surprising when we consider... life in a large industrial area induces strained and emotional conditions; consequently defects associated with these are likely to be frequent among that part of the population, which, either by age or temperament, is unable to cope with the demands of its environment...The congested, inefficient home-life which is the portion of so many primary-school children encourages neglect of mouth, nose and throat hygiene, as well as complete indifference to the child's speech habits."

In spite of this argument, McAllister (ibid., P. 161) discounted the importance of income or "class" as a factor relevant to the incidence of stammering. Of her 139 cases (ibid.),

> "...53 were 'poor'; 68 were 'middle-class', 18 were 'well-to-do.' The clinic at which the cases were treated ministers to the needs of the 'poor' and the 'middle-class.' Children from the 'well-to-do' were accepted only when their need was extremely urgent, so that the number of cases from this social class is smaller than it would otherwise have been. There are no grounds for concluding that stuttering is due to extremes of environmental conditions. External conditions of life appear to have no marked connection with the inception of the malady."

It seems doubtful that the above conclusion was justified by the figures cited. If the argument is to the effect that an

equal quantity of stammerers may be found in all 3 classes, the natural inference would be that the incidence of the disorder is much higher among the 'well-to-do' and 'middle-class' than among the 'poor,' since, especially in Glasgow, the 'poor' 'social class' is so much larger numerically than the 'well-to-do' or 'middle-class.'

Little work by other investigators has yet been done along these lines, and this area of the problem will constitute one of the main foci of this study.

Attention should be called, however, to a survey of 20,101 Dunbartonshire children cited by Mrs. Maud Wohl (26, PP. 13-15):

Description	Town	Stammering Incidence	Number of Children	Number of Stammerers
Mainly Industrial	Dunbarton	1.1%	3,983	45
	Old Kilpatrick	1.1	6,589	73
	Vale of Leven	1.2	2,795	33
	Kirkintilloch	1.6	3,122	50
Residential, Rural	Helensburgh	1.4	1,136	16
Suburban	New Kilpatrick	1.6	1,586	26
Rural, Mining	Cumbernauld	2.0	745	15
Physical or Mentally Handicapped*	Special Group	5.5	145	8
	Average	1.3%	20,101	266

*excluded ineducables and deaf

Table 3.

This data must be analyzed for reliability. The real difficulty lies in the loose terminology describing the particular

areas; for example, Helensburgh is described as residential and rural; while Cumbernauld is said to be rural and mining. What is the exact percentage of rural population in each, however, and does the word "rural" mean precisely the same thing in both instances? Data for the incomes of these communities, or the number of property-owners, etc., would contribute to a more accurate interpretation of the data. Nevertheless, the study, (which also analyzed other speech defects of no interest here), is extremely worthwhile as a step in the right direction, and the varying percentages of stammerers in these neighboring communities are quite provocative in their demand for an explanation. The relatively high incidence of stammering among physically or mentally handicapped children is confirmed by many writers; yet even this figure requires elaboration: how many of the 145 children had purely physical handicaps, and how many mental, and what was the degree of each?

Conclusions from Section 4.

1. The social economics of an area may have an important bearing on stammering incidence.
2. The socio-economic status of the family may be a function of stammering incidence.

5. Boy-Girl Ratios in Stammering Incidence.

All authorities agree that stammering incidence is from two to ten times as great among boys as among girls. Boome and Richardson (4, P. 29) cited figures of 387 boys to 90 girls (4.3 - 1) among 477 case histories. Of McAllister's 139 cases (2, P. 159), 124 were boys and 15 were girls (8.27-1). Travis (18, P. 97) stated that the ratio of boy-girl stammerers varies from 3-1 to 8-1. Burt (5, P. 365) gave tables indicating the overall average of boys' stammering incidence to be 1.53% and girls' to be 0.49%, a ratio of about 3-1.

It is interesting to note that these tables showed the ratio of boy-girl stammering incidence to increase steadily with age. Approximations of these ratios are as follows:

Age	Ratio of Boy-Girl Stammering	
4	0.8 - 1	
5	1.0 - 1	
6	1.6 - 1	
7	1.7 - 1	(Based on figures
8	3.5 - 1	cited by Burt,
9	3.5 - 1	5, P. 365)
10	5.0 - 1	
11	4.0 - 1	
12	9.0 - 1	
13	4.0 - 1	
14	7.0 - 1	

Table 4.

Travis (18, P. 97) also noted the increasing ratio, stating that

> "Boys are much more likely to persist in the defect."

Fletcher (10, P. 57) confirmed:

> "...the greater the age, the greater the preponderance of male over female stutterers. Males...are more likely to acquire the defect and are much more likely to continue it, once it has been acquired."

Perhaps this greater-likelihood-to-persist among boys is indeed the correct explanation for the facts; data have not been found which compare the percentage of girls who stopped stammering with the percentage of boys who stopped. Another hypothesis is of course obvious: perhaps an increasing percentage of boys tend to stammer with advancing age! This must indeed be the view of the Report of the Advisory Council on Education in Scotland (3, P. 13), which stated:

> "...speech as an emotional product is less likely to suffer than that which is intellectually controlled (quoted from Dr. James Kerr, Fundamentals of School Health). If speech is an emotional product in the case of girls, then stuttering in girls, when it does occur, is likely to be more severe and more intractable than in boys. Clinical evidence supports this view." (Italics ours)

It is not explained why speech should be more "emotional" in girls and "intellectual" in boys, (as is implied); in any case it is necessary to point out the discrepancy between the authorities on this question of stammering-persistency differences between boys and girls.

Nevertheless, all authorities do agree on the greater incidence of stammering among boys. Many theories have been offered to explain this difference; Fletcher's (10, P. 63) is one of the more reasonable ones:

> "(1) In the first place, it would be reasonable to assume that there are anatomical and physiological differences between the sexes which may play some part in determining their speech differences. The suggestions heretofore offered concerning such differences, however, have been of little value.
>
> (2) In the second place, the differences in the treatment of and the general social attitude toward boys in the domestic environment may be assumed to produce effects upon personality. The average boy is not so apt to be emotionally adjusted to the purposes and points of view of his parents as is the average girl.
>
> (3) Again, the wider contacts outside of the home, which are characteristic of the lives of the majority of boys, and their acquisition of knowledge, especially of socially forbidden matters such as sex, bad language and the like, are likely to exaggerate inhibitions, especially those that control speech, the medium par excellence of social intercourse. The inner conflicts of tendencies induced by the various cross-currents of disciplinary forces, as they play upon the growing human organism, constitute well-known factors in the production of emotional maladjustments of a social character similar to those that make up the causal background of stuttering. To assume that they may have something to do with the sex differences noted in regard to stuttering, is, therefore, not without warrant."

Yet Seth (28, p. 166a) showed that Fletcher's largely environmentalist theory of sex-difference in stammering incidence was not entirely plausible, writing:

> "...it is by no means clear what external conditioning factors can alone be held responsible for such a marked differentiation between the sexes in a disorder, which, in most cases, makes its appearance at a very early stage in individual development."

Of course Fletcher did admit that constitutional differences between the sexes may play a role in the different incidence of stammering (Point 1, cited supra., p. 24); he did not allege, therefore, that "external conditioning factors can alone be hald responsible." (our emphasis). Furthermore, reference to Table 4 (supra., p. 22) shows that any "marked differentiation between the sexes" only begins to occur at the age of 8-9, by which time conditioning factors can exert some force.

Even with the strictest fairness to Fletcher, however, it seems difficult to accept his theory's explanation of the sex differences in stammering incidence because it is so largely environmentalist-orientated. The greatest difficulty with it lies in the consistently higher incidence of male stammering which is found in all cultures. Even in those non-literate cultures where data were obtained on this point (v. Chapter 6) more male stammerers than female were always reported. It would be beyond coincidence to ascribe this consistent

sex-difference to similar differences in conditioning which boys and girls receive in any culture.*

Seth (op. cit., p. 168 et. seq.) offered still another hypothesis to account for sex-differences in stammering incidence: that the affliction is related to the size of the cephalic index (that of boys being higher than girls') and related this difference to a higher incidence of birth injury accruing to infants with larger heads. in support of this hypothesis, he wrote (ibid.):

> "In the brachycephalic population of Prussia and Poland, the incidence of stuttering is high. In Spain, Portugal and Southern Italy, the cephalic index is low (72-77) and stuttering is less common. The Armenian Jews have an exceptionally high cephalic index (86-87) and are reported to show a very high incidence. Boome & Richardson quote the assertion of the headmaster of a large Jewish school in London, where the racial origin of the pupils is extremely varied, that the disorder is almost twice as common amongst Jewish as it is among the Christian children."

Seth added (ibid.) that the lack of credence now given to cerebral-localization theories, and the failure to find lesions in stammerers, in no way invalidated the hypothesis, writing (op.cit., p. 169):

> "There is some evidence of a connection between abnormal foetal positions or difficult or instrumental birth and disturbance of speech."

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*The present chapter is limited to a discussion of the facts known or believed to be known about stammering incidence. A hypothesis accounting for sex-differences in stammering incidence along genetic lines is presented in Chapter 6.

The difficulties with this hypothesis have already been stated (supra., p. 17) where it was pointed out that higher cephalic indices have produced lower stammering incidence in some countries (Sweden and Denmark) than that cited supra., p. 16 for both Italy and Spain which have low cephalic indices. In addition, the Cretan children, studied by Chrysanthis (cited supra., p. 17), stammered at a very high rate (1.85%) even though they have very low cephalic indices. In any event, these data, or any which Burt or Boome & Richardson have cited, are not really comparable from one country to another, due to lack of standardization of procedure and diagnostic criteria.

Yet Seth's data surely should provoke further research on the relation of birth-injury to stammering incidence; he wrote (op.cit., p. 224):

> "In no less than 25 or fully one-third of the cases, birth itself was more than usually difficult, or finally accomplished after prolonged labour or with instrumental assistance."

Of course some cultures with quite primitive childbirth methods do not stammer at all (Chapter 6). This fact, however, would not refute the possible association of birth-injury and stammering in a culture such as ours, where the disorder is rife; no one, least of all Seth, has suggested birth-injury as a single-factor theory in stammering etiology.

Conclusions from Section 5.

1. Boys stammer more than girls in varying ratios from 2-1 to 10-1. This ratio increases with the advancing age of the children.

2. A bio-social explanation for the differences noted is probably the most reasonable.

6. The Age of Stammering Onset.

The question of onset age is relevant to this study, since much of the original data will be drawn from children aged 12 or less. In this connection, only 3 of 477 cases reviewed by Boome and Richardson (4, P. 29) occurred after the age of 11 (0.6%). The sum of three surveys by Bennett, Morley and Wohl, cited in the Advisory Council Report (3, P. 40), indicated that in 446 cases, the onset of stammering occurred in only 29 children past the age of 11 (6.5%). Two age-modes were noted, (ibid., P. 33): 3-4 years, and 6-7 years.

Seth and Guthrie (19, P. 177) stated that the condition almost inevitably begins in early childhood, and cited two age-modes of stammering onset also, but different from the above: 4-5 years and 7-8 years. No significant correlation with stammering onset and puberty was found, although (ibid., P. 178)

> "...the stuttering child, in whom the disorder persists into adolescence, invariably becomes at that time far more sensitive regarding his disability, and... far more acutely conscious of it as a social handicap."

The condition is therefore (ibid.)

> "...aggravated by the pubertal development... this effect is multiplied many times over in the intelligent child."

Nearly 50% of Seth's 78 cases had begun to stutter noticeably at the age of 4-5 (28, pp. 175-6). These were equally divided into those who started before school and those who started after. Seth added (ibid.)

> "The school situation in itself cannot be held responsible for the onset...but it may be in many cases a factor of special significance.... That the new environment makes a sudden, sharp demand upon the child's powers of expression at a time when their development has barely been completed...is obvious. But this is only one aspect...of the fact that in going to school the child is compelled to make the first great social readjustment of his development."

And later (ibid.):

> "The age of seven...is...for most children, the age of transfer from the primary department of the school to the larger and more difficult world of the junior school...
>
> "...In nearly all cases the schoolroom must be regarded as the principal agency in aggravating to real severity a disorder already present, and in a not inconsiderable number as supplying the finishing-touch to an unfortunate process of cumulative development."

Conclusions from Section 6.

1. The overwhelming majority (over 90%) of stammers begin before the age of 12, although surveys differ on estimates of the percentage which begin after 12.

2. The emotional upheavals associated with puberty only rarely begin a stammer, although they can aggravate a stammer which has already begun and make it more painful to the stammerer.

3. Authorities differ in their estimates of age-modes in stammering.

4. In a high percentage of cases, the classroom's linguistic demands made upon young children either precipitate stammering or aggravate mild tendencies to stammer.

7. School Conditions and Stammering Incidence.

The home is one main arena of the young child's social experience; the school constitutes the other, and the importance of this milieu in relation to stammering incidence has not been neglected by previous writers. Seth and Guthrie (19, P. 177) noted the beginning of school as temporally coincident with stammering age-modes of 4-5 and 7-8. Burt (5, P. 408), in speaking of schoolroom effects upon speech, stated:

> "In the classroom the most important factors are the teacher's attitude towards the child and the child's attitude towards his teacher, his school-fellows and the subject of his lessons."

He added, (ibid.) that sometimes hesitation

> "...seems to spring from an excessive preoccupation with consonants, induced or aggravated by ill-advised phonic drill; such drill at times engenders a sort of bewildering mouth-consciousness, and so, like all attention to functions ordinarily automatic, throws the component processes temporarily out of gear."

Considerations of verbal conflicts arising in bilingual children, or from rapid-fire questioning were also raised by Burt (ibid.).

McAllister (2, Chap. XIV) confirmed that the school may be a culture for the breeding of inferiority feelings so often associated with stammering.

The authority who most emphasized that the school atmosphere was potentially detrimental to stammerers was Fletcher (10); in this connection he was speaking of therapy for confirmed stammerers, rather than of etiological factors of the condition. Nevertheless, he considered the school so critically important in the social determination of the young personality that the entire argument of his book was in behalf of separate schools for stammering children! (In the same way that blind, deaf or other handicapped children are schooled separately).

This idea cannot be lightly dismissed as idealistic or unnecessary, nor by a rationalized argument that it would only make the stammerer more "self-conscious" to be segregated and treated as "different." McAllister (2, P. 345) felt that though some remarkable improvement in the condition of stammering has been achieved by the establishment of classes for them,

> "...the problem calls for individual treatment."

Yet, although she went to great length in pointing out the enormous physiological and psychological differences among stammerers (perhaps her most important contribution to the problem), McAllister generalized (ibid.) in the above connection:

> "To allow a stutterer to hear from others similarly afflicted the evidence of their defect is to inflict upon him an experience

> which can only intensify his consciousness of his own disability, no matter how carefully the instructor tries to eliminate from the situation all that might tend to emphasize the defect... a class for stutterers is a bad psychological procedure..." (Italics ours)

Burt (5, P. 410) agreed in this regard:

> "The policy of treating speech-defectives -- particularly stutterers -- in special classes or groups is by no means an ideal psychological procedure. Could the attitude of teachers and fellow-pupils be changed*, and teachers themselves instructed in the best methods of treatment, there would be much to be said for leaving the milder cases to be dealt with at the child's own school."

Sovak (20, P. 67) described a separate school for stammerers at Prague, whose results have been substantial:

> "Pupils are accepted only for the period required for the treatment of the disorder...the length of time spent there is not determined in advance."

The school had nine "standards" for children from 6-15 years. Part of the treatment was given in speech therapy lessons (5 hours per week) and the balance in the general teaching system,

> "...in which everything is intended to adjust both speech and neurotic symptoms." (ibid., P.68)

This particular school had the added advantage of boarding the children on the premises, thus removing the child from

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*He did not state how this is to be accomplished, and what should be done until it is.

possibly harmful family influences for the period of therapy, as well as from any adverse "ordinary school" conditions. Of course parents were encouraged to visit their children as often as possible, at least once a week.

Of course to implement such a program on a wide scale in Great Britain or the United States would require an enormous financial expenditure, as well as a really comprehensive parent-education program so as to make the idea acceptable. Before any such recommendation could be seriously made, the problem must be studied in its entirety to ascertain: (1) is such a radical program really necessary to treat our stammering children? and (2) are there any adverse side-considerations which would make the program otherwise undesirable?

At this point it is germane to raise the familiar question of imitation in stammering, for it so often begins through school contacts. (This aspect will be discussed in regard to family relationships as well, for imitation of stammering does occur in the home). Previous writers are divided on the question of the extent of imitative stammering. Fletcher (10, P. 31) wrote:

> "...stuttering often does have its genesis in the playful act of imitating a stuttering child. This means that every stuttering child in a school room becomes a menace to every other child...."

and used this point in his argument for spearate schools for stammerers. Burt (5, p. 409) recognized the occurrence of imitative stammering, and related a story of a teacher who began a term with one stammerer in a class of fifty girls; at the end of the term she had nine. He added, however, (ibid.) that

> "when these incidental conditions have provoked a definite stammer, there has always been a prior predisposition in the child himself...In a class for speech-defectives, stammerers and non-stammerers can be safely taught together."

Seth showed that stammering can rarely be ascribed to imitation alone. He wrote (28, p. 201):

> "In only two cases (out of 77) was it suggested by the Mother that the speech-disorder had arisen as a result of association with another stuttering child outside the stutterer's family."

Furthermore, of the 41 cases (out of 77) where some degree of stammering was found in the subject's family, in 24 of these, (ibid.):

> "there is every reason to believe that the possibility of imitation is precluded."

Hence a maximum of 17 out of 77 cases could have been ascribed to imitation, but Seth indicated that even among these it was doubtful that imitation was the only factor.

Out of McAllister's 139 cases, (2, p. 159) only 8 (5.7%) could be traced to imitation; the incidence of imitative stammering thus seems to be very small. The dramatic

nature of an obviously imitated stammer is such as to make a stronger impression in the mind of the therapist than its incidence actually warrants statistically; furthermore, one question can never be answered: would the imitative stammerer have begun to stammer anyhow, even if he had never been exposed to the stammer which he copied? This possibility reduces even more the amount of stammering probably due solely to imitation.

Conclusions from Section 7.

1. School atmosphere has an important bearing on the incidence of stammering, as well as on children who have already begun to stammer.
2. Separate schooling may thus be desirable for at least some stammerers.
3. The incidence of stammering solely due to imitation is undoubtedly very small.

8. Stammering, Intelligence and Scholastic Retardation.

The problem of whether intelligence is in any way a function of stammering is extremely complicated for several reasons:

(1) Few psychologists are agreed on the precise meaning of "intelligence."

(2) Under these conditions, the selection of tests by which to measure intelligence as a separate "faculty" or "g factor" has become very controversial and unstandardized, especially in testing speech-defective children who suffer from the highly verbal nature of most tests.

(3) Even if psychologists were all to agree that "intelligence is only what intelligence tests measure," and were then to agree on a single test or battery of tests by which they could measure the entire school population, the Report of the Advisory Council (3, P. 14) correctly pointed out that

> "...speech defect may be a direct cause of the educational retardation of a child of normal intelligence...Not a few children improve their status as the defect abates in severity."

In spite of the above difficulties, most authorities agree that stammering does not seem to bear any relation to "intelligence." Burt (5, P. 400) found the average intelligence of stammerers was

> "...practically normal (mean mental ratio, 97)"

although the standard deviation of stammerers' intelligence distribution seemed to him to be greater than that for normal speakers.

Of McAllister's 139 cases (2, P. 13),

	Mental Ratio (I.Q.)
"21 were below average in mentality;	78-90
107 were average in mentality;	92-107
11 were above average in mentality;	110-120"

Parenthetically, it may be asked: is this distribution skewed to the left, bearing in mind that 86 of these 139 cases (61.8%) came from 'middle-class' and 'well-to-do' homes (supra, P. 13)? In any event, McAllister concluded (ibid.) in spite of the low number of children studied, that intelligence is distributed among stammering children in a way similar to the general population.

Stein (1, P. 113) stated, however,

> "It is not surprising that the intelligence quotient of stammerers is in the majority of cases above the average."

Ward (6, P. 5) agreed with this position, quoting McLeod:

> "It is almost certain that if I.Q.'s were taken of any 100 perfectly 'normal' persons, free from speech defect, and of 100 stammerers of similar ages and environment, the result would be a decisive victory for the stammerers, provided, of course, that the method of testing did not require spoken answers."

One small survey of 70 stammerers' intelligence quotients was made by Pollitt (27, PP. 4-9) with a battery of tests including Moray House group tests, Cattell's test, Terman Merrill revision of the Stanford-Binet; and a series of performance tests including the Seguin Formboard, Alexander's

Performance Scale, Porteus Maze and Raven's Matrices. She compared the stammerers' distribution of scores on these tests with a "normal" distribution, in the following table:

I.Q.	Normal Distribution	Stammerers' Distribution
Under 70	3%	5.7%
70-79	7	7.1
80-89	15	18.5
90-99	25	25.7
100-109	25	14.2
110-119	15	17.1
120-129	7	5.7
Over 130	3	5.7
	100%	99.7%

Table 5.

The stammerers' distribution is skewed slightly to the left, with only 42.7% having an I.Q. of over 100; in view of the smallness of the sample, however, (70 cases) these figures must indeed be interpreted cautiously, especially because the socio-economic groups from which these particular stammerers were drawn are not stated, nor the proportion of stammerers from each socio-economic group. That socio-economic status has a bearing on test scores needs no emphasis here.

If there is confusion and contradiction on the question of the relevance of intelligence to stammering incidence, there is general clarity and agreement on the question of scholastic retardation among stammerers. McAllister

(2, P. 11) gave the following table:

Association of Educational Retardation with Stuttering (as measured by age)

	Infants (5-7)		Juniors (7-9)		Seniors (9-12)	
	Boys	Girls	Boys	Girls	Boys	Girls
Percent over class age	74.3	44.1	76.2	49.0	41.7	57.3
Average retardation in months	7	7	8.6	13.5	9	13
Range of retardation in months	6-12	6-18	6-24	6-48	6-36	6-24

Table 6.

The table indicates that scholastic retardation of stutterers increases with age, and to a greater degree, with girls.

Fletcher (10, P. 79) confirmed that stammerers are scholastically retarded, but cited Westergaard's study of 34,000 Danish children and Conradi's study of 87,000 American children which agreed that there is indeed retardation up to the fourth grade, but that in the fifth and seventh grades the ages were about equal to the norm. He further (ibid., P. 81) cited Wallin's figure of an average stutterer's retardation (among St. Louis, Mo., U.S.A. children) of 1.6 years, (considerably more than what McAllister found, see Table 6, supra.) based on the following data:

Number of Years Stutterers Retarded	Number of Cases
0	97
½	5
1	219
2	165
3	73
4	29
5	11
6	3
7	2
Accelerated 1 year	8
Av. Retardation: 1.6 years	612

Table 7.

Seth, however, (28, p. 184, et. seq.) pointed up certain fallacies in the assumptions on which the fore-mentioned surveys were based. In brief, he pointed out that:

1. Those stammerers found to be scholastically retarded may well have deserved to be held back in school, because of their lower "mental age." With stammering or non-stammering children, it is general practice not to promote a child where it is evident that he will not benefit scholastically by the promotion.

2. As for those stammerers whose mental age may have justified scholastic acceleration, these children may have been held in their "regular" class because of the rigidity of a school system, which may automatically put all children of a particular chronological age into a particular class -- unless retardation proved advisable.

3. Stammerers may also be sometimes unjustifiably retarded, being "prevented by the speech disorder from 'showing up.'"

Thus the statement that "stammerers are scholastically retarded" is a misleading one. While it may be true that some stammerers are indeed scholastically retarded, this

fact may be more significantly associated with current educational practice, rather than with the mental functioning of stammering children.

Conclusions from Section 8.

1. Little agreement is found on the relation of intelligence to stammering. Some writers claim that the average intelligence of stammerers is more than that of the general population; others claim it is less, while still others find no essential difference.

2. Stammerers are scholastically retarded, although the degree of average retardation is controversial. The cause of the retardation, however, may be found in education rather than in any inherent intellectual weakness of stammerers.

9. Innate and Hereditary Factors in Stammering.

The discussion thus far has dealt with some of the environmental aspects which may be significant in the incidence of stammering. Although these will be of particular interest in a study of psychological and social relations associated with the disorder, examination must also be made of hereditary implications when stammering occurs; of the latter only the most extreme behaviourists express any doubt as to their significance. This brings to mind Watson's (22, P. 74) famous dogma:

> "There is no such thing as inheritance of capacity, talent, temperament, mental constitution and characteristics."

Allport, (23, P. 103 et. seq.) showed this position to be unsound, since it admitted that physical structural differences may be inherited, although denying somehow that these may be manifested in heritably differentiated functioning. It is apparent, furthermore, that there are very definite observable differences already established among the very undeveloped central nervous systems of neonates, not to mention other constitutional differences. Even monozygotic twins manifest central nervous system differences as neonates.

In connection with stammering, the hereditary factors may consist of a neuropathic inheritance. Burt (5, P. 399)

noted this to be the case in as many as 62% of his cases,

> "...and in 23% a tendency to stutter was reported among the child's relatives... In 14 out of the 23%...the child had never been in contact with the relatives who stuttered."

He added, (ibid.) that 92% of his stammering cases also manifested

> "...concomitant signs of an unstable nervous system, or of a temporary nervous disorder, or both,"

although some of these might have fallen under the heading of acquired "habits."

Bender and Kleinfeld cited two other investigators who found evidence supporting the hypothesis of a genetic factor in stammering (31, p. 244):

> "Heredity. G. Hudson-Makuen reported that 39% of 100 stutterers had relatives who stuttered. Bryng Bryngelson found that 74.6% of 594 stutterers had relatives who stuttered, whereas only 11% of 225 normal speakers reported stuttering among relatives."

Boome and Richardson (4, p. 14) plainly recognized an endogenous or constitutional factor in stammering incidence, describing it as a neuropathic tendency:

> "Among 522 of our cases we found 179 (34%) with stammering 'in the family' but we incline to the view that the child inherits peculiar neuropathic tendencies which predispose him to stammering, rather than the view that the actual stammer is inherited." (ibid., p. 16)

This 34% incidence of relatives' stammering is most significant when taken in connection with low estimates of imitative stammering. (supra., p. 36). Boome and Richardson (op. cit., p. 16) also emphasized the possibility of prenatal influence due to extreme, prolonger anxiety of the pregnant mother, or intense psychic trauma.

McAllister (2, p. 203) also stressed the hereditary predisposing aspects which she felt are inevitably found in stammering. To the inheritance of a "neuropathic tendency," however, she added the concept of an inheritance of a physiological vulnerability in the speech organs (ibid., p. xxii),

> "...sufficient to mark the weak spot in the individual's system of habits and to offer a prime center for the concentration of an emotional complex."

Indeed, she pointed out (ibid., p. 162):

> "There is a type of stuttering which is clearly of physiological origin. Its manifestation in speech is distinctively different from that of other types. In no instance has it been found to be reiterative in character. The sufferer is assailed by an inability to manipulate some one or other of the speech organs, and the inability strongly resembles a clonic spasm... One or other of two main physical maladies seems to lie at the root of this type of dysphemia:
>
> 1) Defective conditions of the pharyngeal, nasal and buccal passages, e.g., effects of adenoid overgrowth.
> 2) Defective functioning of the respiratory muscles due to thoracic or abdominal troubles, e.g., constipation."

Only 19 out of 139 cases, however, (13.6%) fell into this category (ibid., p. 159).*

Of course McAllister also agreed with the authorities already mentioned on the heritability of neuropathic tendency (ibid., p. xxiv):

> "In very many cases the tendency towards 'emotionalism' is not merely an idiosyncrasy, but a trait of apparently hereditary origin. The stutterer frequently numbers among his relatives individuals who periodically suffer from 'nervous breakdown,' hysteria, neuroticism, religious mania and other kindred enthusiasms of extreme intensity."

In fact, her main argument was that a combination of hereditary predisposition (temperamental and/or purely physiological elements), with environmental situations of tension and emotional disturbance, is requisite for the onset of stammering. For were it not for the hereditary predisposition toward stammering - or at least vulnerability in the speech organs - she asked (ibid., p. 327):

> "Why does the mental condition of the subject lead to stuttering, to a disorder of speech rather than to some other manifestation of the trouble?"

This question goes to the heart of the problem.

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*Curiously this estimate was confirmed by Bender and Kleinfeld, who quoted Morgan (op. cit., p. 245):

> "...ten to fifteen per cent of stuttering is caused by abnormalities of the peripheral organs."

Conclusions from Section 9.

1. There is a hereditary factor in most cases of stammering, which may be called a neuropathic tendency.

2. Another possible hereditary factor (perhaps less important) often found in stammering incidence is a specific physiological weakness in the organs of speech.

10. Left-Handedness and Stammering Incidence.

The question of left-handedness in regard to stammering has been separated from the previous discussion of hereditary factors for two reasons: 1) the extremely complicated nature of the subject requires special treatment; and 2) there is some controversy over the purely hereditary nature of left-handedness.

Three separate lines of inquiry must be pursued:

(1) Is left-handedness innate or acquired? The implications of this question are obvious, for if it is purely an acquired trait, education and stammering-therapy will be considerably affected.

(2) To what degree is stammering related to uncorrected left-handedness?

(3) To what degree does changing a left-handed child to right-handedness induce stammering?

(1) Innate or Acquired?

Burt (5, P. 294) quoted Watson (24, P. 322) who claimed that left-handedness is a purely artificial habit, acquired through conditioning, being "socially instilled." Burt (op. cit.) doubted this position:

> "In every country...race, primitive as well as civilized, right-handed persons far outnumber the rest. If the preference rested merely on social convention, we should expect it to vary from one community to another..."

Burt further (ibid.) quoted Chamberlain, who concluded that

left-handedness was a Mendelian recessive, since his survey of 12,000 people found that

> "...in families where one or both parents were left-handed, 17% of the children were left-handed also; in families where both parents were right-handed, only 2% of the children were left-handed."

It may be doubted, however, that Mendelian recessiveness is a sole causative factor in left-handedness, since were it so, all families with both parents left-handed would have only left-handed children; this is not the case. Nevertheless, Burt (ibid.) himself found that 14% of his left-handed children had a left-handed parent, and 31% had a remoter left-handed relative. These figures are quite significant, since Burt had already found (ibid., P. 281) the normal incidence of left-handedness to be 5.8% in boys and 3.7% in girls. Burt (ibid., P. 301) therefore reasoned that habit-forming alone cannot explain the occurrence of left-handedness. He pointed out, however, (ibid.), that

> "...the inherited bias must in most instances be comparatively slight, otherwise it would not be so difficult to substantiate."

(2) Stammering and Uncorrected Left-Handedness.

The relationship of stammering to uncorrected left-handedness is easy to compute statistically, but difficult to explain etiologically. Burt (ibid. P. 288) found that only 1.7% of right-handed children showed any tendency to stammer, while 6.5% of left-handers did so. Furthermore, only 3.2% of the right-handers had been reported as having stammered in the past, while 11.9% of left-handers did so.

Incidentally, "mixed laterality" cases seem to suffer more from stammering than pure left-handers; 8.4% of Burt's left-handed children, who were also right-eyed, stammered, but only 4.3% of his left-handed cases did so when they were also left-eyed. (ibid.)

Among 522 of Boome and Richardson's stammerers, 23 (4.4%) were left-handed, or about the same percentage of left-handers as is in the normal, non-stammering population (4, P. 20); yet 132 of 522 stammerers (25.3%) had left-handed relatives,

> "...which points to a possible connexion between the left-handed temperament and stammering." (ibid.)

Of McAllister's (2, P. 159) 139 stammerers, however, only 9 (6.4%) were left-handed, a slightly larger percentage than could be expected from a random population sample.

These three authorities formed considerably different ideas about this aspect of the problem. Burt (5, P. 287) related his higher-stammering figures for left-handed children to

> "...widespread difficulties in almost every form of finer muscular coordination...Those I have dubbed ambi-sinistral (mixed laterality cases)...squint, stammer, shuffle and shamble, flounder about like seals out of water. Awkward...clumsy...fumblers and bunglers at whatever they do...their general disability is as much nervous or temperamental as it is intellectual."

> "...the tendency to left-handedness...and to stammer...must be regarded as forming but two among many alternative signs of a general lack of stability in the child's whole nervous organization..." (ibid., P. 335)

Yet Boome and Richardson, (op. cit., P. 19) whose figures did not seem to imply left-handedness as a function of stammering, wrote,

> "The connexion...has...been overstressed."

Although her figures did not indicate that left-handedness is a particularly important function of stammering, McAllister (op. cit., P. 189) felt that speech defect in general is associated with left-handedness, and added that when there is emotional disturbance in these cases, it is purely a result, rather than a cause, of the stammer. (ibid., P. 157). She insisted, (ibid., P. 189) that in left-handed stammerers,

> "...the defect seems to be largely of physiological origin, and to be free from association with emotional disturbance,"

and for this reason advocated eurythmic training as the only therapy necessary for these cases.*

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*It may appear that McAllister overlooked the social pressures on a left-handed child, even one on whom no attempt to change handedness has been made. Such a child is often made to feel "different" by his parents, siblings, teachers and classmates, to such a degree as to set off telling emotional reactions, particularly in the sensitive child.

This social pressure is found in many societies. Burt (op. cit., P. 313) mentioned the superstitious "evil" or "unlucky" associations made with left-handedness in the past, and suggested that even in primitive communities,

> "...social opinion would tell strongly against any unlucky left-hander who...failed to conform to the regular preference."

(cont'd. on P. 47)

(3) Stammering and Changed Left-Handedness.

Stammering has for many years been popularly considered to be largely the direct result of forcing natural left-handers to right-handedness. In the last twenty years, however, the majority of writers have expressed a healthy skepticism in this belief, and many investigations have contributed to disproving it. Still the legend "dies hard," and it is therefore relevant to summarize here some of the evidence which justifies its interment.

Boome and Richardson (4, P. 19) wrote:

> "There are of course, instances of left-handed children developing a stammer through being forced to use the right hand, but in our experience they are rare; and since schools are increasingly allowing left-handed children to follow their bent, the connexion with stammering is likely to become yet more rare. When

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(Footnote from P. 46 cont'd.)

Bullen (15, P. 58) quoted Hill at length on the extremely strong bias against left-handedness among the American Navaho Indians.

Burt (op. cit., P. 313) further referred to the double meanings of the Latin "sinister," the French "gauche" and the German "linkisch" as indicative of the social disapproval of left-handedness, past and present.

If there is indeed any positive correlation between uncorrected left-handedness and stammering, therefore, the cultural pressures on left-handers must certainly be considered as significant. Indeed, might not these pressures alone account for the extra awkwardness and comparatively poor general physical coordination of left-handed children found by Burt (supra., P. 45)? Many left-handed children are made quite self-conscious over their "difference" or "abnormality." (McAllister, - op. cit., P. 338 - actually called left-handedness and "abnormality, not a variation like colour of hair, or eyes.") That self-consciousness alone causes poor coordination which may become habitual, is a possibility which needs no elaboration here.

> "these cases occur it is probably lack of confidence, resentment against authority, or the sense of strain consequent upon using the less expert hand that determines the same cause and may easily develop the inferiority complex which appears to be inseparable from stammering. This last, may be enhanced too, by the ridicule which so many people accord to the left-handed." (Italics ours)

Burt's figures (5, P. 324) showed only a slightly higher incidence of over-all speech defects between unchanged and changed left-handers: 4.2% and 6.1% respectively, although this ratio is 1:2 among intellectually backward left-handed children. He did find (ibid., P. 325) a small group of left-handed children who were "demonstrably of a neurotic or unstable nature" to be especially affected by being forced to change their handedness, but considered their stammer to be only one symptom of their generally maladjusted nervous system. He concluded (ibid.):

> "...the notion that right-handed training might generate a stammer seems originally to have been derived, not from statistical inquiries or systematic case-study, but from somewhat dubious inferences from anatomical or physiological theory."

Only 2 of McAllister's 139 stammerers (1.4%) had been forced to change from left- to right-handedness (2, P. 173). She shared (ibid.) the opinion of the others already cited:

> "...it would seem that stuttering due to the correction of left-handedness is comparatively rare."

Fletcher (10, p. 65) cited Wallin's figures* which showed that 9.4% of changed left-handers were found to show defects of speech; but he felt that the 90.6% balance, who suffered no speech defect of any kind, was far more significant.

McAllister (op.cit., p. 335) referred to Parsons' survey of 15,000 children in Elizabeth, N. J., U.S.A. (1926), four years after that city had begun an intensive campaign to "cure left-handedness" by compelling all pupils to write with their right hand. Parsons found

> "...not one case of speech disability could be traced to change of handedness."

Yet Seth (28, p. 286) found that fully one-fifth of his 78 cases were properly left-hander; half of these were left-handed and the other half were dextro-sinistrals. This figure of 20% is worth noting, in relation to the norms for boys and girls of 5.8% and 3.7% respectively, which Burt found, cited supra., p. 49. Far more significant, however, is that Seth noted (ibid.):

> "In every one of these cases some attempt, whether successful or not, had been made to train the child to conformity with the right-handed majority."

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*Annual report of the Board of Education, St. Louis, USA, 1915-16.

Miss MacLean (29, pp. 239-240) analyzed association of shift-handedness with speech difficulties in general. Working with 770 children, 51 of whom had some kind of speech defect, she concluded:

> "...Hence there is a suggestion of an association between shift-handedness and speech difficulty...(Yet) on the whole the figures do not strongly support the thesis of speech difficulties being associated with shift of hand, but neither do they disprove it...The present group of children average chronologically an 11-year level and with them there appears no strong relationship between shift of hand and speech."

There is no real contradiction between Seth's findings on the concurrent incidence of shift-handedness and stammering, and the lack of supporting evidence to this effect. What is probably important is the manner in which handedness is shifted, rather than the shift itself. This was the viewpoint of Burt (5, p. 337) and McAllister (2, pp. 331-344) who were both convinced of the handicaps in life for the left-handed child or adult, and of the harmlessness in changing handedness if tactful and ingenious methods were used. They, therefore, actually advocated (ibid.) changing the handedness of most left-biased children. Burt suggested (op. cit., p. 337) that the sole exceptions be those children with "marked neurotic tendencies," although he felt (op.cit., p. 316, et. seq.) that almost all left-handed children had temperamental peculiarities of one kind or another.

Conclusions from Section 10.

1. Left-handedness is not a purely acquired trait, although training and learning may do much to re-inforce and habitualize what was at birth only a very slight predisposition.

2. Authorities disagree on the relation of uncorrected left-handedness to stammering; if there is any positive correlation between the two, it is likely that it is culturally derived through social pressures on left-handed children which may promote anxieties and other emotional disturbances.

3. Little stammering is found to result from changing the handedness of a left-handed child, per se, but it may be associated with a poorly managed shift of handedness.

11. Stammering and "Non-Stammering Situations."

This section is included here merely to emphasize the individual differences which exist between stammerers, and to underline the danger of making sweeping generalizations about them. The stammerer, like the normal individual, has a "uniqueness of personality" to which Allport (23, p. 193) referred - and while general statements may be made which apply to the majority of stammerers, few of any value can be made which apply to all. References to "The Stammerer," just as to "The Neurotic," "The Lame," or indeed, "The Child," must be quite guarded.

This point was forcefully made by Van Thal (25, pp. 16-18). Referring to the well-known assertions that

> "...stammerers are always symptom-free in certain situations, such as: singing, whispering, talking to themselves,* sleep-talking, or under the influence of alcohol," (Italics hers)

she cited a few cases of stammering found to have occurred in each of the above situations. Even in singing, the activity most often considered to be stammer-proof, 8%

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*Seth (28,p.210) noted that in at least 20 of his 78 cases,
> "...some degree of stuttering persisted under conditions in which probably not one of the 20 so much as suspected that they had an auditor. Certainly in the majority of the cases, the disorder did disappear when the examiner left the room, under pretext, and in nearly all it diminished considerably. In a few, however...(5 cases) ...it was scarcely less severe than it was under ordinary conditions of communicative speech."

of the stammerers studied in a survey cited by her (ibid.) retained their stammer.

An individual's speech is delicately responsive to the social attitudes and relations between him and his auditor(s). This fact, together with the infinite number of possible social relations between an infinite number of unique personalities, accounts for the intermittency or undependability of the stammering symptom. Some social situations will of course be fraught with less nervous tension or social pressure or anxiety for the stammerer, than others. Singing, particularly in unison with other people, seems to be such a situation for most stammerers, since no particular attention is focussed on the stammerer, nor is it immediately necessary for him to communicate a thought of his own while vocalizing. Most, though not all, stammerers, therefore, do sing symptom-free.

12. General Conclusions.

An attempt has been made in this chapter to synthesize the facts already learned about stammering incidence. The conclusions at the end of each section within the chapter can themselves be summarized as follows:

(1) Stammering is a nervous disorder of speech, deemed thousands of years old, yet always causatively related to the culture and society in which man has lived.

(2) Stammering is largely caused by emotional disturbance in children mostly under twelve years of age.

(3) About 1% of all children in "Western" civilization suffer from the disorder, which is far more frequent in boys than girls.

(4) Socio-economic conditions have an important bearing on stammering incidence, as well as school atmosphere.

(5) Stammering is not clearly related to intelligence, although stammerers are scholastically retarded, possibly due to pedagogical rigidity.

(6) There is probably a predisposing, innate factor in most stammers.

(7) Cultural attitudes towards left-handedness are a function of stammering when the condition occurs in left-handed children, although changed-handedness is rarely a causative factor.

(8) Few generalizations of value can be safely made about stammerers.

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Chapter 3

Did The Greeks and Romans Stammer?

1. Introduction

No writer has been found who doubted the fact that stammering existed in ancient Greece and Rome. Yet the aim of the current chapter is to suggest that the affliction under consideration may have been relatively unknown to these civilizations. Before launching into the argument itself, however, an explanation must be offered to account for the innumerable writers who have believed and stated that the Greeks and Romans stammered.

In the main, most writers on the subject have tended to depend on each other; few indeed have felt it necessary to analyze the original Greek and Roman texts. Hence the early translators, who first implied that this or that Greek or Roman word meant to stammer, have found their translations unquestioningly cited. To make matters worse, it is only quite recently that any degree of general agreement has been reached in regard to the exact meaning of the words "stammer" and "stutter." (supra., p. 2). As a result, earlier uses of the word "stammer" in translations may confuse the modern investigator, who may have a different meaning for the word in mind.

It has therefore been deemed necessary in the present chapter to examine as carefully as possible all the existing

"evidence" in regard to Greek and Roman stammering. After the inconclusiveness of this evidence has been demonstrated, a positive argument will be set forth which will cast still further doubt on the incidence of stammering in the Greek and Roman civilizations.

2. Evidence that the Greeks Stammered.

Perhaps the most famous alleged stammerer in all history is Demosthenes. The legend of how he cured his stammer by orating to the sea with a pebble in his mouth has been given great credence; even as late as 1913 Bluemel (1, p. 278, Vol. 1) quoted Lombroso as his authority for believing that Demosthenes stammered. Lombroso had written (66, p. 13):

> "Men of Genius frequently stammer. I will mention: Aristotle, Aesop, Demosthenes, Alcibiades, Cato of Utica, Virgil, Erasmus, Malherbe, C. Lanb, Turenne, Erasmus and Charles Darwin, Moses Mendelssohn, Charles V. Romiti, Cardan, Tartaglia."

Bluemel observed later, however, (op. cit., II, p. 216):

> "Demosthenes probably never stammered; his defect seems to have been lallation."

As far back as 1856, Schaefer (74, I, p. 299) had written:

> "Demzufolge war seine Aussprache nicht rein und ohne Anstoss, das R -- den ersten Buchstaben seiner Kunst -- vermochte er so wenig wie einst Alkibiades herauszubringen... Ferner war sein Athem kurz und seine Stimme dünn."
>
> (Free trans:)
>
> "Therefore his pronunciation was not clear and not without defect; R -- the first letter of his art (Rhetoric) -- he could only bring out as poorly as Alcibiades once did...Furthermore his breath was short and his voice thin."

In 1868, Guillaume (2, p. 695) also noted:

> "Nous confessons qu'il nous reste à tout le moins des doutes sur la question de savoir si le vice de langage si energiquement dompté par Demosthènes etait le bégaiement ...ce mot n'est même pas prononcé une seule fois dans la traduction de Plutarque par Amyot, l'autorité constamment invoqué."

Appelt (71, p. 12) wrote:

> "The impediment of Demosthenes who, with doubtful justice, is claimed by many stammerers as their most famous fellow-sufferer, comes more or less under the same head (defective articulation.)"

One quotation from the 16th Century priest Sigonius (3, A Corporis Partibus) refutes forever the possibility of Demosthenes' having stammered:

> "Sunt autem qui R litteram pronuntiare non possunt, quo vitio laboravit Dem....." Demosthenes ita balbus fuit, ut eius artis cui studebat primam littere dicere non posset. Et in Priapo, "Quum loquor, una mihi peccatur litera. Nam prae, pae dico semper; blaesaque lingua mea est."
>
> (Free trans:)
>
> "There are also those who can't pronounce the letter R, which was Demosthenes' defect.... So bad was his articulation that he couldn't say the first letter of the art of his devotion (Rhetoric). And in Priapus[1], "When I speak, one letter fails me, For prae, I always say pae. My tongue lisps."

That Cicero himself knew the exact nature of Demosthenes' speech defect is indicated in his "De Divinatione," (65, II,46):

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[1]The original of this remark of Demosthenes has not been found.

> "Many more have corrected a natural defect by intelligent exertion. Demosthenes is an instance: according to the account given by Phalerus, he was unable to pronounce the Greek letter rho, but by repeated effort learned to articulate it perfectly."[1]

Thus it is certain that Demosthenes never stammered at all, and Hunt (59, p. 22) also reached this conclusion, after weighing all the available evidence, writing:

> "After all, it can scarcely be said that Demosthenes was a stutterer in the strict sense of the term. His chief defect as described by most authors, consisted, apart from weakness of voice, in his faulty enunciation of the letter r."

Lombroso also mentioned Alcibiades (supra, p. 64). Upon investigation, this famous Greek also turns out to have been a lisper. Appelt (71, p. 12) wrote:

> "...a lisper whose defective articulation incited ridicule...Alcibiades. He is reported to have been unable to articulate the letter R, substituting L in its place."

Plutarch (4) wrote of Alcibiades:

> "Even the lisp that he had became his speech."

The dictionary of Liddell & Scott (12) defines traulidzo[2] as

> "mispronounce a letter, lisp, as Alcibiades made r into l..."

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[1]Plutarch agreed with Cicero on this point, writing (79, XI):
"The indistinctness and lisping[1] in his speech he used to drive away by taking pebbles in his mouth and then reciting speeches."
[1](Footnote in this text: "Strictly, an inability to pronounce the letter 'r', giving instead the sound of 'l.'")

[2]All Greek words have been transliterated into Roman throughout this chapter.

Hence it is more than doubtful that Alcibiades stammered.

Appelt (Op. cit., p. 12) asserted that Battos stammered:

> "According to Herodotus (IV, 135) Battos, the son of Polymnestos, stammered in early childhood. His affliction, judging from the terms chosen by the historian, manifested itself in an involuntary stoppage of the voice or complete unintelligibility. When grown to manhood he asked the Pythian priestess, as the oracle of the Delphic God, how he could get rid of his agonizing ailment, and she recommended him to emigrate south to Libya. It is not improbable that the association of his proper name, Battos, with the appelative Batalos (stammerer) is due to the possibility that young Battos received his name as a consequence of his impediment."

In order to show that Battos stammered, Appelt distorted this passage in two ways: 1) by interpolation (e.g. "agonizing ailment"), and 2) by not referring to the entire story as it was written, specifically omitting Herodotus' own opinion as to the origin of Battos' name. Here is the actual quotation from Herodotus (6, iv, 155):

> "There Polymnestos, a notable Theraean, took Phronime and made her his concubine. In time there was born to him a son of weak (ischnophonos*) and stammering (traulos*) speech, to whom he gave the name of Battus[1] as the Theraeans and Cyrenaeans say; but to my thinking the boy was given some other name and changed it to Battus on his coming to Libya, taking this new name by reason of the oracle given to him at Delphi and the honourable office which he received. For the Libyan word for King is 'battus' and this (methinks) is why the Pythian priestess called him so in her prophecy, using a Libyan name because she knew that he was to be king in Libya."
>
> [1](Footnote in this text: "That is, The Stammerer.")

*Note use of ischnophonos to mean weak speech and traulos to mean stammering.

Hence there is no proof whatsoever that Battos or Battus was a stammerer, or received his name because of his speech defect. In fact, Rawlinson (67) proved that Battos meant "king" in Libyan, with this footnote to his translation of the same text:

> It is curious that Herodotus was ignorant of the name given in the myth to the first Battus, before he received that appellation from the oracle, especially as it had already been celebrated by a poet whose works he knew. (Pind. Pyth. v. 81, Ed. Dissen) The name was Aristotle, which appears not only in Pindar, but likewise in the works of Cyrenaic poet Callimachus (hymn ad Apoll. 75) in Heraclides Ponticus (Fr. IV), Eusebius (Chron. Can. II, p. 320), and in the Scholiasts passim."

As for Aesop, (also cited by Lombroso, supra, p. 64) the Encyclopedia Britannica (11th Edition) makes no mention of any speech defect, but states that

"It is probable that Aesop did not commit his fables to writing," suggesting that he narrated them, and others recorded them.* It seems unlikely that a true stammerer would have been

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*Aristotle (75,II,20) gives the following instance:
"Aesop, defending before the assembly at Samos a popular leader who was being tried for his life, told this story: A fox, in crossing a river, was swept into a hole in the rocks; and, not being able to get out, suffered miseries for a long time through the swarms of fleas that fastened on her. A hedgehog, while roaming around, noticed the fox; and feeling sorry for her, asked if he might remove the fleas. But the fox declined the offer; and when the hedgehog asked why, she replied, 'These fleas are by this time full of me and not sucking much blood; if you take them away, others will come with fresh appetites and drink up all the blood I have left.' 'So, men of Samos,' said Aesop, 'my client will do you no further harm; he is wealthy already. But if you put him to death, others will come along who are not rich, and their peculations will empty your treasury completely.'"

able to or would have had the inclination to narrate the fables of Aesop.

The Encyclopedia Britannica (11th Edition) makes no mention of Aristotle's stammer, which was also alleged by Lombroso, (supra, p. 64). No reference to any speech defect of Aristotle has been found elsewhere.

Proving that no famous people in a civilization stammered is far from proving that the affliction was unknown, however necessary it may be to the over-all argument. Reverting therefore, to the assumption that any civilization which stammers must have a word to describe the affliction, an exhaustive study must be made of the words which the Greeks used to describe their speech defects, and especially the contexts in which these words were used. For though a word may be translated to mean "stammer," only an analysis of the context of its use can show whether the translator actually had in mind the affliction under consideration. The Greeks had six words to describe their speech defects:

a. Psellos (and its derivatives)
b. Traulos " " "
c. Batalos " " "
d. Isch(n)ophonos
e. Barbarus
f. Mogilalos

Each of these will be carefully studied.

a. Psellos.

Liddell & Scott (12) translate this word as "Faltering in speech, like a child (Arist. Historia Animalium, 1, 11, 11;) b) passive of words inarticulate, obscure, unintelligible."

The Aristotle quotation referred to was translated by Thomson (7):

"...those who mumble and who lisp" (psellos, traulos), and a footnote states: "Psellos seems to mean 'to slur over a letter' and traulos to misplace or mispronounce it, as for instance, in speaking through the nose. (Persius, 1.33)....traulos = balbus, Lucret. iv., 1160, cf. Cic. de Orat 1.61."

The word is used once again in a famous passage of Aristotle, Problems, XI, 30. In this passage Forster, (8)(quoted, infra, p. 79) translated psellos as stammering; likewise Psellites. Forster evidently did not have the present meaning of "stammer" in mind, however, because a later translation by Hett (9) showed the word to mean defective articulation, as did Thomson (supra, p. 70). Furthermore, the passages quoted (infra, p. 71) in connection with the Greek word traulos, all show psellos and its variants to mean some form of poor articulation, rather than stammering.

b. Traulos

Liddell & Scott (12) translate this word as "Mispronouncing letters, lisping, stammering. Hippocrates, Aphorisms 6,32, etc...esp. of children, Herodotus 4,155.[1] cf. Aristotle... Problems 902^{b} 22."

[1]This shows that the translation of the Herodotus passage, supra, p. 67, is incorrect for traulos, which was given as stammering.

Thomson (supra, p. 70) confirmed this meaning of traulos.

In Aristotle's Problems, XI, 30 (cited supra, p. 70 by page no. 902b22, and infra, p. 79), traulos is translated as lisping (also traulotes) in both the Forster translation (8) and the Hett translation (9).

Hunt identified it with the Latin blaesitas (61), and translated it as "Stammering" by which he specifically meant defective articulation. Again (61, p. 63) he wrote:

> "traulismos seems to mean...rhotacism; psellismos...lisping. 'Psellos,' says Hesychius (factum a sono - an onomatopoeia) 'is a person who cannot properly pronounce s -- a lisper.' The Romans called a lisper blaesus."

Aristotle wrote in De Partibus Animalium, (68, II, 17):

> "Their speech is indistinct and lisping[1] which is due to the fact that they cannot produce all the sounds."
> (the words are psellidzontai and traulidzoysi)

Hunt (59, p. 16) noted Hippocrates' use of trauloi in the Aphorisms (6,32), translating the passage:

> "Stammerers (meaning defective articulators) are much subject to long continued diarrhoea,"[2]

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[1]Translated identically by William Ogle, M.A.,M.D.,F.R.C.P. (69)

[2]Fifty years ago Decroly and Rouma doubted that Hippocrates had ever seen a stammerer, writing (58, p. 199):
"Hippocrate ne distinguait certainement pas le bégaiement du bredouillement, et nous avons tout lieu de croire, qu'il aurait appuyé son diagnostique sur l'observation de quelques brédouilleurs seulement."
(Free trans:)
"Hippocrates certainly didn't distinguish stammering from jabbering (cluttering?), and there is every reason to believe that he based his diagnosis on the observation of only a few jabberers (clutterers?)"

Galen's comment on this paasage was translated by R. Charterius Vindocinensis, who equated (63) traulizere with balbutire linguae, clearly referring to poor articulation, e.g., inability to pronounce such letters as t, r and l. Balbutio as a verb is used to describe drunken speech, (since so much moisture is in the brain), and balbis refers to lisping throughout this passage.

Callias Comicus also equated traulos with the Latin blaesus, to lisp. (62, Fr. 19, p. 697).

Finally, in regard to the Greek usage of these two words, Avicenna, the 10th Century Arabian physician wrote (10):

> "Intelligere eos videtur quos traulous seu psellous (in Greek letters) Graeci, nostri balbos et traulos vocant, qui t et r libere proferre nequent."
>
> (Trans. by T. Wright, E. U. Lib.):
>
> "It seems to mean that those whom the Greeks called traulos or psellos, we call "balbos" and "traulos" who cannot say "t" and "r" freely.

Hence it is clear that neither psellos or traulos meant "stammer" in the present use of the word, but rather different types of dyslalia or poor articulation.

c. Batalos, and derivatives.

This word is of greater interest than the previous two, because of the translation of Battus as "The Stammerer" in the passage cited from Herodotus, supra, p. 67. Liddell & Scott (12) translate it as

> "proktos...; II, a nickname given to Demosthenes (with a variant of Battalos,)"

But the quotation from Sigonius (In Priapo), supra, p. 65, proves that Demosthenes' defect was a simple dyslalia, rather than stammering or stuttering. Hence batalos, if applied as a nickname to Demosthenes, could not have meant the affliction under consideration here.[1]

Battaridzo, is given by Liddell & Scott (12) as

"To stammer...(onomatop. word)"

The assumption of onomatopoeia must surely be questioned. The syllables "bat" and "tar" repeat the sound of t in different positions, so as to make a continuous "t" sound, rather than repetitive ones. The English word stutter is truly onomatopoeic; likewise Portuguese "gaguejar;" Italian "tartagliare," etc. Battaridzo has been found in only a few contexts. It occurs in Plato's Theatetus, 175 D (11) where, upon being asked a very difficult question for the first time,

> "a man...stammers (battaridzo) and becomes ridiculous."

The meaning is clearly figurative, referring to occasional hesitation, rather than to true stammering which is habitual. A footnote in the text equates the word with Barbaridzo which the new Liddell & Scott (12) translates as

> "a. To behave or speak like a barbarian;
> b. speak broken Greek, gibberish"

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[1] In any case, there is some doubt as to whether the nickname was given to Demosthenes because of any speech defect at all! At least Plutarch doubted this, writing of the orator (79, IV):

> "...and his opprobrious surname of Batalus is said to have been given him by the boys in mockery of his physique (soma)" -- (our emphasis)

Cicero, whose Greek was excellent, used the word battaridzo, in the following sense (5, VI, 5):

> "From the stuttering hesitation of my wife's freedman in our meetings and talks, I infer that he has been cooking his accounts a little in the matter of the sale of the Grotonian's goods."

This usage implies the kind of hesitant, halting speech of an inferior suspected of embezzlement -- but not the speech of a chronic stammerer.

Lucian used the term thus (16, 27):

> "...but he (Timocles) utterly lacks the courage to speak before a crowd and his language is vulgar and half-foreign, so that he gets laughed at for that reason, when he appears in public, for he does not talk fluently, but stammers (battaridzon) and gets confused, especially when in spite of these faults, he wants to make a show of fine language."

This context suggests the speech of a poor speaker, trying to be eloquent beyond his capacity, and suffering from the self-conscious awareness of his inadequacy; but it scarcely describes the performance of a chronic stammerer. Indeed, the fact that the speech deteriorates on the speaker's platform is rather a contra-indication of true stammering, which often enough improves under these circumstances.

Battalogio, another derivative of batalos, is given by Liddell & Scott (12)

> "equiv. of battaridzo, to babble, use vain repetitions,"
> also -- "to speak stammeringly, say the same thing over and over again."

No context has been found for the use of battalogio, but if it is an equivalent of battaridzo, it cannot mean stammering in the present sense, but either babbling or halting, hesitant speech.

d. Barbarus, and derivatives.

This word offers an attractive possibility. It looks onomatopoeic in origin, and might be taken at first glance to have meant stammering or stuttering speech. Liddell & Scott (12), however, give it as

"Barbarous, non-Greek, foreign"[1]

and it is evident that any application to speech is secondary and figurative.

Barbaridzo has already been shown (supra, P. 73) to mean "speak gibberish."

Barbarismos in Liddell & Scott (12) means

"use of a foreign tongue, or one's own tongue amiss"

while

Barbarophonos (ibid.) means

"Speaking a foreign tongue."

Lewis & Short (13) translate the Latin word balo thus:

"equiv. of (belo, a Var.) Root (bal= bar; Sanscr. barh, barrire, Greek, barbarus, cf. bleche, ebrache;) to bleat, to talk foolishly."

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[1] cf. Snaith's notes on Isaiah, (76, 28, 11):

"...'stammerings of (lip),' i.e., in a foreign tongue; cf. the parallel phrase and the Greek barbaros..."

Hence it is clear that barbarus and its derivatives are not phonetically onomatopoeic in origin (with a meaning of stammer or stutter); if onomatopoeic at all, these words were based on the "ba-ba" babbling sound of foreign tongues. Furthermore, the overwhelmingly predominant use of the word is as a description of foreignness, rather than of speech at all. Finally, it must be noted that the English words "stammer" and "stutter" occur far more frequently in English in the sense of true speech affliction, rather than in any other figurative sense. It may therefore be inferred that barbarus, also, would occur far more frequently in Greek texts, in the sense of "stammer" or "stutter," than in any other sense, were "speech affliction" its original meaning. This, however, is not the case.

e. Isch(n)ophonos

The discussion has now reached the most interesting word of all those which refer to the speech defects of Greek civilization. Liddell & Scott (12) give two different words:

> "Ischnophonia, hesitancy of speech - Hippocrates, Epidemiorum, 2,5,1; Aristotle, Problems $895^{a}16$, $902^{b}25$ (X,40 and XI,30).
>
> Ischnophonos, thin-voiced, weak-voiced...II. Having an impediment in one's speech,"

although it does not specify any particular kind of impediment. They also state (ibid.) that the Greeks connected ischnos (weak) with ischo (to check); this may be so, but

the fact is that the Schweighhauser version of Herodotus is the only place that has been found which includes the word ischophonos (i.e., without the n), whereas many quotations have been found (infra, p. 77 et seq.) which give the word as ischnophonos (literally, "weak speech.") There is no reason to believe that when the Greeks combined the word ischo, to check, with phonos, voice, they saw fit to insert an n for the sake of easier pronounciation. Far more plausible is the belief that the Schweighhauser version, being the only place found where ischophonos occurs,[1] is an error, and that the n was inadvertently dropped. In this case, the word ischnophonos throughout all the quotations cited infra. would have the literal meaning of "weak speech," and indeed upon analyzing the contexts, it seems that this is what was intended.

Aristotle, Problems, X, 40 (8) wrote:

> "...and hesitancy in speech (ischnophonos) as its name implies is simply being unable to explain one's meaning continuously."

The Hett version (9) of the identical text reads, however:

> "Stammering, as the derivation of the word shows, is nothing except an inability to speak continuously,"

and gives a footnote that "ischnophonos is from ischano, a form of ischo, to check." In fact, the Hett translation (ibid)

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[1]This is the version used by the Loeb Class. Lib., (6); the same text in the edition by J. Williams Blakesley, (19), uses ischnophonos.

of ischnophonos differs from the Forster translation in all the passages cited infra.: Hett invariably translated the word as "stammering," while Forster invariably wrote "hesitancy in speech."

In Aristotle, Problems, XI, 35 (8):

> "Why is it that those who hesitate in their speech (ischnophonos) cannot speak in a low voice? Is it because they are hindered from using their voice by some impediment? Since, then, there is not equal force exerted and similar movement set up when there is some impediment to the movement and when there is none, a violent effort is required. Now the voice is a movement, and those who use more force speak louder; and so since they have to force the hindrance out of the way, those who hesitate in their speech (ischnophonos) must necessarily speak louder."

It is hard to believe that Aristotle referred to true stammering in this passage, since stammering has never been associated with great volume of voice production. Contrary to some belief (v. supra, p. 57) even as low volume as a whisper is occasionally sufficient for stammering. A case history of Diefenbach is described as far back as 1841 (14, p. 11):

> "And when he whispered he stuttered as much as when he spoke loud or shouted."

Returning to Aristotle, Problems, XI, 36 (8) --

> "Why do those who hesitate in their speech (ischnophonos) become worse when they are nervous but better under the influence of drunkenness? Is it because their condition is a state resembling apoplexy of some interior part of the body which they cannot move and which by its coldness, hinders their speech? Wine, then, being naturally hot, tends to get rid of the coldness, but nervousness creates coldness; for it is a form of fear, and fear is a chilling condition."

There is no evidence to show that alcohol (v. supra, p. 57) reduces the quantity or quality of true stammering and stuttering; on the other hand, ordinary hesitant speech, characterized in English by the use of "er, er" is most definitely improved under the influence of discreet quantities of alcohol, which tends to reduce self-consciousness, inhibitedness, and hence nervous, "hesitant" speech. This is the difficulty Aristotle was doubtless describing, then, and not stammering.

In a classic passage, Aristotle defined the speech defects of Greece, once and for all -- Problems, XI, 30 (8):

> "Why do children hesitate (ischnophonos) more in their speech than grown men? Is it because just as when we are children, we always have less control over our hands and feet, and at a still earlier age, cannot walk at all, so the young cannot control their tongue? Now when they are quite small, they cannot speak at all, but can only make sounds like the animals because they lack control. This is the cause not only of hesitancy (ischnophonos) in speech, but also of lisping (traulos) and stammering (psellos).[1] Lisping (traulotes) is due to the inability to master a letter -- not any letter, but some particular one. Stammering (psellites)[1] is due to the dropping out of some particular letter or syllable; hesitancy (ischnophonos) is due to the inability to join one syllable to another sufficiently quickly. All three are due to want of power; for the tongue is not an efficient servant of the intelligence. The same thing occurs in those who are drunken and in the old; but always to a less extent than in children."

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[1] As shown supra, pp. 70-71 psellos did not mean stammer in the present sense.

The main point to note here is that ischnophonos, defined supra, p. 77 as being "unable to explain one's meaning continuously," is now defined as "the inability to join one syllable to another sufficiently quickly" -- the idea of slow, hesitant, or nervous speech being common to both definitions. Above all, a point which will receive greater emphasis later: in no way has the idea of repetition of sounds been mentioned, nor the idea of a total blocking of speech!

If the above commentary is not sufficient to justify concluding that the Hett translation (9) of ischnophonos as "stammering" is inaccurate, it may be desirable to study the context in which the word was used by authors other than Aristotle. The Jewish poet of the 2nd Century B.C., Ezekiel (not the prophet), wrote in Exagoge (translated from Greek into Latin, 15, 11, 113-115):

> "I am not fluent in speech, my tongue is impeded (ischnophonos) so that I cannot speak before the kind." (free trans.)

For ischnophonos, the Latin word given is gracilis. The Latin to English Dictionary of Lewis and Short (13) translates gracilis

> "thin, slight, slender...II. of style, simple, plain, unadorned."

Another "non-stammering" use of ischnophonos is found in Hippocrates, Book 1, 19 (17):

> "...and of the patients there died (in a plague) chiefly striplings, young people, people in their prime, the smooth, the fair-skinned, the straight-haired, the black-haired, the black-eyed, those who had lived recklessly and carelessly, the thin-voiced (ischnophonoi), the rough-voiced, the lispers (trauloi) and the passionate."

Hippocrates made two more doubtful uses of ischnophonos in the following passage, Epidemiorum, (60, 2, 5):

> "Persons who stutter (ischnophoninen) are freed from their impediment by varices; the impediment returns if no varices appear."

> "Tall, baldheaded stammerers and stutterers (trauloi, ischnophonoi) are good."

The question is, did ischnophonos really mean "stutter" in the above passage? Hunt was not sure of this, for in the 3rd (1861) edition of his book (61) he translated the above uses of the word as

> "those who have impediments in their speech"
> "those who hesitate in their speech,"

respectively. He further noted in the 3rd edition (op.cit., p. 63):

> "It would thus appear that translators and commentators have been much perplexed as to the proper meaning of ischnophonia, psellismos, battarismos, traulismos, etc."

Plutarch used ischnophonos in Moralia, Lives of the Ten Orators, Isocrates, 2,837a, saying of that orator (18):

> "...he kept away from political affairs since he had a weak voice (ischnophonos) and had a timid disposition."

The usage of ischnophonos by Hippocrates, in Epidemiorum, 2, 5, cited supra, p. 81, was translated into Latin by Charterius (60) as "exili voce" or "those of a thin or meagre voice." This same Greek-to-Latin translator of Galen equated (70, IV, 9) ischnophonos with tenuem vocem or "thin-voiced."[1]

All of the above non-aristotelian evidence confirms that ischnophonos did not mean "stammering." But for final proof, a use of the word in an actual case history has been found. The Greek physician Oribasius (325-403 A.D.) who was physician to Emperor Julian (The Apostate) described (20, III, 44) a case whom he treated, as ischnophonos, in the following terms, translated into French:

> "Ainsi, un certain rhéteur de mon pays, qui bégayait[2] (ischnophonos) assez fortement, tenait beaucoup à etre guéri: m'étant donc aperçu que lorsqu'il commençait à prendre la parole, il éprouvait surtout de la difficulté, mais que, dès qu'il avait réussi une fois à parler, ne fût-ce qu'un seul mot, il liait admirablement bien son discours, je lui donnai le conseil de tendre modérement la poitrine lorsqu'il commençait à parler, pour pousser plus tard cette tension, s'il le voulait, au degré le plus intense. Le rhéteur me répondit que je lui donnais là un excellent conseil, puisque c'était surtout quand il haranguait le peuple, quand il plaidait, ou quand il s'exerçait, qu'il éprouvait de l'embarras, tandis qu'il commençait facilement quand il se reposait et qu'il parlait avec sa voix tout à fait ordinaire."

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[1] He also translated trauloi and pselloi "balbis blaesisque." Since these words meant forms of defective articulation, supra, pp. 70-72, this substantiates the argument that neither balbus nor blaesus meant "stammer" in Latin.

[2] The argument here is that to translate ischnophonos as bégayer is erroneous.

The main point in this lengthy case history, for the purpose here, is to show that this orator, suffering as he did from ischnophonos, experienced difficulty only when he "harangued the people or pleaded a case or practiced," while he began to speak easily enough when using his ordinary voice. These circumstances are precisely the opposite of those customarily associated with true stammering, which takes place nearly all the time in the ordinary speaking voice of the stammerer (or at least intermittently), but is often known to disappear under conditions of public speaking, acting a role in a play, etc. Ischnophonos, as used by Oribasius, actually meant hesitant, nervous speech. The case cited is clearly that of a speaker who becomes nervous in front of an audience and not one of a stammerer at all.

Hunt added this word of caution in regard to three of the words already discussed (59, p. 18):

> "The reader will see that in translating the above passages, I have supposed ischnophonia to mean stuttering; traulotes, stammering; and psellotes, lisping. This appears to me to be the most suitable to the meaning of the authors; but at the same time I do not assert that they were absolutely used in this sense." (our emphasis)

Only after this analysis can a true critical evaluation be given to the following passage from a recent book by Rumsey (73, p. 8):

"Herodotus, 484-325 B.C., the Greek Historian often called 'the Father of History,' described stammering as ischophonia[1] from ischo (I check or stop) and phonos (voice). So the word means -- 'the checking of the voice.' Equally accurate today as a description of a stammer.

Aristotle (384-322 B.C.) -- the Greek Philosopher and pupil of Plato, described stammering as ischnophonia from ischnos (light, thin or meagre) and phonos (voice). So the word means 'light-voicedness.' Again equally accurate today as a description of a stammer.

These two men from the dim past were more than great: their reputation is as great today as it was 2,000 years ago, so what they saw, heard and said is still worth the most careful consideration, so ---

Listen to any stammerer and you will notice that his voice is weak, thin and meagre.

Watch any stammerer and you will see that his mouth continues to shape letters and words but you will hear no voice because it has stopped."

Apart from the fact that the so-called"weak-voicedness" of stammerers is specifically refuted by Aristotle (supra, p. 78), as well as by all competent modern observers, it has been shown that the above passage of Rumsey is in no way justified by the facts. The actual usages of isch(n)ophonos show that the affliction called stammering was never described by these words.

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[1] Only in the Schweighhauser version of the text (6), cited supra, p. 77.

Substantiating this opinion, Foesius (82) analyzed Hippocrates' usages of ischnophonos exhaustively, and concluded that the word indeed had two meanings:

> "Ex. quib. efficit ischnophonous a leptophonois differe, et duplicem esse ton ischnophonon notionem. Modo enim exili et gracili voce praeditos significant, modo etiam eos qui lingua haesitant, nec explanatiam habent vocum impressionem, quod de balbis dixit M. Tullius, Academic. libr. 1. Ischnophonos quoque leptophonos Hesychio exponitur."
>
> (Trans. by T. Wright, E. U. Lib.):
>
> "From which it appears that ischnophonoi differs from leptophonoi and that there is a double idea of ischnophonoi. Sometimes it means those who are endowed with a feeble and a meagre voice, and sometimes it means those who hesitate with their tongue and do not have articulate pronunciation, as M. Tullius says about lispers in the Academica, book 1. Ischnophonos is also called leptophonos by Hesychius."

It is doubtful that a word which meant "stammer" in the present sense, would also be used to mean "feeble or meagre-voiced." Foesius' reference to hesitancy is based only on the passages already cited in Aristotle. Furthermore, Foesius also wrote (ibid.) that Plutarch described Demosthenes as ischnophonos. This description has not been found, but Plutarch's description of Demosthenes' speech defect was cited (supra, p. 66); hence if Plutarch ever did apply ischnophonos to Demosthenes, he clearly meant something other than "stammerer" by the word, since he well knew that Demosthenes was actually a lisper.

The text cited by Foesius from Cicero is (80,I, 20):

"...in lingua etiam vocum impressionem"

with the editor's note:

"impressionem: the word implies the clear articulation of each particular sound."

The same writer, Reid, translated this line thus (81,I,20):

"...in the tongue, moreover, a lucid intonation of individual utterances."

If, apart from "weak-voiced," as Foesius wrote, another meaning of ischnophonos is to lack a "lucid intonation of individual utterances," this is additional evidence that the word did not mean "stammer."

f. Mogilalos.

Another word for speech impediment exists in Greek - mogilalos - which Liddell & Scott (12) define as

"having an impediment in one's speech."

Because of the paucity of references given for this word, and also the fact that Aristotle did not mention it in his classification of speech disorders, it may be assumed that this is a rather late word, found only in such late Greek scripts as Isaiah, Mark, Ptolemeus, Aetius. None of these used mogilalos in a way which suggests anything more than general speech impediment of undefined nature. The reference in Isaiah is translated in the King James Bible (1611) - (45, 35, 6):

"And the tongue of the dumb shall sing."

The usage in Mark is in the following passage (op. cit., vii, 32):

> "And they bring unto him one that was deaf and had an impediment in his speech." (mogilalon)

A most useful comment on this passage is to be found in Cook's Commentary on The Holy Bible, (83, I, Mark vii, 32):

> "had an impediment....)
> The Greek word implies that the man could scarcely speak. Such a condition is an ordinary result of long-continued deafness; and it may be inferred, not that he was deaf from birth, in which case the removal of his deafness would scarcely have been followed by fluent utterance, but that hearing had been totally lost, as is frequently the case after acute attacks of fever, and that when it was restored, the man was enabled to speak correctly. ...Weiss is not borne out by usage in rendering mogilalos as speechless."

This is a rather convincing argument that mogilalos is another Greek word which could never have referred to actual stammering.

Aetius (22) equated mogilalos with ancyloglossis (v. infra, p. 98), saying:

> "Those who are affected in this way (ancyloglossi) speak with difficulty, which is why they are called mogilali by the Greeks."

If the word refers to any particular defect, therefore, it is probably"tongue-tie," rather than stammering. Mercurialis (72, Ch. 8, De Balbutie, p. 99) also used mogilalos in this sense.

Hence it has been shown that no Greek word - neither psellos, nor traulos, nor batalos, nor barbarus, nor isch(n)-ophonos, nor mogilalos, nor any of their derivatives - meant stammering in the present sense. The evidence, therefore, that the condition was known in the civilization of Ancient Greece has thus been shown to be inconclusive, at best.

3. Evidence that the Romans Stammered

Only two Romans were described by Lombroso as stammerers (supra, p. 64): Virgil and Cato of Utica; Suetonius alleged that Claudius stammered also (v. infra, p. 94). The Encyclopedia Britannica (11th edition) makes no reference to Virgil's speech defect, merely stating that he "studied rhetoric." With regard to Cato of Utica, the

Encyclopedia Britannica (op. cit.) again makes no mention of any speech defect. Oman, moreover described Cato of Utica thus (21, p. 208):

> "...he taught himself a kind of oratory which as we are told, differed much from the florid style of Hortensius and the careful elaborations of Cicero, for 'there was neither heat nor artificiality in it -- all was rough, strong and sensible.' Yet he had a clear exposition which served him as well as the studied eloquence of others."

Oman made no reference to Cato of Utica's alleged stammer.[1]

The Romans only had three words which referred to speech defects:[2]

a. Balbus and its derivatives
b. Titubo " " "
c. Ancyloglossi

a. Balbus and its derivatives.

The Latin translation of Avicenna (10), cited supra, p. 72, identified the Greek traulos with the Latin balbus. Lewis & Short (13) curiously translate balbus as stammering, stuttering -- but then give a number of uses of the word, all of which suggest lisping, from the context:

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[1] Lombroso seemed to be surprisingly incorrect. Very few of the "greats" whom he alleged to have stammered, actually did so; e.g., hê claimed Cardan, the 16th Century mathematician as a stammerer; but the translation of Cardan's autobiography by Steiner (24, p. 47) contradicts this:

> "Not only have I always distinguished myself, moreover in this gift of easy delivery, but I have instructed others therein." (speaking of his debating and lecturing excellence)

[2] Blaesus has not been discussed since it is universally accepted as having meant "lisping."

> "Balbus, a, um (kindr. with balo, cf. Sanskr, barh, barrire and barbarus), stammering, stuttering. (opp. planus, speaking fluently, without impediment): balba loqui non quit? Traulidzoi Does she (the loved one) stammer, can she not speak distinctly? (then he says) she lisps, Lucr. 4, 1164: Demosthenes cum ita balbus esset, ut ejus ipsius artis, cui studeret (sc. rhetoricae) primam litteram (sc. r) non posset dicere..."

It has already been noted (supra, p. 66) that Cicero knew exactly what Demosthenes' speech defect was: inability to pronounce the letter r. Hence the quotation cited from Cicero in Lewis & Short (supra.) describing Demosthenes as "balbus" is additional proof that this word did not mean "stammer."

The following, furthermore, are existing translations of some of the references given by Lewis & Short (13) which use the word balbus:

Horace, Epistles, (26, 2, 1, 126):

> "The poet fashions the tender lisping lips of children."

Horace, Epistles, (op. cit., 1, 20, 18):

> "...that stammering age will come upon you..."[1]

Horace, Satires, (op. cit., 2, 3, 274):

> "baby-talk."

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[1]Obviously figurative, since all ages stammer, and this refers to the early hesitant speech of children.

Cicero, Letters to his Friends, (27, 2, 10, 1):

"pardon my lisp." "my lisp is gone."

Tibullus, verba, 2, 5, 94 (28), (Note on p. 136):

"The old man lisps like the child."

Attention should also be called to the footnote (supra, p. 82) showing Charterius' translation of Galen's use of trauloi into the Latin word, balbis.

With regard to balbutio, Lewis & Short (13) are equally self-contradictory, Again the word is translated as "to stammer, stutter," and again the references given show that the word, when used, meant something quite different from the present meaning of "stammer or stutter:"

> "Balbutio (-uttio), ire, v.n. and a. (balbus). I. To stammer, stutter. Balbutire est cum quadam linguae hesitatione et confusione trepidare, Nonius Marcellus, a grammarian of app. 280 AD. Celsus, 5, 26, 31."

The quotation from Nonius Marcellus in no way identified balbutio with true stammering, but rather with "trembling along with a certain hesitation and confusion of the tongue." If there is any doubt that stammering was not in Marcellus' mind, reference to the original text (29, p. 81) dispels it:

> "Balbutire est cum quadam linguae haesitatione et confusione trepidare. Cicero, Academicorum, Liber IV: 'Plane ut supra dixi Stoicus perpauca balbutiens.' Et Tusc. Liber V: 'Me quidem auctore etiam peripatetici, veteresque academici balbutire aliquando desinant apertque et clara voce audeant dicere beatam vitam in Phalaridis taurum descensuram.'"

Fortunately, the two references to Cicero made here by Marcellus are translated into English, and can be studied in their contexts, so that we may know what Marcellus had in mind when he defined balbutire. Cicero, Academicorum, (30, IV, Fr. 31):

> "He is clearly, as was described above, a Stoic who on a few points gives an uncertain sound." (our emphasis)

and Tusculian Deputations, (31, V):

> "For my part, I should say, let the Peripatetics also and the Old Academy make an end some time or other of their stuttering, and have the courage to say openly and loudly that happy life will step down into the bull of Pharis."

Here, of course, the use of "stuttering" is clearly figurative, and the meaning is obviously that of "hemming and hawing."

As for the reference to Celsus in Lewis & Short, (supra, p. 90) this is translated as follows (22, 5, 26, 31):

> "...others, though in their right minds, stammer so that they can scarcely explain their feelings."

Analysis of the context in which this sentence appears, how-

ever, shows that it is in a lengthy passage which does not describe speech at all, but Gangrene! The "stammer" which Celsus obviously described, therefore, is not at all the affliction studied here, but rather the delirious or distorted speech of a gangrene-sufferer, in considerable pain and fever.

In fact, while absolutely no quotations have been found in which the use of balbus even suggests true stammering, all which have been found are cited, and all mean either lisping speech or hesitant, nervous speech, the latter meaning given only by the later writer, Marcellus. (supra, p. 90) Other corroborative evidence that balbus did not mean true stammering may be found in the Dictionnaire Etymologique of Ernout and Meillet (33) where balbus is said to be derived from the Greek word barbarus. This word was shown (supra, p. 76) to have chiefly referred to foreignness, the meaning of unintelligible speech being merely secondary and derived. If balbus was derived from barbarus, there is no reason to believe that it was given, by the Romans, a special meaning of "stammer or stutter" (in the present sense) which the Greeks never had for barbarus.

While Souter's Glossary of Later Latin to 600 AD (34) does not mention balbus at all, balbutio is given as a

substantive noun with the meaning of "stumbling," (used about the 5th or 6th Century) -- and does not refer to speech at all.

b. Titubo and its derivatives.

A word that seems to offer an attractive possibility as referring to true stammering is titubo, titubare, and its derivatives, due to the apparently onomatopoeic nature of the word. Yet analysis shows that this word is really not phonetically onomatopoeic in origin. Lewis & Short (13) translated the word as

"Stagger, totter, reel"

and give a host of references to gait, before mentioning its single, figurative use

"titubat lingua, stammers, stutters."

The reference cited for this usage is Ovid, Ars Amatoria, 1, 598 (46):

> "Fac titubet blaeso subdola lingua sono"
> "(As real drunkenness does harm, so will feigned bring profit)...Make your crafty tongue stumble in stammering talk."

But this use is evidently figurative, being advice to a lover to hesitate or stumble (deliberately) in his advances.

The derived noun, titubatio is again defined by Lewis& Short (13) as primarily meaning

"staggering, wavering,"

and an example of this original meaning is shown in Seneca, Epistulae, (47, 95, 16):

> "Et semper qualis in ipsa ebrietate titubatio"
> "And a reeling gait just like that of drunkenness"

Lewis & Short (op.cit.) also give a tropical or figurative use for titubatio "aut offensio" (stumbling). One use is shown as a reference to speech in Macrobius, Saturnalia, 7.6,9. The French translation of this word (48) shows this usage to be a reference to drunken speech, rather than stammering:

> "Idem corporis torpor ambobus, eadam linguae titubatio. ...Puis, c'est le même engourdissement du corps, les mêmes bégaiements."

Lewis & Short list another noun, titubantia to mean the same as its variant, titubatio -- "staggering, wavering," but give two references for its use by Suetonius, which are worth examining. The first is in his life of Claudius - (49,30), which listed Claudius' physical defects:

> "But when he walked his weak knees gave way under him and he had many disagreeable traits both in his lighter moments and when he was engaged in business; his laughter was unseemly and his anger still more disgusting, for he would foam at the mouth and trickle at the nose; he stammered besides (praeterea linguae titubantia) and his head was very shaky at all times, but especially when he made the least exertion."

The tone of this description is so subjective as to make the allegation of "stammering" somewhat unreliable; in any event no description of Claudius' speech defect is actually given, and no light is therefore thrown on the true meaning of linguae titubantia.[1] The Encyclopedia Britannica (11th edition) makes no mention of Claudius' alleged stammer.

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[1] In another section of the same word, however, (op. cit., IV, 6) Suetonius described Claudius' handicap in different terms, which do not suggest stammering:

"Nam qui tam asaphos loquatur, qui possit cum declamat saphos dicere quae dicenda sunt, non videt."

(free trans):

"How in the world anyone who is so unclear in his conversation can speak with clearness and propriety when he declaims, is more than I can see."

Tacitus noted that (77, Vol. II, XIII, 3, 6):

"Nec in Claudio quotiens meditata disseret elegantiam requieres."

A footnote to this text says:

"(Nor) would you miss (note any absence of) literary skill. Augustus noted that Claudius as a youth spoke in a surprising degree better than he talked."

In any case, it is almost impossible to determine from the available evidence whether Claudius really did or did not stammer. To this effect, Scramuzza wrote (78, p. 35):

"The confused data handed down from antiquity and the limitations of the psycho-medical sciences make it difficult to draw a picture of Claudius at once satisfactory to the historian, the physician and the psychologist."

But another use of titubantia by Suetonius (49) is more difficult to understand. This occurs in his Life of Vitellius, 6, in the passage describing a son of Vitellus:

> "titubantia oris prope mutum et elinguem"
> "...stammered so that he was all but dumb and tongue-tied."

This reference might refer to a very severe block-stammer. Unfortunately the extremely figurative style of the author, who resorted continually to the uses of hyperbole and metaphor, rather than to the careful, scientific approach of Aristotle, makes the quotation somewhat unreliable. Furthermore, if this use of the word titubantia (oris) refers to true stammering, is it not reasonable to expect that many other references to the condition would be found among other authors? This is not the case, however.

For while Lewis & Short (13) and Goelzer's Nouveau Dictionnaire Latin-Francais (50) both gave a great number of uses of titubo and its derivatives with a meaning of gait, both gave only a few references to speech, and of these few, only those from Suetonius (supra, 94-96) can possibly refer to stammering. This leads to the hypothesis, then, that far from being phonetically onomatopoeic, titubo's original meaning is that of staggering gait,

and that its few uses in a context of speech are figurative. Indeed Goelzer (ibid.) stated that the speech references are "par extension," giving as an example Cicero's use in Flaccus, 10, 22:

"testes, si verbo titubarint,"

which Goelzer (op. cit.) translated:

"Les témoins, s'ils hésitent sur un mot..."

Further evidence that titubo never referred to the condition studied here is in Souter's (34):

"titubatio, hesitation, (in speech) stammering"

but the only context he found for the word was in Macrobius' (cited supra, p. 94) use of it to mean drunken speech (5th Century).

Ernout & Meillet (33) translated titubo thus:

"tituber, chanceler[1] (sens physique et moral) broncher[2] bégayer, hésiter. Se dit frequemment de la langue, cf. Cic., Flacc., 10, 22... etc. Même image que dans peccare[3]..."

To sum up the discussion of titubo, it may be concluded that the overwhelming mass of evidence shows that it was only rarely used in reference to speech, and that hence it

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[1] to stagger

[2] to stumble

[3] to err, to sin

is not phonetically onomatopoeic in origin; furthermore, the fact that, after an extensive search, only one author can be found who used titubantia in a sense that could have meant stammering (Suetonius) suggests that this could not have been his real meaning, or else the usage would be found elsewhere.

c. Ancyloglossis

The Greek physician Aetius (6th Century A.D.) used this word in his Tetrabilion, (22, 2, iv, 36):

> "De Ancyloglossis et qui vix loqui possunt: (About those who are"ancyloglossi" and can hardly speak) (trans. by T. Wright, E.U. Lib.)
>
> "Some people are "ancyloglossi" from birth, but others from some illness. They are so from birth when the lower membranes by which the tongue is supported are harder and mutilated by nature. From illness, however, "ancyloglossis" and curvature of the tongue occur, after an ulcer and when a hard scar is left under the tongue."

Liddell & Scott (12) do not give this word, but translate ancylosis as

"(medic.) stiffening of the joints,"

and the prefix, ancyl - connected with glossis (tongue) might therefore have meant "stiffening of the tongue." If there is any possibility that the word could have referred to true stammering, however, it is dispelled by

Adams' translation of Paul of Aegina, the Greek physician of the 7th Century A.D. (23, II, 6, 29):

> "The affection called ancyloglossis is sometimes congenital, the membrane which fastens the tongue being harder and more constricted than ordinary; but sometimes it is acquired from some hard cicatrix formed under it by ulceration."

Hence ancyloglossis clearly referred to the condition described by the lay English word "tongue-tied" -- and not to stammering at all. Hunt (61, p. 64) agreed, writing:

> "Ancyglossis - tongue-tied, are those whose tongue is attached naturally by the fraenum, or accidentally from indurated cicatrices."

There is one word which can not be treated as either a Greek or a Roman word, since it was used by both civilizations: bambalio, and its variants. Lewis & Short (13) show it as

> "Bambalio (capital B): (cf. (Bambal, to stammer - Greek); bombalo; Eng. bumblebee. -- Bambalion (Gr.),"

giving two references for the word as a proper name only. These two references are to Cicero and Dio. Cicero (51, 2, 36, 90) applied the name to Antony's father-in-law in the 2nd Phillipic -- a footnote confirmed that

> "Bambolio was the nickname of M. Fulvius,"

and again in the 3d Phillipic (52, 3, 6, 16):

> "And yet the one was a most pure and excellent woman, whose father, Marcus Atius Balbus,* an especially worthy man, was an ex-praetor; your wife...had for father a certain Bambalio, a person of no account... who, by the hesitancy of his speech and the dullness of his mind** got a name by way of a jibe.[1]"
>
> [1]Footnote in text: "Bambalio (from Bambaina) -- Stammerer."

This is virtually the only use of Bambolio in Latin, for Dio's*** use of the word (or rather the nickname) is simply a reference to the above usages. Thus, (53, XLV, 47) the historian described Cicero's speech against Antony:

> "...brought back his fellow-gambler, Lenticulus, who had been exiled for his unprincipled life, and who cherishes Bambolio.[1]"
>
> [1]Footnote in text: "Bambolio signifies 'Stutterer.'"

Again, referring to Calenus' reply to Cicero, Dio wrote (op. cit., XLVI, 7):

> "Yet how much better it would be for you, too, to have been born Bambolio -- if this Bambolio really exists - than to have taken up such a livelihood in which it is absolutely inevitable that you should either sell your speech on behalf of the innocent, or else save the guilty also!"

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*Referring not to the Stammerer, M. Fulvius "Bambolio," but to another man altogether. Hence, note that Balbus as a family name did not refer to speech.

**Propter hesitantiam linguae stuporemque cordis"

***Though listed in Lewis & Short, this author wrote in Greek, not Latin.

And again, (op. cit., XLVI, 28):

> "And you, Cicero, I advise not to wax bold with the boldness of a woman, nor to imitate Bambolio."

The inferences which must be drawn from the two Roman uses of Bambolio are that the word is not an actual Latin word at all, but a Greek word which was applied to a certain M. Fulvius by Cicero, who was in turn cited by Dio (in Greek.[1]) Hence it was not a popular Latin word meaning "to stammer" -- and to understand its meaning, we must turn to the Greek usages. Examination of these suggests the incorrectness of the above passages in identifying Bambolio with "stammerer" and "stutterer."

Liddell & Scott (12) listed only the following:

> "Bambaino - onomatop. word, chatter with the teeth ilias, 10, 375; stammer, Bion Bucolicus (2d Cent. BC) Fragm't 6.9 Greek Anthol.-(Agath), Ap. 5.273. Procopius Caesariensis, Historicus, 6th Cent. AD Historia Arcana. So also, Bambakydzo chatter with cold, Hippon, 17"

In Greece, then, the word originally meant "chatter with cold" and indeed, the reference to the Iliad is translated precisely (54, 10, 375):

> "the teeth chattered in his mouth."

Turning to the usages which Liddell & Scott stated as actually meaning "to stammer," Bion Bucolicus wrote (55,Fr.IX(VI) 9):

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[1] Ernout & Meillet (33) confirmed that bambalo is a name borrowed from the Greek, but were unable to give any uses other than those cited.

> "...for if I sing of any other mortal or immortal, then falters my tongue and sings no longer as of old,"

while Agathias used Bambaino, in the following context (56, 5,273):

> "She...is now old and wrinkled and her charm is gone. Her breasts are pendant and her eyebrows are fallen, the fire of her eyes is dead, and her speech is trembling and senile." (our emphasis)

It is apparent that neither of these usages can refer to the actual affliction under consideration; in fact, they are derived or figurative uses of the original word which meant to "chatter with the teeth" rather than "to stammer." Moreover, Bambaino is a word that dates as far back as the Iliad,(6th Cent. BC), but was not among those listed as specific speech defects by Aristotle (supra, p. 79).

The fact that the original Greek word did not mean "to stammer" in the present sense throws doubt on whether it was intended to mean stammerer when taken from the Greek and used as a nickname by Cicero. If the nickname did mean "stammerer," how is it that there is no Latin verb Bambolio, "to stammer" - or in fact any other use of the word to be found?

If any doubt on the matter remains, it is dissipated by examination of Souter's 6th Century A.D. listing (34):

> "Bambalo, stammerer (Martyr. gramm. 7.167.12)."

Referring to the actual passage cited by Souter, the Keil edition (57, 7, 167, 12) shows that it is actually a discussion of the letters b and v, and their interchangeability in speech and writing. Bambalo is merely given as an example and equated with the Greek word Psellistes.[1] Again (op. cit., p. 173) balvus is equated with the Greek psellos. Now since it was shown (supra, p. 70) that psellos never meant "to stammer" in Ancient Greece, the inference must be drawn that this is also true of the Greek-Roman word Bambalio and, incidentally, the Latin word Balbus, (balvus) since the grammarian Martyr specifically identified all three words in meaning.

The common assumption of those lexicographers and translators who translated Bambalo as "stammer" was that since the word referred to speech, and since it contained a repetition of the consonant "b," it must mean "stammer" or "stutter," being phonetically onomatopoeic in origin. This assumption is unjustified; cf. the English words babble, giggle, titer, cackle, murmer, lallation, all of which describe human sounds and are repetitive in character, but have no reference to stammering whatsoever.

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[1]The same author also (ibid.) equated batalus, the Romanization of the Greek batalos, with the Greek word mogilalos. These words were both shown not to have meant "stammering," (supra, pp. 72-75 and 86-87, respectively). Noting again on p. 174 (op.cit.) that bambalo meant psellistes (Gr.), Martyr added that bambalo is an antiquated and unusual word.

Liddell & Scott showed (supra, p. 101), furthermore, that if bambalo was phonetically onomatopoeic in origin, it referred to teeth-chattering rather than stammering.

In conclusion of this section, it may therefore be said that the evidence that the Romans stammered is of the same quality as that for the Greeks: at best, inconclusive. No Latin words have been found which actually described true stammering.

4. The Improbability of Stammering in Greece and Rome.

The evidence that the Greeks and Romans did stammer has been impugned in the previous section. We may now properly consider the argument that they definitely did not stammer.

The main reason why it is doubtful that these civilizations stammered is that throughout the entire literature of both Greece and Rome not a single mention is made of the most obvious characteristics of true stammering: repetition of sounds (by far the most frequent symptom of true stammering); and total temporary blocking (which occurs where repetition does not.) In support of this contention, it is recalled that A. Guillaume (2, p. 696) wrote:

> "Hippocrate-Galien: ...Ils n'ont en réalité rien à nous donner....on peut parcourir les dix volumes d'Hippocrate sans y trouver rien ...Galien n'aurait pas davantage à nous donner...si bien que du quatrième siècle avant notre ère, représenté par Demosthènes[1] nous pouvons, enjambant deux mille ans, arriver d'un saut au dix-huitième siècle."

The assumption of this author was that stammering existed in Greece and Rome, but neither Hippocrates nor Galen could say anything intelligent about it -- nor even recognize it. This belief was shared by Appelt who wrote (71, p. 13) that the Greeks were unable

> "to arrive at the formulation of any satisfactory classification of defective speech... The occasional remarks which we find scattered in the works of Hippocrates, Aristotle, Galen and others, which bear on the subject, are hypothetical and trivial. Aristotle alone seems to have any view of the matter worth mentioning."

The possibility that stammering did not prevail in Greece and Rome, did not occur to these authors. Yet is is surely unusual that in civilizations known to have ridiculed poor speakers and to have glorified the art of rhetoric, no reference to stammering can be found in the tens of tomes of Hippocrates and Galen!

It is even more difficult to understand -- if stammering existed in Ancient Greece -- how it was possible for

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[1] whom he has already discounted as a stammerer, (<u>supra</u>, p. 65)

Aristotle to omit all reference to repetition or blocking in his famous classification of speech disorders (supra, p. 79). For he itemized lisping, mumbling[1] and hesitant (nervous) speech -- traulos, psellos and ischnophonos -- yet somehow overlooked (if it existed) the most striking defect of all: intermittent repetitive or totally blocked speech, stammering. In fact, as has been shown, this concept of repetition or blocking is mentioned by no Greek or Roman writer, not even the great compilers of Greek and Roman medicine of the 6th and 7th Centuries AD, respectively, Aetius and Paul of Aegina. (Note that the case history of Oribasius (ischnophonos, supra, p. 82) contains no mention of repetition or blocking.)

Yet what is found in those writers who do describe genuine stammering? After a careful search, as far back as the 16th and 17th Centuries, no writer was found who failed to mention either repetition or blocking, and most mention both! The following selections are only a random sample.

In 1584, Mercurialis wrote, discussing speech defects (72, VI, p. 96):

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[1] See supra, p. 70, Thomson's translation of Aristotle's Historia Animalium, 1, 11, 11.

> "Prima est, quando non potest proferri oratio statim, sed cogitur homo, vel puer repetere aut primam, vel aliquam aliam syllabam cum labore. Appellatur huiusmodi vitium ab Hipp. et Arist. ischnophonia, nonnulli latin vocant titubantiam linguae, sed melius Theodorus Gaza doctissimus, linguae haesitatiam dixit."

Mercurialis is thus the first post-Renaissance writer to mistake ischnophonia for true stammering.

The Italian physician Menjotio (35) described true stammering in 1665. Menjotio not only followed Mercurialis' error in reading "stammering" into Aristotle's use of ischnophonos, but also gave examples. Discussing the Greek philosopher's description of traulos, psellos and ischnophonos (supra, p. 79), Menjotio gave an example of the last word (35, p. 324):

> "...pro Caesar dicens Caesaesar, ...pro fama, famama."

The use of Caesar's name in the example shows that this is Menjotio's interpretation of the Aristotelian text (and not some lost Aristotelian fragment) since Caesar post-dated Aristotle by three centuries. Again (op.cit., p. 326):

> "...homines pleno ore loquentes...repetuntque ba, ba." (emphasis ours)

In the early 18th Century, Johannes Amman (64, p. 107) described stammering thus:

> "Haesitantia est perpetua fere in Sermone Halluciniatio...consistit autem plerumque in laboriosa tamque anxia Literarum explosivarum repetitione."

This passage was translated by Hunt (61, p. 69) as "consisting in a laborious repetition of the explosive sounds."

Another 18th Century writer, Sauvages (36, 3, 6, 15) described nine types of psellismus but specified the fifth of these in the following terms:

> "Psellismus balbuties, est difficultas recte pronunciandi verba litteris labialibus conflata, ut B.M.P, ita ut illae litterae saepius repetantur." (Our emphasis)
> (Free trans):
> "Stammering is a difficulty of correctly pronouncing words beginning with labially formed letters, such as B, M, P, so that these letters are often repeated."

Rullier wrote in 1828 (37):

> "Bégaiement -- vice de la parole qui consiste specialement à prononcer avec difficulté et à répéter par secousses convulsives un plus ou moins grand nombre de fois, celles des lettres ou des syllabes dont l'articulation exige le plus d'effort..." (Our emphasis)

and contrasted this description with balbutiement.

In 1830 the English physician Arnott wrote (38, p. 386):

> "The most common case of stuttering, however, is...where the interruption occurs behind or beyond the mouth, viz., in the glottus, so as to affect all the articulations equally."

This is a case where an author discusses only one of the two symptoms of stammering - a total temporary blocking.

In 1839 Wright wrote (39, p. 25):

> "Stuttering is interrupted speech, occasioned by stopped respiration and voice."

The same author added, four years later, however, (40, p. 23):

> "The stutterer involuntarily repeats the letters B, P, T and D." (our emphasis)

In 1841 Marshall Hall described a block-stammer thus (41, p. 190 et seq.):

> "...The disease is of an almost convulsive, not to say, epileptic character...in attempting to pronounce...violent efforts are made yet expiration - articulation - is not effected...(or)...there is a perpetual hissing from the escape of compressed air...(or) ...a state of laborious respiration."

In the same year, the German surgeon, Diefenbach wrote (14, p. 11):

> "...(Stuttering)...the momentary inability to pronounce a consonant, syllable or word,"

indicating total blocking, and recognized the other symptom later (op. cit., p. 15):

> "F.K....(had)...the stuttering repetition." (Our emphasis)

and (op. cit., p. 11):

> "F.D.....repeated the same letter often four times running." (Our emphasis)

Guillaume (2, p. 694) defined stammering thus, in 1868:

> "...les deux symptômes suivants: 1° répétition convulsive d'une même syllabe; 2° arrêt convulsif devant telle ou telle autre syllabe... à ces deux symptômes ajoutons des mouvements convulsifs." (our emphasis)

In 1890 Cuvier cited Colombat's two types of stammering (42, p. 42):

> "la première, caractérisée par la répétition des syllabes...; la seconde, qui se distingue par un arrêt de la parole, sans répétition." (our emphasis)

In 1900 Olivier (43, p. 488) agreed that

> "Stammering is characterized either by a convulsive repetition of a letter or a syllable, or by convulsive arrest of speech before such and such a letter or syllable...especially at the commencement of a phrase." (our emphasis)

This random sample survey of 16th-19th Century writers of different nationalities shows that true stammering, the affliction studied here, is always clearly defined and delimited by one or two symptoms: - repetition of sounds, or total blocking, or both. Indeed it would be virtually impossible to compose a definition of the disorder without reference to either of these symptoms, both of which are clearly observable to the most casual lay witness. Hence the very absence of any mention of either of these symptoms among all Greek and Roman writers, particularly Aristotle, who classified the speech disorders then extant, is strongly indicative that stammering was unknown to these civilizations.

Moreover, there are other reasons for this inference. One of the outstandingly well-known facts about stammering incidence is the overwhelming predominance of male stammerers over female. Writer after writer has taken note of this fact; some have said that women hardly ever stammer. Yet no reference is found in the Greek and Roman texts in regard to a difference in incidence of any speech defect between the sexes.

Here is still a further reason for doubting the incidence of Graeco-Roman stammering: one of the most prevalent beliefs about stammering is that stammerers never stammer when they sing, and this is true in the vast majority of cases. (supra, p. 57). Yet no reference to freedom of speech defect during singing is made by any Greek or Roman writer, a fact which would surely have come to the attention of a single writer, if stammering had actually been extant at the time. Certainly Aristotle who noted and classified the existing speech defects would have treated this fact as one of his Problems (for it has surely been one of the "Problems" of all modern writers describing stammering); but to the contrary, Aristotle, as well as all other Greek and Roman writers, failed to mention freedom of stammering during singing!

Finally it must be noted that the overwhelming majority of languages which contain a word for stammer use a word that is phonetically onomatopoeic in origin. In addition to the English "stutter," the Italian has tartagliare; Portuguese, gaguejar; Romanian, gangavi; Spanish, tartamudear; Occitanian (Provencal), lalajeje, quequeja, etc.; cf. also the words for stammer used by non-literate peoples, cited in Chapter 6. Yet no word alleged to mean stammer in Greece or Rome is actually phonetically onomatopoeic in origin: balbus is derived from the Greek barbarus, (supra, p. 92), and barbarus is not phonetically onomatopoeic, at least with a meaning of stammer (supra, p. 76). The absence of a phonetically onomatopoeic word for the affliction is further corroborative evidence as to the absence of true stammering in ancient Greece and Rome.

Analysis of the works of Quintilian, the great Roman orator provides further reason for doubting that stammering was prevalent in Rome. For this teacher of Rhetoric exhaustively treated the question of training the orator from childhood, and would have had ample opportunity to identify and discuss stammering, had this affliction prevailed; yet he did not, nor did it even occur to him to describe it. For example, in Institutio Oratia (44, 1, 1, 21): "stammering accents" is translated from incerta voce, but clearly refers

to baby-talk. Quintilian urged early education for children, e.g., that they be taught to read and write at 3-4; yet he emphasized that they should read slowly at first (op.cit, 1, 1, 32), for

> "You will hardly believe how much reading is delayed by undue haste. If the child attempts more than his powers allow, the inevitable result is hesitation, interruption and repetition, and the mistakes which he makes merely lead him to lose the confidence in what he already knows. Reading must therefore first be sure, then connected, while it must be kept slow for a considerable time until practice brings speed unaccompanied by error."

Furthermore, (op. cit., 1, 1, 37):

> "It will be worth while, by way of improving the child's pronunciation and distinctness of utterance, to make him rattle off a selection of names and lines of studied difficulty: they should be formed of a number of syllables which go ill together and should be harsh and rugged in sound: the Greeks call them "gags." This sounds a trifling matter, but its omission will result in numerous faults of pronunciation, which, unless removed in early years, will become a perverse and incurable habit, and persist through life."

The point of these quotations is that the word balbus does not occur in any of them, nor is true stammering separated from childish, hesitant speech in any way. Hence it is another indication that the condition was unknown to Rome.

5. Conclusion.

The present chapter has in no way attempted to prove, in the scientific sense, that stammering did not occur in Ancient Greece and Rome. The passage of time has made this kind of proof impossible. All that has been done is to question the assumptions made by other writers on the subject, and to suggest that there is ample room for doubt.

Hence the chapter could be summarized thus:

1. Any evidence that stammering was known to the Greeks and Romans is far from reliable.

2. Deductive reasoning suggests that the affliction may indeed have been virtually absent in these civilizations.

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Chapter 4

Stammering Incidence in Medieval Europe

1. Introduction.

The previous chapter indicated that there is no definite evidence of stammering in the Greek and Roman civilizations; yet the disorder has been sufficiently extant to be described by Mercurialis* as early as 1584 (1, VI, p. 96). The hypothesis which follows accounts for these facts as well as for the other data which will be set forth in the present chapter:

It is unlikely that stammering could have arisen overnight during the Middle Ages. Its incidence may have begun imperceptibly, increasing gradually and probably at an uneven pace throughout Medieval Europe.

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*Although Mercurialis was the first author who has been found to have actually described stammering as an affliction, and recommended a cure, one earlier allusion to the condition has been found in Lily's Brevissima Institutio, which is bound with his Shorte Introduction of Grammar (66,Aiii[b]). The passage reads:

"Traulismus est hesitantia quaedam aut titubantia oris, quando eadem syllaba saepius repetitur; ut cacacanit, pro Canit; Tutututullius, pro Tullius."

This was most probably written between 1510 and 1522, the period of association of the two authors, Lily and John Colet. Colet appointed Lily first high master of Saint Paul's in 1510 and Lily died in 1522. Hence stammering was known in England in the early 16th Century, and it may be inferred that it occurred to some degree in the 15th Century.

The Brevissima is not always ascribed to Lily, and indeed his name is not on the title page; but the Encyclopedia Britannica asserts unhesitatingly that

"...Besides the Brevissima Institutio, Lilye wrote a variety of Latin pieces both in prose and in verse."

The possibility must be envisioned that at any specific moment in this era, stammering was occurring in one community, while it had not yet broken out in another. It is no more far-fetched to conceive of such an uneven development of stammering incidence than of any other culturally produced disorder, once it has been established that the syndrome in question is not something timeless and universal, i.e., is not "part of human nature."

Now if stammering developed unevenly in Medieval Europe, the following indications of this possibility should be in evidence:

1. At first, in the first few centuries, insufficient incidence should have prevented any writer from mentioning the disorder as a problem warranting attention.

2. Later on, a few, possibly highly scattered writers might be found to have considered stammering as a problem, or to have referred in unmistakeable terms to true stammerers.

3. As stammering incidence increased, at first the already existing words describing speech difficulty were used to describe true stammering; until finally the disorder became so prevalent that society found it necessary to adopt one of the following linguistic measures:
   a) Create wholly new words which identify stammering as a speech difficulty quite separate and apart from previously known ones;

or b) Assign the meaning of "stammer" to an old word which previously meant something different.*

The succeeding pages show that these are precisely the facts to be found regarding stammering incidence during the Middle Ages, and therefore justify adoption of the hypothesis of the gradual and uneven development of the disorder in this period.

2. Medieval Writers.

There were so few Medieval writers who described stammering - or indeed any other speech defect - that this aspect of the research has been very difficult. Personal communications to the writer from authoritative sources on aspects of medical history were unable to provide any useful data. The Wellcome Historical Medical Library's Chief Librarian wrote:

> "I am afraid I cannot direct you to any specific reference on the subject of stammering in medieval writers. It does rather look as if this is a blank period so far as your present research is concerned...."

*The first quotation in the footnote to p. 123 (supra) is a good example. It is particularly interesting that these two early authorities in the Classics selected the Greek word traulismos to describe stammering -- a word which in the Greek civilization could only have referred to poor articulation (v. supra, pp. 70-72). Even more suggestive is their rejection of the Latin balbus, and resorting to "hesitation or staggering of the mouth" to describe the condition in Latin.

The Royal Society of Medicine's Sub-Librarian wrote:

> "I regret that I know of no publication relevant to your inquiry."

Dr. Douglas Guthrie, Lecturer on The History of Medicine at the University of Edinburgh, wrote, regarding the Medieval incidence of stammering:

> "...I confess that it is quite new to me and that I can throw no light on the matter."

Nevertheless, a careful reading of the works of a great many medieval writers has produced some interesting data. These writers can, in general, be divided into three categories:

a. Those who wrote about speech defects, but did not mention stammering.

b. Those who make no mention of speech defects of any kind.

c. Those writers in whose works a reference to some speech defect has been found, which is sufficiently ambiguous as to allow the possibility that they were describing what is presently understood as true stammering.

a. The previous chapter has already made reference to certain medieval writers who have described some speech defects without mentioning stammering. The first of these was Aetius, the 6th Century Greek writer (2,2,iv,36), who never described stammering, and whose only reference to speech difficulty at all was to tongue-tie (supra, p.98).

The same can be said of the 7th Century Greek physician, Paul of Aegina (3, II, 6, 29) who was cited (supra, p. 99). The Arab physician Avicenna (4), who was cited (supra, p. 72) described lisping and defective articulation (traulous, psellous), but made no mention of stammering.

Under "stammer," the Oxford English Dictionary mentions John of Trevisa's English translation of a Latin passage from the 13th Century physician John Bartholomew (Bartholomeus), De Proprietatibus Rerum (5, v, 21, 128):

> "dronken men stamere whan they ben tomoche in moysture in the brayne."

Bartholomew's usage of Balbutientes and its verb balbutiunt shows that he is describing intoxicated speech rather than the affliction under consideration here. In the same passage (ibid.) he also mentions dyslalia, or the substitution of one consonant for another, calling such speakers,

> "...drauli, qui aliquas literas proferre non possunt, scilicet r pro n, vel c pro t proferunt, et hoc patet in infantibus, qui multas literas corrumpunt..."
>
> (Free trans:)
>
> "...dyslalics, who cannot pronounce some letters, (saying) r for n or c for t, and this appears in children who deform many letters."

The 11th Century Salerno writer, Gariopontus, also falls into the category of those who described some speech defects in this period, but not stammering. His Passionarius (6, pp. 55-56) described a weak voice, which is caused by coughing, shouting, catarrh, etc., (De Vocis Debilitate).

He also described total loss of speech (op. cit., p. 107), saying that it can be caused by pain from the stomach or catarrh, and is sometimes accompanied by deafness (De Vocis Amputatione). He also described paralysis of the tongue (op.cit., p. 316), but seemed to have tongue-tie in mind, merely adding:

"aliquoties fit impedimentum verborum,"

not describing the nature of the impediment at all. He also described (op.cit., pp 466-7, 471-2) the hard, dry tongue caused by fevers.

b. The works of the following medieval writers have been scanned, and no reference to a discussion of speech defect of any kind has been found:

Lanfranc (Guido Lanfranchi) d. 1315)
Chirugia Magna, 1296 (8)
John of Gaddesden, 1280-1361, Rosa Anglica (9)
Alexander of Tralles, 525-605 (10)
Rhazes, 860-932 (11)
Hildegaarde of Bingen, 1098-1179 (12)
Averroes, 1126-1198 (13)
Jabir, 7th Century (14)

c. Two medieval writers have been found whose reference to a speech defect is sufficiently unclear as to allow for the possibility that they were describing true stammering. The first of these was Michael Scot(t) whose De Procreatione et Hominis Phisionomia was written in 1175. In this work, the following passage occurs (7, 69, De Lingua):

"Cuius lingua balbutit loquendo significat hominem valde simplicem, vanum, instabilem; iracundum; cito ab ira convertibilem; servitialem et debilem."

(Free trans:)

"The tongue of him who (balbutit) in speaking strongly suggests a simple, vacuous or unstable man;* or an irascible one or one easily appeased from his wrath; or a servile and weak man."

The fact that this author - however unscientifically - believed the speech defect he was describing to be related to particular personality types who might be "stammer-prone" in our own culture, suggests the possibility that he might actually have had this disorder in mind. Unfortunately, he said nothing more to describe the defect in question, and he may have been thinking of nothing more serious than habitual hesitation or nervousness in speech.

The other doubtful author is Guy de Chauliac, whose Magna Chirugia appeared in 1363. Neither Klingbell (43) nor Decroly and Rouma (44) doubted that de Chauliac was describing true stammering in the passage cited below. Yet the content of the original Latin is surely ambiguous. It reads (45, VI, ii):

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* cf. Spanish, bobo, derived from Latin balbus. Bobo means "feeble-minded." The passage above indicates how the transition from the meaning of speech-defect to one of mental deficiency may have taken place.

"De Paralisi et Balbutie*

> Balbuties possit venire a spasmo ulceribus ab aliis passionibus linguae; ut primum tamen venit a paralisi...
> Cuius autem causae et signa sunt quae paralisis communis; et cum hoc adest flux salivalis absque voluntate: neque directe possunt loqui: nequi pronunciare..."
>
> (Free trans:)
> Balbuties can come from a spasm, from ulcers, or from other disturbances of the tongue; most often, however, it comes from paralysis...
> The causes and signs of it are common with those of paralysis; and with it, there is an involuntary flow of saliva: those who have it can't speak clearly: can't pronounce..."

The fact that de Chauliac identified the causes and signs of this condition with paralysis, together with the fact that he noted an involuntary salivation accompanying it, casts some doubt on the assumption that he was describing true stammering; he might just as well have had in mind the speech of those taken with a "stroke." Furthermore, the passage on Spasm which immediately precedes the above passage in the original Latin text gives further grounds for doubting that de Chauliac was using "Balbuties" to mean true stammering. This passage reads (ibid):

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* It is interesting to note that the first French translation of this text (1478) uses the same title "De Paralyse et Balbutie;" a later translation (46) published in 1661, however gives the title "De la Paralysie et Du Bégaiement," noting in the preface: "En cette dernière edition on a corrigé plusieurs fautes." This "correction" may well have been the basis for the conviction of Klingbeil and Decroly & Rouma that the passage originally dealt with true stammering.

"De spasmo et filo contrabente linguam

Spasmus est retractio et curvatio linguae ad suam originem qua impedit eius actus... Cura fili seu ligamenti contrabentis linguam est incisio per latitudinem donec solvat linguae a retentione sua."

This passage clearly describes tongue-tied speech. What is significant is that in the doubtful passage (supra, p. 130), "Balbuties" is stated to come from a spasm, among other causes. Hence the kind of speech described by balbuties may be assumed to resemble tongue-tied speech. It may therefore be fairly inferred that de Chauliac's use of balbuties was a description of thick, distorted speech which either accompanies tongue-tie or apoplexy (paralysis), rather than true stammering. Nevertheless, all this reasoning is largely deductive, and positive proof as to what de Chauliac was describing cannot be established.

3. Words Meaning "To Stammer" (?)

Following the pattern of the previous chapter, it is essential to analyze the usages of words which might have described true stammering in their original contexts.

a. Titubare - This word was shown in the previous chapter (supra, pp. 93-98) to have referred primarily to gait rather than speech. It was mentioned neither by Souter (15) nor by Baxter and Johnson (16), and it can

therefore be assumed that it was used very infrequently by medieval writers, if at all. The Oxford English Dictionary shows it to be a very rare word in English (titubate), mainly referring to gait, and gives only two figurative uses referring to speech, these dating to the 17th Century.

b. Balbus, and its variants. Souter (op. cit.) did not mention balbus at all, but listed balbutio as a substantive noun meaning "stumbling," in a 5th or 6th Century usage, and hence not referring to speech at all. Baxter & Johnson (op.cit.) did, however, list balbus as meaning "stammering," dating this usage to 826. They also gave balbuties the same meaning in a usage of 1345.* Unfortunately, it has not been possible to find these usages in their actual contexts; hence, as the previous chapter showed, little reliability can be placed on this evidence because of the many semantic difficulties involved.

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* They also listed "fambulo, or bambulo, perhaps -- stammerer," dating its usage 709 A.D. This word has not been found in context either.

c. "Descendants" of balbus.* During the Middle Ages, the Latin word balbus was the source of many words used by the peoples we now call French and Italian. These words varied considerably in their form from one century to another and from one district to another. Godefroy (17) listed the more common forms and derivatives used in the Middle Ages in what is now France. Some of these were: baube, bauber, baubeteor, baubiour, baubeter, barbeter, babiller, bourbeter, borbeter. As many usages of this type of word as could be found are shown in the succeeding pages, with the aim of revealing the medieval meanings

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*It should, of course, be understood that the modern French verb balbutier is not a natural "descendant" of the Latin word balbus. That is to say, it is not a word which was popularly used throughout the Middle Ages, but rather one which was borrowed outright from the Latin late in the development of the French language - in the 14th Century, according to Bloch and Von Wartburg (21), who wrote:

> "Balbutier - XIV^e Siècle, empr. au lat. balbutire (de balbus, 'bègue')...Der. balbutiement, 1751."

Dauzat (22) agreed with this opinion, citing the 14th Century usage as from Ph. de Maizières, and the 1751 usage of balbutiement as from the Encyclopedia.
It will be seen that those words which evolved naturally from balbus, and were popularly used throughout the Middle Ages, generally dropped the l and substituted a u for it in the root of the word. Sometimes the l was replaced by an r, sometimes not at all, but in no case could it have survived from Latin, in popular usage among the peoples inhabiting the area of modern France. In Italy, however, the preconsonantal l did survive in popular usage.

ascribed to them. These usages fall into three categories:

1) Where the word clearly did not mean stammer.
2) Where the meaning is doubtful or indeterminable.
3) Where the word probably meant stammer.

1) Some interesting examples of usages of words "descendant" from balbus, which clearly did not mean stammer, may be found in Du Cange (18, I, p. 533):

"Balbire, Balbutire, Gemma Gemmar

1. Balbutire, Latrare, Vita S. Pardi Radoyno auctore, tom 6. Maii pag. 377: Ut ora balbutientum canum obstruerentur.[1]

2. Balbutire, Coenum agitare in luto versari, Gall. Barboter.[2]

Balbuzare, balbutire, Ital. Balbuzzare Gall. Bégaier, Libell. de remed. peccat. apud Marten, tom. 7. Ampl. Collect col. 46: Qui vero inebriantur contra praeceptum Domini...hoc est ebrietas, quando statum mentis mutant (mutat) et lingua Balbuzat[3]..."

Godefroy (17) gave another usage of a "balbus-descendant" which clearly did not mean stammer in the present sense; it is a quotation from the 14th Century "Ysopet":

"Li Faux mauves, li puens lierres
Désoit par son barboutement."
(Free trans:)
"The false, evil, the wicked thief,
spoke haltingly,"

i.e., the speech of a criminal found out; fearful, emotional speech.

---

[1]Referring to barking dogs.
[2]Having the meaning of disturb, excite, as a transitive verb.
[3]Referring to drunken speech, and not to true stammering.

Another non-stammering usage from Godefroy (op.cit., I, p.601) is the following:

> "Baubeter augmentatif de Balbier, - Bégayer. 'Quant l'enfant fu nez, il baubetoit pour avoir le confort des mamelles de sa mere et donnoit ploreuses vois' (Légende dorée, Maz. 1333),"

which of course refers to anything but true stammering.

La Curne de Sainte Palaye (19) gave the following usage which is also obviously not descriptive of stammering:

> "Balbucie. Bégaiement. Montaigne dit des réponses simples et naives des Indiens aux Espagnols: 'Voilà un exemple de la balbucie de cette enfance.'"

Huguet (20) listed another "non-stammering" usage of the same word:

> "Balbucie. Bégaiement, 1503. Des paralysie et balbutie. Le Guidon en François,* édit. de 1534. Il perdit sa memoire et lui demeura une balbucie, c'est à dire, fut bègue, ne sachant expliquer ce qu'il désiroit dire."

Another non-stammering usage is contained in Huguet's (ibid) definition of

> "Béguoyer - bégayer. La mere estime la fille mieulx estre sienne, laquelle...elle a porté entre ses bras...ouy les premiers motz qu'elle cuyde jazer de sa langue balbuciente et besguente."

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* Another name for Guy de Chauliac, v. supra, pp. 129-130. Balbucie is defined here as "not knowing how to explain what he wanted to say," thus casting further doubt on whether de Chauliac was describing true stammering in his usage of balbutie.

A final, clearly non-stammering usage of a balbus-descendant is found in the new Vocabulario della Lingua Italiana (52) which quotes the 14th Century writer Boccaccio thus:

> "balbuzzare, v. intr. Disus. balbettare. La loro lingua, che apertamente narrar poteva i mostrati versi, balbuzzando andava errando."

This is a reference to poor articulation and mistakes made in reading, rather than the defect under consideration here.

2) Indeterminable usages of balbus-descendants are quite common; that is, the contexts make it quite clear that some kind of deviation from normal speech is being described, but it is impossible to say whether or not it is true stammering. Two of these were given by Du Cange (18, I, p. 533) under "balbuzare," in reference to Charlemagne's grand-son, Louis II:

> (1) "Chron. S. Dion. ad ann. 877: A Looys le fil Challe le Chauf qui Loys li Baubes fu apelez, etc"
>
> (2) "Phil Mouskes:
> 'Loeys ki Baubes ot nom
> Et sachies k'il ot cest surnom
> Por çou k'il estoit Baubeterre
> Mais il n'iert fol, ne abaterre."
> (13th Cent.)

Godefroy (17, I, p. 544) gave several examples of these indeterminable usages:

(1) "Babeter et en orant toujours babète. (Ysopet I Jub. LXIII Robert)" (13th Century)

and (op.cit., p. 581)

(2) "Et commença à barbeter, comme s'elle voulait dire, voicy ma demeure." (This text is from Le Roman de Perceforet, IV, 1, ed. 1528, but there may be earlier editions.)

3) A few usages of balbus-descendants have been found in contexts which must reasonably be interpreted as referring to true stammering. In connection with the hypothesis on which this chapter is based, it is interesting to note that these usages are all rather late. Godefroy (ibid.) gives the following two instances, both from the 15th Century:

(1) "Barbeter. Il ne povoit parler, car il avoit la langue sy morte et le palais si clos qu'il ne faisait que barbeter." (From Chron.)

(2) "Et de ma bouche barbetoye
Sans dire ne mot ne lettre."
(Danse Macabre des Femmes, ed. 1486)

The idea of a block-stammer seems implicit in the latter quotation.

4. Etymology of Modern Words for "Stammer" in Romance Languages.

A survey of all these languages today brings to light the following interesting facts.

1. The modern popular word for stammer in each of them does not trace its origin to the Latin, balbus.[1]

2. The roots of each of these words, with the exception of the French bégayer,[2] are clearly onomatopoeic, containing a repeated consonant.

3. With the exception of Italian and Spanish[3], no two romance languages use the same root in their word for stammer.

Language	Word Meaning Stammer	Biblio. Reference
Italian	tartagliare	(23)
Spanish	tartamudear	(24)
Portugese	gaguejar & tartamudear	(25)
Occitanian (Provencal)	lalajeje	(26)
Romanian	a gangavi	(27)
French	bégayer	(28)

Where did all these words come from if they cannot be traced to Latin? During the Middle Ages, they were created by the peoples speaking these respective languages, in order to meet specific needs. The inter-penetration of the medieval Italian, Spanish and Portugese is sufficiently well known to account for the similar tarta- roots in these languages. Although it is not possible to fix the exact century when these words came into popular usage, it is clear that they all did so somewhere between 500 and 1300 A.D.

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[1] Although in some sections of Italy there is a balb- root word, meaning "stammer," in common use, as well.

[2] Bégayer is discussed separately, infra, pp. 141-142.

[3] And some sections of Portugal.

If we can assume that Man creates his language in order to meet his needs for it, then it must be concluded that the needs for onomatopoeic words describing the affliction of stammering arose sometime during the Middle Ages. The mere modern existence, therefore, of all these varying words strongly suggests that stammering is an affliction whose incidence only became common enough to warrant naming (giving a special word to it) during the Middle Ages.

Modern usages of balb- root words to mean defective articulation support the hypothesis that the onomatopoeic words cited supra, p. 138 were created to meet a new, specific need. For example, Italian (23) identifies "profferire balbettando" with "pronunciare male;" and "balbettamento" is equated (ibid.) with "pronuncia diffetoza."

In Spanish, Roquebarcia (31) showed that balbucir[1] means "pronuncia con dificultad las palabras," while tartamudear actually refers to true stammering, which hampers "la expedita pronunciacion de las palabras." A century ago Cadena (24) had already translated balbucir as "lisp" and tartamudear as "stutter or stammer." Auge (34)

[1]These balb- words in Spanish are (like balbutier in French, cf. footnote to p. 133 supra) artificially borrowed from the Latin. This is clear since the preconsonantal l velarized in Spanish as well as in French. Thus the Latin balbus became bobo; alterum became otro.

equated balbucear with balbucir, defining them both as "articular dificultosamente," and giving the speech of little children as an example. More recently the Real Academia Espanola (33) defined balbucire as "hablar o leer con pronunciacion dificultosa...trastrocando a veces las letras o las silabas." (Speaking or reading with difficult pronunciation...displacing letters or syllables occasionally).

Finally, Fabra (32) noted similar meanings for balb- words in Catalan:

> "Balbejar - parlar d'una manera imperfecta per un defecte dels organs bucals.
> Balbotejar - parlar amb una pronunciacio imperfecto i vacillant, esp l'infant que encara no sap de parlar."

Of course words can change their meanings across the passage of time, yet it seems beyond the scope of coincidence that balb- root words in all these Romance languages once referred to true stammering, and yet now - almost without exception - have come to mean defective articulation. More reasonable is the presumption that balb- root words have always chiefly referred to defective articulation, and that with the rising incidence of stammering in the Middle Ages, new, onomatopoeic words had to be coined to describe the affliction.

Some discussion must be made of the French word bégayer, which is the only one of those cited supra, p. 138, having a repetitive vowel sound, rather than a repetitive consonant. The explanation is that bégayer, unlike the others, is a borrowed word. Bloch & Von Wartburg (21) suggested that it is a Germanic word, writing:

> "Bègue: 1313. Tiré de l'a. français, béguer (XIV^e, Froissart) encore répandu dans les patois septentrionaux, peut-être d'un néerl. beggen, "bavarder" qu'on restitue d'après le flammand beggeln de même sens. Devenu usuel en gallo-roman; a supplanté les représentants du lat. class. balbus, d'où anc. fr. baube, a. pr. baup., it. balbo."

The following argument -- though admittedly speculative -- might accound for the French borrowing of the Germanic beg- root, leading to bégayer. In the northern regions of what is now France, the adjective "baub" or "baup" which would normally "descend" from the Latin balbus, would be pronounced identically with the adjective "beau" from the Latin bellus. This circumstance would lead to enough confusion to warrant borrowing a word from a geographically neighbouring language (Flemish).

Of course bégayer and its dialectal forms did not always refer to stammering. La Curne (19) gave two other usages whose meanings are obscure to the modern reader, though clearly not referring to stammering. The quotations from Huguet, supra, p. 135, are also clearly

non-stammering usages, the first of which dates to as late as 1534. Two other references also found in Huguet (20) are further examples of non-stammering usages:

> "Bègue (Parler bègue) - bégayer. Les disciples d'Aristote se plaisoyent à parler bègue comme luy. (St. Francois de Sales, Amour de Dieu, VIII, 1.)[1]
>
> Béguer - bégayer. Sa langue luy fourche et luy begue, comme s'il avait le fillet (anc. Poes. Franc.) Palsgrave."

Godefroy (17, I, p. 612) showed many forms of béguer referring to drunken speech in the 15th Century, citing béguer, besguer, bégher and begguer. He did not mention, however, besgoier, a 15th Century usage of which (meaning drunken speech) was cited by Du Cange (18,I,p.533) under balbuzare:

> "Besgoier - in Lit. remiss. Ann. 1416 in Reg. 169. Chartoph. reg. ch. 477: Pour ce que icellui prestre estoit moult chargie de vin ou de cidre en besgoiant..."

The latest "non-stammering" usage for a form of begayer is given by Godefroy (17, I, p. 612):

> "Béguer: parler confusement, Trium. Ling. Dict., 1604."

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[1] Could not refer to true stammering, since it describes voluntary imitation of a way of speaking, rather than stammering which is involuntary.

5. Gothic and Old High German Origins.

An "ancestor" of the modern English word stammer can be traced back through the Old High German and Gothic, and an Indo-Germanic root common to all Teutonic cognates has been inferred. The problem for the present study is to ascertain, if possible, the approximate time when stam- words began to acquire the meaning of the speech defect under consideration.

Walde (60, II, pp. 625-626) showed that the modern German word stammeln is derived from forms in Old High German, and is cognate with the Gothic word stamms. These, in turn, were derived from the Indo-Germanic root stem-, whose exact meaning is uncertain, but which he indicated as (ibid):

> "Stem- stossen, anstossen; auch von der Sprache: stottern, stammeln; glistemmen."

Hence he alleged that this Indo-Germanic root is "ancestor" of words with three distinct meanings: "strike, knock; stutter, stammer; stem, check." In adopting this view, Walde cast doubt on the earlier opinion of Feist that the stam- words in modern Teutonic languages originally

came from the Indo-European root, sta.* He was therefore obliged to trace the ancestry of the Gothic word stamms and its Teutonic cognates to a root which "produced" words with meanings quite apart from speech.

For the modern German word stottern, Walde (ibid.) suggested two possible Indo-Germanic roots. These were (1) stem- (leading to stossen, to push); and (2) (s)teu-d, (leading to Gothic, stautan, to strike, and Middle Low German, stut, to blunt). (op. cit., p. 618).

Analysis of Walde's work therefore suggests two speculative yet reasonable conclusions:

1. The English word stammer and all Teutonic cognates are traceable to a common Indo-Germanic root, stem- which first produced words meaning to strike, or knock. Words applying to speech-defect (of any kind) derived their meaning metaphorically, i.e., from the idea of the tongue striking or knocking at the palate in some way. This is especially certain in the case of the Englishword stutter and its modern Teutonic cognates, which are all cognate with the Gothic word stautan, to strike.**

2. Hence the words describing speech-defect are quite probably later words, although how much later it is impossible to say.

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*The root st(h)a had been suggested by Feist (61, p. 248) as a possible source of the Gothic word stamms, since he imagined that stamms (stammer?) was drawn from the same source as the Gothic standan (stand, stand still, stop moving, etc.). This seemed improbable to Walde because of the Baltic meanings "stossen, schieben" (pushing, sliding).

**D'Hauterive (63, p. 205) confirmed this origin of stottern, referring to the Gothic word stautan.

The largest and most important Gothic remnant is the Gothic Bible, translated from the Greek soon after 350 A.D. A passage in Mark, vii, 32 translated the Greek word mogilalos as the Gothic word stamms (62, p. 189). The commentary cited supra, p. 87, showed that mogilalos in no way referred to true stammering, and in this particular context described the speech of a man who had long been deaf but suddenly had his hearing restored to him.

This leads to two possibilities as to the actual meaning of the Gothic word stamms:

1. The Gothic translator (Bishop Wulfilas) knew the real meaning of mogilalos and was translating it with a word which had the identical meaning of "general speech impediment," stamms.
2. Wulfilas knew true stammering by the word stamms, and believing (wrongly) that mogilalos meant true stammering, translated it accordingly.*

It is therefore virtually impossible to determine the specific meaning of the Gothic word, since it is not to be found in an original context.

Graff (64, VI, pp. 679-80) cited various forms of stam- words which appeared in Old High German glossaries,

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*A glossary bound with this volume (ibid.) implies that the editor, for one, doubted that the Gothic word stamms referred to true stammering. The word is translated into modern German as both lallend and stammelnd (lalling, stammering) and hence was taken to cover speech defects in general.

all pre-dating the 12th Century, all of which were translations of different forms of the Latin balb- words. No contextual usages occur.* Of course, it is impossible to assert that none of these stam- words actually referred to stammering merely because they were equated with balb- words which were shown (supra, pp. 88-93) to have referred to defective articulation in the Roman civilization. Words can change their meaning in 500 to 1000 years. Nevertheless, at least some early translations of balbus into Anglo-Saxon and Old English did not refer to true stammering (infra, p.149). Therefore nothing positive can be deduced from the Old High German Glossaries cited by Graff. The only significant fact emerging here is that not one of all the glossaries cited by him mentions an Old High German "ancestor" of the modern German word stottern; it may therefore be fairly assumed that this is a rather late word in German as well as in English.

No word for stammer or stutter was found in the Old High German and Middle German texts collected by Jolivet and Mossé, (65), nor does the 4000 word glossary appended to their work cite such a word. This might suggest that

*Grimm's authoritative Worterbuch (29) gives the Graff glossaries as the only instances of "ancestor-words" to the modern German stammeln.

if such a word existed, it was somewhat less common than it is in modern usage (v. infra, p.153). Similar works by Mansion (30) (with a glossary of about 2300 words) and Braune (54) (with a glossary of about 6000 words) also fail to mention any word for stammer, much less a contextual usage of it in Old High German texts.

In conclusion to this section, it must be conceded that no definitive answer has been found to the question "When did stam- words begin to refer to true stammering in Teutonic languages?" All that can be adduced is the reasonable speculation that such words did not always exist, since it seems likely that they are metaphorically drawn from older words referring to "striking, etc." The first occurences in Germanic languages evidently refer to some speech defect, but in no case can the meaning of "stammering" be proved.

6. "Stammer" in Old English.

The word stammer occurs in Old English, the earliest instance being cited by Sweet (47, pp. 45 and 109) in the Erfurt and Corpus Latin-Saxon glossaries:

Corpus gloss. "balbus -- uulisp
balbutus -- stomwlisp (stom,wlisp)
blessus (blaesus -- stom"

Erfurt gloss. "battalus -- stam."

Sweet (op. cit., p. 2) dated the Corpus glossary "early in the 8th Century," and the Erfurt glossary "the end of the 9th Century." (ibid.) More recently, Siever concurred (58, 2, 4), dating the Corpus glossary to the 8th Century.

It has not been possible to find a single instance of stammer or any of its antecedents in a contextual usage, in all the pre-Norman literature available; the only clues as to the meanings of these words are those found in glossaries; by studying successive glossaries, it is possible to discern some pattern of change. For example, the 8th Century glossary cited above shows balbus as meaning lisp (v. supra, pp. 88-93); and blaesus which always referred to poor articulation in Latin, is translated as stom or wlisp. Stammer, or stom, is thus roughly equated with some kind of poor pronunciation in the 8th Century.

Abbot Ælfric's 10th Century Vocabulary, however, cited by Wright (48, p. 161), implies that new meanings were beginning to be assigned to balbus and blaesus, only 200 years later:

"balbus -- stamer
blesus -- plips* "

*Footnote in text: "So the M.S., not wlips."

The two words no longer had interchangeable meanings as in the 8th Century.

Yet another Anglo-Saxon Dictionary of the 10th Century implied that there was still some confusion in the meaning of the two words (48, p. 192):

"Balbus - qui vult loqui et non potest, wlips vel swetwyrda
Balbutus - stomer"

By defining balbus as "someone who wants to speak, but cannot," the translator seems to have had the idea of a block-stammer in mind; but the issue is somewhat muddled by the addition of the word "wlips."

Still another Anglo-Saxon Vocabulary of the 10th-11th Century quoted by Wright (op. cit., p. 275) suggests that the words had as yet only the haziest of meanings:

"balbus -- wlips
blessus - stamor"

Here the words seem to have exchanged meanings.

Wright cited "Miscellaneous Anglo-Saxon Glosses" of subsequent dates, however, which show the currently accepted meanings (op. cit., p. 500):

"Balbis -- stamerum
Blessus - wlispum."

Finally the matter is "settled" beyond all doubt in the Latin-English Vocabulary of the 15th Century, cited by Wright (op. cit., p. 567):

"balbutio - ...to stamery."

All that emerges from this discussion are the following facts:

1. In the 8th Century balbus and blessus were translated as wlisp and stom, which were interchangeable, and apparently had quite similar meanings.

2. In the 10th-11th Century, there appeared the first attempts to separate the idea of stammering from defective articulation, but these efforts did not result in any standardization.

3. Sometime after the 11th Century and certainly before the 15th Century, the specific meaning of stammering was assigned to balbus, a meaning which had not been given the word in the 8th Century.

Certainly no conclusions of themselves can be drawn from these tenuous facts. It may be observed, however, that they indicate a trend which runs in the same direction as the current of other data throughout this chapter: that stammering was only "separated out," identified, and given a specific name late in the Middle Ages.

The above references are based on the information in Bosworth & Toller's Anglo-Saxon Dictionary (67), which may be presumed exhaustive for these words. In addition, apart from Bosworth & Toller, a good deal of Old English literature has been excerpted and "glossed," yet no word for stammer has been found actually used in context. Examination of the following works revealed no reference to stammering whatsoever:

Sweet, H.	Anglo-Saxon Reader in Prose and Verse (53) (including a glossary of about 5000 words)
Craigie, W. A.	Specimens of Anglo-Saxon Prose (55) (including a glossary of about 1800 words)
Skeat, Walter	An English-Anglo-Saxon Vocabulary (56) including a glossary of about 3500 words)
Corson, Hiram	Handbook of Anglo-Saxon and Early English (57) (including a glossary of about 6800 words, among which is "lipsede...lisped."
Anderson, Marjorie Williams, B.C.	Old English Handbook (68) (including a glossary of about 5000 words)
Flom, George T.	Introductory Old English Grammar and Reader (69) (including a glossary of about 5000 words)

In Middle English, contextual usages of "stammer" are almost as difficult to find, as in Old English. Chaucer, who described so many other human weaknesses, failed to mention the affliction, according to the Concordance to Chaucer of Tatlock and Kennedy (42), which lists about 20,000 words. The Chronicle of Robert of Gloucester, however, (c. 1300) has an allusion to the disorder which seems to be unmistakeable. Describing William Rufus (William II, 1056-1100), the reference is 71, p. 611, l. 8573):

> "boffinde, and mest wanne hii were in wrathe, or in strif."
> (Free trans:)
> "stammering, and mostly when he was angry or arguing."

Wright, the editor of this work, believed (op. cit.) that the numerous dialectal forms of boffinde (boffyng, stotinge, stuttinge) may all be translated as "stammering," and the very number of these words, appearing in different manuscripts of the same text, indicate that this was a genuine allusion to stammering. We may, therefore, take 1300 as the earliest unmistakeable literary instance of a word meaning "to stammer" in English. This is far, however, from asserting that William Rufus was a stammerer; the line in Robert of Gloucester's Chronicle is based on tenuous evidence, as shown infra p.161.

In assessing the significance of the rarity of a word for stammer in the above-mentioned literature, a comparison must be made with the modern frequency of the word, stammer. Thorndike compiled a list of the 10,000 most frequently used English words thus (59, p. iii):

> "The Teacher's Word Book is an alphabetical list of the 10,000 words which are found to occur most widely in a count of about 625,000 words from literature for children; about 3,000,000 words from the Bible and English classics; about 300,000 words from elementary-school textbooks; about 50,000 words from books about cooking, sewing, farming, the trades and the like; about 90,000 words from the daily newspapers; and about 500,000 words from correspondence. Forty-one different sources were used."

Thorndike found that stammer was among the first 5000 most widely used English words (op. cit., p. 105), falling in the second half of the 5th thousand. In view of the fact that the glossaries cited supra, p. 151 are not identical and were compiled to serve many different texts, it is reasonable to conclude that the word stammer has been far more widely used in recent centuries, than in the Middle Ages. Had it been as widely used then as it is today, the chances are that it would surely have occurred in at least one of the texts contained in the works cited supra., p. 151 and "glossed." The inference of less frequent Medieval use of the word supports (though does not prove of itself) the hypothesis of a lower Medieval incidence of stammering.

As for Old Scottish, the oldest word for stammer which could be found by Sir William A. Craigie, leading authority in this field, is mant, a word in current use in certain areas of Scotland. In a personal communication he stated that the word goes back at least to the 15th Century, but that he could find no evidence of earlier usage. To this opinion, he added:

> "Man(n)tach adj. 'stammering' and other forms connected with this are in use in both Scottish and Irish Gaelic, and the stem may be originally Gaelic.* Dineen's Irish Dictionary defines it as 'stammering through loss of teeth,' and manntaire as 'a stammerer, a lisping person, one who has lost teeth.' The Scottish Gaelic dictionaries do not mention the teeth."

This opinion lends further weight to the concept of recency of the development of true stammering as a mass phenomenon. The "non-stammering" meaning of the Irish Gaelic word should also be noted as significant.

7. Early Icelandic Usages.

The earliest unambiguous Germanic language reference to stammering is to be found in the works of the 13th Century Icelandic author, Snorri Sturluson. The

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*Although some linguists in this field incline to the opinion that Gaelic borrowed as much from Old Scots as vice versa.

following is a translation of a passage from his Heimskringla (49, II, 94):[1]

> "There were 3 brothers: Arnvidr the Blind, who saw so little that he could hardly fight, and he was very wise; the second was Thorvidr the Stammerer -- he could not say more than two words together, but he was extremely bold and determined; the third one was Freyvidr the Deaf -- he heard badly...Then said King Olaf: 'What does that mean, which Ermundr said about Atti Daelski?...Then said Thorvidr the Stammerer: 'Atti: quarrelsome:[2] greedy: ill-minded. Daelski: foolish."[3]

If there be any doubt that the 13th Century Icelandic word "Stami" meant stammerer, the same author created a kind of metre in his poetry, which he described as "Stamhendr hátt́r." (Stammering Metre). Here is a sample of it, which needs no translation for this particular point (51):

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[1] Although written in the 13th Century, this passage is alleged to refer to actual personnages of the 11th Century, King Olaf is of course a real historical figure; but the coincidence of 3 brothers, one blind, one deaf and one a stammerer suggests that these details are mythological or at least fictional.

[2] The Icelandic is Atti atsamr. Atsamr is so rare a word that its use implies deliberate repetition of a syllable to suggest stammering speech.

[3] The incompleteness of these sentences certainly suggests the halting speech of a stammerer. Normal sentences would include verbs, e.g., "Atti means quarrelsome or greedy or ill-minded. Daelski means foolish."

"Háttatal" (1222 A.D.)

"Laetr undan brot brotna
bragningr fyrir sér hringa,
sá tekr fyrir men menja
maett ord of sik faettir.
Armr kná vid blik blikna
brimlands vidum landa,
thar er hond at lid lidna
lýslódar ber glódir."

This metre was clearly labelled "stammering" because of the repetition contained at the end of the odd-numbered lines, which would indicate that the 13th Century Icelandic word "Stamhendr" had something to do with repetition, and did not refer to any other speech disorder.

Stamhendr was also used in the approximately 13th Century Icelandic "Mariu Saga," (anon.). In this story, a miracle suddenly gave speech to a man who had been dumb all his life, and (50, p. 665)

> "...he told how he had got his speech, and then he stammered as if he was then learning how to speak."

8. Medieval Personages Alleged to Have Stammered.

The present chapter would not be complete without an investigation (where possible) of the actual speech defect of all medieval personages who have ever been alleged to stammer. The chief difficulty in this part of the project

is once again semantic, for the literature describing any figure who ever established a medieval reputation is chiefly in Latin. As a result, all too often the adjective balbus or its "descendants" must be depended upon, and these have been shown to be far from reliable. This is the case in connection with Louis II of France (9th Century), whose actual speech defect seems difficult to pin down. He is described in the literature as Louis le Baube (with varying forms of this spelling); but it is impossible to say whether the word referred to defective articulation or stammering. The same is true of the following historical characters listed by Godefroy (17) after the adjective balbe:

"Robertus le Baube, 1256
Guillaume Li Baubes, 1314
Isabella la Baube, 1331

Franklin (35) gave a list of 12th-16th Century figures who had the surname of Balbus:

	Mort en	
"Augustin le Bègue (Balbus)	1478	(Italian philosopher)
Bernardus Balbus	1213	(Italian Bishop)
Geronomo Balbo	1535	(Italian writer)
Joannes Balbus	a la fin du 13me Siècle	(Italian theologian)

(cont'd.)

	Mort en	
Lambertus Balbus[1]	1187	(Belgian theologian)
Petrus Balbus	1479	(Italian theologian)
Robertus Balbus[2]	1221	(French archbishop)"

Sigonius (36), however, showed in the 16th Century that the name Balbus was given to certain families (those of Gaius Acilius and Asellio-Sempronius -- who were both historians of the 2d Century B.C.):

> "A Lingua balbi et blase quorum illud Aciliorum hoc Semproniorum cognomen est..."

Hence it is impossible to know which of the names in Franklin's list (supra, pp. 157-158) were based on an actual speech defect of some indeterminable nature, and which were simply Roman surnames of particular families.

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[1]It has been alleged that the lay followers of Lambert, the Beguines (f.) and Beghards (m.) were named after him, since his nickname was Le Begue (?"stammerer," in French although the priest himself was Belgian). In the article under Beguines, The Encyclopedia Britannica (11th ed.) speculates on this point, and even suggests that the English counterparts of the Beghards, the Lollards (14th-15th Century followers of Wycliffe) may have drawn their name from the Flemish Löllen, "to stammer." The article under Lollards, however, (ibid.) states that

> "...the most generally received explanation derives the words from lollen or lullen, to sing softly."

This view is shared by the Oxford English Dictionary which states:

> "Loll....c. to mumble (a phrase); to sing in a low tone.
> Lollard (a. M. Du. lollaerd, lit. 'mumbler, mutterer.'"

As for the Beguines and the Beghards, cf. the quotation from Bloch & Von Wartburg (supra, p. 141) which showed that the Flemish beggeln had the meaning of babble or gossip, ("bavarder") rather than stammer.

[2]It seems likely that this was Robert le Baube mentioned by Godefroy (supra, p. 157)

That these existed is clear from the first footnote, supra, p. 100, in which Cicero referred to a certain M. Attius Balbus as a family name with no reference to speech whatsoever.

A 9th Century monk, Notker Balbulus, is alleged to have stammered-- at least so his biographer, Ekkehart IV believed. In this connection, a personal communication from the Editor of "Notes and Queries" stated:

> "Notker Balbulus (c. 840-912) 'The Stammerer.' Entered the monastery of St. Gall and became Master of the Monastic School. His biographer Ekkehart IV praises him as a vessel of the Holy Ghost, stammering of tongue, but not of spirit. Venerated as a saint."

It has not been possible to find Ekkehart's text in the original, but there is an account of the life of Notker Balbulus in Migne (37, Vol. 131) which quotes it:

> (translation)
> "As Ekkehardus, Junior, Chapter 3 says...Notker was meagre in body, not in mind, defective in voice but not in spirit."*
>
> "Finally Goldastus thinks that Notker Balbulus was the author of two books...certainly the time agrees and these words in Book II, Chapter 26, promote this: 'By these things which I, lisping[1] and toothless...have tried to explain.'"

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*Voce non spiritu balbulus.

[1]Balbus

Since the monk himself associated his speech-defect with his toothlessness, it is as reasonable to believe that his articulation was defective as that he was a genuine stammerer.

Ash (38, p. 57) stated that the Byzantine Emperor Michael II who reigned from 820-829 A.D., was a stammerer.* It has not been possible to find any accurate information about this ruler's speech, but the Encyclopedia Britannica, (11th ed.) states that he was called "Psellus." It was shown, supra, p. 70, that this word never even remotely suggested true stammering -- at least in the Greek civilization.

Blanton (39, p. 1) alleged that the great 12th Century Archbishop of Canterbury, Thomas a Becket, was a stammerer. Robertson's Life of Thomas Becket (40, p. 26), noted, however:

> "He is described to us as...of eloquent and witty speech,"

which scarcely suggests a stammerer.

The Encyclopedia Britannica (11th ed.) asserts that William Rufus (William II, 1056-1100):

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*This is hardly a reliable source, since he also stated (op. cit., p. 58) that Aristotle, Alcibiades and Demosthenes all stammered.

"stuttered violently, and when angry was almost inarticulate."

A careful examination of all of the original sources cited as the Encyclopedia's authorities, however, shows that only one, William of Malmesbury referred to William Rufus' speech at all. This 12th Century chronicler wrote (70, p. 374):

"Eloquentiae nullae, sed titubantia linguae notabilis, maxime cum ira succresceret."

(Free trans:)

"Of no eloquence, but with a remarkable hesitancy of the tongue (?), which became greatest when he was enraged."

This was the only basis for the description of William Rufus in Robert of Gloucester's Chronicle, c. 1300 (v. supra, p. 152), as well as that in the Encyclopedia Britannica, supra. Yet the following works, all by 11th and 12th Century chroniclers of William Rufus, make no reference whatsoever to any defect in his speech:

Eadmer	Historia Novorum in Anglia (72, pp. 25-118), which makes constant reference to long speeches made by William.
Anon.	The Peterborough Chronicle, (73, pp. 120-135)
Ordericus Vitalis	The Ecclesiastical History of England and Normandy, 4 Vols. (74)

In fact, the only other reference to William Rufus' speech is to be found, again, in William of Malmesbury, and

hardly seems to describe a stammerer (op. cit., p. 367):

> "Erat is foris et in conventu hominum tumido vultu erectus, minaci oculo astantem defigens, et affectato rigore feroci voce colloquentem reverberans."
>
> (Free trans:)
>
> "When outside in an assembly of men, he would stand erect with a swollen countenance, fixing anybody standing near him with a threatening eye, and repelling the person he might be talking to with a harsh, wild voice."

The evidence regarding William Rufus' stammer is therefore far from satisfactory; in fact all that suggests it is a single sentence in the narrative of one of four chroniclers of the unpopular "Red King."

Lombroso (41, p. 13) alleged that Erasmus (1466-1536) stammered. Both 11th and 14th Editions of the Encyclopedia Britannica, however, describe the Dutch philosopher thus:

> "...though his voice was weak, his enunciation was distinct...his manner and conversation polished, affable, even charming."

No mention is made of any speech defect that Erasmus may have had, and the above description is hardly one which would normally be applied to a stammerer.

Lombroso (ibid) also listed as a stammerer the Italian mathematician, Tartaglia (c. 1506-1559). It is

almost certain that here Lombroso was correct, because of the onomatopoeic nature of Tartaglia's nickname. The 14th Edition of the Encyclopedia Britannica supports this conclusion:

> "Tartaglia c. 1506-1559 (Niccolo Fontana). His childhood was passed in dire poverty. During the sack of Brescia in 1512, he was horribly mutilated by some French soldiers. From these injuries he slowly recovered, but he long continued to stammer in his speech, whence the nickname 'Tartaglia.'"

Hence the earliest continental European figure of whom it can be stated with absolute certainty that he stammered was Tartaglia, who lived in the first half of the 16th Century.

10. Conclusions

It must be emphasized, finally, that nothing has been scientifically established in the foregoing discussion. The hypothesis set forth supra, pp. 123-125 has been examined, however; and the available clues to the problem of Medieval stammering incidence seem to support this hypothesis. Nevertheless the material in this chapter, as well as the previous one, is so descriptive and uncontrolled that no psychological conclusions of real value can be legitimately drawn.

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Chapter 5

The Present Investigation

1. Introduction

The study thus far has proceeded on the assumption that stammering incidence is influenced by cultural factors. If this assumption is justified, however, it need not follow that, because our civilization includes forces which produce stammering, all elements and strata of the population are equally affected by those forces. Indeed, if reliably higher or lower incidence rates of stammering could be demonstrated within a single, stammering population -- might not such a result contribute to the knowledge of etiology in stammering? This was the aim of the present study.

From the outset it was necessary to recognize certain restrictions and to overcome certain difficulties. It was necessary to restrict the sociological investigation to purely quantifiable factors, and to disregard all material, however interesting, of a purely descriptive nature. It was decided to quantify the various socio-economic groups in Scotland by assigning code numbers to the occupations and professions of the fathers or guardians of sufficiently large numbers of stammering children as to allow for a statistical comparison -- either with an equal number for non-stammering children, or with norms for the entire population. In addition, it was planned to study the number of

siblings as a factor of possible etiological significance; the stammerer's place in the family; and explore certain other questions to be discussed later.

The most important step in the procedure was the decision to take advantage of the sociological norms which had been produced from the 1947 Mental Survey, conducted by The Scottish Council for Research in Education; the norms for siblings are to be found in "The Trend Of Scottish Intelligence," published in 1949 (1), while the socio-economic norms are from "Social Implications of the 1947 Mental Survey," published in 1953 (2). The norms for siblings constitute the actual distribution of over 70,000 11-year-old children by family size and position in family, in 1947 (1, p. 107); the socio-economic norms are those of a random ("Thirty-Six-Day") sample of 10% of the entire Mental Survey, amounting to over 7,000 11-year-old children born on the first three days of each month in 1936.* The availability of these norms, together with the code-numbers and general procedure of the Mental Survey, provided an enormous time-saver, and obviated the necessity of obtaining large numbers of controls, whose nature is so frequently open to question.

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*For greater detail on this random sample, v. 1, Ch. III.

The difficulties of the project were now reduced to the following:

1. Standardization of diagnosis. If more than one judge were to be used for identifying stammering children, what steps could be taken to reduce to the minimum the divergences implicit in the question of "What constitutes a stammering child?"

2. Validity of the Count. Large numbers of stammering children had to be accumulated. Since only about 1% of all children stammer, how to be certain that ALL the stammering children in any area had been identified, without listening to the speech of every single child, which was administratively impossible?

The first of these problems was resolved by the decision to use qualified speech therapists, employed by Education Authorities, as the selectors of stammering children. The training of these speech therapists has been standardized by the London College of Speech Therapy, and all of them hold a diploma accredited by this institution. No other available judges could be considered more competent, nor could be more likely to use common criteria by which to select stammering children from non-stammerers.

The second problem was resolved in the following manner. A letter was sent out by the Directors of Education to the Heads of all relevant schools in the participating Authorities, asking them to return the names of all children in the particular age-group, who were even vaguely suspected of having

stammered within the last year. In the event of no stammer-suspects, a nil return was requested. Teachers were asked to send in the name of any child who could be considered a stammerer according to the following lay "definition," which was standardized for all of the surveys:

> "A child may be considered to stammer (or stutter) if, from time to time, he is forced to interrupt his natural flow of speech by the repetition of any sound, or by a total 'blocking.'"

Special schools were excluded in all Authorities, since these are known to have a significantly higher incidence rate of stammering.[1] When the names of all the "stammer-suspects" had been received, appointments were made for the speech therapists of the Authority to see the children and "confirm or deny" the diagnosis. Those children who were not actual stammerers, in the opinion of the interviewing speech therapist, were dismissed. (The children were asked to read and make spontaneous conversation for five to ten minutes.) Children confirmed to be stammerers were then given a brief oral questionnaire, whose answers were noted by the speech therapist on prepared forms.[2]

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[1] e.g. v. Table 3, supra, p. 20

[2] In Stirling County and Edinburgh, appointments were made with Mothers of confirmed stammerers, and the questions were put to them orally; this was also the case for under-11 children in Mid-Lothian and Peebles; in Fife the writer collected the housing and occupational data through personal calls at the homes of the stammering children, interviewing a parent or an adult sibling in all cases.

This procedure of using class teachers as a preliminary "screen" was deemed the best and most reliable way of counting and interviewing all the stammering children of a community, without being obliged to listen to the speech of every child. It was assumed that all the stammering children of each Authority had been identified, and the numbers (where available) of children who were "rejected" by the speech therapists as not actually being stammerers seem to confirm that the teachers did indeed refer all who were even vaguely suspected of stammering, and that no actual stammerers could have possibly escaped so thorough a drag-net.* It was not possible to test and interview a few cases in Edinburgh and Stirling County, but probable-incidence-rates in these Authorities were calculated; the incidence-rates have also been shown as falling within a range, since it is impossible to know how many of the untested children were actual stammerers.

The oral questionnaire varied from one Authority to another very slightly -- and entirely in form and order, rather than content. Appendix A shows an actual questionnaire, but the questions may conveniently be listed here as well:

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*In Edinburgh, out of 80 referred and tested children, 18 were not considered stammerers (22.5%); in Stirling County the proportion of "rejects" was even higher: 22 out of 68 referred and tested children (32.3%).

1. Name (Initials suffice)
2. Sex
3. Date of birth
4. Address
5. Name of school
6. When did onset of stammering occur (age)?
7. Does the child associate the onset with any particular incident, e.g., a trauma, the start of school, etc.?
8. How many siblings? Their ages? Their sex?
9. Occupation of father or guardian
10. Number of apartments in home (to include kitchen but not bathroom).
11. Number of individuals permanently resident in the home, including any temporarily resident in the Armed Forces.

Attention should be called to the large space in the questionnaire for answers to Question No. 9. While the above wording was used for simplicity, the speech therapists were instructed in all cases to obtain as much detail as possible in regard to the actual occupation, and to note it down in the appropriate space.* For example, if the occupation given was "joiner," it would be necessary to inquire whether he was self-employed or worked for somebody else; in the case of a "merchant" or "shop-owner," details would be required as to the nature and size of the firm (number of employees); and precise details were always requested as to the exact nature of the job performed by such occupations as "builder," "engineer," "contractor," etc.

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*Preliminary discussions of the procedure were held in conferences with the speech therapists in each Authority, for purposes of explanation and standardization.

Questions 10 and 11 were included at the suggestion of the Scottish Council for Research In Education, who had included these questions in the questionnaire given to their "Thirty-Six-Day Sample," and hence had norms with which the returns for stammerers could be compared. It was felt that the data obtained by these questions would yield additional facts regarding socio-economic status, and should serve as a "check" on any information gleaned from the answers to Question 9, since there ought to be a fair correlation between fathers' occupations and family housing accomodations. Nevertheless, these housing data must be very cautiously approached, when compared with the Mental Survey norms which were taken in 1947; in some areas the housing situation has improved so much in the last six years as to make it virtually impossible to use the 1947 findings as norms for a survey of stammerers in 1953.

2. The Surveys

Excellent cooperation and assistance was provided by the Directors of Education, Chief School Medical Officers and Speech Therapists of all the Authorities contacted.

a) In Edinburgh. A pilot survey in Edinburgh revealed that it was far preferable to study the children in the last year of Primary School (Primary 7) than in the first year of

Secondary School (Secondary 1). Children in Primary 7 have been with their teachers for some time and are in smaller classes; they therefore tend to be far better known to their teachers than children in Secondary 1. Hence greater reliance can be placed on the referrals by Primary 7 teachers than by Secondary 1 teachers. Only 26 children were referred out of a School Roll of 5565 Secondary 1 children, in the pilot survey, about 1/2 the actually expected number; when compared with the subsequent Edinburgh survey of Primary 7 children, in which 92 of 4963 children were referred for testing, it was clear that not all of the Secondary 1 stammerers had been referred in the pilot survey. The pilot Edinburgh survey has been labelled Edinburgh B, because it is of lesser importance than the Edinburgh A survey of Primary 7 children. While the pilot Edinburgh B survey cannot be used in any measure of stammering incidence, the 26 cases obtained from it can be usefully applied in other ways, as will be seen.

b) Mid-Lothian and Peebles. The factor which determined the number of children who could be examined in any Authority was invariably the ratio of the number of speech therapists to the number of children in the Authority's schools. Whereas in Edinburgh this ratio stood at about 1: 14,000, in Mid-Lothian and Peebles it was about 1: 4,000. Hence it was

possible to take a wider age-range in these Counties than in Edinburgh; and since the Mid-Lothian speech therapists had concentrated their work in the 30 largest schools of the County, it was possible for them to survey (by the above procedure) 12,914 out of all 16,104 children in the Primary and Secondary Schools in the Authority at the time. The Peebles speech therapist was easily able to survey all 1,967 Peebles school children of all school ages. The children covered in the Mid-Lothian and Peebles surveys, therefore, range from 5 to 15 years in age.

c) Fife. In Fife it was possible to take advantage of an audiometric survey of 11-year-old children which was being conducted at the same time; all children born in 1940 had been previously selected by the Authority and put on a special roll, for hearing tests. These were the children who were examined for stammering in Fife, by the above procedure. Hence all the Fife cases were 11 years in age, although they were not all in the same school class.

d) Stirling County. In this county, it was possible to survey all the children in Primary 6 and Primary 7, i.e., the last two years of Primary School. The same procedure for identifying the stammerers was followed.

The following table gives a quick view of the results of these surveys:

Area	Numbers Surveyed	No. Cases Referred	Nos. Tested By Speech Therapists	Actual Stammerers Boys	Girls	Total
Mid-Loth.	12,914	N O T K N O W N		129	24	153
Peebles	1,967	"	"	20	5	25
Fife	4,173	"	"	34	14	48
Stirling Co.	5,482	86	68	40	6	46
Edin. A.	4,963	92	80	53	9	62
Edin. B.*	5,565*	26	26	18	8	26
	35,064			294	66	360

*The Edin. B. survey cannot be used for computation of incidence rate, since all the stammerers in this group were not referred to the speech therapists for examination.

Table 1.

3. Comparative Incidence Rates

The first point of interest is to ascertain whether the incidence of stammering is significantly higher or lower in any one of the geographical areas included in the above surveys. Represented as a proportion, the incidence of stammering by areas may be shown thus:

Area Surveyed	Stammering Incidence
Mid-Lothian	1.18%
Peebles	1.27
Fife	1.15
Stirling Co.	o.83% - 1.16%*
Edinburgh A.	1.25% - 1.49%*

*Shown as a range because a few "stammer-suspects" in these areas could not be tested for various reasons. These "indeterminable" children prevent the statement of a precise percentage.

Table 2.

Is there a significantly different incidence rate between any two of these areas? In order to make this calculation, it is necessary to make a "probable estimate" of stammering incidence in Stirling County and Edinburgh. By referring to Table 1, supra, p. 180, we note that in Stirling County, 18 cases were not seen by the speech therapist; and from the first footnote to p. 175, supra, we note that of the 68 who were seen, 32.3% were rejected as not actually being stammerers (leaving a net of 46). By applying this percentage to the 18 children not seen, we may infer that 6 of these would probably have been rejected if seen, and that there probably were another 12 stammerers in Stirling County from whom data were not obtained. This gives an over-all figure of 58 stammerers on which to base an estimated incidence in Stirling County; the same procedure adds another 9 stammerers to the Edinburgh A total, making it 71. These two probable incidences are now found to be 1.06% and 1.43% respectively, and have the largest "spread" of any two incidences listed in Table 2, supra, p. 180. Appendix B shows, however, that even this difference is not significant, p being less than .1. (Because of the large number of stammerers in Mid-Lothian, it was deemed advisable to compare the incidence there (1.18%) with the Edinburgh A probable incidence of 1.43%; in Appendix B' this difference is shown to be not significant either, p being

less than .2.) It may therefore be concluded that, at least for the areas studied, geographical location in Scotland does not significantly affect stammering incidence.

The results from the surveys have been classified according to the density of the population in the same way as was done for the "36-day Sample" of the 1947 Mental Survey. This classification was done as follows (2, pp. 56-77):

Location of the Home (LH)	Code No.
Cities (4 in Scotland).	1
Large Town (Population over 20,000, other than Cities).	2
Small Town (Population from 10,000 to 20,000)	3
Other Areas (All other places).	4

Schedule 1.

The areas covered by the surveys may accordingly be classified thus:

LH 1 - Edinburgh

LH 2 - Dunfermline, Kirkcaldy; Stirling, Falkirk

LH 3 - Musselburgh, Grangemouth, Kilsyth, Cowdenbeath

LH 4 - Mid-Lothian (except Musselburgh); Peeblesshire; Fife (except Dunfermline, Kirkcaldy, Cowdenbeath); Stirling Co. (except Stirling, Falkirk, Grangemouth, and Kilsyth).

The stammering cases listed in Table 1, <u>supra</u>, p. 180, can therefore be re-classified thus:

LH	Numbers Surveyed	Boys	Girls	Total No. Stammerers	Boy-Girl Ratio
1	10,528	71	17	88	4.2 - 1
2	2,953	15	3	18	5.0 - 1
3	4,033	48	9	57	5.3 - 1
4	17,550	160	37	197	4.3 - 1
Total	35,064	294	66	360	4.4 - 1 (mean)

Table 3.

By discounting the 5,565 children in the Edinburgh B survey (deemed unreliable), and the 26 cases from it, we can now ascertain whether stammering incidence varies significantly according to the density of the population. To make this comparison, however, it is necessary to combine the numbers of stammerers in LH 2 and LH 3, as well as the numbers of children surveyed in these areas, in order to make the numbers of each "cell" large enough to be reliable. The following table is derived:

LH	Numbers Surveyed	No. Actual Stammerers	No. Probable Stammerers	Probable Total Stams.	Probable Incidence
1	4,963	62	9	71	1.43%
2 & 3	6,986	75	3	78	1.12
4	17,550	197	9	206	1.17
Total	29,499	334	21	355	1.20% (Mean)

Table 4.

Appendix C shows that when the LH 1 probable incidence is compared with that of LH 2 and LH 3 combined, p is less than .2; when LH 1 probable incidence is compared with that of LH 4, p is less than .2; and when the probable incidence of LH 2 and 3 combined is compared with that of LH 4, p is less than .8. Thus there is no significance whatsoever in the varying proportions of stammerers from one LH to another; or in other words, density of population in Scotland does not affect the incidence of stammering significantly.

4. Are the Surveys Reliable?

At this point it is germane to inquire as to the actual

reliability of the surveys; do the results differ significantly from what might have been expected? Writers all over the world have indicated that stammering incidence fluctuates around 1%; v. tables supra, pp. 16 and 20. Appendix D shows the results of statistical comparison of stammering incidence in LH 1, LH 2 and LH 3, and LH 4 with hypothetical authorities of the same numbers of children respectively, in which the incidence was a hypothetical or "expected" 1%. In the case of LH 1, p was less than .1; in the case of LH 2 and LH 3, p was less than .4; and in the case of LH 4, p was less than .2. In other words, in no case did the survey incidence results yield returns which were significantly different from an expected, hypothetical incidence of 1%. This is the best available test for reliability, and indicates that the survey results are indeed reliable. Supporting this conclusion, it may be noted how slightly the ratio of boy-to-girl stammerers varies from one LH to another (v. supra, p. 182, Table 3).

5. Occupational Class and Occupancy Rate.

These two terms were borrowed directly from the 1947 Mental Survey. According to "Social Implications of the 1947 Mental Survey" (2, pp. 56-57), the fathers' (or guardians') occupations were first given numbers, and these

in turn were conveniently grouped into 9 occupational classes, in accordance with the following schedule:

Occupational Class	Father's Occupation Number	Definition
1	10	Professional class - include higher ranks of civil service, etc., forces officers
	20	Employers of 10 or more workers - include chairmen, directors, managers of large firms - but exclude farmers.
2	30	Own account, or employing less than 10 workers - exclude occupations 10, 70, also casual workers, etc. Include small employer, shopkeeper and businessman.
3	41	Salaried employee - non-manual - paid by month or longer. Includes all shop and factory managers.
	42	Salaried employee - manual - paid by month or longer. Exclude those in class 10, 20, 70.
4	51	Non-manual weekly wage-earner - mainly clerical.
	52	Non-manual weekly wage-earner - others, e.g., shop assistants, insurance agents, etc.
5	61*	Manual weekly wage-earners - skilled (e.g., Trades).
6	62*	Manual weekly wage-earners - semi-skilled (e.g., Machine tender, driver).
	6X*	Manual weekly wage-earners - skill unknown
7	63*	Manual weekly wage-earner - unskilled (e.g., Labourer).
8	70	Farmers - employers, managers, own account
9	80	Agricultural - non-managerial.

*Note: 61, 62, 6X, 63: exclude agricultural.

Schedule 2.

The present study made use only of the first column "Occupational Class;" the second column "Fathers' Occupation Number" is included only for reference help in the definition. Wherever the information on the oral-questionnaire forms filled in by speech therapists was sufficiently clear, a child's father or guardian was given one of the 9 occupational class numbers.

The Occupancy Rate, also taken from the "Social Implications of the 1947 Mental Survey" (op. cit.) was based on the following schedule:

No. of Persons per Room*	Code
Fewer than 1	1
1 and less than 2	2
2 and less than 3	3
3 or more	4

*No. of rooms in home (include kitchen but not bathroom)
No. of persons in home (permanent residents, include those in Forces)

Schedule 3

Norms for both Occupational Class (OC) and Occupancy Rate (OR) were available in the "Social Implications" (op. cit., pp. 340-341 and 352, respectively) according to Location of the Home (LH). This made it possible to compare the findings for a reliable number of stammering children with what could have been expected from a random sample in each particular LH.

These norms are shown in the following tables:

	LH				Total
OC	1	2	3	4	
1	98	30	13	95	236
2	114	50	18	161	343
3	117	40	11	87	255
4	313	103	32	144	592
5	1079	437	182	861	2559
6	442	233	94	517	1286
7	598	219	59	360	1236
8	3	4	1	136	144
9	17	9	6	441	473
Total	2781	1125	416	2802	7224 *

Table 5.

	LH				Total
OR	1	2	3	4	
1	166	68	22	277	533
2	1059	413	167	1195	2834
3	881	405	130	742	2158
4	647	187	68	403	1305
Total	2753	1073	387	2617	6830 *

Table 6.

In order to make these norms statistically comparable with the figures observed for stammering children, the figure in each of the above cells was multiplied by the appropriate constant of $\frac{\text{Total observed}}{\text{Total expected}}$; this reduced the figure in each cell to comparable size. With the computations for occupational class (OC), it was found expedient to assimilate classes 1 to 4 inclusive, and

* The total figures vary from one Table to another, both in the norms and in the observed findings. This is of course due to the fact that it was not possible to obtain all the desired data from every single case.

classes 7 to 9 inclusive -- in order to make the observed figures in each cell large enough to be statistically reliable. For the same reason it was also deemed advisable, as before, to combine the findings for LH 2 and LH 3, and to compare them with the appropriate combined norms. The results of the X^2 test in each case are interesting enough to warrant embodying in the chapter, rather than relegating them to the Appendix.

LH 1 Edinburgh A & B Surveys

X^2 Test for Occupational Class

	1-4	5	6	7-9	Total
F_o	16	26	32	10	84
F_e	19.388	32.586	13.348	18.664	83.986
$F_o - F_e$	3.388	6.586	18.652	8.664	
$(F_o - F_e)^2$	11.479	43.375	347.897	75.065	
$\frac{(F_o - F_e)^2}{F_e}$	.592	1.331	26.064	4.022	

X^2 equals 32.009 df equals 3

p is less than .001

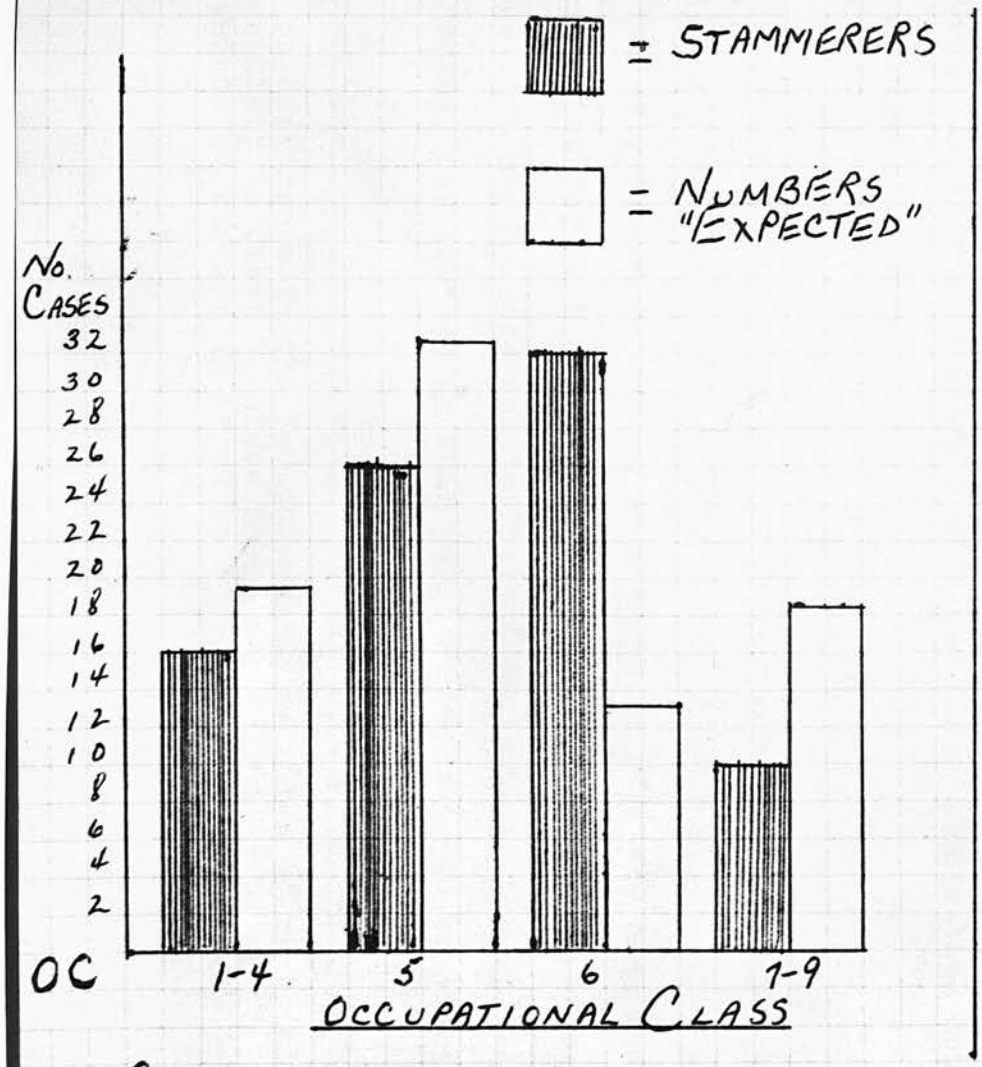
LH 1 Edinburgh A & B Surveys

X^2 Test for Occupancy Rate

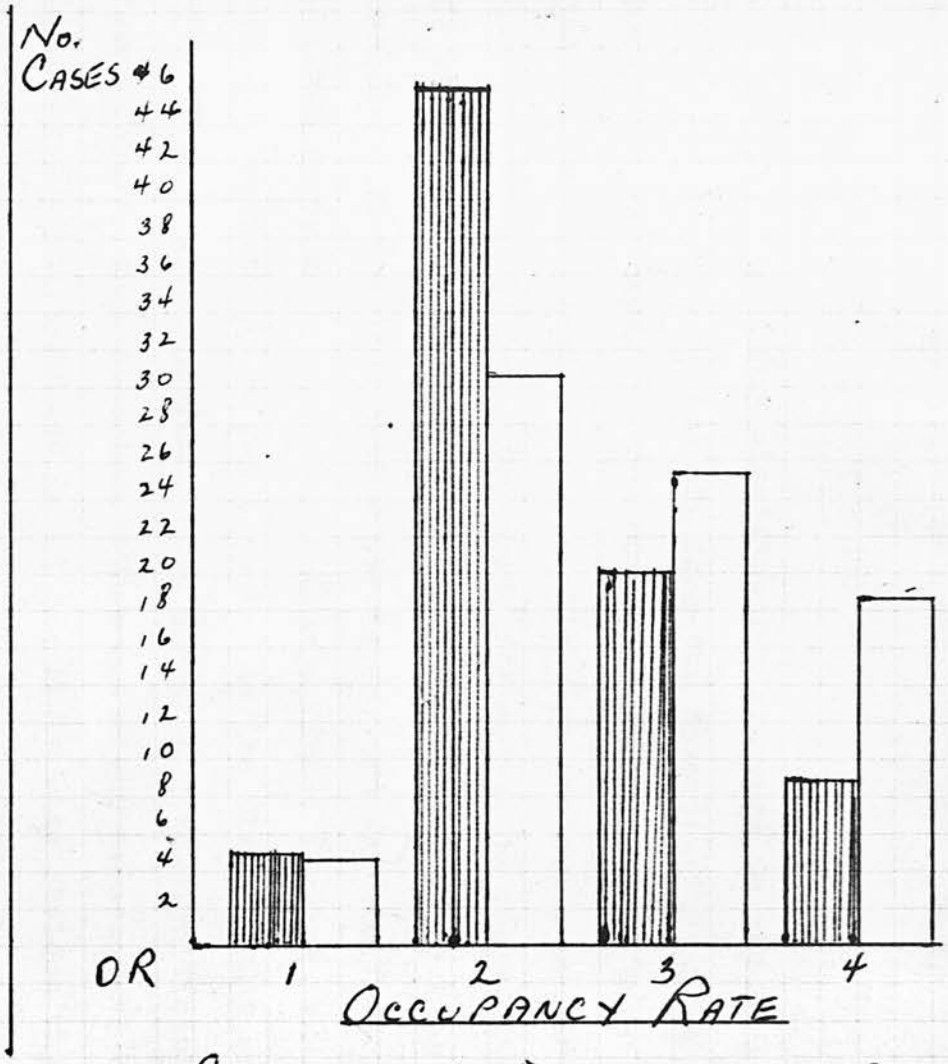
	1	2	3	4	Total
F_o	5	46	20	9	80
F_e	4.831	30.817	25.637	18.828	80.113
$F_o - F_e$	.169	15.183	5.637	9.828	
$(F_o - F_e)^2$	.029	230.523	31.776	96.590	
$\frac{(F_o - F_e)^2}{F_e}$	.006	7.480	1.239	5.130	

X^2 equals 13.855 df equals 5.130

p is less than .01



COMPARISON OF DISTRIBUTION OF 84 STAMMERERS WITH AN "EXPECTED" DISTRIBUTION. (FROM P.188)



COMPARISON OF DISTRIBUTION OF 80 STAMMERERS WITH AN "EXPECTED" DISTRIBUTION. (FROM P.188)

LH1

EDINBURGH A + B SURVEYS

There is a highly significant difference in the LH 1 distribution of both OC and OR, from the distribution which could have been expected. In the OC test, the stammerers have far too many Class 6's (semi-skilled weekly wage-earners), and too few Class 7's* (unskilled labourers). Likewise, in the X^2 test for OR (in LH 1) we may note that there are far too many Class 2 dwellings (1 and less than 2 per room), and far too few of Class 4 (3 or more persons per room). These findings are not self-contradictory, at least as far as the Class 4 OR's and Class 7 OC's are concerned, both of which gave significantly fewer returns than expected, since one might expect OC 7 to be among the worst-housed in LH 1. It is less obvious why there should be many more Class 2 OR's and Class 6 OC's than could be expected at random.

A socio-psychological hypothesis must be formulated to account for the excess of OC 6 found in LH 1 stammerers, particularly since, as may be seen infra, p.191, the same result was noted for LH 4, with many more cases. Such a hypothesis, however, may be more meaningfully formulated at the end of the chapter, rather than at this point where it would be premature.

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* The difference in the 7-9 column may be taken to apply almost entirely to Class 7, since there are virtually no agricultural owners or workers (8 or 9) to be found in LH 1 (big cities).

In LH 2 and 3 combined, an X^2 test revealed, once again, a significantly high proportion of OC 6 among the stammering children; a significantly low proportion of OC 5 was found in these locations:

LH 2 and LH 3 Combined

X^2 Test for Occupational Class

	1-4	5	6	7-9	Total
F_o	13	12	33	13	71
F_e	13.6917	28.5359	15.0747	13.7378	71.04
$F_o - F_e$	.6917	16.5359	17.9253	.7378	
$(F_o - F_e)^2$	.4784	273.5716	221.4849	.5443	
$\frac{(F_o - F_e)^2}{F_e}$	.0349	9.5869	14.6925	.0396	

X^2 equals 24.3539 df equals 3

p is less than .001

An equally significant difference from the expected distribution is found in the X^2 test for OR in the same areas, LH 2 and 3 combined:

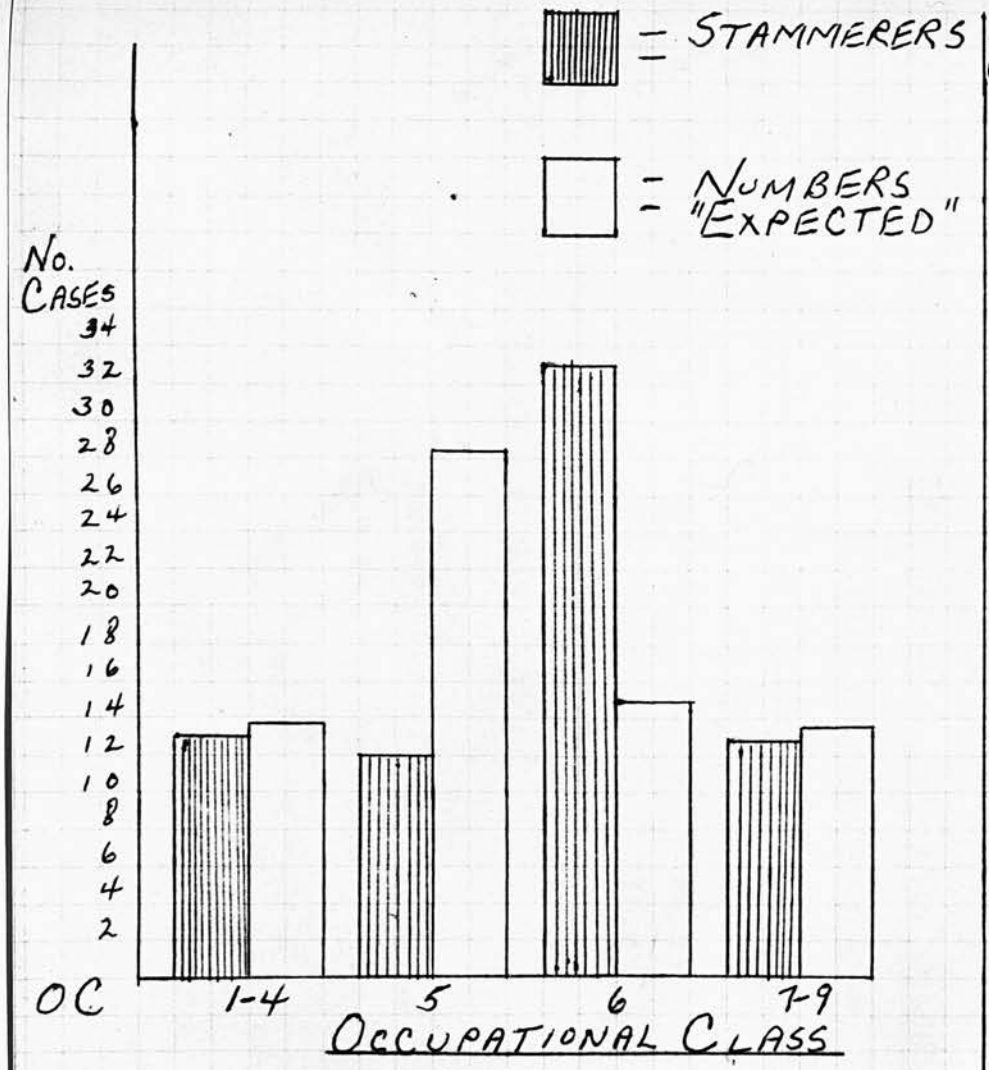
LH 2 and LH 3 combined

X^2 Test for OR

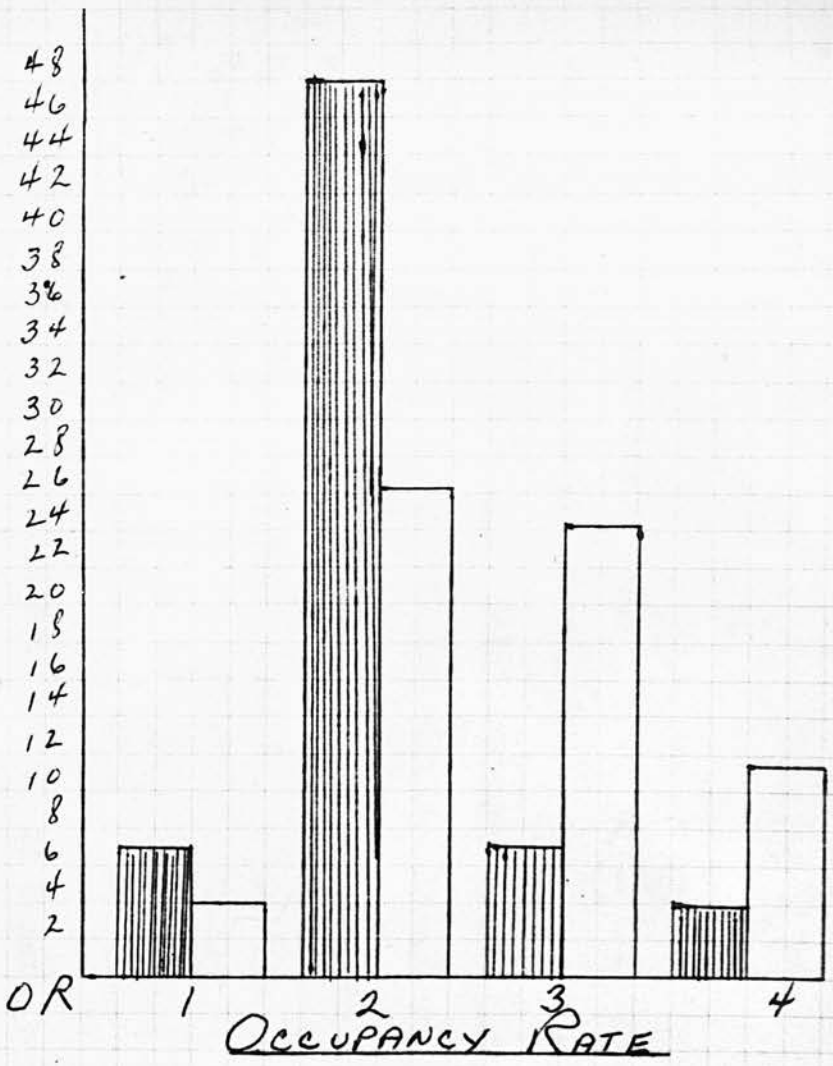
	1	2	3	4	Total
F_o	7	48	7	4	66
F_e	4.068	26.216	24.182	11.526	65.992
$F_o - F_e$	2.932	21.784	17.182	7.526	
$(F_o - F_e)^2$	8.5966	474.6427	295.2211	56.6407	
$\frac{(F_o - F_e)^2}{F_e}$	2.1132	18.1050	12.2083	4.9142	

X^2 equals 37.3407 df equals 3

p is less than .001



COMPARISON OF DISTRIBUTION OF 71 STAMMERERS WITH AN "EXPECTED" DISTRIBUTION. (FROM P.190)



COMPARISON OF DISTRIBUTION OF 66 STAMMERS WITH AN "EXPECTED" DISTRIBUTION. (FROM P.190)

LH2 + LH3 COMBINED

The most significant results of X^2 tests for OC and OR were found in LH 4, which had the largest number of cases:

LH 4 (Areas of less than 10,000 pop.)

X^2 Test for Occupational Class

	1-4	5	6	7-9	Total
F_o	29	80	52	34	195
F_e	33.895	59.926	35.983	65.215	195.02
$F_o - F_e$	4.895	20.074	16.017	31.215	
$(F_o - F_e)^2$	23.9610	402.9655	256.5443	974.3762	
$\frac{(F_o - F_e)^2}{F_e}$	.7069	6.7244	7.1296	14.9410	

X^2 equals 29.5109 df equals 3

p is less than .001

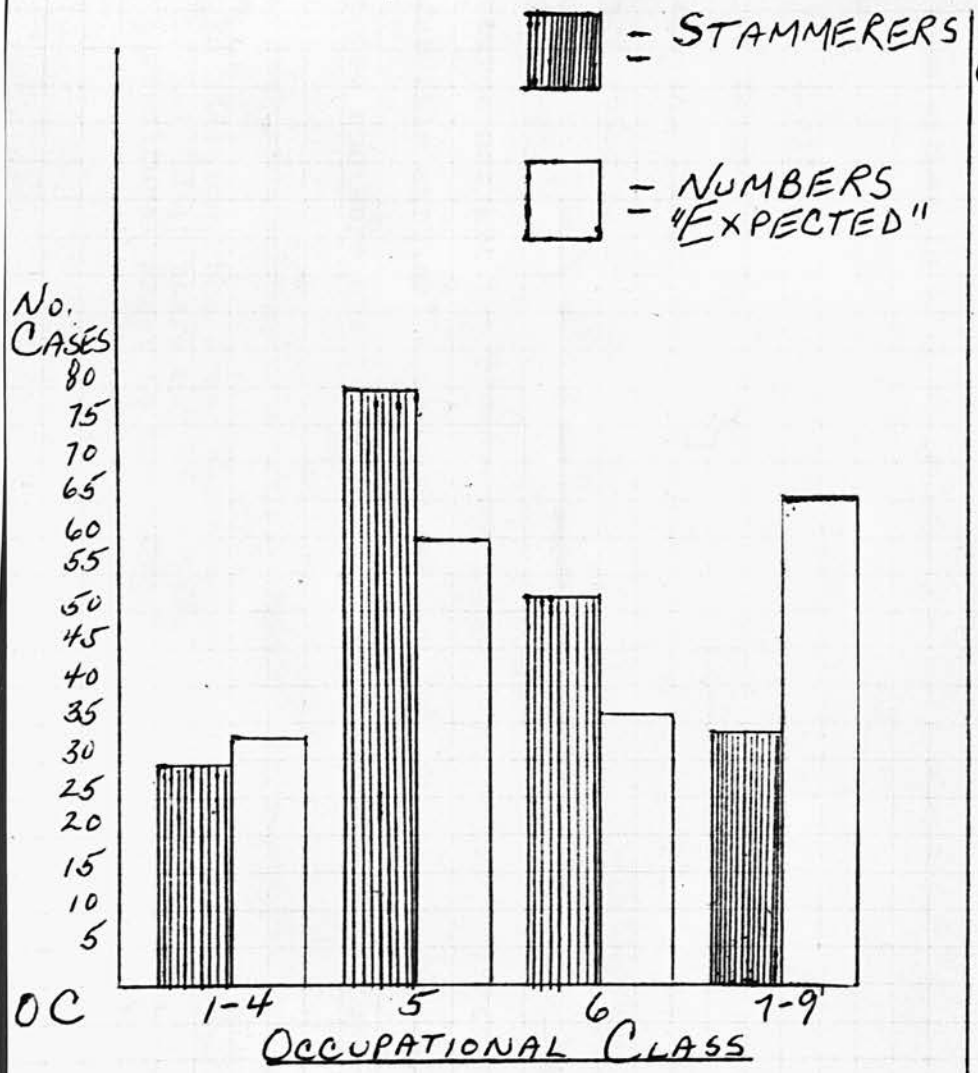
LH 4 (Areas of Less than 10,000 pop.)

X^2 Test for Occupancy Rate

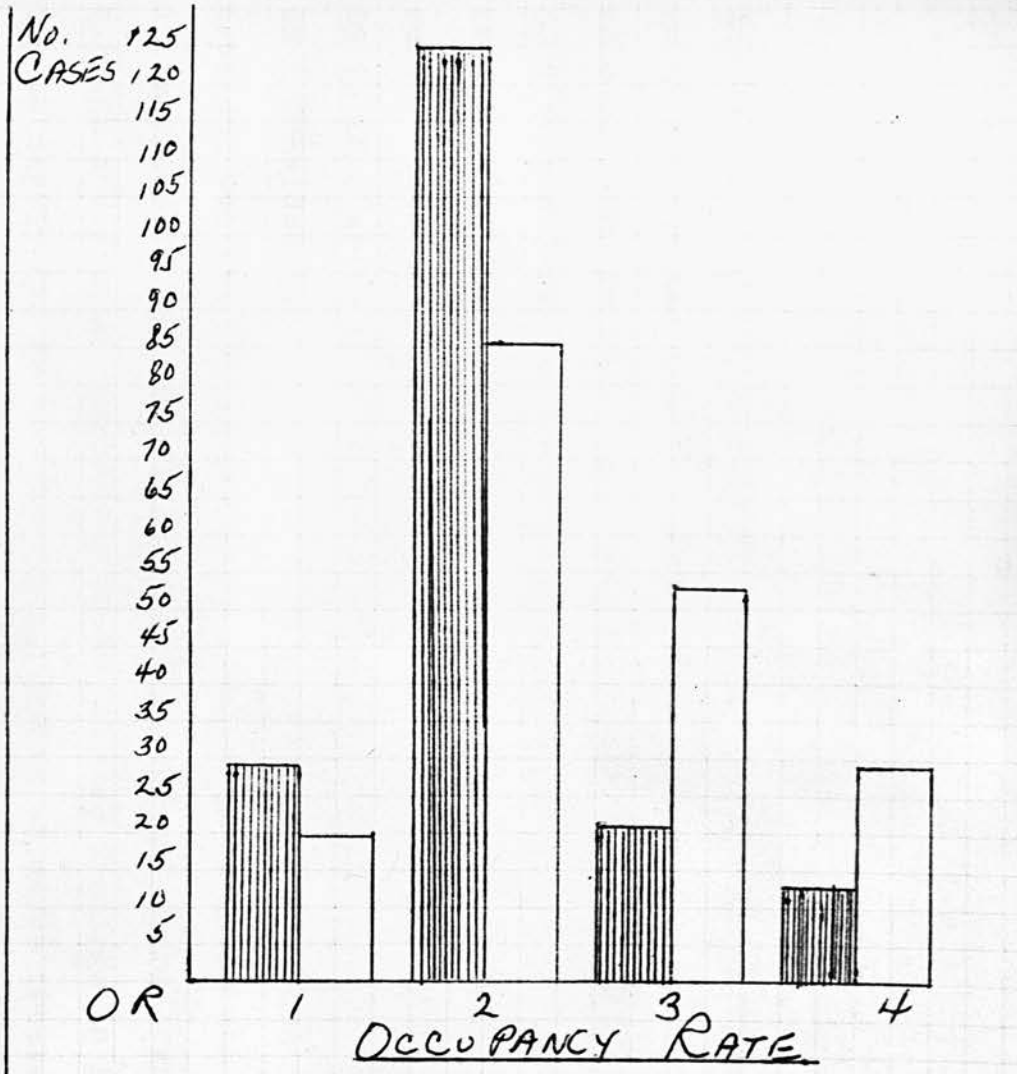
	1	2	3	4	Total
F_o	29	125	21	13	188
F_e	19.889	85.801	53.276	28.935	187.901
$F_o - F_e$	9.111	39.199	32.276	15.935	
$(F_o - F_e)^2$	83.010	1536.562	1041.740	253.924	
$\frac{(F_o - F_e)^2}{F_e}$	4.173	17.908	19.553	8.741	

X^2 equals 50.375 df equals 3

p is less than .001



COMPARISON OF DISTRIBUTION OF 195 STAMMERERS WITH AN "EXPECTED" DISTRIBUTION. (FROM P. 191)



COMPARISON OF DISTRIBUTION OF 188 STAMMERERS WITH AN "EXPECTED" DISTRIBUTION (FROM P. 191)

LH 4

Analysis of the significant differences in the X^2 test for OC in LH 4 shows the same deviations from the expected frequencies as were found in LH 1, with the additional fact that in LH 4, OC 5 provided far too many stammerers, as well as OC 6, whereas this was not the case in LH 1 (v. supra, p. 188). Again, the same deviations from the expected were found in the X^2 test for OR in LH 4 as in LH 1, with the additional fact that in LH 4, OR 1 provided too many stammerers as well as OR 2, while OR 3 provided too few stammerers as well as OR 4; LH 1 had similar differences in OR 1 and OR 3, but they were not significant. Perhaps the greater deviations from expected findings in LH 4 may be partly due to the far larger number of cases treated than either in LH 1 or in LH 2 and LH 3 combined.*

7. Siblings

Norms for the family sizes (no. of children) were obtained for the 36-day sample in "Social Implications," (2, pp. 348-349) according to LH, and this made it possible to compare the findings of the family sizes of 11-year-old stammerers. Of course not all the stammering cases were 11 years of age; but for this particular measure, it was only necessary to exclude those who were under 11, since it was possible to compute the

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* In addition, the areas surveyed in LH 4 may not be typical of all LH 4; there may be too low a proportion of purely agricultural areas in the survey.

family-size of those over 11 as it was, when they were 11, e.g., a 13-year-old stammerer with only one brother 6 months old, was counted as an only child, since this was his status when he was 11.

The norms obtained are cited in the following table:

Area	No. of Children	Sum of Family Sizes	No. of Chil. per Family	No. of Sibs. per 11-yr-old
LH 1	2869	10,256	3.57	2.57
LH 2	1148	4,387	3.82	2.82
LH 3	422	1,622	3.84	2.84
LH 4	2887	11,164	3.87	2.87
Total	7326	27,429	Mean: 3.74	

Table 7.

Table 7 was then compared with the number of siblings observed for stammering children, as noted in Table 8:

No. of Siblings Per 11-Year-Old Stammerer, By Population Density

Area	No. of Children	Sum of Family Sizes	No. of Chil. per Family	No. of Sibs. per 11-yr-old
LH 1	83	261	3.15	2.15
LH 2	15	52	3.47	2.47
LH 3	19	64	3.37	2.37
LH 4	113	416	3.68	2.68
Total	230	793	Mean: 3.45	2.45

Table 8.

The last columns of Table 7 and Table 8 were then compared in an X^2 test (after reducing the last Column of Table 7 by the appropriate constant, .871), and as noted in Appendix E, p was less than .95. In other words, the number of siblings which

11-year-old stammering children were found to have was almost precisely what they could have been expected to have, by a random selection. Hence we may infer that the number of siblings which a child has does not affect the possibility of his becoming a stammerer.

It will be noticed that the last column of Table 8 is slightly smaller in each cell than the last column of Table 7. This is of course due to the fact that the 11-year-old stammerers were all born in 1940 and 1941, when the birth rate fell, due to the war, while the 11-year-old children studied in the 1947 Mental Survey were born in 1936, and the war affected their sibling-count differently.*

One of the more interesting analyses of the observed data is the comparison of the number of older and younger siblings which 11-year-old stammerers have, according to the LH. Table 9, like Table 8, is based on as many 11-year-old stammerers as possible, i.e., "looking backwards" to compute the 11-year-old status of stammerers now over 11.

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*Notestein (3, p. 232) writes:
"Up to the early thirties there had been 60 years of virtually unbroken decline in the birth rate, followed by a slight rise between 1934 and 1939; sharp swings during the war-time experience."
Hence the figures for norms were from a period of a rise in the birth-rate, (1936) while the data observed for stammerers is for children born in a sharp (downward) "swing," 1940 and 1941.

Comparison of Total Number of Older & Younger Siblings of 11-year-old Stammerers, According to LH

Area	Older Siblings		Younger Siblings		Total Sibs.		Total Cases	
LH 1	81		102		183		83	
LH 2	15	96	22	124	37	220	15	98
LH 3	27		25		52		19	
LH 4	152	179	101	126	253	305	108	127
Total		275		250		525		225

Table 9.

In Table 9, LH 1 and LH 2 (the more densely populated areas) have been separated from LH 3 and LH 4 (the more sparsely populated areas), because there were more younger than older siblings in the first group, and more older than younger siblings in the second group. Appendix F shows that the difference in proportions of older siblings in each group to the total number of siblings in each group is highly significant: p is less than .001.

It was necessary to obtain norms with which these findings could be compared. Working from the Table on p. 107 (1), it was possible to deduce the proportion of older and younger siblings which 11-year-old boys and 11-year-old girls have, throughout all Scotland. (Unfortunately these norms do not exist according to the LH). It was found that 36,859

11-year-old boys had 52.92%* older siblings, while 36,008 11-year-old girls had 53.74%* older siblings. This difference, with such large numbers, is shown to be significant in Appendix G. In order, therefore, to obtain norms which would be comparable with findings for 11-year-old stammerers, the proportion of 52.92% older siblings (of boys) was weighted 4-1 against the proportion of 53.74% (of girls), which is slightly less than the actual ratio of boy-girl stammerers in Table 3;p. 182, supra. This procedure produced a "norm" of 53.08% older siblings which might be found in any random sample of 11-year-old stammerers from all Scotland.

Appendix H shows that when this norm of 53.08% is compared with the proportion of older siblings found for stammerers in LH 3 and LH 4, no significant difference is found, p being less than .2. Appendix H' shows that a barely significant difference is found when the norm of 53.08% older siblings is compared with that found for 11-year-old stammerers in LH 1 and LH 2, p being less than .05. In other words, slightly less than the expected proportion of older siblings was found in LH 1 and LH 2.

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*The higher-than-50% older siblings percentage is of course due to the fact that a certain number of these 11-year-olds are in incomplete families. When these families are completed, the percentage of older and younger siblings (as in the adult population) will of course be approximately equal. Cf. the discussion of family-incompleteness by Nisbet (14,pp. 10-11) which emphasizes the cautions necessary in using data on children from a single age-level only.

Appendix I shows that, using the obtained norm of 53.08% older siblings for 11-year-old stammerers, the total figures in Table 9 give almost exactly the same proportion of older siblings (275 out of 525) as could be expected; p is less than .9. This finding is corroborated by Appendix J and Appendix K, which show X^2 calculations for the number of stammering boys and girls (respectively) who were found in each position of the family. The norms with which the observed findings are compared are in "The Trend of Scottish Intelligence" (op. cit., p. 107). It should be noted that like Appendix I, the calculations in Appendix J and Appendix K do not break down the stammerers by LH, but treat them as a single group. No significant difference in place in the family was found for stammerers from what could have been expected by chance: Appendix J shows p as less than .7 for 158 boys, and approximately the same value with an additional 26 cases; Appendix K shows p as less than .1 for 37 girls.

We may conclude that position in the family generally has little or no effect upon the incidence of stammering. There may be a purely sociological explanation for the findings in Table 9, supra, p. 195, and in Appendix F. The significantly high number of older siblings of 11-year-old stammerers in rural (as compared with urban) areas may be in a small part due to the process of rural depopulation,

i.e., the steady trend, in Scotland, of people leaving the country to live in the cities.* Naturally this trend is mostly of young people, rather than of older married couples who are more stabilized. This leads to a higher proportion of older mothers in the rural areas than in the cities. Now, the older the mother, the more likely that an 11-year-old's siblings will be older than himself, as is clear from the following extract of a table in "Social Implications" (2, p. 147):

Age of Mother Related to Number of Siblings of 11-year-olds (Non-Twins)

	Over 42	21 or Less
Mean No. of Sibs.	4.4	2.2
Mean No. of Previous (older) Sibs.	4.1	0.4

Table 10.

If the fact of rural depopulation accounts for the significantly high number of older siblings of 11-year-old stammerers found in rural areas, we may then conclude that neither the position in the family nor the number of siblings in the family are significantly related to stammering incidence.

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*According to Hutchinson (4, p. 3), "The census returns over the past fifty years show that the population of the rural areas of Scotland has steadily declined, and...there is evidence to show that in many areas this decline is continuing." (It must be noted, however, that the rural areas studied by Hutchinson do not coincide with those surveyed in the present study.)

This is corroborated by Appendix L and Appendix M, in which the proportions of first-born boy stammerers and first-born girl stammerers are respectively tested from the expected proportions, which were taken from the norms in "The Trend of Scottish Intelligence" (op. cit., p. 107). For the boys, p is less than .1; for the girls, p is less than .3. In both of these calculations it was possible to use all the stammering cases where sibling data were available, since it is always obvious when a child is first-born, no matter how young he is at the time of the study.

Appendix N shows that the surveys did not contain a significantly high or low proportion of only-children among the 11-year-old boy stammerers, p being less than .4. Appendix O shows that a significantly low proportion of only-children occurred among the 11-year-old girl stammerers, p being less than .001. Only one girl out of 44 11-year-old girl stammerers was an only child (2.27%), while the expected percentage would be 11.09% (based on figures in 1, p. 107). This would imply that being an only child makes a girl even less likely to stammer than she normally is, but no conclusions can be drawn, due to the fact that only 44 11-year-old girls were found by the surveys; the figure may be too small to be reliable.

Appendix P shows that the proportion of last-born 11-year-old boy stammerers was not significantly different from what could have been expected, p being less than .3; Appendix Q

shows no significantly high or low proportion of last-born girl stammerers, p being less than .8.

A final approach to the sibling data lies in the investigation of the mean no. of years' difference between stammerers and their nearest siblings, as compared with non-stammerers and their nearest siblings. Are stammering children significantly further separated from their nearest siblings than non-stammering children? In an investigation of 522 stammerers, Rotter (5, pp. 143-148) found this to be the case, and suggested that children further separated from their nearest siblings are inclined to be more pampered by their parents, which in turn he believed was related to stammering incidence through the development of dependence-feelings; his approach to ediology was largely drawn from Adler's discussion of pampering in "Practice and Theory of Individual Psychology" (1924). Unfortunately the reliance to be placed on Rotter's work must be somewhat less than one would desire, because of an entirely improper statistical method which he used in connection with a survey more central to his theory, which purported to show (op. cit.) a significantly high proportion of only-children stammerers. He compared the sibling status of 522 stammerers whose age range was 2.5 years to 44 years with norms for a presumably non-stammering population of 7,738 junior high school children whose average age was about 13.

Of course findings for such a range of stammerers were in no way comparable with such norms, because of an indeterminate and unstandardized number of incompleted families in both series. The present investigation has already shown (supra, p. 199) that when the age of stammerers is standard with the norms, no significantly high proportion of only-children can be expected; indeed a significantly low proportion of only-child girl stammerers was found, based on a very small sample.

Hence it seemed desirable to check Rotter's finding on the question of significantly greater-age differences between stammerers and their nearest siblings, as compared with non-stammerers. The controls which were used were taken from the Mid-Lothian and Peebles surveys. Here, it will be recalled, all of nearly 14,000 children from 5 to 15 were surveyed; if, therefore, a stammerer's sibling (who was between the ages of 5 and 15) was not listed as a stammerer himself, it was inferred that this sibling was a non-stammerer. It was possible to make 131 calculations for these non-stammerers for the number of years to their nearest succeeding sibling, and 129 like calculations to their nearest preceding sibling. These findings were then compared in two ways: 1) with the same findings for the very stammerers in the Mid-Lothian and Peebles families from which the norms were drawn (controlling

socio-economic status of the families); and 2) with similar findings for the stammering children found in the Fife, Edinburgh and Stirling County surveys. The following tables show a significantly greater difference between stammerers and their nearest siblings, as compared with non-stammerers:

Mean Number of Years Between Children, For Mid-Lothian & Peebles Stammerers, As Compared With Their Non-Stammering Siblings.

Mean No. of Years Between Child and Succeeding Sibling					Mean No. of Years Between Child and Preceding Sibling				
Stammerers		Non-Stams.			Stammerers		Non-Stams.		
N.	Mean	N.	Mean	C.R.	N.	Mean	N.	Mean	C.R.
79	3.73	131	2.92	2.99	94	4.37	129	3.02	3.10

p is less than .01 — p is less than .01

(N denotes the no. of calculations, not the no. of cases)

Table 11.

Mean Number of Years Between Children, for 10-13 Year Old Stammering Children of Fife, Edinburgh and Stirling County, plus the above Mid-Lothian & Peebles Children, As Compared with the Non-Stammering Siblings of the Mid-Lothian & Peebles Children.

Mean No. of Years Between Child and Succeeding Sibling					Mean No. of Years Between Child and Preceding Sibling				
Stammerers		Non-Stams.			Stammerers		Non-Stams.		
N.	Mean	N.	Mean	C.R.	N.	Mean	N.	Mean	C.R.
191	3.70	131	2.92	3.66	194	3.77	129	3.02	2.67

p is less than .001 — p is less than .01

(N denotes the no. of calculations, not the no. of cases)

Table 12.

In other words, adding the Fife, Stirling and Edinburgh data to Table 11 did not diminish its significance in any way. (Calculations for Tables 11 and 12 are shown in Appendices R and S respectively.)

Hence Rotter's findings on this point are entirely confirmed by the present investigation: there is indeed a significantly large difference in years between stammerers and their nearest siblings, as compared with non-stammerers and their nearest siblings. A hypothesis, more closely related to speech than Rotter's theory of pampering as a stammer-genetic factor, may be suggested to account for the findings:

Widely-spaced children receive greater individual attention from their parents (especially mothers) than children who follow each other in close succession. Parents of widely-spaced children are therefore in a better position to supervise and stimulate the child's development in every way, particularly linguistically. Widely-spaced children may thus receive a greater amount of correction of their early, non-fluent speech, which may tend to produce anxiety and self-consciousness in the child, regarding his speech. Hesitations (to avoid correction by his parents) may become so strong a habit as to gain functional autonomy, leading ultimately to the habit of stammering in all situations of the slightest linguistic stress.

Admittedly this hypothesis of itself does not account for the failure to find a significantly higher proportion of only-children among stammerers.

8. Dates of Mother's Birth.

Norms were obtained for the dates of birth of the mothers in the "Thirty-Six-Day Sample," treated in "Social Implications" (op. cit.). It was possible to obtain dates of mother's birth only on 46 cases in Fife, where the writer visited the homes in person. By dividing the mothers' ages into 3 categories (43 or over, 38 to 42, 37 and less) it was possible to make a small statistical comparison between the ages of 11-year-old stammerers' mothers, and those of a random sample. Appendix T shows no significant difference between the observed and the expected data, p being less than .8.

9. Age of Onset.

The following table shows the distribution of Ages of Onset, where they were known. The symbol "p" is used to mean Pre-School, no more precise age being known; the symbol "A" is used to mean Always, i.e., since the beginning of speech:

Distribution of Onset Ages

	A	P	2	3	4	5	6	7	8	9	10	11	12	Total
Boys	15	16	7	19	19	71	18	23	11	15	10	2	5	231
Girls	3	4	2	-	7	15	4	7	7	2	2	2	-	55
Total	18	20	9	19	26	86	22	30	18	17	12	4	5	286
Total	%6.3	7.0	3.1	6.6	9.1	30.1	7.7	10.5	6.3	5.9	4.2	1.2	1.7	99.9

Table 13.

Appendix U shows no significant difference between these two distributions, p being less than .1. The most important feature is the age-mode of 5, for both boys and girls: over 30% of the boys and over 27% of the girls who could recall the date of their stammer-onset stated that they began to stammer at this age - the school entry age. Furthermore, a second minor mode occurred at the age of 7. These findings coincide with the findings of Seth & Guthrie, cited supra, p. 29. Over 62% of the stammerers had begun to stammer by the conclusion of the first school year. Less than one-fifth of the stammerers began to stammer after reaching the age of 8. To account for this finding, one could scarcely improve on Seth's description of the effect of the school's linguistic demands on the unprepared child, cited supra, p. 30. Dr. Dickinson (6, p. 49) also suggested that placing early and undue emphasis upon linguistic fluency is a possible etiological factor in stammering incidence.

Parenthetically it may be noted that Scotland is a land of many accents and dialects, which many teachers feel obliged to "correct" in the early school years (or at least to make such an attempt), on the principle that "if you don't change them while they're young, you never will." The writer knows of one teacher who systematically "corrects" and forbids all dialect speech in an infants' class of a Mid-Lothian school, e.g., "Let's gang awa' hame," and another who limits herself to correction of "faults of speech" such as glottal stops.

10. Episodes, And/Or Causes, Associated with Stammering-Onset By Children.

An analysis was made of the answers made to the question regarding association of episode and/or cause with stammering-onset, on the part of the stammering children themselves. The following table presents this analysis in the clearest form:

Association of Episode And/Or Cause with Stammering-Onset, By The Stammerers.

	None or Unknown	Illness	Physical Injury	Psychic Trauma	School	Imit-ation	Misc. Other	Total
Boys	182	10	35	19	22	15	11	294
Girls	37	3	3	7	8	6	2	66
Total	219	13	38	26	30	21	13	360
Total %	60.8	3.6	17.8		8.3	5.8	3.6	99.9

Table 14.

Appendix V shows that there is no significant difference between the distribution of episodes associated by boys and by girls, p being less than .1. Hence the figures for boys and girls may be combined. The percentage figures for physical injury and psychic trauma have been combined, since the operative element in the physical injury was invariably the shock resulting from it, rather than the injury itself. Under psychic trauma have been grouped such episodes as frights (from any event), shocks, or any very sudden and unpleasant stimulus to the central nervous system. Under School have been grouped all answers which mentioned the school situation in any way, e.g., the beginning of school, hating the teacher, being frightened by a teacher who shouted, not liking oral recitation, etc.

The question was included in the questionnaire not so much with the aim of learning anything about etiology, but rather with an interest in what stammering children themselves think about the cause of their speech difficulty. Perhaps the most significant fact emerging is that 219 out of 360 stammering children, or 60.8%, were unable to think of any single causative episode or experience related to their stammer-onset. So far as these children knew, we may infer, stammering came on gradually and was not associated with any single experience.

Comparing Table 14 with Table 13, (supra, pp. 205-206), another point of interest is that although over 30% of 286 cases began to stammer at the age of 5, only 8.3% of 360 cases consciously associated the onset of their stammering with school, in any way. The age-of-onset figures in Table 13 were obtained from parents, in the case of under-11 children of the Mid-Lothian and Peebles surveys, and from all children in all the other surveys; whereas the data of Table 14 reflect the child's own conscious attitude towards the cause of his stammer. This seems to confirm, therefore, that children are often unaware of their stammer, at least in the early years of onset.

Of course in every case where a cause or associated-episode is given, we may have real doubts as to the accuracy of the information; and even if a child was correct in answering that his stammer began after a physical injury, we may inquire as to whether he might not have been on the brink of stammering anyway. This is always the case, certainly, in the event of a stammer ascribed to imitation of another stammerer. Nevertheless, the writer is personally familiar with several stammering-onsets in young children immediately following painful, physical injury, and when it was certain that prior to the accident there had been no discernible

signs of the slightest stammer. It is not suggested here that the shocks to the central nervous system resulting from physical or psychic trauma may "cause" stammering-onset, per se. The present view is that certain kinds of experience can act as speech-inhibitory mechanisms, and both trauma and serious illness may have such an effect. Seth (11, p. 249) also felt that this was a possibility, although rare. Only one of his 78 cases could provide unequivocal evidence that stammering had been the immediate result of a fright; and he stressed the unreliability of the evidence of mothers, in this connection. Four more of Seth's cases were preceded by serious illness. Seth summarized his findings thus:

> "...It is necessary to presuppose either a specific predisposition to disorganization of nervous control of the language function, which may become effective when vitality and the general tone of the nervous system are lowered...or else a situation of fixation and repression upon which the shock may take immediate effect...Whichever of these views be the true one...the number of cases in which we can trace a connection between the speech disorder and any such immediate causative factor appears to be small."

Any reasonable theory of stammering etiology must incorporate this view. It might be noted here, however, that both of Seth's factors may be in simultaneous play when a stammer immediately follows physical injury, psychic trauma or serious illness: a "situation of fixation and repression" may be superimposed upon a "predisposition to disorganization of nervous control of the language function."

11. A Summary of the Findings.

1. Stammering incidence does not vary significantly according to geographical area (of those studied), nor according to population density (in the areas surveyed). (pp. 180 and 183)

2. The ratio of boy-to-girl stammering incidence ranged from 4.2 - 1 to 5.3 - 1, with a mean of 4.4 - 1. (p. 182)

3. In all areas, there was a singificantly high proportion of stammerers whose fathers or guardians are semi-skilled manual weekly wage-earners, e.g., machine tenders, drivers (OC 6). In LH 1 and LH 4 there were significantly few stammerers whose fathers or guardians were unskilled labourers, industrial or agricultural (OC 7 and OC 9). Sparsely populated areas also produced a significantly high proportion of stammerers whose fathers were skilled manual weekly wage-earners (OC 5). No significant differences from the expected incidence were found among children whose fathers were in OC 1-4. (pp. 188, 190 and 191)

4. Stammering incidence is negatively correlated with crowded housing in all areas, although in some cases this finding may be unreliable due to housing construction since 1947, when the norms of occupancy rate were established. Nevertheless, this finding is in accord with the too-few-labourers finding in #3, supra. A significantly high proportion of children living in Code 2 homes (p. 180) was found among the stammerers in all areas (pp. 188, 190 and 191); in rural areas Code 1 and Code 2 (OR) homes both produced a significantly high proportion of stammerers, while OR 3 and OR 4 homes both produced a significantly low proportion. (p. 191)

5. Sibling-status has almost no effect on stammering incidence. The distributions observed for stammering children produced no significant differences from expected distributions, in the following measurements: a) number of siblings (p. 193); b) ratio of older-to-younger siblings (p. 196); c) number of first-born children; d) number of last-born children (p. 199); e) number of only-children (p. 199); although a small number of cases suggested that only-child girl stammerers are significantly few; and finally, f) position in the family (p.197)

6. The sole exception to #5 is that stammering children were found to be significantly further separated from their nearest siblings (before and after), than non-stammering children. (p. 202)

7. Age of mother was found to have no effect on the incidence of stammering among a small number of children. (p. 204)

8. The age of 5 (school-entrance) was found to be the mode for boys and girls alike in regard to age of stammering-onset. (p. 205)

9. In over 60% of the cases, stammering children were unable to cite any incident, episode or cause which they associated with stammering-onset. (p. 206) Less than 1/3 of the stammerers whose onset was at 5 years (according to their mothers or teachers) consciously associated the onset with the school situation. (p. 208) In some cases physical and/or psychic trauma, or illness may be associated with stammering-onset. (p. 209)

12. A Theory.

Of all the findings above that seem to have clear significance in relation to stammering etiology, #6 is pre-eminent. The hypothesis proposed (supra, p. 203) to account for a significantly greater spacing between stammerers and their nearest siblings, as compared with non-stammerers, suggests that in this country, the more supervision and speech-correction a child receives from his parents, the likelier he is to become a stammerer. In this connection, Dr. Wendell Johnson's theory of stammering etiology -- also discussed in the next chapter -- is particularly relevant. Studies under his direction at the Iowa Child Welfare Research Station showed (7, p. 443 et seq.) that almost all normal children between the ages of two and six

> "...speak in such a manner that from 15 to 25 per cent of their words figure in some kind of repetition...the average child was found to repeat, in some fashion, about 45 times per 1000 words. In addition, there are frequent hesitations other than repetitions."

Comparing the speech of 46 children diagnoses by their parents as stammerers with 46 children of similar age, sex and intelligence, Johnson found (op. cit., p. 445) no distinguishable difference between the speech diagnosed by lay parents as stammering, and the characteristic, normal non-fluency of young children learning to speak. He concluded that the evaluations of the parents in regard to the child's speech were extremely important, and, if adverse, could have a serious effect on the speech itself, because (ibid)

> "...The more anxious the parents become, the more they hound the child to 'go slowly,' to 'stop and start over,' to 'make up his mind,' to 'breathe more deeply,' etc., the more fearful and disheartened the child becomes, and the more hesitantly, frantically and laboriously he speaks -- so that the parents, teachers and others become more worried, appeal more insistently to the child to 'talk better,' with the result that the child's own evaluations become still more disturbed, and his outward speech behavior more disordered."

It is clear that finding #6 (supra, p. 210) supports this argument, particularly because the same finding was made by Rotter (op. cit.) in America in 1939.

The hypothesis would explain why stammering incidence varies little from area to area within a particular culture which places a premium on speech fluency and attaches a heavy stigma to speech defects; for from one area to another (within the same culture) one might expect to find approximately

the same degree of anxiety over childish non-fluency, if sufficiently large numbers are sampled. But if a class or socio-economic group of parents exists, within a culture which prizes speech fluency, who attach even higher importance to speech fluency than other socio-economic groups, then one might expect this group to suffer from higher stammering-incidence, by the lights of Johnson's theory. Likewise, any particular group, within a stammering culture, (for socio-psychological reasons) which was relatively indifferent to the importance of speech fluency, as compared with other groups in the culture, then this group would be likely to stammer at a lower incidence-rate than the rest of the culture.

This reasoning might well account for the unusually high incidence of stammering found among children of semi-skilled manual wage earners, and the comparatively low stammering incidence found among unskilled labourers, industrial and agricultural (<u>supra</u>, p. 210, #3). In the first instance, we have a segment of the population which has received some degree of training or skill, but not enough for tradesman status; such men, and their wives, may well see the socio-economic advantages which more training and education can bring; because of economic pressures, they may be extremely desirous that their children should make an achievement in

society higher than their own. The advantage of linguistic fluency as a means of achieving higher occupational status is not unknown to them. It may be argued that, more than any other single occupational class listed, supra, p. 185, those in OC 6 desire higher status. Furthermore, their children may be said to have the greatest possibility of improving on the occupational status of their parents. The high proportion of stammering children in OC 6 therefore lends further credence to Johnson's conception of stammering as an effect of 1) parents' hyperanxiety over the non-fluency of young children, and 2) generalization of this anxiety to the children, whose re-inforced fear of their own non-fluency thereupon multiplies the hesitations and repetitions anew.

Likewise it may be fairly observed that the value placed upon speech fluency is likely to be a good deal less in the homes of urban and rural unskilled workers than anywhere else in our culture. The low incidence of stammering found in these homes by the surveys (supra, p. 210, #3) therefore lends further support to Johnson's theory.

It is indeed possible that the wider spacing of children which has been found in stammerer's families may be deliberately planned by a proportion of parents who fall into OC 6, and who space their children as an aid to the achievement of their socio-economic ambitions. These will also tend to be the parents who will give most attention to their children's fluency.

Of course the fact that the mode of stammering-onset is found at the school-entrance age is entirely in accord with Johnson's theory, which is based on the effect of constant correction of non-fluency by teachers as well as by parents. Reference has already been made (supra, p. 205) to the linguistic demands which are so often made upon school-children who may be unqualified to meet them. Robbins, stated in thisconnection (16, pp. 22-23):

> "Certain systems of teaching phonetics* cause more cases of stammering than others. A few years ago a certain private school employed a unique system of phonetics which started nearly one-third of the pupils stammering. Statistics show that nine persons in one thousand stammer. If a much larger proportion stammer in a given school, I should like very much to know what proportion stammer and what system of phonetics is taught. Likewise, if a much smaller proportion stammer, I shall be just as much interested to receive the same information. I believe that many speech defects might be prevented if sufficient statistics could be accumulated to show what systems of teaching phonetics produce the best results in normal speakers and at the same time produce the minimum number of stammerers."

There are, however, certain aspects of the problem which Johnson's theory does not account for. First, we must recognize that it is a theory of stammering-onset only, and in no way attempts to deal with the question of habit-reinforcement, accompanied by stimulus-generalization and irridiation to

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*"Phonetics" is of course used here merely to denote speech-habits in general.

movements not normally associated with speech, eventually gaining "functional autonomy." Secondly, Johnson's theory makes no attempt to account for the male-female sex ratio. Thirdly, the incidence of stammering in young children following physical or psychic trauma or illness, infrequent as it may be, must also be accounted for. Fourthly, the theory does not account for the relative freedom which many (though not all) stammerers enjoy in situations such as group singing, whispering, reading aloud in the belief that they are alone. Finally, and most important, the theory in no way accounts for the fact that, having experienced very similar training, some children stammer and some do not; that some children may receive constant correction and harrassment in their speech and never become stammerers at all.

Hence, while Johnson's theory is plausible in so far as it goes, it is insufficient to account for all of the aspects of stammering onset and incidence. Its mechanistic, stimulus-response approach to stammering etiology is of course bound to limit the applicability ofthe theory. No purely environmentalist explanation of any behaviour can succeed. All children are not the same at birth, and we must acknowledge that a reaction-sensitivity to any stimulus -- while it can be learned -- may be largely determined by constitutional factors. This view is implicit in the "neuropathic tendency"

which Boome and Richardson proposed as a heritable factor in stammering incidence (v. supra, p. 44). McAllister also recognized constitutional elements in stammering-onset, of a physiological nature, finding a vulnerability in the organs of speech in 13.6% of her stammering cases, a proportion which was also found by Bender and Kleinfeld (v. supra, p. 45).

The male-female sex ratio in stammering incidence may well be a secondary, indirect effect of constitutional sex differences, interreacting with varying social experience of boys and girls. There are subcortical sex differences on the emotional level in many other vertebrates, and it seems reasonable to assume that they exist in Man as well. These differences might be the basis for greater aggressiveness in boys, which, in a culture which makes rigorous demands upon children to conform to high social standards, would require greater self-inhibition on the part of boys. This in turn might lead to a greater vulnerability in situations of linguistic stress. Can sex differences in subcortical structure lead to sex differences in language behaviour, which is cortically controlled? This question is suggested by the summary of sex-differences in language behaviour cited by McCarthy (12, pp. 551 et seq.):

> "Whenever groups of boysand girls are well matched in intelligence and socio-economic background, and when the situation in which responses are recorded does not tend to favor the interests of one sex or the other, there appear slight differences in favor of the girls."

She prepared a table (op. cit., p. 520) which showed 55 such comparisons, with the mean length of response as the most objective single measure available; of these, 39 favoured the girls, 3 were identical, and 13 favoured the boys. She was able to show that those which favoured the boys were either weighted in the boys' favour, or due to sampling errors. Furthermore, she cited (op. cit., pp. 553-555) the following investigations of sexual difference in language behaviour, all of which showed superiority in the girls:

1. Mead: Earlier talking age for feeble-minded girls.
2. Sirkin & Lyon: Speech defects twice as frequent for mentally deficient boys as for mentally deficient girls.
3. Davis: Girls mature in articulation about 1 year earlier.
4. Terman: Gifted girls used short sentences at earlier age than gifted boys.
5. Doran: Girls have larger vocabularies than boys of same ages, but difference is smaller among older children.
6. Smith: Confirmed #5.
7. McCarthy: Girls had higher proportion of comprehensible responses than boys at 18 and 24 months.

8. Fisher: Confirmed #7, found that boys repeated identical speech patterns more often! (Preschool children)

9. Davis: Twin boys with twin sisters were less retarded linguistically than twin boys with twin brothers.

10. Wellman: Girls articulate consonant elements better.

11. Jersild & Ritzman: Girls excel in number of words spoken and number of different words used.

McCarthy concluded that a real sex difference in language development exists in favour of the girls, and also cited two studies of stammering and other speech defects (which showed the usual sex differences) as further evidence. Gesell (15, p. 199) also connected the male-female ratio in stammering incidence with consistently superior linguistic behaviour in girls; he had previously (op. cit., p. 193) observed that

> ""...most investigators have agreed that girls are relatively accelerated over boys in language development during the first two or three years of life."

In this connection, MacLean's recent findings are of interest (13, p. 236 et seq.)

> "In the total group (of 770 children), 7.69% of the boys' group and 5.27% of the girls' group showed speech disorder."

Analysis of a group of 166 boys and 178 girls, each of whom had a twin, showed that (ibid.)

> "...as with the Retarded Group (of 520 boys and girls), more boys than girls showed speech difficulty."

And furthermore, (ibid.):

> "Of the total Normal Group (of 180 boys and girls)....5.26% of the boys' group and 1.33% of the girls' group showed speech disorder."

It is the intermittency of stammering which emphasizes that this is a disorder of communication behaviour, rather than of speech production. The affliction arises, as Johnson suggests, through the child's interiorization of anxiety over inadequacy in communication; since vocal communication is the very basis for social existence, the habit of stammering finds re-inforcement in every sentence. It becomes a self-conditioning response, whose autonomy derives new strength with every stammered word. Stammering, is not, therefore, a habit of the speech-organs, but of the entire personality in communication behaviour. If the speech-organs are exercised in social contexts other than communication, totally different stimuli are in play, and the conditioned response of stammering need not be elicited, (although it may occasionally be generalized to non-communicative situations, as Van Thal found, v. supra, p. 57).*

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* Seth (11, p. 210) noted that 20 out of 78 cases continued to stammer when reading aloud, even though they had every reason to believe themselves alone, after the examiner left the room on a pretext! There was some degree of improvement in most of the 20 cases, however.

Finally, it should be noted that any sudden physical or psychic trauma may act as a speech-inhibitory mechanism, which, in the presence of continued social pressure to communicate, may well contribute to a stammer-onset.* This is because stammering is actually a habitual form of inadequate, unsuccessful communication -- habitual failure in goal-seeking behaviour, in which the goal is fluent communication. The effects of physical and/or psychic trauma in producing stammering have been well known since World War 1; in fact, trauma of high intensity is one of the rare causes of stammering-onset in adults who have never stammered before. Prideaux (8,pp. 217-18) noted in 1919 that "Stammering is a common symptom of war psychoneurosis." In 1918 Leary wrote that stammering is (9,pp.259-262)

> "...brought about in many instances from shell or war shock, or from the strain of long hospital nursing routine."

In 1918, Godefroy (10, pp. 262-274) also mentioned having seen

> "...a number of cases...in which stammering or stuttering has developed...as the result of shell-shock or of various war stresses...Every Every variety of stammering is met with in these war cases."

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*Trauma is rarely the only adverse factor in stammer-onset. In fact the present theory is that a number of adverse factors, of which trauma may be one, generally act in concert to produce a stammer. Dr. Dickinson (op. cit., p. 41) noted that 14 out of 62 cases in school-child stammer (22.6%) reported physical injury and/or shock immediately preceding onset; but

> "...of those (14) cases where an injury or shock is recorded...all (but 2) of them show other important causes."

Thus the children who ascribed their stammer-onset to some form of physical injury or psychic shock (v. supra, p. 206) cannot all be dismissed as simply imagining this to be the causative experience, without any basis in fact.

The present theory, then, adopts Johnson's view, but broadens it from its basic single-causality by recognizing 1) that stammering is an involvement of the entire personality in which constitutional factors may play a considerable predisposing role; 2) by regarding stammering not as a positive entity of itself, but rather as a self-reinforcing habit of unsuccessful goal-seeking behaviour, in which the goal is to communicate. This view is sufficiently flexible to regard stammering as being "caused" by any one, or combination, of a number of immediate stimuli, which may act either through gradual accumulation, or by suddenly increasing the pressure on the child to communicate fluently, e.g., school entrance; or by any one, or combination, of a number of speech-inhibitory processes, with the above-mentioned pressure held constant. In either circumstance, the temporary hesitations and repetitions immediately produced may become habitual stammering because of the increasing "penalty-reactions" which the faltering child experiences, leading in turn to self-reactions of continued and increased inadequacy feelings in communication behaviour.

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Chapter 6

An Investigation of Stammering Incidence in Other Cultures

1. Introduction

Reference was made (supra, pp. 11-12) to the fact that stammering is known to occur among some non-literate* cultures, and to be absent among others. A study of each of these types therefore seems to be indicated, with the aim of identifying etiological factors in the culture which "produces" stammering.

This question has provoked interest for some time. As far back as 1861, Hunt (1, p. 39) noted that

> "All travellers who have long resided among uncultivated nations and whose authority is of any weight, maintain that they have never met with any savages labouring under an impediment of speech...It is not easy to say whether this immunity is owing to the more ample physical development of the buccal cavity of savages, to the nature of their dialect, or to their freedom from mental anxieties and nervous debility. My impression is that the latter circumstance offers the best explanation of the alleged fact."

This viewpoint, as well as the tendency to generalize about all cultures other than European or American, is met with continually in the literature of stammering, and still flourishes today.

*The word "non-literate" has been selected as the best adjective by which to describe the cultures discussed in the present chapter; "primitive" more aptly describes paleolithic man. It is not considered, however, that literacy or learning to read, or even the existence of a written alphabet in the culture, are in any way etiological factors of themselves.

Jones (2, p. 5) referred to

> "...children and primitive races. That stammering is almost unknown among the latter is very significant."

Allen stated quite positively in 1910 that (3)

> "It is common knowledge that stammering and all forms of speech defect are quite unknown amongst savage and barbarian nations, and the baneful habit is without doubt traceable to effects originated by civilization, and it is distinctly due to the strenuousness of civilized life, with its accompanying train of evils, that the habit of stammering has increased so alarmingly within recent years."

More recently, Boome and Richardson added to the above dogmas (4, p. 28):

> "Negroid races rarely stammer in their own country," although "Dr. Shrubsall who was in the United States in 1925 says that Negroes working among the white population frequently do so. The nervous strain involved in adjustment to civilized conditions, with their complicated actions and reactions, may be mainly responsible for this..."

Bullen (5) concluded in 1945 that "non-literate cultures" (in general) do not stammer, but her work is based only on her own field work among American Navajo Indians and personal communications which she received from field workers whom she contacted after their return to the United States. "What," she asked (op. cit., p. 73) "have the non-literates got that we haven't got, or...what don't they have that we have and would be better off without?" Unfortunately, the non-incidence

of stammering reported to Bullen by her various communicants -- while interesting and provocative -- have little real scientific value. In the absence of data relevant to the alleged non-incidence of stammering in the pertinent cultures,* interpretation becomes a purely subjective affair; more important, the authenticity of such data is entirely open to question, because of the huge opportunity for error on the part of the reporter.

In the first place, perhaps the anthropologist simply did not know the language well enough to recognize stammering when it occurred. Second, he just may not have happened to meet any stammerers in the course of his work in the field, although the disorder did occur there. Third, he may have met stammerers, but due to their handicap, they refrained from speaking to him. Fourth, perhaps he met them and they said a few words, but due to the intermittency of the disorder, they failed to stammer on the occasion. Fifth, he may have actually heard stammering, and been linguistically qualified to recognize it, but simply may have forgotten

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*Fortune: New Guinea - Mundugumor, Arapesh, Tchambuli, Manus; Dobu, New Hanover, Tabor tribes; Australia - Kamamentira River tribe.

Mead: "I have never seen stuttering among any of the primitive people whom I have studied." (Arapesh, Tchambuli, Mundugumor, and others)

Ekblaw: 250 Greenland Eskimos (a rather small sample!)

the fact when asked to recall it some time later, due to his lack of interest in the question at the time of his field-work.

Johnson (1944) was among the first to perceive that the only reliable reports were first-hand, obtained from workers who had made a specific search for stammering incidence, while in the field. Two of his pupils (Hayes and Snidecor) who had spent several years among the Bannock and Shoshone Indians in Idaho enabled Johnson to state (6, pp. 330-337) that these two tribes did not stammer; that they did not know what it meant to stammer; and that they had no word for it in their language! Here was the first truly objective observation of stammering non-incidence in other cultures. Its value was somewhat lessened, however, by Johnson's regrettable leap to the conclusion (op. cit., p. 331):

> "For all practical purposes, then, it may be said, so far as the writer is aware, that there are no stutterers among North American Indians living under conditions comparatively free from the white man's influence."

This generalization apparently disregarded Sapir's report in 1915 (cited supra, p. 12) that stammering was quite common among the Nootka Indians of Vancouver Island. Snidecor (1947) made the same omission in an article entitled "Why The Indian Does Not Stutter." Accounting for this "fact," his conclusions were (7, pp. 493-495):

> "(1) There is little effort to change native handedness in the group studied; (2) low incidence of birth injuries and lack of survival of the birth injured favor the Indian group; (3) emotional difficulties inherent in the act of speaking in our society do not appear to be present in the society of the Indians studied; (4) the Indian does not have a word for stuttering, and therefore is unlikely to be labelled as a stutterer; and (5) although I do not have evidence upon which to base a definite opinion as to how far and in what ways the Indian is neurotic, it is my impression that the Indian is probably akin to the white in respect to neurotic tendencies."

A most recent (1952) contribution to knowledge of stammering incidence among Indians was made by Lemert, who with his colleagues, pursued the findings of Sapir regarding the Nootka, as well as their neighbors, the Salish, the Tsimshian, the Haida and Kwakiutl groups. He found (8, pp. 429-442) stammering evidence among all of these peoples, and cited supporting data (e.g., in folklore and "cures") to show that the disorder was well known long before any contact with white men was made in the 19th Century. Far from attempting to disprove the general conclusions and theory of Johnson and Snidecor, however, Lemert suggested that cultural aspects of the people he studied generally confirmed their approach which stresses (8, p. 436):

> "(1) the penalizing reactions of others, especially those of anxious parents, critical siblings, and ridiculing playmates, towards the speech of the young child; (2) the internalization of these reactions or negative evaluations by the child; (3) the growth of anxiety in the child about his own speech; and (4) the pathological disruption of the child's speech rhythms by the anxiety."

Lemert found that (op. cit., p. 433)

> "The attitudes of the coastal Indians in the North Pacific towards stutterers range from mild to serious disapproval, through humorous tolerance, to pity and condescension. Members of the three mainland tribes...were easily moved to laughter by mention or discussion of the subject."

One Tsimshian father (op. cit., p. 434) severely criticized his son for his faulty speech as a child, invoking the native term for "acting crazy," as opposed to insanity, to express his strong disapproval of his son's verbal failures. Among the Nootka (who strongly ridicule virtually any physical abnormality), (ibid.)

> "...when a person who had a speech defect was addressed or talked about, his defect was imitated or mocked...Restraint (p. 435) was exercised in mocking adults when they were present, but this was not the case for children."

Linguistic demands were made upon Nootka children from the beginning, ibid:

> "Parents in the Nootka tribes often began their discourses on mores while the infant was still cradle-bound, with high ranking fathers seriously lecturing sons at this time on the merits of giving feasts and potlatches. Most Nootka children while still quite young were expected to learn their privileged dances and songs, and adults worked continuously with them to achieve the necessary competence in their performances. At very tender ages they were required to perform alone before assemblies of their own and other tribesmen... (p. 439) That parents of the Nootkan tribes had anxieties concerning the future verbal facility of their children seems demonstrated by the custom of putting a finger far down in the infant's throat to insure his becoming a good singer."

And in regard to stammering itself, Lemert described the cultural attitudes in these terms (op. cit., p. 440):

> "While the general adult population of these Northwestern Indian tribes may have been partly restrained in criticizing the stuttering child, in all likelihood this was not true for his immediate family. It is also probable that in play groups the stutterer aboriginally encountered much open ridicule from other children, especially away from the presence of adults...(p. 441)....The facts indicate that aboriginally stuttering was culturally defined, that stutterers were and still are socially penalized, that parents tended to be specifically concerned or anxious about the speech development of children, that children were anxious about ritual performances involving solo verbal behaviour, and that Indian stutterers showed and still show 'secondary' symptoms of the defect, which are ordinarily interpreted as distortions of the speech induced by internalizations of anxiety about the speech."

This report has a double-value of tremendous importance: 1) it serves as an excellent warning to all writers who are tempted to generalize about "non-literates" or "primitive peoples;"* and 2) it gave even greater meaning to the terms in which Johnson (9, p. 443) had described the Bannock and Shoshone Indians of Idaho, who are of course, of an entirely different culture:

> "...their standards of child care and training appeared to be extraordinarily lax in comparison with our own. With respect to speech in particular, it seemed to be the case that every Indian child was

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* A personal communication from Dr. Leopold Stein, noted authority on the question, stated:

> "People of the standards of the Red Indians or certain South African tribes hardly stammer, - if at all. They have not even got a word for this disorder."

> "regarded as a satisfactory or normal speaker, regardless of the manner in which he spoke. Speech defects were simply not recognized. The Indian children were not criticized or evaluated on the basis of their speech, no comments were made about it, no issue was made of it. In their semantic environments there appeared to be no speech anxieties or tensions for the Indian children to interiorize, to adopt as their own."

Can the importance of speech fluency in the culture, accompanied by anxiety reactions of parents in regard to their children's speech, be an operative etiological factor in stammering incidence? It seemed imperative for the present study to devise a reliable method of testing this hypothesis, for if any considerable support could be found for it, the findings and theory in the previous chapter would be substantiated proportionately.

2. The Investigation

The immediate problem was to obtain the names and addresses of a large number of reliable field workers who were currently in the field, to whom a questionnaire might be addressed. The following table shows how these were obtained:

Sources of Names of Field-Workers

Source	No. of Names
Royal Anthropological Institute of Great Britain	126
Dept. of Anthropology, London School of Economics	8
Institute of Social Anthropology, Univ. of Oxford	20
Faculty of Archaeology & Anthropology, Univ. of Cambridge	4
Department of Anthropology, University College, London	8
Dept. of Social Anthropology, University of Manchester	7
Church of Scotland, Edinburgh (medical Missionaries	35
Edinburgh Medical Missionary Society	40
	248
Miscellaneous sources.	10
Total . . .	258

Table 1.

After some consideration, it became clear that it was virtually impossible to draw up a questionnaire which would be as comprehensive and informative as might be desired, and yet which would also be returned by a large number of field-workers, who were undoubtedly fairly well occupied with their own studies. A preliminary circular was therefore sent to all the addressees (v. Appendix W), asking the following questions:

1. Name of people studied.
2. Geographical area (approx.)
3. Have you personally observed stammering among these people?
   (a) children..... (b) Adults.....
4. Is there a word for "stammer" or "stutter" in their language? If so, what is it?.....
5. Parents in our culture are greatly concerned about the fluency of their children's speech, since non-fluency is socially "punished." Is this the case among the people you are studying?
6. Is stammering (a) considered undesirable?
   (b) ridiculed?
7. Your name and address.
8. Any comments you wish to make.

This questionnaire was devised, with the aim of getting as many correspondents "on the hook" as possible. Those workers who returned the questionnaire were then written individual letters which acknowledged with thanks the information which had already been sent, and asked for a few bits of further data to enhance the worth of what had already been received. This "extra" information was the essential point of the entire investigation. The respondents were given the incidence-rate of stammering in our culture as approximately 1%, and were asked to compare

this incidence (by estimate only) with the incidence among the people they were studying. In addition, each of these "follow-up" letters contained a short discussion of the following aspects of our own culture:

1. The high premium placed on speech fluency.
2. The stigma placed on speech defects.
3. The attitudes of parents towards the early "non-fluency" of young children's speech (which so often include anxiety, lest the frequent hesitations and repetitions found by Johnson to occur normally in young children be the beginning of real stammering.)

The respondents were then asked to compare these three points with their impressions of what they found in the field.

Attention is called to Question #4, which asks if there is a word for stammering, and if so, what it is. Answers to this question are shown in Appendix X. It was assumed that the act of speech is so critically important to Man in his symbolizing, communicating and learning behaviour, that the incidence of any serious deviation from the cultural norm will be given a name; in other words, if stammering occurs, there will be a word for the disorder in the language. The converse of this proposition, however, is not necessarily true. Indeed, a few peoples were found to have a word for stammering, but to be virtually unfamiliar with the affliction themselves;* they needed the word to describe the speech of stammerers

*e.g., The Hausa, v. infra, p. 242 ; The Khasi, p. 244.

whom they met among other peoples with whom they had contact! (The almost universal onomatopoeia of these words is especially interesting; v. the discussion on this point, regarding the question of Greek and Roman stammering incidence, supra, p. 112)

The replies to these questionnaires and their follow-ups were then rated according to the following 3-point scales:

Code No.	Estimated Degree of Stammering Incidence*
A.	Denotes extremely rare incidence; includes replies of "Unknown," or almost unknown.
B.	Denotes incidence which is well-known, yet clearly far less common than in our culture.
C.	Denotes incidence which seems at least as common as in our culture, or even more so.

Schedule 1.

Code No.	Impression of Cultural (Mostly Parental) Attitudes Towards Childish Non-Fluency And/Or Speech-Defects*
1.	Denotes complete-to-relative indifference. Taking no notice; disregard.
2.	Some degree of interest; mild reproof or disapproval. Certain acts of correction of poor speech; yet all still well below the level of stigma attached to non-fluency in our culture.
3.	As much concern, anxiety, or general stigmatization of speech defects as in our culture, or more. Equal effort to help, or urge, the child to "speak well."

Schedule 2.

*For examples of scoring of actual responses, v. Appendix Y.

The aim was to ascertain the degree of A-to-1, B-to-2, and C-to-3 correlation. There are, however, several weaknesses in this approach. First, the incidence-schedule is based on the estimates of field-workers rather than on any actual count, Second, the entirely verbal nature of the responses measured by Schedule 2 tends to make the investigation rather subjective and unstandardized. Under the circumstances, however, this procedure seemed about the only way of obtaining reliable data on any considerable number of peoples, in a short time. Moreover, it was considered that the following safeguards would strongly contribute to the reliability of the result:

1. Relying only on data received from field workers.

2. Presenting the same standards of incidence and cultural attitudes toward stammering in our culture to all correspondents, so that they had a common criterion with which to compare their own field conditions.

3. Although all the rating was done by the writer, the responses of incidence were rated first, these answers being read aloud to him, one by one, in a long series, without mention of the people to whom they applied, Then the replies were shuffled and the responses for Schedule 2 were read aloud and rated orally by the writer, in the same fashion. This procedure at least ruled out the possibility of the resulting correlation being affected by any unconscious bias on the part of the writer.

Finally it was hoped that the numbers of responses obtained, and the nature of them, would yield a result sufficiently clear to permit drawing some legitimate conclusion, despite a procedure

that was admittedly not quantitative or objective in every respect. The results of the ratings by the above procedure are shown in Appendix X. The ratings were then placed into a scattergram:

	A	B	C
1	11111 11111 11111 (15)	1 (1)	
2	11 (2)	11111 11111 11111 1 (16)	11111 (5)
3		1111 (4)	11111 11111 11111 111 (18)

Figure 1.

Illustration of degree of correlation between A-1, B-2 and C-3 codings, as described in Appendix Y.

Expressed as a correlation this gives an r_t of between .886 and .986 (Appendix Z), but the numbers and classes are too few for this to add much to the scattergram. None the less, there seems evidence to justify a conclusion that there

is a strong association between stammering incidence and the degree to which speech defects are regarded as a liability by the culture, and particularly by the parents. We cannot, of course, derive from this association a causal relationship. It may be that a tendency to stammer has produced the anxiety and not vice versa. But since this interpretation would involve some very odd genetic assumptions, it need only be admitted as theoretically possible. This is not to say that the causal relationship suggested between stigma and stammer is a simple one. However, the very high correlation of cultural, particularly parental stigmatization of stammering with the incidence of stammering suggests the following reasoning: since these two elements in a culture are nearly always roughly proportionate to one another, if one can be lowered to any degree, the other will be similarly diminished. In other words, if parents, teachers, and other adults could be educated not to worry about the possibility of stammering occurring in children, and particularly not to take any steps whatsoever to "prevent" its development, stammering incidence itself might decline.

2. Non-Stammering Peoples

Only a fraction of the peoples who were reported on have actually never heard of stammering at all, and lack a word for the affliction altogether. Since the Bannock and

the Shoshone Indians of Idaho are the only non-stammering tribes described in the literature to date, it seems important to list the following peoples, together with a short excerpt from the report which indicates that these peoples indeed do not stammer.

BRITISH GUIANA: Wapishianas (Table 1, #32): (2500 people) "No children or adults stammer. They have no word for it. I have been in the above area for 17 years (a missionary)."

Patamonas, (1100) and Akawaio, (1500). "I travel extensively and visit all Amerindian tribes in British Guiana. Since 1949 I have probably met 99% of all Amerindians. I have never encountered a case of stuttering or blocking. The only impediment seen is complete mutism, all cases being of the deaf-mute variety. ...I have not had time to make extensive inquiries amongst all tribes, but the Akawaio and Patamonas do not know the condition, and my imitations caused great amusement. They possess a word for 'dumbness' but that is all." (a physician)

NEW GUINEA: Garia, Forty miles W.S.W. of Madang, Territory of New Guinea. "I have observed it neither among children nor adults. They do not have a word for it. The problem does not arise..I have checked all my answers with my Garia servant. He bears out my statement to the full. I asked him what action Garia would take to cure a stuttering child. He said that nothing would be done to attempt to cure it...I do not think that there would be any social handicap attached to stammering among the Garia...The nearest case to stammering I ever found among the Garia was a youth who had an impediment in his voice. This was not stammering and it was such that it was hard often to hear his individual words...The point is that this youth was a popular person...he was never ridiculed, people were always kind to him and everybody was very fond of him. As far as I am aware nothing was ever done to attempt to cure...he was subjected to no social disabilities or handicaps..." (a physician)

BORNEO: Kelabits. (West Borneo). "They have no word for it. I have never seen it among children or adults. It is not considered undesirable or ridiculed...I really know these people intimately...Parents do not play a major part in the actual speech growth of their children as they are generally out of the longhouse all day, leaving a gang of small kids indoors." (Curator of Sarawak Museum)

MALAYA: Malayan Aborigines (Negrito, Senoi, Aboriginal Malay) "Have not observed it among children nor adults. There are some sixteen languages and I have not been able to trace a word in any one...I know about 60,000 of these people but have never noticed a case of stuttering...What does happen is that an Aborigine adult talking to a European he does not know for the first time, tends to hesitate in his speech but I do not think this constitutes stuttering...I have however some sixty Aborigines from 11 different groups on my staff and none can recall a case amongst themselves although they gleefully told me of Europeans and Malays they had met with this affliction." (Director of Museums, Kuala Lumpur)

ASSAM, India: Sonthals, Bhuyans and Gatwas (from Behar) Turis and Tantis (from Orissa). "No children or adults stammer. My personal observation (I was assisted by my other medical assistants in the search and I have also spoken to several other medical men in charge of other Tea Estates, and they too have not come across any case) ...has not found a single stammerer or stutterer. The above statement applies only to the labourers and their families employed on the Tea Estates of a British Company in this Central Area of the Assam Valley of the River Brahmaputra (Chief Town - Jorhat, District Sibsagar, Assam). The population actually under my direct care number, in round figures, 20,000 men, women and children... These people are not recent arrivals (new recruits to these parts). Most of them have been here for two or three generations but they have not intermixed with any of the other communities of Assam -- such as Hindus, Ahoms or other original Hill Tribes of Assam...I have not been able to get hold of any word for stammering or stuttering in any of the dialects. As the language-learning

(cont'd., Tea Estates Labourers):
"children among these people do not develop any marked hesitations or if there be any slight amount of it, I believe it is not taken any notice of by the parents." (The report then goes on to cite quite common stammering among other residents of this area -- Hindus, Moslems, Ahoms, (Buddhists), particularly among the literate.) (a physician)

These were the only peoples found to be completely unfamiliar with stammering to the point of lacking a word for the affliction in their languages.

3. "Culture-Contact" and Stammering Incidence

It was found that proximity to stammering peoples can not be claimed as a function of stammering incidence by itself. The example of the Tea Estates Labourers (supra) is striking, but there are other examples of stammering and non-stammering peoples living in fairly close proximity. Near the non-stammering Wapishianas, Patamonas and Akawaio, (cited supra, p. 239) live the Macusi, who do have a word for stammer "Apore inu" (literally: stiff his tongue), and among whom one stammering adult was observed. All these Indians were hinterland; stammering is familiar to the Coastal Arawak of British Guiana, whose word is "ha-ta-tai - he stutters."

Not far from the non-stammering Garia of New Guinea, cited supra, p. 239, live the Tabaiyang (Rai Coast South of Madang, between the Mot and Nankina Rivers, about three

to eight miles inland). Stammering, though very rare, is known to these peoples; they have a word "Ngak-ngak (ng as in singing)" to describe the disorder, and one adult case was observed.

Of all the peoples who inhabit the West Coast of Africa -- from the British Cameroons to Nigeria, the Gold Coast and Sierra Leone -- not one was found who do not stammer -- except the Hausa. This Moslem people of Northern Nigeria, reputedly the aristocrats of the country, do not stammer, according to Mr. and Mrs. D. P. Dry, who spent 30 months in the field. Mrs. Alice Dry is a "trained and experienced child psychologist, and consequently considered speech habits of small children an important field of study." Although the Hausa do have the word Kwatta which("includes any indistinctness, including an accent") and the word I'ina (translated as "stuttering" in Abraham's Dictionary of the Hausa Language), both Mr. and Mrs. Dry failed to observe any stammering whatsoever. This fact may be associated with the report that

> "Parents are not concerned about the fluency of their children's speech. Childrens' development is not measured against abstract standards or norms, but it is encouraged by approval of progress and generalized. Where speech is concerned, the Hausa put more emphasis on the duty of the hearer to understand than on that of the speaker to be intelligible...They are extremely tolerant of the linguistic vagaries of small children..."

As for the word "I'ina," it is clearly onomatopoeic:

> "the i's would be very short, as in 'pin,' and an initial vowel in Hausa is always protected by a glottal stop. I can only offer two, probably related explanations of why I have never come across it:
>
> a. The extreme rarity of stammering in the area of Northern Zaria where we did most of our field work, and
> b. the probability that the word is not current in the regional dialect of that area.
>
> We have also, however, spent some time in Kano and Sokoto, and still have not heard it used, and have also spoken with a large number of Hausa from all over the country. I suggest that it is a perfectly good Hausa word, but necessarily not widely used... If 'I'ina' is onomatopoeic, it seems to me that it may well be representational of a stammerer's pronunciation of one or both of two words:
>
> a) 'Ina' (tone-pattern - low, high), meaning 'Where is' or 'How is' and often used as the initial word in various greetings - it is, interestingly enough, more frequently used to precede greetings by non-Hausa than by native Hausa speakers.
> b) 'Ina' (tone-pattern, - high, low or mid, low), meaning 'I am.'...The description of strangers by the use of a characteristic opening word or phrase is fairly common in Hausa. The word for a Southerner is 'Akawu,' according to traditional etymology derived from 'A kawo...,' meaning 'Bring me...' (Cf. the obsolescent English word 'Parlez-vous' meaning Frenchman)."

No other people has been found to be non-stammering in West Africa.

We may note that in Borneo, upper Baram River of Sarawak, the Kenya and Kayan peoples were reported as being stammerers, though far less than our culture; likewise the Penan people

of the Akah River. None of these peoples are far from the Kelabits, cited as being non-stammerers, supra, p. 240.

In this context we may also recall the amusement of the non-stammering Malay aborigines (cited supra, p. 240) regarding the stammering they had encountered among Malays and Europeans.

A reply from Dr. R. A. Hughes, medical missionary among the Khasi of Assam also indicated that while these people do not stammer themselves, they have a word "Keh Keh" which is

> "...obviously an onomatopoetic word...I cannot remember to have heard any Khasis stammering, although I have been here for fifteen years. (If it exists) it must be very rare indeed amongst them. They would, however, hear many stutterers amongst Bengalis and Assamese with whom they come into contact."

Dr. Hughes obtained another opinion on the question from the Headmistress of a Welsh Mission Girls' High School in Shillong, who wrote that she had never come across stammering in Khasi children or adults. Furthermore,

> "Only a very few among the non-literate people are concerned about the fluency of their children's speech, and non-fluency is not socially 'punished.'"

4. The Male-Female Ratio

A regrettable oversight in the investigation was the failure to ask a question at some point in the correspondence about

comparative incidence of stammering among the sexes. It would have been extremely useful to know whether the usual sex ratio in stammering incidence is consistently found in other cultures as well. Such a finding would have given additional weight to the belief that the ratio is determined by constitutional differences rather than differing environmental stimuli which affect boys and girls. Fortunately, a few respondents sent some information on the point, without being asked for it. These data are worth examining.

a) From Mr. F. A. Peet, various tribes of the Wateita of South Kenya:
(1) Sagalla: Population, 4,219. Stammerers: 5 all male.
(2) Bur: Population, 6,161. Stammerers: 13 male, 7 female.
(3) Mbololo: Pop., 7,109. Stammerers: 24, all male.
(4) Mwanda: Pop., 5,084. Stammerers: 9 male, 4 female.
(5) Mbale: Pop., 19,719. Stammerers: 42 male, 8 female.

b) From the Rev. Edward Paterson, Cyrene, near Bulawayo, S. Rhodesia, on various tribes of the Matabele:
"Of the total of 15 stammerers met with, 3 were female, 12 were male."

c) From Prof. P. de V. Pienaar, Director of Speech, Voice and Hearing Clinic, University of the Witwatersrand, Johannesburg:
Cited a study made by H. S. Wise in 1939, on stammering among South African children in Transvaal schools.
"He found 1,122 stutterers:
979 European or .98% of the European children
65 Bantu or .70% of the Bantu children
88 Non-European or .99% of the Non-European children."
He also found the male-female ratio in the case of stutterers to be:

"European	1 : .2	(5-1)
Bantu	1 : .4	(2.5-1)
Non-European	1 : .2	(5-1)"

d) From Mr. D. Earle, Gov. Agent in the Gold Coast, on stammering among the Akans, (including Twi, Fanti, Ashanti):
"Stuttering is fairly common in this area, but it is mainly in males. I have observed it mainly in males, and have never heard a female stutterer, but I am informed that such is known."

e) From one school in Aba, Nigeria; part of a collection of data sent by Mr. John Field, Senior District Officer, Aba, E. Nigeria, regarding the Ibo people:
"Total no. of boys who stammer this term: 11
Total no. of girls who stammer this term: 1."

It will be noted that this information concerns one East African people, one from Central Africa, one from South Africa and two from West Africa, and that all these unsolicited reports uniformly observed the usual sex ratio in stammering incidence. Admittedly this is far from conclusive evidence of itself. Indeed, it might be argued that the determining factor in the sex ratio is the element of authority in the cultures cited, which, like ours, are male-dominated. Nevertheless, the behaviour of boys and girls varies considerably from one African culture to another, as well as their training. A reasonable theory of stammering incidence must be related to specific customs and mores which have a direct connection with speech. It seems difficult to believe that the same purely environmental stimuli - if they exist - which create a higher incidence of stammering among boys than girls in our culture are to be found in the five different cultures cited,

supra, pp. 245-246. One is led to believe, rather, that the data, sparse as they are, tend to support the hypothesis of constitutional sex-differences which determine the customary sex ratio in stammering incidence, proposed supra, pp. 217-220.

5. Peoples With a High Stammering Incidence

It is interesting to examine the 3 cultures in which it was suggested that the incidence of stammering is considerably higher than in our own.

a. The Ibo of South-East Nigeria

Mr. John O. Field, Senior District Officer of Aba, E. Nigeria, cooperated with the present investigation in a very enterprising way, by initiating a minor survey of stammering incidence of his own, and returning its results to the writer. Citing the criterion at the foot of the present questionnaire (Appendix W), he directed a series of questions on stammering incidence to 13 headmasters of primary schools, and 20 Ibo school-teachers.

"Total enrolment of 12 schools at time of enquiry: 5618
No. of Stammerers. 150
% of Stammerers. . . . . 2.67 "

Of course this finding cannot be statistically compared with the Scottish findings, which showed an incidence of approximately 1/2 the estimate for Ibos. Although the same criterion for selecting stammerers was used in both areas, the judges

who applied it did not have a standard degree of training. Yet it seems reasonable to suppose that the Ibo headmasters and teachers (who are well-educated and English-fluent) were incapable of erroneously identifying over 75 normal-speaking children as stammerers, and we may therefore infer that these Ibo children have a higher incidence of stammering than Scottish children.

Parenthetically, we may call attention to the question of bilingualism in this finding, since the enquiry was limited to a tribally-cosmopolitan town, where English is a compulsory school subject.*

It is, of course impossible to present here all the data which were sent. It suffices to say that in general stammering among the Ibo is at least as much of a social handicap and liability as it is in our culture, if not more so. This has clearly been the case for a very long time, judging from the "cures" in native folklore, which quite evidently antedate the arrival of Europeans. The respondents agreed that stammering children were strongly ridiculed by their age-mates, and several mentioned that "many adults ridicule stammering

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*Although this is scarcely a function of stammering incidence in the Gaelic-speaking island of North Uist; v. infra, p.

children as a punishment or as a method of cure." (!) One teacher remarked that "the teacher helps the stammerer by training him to maintain a regular rhythm as he speaks."

b. The Idoma of Nigeria

These people are in sufficiently close contact with the non-stammering Hausa (v. supra, pp. 242-243) to borrow words from the Hausa language. Yet they were described in the following terms:

> "Stammering (in the sense of the spasmodic repetition of the same speech sound) is practically a mass phenomenon here. I have met many dozens of persons who stammer in some degree...there is a lot of bilingualism here (the mother speaking one African language, the other people a different one, the child learning both)...Ability to speak well in public is vastly admired in West Africa, and Idoma and Ibo country is no exception to this statement. People make speeches on the slightest pretext--long, narcissistic speeches. They compete for opportunities to address meetings, and a speech of any importance will be echoed antiphonally as it proceeds by a spokesman.* One makes speeches to one's age-mates, principally...This statement holds roughly throughout life. The speech-making pattern starts with adolescence at the latest...There is strong ridicule from the stammerer's age-mates. (You should) pay attention to the question of ridicule from age-mates as well as to the parental situation..."

The above quotations are from letters from Dr. Robert Armstrong,

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*Re the non-stammering Hausa, Mrs. Dry wrote: "Fluency of speech is a Hausa characteristic, but grave, considered speech is much admired by them, so that slowness, if present from any reason, is unlikely to be criticized."

an American anthropologist who was working among the Idoma; the following remarks were written by an African, Mr. Patrick Unogwu, who was working with Dr. Armstrong at the same time:

> "I am in agreement with Dr. Armstrong (about the degree of stammering incidence). In my life out in Idoma I have not moved over a few dozen miles without meeting with stammerers. Penalty is imposed on principally by age groups. The ridicules take form of public disgrace, abuse, fun and insult. In a more serious form, the young stammerer is tabooed...The parents of the stammerer defend him: they scold at the playmate or playmates. This may cause other serious troubles between parents. All these serve as means of punishment to the stammerer, he then tries to learn to talk without stammering...Usually stammerers are quick tempered here, they never hesitate to strike an offender physically. This means that his life with the age group is not quite happy...
>
> Re your question on the 'going to stammer Idoma' I may say that at this stage parents get worried believing there is no basic psychological remedy for this God-sent affliction. The only thing a mother does this time is to <u>scold the 'going to stammer'</u> each time he stammers a word. Assuming that her scolds and blames don't upset the child, she reminds him to speak slowly and thoughtfully. As the outcome of this, the 'going to stammer Idoma' often speaks with shyness under the supervision of an elderly caretaker...The caretaker also reminds the child of stammered words, demanding that it be corrected; if the child does not do this, it is reported to the mother, who in her own ways punishes the young stammerer...We are...very sympathetic and get worried that the child will stammer."

c. A third culture whose stammering-incidence is apparently far higher than our own was described by Dr. Ian Cunnison in the following terms:

> "The Messizia Arabs of the Baggara Group, S.W. Kordofan, Anglo-Egyptian Sudan. Stammering is not considered undesirable, and it is not ridiculed. You'd be interested in these people. Their speech is Arabic, twisted up into the most awful jumble by imperfection of articulation. 'Normal,' quiet, steady speech as we know it, hardly exists; some of the speaking is very loud, and is a mixture of very quick and very slow speeds.
>
> Stammering is noticeable in about half the (male) speakers. (one does not have much opportunity of hearing women speak). Not only parts of words, but whole words and even two or three successive words may be stammered, and that, two or three times in the same sentence. When this is combined with the explosive way they mostly have of speaking, the result is extraordinary in the extreme.
>
> Of course I've been wondering why. Can't help thinking it's connected with this in some way: Men here do no work at all, and spend their whole days in talking under trees about tribal affairs. Each person all the time is trying to become known through the wisdom of his speech, or the way he can keep on speaking and allow no other to get a word in. One usually finds, out of a group of, say 10 men, that 8 would be talking at the same time, and 2 either listening or waiting for an opening to start themselves. One simply talks -- not to anyone; but if anyone happens to be interested in what you are saying, he might just stop and listen. Conversation as we know it is non-existent; it's just a verbal free-for-all. Many devices are used to try to keep others' attention, and it may be that the stammering is in part purposeful."

This report was quoted in full because of its striking interest. Here is the only culture found where stammering seems to be so common that it bears no stigma whatsoever, being part of the cultural norm! This suggests that it isn't the ridicule or stigma which is attached to speech-defects which necessarily matter, but rather any kind of intense pressure to speak well. It so happens that in our culture, and in most of the others where stammering was found, the usual pattern consisted of 1) a premium being placed on speech fluency; 2) hence a stigma or penalty being attached to speech defects, which led to 3) the tendency to parental anxiety regarding defects and the repercussions caused by this anxiety. In the Messizia culture, however, this process seems to be short-circuited: speech fluency is so glorified that stammering is derived from this value directly, through the continual urgent necessity of speaking fluently.

6. European Low Stammering-Incidence

The investigation discovered one final point of interest -- that there are peoples in Europe who have a very low incidence of stammering! This is particularly significant, lest it be inferred that low stammering-incidence is somehow associated

with "backwardness" or "primitive peoples" or "uncivilized peoples" or simply with non-literate peoples.

A report from the Hebridean Island of North Uist, from Mr. F. E. G. Macaulay, is most valuable because it happens that Mr. Macaulay is employed by the University of Edinburgh in connection with the Linguistic Survey of Scotland; he spends half of his time in the field among Gaelic-speaking Scots (his mother-tongue is Gaelic), listening to their speech and recording it. We may infer that he is specially qualified to make a report about speech defects on North Uist, where he grew up. Out of 2,500 Gaelic-speaking Scots on the island, (whom he knows personally), he reported that there were only two stammerers, both adults. (1 male, 1 female). An incidence of 1% of course would have produced about 25 stammerers

> "The word for stammering is manndach, but it is obsolete, no longer used. The word ruith (a 'run') is metaphorically applied to repetitive stammering, and the word stad (a 'stop') is used to denote a block-stammer....
>
> If there is any slowness in the child's speech-development, they tend to regard it as part of the personal development of that child. They are not concerned about any possible development of stammering. There is virtually no anxiety on the part of the parents that a child might not become a fluent speaker. Stammering is considered undesirable; it is not ridiculed, rather mimicked, and then only for mild amusement behind the man's back..."

> "I have never heard a child's speech corrected by a parent or a teacher for any reason except for poor grammar. Of course English is the 2d language for all school-children, and a child's mispronunciation of an English word would be corrected by his teacher. Gaelic is the only language outside of school, however, and the child receives no correction from his parents. The one surviving stammerer on the island, a man of 21, has stammered since early boyhood; it used to be much worse. He comes from a large family, and has a sister with a cleft palate. Cleft palate speech is regarded in a similar way as unfortunate; but no great stigma is placed upon it....
>
> Speech fluency is only prized as such if it is part of the profession of the speaker, such as a bard or a poet; but not of the average man... Of course, speech fluency would contribute to a man's getting into a social position of some rank which he could not reach without it; but far more important is the sum total of a man's character and personality. If he wasn't liked, all the speech fluency in the world wouldn't help him gain social and/or political prestige."

Mr. Robert Paine wrote from Norway, during the course of his field-work among the Norwegian Lapps (Coast, Mountain and River) of Finnmark Fylke, that he had met no stammering children or adults.

> "While occurrence of stammering among the Norwegian population of this northern area is not unusually uncommon, I have not, during the course of 1½ years fieldwork here, come across a single, sic, case of a Lapp who stammers. Nor can informants in Karasjok produce any such case. I have just spoken to the District Nurse...a Norwegian who has daily contact with people of all ages and who met <u>all</u> the children of this district. She confirms <u>this</u> to be the case...Which is surely remarkable?

> "I haard through an informant, one case from Kautserio, of a middle-aged man (Lapp) who stammers.
>
> ...In view of the occurrence of stammering among the Norwegians, and the ethnic mixture (Lapp-Norwegian) of the coastal settlements of Finnmark, these coastal areas might provide interesting material...
>
> ...There is again one solitary case which might interest. I came across it firsthand. A boy of 5 years had a moderately severe stammer, especially prevalent when excited... The other children are inclined to tease the child over its stammer, and its foster parents were worried...When I first met them they were in the habit of rebuking the child - 'You must not stutter,' etc...At my suggestion, the parents ceased to mention the matter in the hearing of the child...The stammer today is much reduced from when I first knew him...
>
> The child is illegitimate and adopted; (when adopted at the age of 1 year) it was (reported) severely undernourished and backward, (in particular, slow in learning to stand on its feet and to begin to talk), since when the child has developed markedly..."

Writing from Edinburgh, Mr. Ian Whitaker of the University's Department of Prehistoric Archaeology could not recall a single case of stammering among the Swedish Lapps whom he studied. Though there is a considerable difference among Lappish groups, those he knew were most

> "nearly related to the Mountain Lapps of Finnmark Fylke studied by my colleague Robert Paine...I am sure you can rely upon what Paine has told you; he is a most conscientious fieldworker. As far as I am

> concerned, I have to reply that I do not personally know of any cases in Torne Lappmark - the whole most northerly Lappish-speaking area of Sweden - of Lappish children stammering, and I think I can say with certainty that it does not occur there. I am informed that there is a case among Karesuando (i.e. Northern Mountain) Lapp immigrants into Arjeplog parish: a young boy, but I have never met this child."

Incidentally, the Lappish word for stammer, like the Gaelic words now in use (v. supra, p. 253) is metaphorically derived, according to Whitaker:

> "The verb væ ud'at, also means, I am told, to close with a hook, and the use of the word in the meaning of 'to stammer' is secondary."

7. Conclusions to Chapter 6

The investigation of stammering incidence among other cultures made the following findings:

1. Stammering incidence in a culture is very highly correlated with cultural practices of stigmatization of the stammering, particularly with parental anxiety over the possibility of their children's stammering. This finding supports Johnson's "Evaluational" theory of stammering-incidence.

2. Stammering incidence is not in any way a question of "race," nor of "culture-contact" with other peoples who stammer.

3. The word for stammer is onomatopoeic in the overwhelming majority of languages reported.

4. In the few reports which mentioned the sex ratio, the usual preponderance of male stammering was noted, lending further support to a theory of constitutionally determined predisposition among males.

5. A few peoples were found to be completely unfamiliar with stammering, lacking a word for the affliction in their language, thus confirming the cultural determination of stammering incidence.

6. Three peoples were found who seem to stammer at a considerably higher incidence-rate than our own culture.

7. Some instances of European cultures were cited, in which the incidence of stammering is very much lower than our own; this suggests the possibility of substantially reducing the incidence of stammering among other European cultures.

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Chapter 7

Summary and Conclusions

Since each chapter was summarized in turn, it seems almost unnecessary to present a final summary of the study; yet a collation of the more interesting findings may prove of some value.

First, it has been established that the incidence of stammering is a matter of culture; some cultures clearly have no manifestation of the disorder, and others have a far lower incidence than our own. Chapters 3 and 4 suggested that the evidence of stammering-incidence in our own pre-Renaissance ancestors is not reliable; and some North-European cultures were noted in Chapter 6, in which stammering incidence today is lower than the customary rate of 1-1½%.

Chapters 5 and 6 attempted to deduce what some of these cultural factors which produce stammering might be. It was found that the importance of speech fluency in the culture, and the corresponding degree to which speech-defects are stigmatized, are highly correlated with stammering incidence. This finding lends support for Johnson's theory of stammering-onset, according to which the adverse and anxious reactions of parents toward the normally non-fluent speech of their

young children play an important part in setting up a stammer, which leads to a functionally autonomous habit. Particularly interesting in this connection, was the finding in Chapter 5 that stammering children are significantly farther separated from their nearest siblings than non-stammering children -- offering greater scope to their parents for speech correction and general supervision. Furthermore a significantly high proportion of stammerers' parents were found in a socio-economic group most likely to desire improved status (semi-skilled workers); this finding may be associated with a deliberately wider spacing of children, as part of an overall plan to improve social status, and in any case would contribute to a greater domestic stress being placed upon linguistic fluency which is known to be a means of winning socio-economic gains.

In no way, however, were the importance of linguistic fluency, and the steps taken during early childhood to achieve it, proposed as a single etiological factor in stammering. To the contrary, the theory discussed at the end of Chapter 5 is multi-causal, taking recognition of stammering onset which can be the immediate sequel to many kinds of contributing circumstances. Above all, the theory takes into account the question of hereditary predisposition, both neurological and physiological, of which there seems

to be some evidence in the well-known sex-ratio of stammering incidence.

If not the only factor in stammering-incidence, however, the well-intended but harmful measures taken by parents and teachers during language-learning years do indeed seem to be most important; and fortunately, this factor is the one we can do most about, with a view to stammering prophylaxis. In this connection, Nuttall wrote in 1937 (1, p. 160):

> "But I only needed to know they were there, or to see them enter the room, for the stammering to come into action. In short, I only stammered when addressing myself to other people, Whatever the cause of it was, it must have lain as much in them as it did in me."

Furthermore, (op. cit., p. 184):

> "Where it is cured...the event is...a modification in the structure of society. A stammerer is a sign that the system of social, or linguistic relations, in which he is a unit, is faulty."

How can we alter these "social or linguistic relations?" It is not to be hoped, or even desired, that linguistic fluency should diminish in importance in a culture as complex as ours. An education program could be undertaken, however, describing the best ways to achieve linguistic fluency. Such a program would necessarily aim at the child's most important language-teachers: his parents and his teachers. It would be a mass-campaign to eliminate adult anxiety and tension over early

non-fluency, which could easily be shown to be normal and commonplace in young children. Documentary films could be made which would quickly convince large numbers of parents and teachers of the dangers implicit in constant correction of children's speech. Teachers would be shown the desirability of eliminating rapid-fire drills and correction of accents and dialects from their classrooms.

In addition to an education-program to prevent the development of stammering, we must educate all adults regarding intelligent attitudes towards confirmed stammerers; such attitudes would soon be adopted by children in our society. A recent radio-program featured "a comedian," the chief source of whose humor lay in an imitated stammer. Such a program does more indirect harm in 10 minutes than all the good done by all the speech clinics in a week.

With regard to therapy, no hard and fast conclusions can be drawn from the present study, which has sought to emphasize that stammerers differ as much as non-stammerers, and will of course respond to different kinds of treatment. In general, it may be inferred that a stammer can rarely be "cured" as long as the subject - adult or child - is

made to feel that it is critically important to do so.

Johnson suggested (2, p. 459) that:

> "...parents or teachers confuse or identify normal non-fluency with stuttering. To the child, then, non-fluency comes to be the same as stuttering. For him the taboo against stuttering becomes generalized as a taboo against non-fluency. Out of this semantic confusion he develops the fearful effort, exaggerated hesitancy, etc., which we call well-developed stuttering. He develops this behavior as an attempt to avoid the non-fluency that was originally disapproved."

While this statement may be an over-simplification, it would indicate the desirability of getting the stammerer to "live with" his non-fluency, as all normal speakers do. The non-stammerer - child or adult - frequently says "er, er" or stumbles over a word, without the least embarrassment or tension; this is the type of non-fluency almost never found in stammerers, who may stammer, as Johnson says, to avoid being non-fluent.

Above all, treatment must include a qualitative alteration in the environment of the child. Parents and teachers must be seen and their cooperation enlisted. It may be desirable to establish residential schools for sufficiently severe stammerers, whose home environments seem likely to prejudice the chance for improvement. Such a school was most favourably reported on by Sovak in 1948 (v. supra, p.33).

By adoption of such broad social measures as have been suggested, at least one highly important factor contributing to the incidence of stammering may be considerably reduced.

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A P P E N D I C E S

SURVEY OF STAMMERING

Questionnaire

1. Name (Initials suffice) 2. Sex

3. Date of Birth 4. Address

5. Name of School

6. When did onset of stammering occur (age)?

7. Does the child associate the onset with any particular incident, e.g., a trauma, the start of school, etc.?

8. How many siblings? Their ages? Their sex?

9. Occupation of father or guardian.

10. Number of spartments in home (to include kitchen but not bathroom)

11. Number of individuals permanently resident in the home, including any temporarily resident in the Armed Forces.

APPENDIX A

Does the Incidence Rate of Stammering Vary Significantly, From One Survey to Another?

	Numbers Surveyed	Prob. No. Stammerers	Probable Incidence	Probable Non-Incidence
Stirling Co.	5,482 (N_1)	58	.0106 (p_1)	.9894 (q_1)
Edinburgh A	4,963 (N_2)	71	.0143 (p_2)	.9857 (q_2)

$\frac{p_1 q_1}{N_1} = .00000191$ A

$\frac{p_2 q_2}{N_2} = .0000284$ B

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0037}{.0022} = 1.68$$ p is less than .1

Hence there is no significant difference between the probable incidence of stammering in Stirling County and Edinburgh.

APPENDIX B

	Numbers Surveyed	No. of Stammerers	Probable Incidence	Probable Non-Incidence
Edinburgh A	4,963 (N_1)	71 (prob.)	.0143 (p_1)	.9857 (q_1)
Mid-Lothian	12,914 (N_2)	153	.0118 (p_2)	.9882 (q_2)

$\frac{p_1 q_1}{N_1} = .00000284$ A

$\frac{p_2 q_2}{N_2} = .00000090$ B

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0025}{.0019} = 1.32$$ p is less than .2

Hence there is no significant difference between the probable incidence of stammering in Edinburgh and Mid-Lothian.

APPENDIX B'

The Incidence Rate of Stammering Does Not Vary Significantly, From one LH to Another, i.e., According to Density of Population.

	Numbers Surveyed	Probable Incidence	Probable Non-Incidence		
LH 1	4,963 (N_1)	.0143 (p_1)	.9857 (q_1)	$\frac{p_1 q_1}{N_1}$ = .00000284	A
LH 2 & 3	6,986 (N_{23})	.0112 (p_{23})	.9888 (q_{23})	$\frac{p_{23} q_{23}}{N_{23}}$ = .00000158	B
LH 4	17,550 (N_4)	.0117 (p_4)	.9883 (q_4)	$\frac{p_4 q_4}{N_4}$ = .00000066	C

Compare LH 1 with LH 2 & 3

$$t = \frac{p_1 - p_{23}}{\sqrt{A + B}} = \frac{.0031}{.0021} = 1.48$$ p is less than .2

Compare LH 1 with LH 4

$$t = \frac{p_1 - p_4}{\sqrt{A + C}} = \frac{.0026}{.00187} = 1.39$$ p is less than .2

Compare LH 2 & 3 with LH 4

$$t = \frac{p_{23} - p_4}{\sqrt{B + C}} = \frac{.0005}{.00149} = .336$$ p is less than .8

APPENDIX C

Compare the Incidence in each "LH" group, with an "expected" or Hypothetical Incidence of 1%.

	Numbers Surveyed	Probable Incidence	Probable Non-Incidence		
LH 1	4,963 (N)	.0143 (p_1)	.9857 (q_1)	$\frac{p_1q_1}{N}$	= .0000284 A
Hypothetical Authority	4,963 (N)	.0100 (p_2)	.9900 (q_2)	$\frac{p_2q_2}{N}$	= .00000199$\frac{48}{}$ B

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0043}{.002198} = 1.956$$ p is less than .1

	Numbers Surveyed	Probable Incidence	Probable Non-Incidence		
LH 2 & 3	6,986 (N)	.0112 (p_{23})	.9888 (q_{23})	$\frac{p_{23}q_{23}}{N}$	= .00000158 A
Hypothetical Authority	6,986 (N)	.0100 (p_2)	.9900 (q_2)	$\frac{p_2q_2}{N}$	= .0000014$\frac{2}{}$ B

$$t = \frac{p_{23} - p_2}{\sqrt{A + B}} = \frac{.0012}{.0014} = .857$$ p is less than .4

	Numbers Surveyed	Probable Incidence	Probable Non-Incidence		
LH 4	17,550 (N)	.0117 (p_4)	.9883 (q_4)	$\frac{p_4q_4}{N}$	= .00000066 A
Hypothetical Authority	17,550 (N)	.0100 (p_2)	.9900 (q_2)	$\frac{p_2q_2}{N}$	= .00000056 B

$$t = \frac{p_4 - p_2}{\sqrt{A + B}} = \frac{.0017}{.0011} = 1.55$$ p is less than .2

There is no significant difference between the probable incidence ofstammering found in any LH and a hypothetical incidence of 1% in that LH. Therefore the surveys may be taken to be reliable.

APPENDIX D

X^2 Test, Comparing Observed Findings of Number of Siblings Per 11-yr-old Stammerer, by LH, with Norms Obtained from "Social Implications of the 1947 Mental Survey" (reduced by the Appropriate Constant of .871).

	LH 1	LH 2	LH 3	LH 4	Total
F_o	2.15	2.47	2.37	2.68	9.67
F_e	2.24	2.46	2.47	2.50	9.67
$F_o - F_e$	.09	.01	.10	.18	
$(F_o - F_e)^2$	.0081	.0001	.0100	.0324	
$\frac{(F_o - F_e)^2}{F_e}$	.0036	.00004	.004	.013	

$X^2 = .02064$ df = 3

p is less than .95

Hence, 11-yr-old stammerers do not have a significantly different number of siblings from what could have been expected in a random sample of the population, regardless of population density.

APPENDIX E

Using the Data in Table 9, (p. 195), Compare LH 1 and LH 2 combined, with LH 3 and LH 4 combined.

	Numbers of Siblings	Proportion of Older Sibs.	Proportion of Younger Sibs.	
LH 1 & 2	220 (N_{12})	.4364 (p_{12})	.5636 (q_{12})	$\frac{p_{12}q_{12}}{N_{12}}$ = .001118 A
LH 3 & 4	305 (N_{34})	.5869 (p_{34})	.4131 (q_{34})	$\frac{p_{34}q_{34}}{N_{34}}$ = .000794 B

$$t = \frac{p_{12} - p_{34}}{\sqrt{A + B}} = \frac{.1505}{.0431} = 3.49 \quad p \text{ is less than } .001$$

The proportion of older siblings of 11-yr-old stammerers is significantly higher in sparsely populated areas than in densely populated areas.

APPENDIX F

Based on Data In "The Trend of Scottish Intelligence," p. 107.

	Total No. of Siblings	No. of Older Sibs.	Proportion Older Sibs.	Proportion Younger Sibs.
36,859 Boys	96,081 (N_1)	50,847	.5292 (p_1)	.4708 (q_1)
36,008 Girls	94,734 (N_2)	50,908	.5374 (p_2)	.4626 (q_2)

$$\frac{p_1 q_1}{N_1} = .00000259 \quad A \qquad \frac{p_2 q_2}{N_2} = .00000262 \quad B$$

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0082}{.0024} = 3.47 \quad p \text{ is less than } .001$$

Hence, in the Normal population, there is a significantly high proportion of older siblings among 11-yr-old girls, as compared with 11-yr-old boys.

APPENDIX G

Calculation of Expected Proportion of Older Siblings/Total No. of Siblings for 11-yr-old Scottish Children, 4/5 of whom are boys:

	Proportion of Older Siblings	Weight	
Boys	(From Appendix G) .5292	4	2.1168
Girls	" " " .5374	1	.5374
		5	2.6542

$5 / \overline{2.6542} \quad .5308$

(Observed Data is Drawn from Table 91, p. 195)

LH 3 & 4

	No. of Siblings	Proportion of Older Sibs.	Proportion of Younger Sibs.
Observed	305 (N)	.5869 (p_1)	.4131 (q_1)
Expected	305 (N)	.5308 (p_2)	.4692 (q_2)

$\frac{p_1 q_1}{N} = .000794$ A $\qquad \frac{p_2 q_2}{N} = .000816$ B

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0561}{.0401} = 1.399$$ p is less than .2

In sparsely populated areas, the proportion of older siblings/total no. of siblings is not significantly different for 11-yr-old stammerers from that found in a random sample of the population.

APPENDIX H

LH 1 & 2

	No. of Sibs.	Proportion of Older Sibs.	Proportion of Younger Sibs.	
Observed	220 (N)	.4364 (p_1)	.5636 (q_1)	$\frac{p_1 q_1}{N} = .001118$ A
Expected	220 (N)	.5308 (p_2)	.4692 (q_2)	$\frac{p_2 q_2}{N} = .001132$ B

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0944}{.0474} = 1.99$$ p is just less than .05

In densely pppulated areas, there is a barely significantly-low proportion of older siblings/total no. of siblings for 11-yr-old stammerers, as compared with a random sample

APPENDIX H'

	Number of Siblings	Proportion of Older Sibs.	Proportion of Younger Sibs.
Observed	525 (N)	.5238 (p_1)	.4762 (q_1)
Expected	525 (N)	.5308 (p_2)*	.4692 (q_2)

$$\frac{p_1 q_1}{N} = .000475\ A \qquad \frac{p_2 q_2}{N} = .000474\ B$$

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0070}{.0308} = 0.23 \quad p \text{ is less than } .9$$

The overall findings for the ratio of older siblings of 11-yr-old stammerers to younger siblings of 11-yr-old stammerers are not significantly different from the ratio found in a hypothetical sample of 11-yr-olds, 4/5 of whom would be boys.

*Calculation of Hypothetical proportion shown in Appendix H.

APPENDIX I

P/F	Norms	x Constant .004991	F_e	F_o	$F_e - F_o$	$(F_e - F_o)^2$	$\frac{(F_e - F_o)^2}{F_e}$
1/1	4158		20.7526	27	6.2474	39.0300	1.8807
1/2	4987		24.8901	28	3.1099	9.6715	.3886
2/2	3542		17.6781	21	3.3219	11.0350	.6242
1/3	2962		14.7833	21	6.2167	38.6474	2.6143
2/3	2676		13.3559	10	3.3559	11.2621	.8432
3/3	2196		10.9602	9	1.9602	3.8424	.3506
1/4	1420		7.0872	3	4.0872	16.7052	2.3571
2/4	1550		7.7361	6	1.7361	3.0140	.3877
3/4	1551		7.7410	7	1.7410	3.0311	.3916
4/4	1359		6.7828	8	1.2172	1.4816	.2184
1/5	563		2.8099	1	1.8099	3.2757	1.1658
2/5	870		4.3422	4	.3422	.1171	.0270
3/5	927		4.6267	2	2.6267	6.9022	1.4918
4/5	925		4.6168	6	1.3832	1.9132	.4144
5/5	874		4.3621	5	.6379	.4069	.0933
	30,560		TOTAL FOR.....158 Cases.....X^2 =				13.2487
			df = 14		p is less than .7		
1/6	232		1.1579	-	1.1579	1.3407	1.1579
2/6	409		2.0413	-	2.0413	4.1669	2.0413
3/6	512		2.5554	4	1.4446	2.0869	.8167
4/6	519		2.5903	1	1.5903	2.5291	.9764
5/6	515		2.5704	3	.4296	.1846	.0718
6/6	519		2.5903	2	.5903	.3485	.1345
1/7	88		.4392	-	.4392	.1929	.4392
2/7	155		.7736	1	.2263	.0512	.0662
3/7	306		1.5272	1	.5272	.2779	.1820
4/7	312		1.5572	1	.5572	.3105	.1994
5/7	301		1.5023	3	1.4977	2.2431	1.4931
6/7	310		1.5472	2	.4528	.2050	.1325
7/7	347		1.7319	-	1.7319	2.9995	1.7319
1/8	27		.1348	-	.1348	.0182	.1348
2/8	48		.2396	-	.2396	.0574	.2396
3/8	109		.5440	2	1.4560	2.1199	3.8969
4/8	189		.9433	2	1.0567	1.1166	1.8372
5/8	191		.9533	1	.0467	.0022	.0023
6/8	211		1.0531	-	1.0531	1.1090	1.0531
7/8	169		.8435	-	.8435	.7115	.8435
8/8	184		.9183	-	.9183	.8433	.9183
1/9	7		.0349	-	.0349	.0012	.0349
2/9	13		.0649	-	.0649	.0042	.0649
3/9	33		.1645	-	.1645	.0271	.1645
4/9	60		.2995	-	.2995	.0897	.2995
5/9	119		.5939	2	1.4061	1.9771	3.3290
6/9	120		.5989	1	.4011	.1609	.2687
7/9	115		.5740	-	.5740	.3295	.5740
8/9	82		.1397	-	.1397	.0195	.1397
9/9	97		.4841	-	.4841	.2344	.4841
	36,859		183.6935	184		X^2 =	36.9766
			df = 44		p is less than .7		

The distribution of family-places for 11-yr-old boy stammerers does not differ significantly from the rest of the 11-yr-old population.

APPENDIX J

P/F	Norms	x Constant .004991	F_e	F_o	$F_e - F_o$	$(F_e - F_o)^2$	$\frac{(F_e - F_o)^2}{F_e}$
1/1	4158		20.7526	27	6.2474	39.0300	1.8807
1/2	4987		24.8901	28	3.1099	9.6715	.3886
2/2	3542		17.6781	21	3.3219	11.0350	.6242
1/3	2962		14.7833	21	6.2167	38.6474	2.6143
2/3	2676		13.3559	10	3.3559	11.2621	.8432
3/3	2196		10.9602	9	1.9602	3.8424	.3506
1/4	1420		7.0872	3	4.0872	16.7052	2.3571
2/4	1550		7.7361	6	1.7361	3.0140	.3877
3/4	1551		7.7410	7	1.7410	3.0311	.3916
4/4	1359		6.7828	8	1.2172	1.4816	.2184
1/5	563		2.8099	1	1.8099	3.2757	1.1658
2/5	870		4.3422	4	.3422	.1171	.0270
3/5	927		4.6267	2	2.6267	6.9022	1.4918
4/5	925		4.6168	6	1.3832	1.9132	.4144
5/5	874		4.3621	5	.6379	.4069	.0933
	30,560		TOTAL FOR.....158 Cases.....X^2 =				13.2487
			df = 14	p is less than .7			
1/6	232		1.1579	-	1.1579	1.3407	1.1579
2/6	409		2.0413	-	2.0413	4.1669	2.0413
3/6	512		2.5554	4	1.4446	2.0869	.8167
4/6	519		2.5903	1	1.5903	2.5291	.9764
5/6	515		2.5704	3	.4296	.1846	.0718
6/6	519		2.5903	2	.5903	.3485	.1345
1/7	88		.4392	-	.4392	.1929	.4392
2/7	155		.7736	1	.2263	.0512	.0662
3/7	306		1.5272	1	.5272	.2779	.1820
4/7	312		1.5572	1	.5572	.3105	.1994
5/7	301		1.5023	3	1.4977	2.2431	1.4931
6/7	310		1.5472	2	.4528	.2050	.1325
7/7	347		1.7319	-	1.7319	2.9995	1.7319
1/8	27		.1348	-	.1348	.0182	.1348
2/8	48		.2396	-	.2396	.0574	.2396
3/8	109		.5440	2	1.4560	2.1199	3.8969
4/8	189		.9433	2	1.0567	1.1166	1.8372
5/8	191		.9533	1	.0467	.0022	.0023
6/8	211		1.0531	-	1.0531	1.1090	1.0531
7/8	169		.8435	-	.8435	.7115	.8435
8/8	184		.9183	-	.9183	.8433	.9183
1/9	7		.0349	-	.0349	.0012	.0349
2/9	13		.0649	-	.0649	.0042	.0649
3/9	33		.1645	-	.1645	.0271	.1645
4/9	60		.2995	-	.2995	.0897	.2995
5/9	119		.5939	2	1.4061	1.9771	3.3290
6/9	120		.5989	1	.4011	.1609	.2687
7/9	115		.5740	-	.5740	.3295	.5740
8/9	82		.1397	-	.1397	.0195	.1397
9/9	97		.4841	-	.4841	.2344	.4841
	36,859		183.6935	184		X^2 =	36.9766
			df = 44	p is less than .7			

The distribution of family-places for 11-yr-old boy stammerers does not differ significantly from the rest of the 11-yr-old population.

APPENDIX J

P/F	Norms x Constant .00144	F_e	F_o	$F_e - F_o$	$(F_e - F_o)^2$	$\frac{(F_e - F_o)^2}{F_e}$
1/1	4081	5.876	1	4.876	23.7754	4.046
1/2	4781	6.886	7	.114	.0130	.002
2/2	3456	4.977	5	.023	.0005	.000
1/3	2817	4.056	10	5.944	35.3311	8.711
2/3	2664	3.836	4	.164	.0269	.007
3/3	2123	3.057	4	.943	.8892	.291
1/4	1346	1.938	3	1.062	1.1278	.582
2/4	1477	2.127	1	1.127	1.2701	.504
3/4	1504	2.166	1	1.166	1.3596	.628
4/4	1371	1.974	1	.974	.9487	.481
	25,620	36.893	37		X^2 =	15.252

df = 9 p is less than .1

The distribution of family-places for 11-yr-old girls stammerers does not differ significantly from the rest of the 11-yr-old population.

APPENDIX K

	Numbers Surveyed	Numbers of First-Born	Proportion First-Born	Proportion of Other Positions
Observed	278 (N_1)	125	.4496 (p_1)	.5504 (q_1)
General Population	36,859 (N_2)	14,444	.3918 (p_2)	.6082 (q_2)

$$\frac{p_1 q_1}{N_1} = .00089 \quad A \qquad \frac{p_2 q_2}{N_2} = .000006 \quad B$$

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0578}{.0299} = 1.933 \qquad p \text{ is less than } .1$$

There are not significantly more or less first-born boy stammerers than could have been expected by chance.

APPENDIX L

	Numbers Surveyed	Numbers of First-Born	Proportion First-Born	Proportion of Other Positions
Observed	58 (N_1)	27	.466 (p_1)	.534 (q_1)
General Population	36,008 (N_2)	13,976	.388 (p_2)	.612 (q_2)

$$\frac{p_1 q_1}{N_1} = .004289 \quad A \qquad \frac{p_2 q_2}{N_2} = .00000659 \quad B$$

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.078}{.066} = 1.18 \qquad p \text{ is less than } .3$$

There are not significantly more or less first-born girl stammerers than could have been expected by chance.

APPENDIX M

	Numbers Surveyed	Numbers of Only-Children	Proportion of Only-Children	Proportion of Other Children
Observed	186 (N_1)	27	.1452 (p_1)	.8548 (q_1)
General Population	37,587 (N_2)	4158	.1106 (p_2)	.8894 (q_2)

$$\frac{p_1 q_1}{N_1} = .00067 \quad A \qquad \frac{p_2 q_2}{N_2} = .0000026 \quad B$$

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0346}{.0259} = 1.336 \qquad p \text{ is less than } .2$$

The proportion of only-child 11-yr-old boy stammerers does not differ significantly from the proportion of only-child 11-yr-old boys in the general population

APPENDIX N

	Numbers Surveyed	Numbers of Only-Children	Proportion of Only-Children	Proportion of Other Children
Observed	44 (N_1)	1	.0227 (p_1)	.9773 (q_1)
General Population	36,799 (N_2)	4081	.1109 (p_2)	.8891 (q_2)

$$\frac{p_1 q_1}{N_1} = .0005 \quad A \qquad \frac{p_2 q_2}{N_2} = .0000027 \quad B$$

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0882}{.0224} = 3.94 \quad p \text{ is less than } .001$$

The proportion of only-child 11-yr-old girl stammerers is significantly lower than the proportion of only-child 11-yr-old girls in the general population; the numbers measured may be too small to be reliable, however.

APPENDIX O

	Numbers Surveyed	Numbers of Last-Born	Proportion of Last-Born	Proportion of Other Children
Observed	184 (N_1)	72	.391 (p_1)	.609 (q_1)
General Population	36,859 (N_2)	13,276	.360 (p_2)	.640 (q_2)

$$\frac{p_1 q_1}{N_1} = .001294 \quad A \qquad \frac{p_2 q_2}{N_2} = .00000625 \quad B$$

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.031}{.036} = .861 \qquad p \text{ is less than } .3$$

The proportion of last-born 11-yr-old boy stammerers does not differ, significantly from the proportion of last-born 11-yr-old boys in the general population.

APPENDIX P

	Numbers Surveyed	Numbers of Last-Born	Proportion of Last-Born	Proportion of Other Children
Observed	41 (N_1)	14	.3415 (p_1)	.6585 (q_1)
General Population	36,008 (N_2)	13,070	.3630 (p_2)	.6370 (q_2)

$$\frac{p_1 q_1}{N_1} = .0054848\,2 \quad A \qquad \frac{p_2 q_2}{N_2} = .0000064\,2 \quad B$$

$$t = \frac{p_1 - p_2}{\sqrt{A + B}} = \frac{.0215}{.0742} = .290 \qquad p \text{ is less than } .8$$

The proportion of last-born 11-yr-old girl stammerers does not differ significantly from the proportion of last-born 11-yr-old girls in the general population.

APPENDIX Q

Succeeding Siblings

- 1 -

STAMMERERS (Mean = 3.73 yrs.)

Yrs.	f	x	fx	fx^2	
1	8	2.73	21.84	59.623	σ_1 =
2	20	1.73	34.60	59.858	2.052
3	16	.73	11.68	8.526	
4	9	.27	2.43	.656	
5	10	1.27	10.27	13.043	
6	8	2.27	18.16	41.223	
7	3	3.27	9.81	32.079	
8	2	4.27	8.54	36.466	
9	3	5.27	15.81	81.319	
	79	(N_1)		332.793	

$\frac{(\sigma_1)^2}{N_1}$ = .05330005 A

- 2 -

NON-STAMMERERS (Mean = 2.92 yrs.)

Yrs.	f	x	fx	fx^2	
1	30	1.92	57.60	110.592	σ_2 =
2	32	.92	29.44	27.085	1.618
3	22	.08	17.60	14.080	
4	23	1.08	24.84	26.827	
5	15	2.08	31.20	64.896	
6	7	3.08	21.56	66.405	
7	2	4.08	8.16	32.928	
	131	(N_2)		342.813	

$\frac{(\sigma_2)^2}{N_2}$ = .019984152 B

$$t = \frac{Mn_1 - Mn_2}{\sqrt{A + B}} = \frac{.81}{.2707} = \underline{2.99}\ \text{C.R.}$$

p is less than .01

Preceding Siblings

- 3 -

STAMMERERS (Mean = 4.46 yrs.)

Yrs.	f	x	fx	fx^2	
1	17	3.46	58.82	203.517	σ_3 =
2	18	2.46	44.28	108.929	3.883
3	13	1.46	18.98	27.711	
4	12	.46	5.52	2.539	
5	9	.54	4.86	2.624	
6	6	1.54	9.24	14.230	
7	6	2.54	15.24	38.710	
8	3	3.54	10.62	37.595	
9	1	4.54	4.54	20.612	
10	2	5.54	11.08	61.383	
11	1	6.54	6.54	42.772	
12	2	7.54	15.08	113.703	
13	2	8.54	17.08	145.863	
16	1	11.54	11.54	133.172	
26	1	21.54	21.54	463.972	
	94	(N_3)		1.417.332	

$\frac{(\sigma_3)^2}{N_3}$ = .1604009 A

- 4 -

NON-STAMMERERS (Mean = 3.02 yrs.)

Yrs.	f	x	fx	fx^2	
1	20	2.02	40.40	81.668	σ_4 =
2	47	1.02	47.94	48.899	1.935
3	26	.02	.05	.000	
4	15	.98	14.70	14.406	
5	9	1.98	17.82	35.284	
6	5	2.98	14.90	44.402	
7	1	3.98	3.98	15.840	
8	1	4.98	4.98	24.800	
9	2	5.98	11.96	71.521	
10	3	6.98	20.94	146.161	
	129	(N_4)		482.981	

$\frac{(\sigma_4)^2}{N_4}$ = .029025 B

$$t = \frac{Mn_3 - Mn_4}{\sqrt{A + B}} = \frac{1.44}{.4352} = \underline{3.31}\ \text{C.R.}$$

p is less than .01

Mid-Lothian and Peebles stammerers are significantly farther from their nearest siblings than non-stammerers are from theirs.

APPENDIX R

Succeeding Siblings

- 1 -

STAMMERERS (Mean = 3.70 yrs.)

Yrs.	f	x	fx	fx^2
1	26	2.7	70.20	189.54
2	48	1.7	81.60	138.72
3	31	.7	21.70	15.19
4	27	.3	8.10	2.43
5	18	1.3	23.40	30.42
6	15	2.3	34.50	79.35
7	13	3.3	42.90	141.57
8	7	4.3	30.10	129.43
9	4	5.3	21.20	123.60
10	2	6.3	12.60	79.38
	191 (N_1)			929.63

σ_1 = 2.2061

$\frac{(\sigma_1)^2}{N_1}$ = .025490953 A

- 2 -

NON-STAMMERERS (Mean = 2.92 yrs.)

Yrs.	f	x	fx	fx^2
(Same as Appendix R)				
	131 (N_2)			342.813

σ_2 = 1.618

$\frac{(\sigma_2)^2}{N_2}$ = .019984152 B

$$t = \frac{Mn_1 - Mn_2}{\sqrt{A + B}} = \frac{.78}{.2132} = \underline{3.66}\ \text{C.R.}$$

p is less than .001

Preceding Siblings

- 3 -

STAMMERERS (Mean = 3.77 yrs.)

Yrs.	f	x	fx	fx^2
1	39	2.77	108.03	299.243
2	46	1.77	81.42	144.113
3	35	.77	26.95	20.752
4	18	.23	4.14	.952
5	18	1.23	22.14	27.232
6	10	2.23	22.30	49.729
7	7	3.23	22.61	73.030
8	8	4.23	33.84	143.143
9	3	5.23	15.69	82.059
10	3	6.23	18.69	116.439
11	1	7.23	7.23	52.273
12	2	8.23	16.46	135.466
13	2	9.23	18.46	170.386
16	1	12.23	12.23	149.573
26	1	22.23	22.23	494.173
	194 (N_3)			1,888.563

σ_3 = 3.120

$\frac{(\sigma_3)^2}{N_3}$ = .050177319 A

- 4 -

NON-STAMMERERS (Mean = 3.02 yrs.)

Yrs.	f	x	fx	fx^2
(Same as Appendix R)				
	129 (N_4)			482.981

σ_4 = 1.935

$\frac{(\sigma_4)^2}{N_4}$ = .029025 B

$$t = \frac{Mn_3 - Mn_4}{\sqrt{A + B}} = \frac{.75}{.2814} = \underline{2.67}\ \text{C.R.}$$

p is less than .01

All stammerers surveyed are significantly farther from their nearest siblings than non-stammerers are from theirs.

APPENDIX S

Ages	Norms x Constant .00686	F_e	F_o	$F_e - F_o$	$(F_e - F_o)^2$	$\frac{(F_e - F_o)^2}{F_e}$
43 or over	2221	15.236	16	.764	.584	.038
38 - 42	1828	12.540	14	1.460	2.132	.170
37 or less	2656	18.220	16	2.220	4.928	.270
	6705	45.996	46		x^2	= .478

df = 2 p is less than .8

The distribution of ages of mothers of 46 11-yr-old Fife stammerers is not significantly different from that of a random sample of mothers' ages of Scottish 11-yr-olds.

APPENDIX T

Age	Boys	Girls	Total	$F_e - F_o$	$(F_e - F_o)^2$	Boys $\frac{(F_e - F_o)^2}{F_e}$	Girls $\frac{(F_e - F_o)^2}{F_e}$
A	15 (14.539)	3 (3.461)	18	.461	.213	.015	.615
P	16 (16.154)	4 (3.846)	20	.154	.024	.002	.006
2	7 (7.269)	2 (1.731)	9	.269	.072	.001	.042
3	19 (15.346)	- (3.654)	19	3.654	13.352	.870	3.654
4	19 (21.000)	7 (5.000)	26	2.000	4.000	.190	.800
5	71 (69.462)	15 (16.538)	86	1.538	2.365	.034	.143
6	18 (17.769)	4 (4.231)	22	.231	.053	.003	.013
7	23 (24.231)	7 (5.769)	30	1.231	1.515	.063	.263
8	11 (14.539)	7 (3.461)	18	3.539	12.525	.872	3.619
9	15 (13.731)	2 (3.269)	17	1.269	1.610	.117	.493
10	10 (9.692)	2 (2.308)	12	.308	.095	.010	.041
11	2 (3.231)	2 (0.769)	4	1.231	1.515	.469	1.970
12	5 (4.038)	- (0.961)	5	.962	.925	.229	.962
	231 (231.001)	55 (54.999)	286			2.875	12.621

$X^2 = 15.496$ df = 12

p is less than .2

A denotes always
P denotes pre-school

There is no significant difference between the distribution of onset-ages given for stammering boys and the distribution for stammering girls.

APPENDIX U

Category	Boys	Girls	Total	$F_e - F_o$	$(F_e - F_o)^2$	Boys $\frac{(F_e - F_o)^2}{F_e}$	Girls $\frac{(F_e - F_o)^2}{F_e}$
None or Unknown	182 (178.86)	37 (40.14)	219	3.14	9.8596	.0551	.2456
Illness	10 (10.62)	3 (2.38)	13	.62	.3844	.0362	.1615
Physical Injury	35 (31.03)	3 (6.97)	38	3.97	15.7609	.5079	2.2535
Psychic Trauma	19 (21.23)	7 (4.77)	26	2.23	4.9729	.2342	1.0425
School	22 (24.50)	8 (5.50)	30	2.50	6.2500	.2551	1.1364
Imitation	15 (17.15)	6 (3.85)	21	2.15	4.6225	.2695	1.2006
Misc. Others	11 (10.62)	2 (2.38)	13	.38	.1444	.0136	.0607
	294 (294.01)	66 (65.99)	360			1.3716	6.1008

$x^2 = 7.4724$

df = 6 p is less than .3

There is no significant difference between the distribution of Associated-with-onset Episodes and/or Causes given by stammering boys, and the distribution given by stammering girls.

APPENDIX V

Dear Fellow:

May I solicit your help in connection with my Ph.D. thesis on Children's Stammering? I am amassing as many facts as possible about the incidence of this affliction, and am particularly interested in the degree to which it occurs among non-literate peoples. The only completely reliable evidence, however, is that which is obtained from a worker who is in the field at the moment, and who can look for the specific disorder of stammering.

Therefore: Are you now,or do you shortly plan to be, in the field, studying a non-literate people? If not, can you possibly refer this letter to someone who can help with this study?

Here are the only questions whose answers are needed:

1. Name of people studied.....
2. Georgraphical area (approx.).....
3. Have you personally observed stammering among these people?
   (a) Children.....(b) Adults.....
4. Is there a word for "stammer" or "stutter" in their language?
   If so, what is it?.....
5. Parents in our culture are greatly concerned about the fluency of their children's speech, since non-fluency is socially "punished." Is this the case among the people you are studying?.....
   .....
6. Is stammering (a) considered undesirable?.....
   (b) ridiculed?.....
7. Your name and address.....
   .....
8. Any comments you wish to make:.....
   .....
   .....
   .....

This letter is being sent to workers all over the world; the investigation is among the first of its kind, and may lead to an important contribution to knowledge of stammering etiology and therapy. May I therefore ask for your cooperation?

Yours sincerely,

John J. Morgenstern
(Fellow, Royal Anthropological Institute).

P.S. Incidentally, the following should be used as a criterion: "A child may be considered to stammer or stutter, if, from time to time, he is forced to interrupt his natural flow of speech by the repetition of any sound, or by a total 'blocking.'"

APPENDIX W

List of Peoples Concerning Whom Reports on Stammering Incidence were Received, with Informant's Estimates of the Degree of Stammering Incidence and Attitudes of Parents Towards Non-Fluency of Children.

(ESI means Estimate of Stammering Incidence (See App. Y)
(EPA means Estimate of Parents' Attitudes " " ")

No.	Name of People	Approximate Area	ESI	EPA	Word Meaning Stammer
		SOUTH AFRICA			
1.	Bantu	U. of S. Africa	B	2	Hohoelea
2.	Xhosa	Cape Prov.(Alice)	C	3	Ithintitha
3.	Zulu	Northern Natal	B	2	Amalimi
		CENTRAL AFRICA			
4.	Makalanga	S. Rhodesia	B	2	Audzadzama
5.	Vazezuru(Shona)	Around Salisbury	C	3	Kudzadzama
6.	Amandebele (Matabele)	S. half of S.Rhodesia	A	2	Ugugagasa
7.	Matabele	Cyrene, near Bulawayo S. Rhodesia	A	1	Kundandamera
8.	Ufipa	Sumbwanga, Tanganyika	C	2	Kusisita
9.	Lungu	near Abercorn, N. Rhodesia	C	2	Chimemele
10.	Bemba	Kasama, N.Rhodesia	C	3	Kutitisha
11.	Mambwe	Kawimbe,near Abercorn, N.Rhodesia	C	3	Kutitisya
12.	Barabaig	Mbula Dist.,Tanganyika,N.Province	C	2	Ruksagilamanang
13.	Wazigua	Tanga Province, Tanganyika	C	2	Kugugumiza
14.	Banyoro(Bakitara)	Western Uganda	B	2	Hebebera
15.	Tumbuka	N. Nyasaland	C	3	Cikwikwi
16.	Lele(Bashilele)	Kasai Dist., Belgian Congo	B	2	Ikukeme
17.	Baganda	Uganda	B	2	Nanagira
		EASTERN AFRICA			
18.	Luo	Nyanza Prov.,Kenya	B	2	Radwal
19.	Wateita	South Kenya	B	3	Kugugumia
20.	Kikuyu	Kenya	C	3	Babaika

APPENDIX X

No.	Name of People	Approximate Area	ESI	EPA	Word Meaning Stammer
		WEST AFRICA			
21.	Vakpe(Bakweri)	S.British Cameroons	B	2	Likikimele
22.	Ibo	Aba, Nigeria	C	3	Nso
23.	Idoma	South of Benue River, Nigeria	C	3	kikiki
24.	Edo or Bini	Near Benim City, South Nigeria	C	3	Bebe
25.	Tiv	Middle Benue Valley Cen. Nigeria	A	1	Mkehenem
26.	Hausa	Northern Nigeria	A	1	I'ina
27.	Ibibio	Nigeria	B	2	Andikek
28.	Various Remnant Tribes	Bamenda Div. of Prov. of Brit.Cameroons	B	2	Word exists but not known.
29.	Frafra	Zuarungu Dist.,N. Gold Coast	C	3	Abitimi
30.	Akans(Twi,Fanti, Ashanti)	Gold Coast and Ashanti	C	3	Dodow
31.	Kusasi	Bawhu, GoldCoast	C	2	Biduk
32.	Fruni	near Zuarango, Gold Coast	C	3	Burego
33.	Konkomba	Oti Plain, N. Togo-land, Gold Coast	B	2	Obabe
34.	Mende	East of Sierra Leone	B	2	Ndaboi
35.	Kissi	East of Sierra Leone	B	2	Kuwa
36.	Maninka	Sierra Leone(near Freetown)	C	3	Da Gbadaa
37.	Loko	Sierra Leone(near Freetown)	C	3	Ndabwolona
38.	Temne	Sierra Leone(near Freetown)	C	3	Kaiyekup
39.	Creole	Sierra Leone(near Freetown)	C	3	Stommer
40.	Yoruba	Southern Nigeria	C	3	Kololo
		BRITISH GUIANA			
41.	Wapishianas	Along the Rupumini River	A	1	NONE
42.	Patamonas	Along the Ireng River	A	1	NONE
43.	Macusis	Along the Takutu River	B	1	Apore Inu
44.	Akawaio	Hinterland	A	1	NONE
45.	Arawak	Coastline	B	2	Ha-ta-tai

APPENDIX X
(cont'd.)

No.	Name of People	Approximate Area	ESI	EPA	Word Meaning Stammer
		INDONESIA			
46.	Indonesian Peoples	Java, Sumatra, Celebes, Bali, Timor	B	3	Grojok, Gagap, Kamu'mu', Keta, Ngaak, Ghalugghu , arapap-eureupeup
		NEW GUINEA			
47.	Garia	40 miles W.S.W. of Madang, Terr. of New Guinea	A	1	NONE
48.	Tabaiyang	Rai Coast, South of Madang	A	1	Ngak-ngak
		BORNEO			
49.	Penan	Akah River, Sarawak	B	2	Word exists, not known
50.	Kenya	Upper Baram River, Sarawak	B	3	Sebaba
51.	Kayan	Baram River, Sarawak	B	3	Ka'a
52.	Kelabits	West Borneo, Northern Interior	A	1	NONE
		MALAYA			
53.	Malayan Aborigines (Negritos, Senoi, Aboriginal Malay)	Federation of Malaya	A	1	NONE
		INDIA			
54.	Tea Estates Labourers (Sonthals, Bhuyans, Gatwas, Turis, Tantis)	Central Area of Assam Valley of the River Brahma Putra	A	1	NONE
55.	Bhils	N.W. Corner of Central Turia	A	2	Bobro
56.	Hindus, Moslems Ahoms (Buddhists)	Central area of Assam Valley of the River Brahma Putra	C	3	Totlana, etc.
57.	Hill Uriyas	Kondmals, Orissa	B	2	Tuttura
58.	Khasi	Assam (Shillong)	A	1	Kren Keh Keh
		VIETNAM			
59.	Meoblanc (Miaotseu)	Lai Chau, North Vietnam	A	1	Hay Nthenthia Lu
		HEBRIDES			
60.	Gaelic speaking Scots	Island of North Uist	A	1	Ruith, Stad
		SCANDANAVIA			
61.	Norwegian Lapps	Finnmark Fylke	A	1	Vaud'dat

APPENDIX X
(cont'd.)

Some Examples of Responses in Investigation of Stammering Incidence and Cultural (Mostly Parental) Attitudes Toward Stammering, Showing How These Responses Were Coded, In Accordance With The Schedules on p.235

ESTIMATE OF STAMMERING INCIDENCE

Code No.

A Ranging from "No Children or adults stammer. They have no word for it." (Wapishianas of British Guiana)

to "Stammerers are certainly very rare among the Meo, and I have personally been able to observe only one very feeble-minded man in my sector; with him it's rather a question of mental abnormality, rather than simple stammering." (the Meo of Northern Viet-Nam)

B Ranging from "I have not personally observed stammering in Kenya children, and very rarely in adults. Some parents claim to have taught their afflicted children to speak without stammering. Kenya people tell me stammering was more common two decades ago than now." (Kenya people of Borneo)

to "We have at least 3 stammerers per 1000 in Buea. In Membea with 683 population, 2 stammerers have been unearthed." (The Vakpe of British Cameroons)

C Ranging from "Stuttering is Fairly Common in this area." (Akans of Gold Coast Colony)

to "Stammering...is practically a mass phenomenon here." (Idoma of Nigeria, South of Benue River)

APPENDIX Y

ESTIMATE OF CULTURAL (MOSTLY PARENTAL) ATTITUDES TOWARD STAMMERING OR NON-FLUENCY

Code No.

1 Ranging from "If there be any slight amount of hesitations or non-fluency in the development of language-learning children, it is not taken any notice of by the parents." (Tea Estates Labourers in Assam)

to "I asked him what action would be taken to cure a stuttering child. He said that nothing would be done to cure it." (Garia of New Guinea)

2 Ranging from "Some (parents) are troubled -- others not very much." (Amandebele of Matabeleland)

to "Non-fluency is no great concern to parents, although I observed that a child is maybe ridiculed by his age-mates. Adults are tolerant and helpful." (Barabaig, Tanganyika)

3. Ranging from "A child who stammers is encouraged to talk slowly and deliberately. As a man, he will be expected to pass many things by word of mouth to his children; speak in tribal meetings." (Xhosa of Cape Province, South Africa)

to "...Parents get worried, believing there is no...remedy, for this God-sent affliction. The only thing a mother does at this time is to scold the 'going to stammer' each time he stammers a word. Assuming that her scolds and blames don't upset the child, she reminds him to speak slowly and thoughtfully...The caretaker also reminds the child of stammered words, demanding that it be corrected...(if not)... the mother...punishes the young stammerer." (Idoma of Nigeria)

Tetrachoric Correlation, Based on Data Shown in Figure 1, p.237

(1)

a	b
15	1
2	43
c	d

$$r_t = \cos\left(\frac{\pi\sqrt{bc}}{\sqrt{ad} + \sqrt{bc}}\right) = \cos\left(\frac{180^\circ \times 1.414}{25.396 + 1.414}\right) =$$

$$\cos 9.49 = .9863$$

(2)

a	b
34	5
4	18
c	d

$$r_t = \cos\left(\frac{\pi\sqrt{bc}}{\sqrt{ad} + \sqrt{bc}}\right) = \cos\left(\frac{180^\circ \times 4.472}{24.739 + 4.472}\right) =$$

$$\cos 27.55 = .8868$$

The tetrachoric correlation between estimated degree of stammering incidence in other cultures, and estimated degree of cultural (mostly parental) stigmatization of stammering or non-fluency in those cultures, is thus shown to be between .8868 and .9863.

APPENDIX Z

Names and Addresses of Respondents to Questionnaire on Stammering Incidence in Other Cultures.

No.	Name of People	Name and Address of Respondent
	SOUTH AFRICA	
1.	Bantu	Prof. P. de V. Pienaar, University of the Witwatersrand, Johannesburg, S.A.
2.	Xhosa	Samson Mbizo Guma, University College, Fort Hare, P.O. Fort Hare, S. A.
3.	Zulu	D.W.M. Matheson, Gordon Memorial, Pomeroy, Natal, S. A.
	CENTRAL AFRICA	
4.	Makalanga	K. R. Robinson, Box 240, Bulawayo, S.R.
5.	Vazezuru (Shona)	Rev. B. J. Riordan, Makumbi Mission, P.O. Box 740, Salisbury, S. Rhodesia
6.	Amandebele (Matabele)	C. D. Huntley, Hope Fountain Mission, P. B., T229, Bulawayo, S. Rhodesia
7.	Matabele	The Rev. Edward Paterson, Cyrene, P.B. 130 P, Bulawayo, S. Rhodesia
8.	Ufipa	Ian Robertson, P.O.Box 37, Abercorn, N.R.
9.	Lungu	" " " "
10.	Bemba	" " " "
11.	Mambwe	" " " "
12.	Barabaig	G.M. Wilson, 56 Woodruff Ave., Hove, Sussex
13.	Wazigua	Miss M. E. Reeves, U.M.C.A., Kideleko, P. O. Handeni, Tanganyika,
14.	Banyoro (Bakitara)	J. H. M. Beattie, c/o D.C.Hoima, Uganda
15.	Tumbuka	Miss H.M. Taylor, Overtoun Institution, Livingstonia, Nyasaland
16.	Lele (Bashilele)	Miss Mary Douglas, Yenga-Yenga, c/o H.C.B., Brabanta, Kasai, Belgian Congo
17.	Baganda	Dr. W.R. Billington, C.M.S.Mengo Hosp., P.O. Box 161, Kampala, Uganda
	EAST AFRICA	
18.	Luo	Lt.Col. H. F. Stoneham, Stoneham Museum & Research Centre, Kitale, Kenya Colony, B.E.A.
19.	Wateita	F. A. Peet, c/o D.O., Wundanyi Teita Hills, P.O. VOI, Kenya
20.	Kikuyu	Dr. E. J. Foley, Medical Dept., Nairobi, Kenya
	WEST AFRICA	
21.	Vakpe (Bakweri)	E.W. Ardener, c/o C.D.C., Bova, British Cameroons
22.	Ibo	John O. Field, Sr. D.O., Aba, E. Nigeria
23.	Idoma	Dr. Robert Armstrong, W.A.I.S.E.R., Univ. College, Ibaban, Nigeria, and P. O. Unogwu, 3820 Jessup Rd., Cincinnati, Ohio

APPENDIX AA

No.	Name of People	Name and Address of Respondent
	WEST AFRICA	
24.	Edo or Bini	K. E. Bradbury, c/o D.O., Benim City, Southern Nigeria
25.	Tiv	P. J. Bohannan, Inst. of Social Anthropology, 11 Keble Rd., Oxford
26.	Hausa	Mr. & Mrs. D. P. L. Dry, 471 Marston Rd., Oxford
27.	Ibibio	Dr. M.D.W. Jeffreys, U. of Witwatersrand, Johannesburg, S. Africa
28.	Various Remnant Tribes	" " " " "
29.	Frafra	E. H. Salmon, A.G.A., Bawku, N.T., Gold Coast
30.	Akans (Twi, Fanti, Ashanti)	D. Earle, Gov. Agent, Wiawso, W. P., Gold Coast
31.	Kusasi	A. Spicer, Dept. of Phonetics, Univ. Coll. of Gold Coast, Achimota, Gold Coast
32.	Konkomba	David Tait, Dept. of Sociology, Univ. Coll. of Gold Coast, Achimota, Gold Coast
33.	Fruni	A. Spicer, Dept. of Phonetics, Univ. Coll. of Gold Coast, Achimota, Gold Coast
34.	Mende	J.D.W. Hughes, D.O., Kailahun, Sierra Leone, Br. West Africa
35.	Kissi	" " " " "
36.	Maninka	M. Banton, 30 Howe Street, Freetown
37.	Loko	" " " " " "
38.	Temne	" " " " " "
39.	Creole	" " " " " "
40.	Yoruba	Miss A. Issett, Colony Welfare Office, Lagos, Nigeria
	BRITISH GUIANA	
41.	Wapishianas	The Rev. Wm. Keary, Brickdam Presbytery, Georgetown, B. G.
42.	Patamonas	" " " " " "
43.	Macusis	" " " " " "
44.	Akawaio	Dr. C. R. Jones, c/o M.O.H., Medical Dept., Georgetown, B. G.
45.	Arawak	The Rev. J. Holden, Morawhanna Vicarage, N.W. Dist., B. G.
	INDONESIA	
46.	Indonesian Peoples	Sunardjo Haditjaroko, Sindunegaran 4 a, Jogjakarta, Indonesia
	NEW GUINEA	
47.	Garia	Dr. Peter Lawrence, c/o Dist. Officer, Madang, Terr. of New Guinea
48.	Tabaiyang	" " " " " "
	BORNEO	
49.	Penan	Ray Cunningham, Borneo Evangelical Mission, Lawas. Sarawak, via Labuan, Borneo
50.	Kenya	" " " " "
51.	Kayan	" " " " "
52.	Kelabits	T.H.Harrisson, Curator, Sarawak Museum, Kuching, Sarawak

No.	Name of People	Name and Address of Respondent
	MALAYA	
53.	Malayan Aborigines (Negritos, Senoi, Aboriginal Malay)	Major P.D.R. Williams-Hunt, Director of Museums and Adviser on Aborigines, Kuala Lumpur (Deceased)
	INDIA	
54.	Tea Estates Labourers (Sonthals, Bhuyans, Gatwas, Turis, Tantis)	Dr. S. C. Chatterjee, P.O. Badlipar, Assam, India
55.	Hindus, Moslems, Ahoms (Buddhists)	" " " " "
56.	Bhils	Fr. H. Kettler, S.V.D., Catholic Mission, Panehkin, P.O. Meghuagar, India
57.	Hill Uriyas	F.G. Bailey, Camp Bisipara, Phulbani Dist., Orissa, India
58.	Khasi	Dr. R. A. Hughes, Sr. Medical Officer, The Khasi Hills Welsh Mission Hospital, Shillong, Assam
	VIETNAM	
59.	Meoblanc (Miaotseu)	M. Guy Morechand, Ethnologue, 26 Bd. Carreau, Hanoi, Nord Vietnam
	HEBRIDES	
60.	Gaelic speaking Scots	Mr. F. E. G. Macaulay, Sollas, Loch Maddy, N. Uist, Scotland
	SCANDANAVIA	
61.	Norwegian Lapps	Robert Paine, P.R. Hammerfest, Finnmark, North Norway