

THE UNIVERSITY OF HULL

Acquisition of Advanced Vocabulary

by Five-Year-Old Children:

An Experimental Study

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Acquisition of Advanced Vocabulary by

Five-Year-Old Children:

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In a series of experiments, 275 five-year-old children were taught the meanings of difficult new words, without the use of referents, pictures or direct definitions. Carefully constructed stories formed the general context in which the local contexts containing the difficult words were embedded.

Groups of children were matched for age, sex and passive verbal intelligence. Following a Pre-test each group heard one story per day, on ten consecutive school days, in either a five-year-old version or a ten-year-old version. Some groups heard ten different stories, while others heard two stories read alternately. After this, Oral, Pointing and Pointing-oral Post-tests were given to each child individually. These were designed to reveal whether, and to what extent, the children had learned the meanings of the difficult words. Several methods of control were used to ensure that children were not learning the meanings of the difficult words from sources other than the stories.

Important variables were found to be:

- (1) the clarity of the local contexts
- (2) the variety of the local contexts
- (3) the type of word (new label, or new concept)
- (4) the verbal I.Q. of the child
- (5) the level of difficulty of the stories (five-year-old version or ten-year-old version)
- (6) the variety of the stories heard (repetition)

(7) the number of difficult words in a story (termed load)

(8) the school which the children attended.

The difference in Post-test performance between matched groups of children at different schools proved to be so pervasive a phenomenon that it was given additional attention.

Errors made in defining the difficult words were analysed, and certain modes of problem solving were observed in both children and adults.

The results of this experimental study support research from diverse fields, which demonstrates that learning is not merely a process of maturation, but can be accelerated and controlled by the manipulation of appropriate variables in the learning situation.

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## CHAPTER ONE

### INTRODUCTION

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### INTRODUCTION

In the absence of a detailed literature on young children's acquisition of new vocabulary, it has been necessary to draw on the contributions of seemingly unrelated branches of psychology. This is undertaken in three main sections, in this introductory Chapter. In Section (1) the reasons for the lack of experimental work in vocabulary acquisition are studied. Section (2) examines several areas of indirect relevance to vocabulary acquisition, particularly transformational grammar, semantics and concept formation. In Section (3) the possibility of personal change, following changed circumstances, is discussed. Evidence is presented from research with mentally handicapped adults and children, from the few detailed studies of individuals suffering extreme conditions of early adversity, and from data gleaned from preschool intervention programmes.

Certain teaching techniques, which appropriately used, can alter the learning environment to produce changed behaviour, are discussed in Section (4).

Finally, Section (5) examines the sparse literature directly concerned with vocabulary acquisition in young children.

#### Section (1) Lack of previous research

There is a remarkable paucity of experimental research on the way in which young children acquire new vocabulary. There are probably five main reasons for this:

(1) Historical Much of the early work, (e.g. Preyer 1889; Leopold 1939; and more recently Lewis 1936) was normative, the best of it consisting of detailed longitudinal observation of the growth of vocabulary (and language) in individual children. This approach reflected the general passivity of the psychometric movement.

(2) Time By its very nature, working with preliterate children is very time consuming. Few researchers have <sup>been</sup> ~~felt~~ able to devote enough time to observation, recording and analysis on an individual basis, to produce systematic and useful results. Irwin (1960) categorises the scattered reports of the

earliest workers (excluding those mentioned above) as being "spotty, meager, unscientific, and almost entirely unconcerned with standardized recording techniques."

(3) Vocabulary tests A considerable amount of effort has been put into the production of vocabulary tests (e.g. by Smith 1926; Van Alstyne 1929; Williams and McFarland 1937; Ammons and Ammons 1948 and Templin 1957). This was a quicker operation, as children of different ages could be tested during a comparatively short time. The longitudinal method required several years of observation of the same children, and has the additional disadvantage of taking so long that some of the sample moved out of the area before the observations were completed (Irwin 1960).

(4) Size of task When lists have been made of the young child's growing vocabulary, they are quite satisfactory for the first year or so, "but soon the vocabulary becomes so extensive that the lists become unwieldy and adults find it increasingly difficult to detect new words." (McCarthy 1954).

(5) Transformational grammar In recent years, much interest has been shown in children's acquisition of language, but following the exciting lead of Chomsky and his colleagues, most of this has been concerned with the acquisition or demonstration of syntax, particularly in preschool children. The most detailed observations have been made by Brown (1964) and his associates, first by a series of experiments and then by a painstaking longitudinal study, in which more recently Brown (1973), in his preface, states that he has been persuaded to take account of semantics as well as grammar, by studies which were not yet published in 1969, when the present work commenced.

The present study arose from a concern with the application of experimental method to a practical area, pertaining to the writer's educational preoccupations. In consequence, though only two experiments directly related have been discovered, many fields of endeavour are of indirect relevance. These range from contemporary work on transformational grammar, to story telling as a method of instruction; from the problem of meaning to the value of repetition. These, and similar indirectly relevant issues are discussed in the following sections.

The transformational grammar approach

This approach appears to have been strengthened by the seminal article by Katz and Fodor (1963) which, although stimulating, is not directly concerned with vocabulary acquisition, and will therefore be described very briefly here. Katz and Fodor (1963), Katz (1966), Weinreich (1963), McCawley (1968), Olson (1970a) and McNeill (1966, 1970), among others, have been involved in a complicated and ongoing discussion about the relationship between a word (or a sentence) and meaning, and have attempted to describe the essential components of a theory of semantics. Much of this has been concerned with the investigation of the relation between syntax and semantics, following Chomsky (1957), who showed that some sentences which were meaningless could, nevertheless, be grammatical, and that some sentences that were meaningful could be non-grammatical. This led him to the assumption that grammar was primary, in that meaning could not be assigned until the sentence had been segmented or parsed by the grammar. According to Olson (1970a),

"Chomsky's (1965) model postulated a base component of the grammar which specified the membership of a class of well-formed deep structures such as subject-verb-object, and a semantic component which relates these deep structures to their semantic representations ... This influence was hypothesised to occur via syntactic selection restrictions; once sets of inherent features such as human or animate were assigned to the noun in the base component, they have the effect of limiting the selection of the verb or object to a lexical item fitting these same sets of features."

Chomsky's (1957) transformational linguistics altered the perception of the problem of meaning, so that many linguists omitted reference from their immediate study, following Chomsky in the view that semantic considerations should play no role in the linguist's analysis of syntactic structure. Chomsky argued that syntactic selection restrictions (the base component of the grammar) made possible the assigning of meaning. By 1965, accommodating the work of Katz and Fodor (1963),

"Chomsky's model postulated a base component of grammar which specified the membership of a class of well-formed deep structures such as subject-verb-object, and a semantic component which relates these deep structures to their semantic representations." (Quotation from Olson 1970a.)



It is, therefore, the transformational component of grammar which is thought to reorganise the base structure into a surface structure, and to lead to the selection of appropriate lexical items. Katz and Fodor (1963) envisaged two kinds of semantic "projection rules" which would permit choice between possible meanings. The first kind would build up the meaning of kernel sentences from the meanings of their lexical items, a specific semantic rule being correlated with each phrase-structure rule. The second projection rule would represent the way in which the meaning of a sentence changed as it was transformed. In 1964, Katz and Postal suggested that it might be the case that transformations never did change in meaning, and that therefore the second kind of projection rule was unnecessary. This principle gained support quickly, and Chomsky recognised it in 'Aspects of the Theory of Syntax' (1965), where he writes

"... the syntactic component of a grammar must specify, for each sentence, a deep structure that determines its semantic interpretation and a surface structure that determines its phonetic interpretation." (Chomsky 1965, page 16).

The problem of semantic interpretation will be considered in the next section.

### Meaning

The question 'How do children learn the meanings of new words?' appears disarmingly simple, even if it cannot easily be answered. However, the problem of meaning has long occupied philosophers, linguists and psychologists, and it is agreed by many of the workers in the field (for example, Partee 1971; Olson 1970a; McNeill 1966, 1970; McCawley 1968; Weinreich 1963; Katz 1966), that progress has been limited. Ogden and Richards (1923), having distinguished sixteen kinds of definition of meaning, developed an elaborate theory based on the relation between meaning and reference. The problem of reference has also exercised psychologists such as Vygotsky (1962), Osgood (1963, 1968) and Brown (1958) who have attempted to account for meaning in terms of behavioural responses to objects and events. Brown (1958a), following Ogden and Richards (1923) and Wittgenstein (1958), maintains that meaning is relative and reflects both the context of the utterance, and the use in the culture. The common name for an object differentiates an object at the level of usual utility. Brown (1958b) has also shows that a word does not so much label one particular



object, as identify a category. This supports Olson's claim that

"words do not "mean" referents or stand for referents, they have use - they specify perceived events relative to a set of alternatives; they provide information." (1970a, page 263).

In the rest of his paper, Olson argues for a cognitive theory of semantics, in which he shows that a semantic decision, such as the choice of a word

- (1) cannot be determined by underlying grammar (see also McCawley 1968), and
- (2) is made so as to differentiate an intended referent from some perceived or inferred set of alternatives.

This view of semantics brings word meaning into close proximity with concept formation which, apart from the massive work of Piaget and his associates, and a few examples such as some of Bruner's work, remains an isolated field having made little contribution so far to our understanding of the kinds of learning that go on in our daily lives, and, for example, in school.

#### Concept formation

Studies of concept formation range from detailed laboratory experiments on concept identification, such as those so fruitfully conducted by Bruner, Goodnow and Austin (1956), to the work of the last fifty years by Piaget and his colleagues, exploring the ways in which children of different ages tackle certain tasks, which has led to the postulation of an invariant order of stages of development, through which each individual will pass.

- (1) In the first type of study, subjects are typically involved with the experimenter in playing a game, of guessing and elimination, in which the subject has to induce the concept that the experimenter has in mind. This might be, for example, a "conjunctive" concept where two attributes must appear together, such as "three circles"; a "disjunctive" concept such as "any card that has either redness or two borders"; or a "relational" concept such as "any card with more figures than borders". While it is apparent that such concepts could be taught quickly by direct instruction, semantic meaning being advanced "more by the definition of words by words and by using words in an appropriate linguistic context than by exposure to the referents" (Olson 1970b), it also seems probable that there will be many occasions as a child grows up, when a statement correctly identifying all the criterial attributes of a concept

with relevant positive and negative instances will not be available.

Carroll (1964) has demonstrated that, though many of the concepts frequently taught in school are more complex than those normally used in experimental psychology, depending on relationships between prerequisite concepts which are themselves complex, experimental models and findings can contribute to our knowledge of the inductive and deductive procedures by which concepts are acquired. One direct parallel can be seen in experimental paired associate learning which may illuminate the memory problem posed by the learning of new labels to express or represent newly formed concepts.

Cassirer (1923, 1957) according to Olson (1970b) identifies two sorts of concepts, "thing concepts" which correspond to Piaget's (1947) perceptual schemata, and relational concepts. He stresses the fact that in the past experimental psychology has seriously underestimated relational concepts. This is similar to Carroll's (1964) view. The most obvious relation is that of similarity, but it could also be any one or more of inclusion, classification, seriation, cause-effect, and/or time and space relations.

(2) It is this type of conceptual system that Piaget and his colleagues have devoted themselves to observing; relational concepts such as classification, superordination, class inclusion, seriation and conservation form Piaget's concrete operations.

Piaget's observations have led him and his followers to postulate an invariant order of four major stages of intellectual development, [sensorimotor (0-18 months); preoperational (18 months - seven years); concrete operations (seven - twelve years); and formal operations (from twelve years onwards)]. This hypothesis has been the subject of much speculation, discussion, observation and experiment. Some writers, such as Elkind (1961), Piaget (1947), and Wohlwill and Lowe (1962) base their support for a maturational theory of development mainly on evidence from cross-sectional studies, where children of different ages are compared in their ability to perform various tasks. Usually, an age related progression is found. For example, some five-year-olds apparently do not recognise that a solid or liquid may be transformed in shape, without changing its volume or mass. Older children will state that a given



plasticine pancake has the same amount of plasticine as the ball it is compared with, because the pancake can be rolled back into a ball of matching size (reversibility), or because the pancake is thinner but also wider (compensation).

It is clear from cross-cultural studies (Greenfield et al 1966), that the passing of time is not a sufficient condition for the appearance of the operational stage, as it appears earlier in some cultures and sub-cultures than in others.

However, motor activity may be a necessary precondition for the development of ability to perceive and deal with relations. To acknowledge this is not to deny the gradually amassing evidence that instruction can accelerate this development (Sonstroem 1966; Brison 1966; Lomax 1973; Bryant 1974). To take one example, Peter Bryant in his book *Perception and Understanding in Young Children: An Experimental Approach*, describes and discusses a series of experiments conducted by himself and others, which investigate the use of absolute and relative codes in children's perception, the limitations of relative codes, the use of external frameworks, and the influence of perceptual inferences. He demonstrates that relatively simple (though ingenious) training procedures are effective in helping children to make correct judgements. For instance, by training four- and five-year-olds that length is an incorrect cue about numbers, and that the one-to-one correspondence cue is entirely unreliable, their performance in number conservation tasks is improved.

It is obviously of critical importance to teachers (in particular), that there may be the possibility of altering a child's performance, whether this be through direct instruction, the arrangement of materials in such a way that "discovery" can take place, a combination of these deductive and inductive methods, or even, when appropriate, operant conditioning techniques.

This view, that cognitive development can be modified by environmental conditions, contrasts strikingly with the historical, and to some extent still current, orientation of developmental psychology. The whole psychometric movement, with the notable exception of Binet (see for example Binet and Simon 1914) stressed the idea that human qualities, whether cognitive or

affective, and whether thought to be genetically or environmentally produced, were normally fixed and irreversible from early childhood. Man was predestined either by genes, or brain damage, or early experience. We now see from different areas that to some extent, man is a much more open system, with potentiality for change at almost any age.

The following sections consider evidence from the fields of mental handicap, early adversity, and preschool intervention programmes. In these areas, researchers have not been content to sit back and wait, nor have they accepted observed levels of performance as being indicative of final levels of capacity. Rather, active intervention has been advocated, monitored, and evaluated.

### Section (3) Unrelated, but relevant, work

#### Mental handicap

Bortner and Birch (1970) have reviewed much work of the past thirty years or so, which has run counter to the philosophy of pre-determinism. The attention they have drawn to the important distinction between cognitive capacity and cognitive performance, may have served as a timely reminder that performance levels under particular conditions may be but partial indicators of capacity. The manifestation of possessed concepts and skills in performance, must always reflect the interaction between possessed potentialities and the particular conditions of training and testing.

One of the pioneers to respect this distinction between capacity and performance was Itard (1801) who, against the prevailing opinion, devised methods for teaching Victor (the "wild boy" of Aveyron), and was able to demonstrate considerable improvement, even though Victor failed to reach a normal level of intellectual and social functioning.

This distinction, and the spirit of the scientific investigator prepared to observe, alter parameters, and observe again, informed the efforts of many of the modern researchers in the field of subnormality.



For more than twenty years, the Clarkes and their colleagues and contemporaries have demonstrated that mentally handicapped children and adults can be taught, through a variety of methods. Retarded patients, who had long been viewed as unemployable, were able to acquire the necessary skills, when the social conditions in the workshop (O'Connor and Tizard 1956), or the learning conditions (Clarke 1957), were manipulated. Motivational factors, and the structuring of tasks were also found to be important features which could be altered to enhance and improve cognitive performance. For example, in a long series of carefully controlled experiments on subnormal adults and children, and young normal children, the Clarkes have established that task complexity is a major determinant of generalised transfer (Clarke et al 1962-1968). They argue that assessment of mental retardation is useless as a predictor of future attainment, unless it is assumed that such people will not subsequently be exposed to structured learning opportunities. For, systematic and structured training on complex tasks seems to constitute the means for cognitive development for these people, who apparently lack the intelligent person's ability to profit from general life experience (Clarke and Clarke 1971).

In Russia, during the same period, Luria and his colleagues emphasised the significance of language development for the more general process of mental development (see, for example, Luria and Yudovich 1956, and Luria and Vinogradova 1959) and were able to show massive improvement in the practical speech activity of both of their twins, Liosha and Yura, following only ten months of separation from each other, and experience in a Kindergarten. In addition, there was a perceptible reorganisation of their intellectual processes. Yura, who had been given continuous, systematic exercises in speech, also developed a "theoretical attitude" towards speech, enabling him to surpass Liosha in several intellectual operations, such as decoding stories told by gesture, analysing the component parts of a picture, and classifying pictures and objects according to categories other than their immediate perceptual



attributes (e.g. colour and shape).

These twins were not mentally defective, though they might have been considered so, as their speech, both phonetically and structurally, was exceedingly retarded at the start of the experiment. There have been several other cases of considerable recovery from the adverse effects of early experience.

### Early adversity

In their recent book 'Early Experience: Myth and Evidence' (1976), the Clarkes and their collaborators have presented a compelling case for the possibility, indeed likelihood, of personal change for the better, for children who, having suffered adversity, then experience a marked change in their environment. Four cases of rehabilitation of children exposed to extreme isolation, are discussed. The description of the children, their histories, and the sudden change in circumstances, which, in each case, resulted in marked improvement in motor, social, linguistic and cognitive functioning, is fascinating. Even the child Anna, who was not given specialised, expert help with the development of speech [which in Isabelle's case, starting with the characteristics of a feeble minded child, resulted within two years in a normal mentality (!)], nevertheless achieved in four and a half years, enough speech to be able to make her needs known, the ability to dress herself and keep herself clean, and sufficient motor co-ordination to be able to walk, run, and to bounce and catch a ball. It is observed that had Anna been given a mastery of speech at an earlier point by intensive training, her subsequent development might have been much more rapid (Davis 1947, 1976).

The twins, P. and J., were isolated and cruelly treated from the age of eighteen months until they were rescued when they were seven years old. Although they had almost no speech during the isolation period (the earlier part of which has usually been regarded as critical for the acquisition of language), considerable gradual progress was made after their rescue. During their ninth year, when the twins moved to their foster home, and changed to the second class of a normal school, their mental age increased by three years, an immense acceleration of development, indicating how the change of living conditions

provided a rapidly effective compensation for the consequences of earlier deprivation. At fourteen, the twins are regarded as normal, both socially and intellectually, their I.Q.s having risen from about 40 to about 100 (Koluchová 1972, 1976). Clearly, in each case, the child possessed the potential, which remained hidden during the early testing, and only became apparent through improved performance after major intervention.

#### Preschool intervention

Although many of the preschool programmes which have been evaluated, have been criticised because they have failed to produce long term cognitive changes in the children they were designed to help (Westinghouse Survey of Head Start Project 1969), it would be premature to decide that such children are unable to benefit from any preschool programme. Bronfenbrenner (1974) has reported on twelve studies of preschool intervention in group settings, and nine studies of intervention with both parents and their children. The results seem to be unequivocal. The children showed substantial I.Q. and other cognitive gains during the programmes, in comparison to control groups, attaining or exceeding average norms for their age. However, the children taught in groups showed a progressive deceleration in I.Q. during the first and second year following termination, and were well below average by the third or fourth year, with a sharp decline after entry into the regular school. In contrast, the parent-child groups retained their substantial I.Q. increments for at least three or four years following the end of the programme. Bronfenbrenner describes the critical features that made the parent-child programmes so effective. The key element was the involvement of parent and child in verbal interaction round a cognitively challenging task. A second important feature was the fact that the mother not only trained the child, but the child also trained the mother. The third point noted was that a mutual and enduring emotional attachment existed between the child and the adult. Children from the most deprived families fail to benefit from even the parent-child intervention programmes. Klaus and Gray (1968) report that these families are so over-burdened with the task of survival that they have neither the energy nor the psychological resources necessary to



participate in programmes involving the regular visits of home-tutors. They also discuss the remote chances of producing long-term intellectual gains in children, even where the parents and siblings are involved (and have been shown to benefit), in families where massive changes in the extremely adverse home circumstances are not made (1970). Bronfenbrenner (1974) supports these conclusions and expresses "a profound faith in the capacity of parents, of whatever background, to enable their children to develop into effective and happy human beings, once our society is willing to make conditions of life viable and humane for all its families."

While others might not share Bronfenbrenner's faith, or may doubt our ability to substantially improve the lot of every impoverished family, evidence exists which explicitly demonstrates the over-riding effects of such an ameliorative all-inclusive programme.

Heber and Garber (1971, 1975), conducted this study with a group of twenty newborn infants selected randomly from a 'high-risk' group of forty, whose mothers all had I.Q. below 70. The remaining twenty were assigned to the control group. The families inhabited a slum area of Milwaukee, and previous surveys had shown that children of mothers whose I.Q.s were below 80, showed a progressive decline in mean intelligence as age increased. It was therefore to be expected that all forty infants would grow up to be subnormal. Soon after the experimental mothers returned from hospital, they were exposed to a rehabilitation programme of occupational training, as well as training in home-making and baby-care techniques. Their infants were transported from the homes early each morning by their infant teachers, and were returned in the late afternoon. At the Infant Education Centre, these children followed an intensive stimulation programme, designed to facilitate language development, problem-solving skills, and achievement motivation. Among many kinds of tests, I.Q. tests were frequently given. At age forty-two months, the difference between the experimental and the control group was 37 I.Q. points ! At five years of age, the average I.Q. of the experimental group was in the low 120s, and of the control group in the 90s. The intervention was terminated when the children were six years of age. Following this, there was a decline in both

groups, the discrepancy remaining. The experimental children declined to an I.Q. average of 112, then 110, then 106, (see Clarke and Clarke 1976). By this time, however, there was no difference in reading ability. It is most unfortunate that this, probably unique, programme was ended, before various questions could be answered. Although Heber and Garber had shown convincingly, that children from deprived circumstances with low I.Q. mothers need not necessarily be mentally retarded, we do not know the cause of the decline after the termination of the programme. The Clarkes suggest two possibilities, and guess that the first is the most likely reason, namely "(1) that the intervention was insufficiently lengthy to enable the children, in their still rather adverse home and school contexts, to maintain their degree of gain, or (2) that the early acceleration of development has merely enabled them to reach their genetic limits earlier, and that these will progressively exercise constraints upon development, reflected in decelerating growth." Only a similar intervention, continued at least into early adulthood, will decide between these alternatives.

There remains the question of why the Headstart Programme failed, when other programmes such as those described by Bronfenbrenner and Heber and Garber were successful, at least during the period of the training.

Several factors have been identified by Bronfenbrenner (1974), the Clarkes (1976), and others, as important in improving intellectual performances, as follows :

(1) Duration Enormous gains can be made in a relatively short space of time, for example, Miller (1970) calculated that the maximum tuition received by the children in the Early Training Project (Gray and Klaus 1970) amounted to 600 hours, 110 hours of this being in the home. However, this tuition was spread across three years, and consisted of three summer preschool programmes, with weekly home visits in the intervening periods. Bereiter and Engelmann (1966) also produced large I.Q. increments and other gains, through a structured programme of two hours per school day for nine months (360 hours in total). An independent preschool programme based on individual, highly structured tutoring achieved similar results in a limited area using fifteen minute



sessions, five days per week, for three months (a total of fifteen hours, Blank and Soloman 1968).

Many of the Headstart Programmes were expected to make lasting differences in cognitive ability, with only eight weeks of pre-school experience, in one block, in the summer before regular schooling began (Bereiter and Engelmann 1966).

(2) Structure Even more important, relatively, than the duration of the intervention, is the form that it takes. The Headstart Programmes floundered in the mistaken belief that "enrichment" would expose deprived children to the elements presumed missing in their environments, which would somehow be absorbed as, and when, the child was "ready".

Researchers such as Bereiter and Engelmann, the Clarkes, and Blank and Soloman, predicted that such programmes would not be effective in altering the level of cognitive performance because:

(a) there was not time in eight weeks for the child to absorb what middle class children had had the opportunity to absorb across five years, and

(b) evidence indicates that in many middle class homes, language is pervasive, and parents utilise the opportunities which arise in daily life to help their children employ language to organise thoughts, reflect upon situations, comprehend the meaning of events, and to choose among alternatives.

In the effective programmes discussed above, priorities were selected, and highly structured intensive teaching strategies used, to ensure that time and resources were efficiently directed to the achievement of specified goals.

(3) Parent participation The parents and homes were not



sufficiently involved in the learning process. The most effective programmes described by Bronfenbrenner were those that utilised the parent-child relationship, and enabled the mother to participate in the teaching while the children were of preschool age. Gray and Klaus (1970) incorporated a study of vertical and horizontal diffusion in their design, and found that younger siblings benefited mainly through the mother. Local control group younger siblings benefited, compared with younger siblings in the distal control group, because of a "spillover" effect such that, for example, local shops stocked the books and toys recommended for the project, which thus became available for all the families in the neighbourhood.

(4) Continuation of programme The Headstart Programmes ended when the children started regular school, and soon any benefits accruing were lost. This also happened in all the studies discussed by Bronfenbrenner, who reports

"The period of sharpest decline occurred after the child's entry into regular school. Preliminary data from the Follow-through programme suggest that this decline may be offset by the continuation of intervention programmes, including strong parent involvement, into the early grades."

### Conclusion

The three sources of evidence discussed in this section, together with the successful attempts to teach Piagetian concepts such as conservation of volume mentioned earlier, demonstrate conclusively that children can be taught skills or concepts which might normally be regarded as being beyond their capabilities. Cognitive capacity is often much greater than would be credited,

under particular task conditions. The implication is that we should attempt to analyse more carefully the needs of the particular children (of whatever intellectual status) and to plan activities which focus directly on these objectives,

"bringing the concepts to be learned to the forefront and ensuring that the child receives an amount of exposure, practice, and correction sufficient to teach what is intended"  
(Bereiter and Engelmann 1966).

One of the time-honoured methods of reinforcing direct instruction, has been story telling or reading, and the following section considers this method of instruction.

#### Section (4) Certain teaching techniques

##### Story as a medium of instruction

Most of the early teaching practice primers emphasise the importance of being able to tell a story well. Montessori (1912) appears to be among the few well-known educators to stress the possible dangers of story telling. She banished fairy stories from her curriculum for young children, because, she believed that permitting children to enter the world of fantasy would encourage them to accept unreal solutions to their problems, and hinder them in the process of adjusting themselves to the real world. Dewey (1907) also gives a subordinate place to stories, especially myths and fairy tales, seeing practical occupations as the proper centre for the child's school life.



Froebel, however, advocates the telling of stories and legends, fables and fairy tales,

"Though the story may present strange men and strange lands, other times and other manners, yet in it the hearer seeks and finds an image of himself..." with which to compare himself and thus to reach an understanding of himself and of the spiritual significance of the world around him (Fletcher and Welton 1912). Findlay, writing in 1923, recommends the practice of using a good story as the stimulus for a week's work in the Kindergarten. He points out that older children will use as models the literature they have heard and read, in their own oral and written composition. This point is made by Green and Birchenough (1926), who recognise the need for careful selection of story material to suit the age range, and needs of the children, and the teaching points to be made. They, among many writers of the time, claim the high educational value of the rightly chosen, well told, story. Writing a little later, Stevens (1931) concludes that there is need for at least half an hour once or twice a week, of story telling by the class teacher, in particular, to help the slower readers to "have their horizons broadened and their imaginations quickened".

In his book 'A Modern Infant School', Wellock (1932) suggests

"The children should hear and dramatise many stories and poems, and for this reason, part of each day should be devoted to literature.

The stories and poems read and told to the children should have real literary value. The children's tastes are being formed during the first years in school. It has been found that children who have heard good stories and poems usually themselves select to read good literature.

The ethics of the stories and poems should be sound, for the children unconsciously gain ideals of life from the literature with which they are brought into contact ....

The stories and poems should be suited to the emotional and mental stage of the children for whom they are intended .....

The language in which stories are told should be simple and good. It should be within the comprehension of the listeners, but the vocabulary should not be limited to that of the children ... New words may often be introduced into the story in such a way that their meaning is made clear by the context."

Wellock also draws attention to the relationship between listening to stories, (perhaps being helped to learn the meaning of words under pictures in story-books,

which results in the enlarging of ideas and the gaining of a more extensive vocabulary,) and an initial interest in learning to read.

This theme is continued in the 1959 edition of H.M.S.O. 'Primary Education'.

".... some stories should be told, and some should be read so that children can have an insight into the pleasures to be found in books, and this principle holds good throughout the primary school. Stories chosen to be read aloud should have some distinction of language, whether in the range or interest of vocabulary or in the rhythm of its arrangement. There is no better way for children to catch the rhythm of good prose than by hearing it well read ...

There is a danger that in preparing stories and in choosing books, teachers will underestimate children's ability to respond to good language and style."

The Plowden Report (1967) makes many of the same points, advocating a large supply of well chosen books from a variety of sources and for a variety of purposes.

These claims for the virtues of the story, told, read aloud, or read silently, while intuitively obvious, do not seem always to be supported by a great deal of research evidence. There is some, however. Van Alstyne (1929) found that factors such as number of constructive toys, books, and hours read to, were correlated 0.5, 0.4 and 0.4, with three-year-old children's vocabulary acquisition and I.Q.\* She also found significant correlations between indices of deprivation, such as cleanliness, overcrowding, family size, and health and mental age. Similar findings have been repeated by, for example, Douglas (1964), and by Wedge and Prosser (1973), as well as by researchers such as Luria and Yudovich (1956), and Bronfenbrenner (1974), mentioned earlier. More direct evidence about the effect of story reading on young children was gathered by Irwin (1960), who observed that systematically increasing the speech sound stimulation of infants under two-and-a-half years of age in homes of lower occupational status by reading and by telling stories about pictures, would lead to an increase in the phonetic production of those infants over what might be expected without reading enrichment. More recently, Wootton (1974), has made a study of twenty three-year-olds, involving recordings (via a radio microphone system), of four hours of ordinary living in the home, on three separate occasions. These recordings showed that working class children spoke less frequently to parents in the home, and for a shorter time,

The demonstration of correlation should not in itself be taken to imply a causal link between variables. If causality is present, its direction may be ambiguous, or a third agency may be operating on both variables. See Clarke (1976) for further discussion of correlations.



than middle class children. One of the major factors in this variation in speech production, was that middle class children and their parents were more involved in games requiring a high degree of adult participation (e.g. making a jig-saw puzzle), in reading stories and looking through books, and in fantasy play. This research supports with more detail, the findings of Milner (1951), who showed that reading readiness in grade one children was associated with high verbal interaction with their parents and other adults. Analyses of longitudinal data by Moore (1968) provide further confirmation of the relationship between parental intervention, through media such as toys and books, and the child's intellectual development and achievement in reading. Correlations of these home-environment variables (measured at age thirty-two months) with the child's intelligence test scores at three and eight years, and reading achievement at eight years were significant, even after the effect of social class had been partialled out. It is surprising that these ratings made at two-and-a-half years of age, should have such predictive value for the child's status at eight years.

In another study, Levenstein (1969) has reported success in promoting cognitive growth by stimulating the verbal interaction of the mother and the child. Again, books and toys had been provided as the main verbal interaction stimulus material. Tizard and Rees (1974) also found that, even without a close and/or continuous relationship with a mother substitute, institutionally reared children would reach an average level of cognitive development at four years, provided that a good staff-child ratio had been maintained, together with a generous provision of toys, books and outings. In addition, it was found that 42% of children in a second study (all of whom had been raised in institutions at least until they were two years of age), who had I.Q.s of 110 or more, had benefited from 'literary' experiences. These experiences consisted of being read to at least three times a week, and taken to a children's library at least once a month. Tizard (1975) concludes that the test scores of children in different settings (e.g. institutional, adopted, restored, or own home) are influenced by the number and quality of interactions with adults. Quality, here, may be taken to mean cognitively stimulating, as for example reading a story



rather than emotional.

One suggestion, by Carol Chomsky (see Cazden 1972) is that reading aloud to a young child may be a particularly potent form of language stimulation, since it is likely to encourage meaningful conversation about the pictures, often in a situation of close physical contact and shared visual focus. Chomsky is investigating the relationship between individual difference in knowledge of complex structures like 'ask-tell' and the reading done by elementary school children. Cazden has pointed out that language in books differs from speech in both structure and distance from non-verbal context and may therefore have a qualitative as well as a quantitative significance. Reid (1972) takes this point further by suggesting that reading aloud may have specific value in the pre-reading and early reading stages, in familiarising the child with orally presented written linguistic structures, what Davies (1969) has called the 'medium' 'stylistic' and 'function' features of the written register. Clark (1975) has recommended that oral reading by the teacher to the children in her class, or by one child to another, should probably form an integral part of reading instruction, in order to develop an intuitive awareness of written linguistic structures.

In her latest book, Joan Tough (1977) has suggested that the cognitive demands, such as projecting through the imagination

into the experiences of others, that listening to a story makes on a young child, are best enabled in an individual or small group situation where personal interaction allows the storyteller to help the child interpret what he hears. Children vary greatly in the quantity of enabling personal interaction they have experienced by the time they start school. A child from what Tough has called an advantaged home will already know what books are for, be well motivated because of pleasant experiences associated with books and stories, know how to listen, know how to handle books (both the orientation, and the page order), know how to interpret and talk about pictures, be able to imagine and talk about situations that have not really occurred, be able to produce and comprehend some of the more difficult syntactic structures of written material (Menyuk 1969) be intuitively aware of some features of the written register and expect written and oral material to be meaningful, informative and enjoyable.

### Conclusion

Many of the early claims about the benefits of story telling and story reading to children seem to be supported by recent research evidence. Clark (1975) has drawn attention to the need for experimental studies with



preschool children, and school beginners to investigate the effects on reading progress of story telling or story reading, and the effects of different types of orally presented reading materials. The author would go further, and hypothesise that stories, particularly carefully constructed, well read stories, may be important as one component in a language programme, designed to make explicit chosen conceptual and syntactic relationships, and to foster comprehension, speech for different purposes, reading, and writing, in young children. The present research explores one area of this, indirectly, that of the ways in which five-year-old children learn the meanings of difficult new words (and concepts) from the prepared contexts of stories read aloud to them.

Another important technique of instruction investigated by the present study, is repetition. The role of repetition is briefly discussed in the following section.

#### Repetition

There is considerable controversy about the role of repetition in education. Some psychologists, such as Bereiter and Engelmann (1966) have stressed the need for much repetition, rote learning and drill, in their programme for disadvantaged preschoolers. To other educationalists, such as followers of Froebel, this would be repugnant.

In primary school practice, particularly in the teaching of reading by phonic methods (see discussions by Daniels and Diack 1956, Diack 1966 and Moyle and Moyle 1971) and in the teaching of number bonds, it has long been the custom to employ such drill, repetition and rote learning. In the 1950s some teachers became more interested in using "whole word" approaches to reading, and many teachers in the 1970s use a combination of methods, and avoid what they regard as excessive repetitious pre-reading drill. The argument continues, and the evidence about over-all effectiveness is not conclusive for any method (see Southgate and Roberts 1970). However, there are still many primary school teachers who believe in repetition to an extent that others would call excessive.

While it is clear that some single-trial learning in the acquisition of vocabulary takes place, it is probable that the child will need to hear a new

word several times before he incorporates it and its meaning first into his passive and then into his active vocabulary. It seems likely that there will be, for each individual, an optimal number of repetitions, (depending upon the type or difficulty of the particular word), combined with a certain minimum of differing local contexts, which would permit the child to notice the word, and deduce its boundaries. Thus, although repetition may be a necessary condition for vocabulary acquisition (except in cases of heightened interest or emotional impact), it will not be a sufficient condition.

The present Experiments seek to investigate the roles of repetition, and variety of local context, in children's acquisition of difficult words.

Before describing the Experiments, previous normative and experimental work on children's vocabulary acquisition will be described.

#### Section (5) Previous work on acquisition of vocabulary

Lewis (1957) in a most careful study, catalogues the age and circumstances in which his son, K, says certain words. These make fascinating reading, as they show K learning the boundaries of the adult meaning, and the width of reference the child naturally makes at a very early age. For example, within six months, K has generalised from jonquils growing in a bowl, to tulips growing in a bowl, to hyacinths seen through a window, to tulips growing in a garden bed, to a bowl of irises, to flowering-cherry blossom, to Virginia stock, to a sugar flower on a biscuit, and to embroidered flowers on his slippers. The last two cases are particularly interesting, because, five months previously, he had not responded when his mother asked "Where's flowers?", showing him two pictures of flowers in a book. K demonstrates his understanding, both by gesture, by vocal response, and by unsolicited vocalisation in appropriate situations.

A second example is in K's use of "ti" to refer to animals. At first, this word refers to a cat called Timmy. By twenty-one months, various animals, such as a dog, cows, sheep, and a horse, are referred to as "ti". At the age of twenty-three months, he imitates the word "doggie" as "goggi" on seeing his own toy dog. "Goggi" now becomes the word used to refer to dogs, "ti" being used for other animals until it is replaced by "hoss" or "pussi". "Goggi" now takes on some of the reference of "ti", being used for pictures of animals and



birds. At the age of two years, ten days, on seeing a large St. Bernard dog, K says "hoss", but ten days later refers to the St. Bernard as "biggi goggi".

As Lewis indicates, the child's impulse to use words widely is present before the child acquires conventional words. It is only gradually that words come to play the part of names in the child's language. The child's wide application of a word (as for flowers) leads to its becoming the name of one or a group of objects.

While vocabulary growth is likely to continue into maturity, Olson (1970b), has pointed out that an increase in vocabulary will

"indicate semantic development if it accompanies the differentiating of broad or global meanings into more specific ones, or if it involves the hierarchical integration of specific word meanings into more general ones. If it simply involves the learning of new words to cover more or less the same referential range, it corresponds to no development at all."

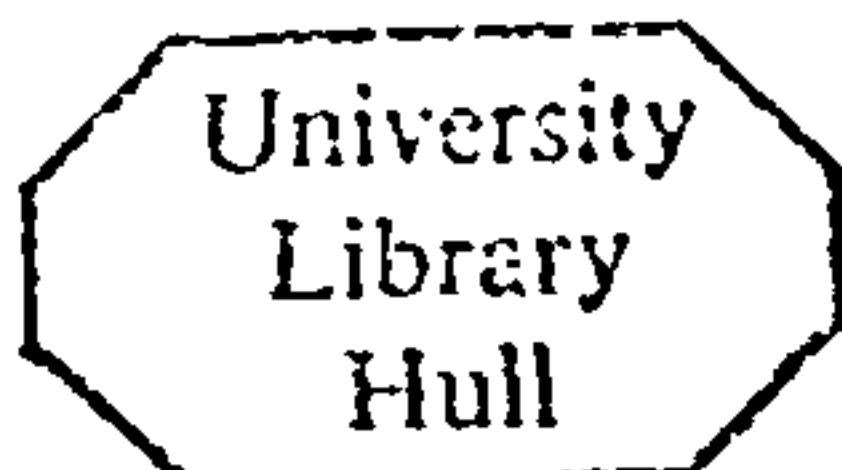
Brown (1958b) showed that children's naming habits begin at the level of usual utility and reflect the naming habits of adults, being neither particularly concrete, nor abstract. Thus, when Lewis' son, K, used the word "ti" to refer to animals other than Timmy, the adults in his environment did not supply him with the superordinate "animal" or "quadruped", but instead offered the individual common names of the creatures referred to. Brown indicated that when later

"the names of numerous subordinates have been mastered, he may be given the name 'quadruped' for the superordinate. This abstraction is not the same as its primitive forerunner. The schoolboy who learns the word 'quadruped' has abstracted from differentiated and named subordinates. The child he was, abstracted through a failure to differentiate " (1958b).

#### Experimental studies

In contrast to the observational methods, some approaches have been made in response to Piaget's (1929) theory of the development of cognitive functioning in children, which implies that the transition from defining words by use, to defining them in terms of some essential characteristic, will coincide with the developmental levels in thought, described by Piaget.

A relevant study has been conducted by Wolman and Barker (1965) who used the forty words from the vocabulary portion of the Wechsler Intelligence Scale for Children. The subjects were one hundred and seventeen middle class



children, aged between four and twelve years, (allowing about thirteen children per year group, a rather small sample). Scoring according to Wechsler's criteria enabled Wolman and Barker both to estimate the verbal I.Q. of each child, and to judge certain of the words "criterion" words, for "definition by use", or "definition by basic qualities". They found that

"as age increases, the per cent of use definitions tends to decrease, e.g. four-year-olds define 78 per cent of the words by use; eight-year-olds, 63 per cent; and twelve-year-olds, 25 per cent. Also, as the number of words that the child knows increases, the per cent of use definitions decreases."

(Intelligence appeared to play a small role in influencing the per cent of the words defined by use.)

Thus, instead of the sudden and discontinuous progression in children's definitions of words, which they claim might be expected from an extreme interpretation of Piaget's Theory, they see the transition from the infantile mode to the more mature form as being gradual and slow.

This conclusion that development is slow but continuous supports findings of earlier workers which have been summarised and criticised by McCarthy (1954), as well as those of recent researchers, such as Anglin (1970), McNeill (1970), Bruner (1966), Vygotsky (1966) and Olson (1970b). Bruner (1966) has attempted to account for the fact that "the learning of reference, that is the 'semantic function' of language, is a slow process ... largely because it involves ... learning the semantic markers of a word - the senses that it has or the contexts into which it fits."

Earlier work, by Werner and Kaplan (1950) was of a more experimental nature. In their detailed monograph, called 'The Acquisition of Word Meaning: A Developmental Study', Werner and Kaplan claimed to be investigating the processes underlying the acquisition of word meaning through verbal contexts. They designed a Word Context Test, which consisted of artificial words embedded in sentences. The subject going from one context to the next was expected to arrive finally at the meaning of the word. Each artificial word signified either an object or an action varying in degrees of concreteness and the child knew that each word had only one meaning throughout its series of six sentences. They produced twelve series of six sentences each.

An example is as follows:-

Corplum (= stick or piece of wood).



1. A corplum may be used for support.
2. Corplums may be used to close off an open space.
3. A corplum may be long or short, thick or thin, strong or weak.
4. A wet corplum does not burn.
5. You can make a corplum smooth with sandpaper.
6. The painter used a corplum to mix his paints.

They used one hundred and twenty-five children, with twenty-five from each of five age groups between 8.6 and 13.5. The interquartile I.Q. range was from 101 to 111.

The protocols of the children were analysed in terms of the following:-

1. Correctness and uniformity.
2. Processes of signifying words; formation of verbal concepts; the ways meanings are given to artificial words.
  - a. Signification Based on Word Sentence Fusion.
  - b. Signification Based on Embeddedness of word in sentence.
  - c. Formation of Word Meanings Relatively Differentiated from sentence context.
3. Interpretation of sentences during signification.
  - a. Assimilation of sentence meanings.
  - b. contamination of sentence meanings.
  - c. concrete, Egocentric and Imaginative Interpretation of sentence meanings.

Their results suggest that 1. the sentence is used as a structured medium increasingly with age, 2. meaning and structure are inter-dependent.

Their detailed exploration under the headings listed above, highlights some of the processes involved when a child is searching for a concept he already knows, with which to replace an artificial word.

However, as Roger Brown (1956) points out, "The problem of the Word Context Test is not strictly a problem of concept formation or attainment but is rather concerned with concept identification" (p.298). He goes on to suggest that the "solution" Werner and Kaplan give for each series is the word which has the highest probability across the series. In some cases, the final sentence will elicit the correct response from adults who have not seen the previous five

sentences (e.g. "Jimmy lidbered stamps from all countries" elicits "collected").

There are two main strategies which could be used to solve this kind of problem. Brown identifies them as a simultaneous scanning strategy, with the conjunction of preceding attributes, or a lazy scanning strategy, taking into account only the immediate context. An adult using the second strategy, when reaching a highly criterial context, such as the one for "collected", would feel certain that this is the correct solution, and quickly glance back to see if it "fits". Children, however, because less experienced with adult language, may have a quite different criteriality from that normal for adults. Brown cites the example of the child who used the word "cars" to replace the nonsense word in the sentence, "The way is clear if there are no ashders." In this child's "experience "cars" was so predictable in this context that he persisted in using it in other sentences where we should say that it did not fit at all well."

Further evidence that children are less experienced with adult language, comes from the early work on verbal association tests. The Kent-Rosanoff (1910) frequency tables, were used by other researchers on different populations - Schellenberg (1930) on nine hundred and twenty-nine first year students, Woodrow and Lowell (1916) on one thousand Minneapolis school children, and O'Connor (1928) on one thousand men, mostly in industry. The children tended to "stay by" the thing mentioned; they completed or enlarged upon the idea conveyed by the stimulus word; whereas the adults jumped to a related, parallel idea. Woodworth and Schlosberg suggest that this difference in children may be due to experimental conditions of drive or set, rather than to associative strength (see page 55, 1954 Edition).

What Werner and Kaplan did not do in their experiment (or elsewhere, as far as can be determined) was to explore how many new contexts would be needed to induce the child to alter his strongly held solution. They claimed that they had uncovered a developmental aspect since the thirteen-year-olds achieved significantly more correct solutions than the younger children, and tended to use more advanced strategies. Werner and Kaplan (after Piaget 1929 and Gesell 1946) suggested that the acquisition of word meanings follows the principle of spiral development, based on unfolding maturational stages. They



suggested that, in attempting to give signification to unknown words, children exhibit a variety of intellectual operations, which shift with increasing age, from primitive to more mature forms. At any stage of maturity, the level of performance depends on the relative novelty of the task. If a child meets with a new task, he may regress to an earlier level of functioning. It is implied that younger children (in this case, eight-year-olds) will not be able to abstract and generalise, and therefore will not be able to give signification to words requiring this kind of operation. Moreover, Werner and Kaplan found that the older children were also less variable in their responses. As Brown (op. cit.) puts it, the older children "were more like the adult-model computers (Werner and Kaplan)" in that they were more experienced in the context probabilities necessary to form the "correct solution".

It is not clear that this experience can only come with maturation. It might be the case that the eight-year-olds given sufficient experience with a variety of contexts, would be able to arrive at the "correct solution" provided that they fully understood that only one word was required for the whole series.

Brown suggests that "the Word Context Test might be improved as a model for the learning of word meanings (in the sense of co-ordinate nonlinguistic categories) if the critical term were totally unfamiliar. If it were a word we had never heard, standing for a concept we had not formed, there would be no reason to alter its phonemes. The psychiatric term "schizophrenic" once satisfied these conditions for most of us" (page 301).

The present series of Experiments was designed to investigate the possibility of young children (five-year-olds) learning the meanings of words

- a) in the sense of labels e.g. fat = 'obese'
- b) in the sense of previously unknown co-ordinate nonlinguistic categories, e.g. 'precarious', from the general context of stories. Unlike the Werner and Kaplan experiment, many of these children did not know that they were expected to learn word meanings from the stories, and none of the children knew which words and concepts would be tested.

In this way, it was hoped to provide a more realistic approximation to the way children learn word meanings and concepts in ordinary life. A wide variety of general and local contexts, thirty for each difficult word, was used, to enable the children to refine their concepts. Some children heard only six local contexts for each word, so that the relationship between variety,

repetition, and concept formation could be studied.

### Summary

This Chapter has attempted to outline issues in psychology relevant to the present experimental study, in five sections, which are now summarised.

#### (1) Lack of experimental research

The main reasons for the lack of experimental research have been examined briefly. These range from the time consuming character of work with preliterate children and the vast increase in task size as the young child rapidly enlarges his vocabulary, to the historical development of psychology during this century which, almost consistently, has stressed the pre-determined and unalterable nature of human attributes.

#### (2) Recent work indirectly related to vocabulary acquisition

A tremendous amount of work related to language acquisition has been undertaken in recent years, and that of Chomsky (1957, 1965) and his collaborators on transformational grammar has been acknowledged in this section. However, interesting as this work has been, with a few exceptions such as Brown (1956) there has been little concern with semantics, and we have had to turn to research in other fields such as concept formation, for ideas of relevance to children's acquisition of new words and meanings.

Here, the two prevailing trends have been discussed. The one, typified by Bruner et al (1956) has been experimental, but usually has studied concepts much more simple than many required in daily or school life. The other, represented mainly by Piaget and his followers over many years, has been concerned with more complex relationships, but has viewed these from the perspective of immutable maturational stages, in harmony with the pre-determinism of the psychometric school.

However, there have been a few voices of dissent even within the area of concept formation. For example, Sonstroem (1966) and others have investigated the effects of altering experimental parameters, instead of merely observing children of different ages tackle the same tasks. They have found that children's performance in conservation tasks can be advanced beyond the usually

expected level, given suitable experience.

Similar results have been obtained by Birch and Bortner (1966) and others, who have been able to demonstrate differing levels of competence evident through performance, under conditions in which competition, from responses lower in the hierarchical repertoire, has been systematically reduced.

For further evidence about the possibility of manifest change following altered circumstances, we turn to the next section.

### (3) Recent Work in fields unrelated, but relevant to, Vocabulary acquisition

Several areas outside the recognised main stream of psychology, particularly those of mental handicap, early adversity and preschool education, have been considered in this section because they offer evidence about the conditions under which the acquisition of concepts and/or new behaviour takes place. The work of the Clarkes and their colleagues, who have shown that mentally handicapped adults and children can both benefit from systematic and structured training on complex practical and cognitive tasks, has been discussed. Similarly, much evidence from studies of children who have suffered extreme early deprivation, and from preschool programmes of as little as fifteen hours duration, indicates that the effects of early experience are not irreversible. On the contrary, the problem has become, rather, one of defining the needs of the individual of whatever age, and of exploring the ways in which the environment can be altered to meet these needs. Such work may be ameliorative on the large scale, or may be concerned with the defining of concepts to be taught, and appropriate teaching procedures. Section (4) considered some teaching methods of relevance to the present study.

### (4) The roles of techniques such as Story telling and repetition

Techniques such as story telling, and frequent repetition to the point of over-learning, have long been used in teaching both inside and outside school. Claims made for these methods have been described and discussed in Section (4) and the role of these methods in the present Experiments has been indicated.



## (5) Previous work on vocabulary acquisition

Although there has been very little research into the ways in which young children learn the meanings of new words, the final section of the Chapter has described and considered both the normative, and the more experimental investigations. Werner and Kaplan (1950) in a detailed study on what proved to be concept identification, rather than concept formation, suggested that the acquisition of word meanings was dependent on unfolding maturational stages. The present research challenges this view. The major hypothesis is that there is nothing to prevent a young child learning the meanings of difficult (and abstract) words, provided that the learning conditions are appropriately manipulated.

Chapter Two describes the experimental method used throughout the study, while in Chapter Three, the Experiments are described and discussed.

## CHAPTER TWO

### GENERAL DESCRIPTION OF METHOD

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#### Introduction

The aim of the investigation, then, was, by means of a series of three experiments, to seek to add to what is known about the processes by which five-year-old children acquire a new vocabulary of six selected words, in the sense both of new labels, and of new concepts. As the same basic method was used throughout the Experiments, a description of its important features is given here, in a separate Chapter. But first, an outline of the main features of the investigation is provided, as an initial guide to the material in the experiments. Cross-referencing page numbers are given in brackets to enable the reader to turn to the detailed description of method should this be desired. Following the outline is a summarising chart of the main experimental variables and the Experiments in which they occur (p.419). This is also available for reference as a pull-out sheet at the end of the thesis. There is a brief over-view at the beginning of the thesis on page i.

#### The Investigation in outline

The investigation involved 275 children (discussed on p.63) in six schools (p.67). The children were divided into 23 groups (shown on p.59, and on the fold-out summary at the end of the thesis), on the basis of a Peabody Picture Vocabulary Test (Dunn 1959) (P.P.V.T. I.Q.) which was administered at the outset (p.43). Seventeen of the groups, termed "standard" (ST.) had a P.P.V.T. I.Q. range of 100 - 119, three groups termed "bright" (BR.) had a P.P.V.T. I.Q. range of 120 - 140, and three groups termed "low" (L.) had a



P.P.V.T. I.Q. range of 80 - 97, (p.63).

Following the P.P.V.T. I.Q. test, each child completed an experimental Pre-test, to ascertain whether or not the six selected words were already known (p.45).

Within the groups, the children heard folk stories (p.40), which were read by the experimenter (p.58). The stories had been constructed by the experimenter to provide local and general contexts (p.38) for six selected difficult words (p.36). These words formed the new vocabulary the acquisition of which was investigated in the three Experiments.

The acquisition of the six difficult words was tested within a few days of the last story being read. Three Post-tests were administered, an Oral, a Pointing, and a Pointing-oral Post-test. The Oral Post-test was designed similarly to the Wechsler Intelligence Scale for Children (Wechsler 1959). It was administered separately from the Pointing and Pointing-oral Post-tests which were based on the P.P.V.T. and involved pointing at a picture and then talking about it. Crucial to the whole investigation was the scoring of the Post-tests, and care was taken to ensure sensitivity and reliability (p.49)

Experiment I was set up to examine five hypotheses (p.77), suggesting that the ability of five-year-old children to learn difficult words will depend on the context in which the new words are heard, and will be related to the verbal I.Q. of the child. The results of Experiment I are summarised on p.118, and indicate that this is the case. A difference in performance between matched groups of children at different schools was observed (p.119), and the six words were not learnt with equal ease. Groups which heard two stories repeated five times each, performed less well than those which heard ten different stories.

Experiment II was designed to provide improved conditions to facilitate the learning of new concepts (two of the six selected words) by standard I.Q. children (p.121). An internal control was introduced as a further check on whether outside agencies were aiding the children's learning of the difficult words. The difference in performance of matched groups at different schools was further explored in Experiment II. The results of Experiment II are summarised on p.144. The improved conditions led to significant improvement in test result, but the difference in performance between matched groups at different schools remained. The further investigation of these differences between schools is described in Experiment III on p.147, as well as in Chapter Five on p.218. The results of the internal control were interesting and unequivocal (p.171).

Experiment III was designed to reveal the particular set of conditions which led to improved performance in Experiment II. At the same time, the difference between groups at different schools was further explored, and the observed difference between words in difficulty of attainment was investigated, (p.147). Experiment III was also designed to illuminate the relationship between repetition of story, and repetition of context, following the results of Experiment I.

The results of Experiment III are summarised on p.171. The improved contexts led to considerable improvement in performance and the results suggest that clarity of context is more important than certain other factors in promoting acquisition of vocabulary. The difference in performance between matched groups at different schools remains for some of the experimental conditions. The number of stories was shown to be an important factor at one school, but not at another. The erroneous responses from all three experiments are analysed in Chapter Four (p.177). Some words remained more difficult to acquire than others, in spite of improved conditions.

A summary of the main findings from all three Experiments can be found on p.174.

The rest of this Chapter describes in detail the factors common to all three Experiments, starting with the selection of the six difficult words.

## The Words

Six words - two verbs, two adjectives and two adverbs - were selected from a Verbal Intelligence Test consisting of 150 words. The Peabody Picture Vocabulary Test (P.P.V.T.) (Dunn 1959) was chosen as being most appropriate for young children, and so that an adaptation of the pointing test could be used as a Pre- and Post-test. This method of testing was necessary because, as was reported by McCarthy (1946) and Fraser, Bellugi and Brown (1963), speech comprehension precedes the ability to produce speech. As the P.P.V.T. proceeds, the words illustrated become either conceptually difficult or of infrequent occurrence in daily use, or both. The six words selected were all of infrequent occurrence, and two of the six were also conceptually difficult. Since the selected words were taken from the difficult end of the test, they would not normally be known by average ten-year-old children, far less five-year-olds. Table 2.1 gives details of the six words.

TABLE 2.1

The six words selected from the P.P.V.T. with indication of frequency of occurrence in spoken and written material, and of conceptual level

<u>P.P.V.T.</u> <u>page*</u>	<u>Words</u>	<u>Part of Speech</u>	<u>Frequency</u> <u>per million</u> **	<u>Conceptual</u> <u>Level</u>
			G	
105	'illuminate'	verb	13	synonym
110	'encumbered'	adverb	3	new concept
129	'obese'	adjective	1	easy synonym
131	'inclement'	adjective	1	easy synonym
134	'precarious'	adjective or adverb	6	new concept
140	'embellish'	verb	2	synonym

### Notes to Table 2.1

\* The Peabody page numbers, indicate the relative position of the words in the test, which reaches page 150, with an I.Q. score of 140 for an eighteen-year-old who scores 150.

\*\* The frequency figures are taken from the Thorndike and Lorge (1944) word count. The G column is a summary of the four counts conducted by Thorndike and Lorge, on spoken and written material. It indicates the number of times per million that the word occurred.



The complete Concise Oxford Dictionary definitions of the words are given in the Appendix, on page 282.

These six words, termed the "difficult" words, have been used throughout the three Experiments, though in differing combinations and contexts.

The words, apart from 'obese' and 'inclement', were used in several ways in the local contexts, varying the situation illustrated and the part of speech used to permit appropriate generalisations to be made by the children. For example, 'encumbered' was used in contexts where it became 'encumbers', 'encumber', and 'encumbering', even though it usually appeared as 'encumbered'. At the same time, 'encumbered' might apply, for example, to situations in which a horse pulled a load, a man was slowed down by an animal, or something large or heavy was carried.

### The local contexts

Each difficult word was surrounded by a local context, consisting of the sentence in which the difficult word was embedded, and two further sentences, one on each side of this sentence. These local contexts may be seen on page 303 of the Appendix. Except in the case of the control group, and of 'obese' in Experiment II, the local contexts were intended to be explanatory, but there were certain constraints which were adhered to throughout the Experiments.

The first constraint was that, though the words were scattered throughout the stories in the order which best suited the particular story, on no occasion were two difficult words contained in the same sentence. From the results of Experiment I, it appeared that even so, the resulting degree of proximity may have led to confusion, and so in later experiments the number of sentences between difficult words was increased.

The second constraint was that, where a difficult word appeared three times in a story, (as it did in most cases, in Experiments I and III), all three "mentions" should not be made in the same paragraph, but rather the words should be distributed throughout the text. This distribution was introduced because in natural conversation, a word may be repeated for emphasis or effect, but otherwise is unlikely to be used three times within the same few sentences.

The third constraint, that of variety of local context, was related to the second (distribution). Variety of local context was regarded as important, because it was supposed that only by hearing the words used in differing situations would the children be able to generalise to the correct uses, and appropriate boundaries of the words. This supposition was supported by the results of Experiment I, where the contexts for 'encumbered' led the children to emphasize the "weight" aspect as opposed to the "slowed down" aspect of the word, see the discussion on page 99.

It is comparatively easy to use a word three times within the same general context of meaning. For example, someone might 'embellish' her hair with a ribbon, her blouse with a matching ribbon, and her belt with a

flower, in preparation for a party. It is more difficult to construct three entirely different situations, (such as 'embellished' clothing, furniture and food) for each of six difficult words, within the space of 2,000 words, the limit set in order to be well within the concentration span of normal five-year-olds.

In the event, this constraint had to be relaxed in some cases. However, with the exception of the word 'inclement', which by its nature is limited to the general context of weather, a variety of situations was aimed at, for each difficult word, both within and between stories.

The number of times the difficult words appeared in each story was an arbitrary decision. Three times seemed sensible, as this would allow repetition of the word in a variety of local contexts. Using each of the six words more than three times, within each story, and in a variety of local contexts, would not have been feasible, within the limits of space set for the stories.

The fourth constraint was that the definition of the difficult word was never actually "spelled out". Contexts were explanatory in that they added information about the meaning of the word, but they did not define its meaning, for the Experiments were being run to find out under which circumstances children could generalise the meaning of a word from hearing it in various contexts. The question of whether a child could learn the meaning of a word from a direct definition was not at issue.

The fifth constraint was the need to avoid repeating in the stories the exact situation of the P.P.V.T. picture. For example, in the P.P.V.T. the difficult word 'embellish' was represented by a picture of a decorated birthday cake. In the stories, many things such as clothes, jewellery and furnishings, as well as some foods such as pies, ice-cream, and trifles, but never cakes, were 'embellished'. It was thus hoped to avoid the possibility that children might recognise the story situation in the picture, without having identified the difficult word and its meaning.



## The stories

The stories formed the general context in which the words were heard. Ten folk stories were rewritten in two versions, a difficult and an easy version. The difficult version was intended to be understood by average ten-year-olds, while the easy version was intended to be understood by average five-year-olds.

The main differences between the two sets of stories were in vocabulary and sentence length. The difficult stories contained longer words, and longer sentences, and tended to use the passive voice occasionally.

Although most children are able to use and understand most grammatical structures by the age of five, according to McNeill (1966) and Ervin and Miller (1963), it is probable that passive phrases embedded in longer sentences would be less easy for five-year-olds to process, than short, active sentences, because of semantic factors if not syntactic factors (see Miller and McKean 1964. and also Menuk 1969 ).

An example, taken from one of the stories 'The Drummer', will illustrate the main differences between the easy and the more difficult versions.

### Easy version

So the drummer got up early, before it was light. The moon illuminated the piles of wood just enough for him to see what he was doing. He worked through the early hours of the morning, and on and on. But though he did not stop to rest, he could see he would never get all the piles of wood into one big heap in time. The logs were very heavy, and he was encumbered by the size of the pile. He could not reach the top of the pile to put logs on it. He had

### Difficult version

So the drummer rose before it was light, and started to carry the wood from the little piles to make a great big pile. The faint moonlight was just sufficient illumination for him to be able to see what he was doing, but there were dark shadows everywhere. He worked through the early hours of the morning, on and on, until noon. But though he had not ceased in his labours, there were far more logs to be piled than he could manage in the time left. He was encumbered by the

to climb up.

It was a precarious job, standing on logs which slipped from under his feet, and trying to put heavy branches in safe places. But again, the girl came to help him. "This time," the girl said, "the witch will give you another job. Do whatever she asks and don't be afraid. If you are afraid, the fire will burn you up. Then when you have done it, take her with both hands and throw her into the fire."

colossal weight of the logs which were tremendously heavy, as well as by the height of the pile which was already immense. It was a precarious task, balancing on logs which rolled from under his feet, while trying to place cumbersome branches in safe positions. But once again, the girl came to help him. "This time," the girl said, "the witch will set you another task. Do whatever she asks, fearlessly. If you are afraid, the fire will burn you up. Then, when you have done it, take her with both hands and throw her into the fire."

Care was taken to ensure that though the difficult versions contained more complicated sentence structures, and longer words, many of which five-year olds would not understand, the stories were the same length, and took the same period of time to read.

The stories ranged from the familiar 'Jack and the Bean Stalk' to the less known 'How the Sea Became Salt'. They are listed in the Appendix on page 402.

In writing the stories, an attempt was made to create situations such that it was possible to feed in the boundaries of the meanings of the difficult words through a variety of local contexts, during the course of the ten stories. In Experiment I, each version of every story contained all six "difficult" words three times, set in a varied, explanatory local context. Thus a child hearing the ten stories on ten consecutive school days would hear each of the six words thirty times, in thirty local contexts, many of which illustrated different situations. The local contexts are discussed on page 38, and a summary of local contexts will be found in the Appendix on page 303 onwards.

The stories were read to each group of ten to thirteen children in a

prearranged order, so that the children would meet the more familiar stories first. This order was maintained for all the groups apart from the repeat groups (see page 149) throughout the three Experiments.

For Experiment II, and Experiment III, the easy versions of the stories were altered in ways specified in detail on pages 122 and 149 .

On the first day of story reading, every group was given instructions about listening to the stories and not asking questions.

The instructions read out before the first story were as follows :-

"Every day, for the next two weeks, I am going to come and read you a story. I want you to listen very carefully. One day, when you have heard all the stories, I shall ask you some questions about them. So you must listen carefully.

But there is one thing I'm not allowed to do. I'm not allowed to answer any questions. So you mustn't interrupt. Just listen. To-day's story is called .....

Are you ready ? Good. "

For one group (ST.E.I.) (see page 61), the instructions were altered, to draw the children's attention to the fact that they would be asked questions about words. The altered instructions were as follows :-

" Every day, for the next two weeks, I am going to come and read you a story. I want you to listen very carefully. One day, when you have heard all the stories, I shall ask you some questions about the stories and the words. So you must listen carefully.

But there is one thing I'm not allowed to do. I'm not allowed to answer any questions. So you mustn't interrupt. Just listen. To-day's story is called .....

Are you ready ? Good."

On days following the first story, children in each group were reminded of the instructions by the following questions which were asked in random order :-

"What is it that I'm not allowed to do ?"

"What is it that you mustn't do ?"

"What must you do ?"



"What will I do when you've heard all the stories ?"

If the children did not correctly answer the last question, they were helped as follows :-

"I'll ask you questions about ....."

Children from all groups except ST.E.I. then responded :-

"the stories"

Later on, they did not need help. Children from the ST.E.I. group responded :-

"the stories and the words", or something similar, so that they were reminded that they would be asked about the words.

### Testing

In Experiment I, the children were tested in three different ways. First, the Peabody Picture Vocabulary Test (P.P.V.T.) (Dunn 1959), was given, in order to provide a basis for the matching of the groups. Following this, the second tests, the 'Pre-test Pointing', the 'Pre-test Pointing-oral', and the 'Pre-test Oral' were administered, to see whether any of the difficult words were known. After the children had heard the stories the third tests, 'Post-test Oral', 'Post-test Pointing' and 'Post-test Pointing-oral' were given to discover whether any of the difficult words had been learnt. Table 2.2 shows the plan of the testing sequence. Experiments II and III followed a similar sequence to Experiment I, except that the Pre-tests were omitted for reasons given on page 123. Descriptions of the tests follow in the remainder of this section.

TABLE 2.2

#### Plan of the testing sequence

(Experiment I only)

	<u>Pre-tests</u>		<u>Post-tests</u>
P.P.V.T. )	Pre-test Pointing )	Stories	Post-test Oral
)	)		
)	Pre-test Pointing-oral )		Post-test Pointing
)	)		
)	Pre-test Oral )		Post-test Pointing-oral

## P.P.V.T.

The Peabody Picture Vocabulary Test was used as a basis for matching the groups on verbal I.Q. because it is one of the most suitable for very young children. A test of verbal ability seemed most relevant to the task in hand, as it might be expected that children whose general intelligence and home background had enabled them to score highly on this test, would also be good at selecting and learning words from a prepared context. Throughout this paper, I.Q. refers to P.P.V.T. I.Q., unless otherwise stated. Also, 'bright', 'standard', and 'low', refer to groups within certain ranges of the P.P.V.T. I.Q. test (see pages 59 and 64 ). The I.Q. scores were used, rather than the raw scores, because these are roughly standardised for age.

It must be made clear that the P.P.V.T. was used merely as a convenient experimental tool to match children on the basis of acquired vocabulary, and not as a test of general intelligence, (see Burland and Carroll 1971 for a discussion on the dangers of using the P.P.V.T. as an estimate of general ability or abilities). Even so, vocabulary tests are still the best indicators of general intellectual ability that we have, and have been reported as giving "an intelligence quotient within ten per cent of that secured by the entire scale", by Terman and Merrill (1961) writing of the Third Revision of the Stanford-Binet Intelligence Scale. Furthermore, the P.P.V.T. yielded a higher correlation (of 0.546 versus 0.406) with the Oral score than did the Oral Vocabulary Test from the Wechsler Intelligence Scale for Children (Wechsler 1959) see page 221.

The P.P.V.T. was given to more than five hundred five-year-old children, individually, according to the instructions in the expanded manual, using Form B, with one alteration to suit English children. On page 27, 'peeping' (4), was substituted for 'peeking' (4).

The time taken to give this test ranged from about fifteen minutes (as the authors suggest) to an hour or more, if the child was very bright, and/or very shy. Thus the I.Q. testing alone took at least three months.

Pre-test Pointing

In order to discover whether the children knew any of the difficult words, a Pointing Pre-test was constructed as follows. A duplicated test sheet was made, using the Peabody Form B from page 24 to page 1. Copies of the pages on which the six difficult words were pictured were produced, and sewn on to the wire spine of the Peabody Picture Vocabulary Test, as follows in Table 2.3.

TABLE 2.3

To show the point at which the pictures of the  
difficult words were introduced in the Peabody  
Picture Vocabulary Test, for the Pointing Pre-test

Picture of difficult word

Page 110	between	Pages 23 and 24
Page 105	"	Pages 20 and 18
Page 129	"	Pages 17 and 15
Page 131	"	Pages 14 and 12
Page 140	"	Pages 11 and 9
Page 134	"	Pages 8 and 6

The difficult words were interspersed among easy words so that the children would not feel defeated by successive failure, and possibly fail to point at the correct picture when they really knew a word.

The picture for 'precarious' was altered to one more suitable for recognition by five-year-olds, for the purpose of this Pre-test (and the Post-test). Copies of the Test list and the picture plates can be seen in the Appendix on pages 298 and 286 respectively.

This Pointing Pre-test was given immediately after the Peabody Picture Vocabulary I.Q. Test (P.P.V.T.), working backwards from page 24, and usually took only a few minutes. Those low I.Q. children who had had to reverse from their starting point to pages lower than page 24, were not included in the Experiments, and their P.P.V.T. I.Q. Test was completed in the normal way.



The Pointing Pre-test was used in conjunction with the Pointing-oral Pre-test to identify any children who knew any of the six difficult words. Since there is, supposedly, a one in four chance of pointing at the right picture by chance, the Pointing-oral Pre-test had to be included, to permit children to justify their choice.

#### Pre-test Oral

An Oral Vocabulary Test was constructed, similar to that in the Wechsler Intelligence Scale for Children (Wechsler 1959). This consisted of eleven words that five-year-olds could be expected to know (established on a preliminary pre-test), and the six difficult words interspersed alternately after the first four easy words, with two easy words left at the end of the list. The easy words were used both to train the children in the kinds of answers required, and to counteract feelings of failure which might have arisen had the six difficult words been presented successively. It was felt that such failure might a) make the child unhappy b) set the child against the experiment or the experimenter, and c) possibly camouflage knowledge of one of the difficult words through a set to respond negatively.

A copy of the Oral Pre-test used, with the instructions and with the kinds of deliberately non-leading questions designed to elicit responses from the child is in the Appendix on page 293 and 294. The Oral Pre-test took roughly twenty minutes to half-an-hour per child. However, where children were very shy, or when it appeared that they might know a difficult word, it took longer. None of the children tested knew any of the six difficult words.

From the behaviour of some children in Experiment I, it seemed possible that responses to difficult words given on the Oral and Pointing-oral Pre-tests, could be influencing responses given on the Oral and Pointing-oral Post-tests. It seemed that children who gave homophonic responses on the Pre-tests, were less likely to give correct responses on the Post-tests than children who said "don't know" (d.k.) on the Pre-tests. This suggestion was confirmed for the Pointing-oral data, where  $\chi^2 = 15.38$ , significant at the .001 level.

For the Oral data, no such difference emerged, ( $\chi^2 = 2.09$ , not significant). The summaries of these analyses may be seen in Tables 3.18 and 3.19, on page 100. The influence of the Pre-test on the Post-test Pointing-oral results is shown to be well beyond that to be expected by chance. Therefore, the Oral and Pointing-oral Pre-tests were dropped for Experiments II and III.

For these experiments, training in giving definitions was confined to the first few easy words in the Oral and Pointing-oral Post-tests.

#### Post-test Oral

The same test as the Pre-test Oral was used for the Post-test. The Post-tests were administered as soon as possible after the last story to be heard, since rapid forgetting was expected, because of lack of reinforcement of hearing the words in the ordinary environment. This Oral Post-test was the first of three Post-tests to be given to each child. It usually took between twenty and thirty minutes per child to administer, since children were usually quite good at giving the meanings and use of the easy words (having been trained in the Pre-test Oral) and the time saved was taken up with their efforts on the difficult words.

#### Post-test Pointing

A second duplicated sheet was prepared, like the Pre-test Pointing sheet, but using form A instead of form B. The difficult words were interspersed at the same points, but in a new order, (see Appendix page 298). The test was administered, as before, according to the P.P.V.T. Manual. This test was used because it would show those children who had learnt the meaning of a difficult word, but who were not able to recall it, without a picture to remind them of it. Running concurrently with this test was the Post-test Pointing-oral.

#### Post-test Pointing-oral

The Post-test Pointing-oral ran concurrently with the Post-test Pointing. Instructions are included in the Appendix on page 292. Briefly, the child was asked to say why he had pointed at a particular picture. The 'examples' and easy words were used as training examples for the Pointing-oral, as well as the Pointing task.



The purpose of this additional test was to reveal the extent to which the reminder provided by the picture in the Pointing test would elicit correct responses from children who previously in the Post-test Oral had forgotten the difficult words. It also revealed children who pointed at the correct picture through guessing. The kinds of questions used to elicit this information were the same as for the Post-test Oral.

The Post-test Pointing and Pointing-oral tests took about ten to fifteen minutes per child, since an oral explanation was not required for all the easy words, and after the first few per child, responses for the easy words were not recorded.

#### Post-tests for Experiments II and III

In Experiments II and III, the same test sheets were used for the Oral and Pointing-oral Post-tests. However, this time questions were pre-arranged, and followed the same programme in every case. Non-leading supplementary questions were used only to get the child to clarify his exposition. They were not used to prompt an answer. The Post-test sheets and questions are in the Appendix on page 295.

#### General

In each of the Experiments, an independent tester helped with the Pointing and Pointing-oral tests. This tester did not know to which groups children belonged, so she provided a check against "experimenter effect" (Kintz, 1965b).

All the children were tested as soon after the last story as possible, except that two full days were allowed where the children would not hear the six difficult words. In some cases, this was the weekend. Children were selected from the groups in such a way that no group, or section (e.g. boys) gained the advantage of having the majority of its members tested on the first day. As far as possible, each child had all three tests on the same day, in two sessions, separated by at least one hour, to allow time for relaxation.

Informal evidence suggests that some children, who were using some of the difficult words correctly at home, forgot the meanings very rapidly when they were no longer reinforced by hearing the words in the stories.



## Scoring

It was recognised that the scoring of the Post-tests would be crucial to the whole investigation, and care was taken to ensure both sensitivity and reliability. This section describes the scoring system that was developed.

### Pre-test Pointing

One mark was given each time a child pointed at the correct picture for a difficult word. The highest total possible was six marks. No one scored six marks on the Pre-test.

### Pre-test Oral

Any child who correctly defined one of the six difficult words during the Oral Pre-test would have been eliminated from the Experiment as not satisfying the criterion of not knowing the difficult word. However, no one did, and no marks were scored on the Oral Pre-test.

### Post-test Oral general

The method of scoring for the Post-test Oral was arrived at after inspection of the responses. It was found that when children were encouraged to tell all they knew about a word, and to use it in a sentence, made up by themselves, they were often able to give better definitions (even for difficult words), than would be expected of them in Oral Vocabulary Tests, such as the Stanford-Binet and the W.I.S.C.

The Stanford-Binet scoring system of plus or minus seems very lenient for five-year-olds. For example, any one of the following responses is credited with plus, in an attempt to say "What is a ..... ?" at the five-year-old level.

Chair: "To sit on." "You sit on it." "It is made out of wood and has legs and a back." etc.

Horse: "To drive." "To ride." "What people drive." "To pull the wagon." "It is very big and has four legs." etc.

These examples are given to indicate the level of a satisfactory response, by Terman and Merrill (1961). At the same time, they point out that

"It is not the purpose of this test to find out whether the child knows the meaning of the words he is asked to define. Words have been chosen which are perfectly familiar to all normal children of five years. But with young children there is a difference between knowing a word, and giving a definition

of it. Besides, we desire to find out how the child apperceives the word, or rather the object for which it stands; whether the thing is thought of in terms of use, appearance (shape, size, colour, etc.), material composing it, or class relationships."

At the five-year-old level, children are expected to define four out of six words in terms of use (or superior to use), in order to pass the test.

For children aged nine and older, a vocabulary test of 100 words arranged approximately in order of difficulty, is introduced in the Stanford-Binet test. Again, Terman and Merrill stipulate that no indication of the merit of the response should be given, and nothing which might suggest a model form of definition should be said.

"Although the form of the definition is significant, it is not taken into consideration in scoring .... When it is evident that the child has one fairly correct meaning for a word, he is given full credit for it, however poorly the definition may have been stated."

The following examples are given by Terman and Merrill (1961) to indicate how lenient scoring should be, although these are acknowledged to be weak definitions.

Orange: "An orange is to eat." "It is yellow and grows on a tree." (Both full credit)

Gown: "To sleep in." "It's a nightie." "It's a nice gown that ladies wear." (All full credit)

Straw: "It grows in the field." "It means wheat-straw." "The horses eat it." (All full credit)

In the W.I.S.C. Oral Vocabulary Test, Wechsler (1959), also allows very lenient scoring for the first five words, which

"should be scored 2 or 0. This arbitrary decision has been necessary because of the young child's limited ability to give verbal expression to his concepts. Therefore, any definition which indicates that the young subject knows what one of these five words means is credited 2 points."

Other words are scored 2, 1 or 0, elegance of expression being disregarded, while poverty of content is, to some extent, penalized.

Some of the examples given by Wechsler to guide scoring follow. At the five-year-old level :-

Bicycle 2 points :- "What you ride on." "It has wheels and a seat and pedals and a handlebar." "You ride on it - you pedal, you steer. The wheels go around." "A thing you ride on and pedal."

0 points :- "You fall off it." "My Daddy is going to get one for me. (Q. (Q = non-leading question)) To play with it." "With wheels."

Knife 2 points :- "Something you cut with." "I play commando with it. (Q.) It has a sharp blade and a handle." "A weapon." "Silverware - it cuts." "For to kill people."

0 points :- "I have one; I play with it." "I got one for my birthday. (Q.) A present." "I don't have one. (Q.) My brother has but



he's big."

Examples of how to score responses after the first five words follow :-

Cushion 2 points :- "You put it on the dresser and stick pins and needles in it." "It is something like a bag but it is closed at the end and stuffed with cotton or feathers." "To cushion a blow is to keep from getting the full force."

1 point :- "It is filled with cotton." "It is something you put on a couch."

0 points :- "A piece of furniture." "It is soft."

Nail 2 points :- "It is a spike." "You put polish on it; it is on your finger." "To pound into wood." "He nailed the argument." "It's to hammer in so the boards will stay together."

1 point :- "It is sharp." "It is metal." "To hold something down." "A tool to put things together."

0 points :- "Hit it." "A thing you stick things with." "Nail boards." (No reply to Q.)

For comparison, some examples of responses to one of the difficult words from the Experiments, with the scoring criteria and the scores allocated follow :-

Encumbered 4 points Clear idea of being slowed down or impeded in child's first attempt at definition.

4 points :- "A cow can slow you down. 'Jack and the Beanstalk' - in that story a cow 'encumbered' him when he was taking it to the market. (Q. How could you 'encumber' someone ?) Put something heavy on them."

"Don't know. (Have a guess at it.) I think it means slowed down. (Make up something to say to me, using the word 'encumbered'.) There was a man who was 'encumbered' .... (long story here). (What does 'encumbered' mean ?) Slowed down. You can't go fast 'cos it's heavy and you can't go very fast. In one of the stories it said 'encumbered' and he had to put down his cases and that ..."

3 points Clear idea of being held up, slowed down, weighed down by something - object or animal. Heavy and slow.

3 points :- "You're carrying things and it's a lot too heavy. (Won't make something up. How could you 'encumber' someone ?) Give them real heavy things to carry. (Look like ?) Big things and sacks. (Person like ?) Walking very, very slowly."

"Heavy. (Make up.) Some donkeys are 'encumbered'. (Look like ?) They have to walk slowly. (Why ?) Because it's heavy for them ... (How could you 'encumber' someone ?) Suitcases sometimes. (Tell me more ?) It depends how much things they've got inside them."

"Heavy. (Make up.) My Daddy had two heavy suitcases in his boot of his car. The suitcases 'encumbered' Daddy. (Like ?) They'd walk slowly. (Why ?) Because the suitcases were 'encumbering' the gentleman or lady who was carrying them. (Mean ?) Heavy."

2 points Idea of heaviness or being slowed down ; or word not used correctly.



2 points :- "You're 'encumbered' with your bags. (Like ?)  
Nearly falling over. (Why ?) Because the bags is heavy. (Mean ?)  
The bags are too heavy."

"Encumbered with lots of cases. (Like ? Demonstrates with bent back  
and arms weighed down. Make someone ?) Give them your cases and be rather  
lazy. (Means ?) Don't know - carrying other things as well, like big boxes  
full of heavy stuff."

"With heavy things. I have got an 'encumbered' sack. (Like ?) Sort  
of heavy. (Tell me more. If someone were 'encumbered' what would he be  
like ?) Very slowly. (Why ?) Because of the heavy load. (How could you  
'encumber' someone ?) A big bag of fruit."

1 point Muddle in correct area. Meaning elicited with much  
questioning. Confusion with one of the other difficult words.

1 point :- "Full, full. (Like ?) Carrying something. (Tell  
me more. What would he look like ?) Different - 'cos he'd have a lot of  
things. (Q.) Anything. (If you carried a feather would you be 'encumbered' ?)  
No, (laughter) it's only little. (Q.) Packets of things. (Feel like ?)  
Heavy. (Make someone 'encumbered'?) Give them a lot of things - a pair of  
ladders. (Make up ?) I saw a man 'encumbered' (Q.) with a pair of ladders."

" 'Encumbered' by a man. (How ?) When he's blocking the passage up.  
(Mean ?) You can't get by."

"You can't get out with snow on the ground. (Make up.) That man was  
'encumbered' in the snow. (Q.) By the snow and the cold. (Why ?) The  
snow was deep. (Man look like ?) He'd have two heavy suitcases. (Why  
would he be 'encumbered'?) They was heavy. (How would I know he was  
'encumbered' ?) The cases was very heavy, and the snow was very deep. (Do?)  
They'd bury him in the snow."

0 points Don't know, with no response after encouragement to guess,  
and to make up something to say using the word 'encumbered'. Correct  
definition for another difficult word. Homophonic response or guess.  
Perseveration from word earlier in the list.

0 points :- "You can be 'cumbered' by a witch. (How ?) She  
might get you. (Like ?) Crying. (Why ?) If someone just murdered you.  
(Mean ?) Don't know."

"I got some of them right at home. (Q.) Some of them hard questions.  
(Did Mummy ask you ?) No. (Q.) I thinned hard to myself and then I knew.  
That means looking after people. (Q.) When you're poorly, doctors 'encumber'  
you." (!)

"It means it's raining or something. (Make up.) The weather is  
'encumbered'. (Q.) Either snowing or raining."

"It means you're all fat and it's too heavy. (Make up) Yesterday, I  
saw a fat lollipop in the shops. (Q.) You'd see me. (Q.) So fat. (Q.)  
Mummy isn't 'encumbered' but Granny is."

"A Mr. (Tell me more ?) A bear. (Q.) A man. (How would the man  
'encumber' the bear ?) Stopped - the bear stopped the man."

"Working. (Like ?) Men. (Doing ?) Working. (Q.) A man.  
(How make someone 'encumbered' ?)" No answer.

"A bike. (Q.) Ride it." (Perseveration)

The criteria on which the scoring of all the difficult words was based, are on page 238 onwards in the Appendix.

It will be noticed that these criteria are very much tougher for five-year-olds than those used by Terman and Merrill or Wechsler. This was because, unlike the intelligence testers, it was not possible to assume that the children were familiar with the meaning of the difficult words. The purpose of the Experiments was to find out, as far as possible, how much, and what, the children had been able to learn about the meanings of the words having listened to the stories. Therefore, more questions were asked than would be normal in an Oral Vocabulary Test, and the children were asked to "Make up something to say to me, using the word ...." They were given an example of how to do this. Sometimes questions were asked about their made-up responses to elicit further information about how much the children knew about the words. In addition, children were encouraged to "have a guess" and to "tell me more".

These methods elicited much better definitions than would usually be expected of five-year-olds, and much data would have been lost, especially after the replication of Experiment I, if the "all or nothing" scoring systems of Terman and Merrill, or Wechsler, had been adopted.

Instead, the responses were inspected and compared with the salient features of the dictionary definitions. The procedure was as follows :

#### Experiment I

##### Post-test Oral

For Experiment I, all eighty Oral and Pointing-oral responses, for each of the six words, in the groups (see page 59 and pull-out reference sheet at end of thesis) ST.E., ST.D., ST.E.R., B.R.D. were scored twice, once by the experimenter and once by an independent observer (Dr. Ann Clarke) who did not know to which groups the children belonged. The criteria for each word were written down, and constantly referred to, in order to make the scoring



consistent. Final scores between 0 and 3 were agreed. Even so, it is possible that some borderline cases, rescored blind with the same criteria, could move up or down one point.

A score of one, two, or three marks was given to a child defining a difficult word. A correct definition, comparable with a dictionary definition, scored three points. A child showing clearly that he had a fair idea of the meaning of a word, but limiting or over generalising it, scored two points. A very limited or muddled definition, including enough to show that the child had some idea of the word, scored one point.

After Experiment I, when contexts had been deliberately improved, it was found necessary to introduce a score of 4 for 'encumbered' and 'precarious', because definitions, particularly of the bright group, were so much better than those given in Experiment I. This is discussed fully on page 127. The criteria on which the scoring was based are on page 285 in the Appendix.

#### Post-test Pointing

As for the Pre-test, one mark was given for each correct pointing. If a child spontaneously changed his mind, the final decision was taken (even if this reversed a previously correct pointing). However, if the Post-test Pointing-oral revealed that the child had no idea of the meaning of the word, and a score of 0 was given, the Post-test Pointing score was altered to 0.

#### Post-test Pointing-oral

As for the Post-test Oral, scores of one to three were given for correct or partially correct definitions. For Experiments II and III, a score of 4 was introduced, because some definitions for 'encumbered' and 'precarious' were very much better than those given in Experiment I. As for the Oral Post-test, this is discussed on page 127. The criteria on which the scoring was based are the same as those used for the Oral test, and are on page 283 onwards of the Appendix.

#### Experiment II

When the 85 data sheets of Experiment II were amalgamated with the 40 sheets of the ST.E. and BR.D. groups from Experiment I, and were placed in



rank order, and four sets selected, the scoring thus achieved coincided with the original scoring for the ST.E. and BR.D. groups. This suggests that the scoring had a rather high degree of reliability. It is surprising that such reliability was achieved, when the inevitable subjectivity of the scoring is considered.

A score of 4 for 'encumbered' and 'precarious' had to be introduced, and this is discussed fully on page 127 in Experiment II.

A comprehensive spot-check was made by the independent observer, to check that scoring was consistent.

### Experiment III

Data sheets were ranked as for Experiment II. A spot-check on about half the subjects was made by the independent observer.

### Criteria

A full explanation of the criteria for scoring each word, with examples, is in the Appendix, on page 283 onwards.

### General

Of the three methods, one would expect the Pointing Post-test to elicit the largest number of correct responses, as, theoretically, there is a one in four chance of pointing to the correct picture by chance. However, if a child scored zero on the Pointing-oral Post-test, having pointed at the correct picture, his score for the Pointing Post-test was reduced from 1 to 0. Unfortunately, this meant that any pre-verbal ideas the child may have had about the word were not given the opportunity of being credited. However, it was felt to be desirable to err on the side of stringency in all the scoring procedures.

The Pointing-oral Post-test should be the next easiest because here the child would have the picture to help him remember the word and its meaning.

The most difficult test should be the Post-test Oral taken before the Pointing and Pointing-oral, because here the child would have to rely on unprompted memory, there being no recognisable context to help him.

In Experiments II and III, a prearranged schedule of questions was given

This is on page 259 in the Appendix, and is discussed on pages 126 and 249.

It may be thought that a question such as "If someone was doing something 'precariously' at a circus, what might he be doing?" would elicit a correct response whether a child knew the word 'precarious' or not. However, this is not the case. Children whose first response to the meaning of the word 'precarious' was "It means dangerous", or who used the word correctly, used the circus question to invent colourful and appropriate examples, with good reasons when asked why the activity would be 'precarious'. Children who did not know the word either could not answer, or guessed at 'non-precarious' circus events, such as "he would be making people laugh", and could not say why this would be 'precarious', or else they gave a clearly inappropriate answer to this question.

#### The Experimenter

The experimenter was a trained primary school teacher, with more than four years experience of classroom teaching and handling young children. As will be appreciated, this was of great advantage in establishing rapport and working relationships with both children and teachers.

In each of the three Experiments, an independent tester, who was used to working with young children, and who did not know from which groups the children came, helped with the Pointing and Pointing-oral, or the Oral Tests. This provided a check against the "experimenter effect" (Kintz 1965a) and allowed the testing time to be nearly halved. This, in turn, meant that several groups could be run during the school term, without the problem of some children being tested a fortnight or more after they had heard their last story, when the chances of forgetting caused by lack of reinforcement of hearing the words, would be very high.

#### Control of questions

It was the purpose of the Experiments to find out whether, and to what extent, children could pick up the meanings of difficult words heard in explanatory contexts. It was important, therefore, to avoid direct instruction or explanation concerning the words, such as might arise through children's questioning of adults. Also it would be extremely difficult to record



questions asked by children during the stories, or at other times (e.g. at home), or to introduce experimental controls on questions and answers, so the steps set out in the following paragraphs were taken to minimise the chances of questions about the difficult words being answered.

#### 1. The teachers

Before the P.P.V.T. testing, a letter (see Appendix page 301) was sent to the headmistress of each of six schools, explaining briefly what the experiment was about. The teachers also read the letter, and the experimenter answered any questions they had. They agreed to help, by not answering questions about very difficult words, without finding out from the experimenter first whether or not these were the experimental difficult words.

#### 2. The parents

A duplicated note, stamped with the school stamp, was sent to the home of each child involved in the experiment, with each child, on the evening of the first story. It was worded very simply so that all the parents would be able to understand, and it requested that they would not answer questions about very difficult words, for three weeks, explaining why. (A copy is in the Appendix, on page 302.)

Informal sources suggest that some parents found it very difficult to avoid answering such questions, because they habitually did so. However, many children volunteered that they retold the day's story to their parents, but that their parents would not tell them what certain words meant, or spell the words for them. This constitutes a separate problem of controls, as the children were not meant to know that they would be asked about words, rather than about plots of stories. On the Post-test, they seemed to expect questions about both.

When the difference between schools was discovered after Experiment I (a), it was felt that one aspect of this difference might be that children at School 1 knew the contents of their parent's letters, or were told by parents that they would be asked about words, whereas children at School 2a might not have this information. For this reason, a matched



group of standard children (ST.E.I.) was given new instructions (see page 42) directing their attention to the fact that they would be asked about words. The results of this group are discussed on page 119.

### 3. The Experimenter

Before the first story, the Experimenter read out to each group the instructions on page 42. Having explained that they would be asked questions about the stories at the end of the two weeks, the instructions continued :-

"But there is one thing I'm not allowed to do. I'm not allowed to answer any questions. So you mustn't interrupt. Just listen."

Before each subsequent story the children were reminded by the question "What is it I'm not allowed to do ?" ... "So what is it that you mustn't do ?"

It was hoped that these instructions would inhibit questions of the Experimenter about the difficult words.

Very occasionally, a child did interrupt to ask a question about the plot, or about a word (executed, 'encumbered', shuddered so). In each case the Experimenter answered "If you listen carefully, the story will tell you," or the children reminded the questioner of what he was not allowed to do !

### 4. General

These three precautions did not guarantee that children did not ask other people the meanings of the difficult words, or discuss them amongst themselves.

Discussion was minimised by having each group constituted of children from several classes. Similarly, if a teacher had inadvertently given a meaning of one of the words, all the groups being run at that time and school, would benefit. A check made on this possibility is reported on page 241.

The fact that the results are so poor, for ST.E. groups, suggests that children were not being given definitions by adults. The negative results of an internal control, in Experiment II, where 'obese' was heard thirty

times without an explanatory context, also suggests that children were not given definitions by adults.

### The experimental groups

The children were placed in twenty-three experimental groups, based on results of the P.P.V.T. I.Q., and on experimental condition. Table 2.4 summarises the group names for the three Experiments, and is available for convenience as a pull-out sheet at the end of the thesis. The following sections describe the experimental conditions for each group.

TABLE 2.4

Summary of Groups in Experiment I (a), I (b), II and III  
showing number of children in each condition and  
abbreviated group names

<u>Abbreviations</u>	<u>Experiment I(a)</u>		
		<u>Repeated with :-</u>	
		<u>Part 1.</u>	<u>Part 2.</u>
ST. = standard (P.P.V.T. I.Q. 100-119)			
E. = easy versions of stories	1. ST.E.	10 children	10 children
D. = difficult version of stories	2. ST.D.	10 children	10 children
R. = repeat (two stories, five times)	3. ST.E.R.	10 children	10 children
BR. = bright (P.P.V.T. I.Q. 120-140)	4. BR.D.	10 children	10 children
C. = control (difficult words omitted from stories)	5. ST.C.	10 children	
L. = low (P.P.V.T. I.Q. 80-97)	6. L.E.	10 children	10 children
	<u>Experiment I (b)</u>		
	7. ST.D.R.	10 children	
I. = altered instructions	8. ST.E.I.	10 children	
T. = two (two different stories)	9. ST.E.R.T.	10 children	10 children
	<u>Experiment II</u>		
R. = revised (two words only, with improved contexts)	10. R.ST.E.	10 children	10 children
	11. R.BR.E.	10 children	
	12. R.L.E.	10 children	
	<u>Experiment III</u>		
N. = new (improved contexts for all six words)	13. N.ST.E.	10 children	10 children
	14. N.ST.E.R.	10 children	10 children



### The groups in Experiment I(a)

ST.E. and ST.D. were standard groups who heard ten stories, easy version (ST.E.), or difficult version (ST.D.), respectively. Hypothesis 2a (see page 77 ) suggests that the group with the easy stories will learn the difficult words more successfully than the matched group with the difficult stories.

ST.E.R. was a standard group. Instead of hearing ten different stories, this group heard two easy stories ('The Shoes that Were Danced into Holes' and 'David') five times each, on alternate days. So this group had a less varied general and local context.

According to hypothesis 2b (see page 77 ) this group should learn the difficult words less well than ST.E. However, it might be thought that repetition of the general context would allow the children to concentrate more on the local contexts, and this might improve their learning.

BR.D. was the bright group and heard difficult stories. Hypothesis 2a (see page 77 ) suggests that this group will learn the difficult words more successfully than ST.D. because the difficult context should be more suited to the needs of the bright children, while it would impair the learning of the standard children.

ST.C. was the standard control group. This group heard ten easy stories. However, the stories were altered by the removal of the six difficult words. The local and general context was kept as close to the ST.E. versions as possible. It was important to give the control group similar treatment to the other groups, but without the inclusion of the difficult words, so that the experimenter relationship would be similar. The Post-tests would then reveal whether or not children were acquiring the difficult words in the same time interval from sources other than the stories, e.g. from the natural language environment at home. No other group was taken at this school, so that possible contamination from other groups was avoided. This was not the only kind of experimental control used.

L.E. was the lower I.Q. group. Hypothesis 2a (see page 77 ) suggests



that this group will learn less well than the standard group with easy stories, since the stories will be less easy for this I.Q. range. It was questionable whether this group would learn any of the words.

#### The groups in Experiment I(b)

ST.D.R. This standard group heard the same two stories as ST.E.R., but in the difficult version. Hypothesis 2a suggests that ST.D.R. would learn the words less well than ST.E.R. or ST.E. because the context would be too difficult for them.

ST.D.R. should also learn the difficult words less well than ST.D. according to hypothesis 2b, if variety, rather than repetition, aids acquisition. However, if repetition of general and local context aids learning more than variety, one would expect ST.D.R. to learn better than ST.D. and ST.E.R., since the ST.E.R. group might be bored by the repetition of easy stories. The repetition of difficult stories could be less boring because there would be more to think about, or more boring because so little would be understood.

ST.E.I. had special instructions (see page 42), drawing the children's attention to the fact that they would be asked questions about words after they had heard the stories. This group was run after the difference between schools had been revealed, and was an attempt to remove the difference.

ST.E.R.T. was a second standard easy repeat group, using the stories 'Jane' and 'Drummer', to act as a control for the possibility that the particular two stories chosen for the repeat condition might, by chance, have caused the observed effect.

#### The groups in Experiment II

R.S T.E. was a revised standard easy condition, using mainly the two difficult words 'encumbered' and 'precarious', in improved contexts. At the same time, 'obese' was used without explanatory contexts, a) as an internal control, in case the children were taking the words home and asking their parents for definitions, and b) to provide further evidence on the suggestion that contexts must be explanatory and apposite if the child is to learn the meaning of difficult words.

More detail about this group will be found in Experiment II on page

R.BR.E. This was a bright group, using the above revised easy condition. It was possible to run only one bright group using the revised easy condition because School 2b did not have enough bright children in the class available within the age range to form a group of ten (see page 235).

R.L.E. This was a low P.P.V.T. I.Q. group, using the same revised easy condition as the groups described above. Part of the second aim of Experiment II was to observe the effect of reduced load and improved context on the learning by low I.Q. children of these conceptually difficult words.

### The groups in Experiment III

N.ST.E. This new standard easy group had stories with the same improved contexts for 'encumbered' and 'precarious' as were used in Experiment II. Now, however, the other four words were included in the stories, in an attempt to discover whether it was the reduced load, or the improved contexts, which caused the observed improvement in learning.

The contexts for 'illuminate' and 'embellish' were also improved, but only six contexts for each word were used through the ten stories. These six contexts, each heard five times, were identical to those used in the N.ST.E.R. condition. This was included to see whether variety in the 'near', or the 'near' and the 'general' context was needed to enable children to learn. A comparison with ST.E. would show whether six improved contexts, heard five times each, in ten easy stories would be as conducive to learning as nearly thirty different contexts in the ten stories.

N.ST.E.R. The new standard easy repeat group used two of the ten new standard easy stories, 'Jane' and 'Drummer'. It was included so that the effects of repetition of improved contexts (for 'encumbered', 'precarious', 'illuminate' and 'embellish') could be compared with earlier repeat groups, and with 'illuminate' and 'embellish' in the N.ST.E. condition.

Further details about the N.ST.E. and N.ST.E.R. groups will be found in Experiment III on page 148.



## The children

Although working with older children would have been more convenient, and quicker, as I.Q. tests, Pre-tests and Post-tests could have been given on a class basis, with written responses, it was decided to use pre-literate children for three reasons. First, it is between the ages of three to five that children acquire a large oral vocabulary, that is, before they can read and write. Second, using non-readers guards against the possibility that children may look up the difficult words they hear, in a dictionary. In the third place, using pre-literate children ensures that the children do not meet the difficult words in written material, such as newspapers.

To ensure availability, children in their first year at school were selected and grouped according to their results on the Peabody Picture Pointing Vocabulary Test (P.P.V.T.) On the basis of this test, seventeen "standard" I.Q. groups of ten children (I.Q. 100-119)<sup>\*</sup> and three "bright" I.Q. groups of ten children (I.Q. 120-140 plus) were formed. Thus 230 children took part in the Experiments. In addition, a further 45 children took part in Experiment II. Altogether, 275 children were active participants in the experiments. Details of the experimental groups will be found on page 59. The groups of ten were matched for age and sex composition, and for P.P.V.T. I.Q. within each range. While experiments were being run, each group of ten had at least two extra children in the right age and I.Q. range to compensate for probable "natural loss" through illness, etc., which is common with this age group. Results of only ten children per group were used. Where there was a choice in the selection of the ten, children were chosen who best fitted the matching on the basis of age, I.Q. and sex, and extras were discarded before scoring. Usually, there was no choice, as children dropped out because of illness, removal, operations, and similar factors.

Fortunately, the children whose results could be used always formed correctly matched groups. Summaries of one-way analyses of variance, on "standard" P.P.V.T. I.Q.s, "bright" P.P.V.T. I.Q.s, "low" P.P.V.T. I.Q.s, <sup>\*</sup>, three "low" I.Q. groups of ten children (I.Q. 80-97)



and age, are shown in Tables 2.5, 2.6, 2.7, and 2.8. Even when all twenty-three groups are included in the analysis for age,  $F = 0.75$ , which is not significant. For the seventeen standard groups, for P.P.V.T. I.Q.,  $F = 0.49$ , (not significant) and for the three bright groups  $F = 0.08$  (not significant). For the three low I.Q. groups,  $F = 0.86$  (not significant).

TABLE 2.5

Summary of one-way analysis of variance on all  
seventeen standard I.Q. groups for P.P.V.T. I.Q.

<u>GROUP</u>	<u>MEAN</u>
1	107.7
2	109.2
3	106.0
4	110.9
5	107.9
6	109.9
7	109.6
8	107.8
9	107.5
10	108.0
11	109.4
12	110.3
13	109.0
14	110.8
15	107.8
16	107.1
17	109.1

SOURCE	SS	DF	MS	F	P
TREATMENTS	300.9063	16	18.80664	0.491	NS
ERROR	5862.391	153	38.31628		
TOTAL	6163.297	169			

TABLE 2.6

Summary of one-way analysis of variance on the  
three bright groups for P.P.V.T. I.Q.

	<u>GROUP</u>		<u>MEAN</u>		
	1		131.5		
	2		130.2		
	3		131.0		
SOURCE	SS	DF	MS	F	P
TREATMENTS	8.601562	2	4.300781	0.084	NS
ERROR	1386.098	27	51.33695		
TOTAL	1394.699	29			

There was no significant difference between groups, indicating successful matching for "bright" groups on P.P.V.T. I.Q.

TABLE 2.7

Summary of one-way analysis of variance on the  
three low groups for P.P.V.T. I.Q.

	<u>GROUP</u>		<u>MEAN</u>		
	1		91.3		
	2		88.6		
	3		92.6		
SOURCE	SS	DF	MS	F	P
TREATMENTS	31.3	2	15.65	0.86	NS
ERROR	494.1	27	18.3		
TOTAL	525.4	29			

There was no significant difference between groups, indicating successful matching for "low" groups on P.P.V.T. I.Q.

TABLE 2.8

Summary of one-way analysis of variance on all  
twenty-three groups for age

<u>GROUP</u>	<u>SCHOOL</u>	<u>MEAN</u>
ST.E.	2a	67.8
ST.E.	1	67.9
ST.D.	2a	68.6
ST.D.	1	67.9
ST.E.R.	2a	68.5
ST.E.R.	1	68.9
ST.E.R.T.	2a	68.4
ST.E.R.T.	2c	69.6
R.ST.E.	2b	67.5
R.ST.E.	1	67.9
N.ST.E.	2a	67.0
N.ST.E.	1	66.1
N.ST.E.R.	2a	66.1
N.ST.E.R.	1	66.0
CONTROL	2d	67.4
ST.E.I.	2d	68.7
ST.D.R.	1	67.8
BR.D.	2a	69.2
BR.D.	1	69.8
R.BR.E.	1	69.7
L.E.	3	66.8
L.E.	2c	68.8
R.L.E.	1	67.1

SOURCE	SS	DF	MS	F	P
TREATMENTS	280.00	22	12.72	0.75	NS
ERROR	3495.00	207	16.88		
TOTAL	3775.00	229			

There was no significant difference between groups, indicating successful matching for age.



### The schools

Six local schools within easy reach of the experimenter's home and office, participated in the experimental work, by providing children and work areas. Schools with large intakes of five-year-old children were used several times in the course of the two years of research.

It had been the experience of the Clarkes' group that children at different schools behave differently under similar experimental conditions. For this reason, each group of ten children was always made up from children within one school. Also, each experiment was replicated at a second school to ensure that results were not due to a chance combination of factors at a particular school.

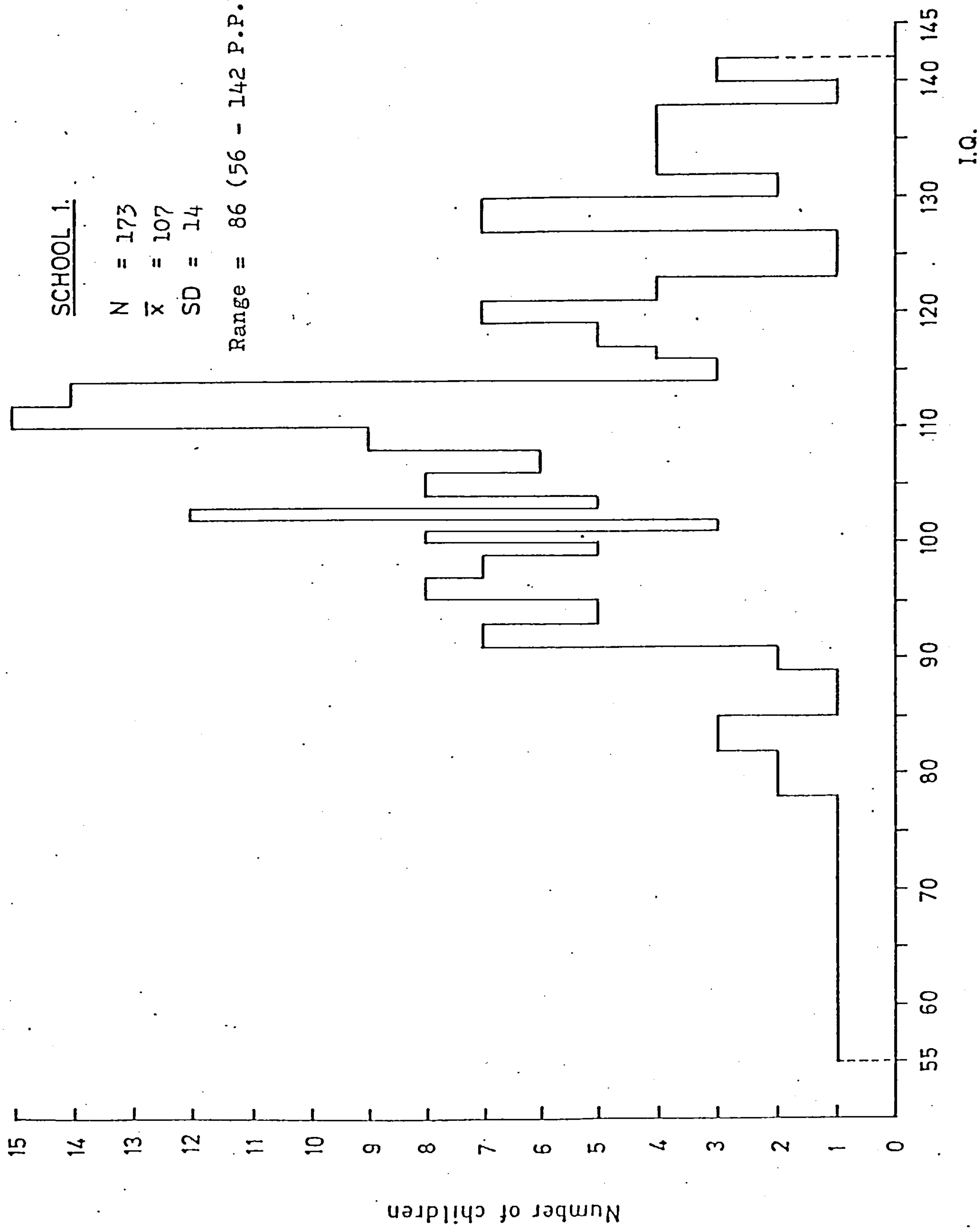
It had been hoped that by matching children on the P.P.V.T. I.Q. Test, differences between schools, such as those caused by differing catchment areas, would be controlled for.

However, when Experiment I (a) was repeated at a second school, although the differences between treatments remained, all the scores at the second school were higher than those at the first.

Bar histograms of the P.P.V.T. I.Q. scores at the various schools showed a series of over-lapping curves, with one school from a poor area having only two children of I.Q. over 100, and another school having only eleven children with I.Q. below 95, and in addition, having twenty children with I.Q. over 115, see following pages.

Four schools seemed to have equivalent curves, representing roughly the normal distribution of I.Q. in the population. Since the school with the higher scores in the replication of Experiment I (a) was the school with a skew to the right of the normal I.Q. distribution, and for reasons included in the discussion on the "schools difference" on page 236, it was decided to regard this school as different from the rest, and to use it to replicate experiments conducted at the four "normal" schools.

The four "normal" schools, were in catchment areas consisting of lower middle class homes, in the main. The small terraced houses were

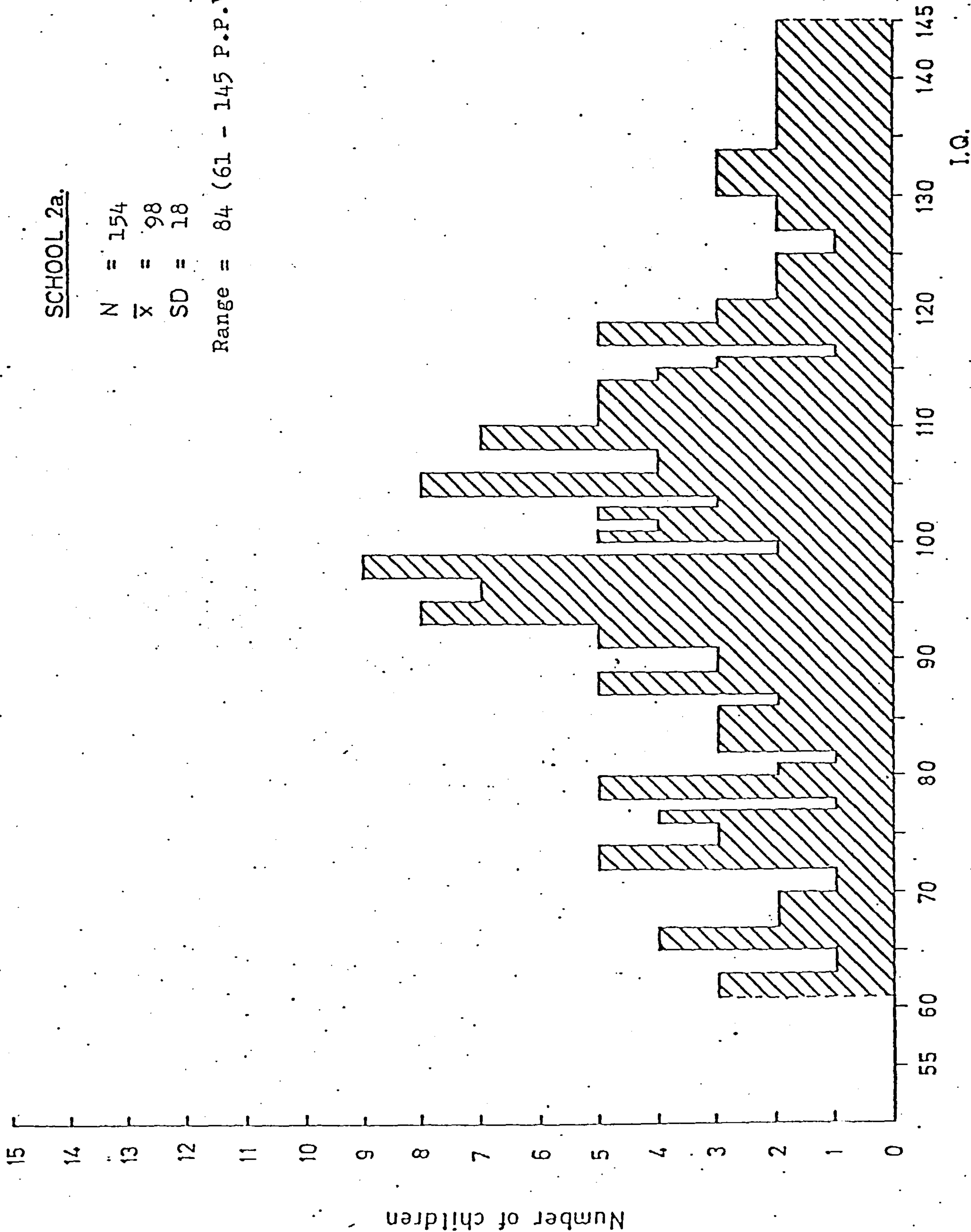


Bar histogram to show the range and distribution of P.P.V.T. I.Q. scores for all children tested at School 2a

SCHOOL 2a.

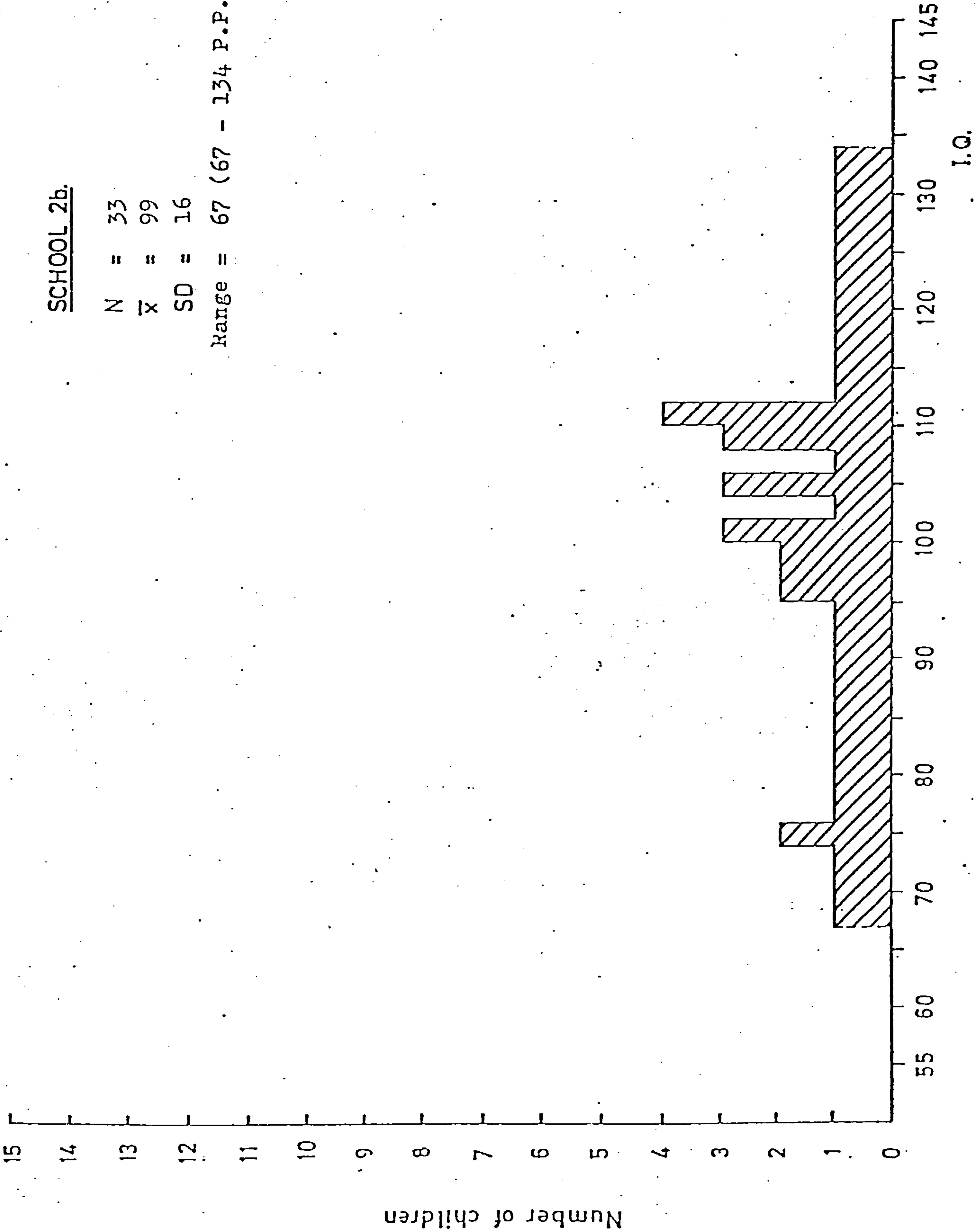
N = 154  
 $\bar{x}$  = 98  
SD = 18

Range = 84 (61 - 145 P.P.V.T. I.Q.)

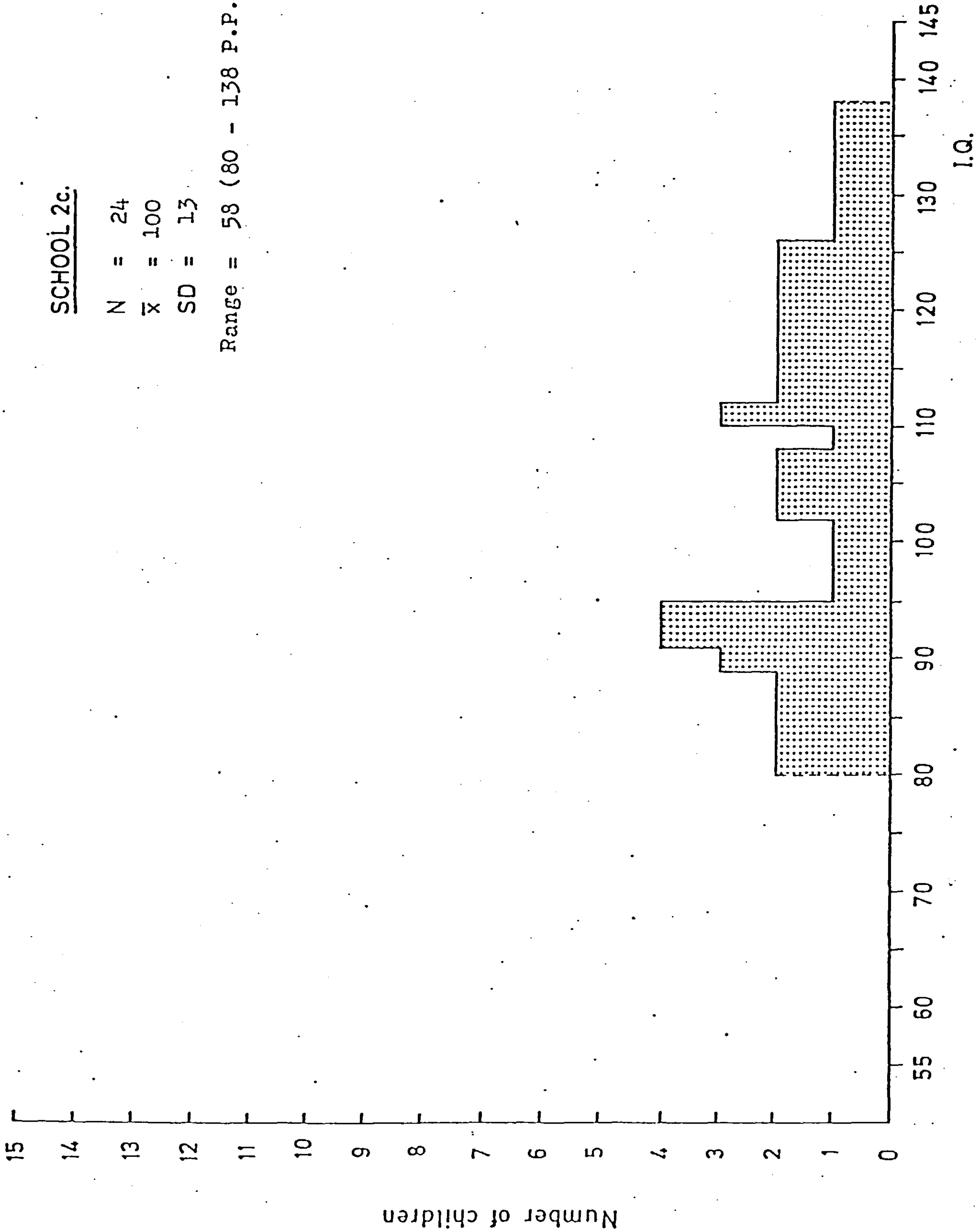




Bar histogram to show the range and distribution of P.P.V.T. I.Q. scores for all children tested at School 2b



Bar histogram to show the range and distribution of P.P.V.T. I.Q. scores for all children tested at School 2c



Bar histogram to show the range and distribution of P.P.V.T. I.Q. scores for all children tested at School 2d

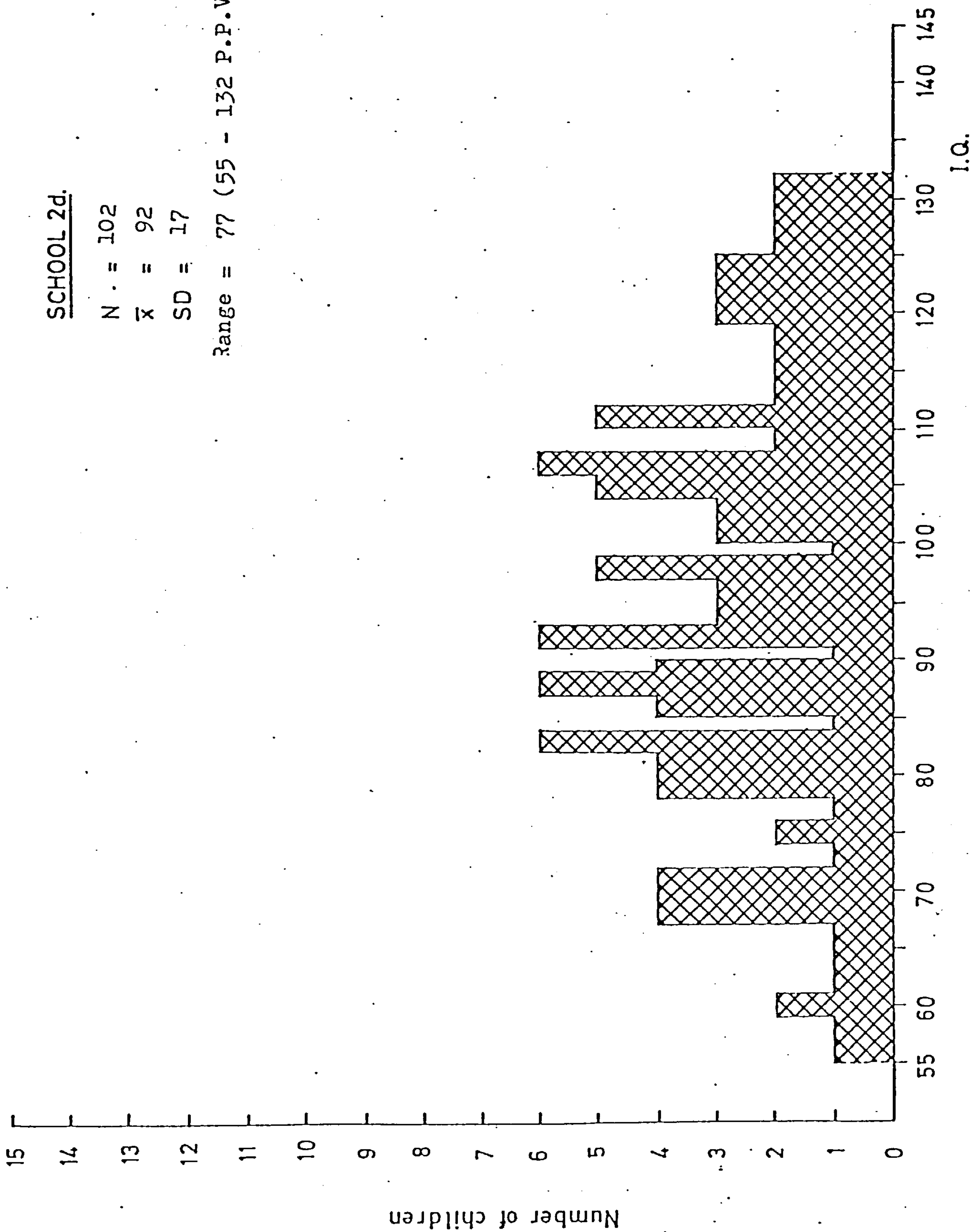
SCHOOL 2d.

N . = 102

$\bar{x}$  = 92

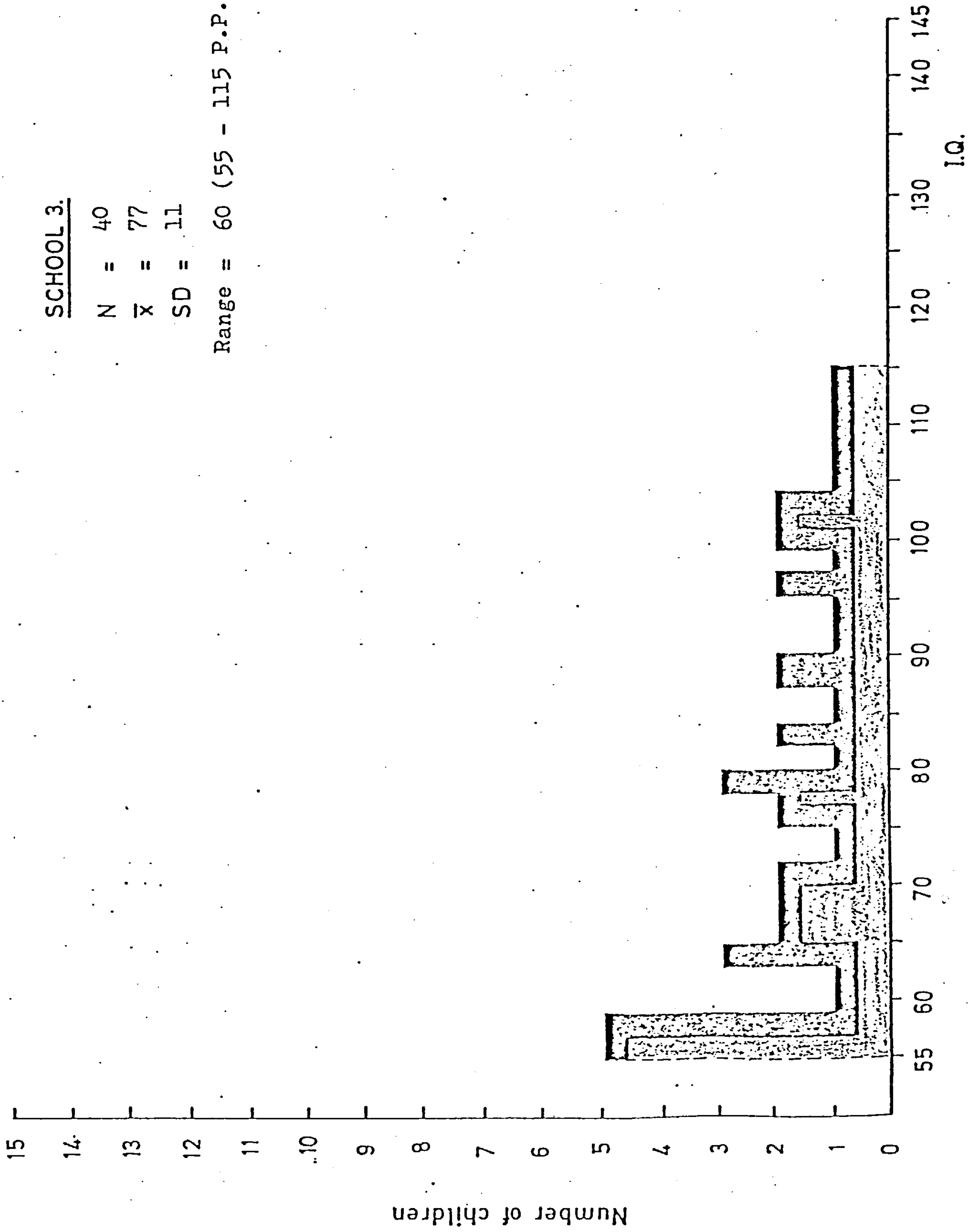
SD = 17

Range = 77 (55 - 132 P.P.V.T. I.Q.)





Bar histogram to show the range and distribution of P.P.V.T. I.Q. scores for all children tested at School 3



well kept and often owner occupied. These schools, for convenience, are coded 2a, 2b, 2c and 2d.

The school with children of a higher average P.P.V.T. I.Q., coded 1, was in a more prosperous catchment area, as evidenced by the higher prices of the semi - detached houses, the well stocked front gardens, and the known success rate on the entrance examination to the local direct grant secondary school. It has been suggested that knowledgeable parents, concerned with the academic success of their children, try to obtain houses in School 1's catchment area. Nevertheless, it must be pointed out that most of the really wealthy people live outside Hull in some of the nearby villages.

The school with the low P.P.V.T. I.Q. range, School 3, was situated in a poor part of Hull, though still within easy reach of the other schools. Its catchment area consisted mainly of small terraced houses backing on to factories, railway lines, and gas and electricity works. The children were often from one-parent homes, unemployment was high, and the head teacher spoke of a conglomeration of social problems. It was not possible to form a standard group within the age range, at this school.

For reference, the code numbers of the schools are set out in Table 2.9, and at the end of the thesis, in a fold-out section.

TABLE 2.9

Summary of the code numbers of the six schools

School with above average I.Q. range	1
Schools with normal I.Q. range	2a
	2b
	2c
	2d
School with below average I.Q. range	3

### Conclusion to Description of Method

The main materials, methods and procedures have been described, as well as the children and the schools which took part in the Experiments.

Any deviance from the basic description will be pointed out for each Experiment, as it arises.

The following Chapter reports the Experiments and discusses their results and findings.



## CHAPTER THREE

### THE EXPERIMENTS

## CHAPTER THREE

### EXPERIMENT I

## CHAPTER THREE

### THE EXPERIMENTS

In this chapter, the three Experiments are reported together, because of the inter-dependence between them. Experiment I was carried out in two sections, (a) and (b). Section (a) was subdivided into two parts, Part 1 and Part 2. Part 2 consisted of a replication of Part 1. The experimental groups have been described in Chapter Two (page 59) and a pull-out summary for reference is available at the end of the thesis. Any additional details about groups will be given during the description of the Experiments.

#### EXPERIMENT I(a) and (b)

##### Summary of Experiment I(a) and (b)

Two hundred and eighty eight five-year-old children, from five schools, were tested on the Peabody Picture Vocabulary Test (P.P.V.T.) Fifteen groups, matched for age (average 5.7 ) were selected on the basis of the test. Eleven groups were also matched for P.P.V.T. I.Q. with a mean of 108 and a range of 100 - 120 (standard I.Q.). Two of the remaining groups had a mean I.Q. of 91, and a range of 80 - 97 (low I.Q.). The two "bright I.Q." groups had a mean I.Q. of 130, and a range of 121 - 145 I.Q. points.

Ten folk tales were re-written in an easy version and a difficult version. Each story contained six difficult words repeated in an explanatory context three times each.

Each group of children heard ten stories in either the difficult, or the easy, version, except three groups, ST.E.R. and ST.E.R.T., which heard two easy stories repeated five times each, and ST.D.R. which heard two difficult stories repeated five times each. The control group, ST.C., heard the easy stories altered slightly so that the difficult words were omitted, while the contexts remained as nearly as possible unchanged. The ST.E.I. group had altered instructions.

There were five main hypotheses for Experiment I (a).



## Experiment I (a) The hypotheses

(1) Five-year-old children should be able to learn the meaning of "difficult" words without the aid of a physical referent or picture. It would seem to be unlikely that factors to do with the developmental level of five-year-old children would prevent the acquisition of "difficult" words.

(2) The learning of the "difficult" words will depend on the context in which they are heard, and usually "difficult" words are heard, if at all, in an abstract context too difficult for young children to follow. Therefore, the hypothesis states that a young child will learn a "difficult" word if it is presented to him in an easy context,

(a) which he can readily understand, and

(b) one designed to present the word in a variety of ways.

(3) Among groups of words normally used by adults, there will be differences in ease of acquisition. Therefore, if one has a clear conception of "fat", it should be relatively easy to substitute the word 'obese' as its equivalent. However, since 'precarious' has no simple and commonly used synonym, it should be more difficult to acquire this word.

(4) Verbal I.Q. will be related to the acquisition of "difficult" words.

(5) That the effectiveness of repetition of contexts and stories as a medium from which to learn, remains an open question.

## Experimental plan Experiment I (a)

1. (a) Peabody Picture Pointing Vocabulary Test.

(b) Pointing Pre-test.

2. Selection of groups based on P.P.V.T. I.Q. and matched for age and sex.

3. Oral Pre-test.

4. Stories. Each group heard a story on ten consecutive school days. The groups were rotated so that no group heard a story

at the same time two days running. This was to control against

some times being more propitious for learning than others. It also ensured as far as possible that no child consistently missed the same lesson over the course of the fortnight.

- |                         |                      |
|-------------------------|----------------------|
| 5. Oral Post-test       | - independent tester |
| Pointing Post-test      | - experimenter       |
| Pointing-oral Post-test | - experimenter       |

### Method

The method followed was that outlined in the Introduction to Method, in Chapter Two.

### The schools

Schools within easy reach of the experimenter's home and office were chosen, that is, schools labelled 2a, 2b and 3, in the Introduction to Method, page 74. After the P.P.V.T. I.Q. testing, it became apparent that Schools 2a and 2b were in lower middle class catchment areas, with children of a normal intelligence range. School 3 drew its children from a much poorer area, and the range of P.P.V.T. I.Q. scores was lower than that at the other schools.

Following Dr. A. M. Clarke's suggestion (1966) that matched children from different schools, because of factors of socio-economic background or method of instruction, do not always behave similarly in experimental situations, Part 2 of Experiment I (a) was carried out at yet another school, School 1. It will be seen how important this turned out to be. Further information about the schools can be found in the Introduction to Method, page 67, and the Chapter on Differences Between Schools, page 218, as well as on page 91, of this Chapter.

### The children and groups

One hundred and ninety children of five years of age, from three schools, were tested on the Peabody Picture Vocabulary Test, (P.P.V.T.), form B. This test was used as a basis from which to form matched groups of ten children, since it was assumed that performance on this test would have a close relationship to verbal performance and verbal acquisition in general.



Six groups were formed, all matched for age, mean 5.7. Four groups were also matched for Peabody I.Q., mean 108 (standard I.Q.). A bright I.Q. group, mean I.Q. 129, and a lower I.Q. group, mean 91, completed the groups.

The groups were given the following treatments, as set out in the Introduction to Method, Chapter Two, page 59.

<u>School</u>	<u>Group</u>		
2a	ST.E.	Standard I.Q. children,	10 easy stories
2a	ST.D.	Standard I.Q. children,	10 difficult stories
2a	ST.E.R.	Standard I.Q. children,	2 easy stories, repeated alternately five times.
2a	BR.D.	Bright I.Q. children	10 difficult stories
2d	ST.C.	Standard I.Q. children	10 easy control stories
3	L.E.	Low I.Q. children	10 easy stories

#### Procedure

The procedure was as outlined in the Introduction to Method, Chapter Two.

After Pre-tests, stories were read to each group of children, the number and degree of difficulty being dependent on which treatment the group had been assigned to.

At least two days after the last story, Post-tests were given. The order in which children were tested was arranged so that no group or subsection (e.g. boys or girls, upper end of I.Q. range, or lower) was given the advantage of early testing.

#### Replication (Experiment I (a), Part 2)

A replication of the Experiment was carried out, as soon as results were known, because group numbers were small (ten children per group), and the experimental results were in the expected direction.

Seventy-four children from School 1 were tested on the P.P.V.T. It was found that four groups could be formed matching the previous standard I.Q. groups in age and P.P.V.T. I.Q. In addition, there was a bright I.Q.



group, which matched the previous bright I.Q. group.

The Experiment was repeated with these children apart from the control condition, ST.C., which had been so unequivocal that this treatment was not repeated. The standard group thus freed, was used as a second repeat group (ST.D.R.) using the difficult versions of the two repeated stories. The ST.D.R. group is discussed on page 61, in Experiment I (b).

The replication, therefore, consisted of the four "basic" groups, ST.E., ST.E.R., ST.D., and BR.D. at School 1.

It was not possible to form a low I.Q. group at School 1, and there was not time to run additional groups at another school at the same time as running the replication at School 1. So later on, twenty-four children at School 2c were given the P.P.V.T. It was possible to form two groups from these children, a L.E. group, and another standard I.Q. group, which was given the second repeat of two easy stories condition, ST.E.R.T. The L.E. results are discussed on page 89, and the ST.E.R.T. results are discussed on page 116.

#### Results of Experiment I(a), Parts 1 and 2

##### Pre-test data

##### Pre-test Oral (including "basic" group replication data).

Not one of the one hundred and ten children in these groups was able to define or use correctly any of the six difficult words. When a child did attempt a definition, it was often imaginative, or else based on the phonemes of the word, e.g. " 'obese' means a beast", " 'precarious' means when you're careful" (or "careless", or "taking care of someone"), " 'encumbered' means a cupboard". Homophonic responses are discussed in Chapter Four on Qualitative Analysis on page 177. Sometimes a child would persevere an earlier response to a different word. For example, one of the easy words given for definition was 'bicycle'. A frequent response to this was "ride it". A perseverating child would respond "ride it", or "bicycle" to some of the difficult words following bicycle, such as 'inclement' and 'precarious'.

## Pre-test versus Post-test Pointing

Table 3.1 shows the results of a two-tailed sign test for each group. In all cases except the control group (ST.C.) there was a significant difference between the Pre-test and the Post-test Pointing scores. Scoring was 1 or 0.

TABLE 3.1

Sign Test on Pre-test and Post-test Pointing, including

<u>replication data</u>			
GROUP	N	x	p
ST.E.	20	0	•002
ST.D.	19	0	•002
ST.E.R.	20	0	•002
BR.D.	20	0	•002
ST.C.	7	3	•5 N.S.
L.E.	9	1	•04
ST.D.R.	9	0	•004

### Notes to Table 3.1

It should be noted :- a) that where a treatment has been replicated the results are combined. Thus 20 subjects took part in the following groups :- ST.E., ST.E.R., ST.D. AND BR.D.

b) The sign test Ns do not exactly follow the number of subjects actually participating in each treatment, because whenever there is a tie between Pre and Post-test Pointing score, that subject is dropped from the analysis, and the N is correspondingly reduced (Siegel 1956).

Thus all children were able to point significantly more often at the correct picture for the difficult word, after the stories, except the control group children who did not hear the difficult words in the stories. This suggests that the difficult words were not available to five-year-old children in their usual home or school environment.

It also suggests that at a passive vocabulary level, children had gained sufficient information from the stories to enable them to point at the correct picture with much greater frequency than they had been able to before the stories.



## Post-test Results, Part 1

### Examples from the pro-formas

To give some indication of the kinds of oral responses made, examples for each word are given in Table 3.2, with the score allocated. The scoring criteria are discussed on pages 49 - 56 in the Introduction to Method, and may be found on page 283 in the Appendix.

TABLE 3.2

Examples of Oral responses given by children in Part 1  
of Experiment I (a), for each of the six difficult words,  
with scores allocated. - The words are arranged in order  
of decreasing difficulty on the Oral Test

#### 'Precarious'

<u>Score</u>	<u>Group</u>	<u>School</u>	
3	SEE.R.	2a	"It was very ' <u>precarious</u> '. (Q.) Trying to find out where the witch put a spell. (Q.) 'Cause you might stand on it. (Q.) You might die 'cause it's a magic one. (Mean ?) Dangerous."
2	ST.E.	2a	"I don't know. (G.) Slippery. (Make up something to say using the word ' <u>precarious</u> ' :- Well, if it's bad weather you can go out but if it's too ' <u>precarious</u> ' and slippery you needn't. (Q.) Because they'd be dangerous. (Q People ?) Just the weather."
1	ST.D.	2a	"Means that you're not looking what you're doing - burn yourself on the oven. (Make up :-) My sister is ' <u>precarious</u> ' and traps her finger in the door."
0	BR.D.	2a	"I think it means bad weather. I don't know. (Make up :-) ' <u>Precarious</u> ' weather when it's snowing or raining." (Said that five out of the six words meant bad weather, so not questioned further.)
0	ST.D.	2a	"You're frightened. (Q.) 'Cause you hear a noise. (Q.) You're scared. (Make up :-) You're scared of ' <u>precarious</u> '."

#### 'Encumbered'

3	ST.E.	2a	"When you're going out to dinner and you're ' <u>encumbered</u> ' by two heavy suitcases. (Q.) With three bags. (Q.) Walking slow, carrying three bags. (Q.) By carrying all the bags and suitcases. (Q. What else ?) Lots of paper bags. (Q. At school ?) No."
3	BR.D.	2a	"Like you used in the stories ? It means heavy. Does it mean tired as well ? Worn out. (Q.) Rocks. (Q.) 'Cause they're real heavy - and sacks of gold, 'cause they're real heavy. They weigh you down."



- 2 L.E. 3 "Carrying heavy baskets with heavy things in the baskets. (Q.) Putting them down and having a rest. (Q.) Heavy chair. (Q.) 'Cause it's too heavy."
- 2 L.E. 3 " 'Encumbered' with a bag. (Q.) A shopping bag and a parcel or a sack. (Q.) 'Cause it would be heavy. (Q.) 'Cause you wouldn't get there quick - quick enough."
- 1 Not scored by any children in these five groups, on the Oral Test.
- 0 ST.E.R. 2a "You can buy this and 'encumber' people and bears. (Q. What are people like when 'encumbered' ?) Don't know. (Make up :-) I don't like being 'encumbered'. (Q. Why ?) Don't know."
- 0 ST.E.R. 2a "A lot. (Make up :-) When it was Christmas I had a lot of presents." (Says he can't use the word.)
- 0 ST.D. 2a "Cupboard. (Q.) An aeroplane. I don't know."
- 'Illuminate'
- 3 BR.D. 2a " 'Illuminate', that is, it means that light brightens something up and you can see whatever it is or what you want to do. In the night time when it's dark, you have to have something that 'illuminates' the room up so that you can see where you're going and won't bump into anything."
- 3 ST.E. 2a "Light. Well if a boy's playing football and breaks the window and breaks the light he has to buy another one to light up the house. (Make up :-) At night you watch the tele and put it on and it 'illuminates' all the room."
- 3 L.E. 3 "That makes the Christmas tree light. (Q.) Light in our bedrooms. (Q.) The lights."
- 3 ST.D. 2a "Light. (Q.) Switch the light on. (Q.) Sunshine."
- 2 Not scored by any children in these five groups, on the Oral Test.
- 1 ST.D. 2a " 'Illuminated' room. (Q.) blue (Q.) black (Tell me more about it) A light. (Q. Is this room 'illuminated' ?) No. (It was ! Q.) It hasn't got 'illuminate'. (Q.) It's all plastic. (Q.) 6" x 6".(!)
- 1 L.E. 3 "Don't know. (G.) - (If you 'illuminate' something, what do you do ?) Switch the light on. (Q.) Paint. (Q.) 2 o'clock. (Q.) To get finished before the night. (Q.) It dries up."
- 0 ST.E. 2a "No. (Says she has heard it.) Colours. (Q.) - ."
- 0 ST.D. 2a "Don't know. (Heard it ?) Only when Miss F. reads a story. (Q.) You have to listen." (Perhaps thinking of concentrate.)
- 0 ST.E.R. 2a "The Christmas tree was 'illuminated' with silver patterns and balls and a fairy on the top. (Q.) By

looking. (Q.) The factory would make it.... (Else ?)  
A pattern - a Christmas tree pattern."

'Obese'

- 3 L.E. 3 "Fat. (Q.) A woman. (Q.) Yes. (Q.) Eating too much food."
- 3 ST.E. 2a "It means when somebody's real fat and they can't walk properly because they've got such a fat tummy. (Make up :-) Isn't that lady's tummy 'obese' ? (Q.) Because they would be fat. (Q.) By eating such a lot of food. (Q.) They can't walk properly because their fat tummy wobbles from side to side. (Else difficult ?) No, "
- 3 ST.E.R. 2a "Fat. (Make up :-) Sometimes grandmas are fat. (Q.) Tummy."
- 2 ST.E. 2a "It means it can chase you. Well, if you're going on the road and you see an 'obese' woman and if it chases you you can send the police and if it is only little then you can put her in prison. (Q.) Because they'd be fat. (Q.) By eating too much. (Q. means ?) A fat woman. (Q.) Just a woman."
- 1 BR.D. 2a "Fat; old, I think. A giant is 'obese'. (Q.) Only giants and some big old animals in the olden days, some big horrid animals."
- 0 ST.D. 2a " 'Obese' woman. (Q.) Wicked, green or yellow, like a witch."
- 0 ST.D. 2a "Horrible. (Make up :-) 'Obese' tiger turned you into something. (Q.) Striped ... (Q.) When somebody looks horrible. (Q.) By the face. (Q.) Hairy face. (Q.) Don't shave."(!)
- 0 BR.D. 2a "Horrible. (Make up :-) My James keeps hitting me - every day he pushes me. He hits me and I think he's 'obese'. My sister is - she's horrible. Every night when I'm in bed she spits at me. (Q.) Horrible to yer - like when they're greedy and won't let you have any sweets and push you out of the house. (Q.) If they don't do what they're told, the owners of the house think they're 'obese'."
- 0 BR.D. 2a "I don't know. (G) A big creature - an animal. (Make up :-) I saw a big 'obese' bear when I went to the zoo. (Q. What sort of bear ?) A wild bear. (Q.) It would be hairy and growling. Miss F. told us a story about a witch that turned a prince into a friendly bear. (Q. 'Obese' ?) No - it was a nice bear, so it wasn't 'obese', it wasn't a bad bear." (Proceeds to tell story to "happy ever after".)

'Embellish'

- 3 ST.D. 2a "My mummy made me a dress 'embellished' with laces. (Q.) The walls. (Q.) Decorations."



- 3 ST.E.R. 2a "Make gold patterns. (Q.) Put gold patterns on it. (Q.) A Christmas tree. (Q.) A coat. (Q. Does it have to be gold ?) No. (Q.) A cake. (Q.) Put some sweets on. (Q.) To make it look nice."
- 3 BR.D. 2a "It means all things are 'embellished' and things like silver and gold. (Make up :-) Yesterday my mummy 'embellished' a cake with some silver icing and little round balls and they were all colours. (Before she'd seen the picture !) ... (Q. At school ?) We 'embellish' masks with cloth and paper and crayons."
- 2 ST.E. 2a "It's too nice on your house - too pretty. (Make up :-) Your hair is 'embellished' by some blue ribbons. (Q.) Your dress, your shoes with red ribbons, your coat with blue ribbons. (Election fever ! Q.) Flowers, leaves, animals - pictures of them. Don't know. (Q. Before ?) Just like a white dress or blue one. (Q. After ?) Nice. (Q. School ?) Don't know."
- 1 ST.E.R. 2a "My daddy's got some 'embellished' paints. (Q Means ?) Nice. (Q.) Wood. (Q.) Paint it. (Q.) Dress. (Q.) Start again with wool and cotton and that. (Q. Make it again ?) Yes ... (Q. Food ?) Put icing on it and that - cakes, I don't mean dinners. (Q. Means ?) Nice."
- 1 BR.D. 2a "Bright colours. My little sister always gets a bright ball. It's a beach ball. (Q.) Embroidery. (Q.) Woollen hat. (Q.) By dyeing in colours so that you make you don't have to make it all the same colours because you might want patterns on it. I've seen some sheep skins outside a shop and they were 'embellished' - they were red and orange and yellow. (Q.) Sometimes anoraks."
- 0 L.E. 3 "That means your belly. When you get too 'embellished'. (Q.) Don't know."
- 0 ST.E.R. 2a "Bells."
- 0 ST.E. 2a "If your shoes was dirty you'd have to clean them. (Q.) Shining things up and making them get 'embellished'. (Q.) A side-board. (Q.) With polish."

'Inclement'

- 3 L.E. 3 " 'Inclement' weather. (Q.) Raining and snowing. (Q.) No, windy. (Q.) Horrible weather."
- 3 BR.D. 2a "It means the bad, horrible weather, when it's raining. If you want to go out in the 'inclement' weather, you have to have hat, raincoat and wellies. (Make up :-) To-day - one day we went out and it was raining and snowing and we had to go in the horrible 'inclement' weather and we had to wear anorak and duffel coat."
- 2 BR.D. 2a "The weather is 'inclement' 'cause there's snow on the ground. (Q.) Rain, windy. (Make up :-) When the weather is 'inclement' and you can't go out to play."
- 2 ST.E. 2a "Bad. (Make up :-) If you're going out to play or to Grandma's then you have to put your coat, hat and scarf



on because there's 'inclement' weather. (Q) Showery days. (Q Other weather ?) No ... April showers."

- 2 ST.E.R. 2a "Rain, get wet, (Q) or snow, or thunder. (Q) Weather."
- 1 ST.D. 2a "Winter. (Make up :-) When it's snowing. When it's cold. (Make up :-) When it's dark."
- 0 ST.E.R. 2a "Read." (Perseveration from earlier word, book)
- 0 ST.D. 2a "Don't know. (G) Clement people. (Q) Old people."

These examples, taken from the Oral responses of the five groups from Experiment I (a), Part 1, illustrate many of the features displayed in the Oral and Pointing-oral responses, throughout the Experiments. When all the responses were considered together, strategies of learning were sometimes revealed, which were not apparent initially, with the responses of only fifty children available. For this reason, discussion of the responses is postponed, and considered in Chapter Four on Qualitative Analysis, on page 177.

#### Post-test Data Results. Experiment I (a), Part 1

First, the results of the first part of the Experiment were analysed by one-way analysis of variance. The control group was left out of the analyses because the children made only  $7/60$  scores on the Pointing Test, and  $1/360$  on the Pointing-oral and Oral Tests.

A summary of the analysis of variance for the five other groups is shown in Table 3.2, for the Oral; Table 3.3 for the Pointing; and Table 3.4 for the Pointing-oral data. Hartley's test for Homogeneity of Variance (in Winer 1962) showed that the largest  $F$  max for these analyses is 6.2 which is within the prescribed limits for  $k = 5$ ,  $n = 9$  (Table  $F$  max = 7.11 at .05 level).

The analyses showed that the differences between groups were not significant for the Oral data, but were highly significant for the Pointing and Pointing-oral data, ( $F = 6.65$ , significant at .001 level for Pointing, and  $F = 7.99$ , significant at .001 level for Pointing-oral).

There were probably two reasons for this. The first was that the Oral Test would be the most difficult because there is nothing to help a child

TABLE 3.2

One-way analysis of variance on Oral data, for Part 1

Group	N	Mean	SS	Variance	
ST.E.	10	6.40	274.4	30.49	
ST.D.	10	3.70	44.1	4.90	
ST.E.R.	10	3.40	112.4	12.49	
BR.D.	10	6.90	236.9	26.32	
L.E.	10	3.30	116.1	12.90	
SOURCE	SS	DF	MS	F	P
TREATMENTS	123.72	4	30.93	1.78	NS
ERROR	783.90	45	17.42		
TOTAL	907.62	49			

TABLE 3.3

One-way analysis of variance on Pointing data, for Part 1

Group	N	Mean	SS	Variance
ST.E.	10	4.30	16.9	1.88
ST.D.	10	3.70	20.1	2.23
ST.E.R.	10	2.50	4.5	0.50
BR.D.	10	4.60	8.4	0.93
L.E.	10	2.30	20.1	2.23

SOURCE	SS	DF	MS	F	P
TREATMENTS	43.28	4	10.82	6.65	.001
ERROR	73.20	45	1.63		
TOTAL	116.48	49			

TABLE 3.4

One-way analysis of variance on Pointing-oral data, for Part 1

Group	N	Mean	SS	Variance
ST.E.	10	11.70	214.10	23.79
ST.D.	10	7.10	108.90	12.10
ST.E.R.	10	6.30	62.10	6.90
BR.D.	10	11.80	63.60	7.06
L.E.	10	5.00	116.00	12.89

SOURCE	SS	DF	MS	F	P
TREATMENTS	401.08	4	100.27	7.99	.001
ERROR	564.70	45	12.55		
TOTAL	965.78	49			

remember a definition he partly knows. The second reason is that young children find it very difficult to give definitions, even of words they know well. This point is made in the instructions for the Oral Vocabulary Test in both the Binet and the W.I.S.C. manuals, and their scoring is consequently lenient for five-year-olds (see Terman and Merrill 1964 and Wechsler 1959 and the discussion in the Introduction to Method on page 50 ).

Inspection of the means for each set of data, revealed that in each case the groups fell into two clusters, ST.E. with BR.D., and ST.D. with ST.E.R. and L.E.

There was no significant difference between ST.E. and BR.D. on any of the tests ( $F = 0.04$  N.S., oral;  $F = 0.28$  N.S., Pointing; and  $F = 0.003$  N.S., Pointing-oral). This suggested that bright I.Q. children were able to overcome the handicap of the difficult version of the stories, and learn as well as standard I.Q. children with easy stories. This notion was supported by the difference between ST.D. and BR.D. groups. The difference reached .005 level of significance ( $F = 11.53$ ) on the Pointing-oral Test, and the trend was there for the Oral Test ( $F = 3.28$ , significant at .1 level), although there was no significant difference on the Pointing Test.



The difference between BR.D. and ST.D. scores was repeated in the difference between ST.E. and L.E. Although L.E. children had the same stories as ST.E. children, they were not able to learn the words from the stories as well as ST.E. children. The differences between ST.E. and L.E. were as follows :- Pointing,  $F = 8.96$ , significant at .01 level; Pointing-oral,  $F = 12.23$ , significant at .005 level; Oral,  $F = 2.21$ , not significant.

These differences between low, standard and bright I.Q. groups, supported the hypothesis that P.P.V.T. I.Q. would be related to the acquisition of difficult vocabulary.

There was some support for hypothesis 2a, that an easy context would be more conducive to the learning of difficult words than a difficult context, in the comparison of ST.E. with ST.D. children. In each test, ST.D. children did less well than ST.E. children. The difference reached significance, nearly .01 level, only for the Pointing-oral Test ( $F = 5.90$ ). (For the Pointing test,  $F = 0.81$ , not significant, and for the Oral,  $F = 2.06$ , not significant.) Thus, the difficult version of the stories probably detracted from the acquisition of the difficult words, for the ST.D. group.

Further evidence about the effect of context on acquisition of words was available in the comparison of ST.E. with ST.E.R. children. The ST.E.R. group did surprisingly badly, and significantly less well than the ST.E. group. For the Pointing Test,  $F = 16.2$ , significant at .005 level; for the Pointing-oral Test,  $F = 9.50$ , significant at .01 level; and for the Oral Test,  $F = 0.05$ , insignificant. There were several possible reasons for the poor performance of ST.E.R.

(1) The six contexts repeated five times, for each word, might not give sufficient information about the words to allow children to clarify their ideas about the words. This possibility will be explored in Experiment III, with the N.ST.E.R. (new standard easy repeat) group.

(2) The particular two stories chosen for the repeat condition in Experiment I (a), may be by chance, inappropriate, in not containing sufficient variety of context for the easier of the "difficult" words. Two different

stories were repeated for another group of standard I.Q. children, in Experiment I (b), in the ST.E.R.T. group (standard easy repeat two), to test this suggestion. Further evidence about this possibility was revealed through Experiment I (a) Part 2, the replication.

(3) The particular two stories chosen for the repeat condition may not have been interesting enough to bear repeating five times each. There was no evidence in the children's behaviour to suggest that this could be the case. However, the ST.E.R.T. group would to some extent check this possibility.

(4) The easy condition might have been too easy to bear repetition. In this case, a standard group hearing the same two stories in the difficult version (ST.D.R.), would show whether more interest, and better learning, would be generated by the hearing of difficult instead of easy versions. Although the ST.D. group had done less well than the ST.E. group, it may be that the repetition of the difficult versions would give children the opportunity to make the most of what they did understand.

#### Summary of results of Experiment I (a), Part 1

Although numbers in each group were small ( $N = 10$ ) the evidence was sufficient to clarify some points.

Hypothesis 1. In the first place, it is clear that some young children can learn very difficult words without the aid of a physical referent or picture. Children from every group except ST.C., learned some of the difficult words to some extent. This suggests that it is the contexts in which such words are usually heard, which affects their acquisition, rather than the maturational level of the child.

Hypothesis 2. There is some evidence to support the suggestion that the learning of difficult words depends on the contexts in which the difficult words are heard. However, differences between ST.E. and ST.D. were not large enough to be significant on each test, and such differences may have been due to chance circumstances at a particular school. Similarly, the ST.E.R. results were suggestive. The replication will throw light on these problems.



Hypotheses 3, 4, and 5 These are considered in the discussion of the complete results for Experiment I (a), where numbers are large enough to make results of correlation analyses more meaningful.

Experiment I (a) Part 2 (Replication)

The Experiment was repeated, for reasons explained in the section on Procedure (page 79). The method used was exactly the same as that described for Experiment I (a) Part 1.

Results of "basic" groups, using Part 1 and Part 2 (replication) data

Observation of the means showed that the results from School 1 followed those from School 2a, although they seemed to be rather higher.

The combined results from these two schools were analysed using a two-way analysis of variance. Summaries of the analyses are given in Tables 3.5, 3.6, and 3.7.

TABLE 3.5

Two-way analysis of variance on combined Part 1  
and Part 2 (replication) Oral data

	ST.E.	ST.D.	ST.E.R.	BR.D.	
School 2a					
Mean	6.40	3.70	3.40	6.90	
School 1					
Mean	10.0	5.80	6.00	7.60	
Source	SS	DF	MS	F	P
Between schools	101.25	1	101.25	7.17	.01
Between groups	189.05	3	63.02	4.47	.01
Schools/groups	21.85	3	7.28	0.52	NS
Within cell	1015.80	72	14.11		
Total	1327.95	79			

F max = 6.92. Permitted F max = 8.95, (K = 8, n = 9). Data are homogeneous.



TABLE 3.6

Two-way analysis of variance on combined Part 1 and  
Part 2 (replication) Pointing data

	ST.E.		ST.D.	ST.E.R.	BR.D.
School 2a					
Mean	4.30		3.70	2.50	4.60
School 1					
Mean	4.80		3.70	3.40	4.20
Source	SS	DF	MS	F	P
Between schools	1.25	1	1.25	0.99	NS
Between groups	32.30	3	10.77	8.54	.001
Schools/groups	4.85	3	1.62	1.28	NS
Within cell	90.80	72	1.26		
Total	129.20	79			

F max = 4.47. Permitted F max = 8.95, (K = 8, n = 9). Data are homogeneous.

TABLE 3.7

Two-way analysis of variance on combined Part 1 and  
Part 2 (replication) Pointing-oral data

School 2a	ST.E.	ST.D.	ST.E.R.	BR.D.	
Mean	11.70	7.10	6.30	11.80	
School 1					
Mean	12.30	10.00	8.70	11.80	
Source	SS	DF	MS	F	P
Between schools	43.51	1	43.51	3.86	.05 almost
Between groups	311.74	3	103.91	9.21	.001
Schools/groups	29.14	3	9.71	0.86	NS
Within cell	812.50	72	11.28		
Total	1196.89	79			

F max = 3.45. Permitted F max = 8.95, (K = 8, n = 9). Data are homogeneous.

When the data from the two schools, 2a and 1, were combined, giving  $N = 20$  for each group, the difference between groups was significant for the Oral data ( $F = 4.47$  significant at  $.01$  level) and very significant for the Pointing and Pointing-oral data, ( $F = 8.54$  and  $F = 9.21$  both significant at  $.001$  level).

Difference between schools

The difference between schools was also significant on two tests. On the Oral data,  $F = 7.17$ , significant at  $.01$  level; for the Pointing data,  $F = 0.99$ , not significant; and on the Pointing-oral data,  $F = 3.86$ , significant at  $.05$  level, almost. This difference between schools, given that the groups were matched for age, and for verbal P.P.V.T. I.Q. was quite unexpected. Subsequent experiments demonstrated this to be an important difference, invariably found. Several reasons could account for it, and these are investigated in Chapter Five, on the difference between schools (page 218).

Difference between groups

The results for the difference between groups for the combined data, support those observed for the data from the first school. Again, the groups fall into two clusters. There is no significant difference between ST.E. and BR.D. ( $F = 0.45$ , insignificant, for Oral;  $F = 0.18$ , insignificant, for Pointing; and  $F = 0.03$ , insignificant, for Pointing-oral data).

However, with  $N = 20$ , the differences between ST.E. and ST.D., and ST.D. and BR.D. are significant. The differences are as shown in Table 3.8.

TABLE 3.8

Summary of two-way analyses of variance showing differences between ST.E. and ST.D., and ST.D. and BR.D., on combined data from the Oral, Pointing and Pointing-oral tests

$N = 20$ for each group.	ST.E. versus ST.D.	ST.D. versus BR.D.
Oral	$F = 8.64, P = .01$	$F = 5.70, P = .025$
Pointing	$F = 18.96, P = .001$	$F = 4.18, P = .05$
Pointing-oral	$F = 8.62, P = .01$	$F = 10.86, P = .005$



These results strongly suggest that the difficult version of the stories made standard I.Q. children learn less well than standard I.Q. children with the easy version. Also, bright I.Q. children were able to overcome the handicap of the difficult version, and do as well as standard I.Q. children with the easy version, and significantly better than standard I.Q. children with the difficult version.

In other words, hypotheses 2 and 4 were supported. Ease of acquisition of difficult words is, at least in part, dependent on the difficulty of the contexts in which the words are heard, and on the verbal I.Q. of the child.

The ST.E.R. group again did badly compared with the others as can be seen by inspection of the means in Tables 3.5, 3.6, and 3.7. Table 3.9 compares ST.E.R. data with ST.E. data.

TABLE 3.9

Summary of two-way analyses of variance on combined

ST.E.R versus ST.E. data

N = 20 for each group.	ST.E.R. versus ST.E.
Oral	F = 7.10    P = .025 *
Pointing	F = 4.65    P = .05
Pointing-oral	F = 1.17    P = NS

\* almost .01

With the larger groups of N = 20, the ST.E.R. group again did significantly less well than the ST.E. group, on both the Oral and the Pointing Tests. Possible reasons for this result were mentioned on page 89. Inspection of the replication data revealed a further possibility. The mistakes showed that 7/10 children at School 1 in the ST.E.R. group, confused 'illuminate' with 'embellished'. This was because the relevant contexts in the story 'David', which was repeated 5 times, allowed confusion through a christmas tree which was both 'illuminated' and 'embellished' by fairy lights. Some children in other groups showed similar confusion on the Oral Test, at School 1, 4/10 ST.E., 4/10 ST.D. and 4/10 BR.D. Children at School 2a tended to say "don't know" and probably had no idea, rather than the conceptual confusion manifest at School 1. Only 4/40 children



at School 2a showed confusion between 'illuminate' and 'embellished'.

A few examples of the children's confused responses follow.

- ST.E.R. 2a "The Christmas tree was 'illuminated' with silver patterns and balls, and a fairy at the top. (Q. How would you 'illuminate' something ?) The factory would make it. (Q. What else is 'illuminated' ?) A pattern - a Christmas tree pattern."
- ST.E.R. 2a "My sister had a 'luminate' dress. (Q. Like ?) Pretty."
- ST.E.R. 2a "You hang nice things up. (Q. Like ?) Christmas balls. (Why ?) Nice and look nice. (Do ?) Make the bedroom nice."
- ST.E.R. 1 "The fairy light 'illuminated'. (Like ?) Flashing. (Q. Other things ?) Stars, sun. (How ?) It shines. Diamonds 'illuminate'-shine. (Do ?) Mummy 'illuminates' the Christmas tree. She puts fairy lights on and a star at the top."
- ST.E.R. 1 "Something what's pretty. And my mother bought a very pretty dress 'illuminated' with beads and lots of colours. (Else ?) A pretty hat 'illuminated' with beads and lots of colours. Wallpaper with coloured beads on the end ... make it pretty with with gold and silver, write some nice flowers on it, and beads in round circles."
- ST.E.R. 1 "Well, it means it's very pretty. (What ?) A Christmas tree. (Like ?) By fairy lights and all the decorations. (Do ?) Make it pretty."

Further discussion of the kinds of semantic confusion shown by the children will be found on page 209, where evidence is drawn from all the Experiments.

#### Results of L.E. groups

The results of the L.E. group were left out of the two-way analysis of variance in the first place, because Schools 3 and 2c were used, and it was not desirable to confound a difference between Schools 2a and 1, with additional results from two more schools. Tables 3.10, 3.11, and 3.12, show the summary of one-way analyses of variance on the combined L.E. data, versus the ST.E. data.

The difference between ST.E. and L.E. was highly significant ( $.001$ ) for each test, supporting the hypothesis that P.P.V.T. I.Q. is related to the acquisition of vocabulary.

TABLE 3.10One-way analysis of variance on combined ST.E. versus L.E. Oral data

Group	N	Mean	SS	Variance
ST.E.	20	8.20	477.20	25.12
L.E.	20	2.85	168.55	8.87

Source	SS	DF	MS	F	P
Treatments	286.23	1	286.23	16.84	.001
Error	645.75	38	16.99		
Total	931.98	39			

TABLE 3.11One-way analysis of variance on combined ST.E. versus L.E. Pointing data

Group	N	Mean	SS	Variance
ST.E.	20	4.55	30.95	1.63
L.E.	20	2.30	38.20	2.01

Source	SS	DF	MS	F	P
Treatments	50.63	1	50.63	27.82	.001
Error	69.15	38	1.82		
Total	119.78	39			

TABLE 3.12One-way analysis of variance on combined ST.E. versus L.E. Pointing-oral data

Group	N	Mean	SS	Variance
ST.E.	20	12.00	312.00	16.42
L.E.	20	4.80	223.20	11.75

Source	SS	DF	MS	F	P
Treatments	518.40	1	518.40	36.81	.001
Error	535.20	38	14.08		
Total	1053.60	39			

Difference between words

Tables 3.13, and 3.14, show summaries of three-way analyses of variance, and a highly significant difference between words, at the .001 level, for both Oral and Pointing-oral data.

TABLE 3.13

Three-way analysis of variance on combined Oral data, from the

"basic" groups (ST.E., ST.D., ST.E.R. and BR.D.)

Source	SOS	DF	MS	F	P
Between Subjects	221.3250	79			
A Schools	16.8750	1	16.8750	7.1766	.01
B Treatments	31.5083	3	10.5028	4.4666	.01
AB	3.6417	3	1.2139	0.5162	
Error Between	169.3000	72	2.3514		
Within Subjects	540.0000	400			
C Words	84.7250	5	16.9450	15.3387	.001
AC	6.1250	5	1.2250	1.1089	
BC	36.4917	15	2.4328	2.2022	
ABC	14.9583	15	0.9972	0.9027	
Error Within	397.7000	360	1.1047		

TABLE 3.14

Three-way analysis of variance on combined Pointing-oral data, from the

four "basic" groups (ST.E., ST.D., ST.E.R., and BR.D.)

Source	SOS	DF	MS	F	P
Between Subjects	203.0000	79			
A Schools	6.5333	1	6.5333	3.4344	almost .05
B Treatments	53.8500	3	17.9500	9.4359	.001
AB	5.6500	3	1.8833	0.9900	
Error Between	136.9667	72	1.9023		
Within Subjects	631.6667	400			
C Words	108.2417	5	21.6483	17.1422	.001
AC	7.6917	5	1.5383	1.2181	
BC	26.8750	15	1.7917	1.4187	
ABC	34.2250	15	2.2817	1.8067	
Error Within	454.6333	360	1.2629		



Tables 3.15, and 3.16, show summaries of the results of a comparison of means of words, using Tukey's method (Winer 1962).

TABLE 3.15

Comparison of means of words, using combined Oral data, from the four "basic" groups, and Tukey's method

		precarious	encumbered	illuminate	obese	embellish	inclement
		.4125	.7	.9875	1.112	1.275	1.737
precarious	.4125		NS	.05	.01	.001	.001
encumbered	.7			NS	NS	.05	.001
illuminate	.9875				NS	NS	.001
obese	1.112					NS	.01
embellish	1.275						.05
inclement	1.737						

TABLE 3.16

Comparison of means of words, using combined Pointing-oral data, from the four "basic" groups, and Tukey's method

		precarious	illuminate	obese	embellish	encumbered	inclement
		.8375	1.387	1.75	1.8	1.825	2.4
precarious	.8375		.01	.001	.001	.001	.001
illuminate	1.387			NS	NS	NS	.001
obese	1.75				NS	NS	.01
embellish	1.8					NS	.01
encumbered	1.825						.01
inclement	2.4						

From Tables 3.15 and 3.16, it can be seen that 'inclement' is by far the easiest word of the six, achieving significantly higher learning scores than any other word, on both the Oral and the Pointing-oral Tests.

The most difficult word, as was hypothesised, is 'precarious', which is

significantly more difficult than every other word on the Pointing-oral Test, and significantly more difficult than every word except 'encumbered' on the Oral Test.

The only other significant difference is that between 'encumbered' and 'embellish' on the Oral Test. 'Embellish' is significantly more easily learnt than 'encumbered' as it achieves a significantly higher Oral score. On the Pointing-oral Test, however, the position is reversed, though not significantly so, with 'encumbered' achieving a very slightly higher learning score than 'embellish'.

Qualitative analysis of words

Although the Chapter on qualitative analysis examines altogether the erroneous responses with a view to deducing the strategies used by the children, inspection of the data revealed three sources of error which should be mentioned at this stage.

The first, the confusion between 'illuminate' and 'embellish' was discussed earlier (see page 95).

The second relates to the word 'encumbered'. The pro-formas showed that of the few children who had some idea of the meaning of 'encumbered' many made the mistake of thinking that 'encumbered' means 'heavy'. Some examples of these erroneous responses follow, which may be compared with the examples of better responses on page 188.

Examples of "'encumbered' means heavy"

<u>Score</u>	<u>Test</u>	<u>Group</u>	<u>School</u>	
2	Oral	ST.E.	1	"Things are heavy (Make up :-) My Daddy was ' <u>encumbered</u> ' by some heavy sacks. (Q.) Give them some heavy things to carry."
2	Oral	ST.E.	2a	"You'd have a bag and it's heavy. (Make up :-) You could be ' <u>encumbered</u> ' by some real big birds. (Q.) They'd be going down a lot. (Q.) 'Cause there's something heavy. (Q) Give them something that was heavy."
1	Oral	BR.D.	1	"Full, full. (Q.) Carrying something. (Q.) He'd have a lot of things. (Q.) ... Packets of things. (Q.) Heavy. (Q.) Give them a lot of things - a pair of ladders. (Make up:-) I saw a man ' <u>encumbered</u> ' (Q.) with a pair of ladders."

- 2

P.-oral

ST.E.

1

" 'Cause he's got a sack on his back. (Q.) Heavy load. (Q.) All the things from my grandpa's house. (Q.) Sideways, because I've got one of the shopping baskets on one side with all the things in."
- 2

P.-oral

BR.D.

2a

" 'Cause it's too heavy. (Q.) It's too heavy for you to carry."

In Experiment II, where the problem posed is whether children of standard I.Q. can learn the two most difficult words, 'encumbered' and 'precarious', improved local contexts have been devised. For 'encumbered' these emphasise the notion of 'being slowed down', and reduce the number of times that 'a heavy load' is mentioned. The revised contexts may be seen on page 363 of the Appendix.

The third source of error revealed by inspection of the pro-formas, arose from the examination of the homophonic responses on the Pre- and Post-tests.

It seemed that children who gave homophonic responses (such as 'cucumber' for 'encumbered'), on the Pre-test, were less likely to give correct responses on the Post-test, than children who said 'don't know' on the Pre-test.

This suggestion was tested by analysis using  $\chi^2$ . Tables 3.17 and 3.18 show the results of the  $\chi^2$  analysis for the Oral and Pointing-oral Post-tests.

TABLE 3.17

$\chi^2$  analysis of Post-test Oral responses, of children giving  
'homophonic' or "don't know" responses on the Pre-test

	Post-test		Pre-test
	Any other response	Correct response	
Homophones	43 (38.23)	14 (18.77)	57
"Don't know"	238 (242.7)	124 (119.23)	362
	281	138	419

$\chi^2 = 2.09$  Not significant for 1 degree of freedom (Winer 1962).



TABLE 3.18

$\chi^2$  analysis of Post-test Pointing-oral responses of children

giving 'homophonic' or 'don't know' responses on the Pre-test

	Post-test		Pre-test
	Any other response	Correct response	
Homophones	50 (32.92)	31 (48.08)	81
"Don't know"	128 (145.08)	229 (211.92)	357
	178	260	438

$\chi^2 = 15.38$   $p = .001$  for 1 degree of freedom.

While the analysis showed that there was not a significant difference on the Oral Post-test between children giving homophonic or "don't know" responses on the Pre-test, on the Pointing-oral Post-test, the difference was highly significant,  $\chi^2 = 15.38$  significant at the .001 level. Possible reasons for this significant result are discussed on page 201, when data from all the Experiments is considered.

#### P.P.V.T. I.Q.

Table 3.19 shows a summary of the correlations between P.P.V.T. I.Q. and the three experimental tests. Two sets of correlations were computed, in order not to confound treatment with I.Q. range. The P.P.V.T. I.Q.s and results of the ST.D. and BR.D. groups were pooled, giving an I.Q. range of 100 - 145, because these two groups, of differing I.Q. level, heard the same difficult stories. The results of the two groups which heard the easy stories, of two I.Q. levels, L.E. and ST.E., were pooled, giving an I.Q. range of 80 - 119.

The correlations, though not very high, are significant for both sets of data, on both the Oral and the Pointing-oral Tests. They suggest that there is indeed a relationship between level of P.P.V.T. I.Q., and ability to learn the difficult words, under both experimental conditions.

TABLE 3.19

Summary of Pearson's Product Moment Correlations (Guilford 1965)between P.P.V.T. I.Q. and Test scores

		r	N	P
ST.D. + BR.D.	Oral	.3123	40	.05
I.Q. Range				
100 - 145	Pointing-oral	.3668	40	.05
	Pointing	.2812	40	NS
L.E. + ST.E.	Oral	.4787	40	.01
I.Q. Range				
80 - 119	Pointing-oral	.5611	40	.01
	Pointing	.2772	40	NS

The predictions were, on the whole, confirmed.

Hypothesis 1 Children from every group except the control group learned some of the difficult words. This suggests that it is the context in which such words are usually heard which affects their acquisition, rather than the developmental level of the child.

Hypothesis 2a, is supported by the results. ST.E. achieved higher scores than any other group except BR.D. where the difference was not significant. Thus a context suited to the child's understanding facilitates the acquisition of difficult words. Also, L.E. learned the words less well than ST.E., suggesting that the easy context was more difficult for these children. Similarly, the BR.D. group did not appear to suffer from having the difficult context, while ST.D. did.

It remains to be seen whether the bright children, given easy stories (BR.E.) would achieve even higher scores than with the difficult stories (BR.D.). However, the problem of ceiling effect arises here, as for some words such as 'inclement' and 'embellished', this group (BR.D.) is already near to making the highest score possible.

Hypothesis 2b, is supported in that ST.E. scored significantly higher than ST.E.R. The protocols suggest that this is because variety of local context (i.e. the three sentences surrounding the difficult word) enables a child to refine his concept of the difficult word.

However, there are several possible alternative hypotheses which could account for the difference between ST.E. and ST.E.R.

(a) The ST.E.R. children could be bored. They did not appear to be bored. They greeted the reader with the same eager anticipation as the other groups. They did not fidget or interrupt more than the other groups. They did try to join in, as they became familiar with the wording of the two stories. Boredom could arise from two sources -

(i) It could be that the easy versions of the stories were too easy to stand repetition. The children could be listening in a passive,



rote way. (The fact that they tried to join in, using the correct wording could be taken to support this view.) In this case, repetition of the difficult version might command more active attention, (ST.D.R.).

(ii) The second possible source of boredom could be that the particular two stories chosen for repetition were not interesting enough for the children to enjoy hearing them five times each. Selecting two different stories (ST.E.R.T.) would test this suggestion in part.

(b) The joining in was suppressed, because of the need for comparability with the other groups. It may be that this in itself dampened enthusiasm, though it did not appear to do so.

(c) It could be that the particular stories chosen for repetition ('Dancing Shoes' and 'David') contained confusing contexts not present in the other stories. There is some evidence in the confusion between 'illuminate' and 'embellish' that this may be the case (though other groups at School 1 also showed some confusion). A second repeat group using two different stories (ST.E.R.T.) would show whether the confusion is due to particular confusing contexts, or to the general proximity of difficult words, met in an unchanging order, in the repeat condition.

(d) It could be that the particular two stories chosen for the ST.E.R. condition, did not contain sufficient variety of local context to enable children to clarify their ideas about the difficult words. This suggestion could be tested by using two different stories (ST.E.R.T.).

(e) It could be that any two stories do not contain sufficient variety of local context to enable the correct boundaries of difficult words to be perceived. The new standard easy repeat condition (N.ST.E.R.) in Experiment III has been designed to clarify this possibility.

Hypothesis 3, that some words would be easier to acquire than others, is in part supported. 'Precarious' is significantly more difficult to acquire than the other words, and 'inclement' is significantly easier. It may be thought that one possible reason for 'precarious' being found more difficult than the other words, might lie in the number of syllables per difficult word. While 'obese' has only two syllables, 'inclement', 'embellish' and

'encumbered' have three, and 'illuminate' and 'precarious' have four syllables. However, the scores suggest that the words were not acquired in the order of least number of syllables. On the Oral Post-test, 'inclement' and 'embellish' were acquired more easily than 'obese' (see Table 3.15), with a significant difference between 'inclement' and 'embellish'. On the Pointing-oral Post-test, 'inclement', 'embellish' and 'encumbered' were more easily acquired than 'obese', the difference between 'inclement' and the others being significant (see Table 3.16). 'Precarious' was most difficult on both tests, but for the Oral Post-test, 'encumbered' was next in difficulty, whereas for the Pointing-oral Post-test, 'illuminate' took this position. During the testing, it was noted that most children were able to pronounce the difficult words, whether or not they knew their meanings.

A more likely explanation to account for the observed difference in ease of acquisition of words, is the conceptual level of the words. There is no straightforward synonym for 'precarious', the nearest being words like "dangerous" or "risky", and this is probably why 'precarious' is more difficult to learn than the other words.

'Inclement' not only has a synonym readily available to five-year-olds, in the form of "horrible weather", but is specific to very limited situations, being confined entirely to types of weather. This is probably why it is easier than the other words having synonyms available to five-year-olds.

Some light is thrown on how children think about new words by the mistakes and confusions apparent in the pro formas. These are discussed in the Chapter on Qualitative Analysis on page 177.

Hypothesis 4, is supported. There is a relationship between P.P.V.T. I.Q. and the acquisition of difficult words. L.E. did less well than ST.E., and ST.D. did less well than BR.D. Tables 3.8, and 3.10, 3.11, and 3.12, show that ST.D. scores are significantly different from BR.D. scores on all tests, and L.E. scores are significantly different from ST.E. scores on all tests.

Pearson's Product Moment correlations show significance at .05 level for ST.D. plus BR.D., and at .01 level for L.E. plus ST.E. data. The small



correlations are due to the fact that there are large individual differences in scores attained within groups. (Table 3.19).

The relationship between P.P.V.T. I.Q. and acquisition of vocabulary is further examined with a larger I.Q. range, on page 143.

Hypothesis 5 remains open. Although there is evidence to show that the repeat groups do less well than the other standard I.Q. groups, the reason for this is not clear. It is not possible to say whether it is repetition as such, that affects acquisition, or whether any of the possibilities previously suggested, are causal, independent of the repetition element. Experiment III is designed to throw light on this question.

### Unexpected results

#### Difference between schools

Although care had been taken to replicate Experiment I (a) at another school, it was not expected that the results would show a consistent difference from those of the first school, since the groups had been matched for age, P.P.V.T. I.Q. and sex. Many possible explanations were considered. Among these, one was tested in Experiment I (b). Later experiments were designed to investigate the problem, and, so pervasive did it prove to be, that a Chapter has been devoted to its consideration (see page 218).

#### "Homophonic" versus "don't know" responses

The highly significant difference in probability of achieving a correct Post-test Pointing-oral response, between children giving homophonic or "don't know" responses on the Pre-test could arise for two possible reasons.

The first, and most obvious reason, is that children who give homophonic responses to a word they do not know, are likely to be using ikonic rather than symbolic modes of thinking, and therefore will concentrate on the sensory features of the new word, rather than on its use in context. If this is a child's habitual mode of attack, when confronted with new difficult problems to solve, then he will be unlikely to alter his strategy when other modes of attack would be more appropriate.

The second possible reason which may account for the difference in



frequency of Post-test correct responses between children giving homophonic or "don't know" responses on Pre-test, is as follows. In the absence of any clues on which to operate symbolically, a child may use such sensory ones as are available in the Pre-test situation, and respond homophonically. This homophonic response may become associated with the word, and predispose, or "set" the child to respond homophonically when the word is heard again, even though, in the second case, there are other clues about its meaning, on which he could operate at a symbolic level.

One way of testing whether children were being "set" by homophonic responses on the Pre-test, would be to include some of the difficult words on the Pre-test, and not others. It would then be expected that the words not Pre-tested would be given correct definitions, while those Pre-tested and given homophonic responses on the Pre-test, would not be given correct definitions. However, an enormous number of children would be needed for this study. The present Experiment gives some indications of the numbers likely to respond homophonically with considerable frequency. At School 1, 7/40 gave three or more homophonic responses (out of six possible responses) on the Pre-test. At School 2a, the corresponding number was 10/40. Of the 7/40, five made low scores on the Oral Post-test (that is, scores which were below the mean for their group), and only one on the Pointing-oral. At School 2a, four and six, out of ten, made low scores on the Oral and Pointing-oral Tests respectively. However, at School 2a, four children scored below the mean for their group on both the Oral and the Pointing-oral Tests. There was not one case of this at School 1. These relationships are set out in Table 3.20.

One way of interpreting this information, would be to suggest that at School 1, five children are released from the ikonic approach by seeing the pictures, which could be similar to images they may have been forming in their minds during the story-telling. This did not happen at School 2a. In addition, 1/7 children at School 1, and 4/10 at School 2a, were not restricted by their homophonic responses on the Pre-test, but did as well as children who said "don't know" on the Pre-test.

TABLE 3.20

To show how children giving certain numbers of homophonic responses on the Pre-test, react on the Oral and Pointing-oral Post-tests in relation to the mean for their group, (+ = score above mean, - = score below mean)

<u>Child</u>	<u>School</u>	<u>Group</u>	<u>Frequency</u> *	<u>Oral</u>	<u>Pointing-oral</u>
1	1	ST.E.	6	-	+
2	1	ST.D.	5	-	+
3	1	ST.D.	3	-	+
4	1	ST.D.	3	-	+
5	1	ST.E.R.	6	-	+
6	1	ST.E.R.	4	+	+
7	1	ST.E.R.	4	+	-
8	2a	ST.E.	5	-	-
9	2a	ST.E.	5	+	+
10	2a	ST.D.	4	+	+
11	2a	ST.D.	3	+	+
12	2a	ST.D.	5	-	-
13	2a	ST.E.R.	3	-	-
14	2a	ST.E.R.	6	-	-
15	2a	ST.E.R.	4	+	-
16	2a	ST.E.R.	5	+	-
17	2a	BR.D.	4	+	+

\* Frequency = frequency of homophonic responses given on Pre-test out of a possible total of six.

There remain  $\frac{4}{10}$  children at School 2a, who were not stimulated to produce other (pictorial/symbolic) associations to the difficult words by the pictures in the Pointing-oral Test. It is probable that these children would habitually operate ikonically, and therefore, removing the Pre-test



would probably not help these children, as much as it would the others.

There were three children whose rating changed from + to - because their scores either fell considerably (from 10 on the Oral to 4 on the Pointing-oral Post-test, for example), or remained static (4 Oral, 4 Pointing-oral) while the others in their group improved scores on the Pointing-oral Test. This was the usual pattern. Forgetting in the space of time between the two tests, was usually counteracted by the recognition prompting inspired by seeing the pictures (even though none of the pictures was specifically described in the local contexts).

Bruner (1966) quotes some work by Kuhlman which is relevant in relation to children's modes of operating. She found that

"children with high imagery are ..... better at performing a task in which they must learn to associate arbitrary verbal labels with pictures. On the other hand, it is the child with low imagery who excels in a task that requires him to form a concept by recognising the shared attribute of a set of pictures." Kuhlman also discovered that "the inferior conceptual performance of children with imagery preference is a result of their use of surface features in grouping", rather than a result of failure to generalise.

Kuhlman's results seem pertinent to the present Experiment, which requires children to identify features (the semantic boundaries) from a verbal experience, and to relate these to a previously unknown label. It is not surprising that some children are constrained by the immediacy of their sensory perceptions, which are inadequate bases from which to generalise about the meanings of the new words. What may be surprising is that only 4/80 are so constrained, and only 11/80 are partially constrained, when it is considered that writers such as Werner (1948) and N.E. Miller (1934) have shown that children up to age eight or nine prefer perceptual bases for sorting objects. It may be that the verbal media of story telling tends to elicit verbal symbolic modes of thinking, from children as young as five years old. This in itself is an interesting hypothesis.

To return to the problem of the influence of the Pre-test on the Post-test responses. It seems probable that some children would not benefit from the removal of the Pre-test, because their main operational mode is



ikonic. It seems likely also, that some children would benefit from not being "set" to respond homophonically. The question is irrelevant for yet other children, who are able to operate on both ikonic and symbolic levels, as circumstances seem to require.

Because the main purpose of these Experiments was to discover whether , and to what extent, five-year-olds could learn the meanings of new words, it was decided to omit the Pre-test in future experiments to help to provide optimal conditions in which learning could take place.

## Experiment I (b) The questions

Three conditions, ST.E.I., ST.E.R.T. and ST.D.R. were arranged, to investigate specific questions arising from Experiment I (a).

These were as follows.

(1) There was a possibility that the difference between School 1 and the other schools was in part caused by School 1 children knowing that they would be asked about the meanings of difficult words after they had heard the stories. This could have happened if parents had told their children the contents of the letters to parents. The ST.E.I. group was run, at School 2d, to see whether altered instructions informing the children that they would be asked about words, as well as the stories, and a reminder of this before each story, would result in improved learning of the difficult words.

(2) The ST.E.R.T. condition, in which two different stories were repeated five times each, was arranged to explore three possible reasons for the ST.E.R. group's poor scores.

(a) That the two stories previously chosen were not interesting enough to stand repetition.

(b) That the contexts of these two stories were not varied and comprehensive enough to give clear pictures of the difficult words.

(c) That some of the contexts contained in the two stories were confusing to the children. Two different stories would show whether there were still confusions being made.

The next two stories, chosen because they contained a good sample of the available local contexts, for each difficult word, were 'Naughty Jane' and 'The Drummer'.

(3) The ST.D.R. condition was introduced to test the possibility that the ST.E.R. stories had been written too simply for the children to enjoy hearing them repeated. The repetition of the difficult versions might provide sufficient stimulus to encourage children to attend, and to work towards understanding during the repetitions.

## Experiment I (b) Method and procedure

The method and procedure were as described in the "Introduction to

Method", and on page 78 of Experiment I (a). Table 3.21 shows which schools were used for each group.

TABLE 3.21

Experiment I (b) Schools and Groups

<u>School</u>	<u>Group</u>	<u>N</u>
2d	ST.E.I.	10
2a	ST.E.R.T.	10 replicated at School 2c. N = 10.
1	ST.D.R.	10

The ST.E.R.T. condition was replicated at School 2c for three reasons. First, this school seemed comparable with School 1 in I.Q. range, though it was not possible to test the complete age group. Second, there was a convenient standard I.Q. group available at School 2c at the time that a standard I.Q. group for the ST.E.R.T. condition was needed. Third, the superior I.Q. range at School 1 was not apparent at this time. The "basic" group responses from School 1 were in process of being scored, and the superior results of School 1 had not been discovered. At this point in time, there was no reason why replication by matched I.Q. groups should not take place at any other local school.

Results for Experiment I (b)

(1) The results of the ST.E.I. group are discussed fully on page 249 in the Differences between Schools, Chapter Five. The effect of altering the instructions was negligible. On both the Oral and the Pointing-oral Tests, differences between the three groups (ST.E. School 1, ST.E. School 2a, and ST.E.I. School 2d) were not significant. The mean scores of ST.E.I. fell below those of School 1 on the Oral Test, and below those of both Schools 1 and 2a on the Pointing-oral Test. Table 3.22 gives the means and results of one-way analyses of variance for the three groups.

Thus, although it remains possible that some children at School 1 may benefit from knowing in advance that they would be asked questions about words as well as stories, it is also clear that children at School 2d do not significantly improve their scores when given this information.



TABLE 3.22

To show the mean scores achieved by children in the ST.E. groups at Schools 1 and 2a in Experiment I (a), and those in the ST.E.I. group at School 2d, in Experiment I (b), on the Oral and Pointing-oral Tests, with summaries of one-way analyses of variance

<u>ORAL</u>				<u>POINTING-ORAL</u>			
School	Group	N	$\bar{X}$	School	Group	N	$\bar{X}$
1	ST.E.	10	10.1	1	ST.E.	10	12.3
2a	ST.E.	10	6.4	2a	ST.E.	10	11.7
2d	ST.E.I.	10	8.2	2d	ST.E.I.	10	9.7
F = 1.42 NS				F = 1.16 NS			

(2) In general, changing the stories that were repeated made little difference to the scoring of children having the ST.E.R.T. condition. Table 3.23 shows the mean scores for the ST.E., ST.E.R., and ST.E.R.T. groups, for the Oral and Pointing-oral Tests.

TABLE 3.23

To show the mean scores achieved by the ST.E., ST.E.R. and ST.E.R.T. groups, on the Oral and Pointing-oral Tests, with summaries of one-way analyses of variance

<u>ORAL</u>			
School	ST.E.	ST.E.R.	ST.E.R.T.
2a	6.4	3.4	2.5
1	10.0	6.0	4.9*
F = 0.98 NS			
<u>POINTING-ORAL</u>			
2a	11.7	6.3	5.9
1	12.3	8.7	8.4*
F = 0.11 NS			

N = 10 for each group. \* The replication of the ST.E.R.T. condition took place at School 2c.

Inspection of the means shows that on both the Oral and the Pointing-oral Test, the ST.E.R.T. groups did slightly less well than the ST.E.R. groups at both schools. This difference does not approach significance.  $F = 0.98$  NS on the Oral, and  $F = 0.11$  NS on the Pointing-oral Test. Thus, changing the stories has no appreciable effect on the scoring of standard I.Q. groups having the easy repeat condition.

The difference between ST.E. and ST.E.R.T. groups is highly significant, with  $F = 12.3$ , significant at .005 level, for the Oral test, and  $F = 15.9$  significant at .001 level for the Pointing-oral Test. These results are summarised in Table 3.24.

TABLE 3.24

Summary of one-way analyses of variance on combined ST.E. versus ST.E.R.T. scores, for the Oral and Pointing-oral Tests

	combined mean ST.E.	combined mean ST.E.R.T.	N	F	P
Oral	8.2	3.70	20	12.3	.005
Pointing-oral	12.0	7.15	20	15.9	.001

The replication of the ST.E.R.T. condition at School 2c follows the precedent set by School 1, in that replication scores are higher than mean scores at School 2a, even though groups werematched for P.P.V.T. I.Q. and age. However, the difference between ST.E.R.T. at School 2a and ST.E.R.T. at School 2c, is significant at the .05 level on the Oral Test, but is not significant on the Pointing and Pointing-oral Tests. Table 3.25 summarises these results.

TABLE 3.25

Summary of one-way analyses of variance on the ST.E.R.T. groups at Schools 2a and 2c, for the Oral, Pointing and Pointing-oral Tests

	School 2a ST.E.R.T. $\bar{X}$	School 2c ST.E.R.T. $\bar{X}$	F	P
Oral	2.5	4.9	4.42	.05 just
Pointing	2.9	3.7	2.13	NS
Pointing-oral	5.9	8.4	2.59	NS

N = 10 for each ST.E.R.T. group.

(3) The ST.D.R. group did even less well than the ST.E.R. groups. Table 3.26 shows the mean scores and the results of one-way analyses of variance on the Oral and Pointing-oral data. The ST.D.R. scores are as poor as those of the ST.E.R. group at School 2a, and are significantly lower than those of the ST.E.R. group at School 1, on both tests.

TABLE 3.26

<u>Summaries of one-way analyses of variance, on the differences between</u>					
<u>ST.D.R. scores and ST.E.R. scores at Schools 1 and 2a, for the Oral</u>					
<u>and Pointing-oral Tests</u>					
	School	N	Oral Mean	Pointing-oral Mean	
ST.E.R.	1	10	6.0	8.7	
ST.E.R.	2a	10	3.4	6.3	
ST.D.R.	1	10	2.5	7.2	
	ST.E.R. 1	vv	ST.D.R. 1	ST.E.R. 2a	vv ST.D.R. 1
Oral	F = 10.97	P = .005		F = 1.32	P = NS
Pointing-oral	F = 4.86	P = .05		F = 0.47	P = NS

The only case where there was slight, non-significant, improvement of ST.D.R. over ST.E.R. was for the Pointing-oral Test at School 2a. The difficult repeat condition in fact, reduced the repeat scores of children at School 1, to the level of the easy repeat group (ST.E.R.) at School 2a.

Discussion Experiment I (b)

(1) The results of the ST.E.I. group showed that altering the instructions in such a way as to inform standard I.Q. children at School 2d, that they would be asked about words when they had heard the stories, had no appreciable effect in raising their scores.

This acted as an additional control on external sources of information about the meanings of the words, as one would expect this group, knowing that they would be asked about words, to try to discover the meanings from parents and other adults, or, at the very least, to be more receptive to the use of the "difficult" words in normal adult conversation, and to refine their own "pictures"



of the difficult words accordingly. The evidence suggests that neither of these strategies were used.

There remains the possibility that children at School 1 were better able to take advantage of knowing what their task was to be, or, perhaps, had greater opportunity to refine their ideas of the meanings of the "difficult" words, through hearing these used in adult conversation more often than children at School 2a. These possibilities are discussed in the Chapter on the difference between schools, on page 218.

(2) The results of the ST.E.R.T. groups suggests that there were not specially handicapping features in the particular two stories, 'Dancing Shoes' and 'David', chosen for the ST.E.R. groups in Experiment I (a). The two new repeat stories, 'Naughty Jane' and 'The Drummer', did not lead to improved results.

Since it is unlikely that  $4/10$  stories would not be interesting enough to stand repetition, hypothesis (2a) can be dismissed. It remains possible that none of the ten stories would be interesting enough to be repeated five times, but this becomes a problem of repetition per se, rather than of particular stories being inadequate.

Again, hypothesis (2b) can be dismissed insofar as it applies to particular stories. It may be true that no two of the ten stories, contain enough varied and comprehensive local contexts to enable children to extract the meanings of the difficult words from them. The problem then becomes is it possible to devise six local contexts for each "difficult" word, within two stories, which will enable standard I.Q. children to learn the words. This when the stories are repeated five times each, is tested in Experiment III in the N.ST.E.R. groups.

Only  $4/20$  children in the ST.E.R.T. groups confused 'illuminate' with 'embellish'. Three of these were at School 2c. This compares with  $7/10$  children in the ST.E.R. group at School 1. There is, therefore, some evidence to support hypothesis (2c), that the particular story 'David', chosen for the ST.E.R. condition, contained local contexts which were more likely to

lead to confusion, than were those in other stories. Even so, the ST.E.R.T. groups did not hear 'David', yet there is still a little evidence of confusion. It is probable that the concepts of 'illuminate' and 'embellish' are closer than at first seems apparent, in certain contexts. For example, people do use lights, lamps and candles, both to 'illuminate' and to decorate, and this is reflected in the stories. The new versions of the stories, written for Experiment III, attempt to reduce the proximity of the two concepts.

Hypothesis (3), that the easy versions of the stories were too easy to hold children's interest when repeated, was tested by the ST.D.R. condition. Standard I.Q. children heard the difficult versions of the ST.E.R. stories ('Dancing Shoes' and 'David'). The results are clear. The scores are reduced further when the difficult versions are used. While it is possible that versions of intermediate difficulty would hold interest and lead to better scores, it is more likely that it is factors other than the easiness of the general context which are causing the repeat groups to do so badly.

Such factors could be as follows.

1. The repeat condition may be always boring, simply because the stories are repeated. There is no experimental evidence in the behaviour of the children to support this view. In addition, teachers and parents of young children will be familiar with their demands to hear again and again, sometimes at the same sitting, well loved stories, which become known by heart. Children will even correct the teller if he should presume to alter the context or vocabulary.

Only a positive instance, where children in repeat conditions score as well as do those in the ST.E. groups, would challenge the view that a repeat condition is always boring.

2. There may not be sufficient breadth and variety in six local contexts, to permit the delineation of the difficult words. This possibility is examined in Experiment III.

3. In each story, the six difficult words, appearing three times each, are very close-packed. When ten stories are heard, the words appear in varied orders, giving children the chance to separate out the appropriate features of each. When only two stories are heard, the same order of words is



repeated five times, so that misleading juxtapositions leading to false hypotheses, cannot be tested against counter-evidence by the child. Reducing the number of difficult words, would create more space between words, in each story. It would also reduce the load on the child's memory. The effect of reducing the load, with ten stories, is explored in Experiment II. The effect of improving the local contexts, to give clearer pictures of the difficult words, and to create more space between them, even with the full load, is studied in Experiment III.

#### Summary of Results for Experiment I (a) and (b)

The results suggest

- (1) that all experimental children, including some from the low I.Q. group (L.E.) learned the meanings of the difficult words from the contexts of the stories. The control group failed to learn any of the words.
- (2) that the context in which a new word is heard, affects the ease with which it is acquired. The easy context allowed standard I.Q. children (ST.E.) to perform at almost the same level as the bright children who had the difficult context (BR.D.). Standard I.Q. children hearing the difficult stories (ST.D.) did less well than standard I.Q. children hearing the easy stories (ST.E.). The low I.Q. group (L.E.) learned the words from the easy contexts nearly as well as the standard I.Q. group with the difficult stories (ST.D.). This suggests that the difficult context suppressed the performance of the standard I.Q. children to near the level of the low I.Q. children.
- (3) that words differ in the ease with which they may be acquired. 'Inclement' and 'obese' were learned more easily than 'encumbered' and 'precarious'.
- (4) that verbal I.Q. is related to the acquisition of difficult words. Of the children hearing the easy versions, standard I.Q. (ST.E.) learned better than low I.Q. (L.E.) children. Similarly, where children heard the difficult versions, the bright I.Q. group (BR.D.) surpassed the standard I.Q. group (ST.D.).
- (5) that contrary to expectation the standard I.Q. group which had two easy stories repeated (ST.E.R.) did significantly less well than the



standard I.Q. group with ten easy stories (ST.E.) or the bright group with ten difficult stories (BR.D.) or the standard I.Q. group with ten difficult stories (ST.D.). Altering the stories chosen for repetition (ST.E.R.T.) did not produce improved performance. Using the difficult version of the repeated stories (ST.D.R.) reduced scores still further.

(6) that children of matched P.P.V.T. I.Q., from different schools, perform differently from each other under the same treatment conditions. Altering the instructions (ST.E.I.) did not reduce the difference between schools.

#### Problems raised by results of Experiment I (a) and (b)

(1) Two of the difficult words, 'encumbered' and 'precarious' proved to be difficult for the standard I.Q. children to acquire, for three reasons. In the first place, they have no synonym of easy access to five-year-olds. These words are like those postulated by Brown (1956) "a word we had never heard, standing for a concept we had not formed", for five-year-old children.

In the second place, as will be recalled, the local contexts for 'encumbered' allowed some children to identify the word with 'heavy' instead of forming a new concept of impediment.

Third, the number of new words included in each story meant that these words were heard in close proximity to each other, producing both difficulty in differentiating the boundaries of the words, and a heavy memory load for young children.

Experiment II is designed to provide improved conditions to facilitate the learning of new concepts by standard I.Q. children.

(2) The second major problem raised by the results of Experiment I is that of the difference between schools. While it had been the Clarkes' suggestion that children at different schools would not necessarily behave in the same way, under similar experimental conditions, it was thought that by matching the groups for age, sex and P.P.V.T. I.Q., this difference would be insignificant. The highly significant difference between schools, is the subject of further investigation in Experiment II, and Experiment III, as well as in Chapter Five.

## CHAPTER THREE

### EXPERIMENT II

## EXPERIMENT II

### Investigation of effect of reducing "load" and improving local context, on concept formation

#### Summary

The Experiment had seven main aims :-

- (1) To see whether it would be possible to teach five-year-olds of average verbal intelligence difficult words which may be regarded as new concepts, rather than new synonyms, using the story-reading method.
- (2) To compare the learning ability of five-year-olds matched on the P.P.V.T. and the W.I.S.C. Oral Vocabulary Test from the schools selected because their catchment areas drew on two fairly distinct social classes.
- (3) To compare the learning of the five-year-olds taking part in the present Experiment, where the contexts of the stories had been specifically altered to enhance the learning of particular words, with that of children, matched for P.P.V.T. I.Q. who took part in Experiment I.
- (4a) To introduce an "internal" control by using one of the difficult words as often as previously, but without the explanatory contexts. Thus, if children were taking the words home and parents were helping, one would expect many of them to have learnt the meaning of this word ('obese').
- (4b) This was also a further check on the necessity of having good explanatory contexts in order for the children to learn the meanings of new words.
- (5) To examine the mistakes, "don't knows" and guesses, and compare these across the two schools, and with previous data.
- (6) To compare learning of children of three separate I.Q. ranges, within one school.
- (7) To examine the question of whether single trial learning may be an important factor in the learning achieved in Experiment I.



## Method

### Stories and words

The method was similar to that used in earlier work. The same ten stories (easy five-year-old version) were used in the same order. However, three major changes were made in an attempt to make it easier for average children to learn the most difficult words.

(1) Earlier work had shown that the order of difficulty for "standard I.Q." children (P.P.V.T. I.Q. 100 - 120) was :-

'inclement', 'obese', 'illuminate', 'embellish', 'encumbered', 'precarious'. Therefore, 'precarious' and 'encumbered' were chosen as the most difficult words, and their contexts were rewritten in the light of earlier mistakes. For example, a common mistake for 'encumbered' was to say "it means heavy". Contexts were altered so that there was less emphasis on "weight" and more emphasis on "slowed down".

(2) At the same time, the "load" of words to be learnt was reduced. Instead of six words repeated in context thirty times in ten stories, the load was as follows in Table 3.27.

TABLE 3.27

To show how many times each difficult word was heard,  
during the ten stories, in Experiment II

'precarious'	30 times
'encumbered'	30 times
'obese'	30 times
'illuminate'	3 times
'embellish'	3 times
'inclement'	4 times

If 'single' trial learning was a predominant factor in the acquisition of these words, one would expect many children to learn 'illuminate' and 'embellish' even though these appeared only three times each throughout the ten stories.

(3) The third alteration introduced an experimental control. The word

'obese' was included thirty times (three times in each story) but without an explanatory context. This word was chosen because Experiment I had shown it to be one of the easiest words for five-year-olds to learn. The lack of explanatory context provided a check on children's learning the words from other sources. For example, in addition to direct instruction, it was possible that children could acquire the meanings through hearing their parents use the words in normal conversation. In this case, one would expect the children to be alerted to the word 'obese' having heard it thirty times. If the word were used elsewhere in their hearing, it would be expected that they would be able to define it, without having heard it in an explanatory context in the stories.

This alteration also provided a check on the difference between schools. If School 1 parents tended to use the difficult words in their normal conversation, more frequently than School 2b parents, and children from School 1 were benefitting, one would expect there to be a difference between schools in the scores for 'obese'.

(4) It was noted in Experiment I, that where children gave homophones on the Pre-test, they were less likely to learn the correct meanings of the words, whereas children who said "don't know" on the Pre-test stood a stronger chance of learning the correct meanings. (This is discussed more fully on page 106.) As it seemed possible that the Pre-test responses could be "setting" the children to respond in particular ways, rather than to be open to the contexts presented in the stories, the Pre-test was left out in this Experiment and in Experiment III. The first three words of the Oral test were used for training and practice.

#### Schools and children

Two local schools were selected on the basis of their differing catchment areas. The results of Experiment I had shown a significant difference in word acquisition between two schools although the groups of children had been matched for age, sex and P.P.V.T. I.Q. The difference was most marked for Oral definitions, declined for the test involving Picture-pointing with Oral definition, and became insignificant for the Picture-pointing Test alone.



Although it is probable that a factor related to social-class, and children's experience of, and ability to use the information gained from, listening situations, caused this difference, no one social-class index proved to be significantly different between groups used in Experiment I, though indices such as telephone or car ownership, and type of house occupied did differentiate between schools. (see page 250).

In the present Experiment, in order to test a replication of the unexpected results of Experiment I, the schools were deliberately chosen to emphasize social class differences. The school which had the superior P.P.V.T. I.Q. range, in Experiment I, School 1, was again used, so that results from Experiment II could be properly compared with those of Experiment I. The second school used, 2b, had an I.Q. range comparable to that at School 2a, as far as could be ascertained. (It was not possible to test the whole of the age range, but the two classes were said to be unstreamed. There were not enough bright I.Q. children in the class tested to form a bright I.Q. group.)

Ten children were selected from each school forming groups matched on P.P.V.T. and W.I.S.C. Oral Vocabulary Test. It was hoped that by matching groups on active as well as passive vocabulary, the previously observed difference between schools in learning ability would disappear. The test of active vocabulary was used, because it was on the Oral Test that the schools difference was manifest. It was felt that there may be an ability to talk about words, which is tested by the Oral Vocabulary Tests, but which is not needed, or revealed, in the Picture Pointing Vocabulary Test.

The original idea was to form matched pairs of children at the two schools. However, the need to match each child with a partner on three variables, age, P.P.V.T. I.Q. and W.I.S.C. vocabulary proved to be impossible to fulfil. Although the P.P.V.T. and the W.I.S.C. correlate well (0.605, see page 221) for individual children there was often a discrepancy between the two. Thus, two children with the same age and P.P.V.T. I.Q. would often have differing W.I.S.C. vocabulary scores, and vice versa. Therefore, it was not possible to form ten matching pairs of children spanning a P.P.V.T. I.Q. range comparable to



that of the standard I.Q. groups of Experiment I. Instead, groups matched on age, P.P.V.T. I.Q. and W.I.S.C. vocabulary score, were formed. These groups had the revised easy stories, and were therefore labelled R.ST.E. Each group of ten from each school also matched the standard I.Q. groups of Experiment I on P.P.V.T. I.Q. score and age. Table 3.28 summarises the results of a one-way analysis of variance on the W.I.S.C. Oral Vocabulary scores of the R.ST.E. groups. There was no significant difference between the groups.

TABLE 3.28

Summary of one-way analysis of variance on the W.I.S.C. Oral Vocabulary scores of the Revised Standard Easy (R.ST.E.) Groups

School	Group	Mean	N
2b	R.ST.E.	14.1	10
1	R.ST.E.	13.4	10

Source	SS	df	VE	F	P
Treatments	2.45	1	2.45	1.74	NS
Error	25.30	18	1.41		
Total	27.75	19			

The results of analyses of variance on age and P.P.V.T. I.Q. for the R.ST.E. groups compared with all the other standard I.Q. groups, may be seen in Tables 2.8 and 2.5 on page 64, in the Introduction to Method. There was no significant difference between groups.

The remaining children at School 1 formed a bright I.Q. group (R.BR.E.) and a low I.Q. (R.L.E.) group, matching those of Experiment I, for P.P.V.T. I.Q. and age. The results of analyses of variance comparing these groups with all others in the same I.Q. range for the P.P.V.T., and with all the other groups for age, may be seen in Tables 2.6 and 2.8, in the Introduction to Method. There was no significant difference between groups, within each I.Q. range.

The fifty-three children at School 1, all heard the same revised stories in four mixed I.Q. groups. This was arranged so that any accidental benefits or hindrance would affect children from each I.Q. group. In this way, the

effect of P.P.V.T. I.Q. on learning from the same treatments, could be observed, across an I.Q. range of 85 - 140, a much larger range than had been available in Experiment I.

### Procedure

All the children in the age-range five years three months to six years at Schools 1 and 2b (68 and 34) were given the Peabody Picture Vocabulary Test. Children with P.P.V.T. I.Q.'s of less than 85 were eliminated from the Experiment thereafter, (11). The remaining 91 children were given the W.I.S.C. Oral Vocabulary Test. This was so that groups from the two schools could be matched on both passive and active vocabulary.

The children were then divided into six mixed I.Q. groups, whose treatment was, as nearly as possible, identical.

Each group heard the ten stories in the same order on ten consecutive school days.

On the day of his first story, each child was given a letter explaining briefly to his parents the purpose of the Experiment, and asking for their co-operation in not divulging the meanings of very difficult words during the next three weeks.

### Post-tests

At least two days after hearing the last story, each child was given the Oral Post-test. After three warm up and training words, the difficult words were asked alternatively with easy words to maintain the child's interest, motivation and confidence. Pre-determined questions were asked, and the child was invited to use the word as well as to describe its meaning.

For example, for 'precarious' the questions were :-

- a) What does 'precarious' mean ?
- b) Make up something to say to me using the word 'precarious'.
- c) If someone was doing something 'precariously' at a circus, what might he be doing ?
- d) Why would that be 'precarious' ?

In addition the experimenter asked non-leading questions, such as "Why would that be 'precarious' ?" to elicit further evidence of the child's



understanding, when necessary. All such answers and questions were recorded.

At least a few hours after the Oral Test, the child was given the Pointing and the Pointing-oral Test. In half the cases this test was given by an independent tester, to counteract "experimenter" effect.

The Oral and Pointing-oral data were scored 1-3, using the same criteria as had been used previously, by the same independent observer as previously, so that results would be comparable.

### Scoring

To achieve comparability of scoring, for 'encumbered' and 'precarious' the raw data sheets of the forty children from the ST.E. and BR.D. groups (from Experiment I) were added to those of the present Experiment. Then the sheets were placed in rank order for goodness of definition using the same criteria as previously, for each word and Oral and Pointing-oral Tests, individually. In each case, four groups were formed, with scores of zero to 3. It was reassuring to find that the ST.E. and BR.D. scores obtained in this way coincided with those given for the same data previously. However, many of the new definitions were substantially better than the best achieved previously. So a new score of four was introduced. Only 8/80 scores for 'encumbered' and 4/80 for 'precarious' were affected from Experiment I. The altered scores were used for comparison with the present Experiment. Thus the means for ST.E. and BR.D. are slightly higher in the present analysis than they were in analyses in Experiment I.

### Criteria

The same criteria were used in scoring as previously (see page 49 ) with the addition of a 4 where children gave more precise definitions in their first attempts. For 'encumbered', greater precision included the idea of 'being slowed down' 'by something big or heavy' or 'by an unwilling animal', in the first attempts at definition. Previously, the highest score of three had been given to responses where the ideas of 'being slowed down' and 'by something heavy' had occurred somewhere in the explanation.

The problem of comparability of 'encumbered' with 'precarious' now arose. While not wishing to claim that a score of 3 means that exactly the



same standard of explanation has been reached for each word, if the words are to be compared the highest possible score must be the same in each case. Therefore, a 4 was given to responses giving a precise definition of 'precarious' in the first attempts. Only 4/80 cases from Experiment I merited a 4.

The scoring criteria are in the Appendix on page 283, and are those used in Experiment I, with the addition of the 4, (see page 285).

### Results and Discussion Experiment II

#### (1) New concepts and difference between words

It proved extremely difficult for five-year-olds of average verbal intelligence to learn the difficult words, 'encumbered' and 'precarious' even under the improved conditions. While some definitions were so good that a score of four had to be introduced to accommodate the improved definitions to the previous scoring scheme, 5/20 children scored 0 for 'encumbered' (Oral) and 10/20 children scored 0 for 'precarious' (Oral).

Also there was a marked difference between scores on the two words. A two-way analysis of variance on the Oral Test gives an F of 10.25, significant at the .005 level for the difference between words. Table 3.29 gives a summary of the two-way analysis of variance.

TABLE 3.29

Summary of two-way analysis of variance on the Oral scores of children in the R.ST.E. groups at Schools 1 and 2b, for 'encumbered' versus 'precarious'

ORAL					
School and Group	N	Encumbered Mean	Precarious Mean		
2b R.ST.E.	10	1.9	0.5		
1 R.ST.E.	10	2.5	1.1		
Source	SS	DF	MS	F	P
Between Schools	3.60	1	3.60	1.88	.25
Between Words	19.60	1	19.60	10.26	.005
Schools/Words	0.00	1	0.00		
Within cell	68.00	36	1.91		
Total	92.00	39			

F max = 5.09 Permitted F max = 6.31 (K = 4, n = 9). Variances are homogeneous. 128

On the Pointing-oral Test, the difference between words at School 1 almost disappears, while it is significant at the .05 level at School 2b. The overall F is 3.77, significant only at the .1 level.

Table 3.30 summarises the two-way analysis of variance on the Pointing-oral data.

TABLE 3.30

Summary of two-way analysis of variance on the Pointing-oral scores of children in the R.ST.E. groups at Schools 1 and 2b, for 'encumbered' versus 'precarious'

POINTING-ORAL

School and Group	N	Encumbered Mean	Precarious Mean
2b R.ST.E.	10	1.7	0.5
1 R.ST.E.	10	2.4	2.0

Source	SS	DF	MS	F	P
Between Schools	12.1	1	12.1	7.14	.025
Between Words	6.4	1	6.4	3.78	.1
Schools/Words	1.6	1	1.6	0.94	NS
Within cell	61.0	36	1.7		
Total	81.1	39			

F max = 5.80 Permitted F max = 6.31. (K = 4, n = 9). Variances are homogeneous.

However, children from the bright group at the socially superior school (School 1), gained greatly from the improved conditions, for both 'encumbered' and 'precarious', compared with the standard I.Q. children. On the Oral Test, putting the two words together, there was only one low score, of 2. Each of the other nine scores was  $\frac{4}{8}$  or higher. A one-way analysis of variance for the three groups gives F = 9.57 on the Oral Test, and F = 10.82 on the Pointing-oral Test, both significant at .001 level. Table 3.31 summarises a one-way analysis of variance on the Oral scores, and Table 3.32 on the Pointing-oral scores. It was not possible to perform a two way analysis of variance, because there were not enough available children of P.P.V.T. I.Q. over 120 to form a bright group, at School 2b.

TABLE 3.31

Summary of a one-way analysis of variance on the Oral scores of children in the R.ST.E. group at School 2b, and the R.ST.E. group and R.BR.E. groups at School 1, for 'encumbered' plus 'precarious'

ORAL						
School	Group	N	Mean	SS	Variance	
2b	R.ST.E.	10	2.4	24.4	2.71	
1	R.ST.E.	10	3.6	68.6	7.60	
1	R.BR.E.	10	6.2	13.6	1.51	
Source	SS	DF	MS	F	P	
Treatments	75.47	2	37.73	9.58	.001	
Error	106.40	27	3.94			
Total	181.87	29				

TABLE 3.32

Summary of a one-way analysis of variance on the Pointing-oral scores of children in the R.ST.E. group at School 2b, and the R.ST.E. group and R.BR.E. groups at School 1, for 'encumbered' plus 'precarious'

POINTING-ORAL						
School	Group	N	Mean	SS	Variance	
2b	R.ST.E.	10	2.2	23.6	2.62	
1	R.ST.E.	10	4.4	28.4	3.16	
1	R.BR.E.	10	5.7	26.1	2.90	
Source	SS	DF	MS	F	P	
Treatments	62.6	2	31.30	10.82	.001	
Error	78.1	27	2.89			
Total	140.7	29				

Since it can be argued that these wrds are new concepts, rather than merely new synonyms, it follows that new concepts can be learnt by hearing them several times in explanatory contexts, provided these have been so arranged as to avoid confusion and to highlight the definitive aspects.



(2) The schools difference

In spite of the reduced load and clarified contexts, the schools difference noted earlier was not entirely eliminated. Children matched for P.P.V.T. I.Q. and W.I.S.C. Oral Vocabulary did not perform equally well in this learning situation. The difference was in the predicted direction, with children from the "middle class" catchment area (School 1), achieving higher scores on their Pointing-oral definitions of 'encumbered' and 'precarious' than those from the "working-class" catchment area. A one-way analysis of variance gives  $F = 8.37$ , significant at .01 level, on the Pointing-oral Test. This is summarised in Table 3.33, while Table 3.34 summarises a one-way analysis of variance on the results of the Oral Test.

TABLE 3.33

Summary of a one-way analysis of variance on the Pointing-oral scores of children in the R.ST.E. groups at Schools 2b and 1, for 'encumbered' plus 'precarious'

POINTING-ORAL					
School	Group	N	Mean	SS	Variance
2b	R.ST.E.	10	2.2	23.6	2.62
1	R.ST.E.	10	4.4	28.4	3.16
Source	SS	DF	MS	F	P
Treatments	24.2	1	24.2	8.38	.01
Error	52.0	18	2.88		
Total	76.2	19			

TABLE 3.34

Summary of a one-way analysis of variance on the Oral scores of children in the R.ST.E. groups at Schools 2b and 1, for 'encumbered' plus 'precarious'

School	Group	N	Mean	SS	Variance
2b	R.ST.E.	10	2.4	24.4	2.71
1	R.ST.E.	10	3.6	68.4	7.60
Source	SS	DF	MS	F	P
Treatments	7.2	1	7.20	1.39	NS
Error	92.8	18	5.16		
Total	100.0	19			

On the Oral Test, the difference between schools was virtually eliminated  $F = 1.39$ , NS. This is mainly because two children at School 1 reduced the average score of the group from 5.7 to 3.6 by scoring zero. (These two children scored 3 and 6 out of 8, on the Pointing-oral Test) The difference between schools is still in favour of School 1, the expected direction.

Thus, although the groups were matched on active (W.I.S.C.) as well as passive (P.P.V.T.) vocabulary, the children from School 2b continue to learn less well than the children from School 1, in the listening-to-stories situation, the difference being significant at the .01 level for Pointing-oral data.

(3a) Comparison of scores for "standard" groups

A comparison of the scores of standard I.Q. children hearing the improved contexts, with those of standard I.Q. children from Experiment I, did not yield completely clear results.

On the Oral Test, as was predicted, the improved condition did produce better scores. On a two-way analysis of variance,  $F = 4.12$ , significant at .05 level, see Table 3.35.

TABLE 3.35

Two-way analysis of variance on Oral scores for 'encumbered' plus 'precarious' of children in the ST.E. groups at Schools 2a and 1, from Experiment I, versus those of the R.ST.E. groups at Schools 2b and 1, from Experiment II

ORAL

<u>Experiment I</u>				<u>Experiment II</u>			
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	1.1	2.4	10	R.ST.E.	2b
1	ST.E.	10	2.2	3.6	10	R.ST.E.	1

Source	SS	DF	MS	F	P
Between schools	13.23	1	13.23	2.99	.1
Between groups	18.23	1	18.23	4.12	.05
Schools/groups	0.03	1	0.03		
Within cell	159.30	36	4.43		
Total	190.79	39			

F max = 2.8      Permitted F max = 6.31 (K = 4, n = 9).

Variances are homogeneous.



However, for the Pointing-oral Test, School 2b gained fewer points than it did on the Oral, and also fewer points than the first experimental group, 2a ST.E. on the Pointing-oral, thus causing a slight interaction ( $F = 3.09$ , significant at .1 level), between schools and treatments, see Table 3.36.

TABLE 3.36

Summary of two-way analysis of variance on Pointing-oral scores on 'encumbered' plus 'precarious' of children in the ST.E. groups at Schools 2a and 1, from Experiment I, versus those of the R.ST.E. groups at Schools 2b and 1, from Experiment II

POINTING-ORAL

<u>Experiment I</u>				<u>Experiment II</u>			
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	3.3	2.2	10	R.ST.E.	2b
1	ST.E.	10	3.2	4.4	10	R.ST.E.	1
Source		SS	DF	MS	F	P	
Between Schools		11.03	1	11.03	2.58	NS	
Between Groups		0.03	1	0.03	0.006	NS	
Schools/Groups		13.23	1	13.23	3.098	.1	
Within cell		153.70	36	4.27			
Total		177.99	39				

F max = 2.63    Permitted F max = 6.31 (K = 4, n = 9)

Variances are homogeneous.

The improved condition did not result in significantly improved Pointing-oral scores, when Schools 2b and 1 were taken together,  $F = 0.006$  NS, but observation of the means shows that at School 1, the improved condition resulted in improved Pointing-oral scores.

(3b) Comparison of scores for "bright" groups

A further indication of the effect of the improved contexts can be gained by examination of the mean results of the present Experiment compared with the BR.D. groups of Experiment I. These children from the high P.P.V.T. I.Q. groups



in spite of having the difficult condition, compared favourably with standard I.Q. groups having the easy condition (ST.E.) in Experiment I.

For the Oral data, the means of the two R.ST.E. groups were both higher than the means for the two BR.D. groups of Experiment I. This suggests that the revised condition enabled standard I.Q. children to surpass bright children having the difficult condition, on the Oral Test.

For the Pointing-oral Test, scores at School 2b for standard I.Q. children having the revised condition (R.ST.E.) were not as good as those of the bright group (BR.D.) at School 2a, of Experiment I. However, at School 1, R.ST.E. scores were better than the BR.D. scores of Experiment I. Tables 3.37 and 3.38 summarise one-way analyses of variance on the Oral and Pointing-oral data.

TABLE 3.37

Summary of one-way analysis of variance on Oral data, for 'encumbered' plus 'precarious' for children in BR.D. groups at Schools 2a and 1, in Experiment I, versus children in R.ST.E. groups at Schools 2b and 1, in Experiment II

ORAL							
<u>Experiment I</u>				<u>Experiment II</u>			
School	Group	N	Mean	Mean	N	Group	School
2a	BR.D.	10	1.5	2.4	10	R.ST.E..	2b
1	BR.D.	10	1.8	3.6	10	R.ST.E.	1
Source		SS	DF	VE	F	P	
Between Groups		18.22	1	18.22	3.84	.1	
Error		180.55	38	4.75			
Total		198.77	39				

The results of the analyses of variance show that the difference between BR.D. and R.ST.E. groups is significant only at the .1 level for Oral data, where  $F = 3.84$ , and is not significant for Pointing-oral data where  $F$  is less than 1.

When a one-way analysis of variance is performed on the Oral data from School 1, where the largest difference between means for the BR.D. and R.ST.E. groups lies,  $F = 2.6$ , again insignificant.

TABLE 3.38

Summary of one-way analysis of variance on Pointing-oral data for 'encumbered' plus 'precarious' for children in BR.D. groups at Schools 2a and 1, in Experiment I, versus children in R.ST.E. groups at Schools 2b and 1, in Experiment II

## POINTING-ORAL

<u>Experiment I</u>				<u>Experiment II</u>			
School	Group	N	Mean	Mean	N	Group	School
2a	BR.D.	10	2.9	2.2	10	R.ST.E.	2b
1	BR.D.	10	3.8	4.4	10	R.ST.E.	1
Source		SS	DF	VE	F	P	
Between Groups		0.02	1	0.02	< 0.01	NS	
Error		160.75	38	4.23			
Total		160.77	39				

Thus, although standard I.Q. children tend to score better with the R.ST.E. condition than brighter children did with the BR.D. condition, the difference is not beyond that which might be expected to occur by chance. This emphasises the difficulty in acquiring the new concepts, faced by standard I.Q. children, even with the improved contexts to aid them.

When the three bright groups were compared, the advantages of the revised easy condition over the difficult condition of Experiment I were manifest, as would be expected. Tables 3.39 and 3.40 give the means and one-way analyses of variance for the three groups, on the Oral and Pointing-oral data.

The large difference between means for the BR.D. groups versus R.BR.E. is significant at the .001 level for Oral data, where  $F = 41.95$ , and at the .01 level for Pointing-oral data, where  $F = 9.32$ . It is probable that the bright children gained both from the improved contexts for 'encumbered' and 'precarious' and from having the easy versions instead of the difficult versions of the stories. This would explain their great improvement compared with the minimal improvement of the R.ST.E. groups.

TABLE 3.39

Summary of one-way analysis of variance on Oral data from the BR.D. groups at Schools 2a and 1, from Experiment I, and from the R.BR.E. group at School 1 from Experiment II, for 'encumbered' plus 'precarious'

ORAL

<u>Experiment I</u>				<u>Experiment II</u>			
School	Group	N	Mean	Mean	N	Group	School
2a	BR.D.	10	1.5				
1	BR.D.	10	1.8	6.2	10	R.BR.E.	1
Source		SS	DF	VE	F	P	
Between Groups		138.02	1	138.02	41.08	.001	
Error		94.15	28	3.36			
Total		232.17	29				

TABLE 3.40

Summary of one-way analysis of variance on Pointing-oral data from the BR.D. groups at Schools 2a and 1, from Experiment I, and from the R.BR.E. group at School 1 from Experiment II, for 'encumbered' plus 'precarious'

POINTING-ORAL

<u>Experiment I</u>				<u>Experiment II</u>			
School	Group	N	Mean	Mean	N	Group	School
2a	BR.D.	10	2.9				
1	BR.D.	10	3.8	5.7	10	R.BR.E.	1
Source		SS	DF	VE	F	P	
Between Groups		36.82	1	36.82	9.32	.01	
Error		110.55	28	3.95			
Total		147.37	29				



(3c) Comparison of scores for "low" groups

The R.L.E. easy group adds additional evidence on the efficacy of the revised contexts in promoting the acquisition of the difficult words, 'encumbered' and 'precarious'. In Experiment I, the L.E. groups made very low scores for these two words, in particular, as can be seen from the mean scores in Tables 3.41 and 3.42. These Tables summarise the results of one-way analyses of variance on the Oral and Pointing-oral data, for the L.E. and R.L.E. groups. It will be seen that there was a significant difference ( $F = 5.27$ ,  $p = .05$ ) between the groups on the Oral Test, but not on the Pointing-oral Test.

TABLE 3.41

Summary of one-way analysis of variance on Oral data for 'encumbered' plus 'precarious' for the L.E. groups of Experiment I, versus the R.L.E. group from Experiment II

ORAL

<u>Experiment I</u>				<u>Experiment II</u>			
School	Group	N	Mean	Mean	N	Group	School
3	L.E.	10	0.4	2.0	10	R.L.E.	1
2c	L.E.	10	0.4				

Source	SS	DF	VE	F	P
Between Groups	17.07	2	8.53	5.27	.05
Error	43.80	27	1.62		
Total	60.87	29			

The non-significant difference between L.E. and R.L.E. groups, on the Pointing-oral Test, arose because R.L.E. children failed to make the usual improvement on the Pointing-oral Test. (Their Oral mean score is 2.0, and their Pointing-oral mean score is 2.1.) There is not a ready explanation for this. It will be seen, throughout the Experiments, that groups normally but not always, made higher scores on the Pointing-oral Tests than on the Oral Tests. While the R.L.E. still scored better than either of the L.E.

TABLE 3.42

Summary of one-way analysis of variance on Pointing-oral data for  
'encumbered' plus 'precarious', for the L.E. groups of Experiment I  
versus the R.L.E. group of Experiment II

## POINTING-ORAL

<u>Experiment I</u>				<u>Experiment II</u>			
School	Group	N	Mean	Mean	N	Group	School
3	L.E.	10	1.2	2.1	10	R.L.E.	1
2c	L.E.	10	0.9				
Source	SS		DF	VE	F	P	
Between Groups	7.8		2	3.90	1.81	NS	
Error	58.4		27	2.16			
Total	66.2		29				

groups, the failure to improve on the Oral score resulted in the observed non-significant difference on the Pointing-oral Test.

Conclusion about revised contexts

The revised condition was successful in producing raised scores on both the Oral and the Pointing-oral Tests. The differences between groups in Experiment I and those having the revised condition in Experiment II were significant for the Oral Tests, at each I.Q. level. For the Pointing-oral data, the differences were significant only for the R.B.R.E. group, which had the advantage both of improved contexts with the reduced load, and the easy versions of the stories, compared with the B.R.D. groups of Experiment I.

The fact that even children of comparatively low verbal I.Q. are able to improve their scores on these very difficult words, suggests that it is the contexts in which the words are heard, rather than the developmental level that these five-year-olds have reached, which is the factor of over-riding importance in their acquisition of new vocabulary.

(4a) Control word, 'obese'

Although the children in this Experiment all heard the word 'obese' thirty times during the course of the ten stories, only five out of eighty-two



children had even a vague idea of its meaning. This suggests that children were not taking words home simply because they had heard them often, and their parents then supplying the meaning. Nevertheless, it is possible that children who had grasped some idea of the meaning of the difficult words could be using the words at home, and the parents could be refining the concept. In this case, one would expect excellent definitions of all six words from all the children having an "easy" condition. The results contradict this as a likelihood.

(4b) Explanatory context, ('obese')

The fact that so few children gave correct responses to the word 'obese', highlights the importance of an explanatory context for the learning of new vocabulary.

Children who had given more or less accurate definitions to words which had been embedded in an explanatory context, instead of saying "don't know" when confronted with 'obese' which they had heard an equal number of times, apparently thought they knew the word, and attempted a definition. Altogether 69/82 children gave definite responses on the Oral Test and 75/82 on the Pointing-oral Test. Only 13/82 (Oral) and 7/82 (Pointing-oral) said "don't know". On the Pre-tests for Experiment I, 16/80 gave homophonic responses and 58/80 said "don't know".

Thus, it has been shown experimentally that even a relatively easy word, often repeated, cannot be gained without an explanatory context.

Discussion of the erroneous responses will be found in the Chapter on qualitative analysis on page 177 .

(4c) Difference between schools, ('obese')

Of the 5/82 children who had some idea of the meaning of the word 'obese', 1/27 came from School 2b, and 4/55 came from School 1. Of these four, one must be dismissed as a picture description, as no supporting data was elicited. These figures (3.7% versus 5.4%) are too small to justify any conclusions about the cause of the observed difference in learning, between schools. Even if there is taken to be a hint that School 1 children are differentially helped at home, through direct instruction, or through hearing new words that they have become aware of, used in normal adult conversation, the amount of



difference in the Oral and Pointing-oral scores that could be attributed to this source would be tiny.

What emerges clearly is that School 1 children are not being helped differentially by having words explained or used in context out of school on any large scale.

(5) Erroneous responses

As explained in Experiment I, the erroneous responses are more illuminating when considered altogether, and therefore, these responses from all the Experiments are discussed in the Chapter on qualitative analysis on page 177.

(6a) Larger I.Q. range

Experiment I revealed significant differences between children of differing P.P.V.T. I.Q. groups, receiving the same treatments. The present Experiment was designed to examine the effect of P.P.V.T. I.Q. on word acquisition, for a larger I.Q. range than had been possible in Experiment I, where the range was 45 points for the standard I.Q. plus bright I.Q. groups, and 39 points for the standard I.Q. plus low I.Q. groups. In the present Experiment, a low I.Q. group (R.L.E.), a standard I.Q. group (R.ST.E.) and a bright group (R.BR.E.) received identical treatments. The scores of these three different groups were significantly different from each other on four out of six occasions. On the Oral Test, R.BR.E. was significantly different from both the R.L.E. and the R.ST.E. groups, but the R.ST.E. did not differ significantly from the R.L.E. group. Results of a one-way analysis of variance and analysis by Tukey's method, are summarised in Table 3.43. On the Pointing-oral Test, the position altered. Both R.BR.E. and R.ST.E. scores were significantly different from those of R.L.E., but the difference between R.BR.E. and R.ST.E. was not significant. Table 3.44 shows summaries of a one-way analysis of variance, and analysis by Tukey's method, on the Pointing-oral data.

TABLE 3.43

Summary of a one-way analysis of variance, and analysis by Tukey's method on the Oral data of the R.L.E., R.ST.E. and R.BR.E. groups for 'encumbered' plus 'precarious'

ORAL					
School	Group	N	Mean		
1	R.L.E.	10	2.0		
1	R.ST.E.	10	3.6		
1	R.BR.E.	10	6.2		
Source	SS	DF	VE	F	P
Between Groups	89.97	2	44.99	10.39	.001
Error	116.90	27	4.33		
Total	206.87	29			
	R.L.E.	R.ST.E.	R.BR.E.		
Oral mean :-	2.0	3.6	6.2		
R.L.E.	-	NS	.01		
R.ST.E.	-	-	.01		
R.BR.E.	-	-	-		

The R.BR.E. group differs from R.L.E. at the .01 level of significance, and from the R.ST.E. group at the .05 level of significance. The difference between the R.ST.E. and the R.L.E. groups is not significant on the Oral Test.

Thus, with a range of 80-145, the differences between I.Q. groups are highly significant when three groups are included in the analysis. The differences between individual groups also tend to be very significant, when it is recalled that here total N = 20, whereas in Experiment I, total N = 40 for any I.Q./treatment comparison.

TABLE 3.44

Summary of a one-way analysis of variance, and analysis by Tukey's method, on the Pointing-oral data of the R.L.E., R.ST.E. and R.BR.E. groups, for 'encumbered' plus 'precarious'

POINTING-ORAL

School	Group	N	Mean			
1	R.L.E.	10	2.1			
1	R.ST.E.	10	4.4			
1	R.BR.E.	10	5.7			
Source	SS	DF	VE	F	P	
Between Groups	66.47	2	33.23	10.75	.001	
Error	83.40	27	3.09			
Total	149.87	29				

	R.L.E.	R.ST.E.	R.BR.E.
Pointing-oral mean :-	2.1	4.4	5.7
R.L.E.	-	.01	.01
R.ST.E.	-	-	NS
R.BR.E.	-	-	-

The R.BR.E. group differs from the R.L.E. group at the .01 level of significance as does the R.ST.E. group. The difference between the R.BR.E. group and the R.ST.E. group is not significant on the Pointing-oral Test.

(6b) Relationship between I.Q. scores and test scores

As had been found in Experiment I, there was a significant correlation between verbal intelligence, both active and passive, and scores on the Oral and Pointing-oral Test. The following Table gives the correlation matrix, based on an N of 53 all from School 1, from Experiment II.



TABLE 3.45

Correlations between P.P.V.T., W.I.S.C. vocabulary, age,  
and Pointing-oral and Oral scores, on 'encumbered' plus 'precarious'

N = 53	P.P.V.T.	W.I.S.C. VOCAB.	AGE	PO
W.I.S.C. VOCAB.	0.605	-	-	-
AGE	0.368	0.215 NS	-	-
PO	0.487	0.441	0.254 NS	-
O	0.546	0.406	0.282	0.715

On a two-tailed test, a correlation of 0.273 is significant at .05 level, 0.322 at .02 level, and 0.354 at .01 level.

The lowest correlations are those for age, which is not really surprising as age allowances are included in both the P.P.V.T. and the W.I.S.C. I.Q. scores. Even so, age correlates significantly at the .05 level, with the P.P.V.T. and Oral scores.

It will be seen that the test of active vocabulary, the W.I.S.C. Oral Vocabulary Test, correlates less well with Oral and Pointing-oral scores, than the passive vocabulary test, the P.P.V.T. This is discussed in the difference between schools Chapter on page 218. The W.I.S.C. vocabulary correlations are still above the .01 level, with Oral and Pointing-oral scores, and with P.P.V.T. I.Q. scores.

P.P.V.T. score remains the best predictor of Oral and Pointing-oral scores, with a correlation of 0.546 and 0.487 respectively. For this reason, the W.I.S.C. Vocabulary Test will not be used to select children for future experiments.

The fact that the P.P.V.T. Verbal I.Q. Test is the best predictor of Oral and Pointing-oral scores, also vindicates the original decision to use the P.P.V.T. I.Q. scores as a basis on which to match groups.

The correlation between Oral and Pointing-oral scores is also very high, at 0.715 significant at well above the .01 level. This is as would be expected.

#### (7) Single trial learning

Some light is thrown on the number of times a difficult word has to be heard in an explanatory context, by the clear evidence that three or four times

is not sufficient. 'Inclement', 'illuminate' and 'embellish' were given reasonable oral definitions by only 1/82, 0/82, 1/82 children respectively. Pointing-oral results were slightly better, with 3 generalising for 'inclement' and a total of 17 pointing at the right picture and mentioning rain. Fourteen of the 17 could be picture descriptions. For 'illuminate', only 1 child pointed at the correct picture and he gave a good definition. For 'embellish' 7/82 children pointed at the correct picture, 5 giving reasonable definitions. This suggests that single trial learning in itself is not an important factor in the learning achieved. However, it is still probable that a single exemplar may make an impression on a child, and give him an idea of the word, which may then be supported and refined by further exemplars.

#### Summary of results and problems raised by Experiment II

(1) It proved difficult for some standard I.Q. children to learn the words 'encumbered' and 'precarious', especially at School 2b, even with the revised contexts and reduced load. While some children scored zero, however, others gave such good definitions that a score of four had to be introduced. The scores achieved by these children increased the scores for their groups to levels higher than those observed in Experiment I. Results on the Oral Test showed significant improvement, for standard I.Q. children (R.ST.E.)

The bright group and the low I.Q. group (R.BR.E. and R.L.E.) also did significantly better on the Oral Tests than children from the same I.Q. range in Experiment I.

As the revised condition had the advantage of both improved local contexts and reduced load, it is not clear which was the cause of the improved learning. This question is examined in Experiment III.

(2) Although children were matched on scores of both passive and active Vocabulary Tests, the difference between schools was not eliminated. School 1 continued to have superior results, significant at the .01 level for the Pointing-oral Test, and at .1 level for the Oral Test.

The Chapter on the difference between schools examines many suggestions about the possible causes of this difference. In Experiment III, the



schools situation is again replicated, to see whether the difference between School 1 results and those of the other schools can be further reduced by new improvements in the stories.

(3) The experimental control introduced by using the word 'obese' thirty times without an explanatory context, was successful in throwing light on three areas. First, children did not acquire the meaning of the word, though many thought they had ! This suggests that external influence is not the major source of the children's learning of the difficult words.

Second, it was shown experimentally that even a comparatively easy word, often repeated, cannot be acquired without an adequate explanatory context.

In the third place, there was no difference between schools in the acquisition of the word 'obese'. This is particularly interesting because it suggests that School 1's superiority cannot be attributed to direct or indirect teaching of the difficult words by outside agents.

The results were so unequivocal that no control group was used in Experiment III.

(4) Experiment II was a rich source of erroneous responses, particularly because of the inclusion of the word 'obese' without explanatory contexts. All the erroneous responses are examined and discussed together, in the Chapter on qualitative analysis on page 177 .

(5) The relationship between P.P.V.T. I.Q. and results on the Oral and Pointing-oral Tests, established in Experiment I, was corroborated in Experiment II. The difference between the three I.Q. ranges (R.L.E., R.ST.E. and R.BR.E.) was significant on four out of six tests. In addition, the correlation between P.P.V.T. I.Q. and Oral and Pointing-oral Test score was significant at above the .01 level (on a two-tailed test) for both Oral and Pointing-oral data.

Although the W.I.S.C. Vocabulary Test score also correlated at above the .01 level for both tests, the correlations were lower than those for the P.P.V.T. I.Q. scores. The W.I.S.C. Vocabulary Test itself, correlated very strongly (at well above .01 level), with the P.P.V.T. I.Q. scores. However as matching on W.I.S.C. Vocabulary score did not eliminate the difference



between schools, and as the P.P.V.T. proved to be the best predictor of Oral and Pointing-oral scores, the W.I.S.C. Vocabulary Test was not used as a basis for group selection in Experiment III.

(6) Several children in Experiment I had used examples taken from the stories, in their attempted definitions. This raised the question of whether single trial learning was taking place. The results of Experiment II, suggest that, if it is, it is on so small a scale as to be insignificant. Three words, 'inclement', 'illuminate' and 'embellish', were included in the stories a total of four, three and three times each, respectively. Out of eighty-two children, only one gave a reasonable definition of 'inclement', and one of 'embellish' on the Oral Test. Not one child defined 'illuminate'. The Pointing-oral results were slightly better, but still show conclusively that single trial learning is not a major factor in the acquisition of difficult words in these Experiments.

## CHAPTER THREE

### EXPERIMENT III

### EXPERIMENT III

Investigation of the effect of improving the local contexts of all six words, on the learning of all six words by standard I.Q. children.

#### Summary of aims

(1a) To see whether the improved contexts, with the full load (i.e. all six words), would allow standard I.Q. children to score better than the standard I.Q. children and as well as the bright I.Q. children, of Experiment I. (N.ST.E. compared with ST.E. and BR.D. on all words.)

(1b) To compare the N.ST.E. and N.ST.E.R. condition with the ST.E., BR.D., ST.E.R. and ST.E.R.T. groups from Experiment I, on all the words to see whether there would be improvement resulting from the altered contexts.

(2a) To see whether the improved contexts for all the words, would eliminate the previously observed difference between schools. (N.ST.E. and N.ST.E.R. at School 2a, versus N.ST.E. and N.ST.E.R. at School 1.)

(2b) To see whether the schools effect would disappear with the introduction of improved contexts and the full load, for the repeat groups using all six words. (N.ST.E.R. versus N.ST.E.R.)

(2c) To see whether improved explanatory contexts would eliminate the detrimental effects of the repeat condition previously observed. (N.ST.E.R. compared with N.ST.E. on all words.)

(3a) To see whether increased load would detract from the learning scores of children given improved explanatory contexts (of 'encumbered' and 'precarious'). (N.ST.E. compared with R.ST.E. and ST.E.)

(3b) To see whether the schools effect disappears with the introduction of improved contexts and the full load, for 'encumbered' and 'precarious' only. (N.ST.E. and N.ST.E.R. at School 2a, versus N.ST.E. and N.ST.E.R. at School 1.)

(4) To observe the effect of having only the six improved contexts from the new repeat condition, heard in the ten stories of the new standard easy condition, for two of the words ('illuminate' and 'obese').

a) N.ST.E. compared with ST.E.

b) N.ST.E.R. compared with ST.E.R.

c) N.ST.E. compared with N.ST.E.R.



d) Is schools effect maintained ?

(5) To examine the differences between words, to see whether 'encumbered' and 'precarious' are no longer more difficult to acquire than the other four words.

(6) To record all responses so that erroneous responses may be analysed in the Chapter on Qualitative Analysis of Words.

#### Method

The same method was used as had been employed previously. Four groups were run, two new standard easy groups (N.ST.E.) and two new repeat groups (N.ST.E.R.). Following the previous pattern, the two treatments each consisted of two groups of ten, one at School 1 and one at School 2a.

Experiment II showed that with a reduced load, and improved explanatory contexts, preliterate children can learn the meanings of difficult words ('encumbered' and 'precarious').

(1) The present Experiment was designed to see whether the reduced load, or the improved contexts, or a combination of these, was the decisive factor. The full load of six words, heard thirty times, in improved contexts, was given, in the new standard easy condition (N.ST.E.).

Thus, if children did less well on 'encumbered' and 'precarious' than children in Experiment II, then the additional load would appear to be detracting from the child's ability to learn.

If these children did as well as children in Experiment II, improved explanatory contexts would be the crucial factor.

(2) At the same time, a repetition condition was run, to see whether improved contexts would eliminate the detrimental effect of repetition observed in Experiment I.

Examination of the pro-formas revealed that only two stories, 'Beauty' and 'Hippo' were not specifically mentioned by ST.E. children, in the contexts they volunteered in their attempts to define the difficult words. (Often the children's formulation could have come from several stories.) Table 3.46 shows the number of times each story was clearly identifiable, and for which

words. From Table 3.46 it can be seen that there is no reason to suppose that particular situations in particular stories were sufficiently attractive or illuminating to be remembered and given in the Oral Post-test as illustrative examples by many children.

TABLE 3.46

To show the number of times each story was clearly identifiable, in ST.E. children's attempts to define the difficult words, and which words were so defined

	illuminate	encumbered	inclement	obese	precarious	embellish	TOTAL
Jack	-	1	-	-	-	1	2
Shoes	1	-	-	1	-	2	4
Beauty	-	-	-	-	-	-	0
Jane	2	2	-	-	-	1	5
Jenny	-	-	-	2	-	-	2
Sea	-	-	-	-	-	1	1
Lucky	-	-	-	-	1	-	1
Drummer	-	-	-	1	-	-	1
Hippo	-	-	-	-	-	-	0
David	1	-	-	-	-	2	3
TOTAL	4	3	0	4	1	7	

The four repeat stories, 'Shoes', 'David', 'Jane' and 'Drummer', are each used for an illustrative context 4, 3, 5 and 1 times, by children in ST.E. groups. One would, therefore, imagine that the repeat groups would do well on those words, at least. But they did not.

The present Experiment was designed to throw light on the possible causes for the detrimental effect of the repeat condition, by using the improved contexts, and spacing, for 'encumbered' and 'precarious'.

(3) To examine further the effects of repetition, two of the words, 'illuminate' and 'obese', were placed in six different improved contexts. These six contexts were heard by the repeat groups in two stories, and the same six contexts were heard by the new standard easy groups in ten stories.

Thus, if the repeat condition is in some way detrimental, one would expect the new standard easy groups to do better on 'illuminate' and 'obese'.



However, if the detrimental effect in the repeat condition was caused by insufficient variety of context, and poor explanatory contexts, producing the confusion observed in Experiment I, then the new repeat groups should do better than the previous repeat groups, and as well as the present new standard easy groups.

### Schools and children

Two local schools were selected from the available, known, schools, repeating the selection of Experiment I, that is, Schools 1 and 2a.

### Procedure

All the children in the age group five years three months to six years were given the Peabody Picture Vocabulary Test. As matching on the W.I.S.C. Oral Vocabulary Test had not eliminated the schools difference, the W.I.S.C. was not used this time. Four groups of about twelve children were formed, matched as closely as possible for age, sex, and P.P.V.T. I.Q. in the range 100 - 120, to match previous standard groups. The extra children disappeared through natural wastage, and the results of only 10 children for each matched group were scored.

Of the four groups thus formed, one at each school was given the new standard easy (N.ST.E.) condition and the other the new standard easy repeat (N.ST.E.R.) condition. Thus,  $N = 20$  for each treatment. The new standard easy groups heard ten stories in the usual order, on ten consecutive school days. The new standard easy repeat groups heard two stories ('Jane', and 'Drummer') repeated alternately five times each, on ten consecutive school days.

On the day of his first story, each child was given a letter explaining briefly to his parents the purpose of the experiment, and asking for their co-operation in not divulging the meanings of very difficult words during the next three weeks.

### Post-tests

The Post-test procedure was exactly the same as for Experiment II.

At least two days after hearing the last story, each child was given the Oral Post-test. After three warm-up and training words, the difficult words were asked alternating with easy words to maintain the child's interest,

motivation and confidence. The same pre-determined questions were asked as



were used in Experiment II. All questions and answers were recorded.

At least a few hours after the Oral Post-test, the child was given the Pointing-oral Post-test. This test was given by an independent tester, to control for "experimenter" effect.

Scoring

The criteria for scoring were those adopted for Experiment II. Where appropriate, a score of 4 was given for 'encumbered' and 'precarious'. Usually a score of 0 - 3 was used.

Results

(1a) The improved contexts for all six words did allow standard I.Q. children (N.ST.E.) to score better than both the bright and the standard I.Q. children of Experiment I. Table 3.47 summarises the results of a two-way analysis of variance on the Oral scores. The difference between groups was significant at the .001 level.

TABLE 3.47

Summary of two-way analysis of variance on the Oral scores, for the ST.E. and BR.D. groups of Experiment I, and the N.ST.E. scores from Experiment III  
for all six words

<u>Experiment I*</u>				<u>Experiment III</u>			
ORAL							
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	6.4	12.6	10	N.ST.E.	2a
1	ST.E.	10	10.1	13.5	10	N.ST.E.	1
2a	BR.D.	10	7.1				
1	BR.D.	10	7.7				

Source	SS	DF	MS	F	P
Between Schools	45.07	1	45.07	2.59	NS
Between Groups	371.23	2	185.62	10.67	.001
Schools/Groups	29.23	2	14.62	0.84	NS
Error	939.20	54	17.39		
Total	1384.73	59			

F max = 5.669 Permitted F max = 7.80 (K = 6, n = 9). Variances are homogeneous.

\*It should be noted that Experiment I scores have been increased by giving scores of 4 where appropriate for 'encumbered' and 'precarious', and that the means will therefore not necessarily be the same as those quoted in Experiment I. This alteration was necessary to ensure comparability with later experiments. This note applies throughout this Chapter.

For the Pointing-oral data, the difference between the standard I.Q. and bright I.Q. groups of Experiment I, and the N.ST.E. group of Experiment III was significant only at the .1 level. Table 3.48 summarises a two-way analysis of variance on this data.

TABLE 3.48

Summary of two-way analysis of variance on the Pointing-oral scores for the ST.E. and BR.D. groups of Experiment I, and the N.ST.E. groups from Experiment III, for all six words

POINTING-ORAL							
<u>Experiment I</u>				<u>Experiment III</u>			
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	12.0	13.9	10	N.ST.E.	2a
1	ST.E.	10	12.5	14.4	10	N.ST.E.	1
2a	BR.D.	10	11.9				
1	BR.D.	10	12.0				
Source		SS	DF	MS	F	P	
Between Schools		2.02	1	2.07	0.17	NS	
Between Groups		56.93	2	28.47	2.43	.1	
Schools/Groups		0.53	2	.27	0.02	NS	
Error		632.70	54	11.17			
Total		692.18	59				

F max = 4.67      Permitted F max = 7.80. (K = 6, n = 9).

Variances are homogeneous.

Thus, in spite of having the full load, the improved contexts for all six words did allow the N.ST.E. children to perform better than both standard and bright I.Q. children (ST.E. and BR.D.) from Experiment I, particularly on the Oral Post-test.

(1b) When the two new conditions (N.ST.E. and N.ST.E.R.) of Experiment III were compared with all groups from Experiment I, on all six words, inspection of the means showed great improvement on both the Oral and the Pointing-oral data. The difference between groups was highly significant at the .001 level in each case, with F = 21.18 for the Oral, and F = 17.1 for the Pointing-oral data.

Table 3.49 summarises a two-way analysis of variance on the Oral data, and Table 3.50 on the Pointing-oral data.

TABLE 3.49

Summary of two-way analysis of variance on the Oral data for the N.ST.E. and N.ST.E.R. groups of Experiment III, compared with the ST.E., BR.D., ST.E.R. and ST.E.R.T. groups of Experiment I, for all six words.

Experiment I				Experiment III			
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	6.4	12.6	10	N.ST.E.	2a
1	ST.E.	10	10.1	13.5	10	N.ST.E.	1
2a	ST.E.R.	10	3.4	9.9	10	N.ST.E.R.	2a
1	ST.E.R.	10	6.0	14.3	10	N.ST.E.R.	1
2a	ST.E.R.T.	10	2.5				
1	ST.E.R.T.	10	4.9				
2a	BR.D.	10	7.1				
1	BR.D.	10	7.7				

Source	SS	DF	VE	F	P
Between Schools	177.63	1	177.63	13.09	.001
Between Groups	1437.50	5	287.50	21.18	.001
Schools/Groups	56.07	5	11.21	0.83	NS
Error	1466.00	108	13.57		
Total	3131.20	119			

F max = 7.13      Permitted F max = 9.91 (for K = 12, n = 9).

Variances are homogeneous.



TABLE 3.50

Summary of two-way analysis of variance on the Pointing-oral data for the N.ST.E. and N.ST.E.R. groups of Experiment III, compared with the ST.E., BR.D., ST.E.R. and ST.E.R.T. groups of Experiment I, for

all six words

POINTING-ORAL

Experiment I

Experiment III

School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	12.0	13.9	10	N.ST.E.	2a
1	ST.E.	10	12.5	14.4	10	N.ST.E.	1
2a	ST.E.R.	10	6.3	11.1	10	N.ST.E.R.	2a
1	ST.E.R.	10	8.7	14.8	10	N.ST.E.R.	1
2a	ST.E.R.T.	10	5.9				
2c	ST.E.R.T.	10	8.4				
2a	BR.D.	10	11.9				
1	BR.D.	10	12.0				

Source	SS	DF	VE	F	P
Between Schools	78.41	1	78.41	7.75	.01
Between Groups	865.24	5	173.05	17.10	.001
Schools/Groups	52.64	5	10.53	1.04	NS
Error	1092.70	108	10.12		
Total	2088.99	119			

F max = 7.15      Permitted F max = 9.91 (for K = 12, N = 9).

Variances are homogeneous.

(2a) Difference between schools

The improved contexts for all six words were almost successful in eliminating the schools difference for N.ST.E. groups, but not for N.ST.E.R. groups. Table 3.51 summarises a two-way analysis of variance for the Oral data.

Because of the large difference between schools for the N.ST.E.R. condition, F = 7.47, and is significant at the .01 level.

TABLE 3.51

Summary of two-way analysis of variance for the Oral data, for N.ST.E. and N.ST.E.R. groups at School 2a, versus N.ST.E. and N.ST.E.R. groups at School 1, for all six words, for Experiment III

ORAL							
School	Group	N	Mean	Mean	N	Group	School
2a	N.ST.E.	10	12.6	13.5	10	N.ST.E.	1
2a	N.ST.E.R.	10	9.9	14.3	10	N.ST.E.R.	1
			Σ 22.5	Σ 27.8			

Source	SS	DF	VE	F	P
Between Schools	70.23	1	70.23	7.47	.01
Between Groups	9.03	1	9.03	0.96	NS
Schools/Groups	30.62	1	30.62	3.28	.1
Error	338.12	36	9.39		
Total	448	39			

F max = 1.91      Permitted F max = 6.31 (for K = 4, N = 9).

Variances are homogeneous.

On the Pointing-oral Test, F = 5.09, significant at the .05 level. Again, inspection of the means showed that most of this difference between schools fell in the N.ST.E.R. groups. Table 3.52 summarises a two-way analysis of variance on the Pointing-oral data.

The difference between schools on the scores for all the words was larger than at first appears, because at School 1, the N.ST.E.R. group actually overcame the previous handicap of a repeat condition, making higher scores than the N.ST.E. group, on both the Oral and Pointing-oral Tests. This resulted in the small interaction between schools and groups, significant at the .1 level for both Tests. (F = 3.28 for Oral data, and F = 2.95 for Pointing-oral data, see Tables 3.51 and 3.52.)

TABLE 3.52

Summary of two-way analysis of variance on the Pointing-oral data  
for N.ST.E. and N.ST.E.R. groups, at Schools 2a and 1, for all six  
words, for Experiment III

POINTING-ORAL

School	Group	N	Mean	Mean	N	Group	School
2a	N.ST.E.	10	13.9	14.4	10	N.ST.E.	1
2a	N.ST.E.R.	10	11.1	14.8	10	N.ST.E.R.	1

Source	SS	DF	VE	F	P
Between Schools	44.1	1	44.10	5.09	.05
Between Groups	14.4	1	14.40	1.66	NS
Schools/Groups	25.6	1	25.60	2.95	.1
Error	311.8	36	8.66		
Total	395.9	39			

F max = 1.8      Permitted F max = 6.31 (for K = 4, N = 9).

Variances are homogeneous.

(2b) When the N.ST.E.R. groups from each school were compared, using a one-way analysis of variance, the difference between schools was significant at the .01 level for the Oral data, F = 8.67. For the Pointing-oral data F = 6.49, significant at the .025 level.

Table 3.53 summarises one-way analyses of variance on this data.



TABLE 3.53

Summary of one-way analyses of variance on Oral and Pointing-oral data  
from the N.ST.E.R. groups at School 2a versus School 1, for all six words  
for Experiment III

## ORAL

	School	Group	N	Mean		
	2a	N.ST.E.R.	10	9.9		
	1	N.ST.E.R.	10	14.3		
Source	SS	DF	VE	F	P	
Between Schools	96.8	1	96.8	8.67	.01	
Error	201.0	18	11.16			
Total	297.8	19				

## POINTING-ORAL

	School	Group	N	Mean		
	2a	N.ST.E.R.	10	11.1		
	1	N.ST.E.R.	10	14.8		
Source	SS	DF	VE	F	P	
Between Schools	68.5	1	68.5	6.49	.025	
Error	190.5	18	10.55			
Total	259	19				

(2c) The improved explanatory contexts were successful in eliminating the detrimental effects of the repeat condition, when data from all six words are examined. For the difference between groups, N.ST.E. vv N.ST.E.R.,  $F = 0.96$  (insignificant) for the Oral data, and  $F = 1.66$  (insignificant) for the Pointing-oral data, see Tables 3.51 and 3.52.

Thus, the overall detrimental effect of the repeat condition was removed. However, inspection of the means revealed that there was a difference in scores between N.ST.E. and N.ST.E.R. at School 2a, and a small difference in the opposite direction in favour of the N.ST.E.R. condition, at School 1, leading to a slight interaction ( $F = 3.28$ ,  $p = .1$  for Oral data, and  $F = 2.95$ ,  $p = .1$  for Pointing-oral data, see Tables 3.51 and 3.52).

A one-way analysis of variance on the N.ST.E. vv N.ST.E.R. scores at

School 2a, showed the difference to be significant at the .05 level for the Pointing-oral Test, where  $F = 5.35$ , but significant only at the .1 level for the Oral Test, where  $F = 3.83$ . Table 3.54 summarises the one-way analysis of variance for this data.

TABLE 3.54

Summary of one-way analyses of variance on Oral and Pointing-oral data from the N.ST.E. versus N.ST.E.R. groups, at School 2a, on all six words for Experiment III

ORAL					
School	Group	N	Mean		
2a	N.ST.E.	10	12.6		
2a	N.ST.E.R.	10	9.9		
Source	SS	DF	VE	F	P
Between Groups	36.45	1	36.45	3.83	.1
Error	171.30	18	9.50		
Total	207.75	19			

POINTING-ORAL					
School	Group	N	Mean		
2a	N.ST.E.	10	13.9		
2a	N.ST.E.R.	10	11.1		
Source	SS	DF	VE	F	P
Between Groups	39.2	1	39.2	5.35	.05
Error	131.8	18	7.32		
Total	171	19			

Thus, it is clear that while the improved conditions have removed the disadvantage previously manifest by the repeat condition at School 1, they have not done so for children at School 2a.

(3a) The scores for 'encumbered' and 'precarious', of the N.ST.E. group (which had the full load plus the improved contexts) were compared with the ST.E. condition of Experiment I (where the full load with the original contexts was heard) and with the R.ST.E. scores of Experiment II (which heard improved contexts and reduced load) in two way analyses of variance. These may be

seen in Tables 3.55 and 3.56. On the Oral data,  $F = 2.47$ , significant only at the .1 level. The difference between the three sets of groups was even less significant for the Pointing-oral data, where  $F = 0.25$  (insignificant). Here, there was a slight interaction ( $F = 1.87$   $P = 0.25$ ) between schools and groups. This was caused by the very slight difference in Pointing-oral score of 0.1 between ST.E. groups at Schools 2a and 1, in the "wrong" direction. Normally, School 1 achieved the higher scores. Also, the R.ST.E. 2b group did less well than the ST.E. group at School 2a, and yet the N.ST.E. group at School 2a did slightly better than either ST.E. or R.ST.E.

TABLE 3.55

Summary of two-way analysis of variance on Oral data, for ST.E. groups from Experiment I, R.ST.E. groups from Experiment II, and N.ST.E. groups from Experiment III, for 'encumbered' plus 'precarious'

ORAL

'ENCUMBERED' PLUS 'PRECARIOUS'

	School	Group	N	Mean
Experiment I	2a	ST.E.	10	1.1
	1	ST.E.	10	2.2
Experiment II	2b	R.ST.E.	10	2.4
	1	R.ST.E.	10	3.6
Experiment III	2a	N.ST.E.	10	2.6
	1	N.ST.E.	10	3.3

Source	SS	DF	MS	F	P
Between Schools	15.00	1	15.00	3.17	.1
Between Groups	23.43	2	11.71	2.47	.1
Schools/Groups	0.70	2	0.35	0.07	NS
Error	255.80	54	4.74		
Total	294.93	59			

$F_{max} = 2.8$  Permitted  $F_{max} = 7.80$  ( $K = 6, n = 9$ ).

Variances are homogeneous.



TABLE 3.56

Summary of two-way analysis of variance on Pointing-oral data, for ST.E. groups from Experiment I, R.ST.E. groups from Experiment II and N.ST.E. groups from Experiment III, for 'encumbered' plus 'precarious'

## POINTING-ORAL

## 'ENCUMBERED' PLUS 'PRECARIOUS'

	School	Group	N	Mean
Experiment I	2a	ST.E.	10	3.3
	1	ST.E.	10	3.2
Experiment II	2b	R.ST.E.	10	2.2
	1	R.ST.E.	10	4.4
Experiment III	2a	N.ST.E.	10	3.4
	1	N.ST.E.	10	3.9

Source	SS	DF	MS	F	P
Between Schools	11.3	1	11.27	2.97	.1
Between Groups	1.9	2	0.95	0.25	NS
Schools/Groups	14.2	2	7.12	1.87	.25
Error	205.0	54	3.80		
Total	232.4	59			

F max = 2.97. Permitted F max = 7.80. (K = 6, n = 9).

Variances are homogeneous.

Thus, the improved contexts for 'encumbered' and 'precarious' resulted in slightly better scores for R.ST.E. and N.ST.E. compared with ST.E. groups of Experiment I. The increased load did not seem to affect the N.ST.E. group very much, when compared with R.ST.E. which had the reduced load. This suggests that it is the contexts, rather than the load, which is important in determining the acquisition of new words, up to the point where the load makes the contexts obscure, or ambiguous, as was seen in the ST.D. condition, and the ST.E.R. condition at School 1, in Experiment I.

(3b) The schools effect, was still strongly apparent for both the Oral and the Pointing-oral data. On the Oral Test,  $F = 4.61$ , significant at the .05 level and on the Pointing-oral Test,  $F = 6.42$ , significant at the .025 level. Thus the improved contexts did not succeed in eliminating the difference between schools,

for 'encumbered' plus 'precarious'. Tables 3.57 and 3.58 summarise one-way analyses of variance on the Oral and Pointing-oral data.

TABLE 3.57

Summary of one-way analysis of variance on Oral data for N.ST.E. and N.ST.E.R. groups at School 2a, versus N.ST.E. and N.ST.E.R. groups, at School 1, for 'encumbered' plus 'precarious' from Experiment III

ORAL							
School	Group	N	Mean	Mean	N	Group	School
2a	N.ST.E.	10	2.6	3.3	10	N.ST.E.	1
2a	N.ST.E.R.	10	2.5	4.2	10	N.ST.E.R.	1
			≤ 5.1	≤ 7.5			
Source	SS		DF	VE	F	P	
Between Schools	14.4		1	14.4	4.61	.05	
Error	118.7		38	3.12			
Total	133.1		39				

TABLE 3.58

Summary of one-way analysis of variance on Pointing-oral data for N.ST.E. and N.ST.E.R. groups at School 2a, versus N.ST.E. and N.ST.E.R. groups at School 1, for 'encumbered' plus 'precarious' from Experiment III

POINTING-ORAL							
School	Group	N	Mean	Mean	N	Group	School
2a	N.ST.E.	10	3.4	3.9	10	N.ST.E.	1
2a	N.ST.E.R.	10	2.6	4.5	10	N.ST.E.R.	1
			≤ 6.0	≤ 8.4			
Source		SS	DF	VE	F		P
Between Schools		14.4	1	14.4	6.42		.025
Error		85.2	38	2.242			
Total		101.6	39				

Inspection of the means showed that the greater part of the difference between schools fell in the N.ST.E.R. groups, as it had done when all the words were included in the analysis.

(4a) N.ST.E. and N.ST.E.R. vv ST.E. and ST.E.R. The six improved contexts for 'illuminate' and 'obese' enabled children in the new conditions to 161

do better on these words than children in Experiment I, even though ST.E. children had had up to 30 different contexts for these words. Table 3.59 summarises two-way analyses of variance on the new groups, compared with the ST.E. and ST.E.R groups from Experiment I.

TABLE 3.59

Summary of two-way analyses of variance on the Oral and Pointing-oral data from the N.ST.E. and N.ST.E.R. groups of Experiment III, compared with the ST.E. and ST.E.R groups of Experiment I, for 'illuminate' plus 'obese'

<u>Experiment I</u>			ORAL		<u>Experiment III</u>		
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	2.6	5.3	10	N.ST.E.	2a
1	ST.E.	10	4.3	5.2	10	N.ST.E.	1
2a	ST.E.R.	10	0.8	3.8	10	N.ST.E.R.	2a
1	ST.E.R.	10	2.5	5.1	10	N.ST.E.R.	1
Source		SS	DF	VE	F	P	
Between Schools		26.45	1	26.45	10.42	.005	
Between Groups		144.60	3	48.20	18.98	.001	
Schools/Groups		10.95	3	3.65	1.44	NS	
Error		182.80	72	2.54			
Total		364.80	79				

F max = 13.76 Permitted F max = 13.9 (K = 8, n = 9). Variances are homogeneous.

<u>Experiment I</u>			POINTING-ORAL		<u>Experiment III</u>		
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	4.2	5.6	10	N.ST.E.	2a
1	ST.E.	10	4.3	5.5	10	N.ST.E.	1
2a	ST.E.R.	10	0.9	4.4	10	N.ST.E.R.	2a
1	ST.E.R.	10	3.0	5.2	10	N.ST.E.R.	1
Source		SS	DF	VE	F	P	
Between Schools		10.51	1	10.51	3.83	.1	
Between Groups		144.64	3	48.21	17.58	.001	
Schools/Groups		14.84	3	4.95	1.80		
Error		197.50	72	2.74			
Total		367.49	79				

F max = 6.86 Permitted F max = 8.95 (K = 8, n = 9). Variances are homogeneous.



It can be seen that the N.ST.E. and N.ST.E.R. groups did better than the ST.E. and ST.E.R. groups of Experiment I on 'illuminate' and 'obese', with F highly significant for each Test. For the Oral data,  $F = 18.98$ , significant at the .001 level. For the Pointing-oral data,  $F = 17.58$ , again significant at the .001 level.

The N.ST.E. versus ST.E. results for 'illuminate' and 'obese', suggest that a few well thought out contexts, often repeated (that is, six contexts repeated five times each) are more conducive to word acquisition by standard I.Q. children, than are a larger variety of contexts, not so clearly presented. Table 3.60 summarises one-way analyses of variance for the ST.E. and N.ST.E. groups for 'illuminate' plus 'obese'. For the Oral data,  $F = 10.9$ , significant at the .001 level. For the Pointing-oral data,  $F = 5.9$ , significant at the .05 level.

TABLE 3.60

Summary of one-way analysis of variance on Oral and Pointing-oral data for 'illuminate' plus 'obese' for ST.E. groups from Experiment I versus N.ST.E. groups from Experiment III

<u>Experiment I</u>			ORAL		<u>Experiment III</u>		
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	2.6	5.3	10	N.ST.E.	2a
1	ST.E.	10	4.3	5.2	10	N.ST.E.	1
Source		SS	DF	VE	F	P	
Between Groups		32.4	1	32.4	10.9	.001	
Error		112.7	38	2.97			
Total		145.1	39				

<u>Experiment I</u>			POINTING-ORAL		<u>Experiment III</u>		
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.	10	4.2	5.6	10	N.ST.E.	2a
1	ST.E.	10	4.3	5.5	10	N.ST.E.	1
Source		SS	DF	VE	F	P	
Between Groups		16.9	1	16.9	5.9	.05	
Error		108.7	38	2.86			
Total		125.6	39				

(4b) N.ST.E.R. vv ST.E.R. The new standard easy repeat group did better than the standard easy repeat group of Experiment I at both schools, for both Test, for the words 'illuminate' and 'obese'. This suggests that improved contexts selected so that six different local contexts are available, are important in helping children to acquire new words. In Experiment I, although the repeat group had six contexts for each of the two words, these were not selected so that they were quite different from each other. Also, some of the original contexts may have led to confusion for standard I.Q. children, as was suggested and discussed in Experiment I. Tables 3.61 and 3.62 summarise one-way analyses of variance on the Oral and Pointing-oral data.

TABLE 3.61

Summary of one-way analysis of variance on Oral data from the ST.E.R. groups at Schools 2a and 1, from Experiment I, versus the N.ST.E.R. groups at Schools 2a and 1, from Experiment III, for 'illuminate' plus 'obese'

<u>Experiment I</u>			ORAL		<u>Experiment III</u>		
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.R.	10	0.8	3.8	10	N.ST.E.R.	2a
1	ST.E.R.	10	2.5	5.1	10	N.ST.E.R.	1
Source		SS	DF	VE	F	P	
Between Groups		78.4	1	78.4	27.7	>.001	
Error		107.5	38	2.83			
Total		185.9	39				

The difference between groups, N.ST.E.R. versus ST.E.R. was highly significant on both Tests. For the Oral Test,  $F = 27.7$ ,  $P = >.001$ , and for the Pointing-oral Test,  $F = 27.07$ ,  $P = >.001$ . It seems that the clarity of the improved contexts is decisive in helping standard I.Q. children to acquire the "difficult" words, 'illuminate' and 'obese' even within the previously detrimental repeat condition.

TABLE 3.62

Summary of one-way analysis of variance on Pointing-oral data from  
ST.E.R. groups at Schools 2a and 1, from Experiment I, versus the  
N.ST.E.R. groups at Schools 2a and 1, from Experiment III, for  
'illuminate' and 'obese'

POINTING-ORAL							
<u>Experiment I</u>				<u>Experiment III</u>			
School	Group	N	Mean	Mean	N	Group	School
2a	ST.E.R.	10	0.9	4.4	10	N.ST.E.R.	2a
1	ST.E.R.	10	3.0	5.2	10	N.ST.E.R.	1
Source		SS	DF	VE	F	P	
Between Groups		81.22	1	81.22	27.07	> .001	
Error		114.15	38	3			
Total		195.37	39				

(4c) N.ST.E. vv N.ST.E.R. For children at School 1, the difference between the new standard easy, and the new standard easy repeat condition was virtually eliminated for the two words, 'illuminate' and 'obese'. Table 3.63 summarises the results of one-way analyses of variance on the Oral and Pointing-oral data.

TABLE 3.63

Summary of one-way analysis of variance on Oral and Pointing-oral data  
from the N.ST.E. versus N.ST.E.R. groups at School 1, from Experiment III  
for 'illuminate' plus 'obese'

ORAL				POINTING-ORAL			
School	Group	N	Mean	School	Group	N	Mean
1	N.ST.E.	10	5.2	1	N.ST.E.	10	5.5
1	N.ST.E.R.	10	5.1	1	N.ST.E.R.	10	5.2
F = 0.03		P = NS		F = 0.45		P = NS	

This suggests that for these children, six improved contexts heard five times each, are as effective in two stories repeated, as in ten different stories, for the acquisition of 'illuminate' and 'obese'.

For children at School 2a, however, the difference still stands. Tables



3.64 and 3.65 summarise results of one-way analyses of variance on the Oral data, where  $F = 5.38$ , significant at the .05 level, and on the Pointing-oral data, where  $F = 3.33$ , significant at the 0.1 level, which should not be ignored, given the experimental attempts to eradicate this phenomenon.

TABLE 3.64

Summary of one-way analysis of variance on the Oral data, from the N.ST.E. versus N.ST.E.R. groups, at School 2a, from Experiment III, for 'illuminate' plus 'obese'

ORAL					
	School	Group	N	Mean	
	2a	N.ST.E.	10	5.3	
	2a	N.ST.E.R.	10	3.8	
Source	SS	DF	VE	F	P
Between Groups	11.25	1	11.25	5.38	.05
Error	37.70	18	2.09		
Total	48.95	19			

TABLE 3.65

Summary of one-way analysis of variance on the Pointing-oral data, from the N.ST.E. versus N.ST.E.R. groups at School 2a, from Experiment III for

<u>'illuminate' plus 'obese'</u>					
POINTING-ORAL					
	School	Group	N	Mean	
	2a	N.ST.E.	10	5.6	
	2a	N.ST.E.R.	10	4.4	
Source	SS	DF	VE	F	P
Between Groups	7.2	1	7.2	3.33	.1
Error	38.8	18	2.16		
Total	46.0	19			

Thus, these children at School 2a, learn better from six improved contexts repeated five times each, embedded in ten different stories, than they do when the same six contexts are embedded in two stories, which are repeated five times.

Why this should be so is something of a mystery, especially when matched

children at School 1 did not behave in this way. It may be that a factor to do with the social class difference postulated to account for the schools difference is operating, since the difference follows the direction of the schools difference.

It may be that these children attend better in the sense of "more actively" less by rote, given new stories, than given repeated stories. But there is little evidence to support this suggestion.

(4d) For these two words, 'illuminate' and 'obese', the difference between schools was maintained for the new standard easy repeat group, but disappeared for the new standard easy group. That is to say, given six improved contexts embedded in ten stories (with the full load of the other four words), the difference between School 2a and 1 was eliminated, for one condition (N.ST.E.). Table 3.66 summarises the results of a one-way analysis of variance on the Oral data, for the N.ST.E. and N.ST.E.R. groups at School 2a, versus those at School 1.

TABLE 3.66

Summary of one-way analysis of variance on Oral data from the N.ST.E. and N.ST.E.R. groups at School 2a versus those at School 1, for 'illuminate' plus 'obese' from Experiment III

ORAL

School	Group	N	Mean	Mean	N	Group	School
2a	N.ST.E.	10	5.3	5.2	10	N.ST.E.	1
2a	N.ST.E.R.	10	3.8	5.1	10	N.ST.E.R.	1
			Σ 9.1	Σ 10.3			
Source	SS	DF	VE	F	P		
Between Schools	3.6	1	3.6	1.68	NS		
Error	81.5	38	2.14				
Total	85.1	39					

F = 1.68 (insignificant), confirming that the difference between schools is not significant for this data.

Examination of the means for the Pointing-oral data shows that there is,

again, no significant difference between schools, when the scores for 'illuminate' and 'obese' are combined for the N.ST.E. and N.ST.E.R. groups. Table 3.67 gives the relevant means.

TABLE 3.67

Showing the Pointing-oral means of N.ST.E. and N.ST.E.R. groups  
at Schools 2a and 1, for 'illuminate' plus 'obese' from Experiment III

School	Group	N	Mean	Mean	N	Group	School
2a	N.ST.E.	10	5.6	5.5	10	N.ST.E.	1
2a	N.ST.E.R.	10	<u>4.4</u>	<u>5.2</u>	10	N.ST.E.R.	1
			Σ 10.0	Σ 10.7			

Inspection of the means for the Oral data in Table 3.66, suggested that there may be a significant difference between schools for the N.ST.E.R. groups. Certainly, the mean score for School 1 was higher than that at School 2a, following the trend observed throughout the Experiments. Table 3.68 summarises a one-way analysis of variance on this data.

TABLE 3.68

Summary of a one-way analysis of variance on the Oral data for the  
N.ST.E.R. group at School 2a versus the N.ST.E.R. group at School 1,  
for 'illuminate' plus 'obese' from Experiment III

School	Group	N	Mean
2a	N.ST.E.R.	10	3.8
1	N.ST.E.R.	10	5.1

Source	SS	DF	VE	F	P
Between Schools	8.45	1	8.45	3.14	.1
Error	48.50	18	2.69		
Total	56.95	19			

The difference between N.ST.E.R. groups at Schools 2a and 1 was significant only at the .1 level,  $F = 3.14$ . However, since the experimental conditions were designed to eliminate the difference between schools, and since this difference mirrors the difference in behaviour reported earlier (that children from School 2a learn better from six contexts repeated in ten stories, than they do when the same six contexts are repeated in two stories heard five times



each), such a difference cannot be ignored.

(5) Difference between words. Although it would not be sensible to subject the difference between mean scores for words to statistical analysis, because higher scores were available for two of the words ('encumbered' and 'precarious'), than were available for the other four words, inspection of the means is instructive. Table 3.69 shows the means of the six words for the Oral and Pointing-oral data for Experiment III, arranged in order of decreasing difficulty as observed in the Oral Post-test of Experiment I.

TABLE 3.69

To show the mean scores for words for the Oral and Pointing-oral data of the N.ST.E. and N.ST.E.R. groups at Schools 1 and 2a from Experiment III

Means for ORAL data

Group	Total	'precarious'	'encumbered'	'illuminate'	'obese'	'embellish'	'inclement'
2a N.ST.E.	12.6	1.0	1.6	2.8	2.5	2.4	2.3
2a N.ST.E.R.	9.9	1.0	1.5	1.8	2.0	1.9	1.7
1 N.ST.E.	13.5	1.6	1.7	2.8	2.4	2.3	2.7
1 N.ST.E.R.	14.3	1.8	2.4	2.7	2.4	2.5	2.5
Maximum possible for each group	20.0	4.0	4.0	3.0	3.0	3.0	3.0

Means for POINTING-ORAL data

2a N.ST.E.	13.9	1.3	2.1	2.6	3.0	2.6	2.3
2a N.ST.E.R.	11.1	1.2	1.4	2.0	2.4	2.0	2.1
1 N.ST.E.	15.4	2.1	1.8	2.8	2.7	2.6	2.4
1 N.ST.E.R.	14.8	2.0	2.5	2.6	2.6	2.6	2.5
Maximum possible for each group	20.0	4.0	4.0	3.0	3.0	3.0	3.0

It can easily be seen that the N.ST.E.R. group at School 2a did less well than every other group, for every word, on both Tests, with only one tie (with

2a N.ST.E. for 'precarious' on the Oral Test. Also, although 'encumbered' and 'precarious' have the larger possible maximum scores, of 4.0, no other word produces a lower mean score than the mean scores for each group for these words. For each Test, for five out of eight mean scores, these are the lowest scores made, and two of the remaining three cases equal the lowest scores on other words made by the poorest group, 2a N.ST.E.R. (see Table 3.69).

For the other words, apart from the scores for the 2a N.ST.E.R. group, mean scores are quite close to the maximum possible, especially for 'illuminate' where thirty children lose only 7/90 points on the Oral Test. It looks as though the improved contexts have made 'illuminate' the easiest word on the Oral Test. On the Pointing-oral Test, 'obese' (which also had improved contexts) achieves the same score and one group also makes the highest score possible. 'Illuminate' and 'embellish' are close seconds. It is clear, that when the 2a N.ST.E.R. scores are not included, 'illuminate' and 'obese' are a little easier than 'embellish' and 'inclement', and all four words are substantially easier than 'encumbered' and 'precarious'. This information is presented in a different form in Tables 4.1 to 4.6, on page 181, where 'precarious' and 'encumbered' have the highest numbers of subjects scoring zero, of all the words, for all the Experiments.

It is possible to perform a one-way analysis of variance on 'encumbered' versus 'precarious'. It will be recalled that in Experiment II, 'encumbered' was easier than 'precarious', particularly on the Oral Test, where the difference was significant at the .005 level. In the present Experiment, although 'encumbered' gained higher scores than 'precarious', the difference was not significant, on either the Oral Test, where  $F = 2.33$  (insignificant) or on the Pointing-oral Test, where  $F = 1.54$  (insignificant).

The remaining four words can be compared with each other, but again, although 'illuminate' is the easiest word on the Oral Test, and 'obese' is easiest on the Pointing-oral Test, the differences do not reach significance. For the Oral Test,  $F = 0.5$  (insignificant) and for the Pointing-oral Test,  $F = 1.42$  (insignificant).

Since the present Experiment has shown that it is not the 'load' which



makes 'encumbered' and 'precarious' more difficult to learn than the other words, the question remains, would it be possible to design contexts (improved for a second time) which would permit more, and better, learning by standard I.Q. children to take place. While six, carefully presented, local contexts were sufficient to produce good learning for 'illuminate' and 'obese', it may be that 'encumbered' and 'precarious' need more contexts, with the different "sections" of each word presented one at a time, and more gradually than was the case in the present stories. There may be an interaction between the level of difficulty of the word, and the number of contexts necessary to provide a definition.

(6) As with the previous Experiments, the erroneous responses are discussed in the qualitative analysis Chapter on page 177 .

### Summary of results of Experiment III

(1a) The improved contexts, in spite of the full load, did allow standard I.Q. children (N.ST.E.) to score better than standard I.Q. and bright children from Experiment I. (N.ST.E. better than ST.E. and BR.D. on all words)

(1b) The improved contexts, in spite of the full load, did allow standard I.Q. children having the N.ST.E and N.ST.E.R. conditions, to score better than every group from Experiment I. (N.ST.E. and N.ST.E.R. better than ST.E., BR.D. ST.E.R. and ST.E.R.T., on all words.)

(2a) The difference between schools was almost eliminated for the N.ST.E. groups, on all words.

(2b) A significant difference between Schools 2a and 1 remains for the N.ST.E.R. groups, on all words.

(2c) The detrimental effect of the repeat condition was eliminated at School 1, but remains significant at School 2a, for all words.

(3a) The improved contexts for 'encumbered' and 'precarious' resulted in slightly better scores for R.ST.E. and N.ST.E. groups, compared with ST.E. The increased load did not affect N.ST.E. compared with R.ST.E. This suggests that clarity of context is more important than load (up to a certain point), in promoting acquisition of vocabulary. (R.ST.E. and N.ST.E. slightly (insignificantly) better than ST.E.)



(3b) School 2a did less well than School 1 in the N.ST.E. condition, for 'encumbered' plus 'precarious', but the largest difference between schools was caused by the N.ST.E.R. group at School 2a, which scored less than any other group. The improved contexts for 'encumbered' and 'precarious' did not eliminate the difference between schools.

(4a and b) The improved contexts for 'illuminate' and 'obese' resulted in greatly improved scores for the N.ST.E. and N.ST.E.R. groups, at both schools.

(4c) The repeat group difference between N.ST.E. and N.ST.E.R. for 'illuminate' and 'obese' was not significant at School 1, but was significant at School 2a. Children at School 2a learned better when six contexts were presented in ten different stories, than they did when the same six contexts were presented in two stories repeated five times each. The number of stories was not a critical factor for children at School 1.

(4d) The schools effect was maintained by children in the N.ST.E.R. group at School 2a, as was described above, in (4c). For the N.ST.E. groups, there was no difference between schools, when the six improved contexts for 'illuminate' and 'obese' were used.

(5) The difference between words remained. In spite of the improved contexts, and the possibility of making higher scores, 'encumbered' and 'precarious' remain more difficult for standard I.Q. children to attain than the other four words. 'Illuminate' and 'obese' are the easiest words now, presumably because of the improved contexts.

(6) The erroneous responses are analysed in Chapter Four.

## SUMMARY of main findings from EXPERIMENTS I, II and III

1. One of the most striking of the experimental findings was that the method worked. Stories proved to be a very good medium for the structured teaching of new vocabulary. Five-year-old children, even of low verbal I.Q., were able to learn the meanings of words through words, and without the mediation of referents or pictures. This supports, experimentally, claims made by several workers, in particular McNeill (1966) and Olson (1970).

2. All children were able to learn something about the six difficult words from the stories. Only one child out of 210 children managed to score zero on both Post-tests. (This child had a P.P.V.T. I.Q. of 89)

3. As would be expected, there was a strong association between verbal I.Q. (whether passive or active) and scores gained on the experimental tests. The correlations were not perfect because there were considerable individual differences in scores at any I.Q. level.

4. Words differed in the ease with which they were acquired. The two new concepts 'encumbered' and 'precarious' were difficult for most children, even under improved conditions.

5. The experimental conditions themselves affected the acquisition of the words. The type and number of stories (easy or difficult version, and the number of times a story was heard) were important experimental variables.

6. The type and number of local contexts, that is, the clarity and proximity of local contexts, the number of times these were heard, and the number of words included in each story, also affected results. Load was not a critical factor when improved local contexts, and better spacing of the 'difficult' words, were introduced.

7. Single trial learning was not a major factor in the acquisition of



the words from the stories.

8. Children at one school do not necessarily behave in the same way as matched children at another school, given similar treatments. The difference between schools may be summarised from the evidence on 'illuminate' plus 'obese' in the following way.

Provided there is sufficient variety in local context (in this case, six exemplars), provided that the local contexts are clear, and do not inadvertently lead to confusions, provided that the words are not very difficult, and provided that the six contexts are embedded in ten different stories, standard I.Q. children from School 2a will do as well as standard I.Q. children from School 1, on both measures.

#### Summary of remaining problems

(1) Although the Experiments have shown that young children can learn the meanings of difficult words, the results for the new concepts 'encumbered' and 'precarious' are not conclusive. While the high I.Q. children scored well for these words after the local contexts had been improved, they remained difficult for standard I.Q. children. Two reasons could account for this factor.

(a) The words 'encumbered' and 'precarious', being new concepts rather than new labels, were not sufficiently reduced to their component parts (each of which may be regarded as a separate concept) and then re-combined, in the local contexts. It seems possible from the pro-formas that children in the standard and low I.Q. ranges were familiar with the ideas of being made tired or unhappy by having to carry a heavy object, but not with the idea of being slowed down. Add to this the idea of impediment by, for example, a light, bulky object, and it can be seen that the word 'encumbered' amalgamates some fairly complex, and at first sight, contradictory ideas.

(b) The second possibility, which must not be ignored, is that Werner and Kaplan (1950) were right in their hypothesis of spiral



development. It could be the case, that though standard I.Q. children could learn new synonyms, this was because such learning did not involve them in certain strategies which would be more likely to be used by older children. The words 'encumbered' and 'precarious', on the other hand, may require such strategies, and therefore be unattainable by standard I.Q. children, within the experimental situation. However, the fact that only  $\frac{4}{60}$  children from the groups which had the improved condition (R.ST.E., N.ST.E. and N.ST.E.R. at Schools 2b, 2a and 1), failed to make a score on these two words, suggests that it is not the case that the words are unattainable for these children. Rather, the parameters are more numerous and complicated, so that it is easy to retain only part of the concept required. It seems likely that a slower, more structured build up would reduce errors of under- and over- inclusion, as suggested in (a) above. Unfortunately, there was not time to follow up this suggestion.

(2) Although we know from Experiment II that a child has got to hear a new word (or at least these particular new words) more than four times in context before he acquires it, evidence is lacking on

(a) how many times he has to hear it before he starts to form a hypothesis, and

(b) how he moves from a less to a more adequate definition.

At one stage of the experimental programme, various methods of exploring the latter were discussed. However, it was decided to pursue only one of these, in the pilot study reported on page 268, as there seemed to be other important questions to be investigated, and unfortunately time was limited.

(3) From the erroneous responses, there exists some evidence on how the words are stored, and what strategies are enlisted in their acquisition. These are discussed in Chapter Four. Evidence is lacking on how a strategy becomes dominant, although it is apparent that adults have available the strategies that children use. We do not have evidence on what educated adults resort to when they are faced with words which they do not recognise. It is not known whether they would resort to guessing, or to ikonic modes of

attempted definition, as did the children.

The next two Chapters examine the erroneous responses, and the possible causes of the difference between schools.

## CHAPTER FOUR

### QUALITATIVE ANALYSIS OF ERRORS



QUALITATIVE ANALYSIS OF ERRORSIntroduction

The children's responses showed definitions and usage of the difficult words which varied from very good (see Tables 4.7 to 4.12) to poor. In addition, several types of error were manifest which revealed the strategies used by the children in their attempts to define the words. Strategies which have been observed in some of the verbal I.Q. tests, and in the Werner and Kaplan Word-Context Test, such as perseveration, random guessing, and homophonic associating, were also found to occur in the Oral and Pointing-oral Tests in the present Experiments.

It was not always possible to discover the underlying strategy from a single response. However, when all the Oral responses (from the Pre-test in Experiment I, and the Oral and Pointing-oral Post-tests from all three Experiments) were pooled, it became possible to differentiate between, for example, homophonic chains and random guesses with some degree of certainty. The categories in which the strategies are discussed, were arrived at empirically. All the erroneous Oral and Pointing-oral responses were first charted by external characteristics. For example, every time the word "doctor" was given, in response to 'inclement' this was noted, along with anything else said. At the end of the process, meaningful links were searched for. In this way, it became apparent that there were a cluster of responses associated, in this case, with medical matters, which probably arose from a homophone, medicine, and led to semantic associations with the homophone, which have been termed 'homophone chains'.

Many of the erroneous Pointing-oral responses were not helpful in this analysis because they were related to the picture pointed at. Care was taken, in cases where the correct picture was pointed at, and a reasonable definition of the difficult word was given in the form of a picture description, to check that the child did have some idea of the meaning of the word. Additional questions were asked, inviting the child (a) to make up something to say,

using the word, and (b) requiring the child to explain how the word applied in a different situation. Picture descriptions of wrongly chosen pictures, were, of course, not included in the analysis, except in cases where the child had pointed to a wrong picture because of an explicit homophonic or semantic association with the difficult word.

For example, for the word 'illuminate' some children pointed at the picture of the pay-desk window, saying that the sun was shining through it, making it bright. For 'inclement', several children pointed at the picture of the hut, explaining that it was being blown down by the 'inclement' windy weather. A third example was where children pointed at the waiter with the broken crockery, saying he was careless, or should have taken more care, or was sad because he had been 'precarious'.

Some children gave several kinds of answer, in one Oral response. For example, a child might give a homophone, a homophone chain, "don't know", and a random guess. For this reason, statistical analysis would be inappropriate in most cases. "Don't know" was only counted as a response in the "don't know" category, if the child would say nothing else.

#### Adult comparison data

Since the difficult words were selected from the far end of the P.P.V.T., and some of the five-year-olds had produced good definitions, the question of how normal adults would respond, was raised.

The usual difficulties were experienced in connection with how to go about finding normal adults. The 4,000 super-normal adults readily available in the University were not considered suitable in the first instance.

The problem was to find ordinary adults, who had left school at fifteen or sixteen years, and who had time to spare to answer questions. The Launderette provided a solution. By selecting the district, it was possible to ensure that the clientele fitted the requirements mentioned. Only one person refused to help, and this was because she had been badgered into answering two lengthy questionnaires about manufactured goods, during the preceding fortnight. The other adults were happily co-operative, having time to waste while their washing was processed. All the adults in the sample were



in their early twenties or older, and had left school at between fourteen and sixteen years, and had not taken part in higher education since leaving school. It was predicted that this group of ten adults would not know the meanings of all the difficult words, and that their responses would therefore be comparable with those of the children who did not know the meanings. It was felt that this group of adults would be biologically mature, but might not have reached intellectual maturity, in the sense of having developed intellectual strategies for coping with problems, which might be expected to accompany academic education at an advanced level.

For this reason, it was decided to use in addition a more sophisticated group, and a random sample of ten was taken from the population of 4,000 University students. It was predicted that this group would be able to define the difficult words, and thus would serve for comparison with the children who did know the words.

The adults were asked to give an oral definition of, and to use, each of the six "difficult" words, plus the word "hat" at the beginning, for practice, and the word "horse" at the end, so that everyone would end with a successful attempt. The adults heard no stories, and did not have a Picture-pointing Test, since it was a spontaneous response that was sought.

The predictions were supported. (The maximum possible score was 60, i.e. 10 subjects x 6 words.) The Launderette group achieved 18/60 correct definitions, while the students gave 45/60 correct definitions. Tables 4.1 to 4.6 show the number of times a score was given, within each group of ten adults, or children, for each of the difficult words, for each of the groups tested, for the Oral data.

The resemblances between the adult responses and those of the children were striking, as may be seen in Tables 4.7 to 4.12, where examples of good definitions from adults and children are presented for comparison.

The main difference between adult definitions and those that the children gave, was that students gave 4 metaphorical definitions, Launderette group 2 metaphorical definitions, and the children, no metaphorical definitions. The students tended to use longer words in their sentences than the children.



Apart from these differences, every type of response given by a child was also given by an adult, including perseverative and homophonic responses. Therefore, the adult responses will be considered with those of the children, as appropriate.

In this Chapter, the several types of erroneous responses made by children and adults are illustrated from the pro-formas and discussed. The mistakes throw some light on the strategies used to formulate a meaning for a difficult new word. The main types of responses are dealt with in the following order :- "don't know", perseveration, random guess, homophone and homophone chain, homophone-semantic chain, and semantic confusion. In addition, clues given by over- and under- inclusion in the definitions are considered.

#### Post-test data

##### Good definitions

"Who knows what a Kangaroo is ? Is it someone who can define it as a marsupial mammal ? Is it someone who can track it down and use its products ? Is it someone who can pick out pictures of Kangaroos from those of other animals ? Or is it only someone who can do all of these ?" (Clarke 1969)

In this study, children were credited with knowing the meaning of a word if they could (a) point to a picture representing the word, (b) define it correctly, and/or (c) use it correctly in a sentence which showed that they understood it.

Examples of good definitions for each word follow in Tables 4.7 to 4.12. Some adult definitions have been included for comparison. The group to which the child belonged has been recorded beside the definition. Adults were either from the Launderette (L.) group, or the student (S.) group.

##### "Don't know"

On the Pre-test for the four basic groups of eighty children in Experiment I (a), (ST.E., ST.D., ST.E.R., and BR.D.), out of a possible 480, 363 said "don't know", or were unable to talk about the difficult word. Children were always encouraged to guess, for two reasons. First, in the pilot studies which had used children of different ages, it had been found that some children tend to say "don't know" if they are not certain, even when they give

(Continued on page 199 .....)

Table 4.1 shows the number of times a score of 3,2,1,0 or 4, is given within each group of ten, for 'precarious'.

TABLE 4.1

To show number of people per group of 10, scoring 3,2,1,0 or 4, for  
'precarious': (Oral data)

Group N = 10 in each	Score 3	2	1	0	4
L.	2	-	2	4	2
S.	4	1	-	-	5
ST.E.1	1	1	1	7	-
ST.E.2a	-	1	2	7	-
BR.D.2a	-	-	4	6	-
BR.D.1.	-	-	1	8	1
R.ST.E.1	1	1	2	5	1
R.ST.E.2b	-	1	3	6	-
R.BR.E.1.	3	-	1	1	5
N.ST.E.1.	1	-	5	2	2
N.ST.E.2a	-	1	4	4	1
N.ST.E.R.2a	1	1	5	3	-
N.ST.E.R.1.	2	2	4	1	1
ST.E.R.1.	1	-	1	8	-
ST.E.R.2a	1	1	1	7	-
ST.D.R.1	-	-	-	10	-
ST.E.R.T.2a	-	-	1	9	-
ST.E.R.T.2c	-	-	2	8	-
ST.D.1.	-	-	2	8	-
ST.D.2a	-	-	3	7	-
L.E.3	-	-	-	10	-
L.E.2c	-	-	1	9	-
R.L.E.1.	-	-	4	6	-
ST.E.I.2d	1	1	-	8	-
Control 2d	-	-	-	10	-

'ENCUMBERED'

Table 4.2 shows the number of times a score of 3,2,1,0 or 4 is given within each group of 10, for 'encumbered'.

TABLE 4.2

To show number of people per group of 10, scoring 3,2,1,0 or 4  
for 'encumbered': (Oral data)

Group	Score 3	2	1	0	4
L.	0	1	2	5	2
S.	5	2	-	-	3
ST.E.1.	2	3	-	4	1
ST.E.2a	1	2	-	7	-
BR.D.2a	1	-	-	7	2
BR.D.1.	2	3	1	4	-
R.ST.E.1.	1	3	-	2	4
R.ST.E.2b	2	2	1	3	2
R.BR.E.1	2	3	-	-	5
N.ST.E.1.	3	2	-	4	1
N.ST.E.2a	2	3	-	4	1
N.ST.E.R.2a	1	3	2	3	1
N.ST.E.R.1.	4	4	-	1	1
ST.E.R. 1	-	1	1	8	-
ST.E.R.2a	-	-	-	10	-
ST.D.R.1.	1	-	1	8	-
ST.E.R.T.2a	-	-	1	9	-
ST.E.R.T.2c	1	-	-	9	-
ST.D.1.	2	-	-	8	-
ST.D.2a	1	-	-	9	-
L.E.3	-	2	-	8	-
L.E.2c	-	1	1	8	-
R.L.E.1.	-	2	-	5	3
ST.E.I.2d	1	1	-	6	2
Control 2d	-	-	-	10	-



'ILLUMINATE'

Table 4.3 shows the number of times a score of 3, 2, 1 or 0, is given within each group of 10, for 'illuminate'.

TABLE 4.3

To show number of people per group of 10, scoring 3, 2, 1 or 0,  
for 'illuminate' : (Oral data)

Group	Score 3	2	1	0
L.	3	2	3	2
S.	8	2	-	-
ST.E.1.	6	1	-	3
ST.E.2a	4	-	-	6
BR.D.2a	5	-	-	5
BR.D.1.	2	-	1	7
N.ST.E.1	9	-	1	-
N.ST.E.2a	8	2	-	-
N.ST.E.R.2a	6	-	-	4
N.ST.E.R.1	9	-	-	1
ST.E.R.1.	-	1	3	6
ST.E.R.2a	-	-	-	10
ST.D.R.1.	1	-	1	8
ST.E.R.T.2a	-	1	-	9
ST.E.R.T.2c	1	-	-	9
ST.D.1	4	-	1	5
ST.D.2a	2	-	1	7
L.E.3	1	-	1	8
L.E.2c	-	-	-	10
ST.E.I.2d	2	2	-	6
Control 2d	-	-	-	10

'OBESE'

Table 4.4 shows the number of times a score of 3, 2, 1 or 0 is given within each group of 10, for 'obese'.

TABLE 4.4

To show number of people per group of 10, scoring 3, 2, 1 or 0, for 'obese' : (Oral data)

Group	Score 3	2	1	0
L.	5	-	-	5
S.	10	-	-	-
ST.E.1	6	1	1	2
ST.E.2a	4	1	-	5
BR.D.2a	3	-	1	6
BR.D.1.	2	1	3	4
N.ST.E.1.	7	-	3	-
N.ST.E.2a	5	5	-	-
N.ST.E.R.2a	6	1	-	3
N.ST.E.R.1.	7	1	1	1
ST.E.R.1.	6	1	-	3
ST.E.R.2a	2	1	-	7
ST.D.R.1.	-	-	-	10
ST.E.R.T.2a	-	1	3	6
ST.E.R.T.2c	3	1	1	5
ST.D.1.	1	-	-	9
ST.D.2a	-	1	-	9
L.E.3.	2	1	-	7
L.E.2c	-	1	1	8
ST.E.1.2d	2	1	-	7
Control 2d	-	-	-	10

'EMBELLISH'

Table 4.5 shows the number of times a score of 3, 2, 1 or 0 is given within each group of 10, for 'embellish'.

TABLE 4.5

To show number of people per group of 10, scoring 3, 2, 1 or 0  
for 'embellish' : (Oral data)

Group	Score 3	2	1	0
L.	2	-	-	8
S.	4	1	2	3
ST.E.1	5	1	2	2
ST.E.2a	3	1	-	6
BR.D.2a	2	2	1	5
BR.D.1.	5	2	1	2
N.ST.E.1.	7	1	-	2
N.ST.E.2a	8	-	-	2
N.ST.E.R.2a	5	2	-	3
N.ST.E.R.1	8	-	1	1
ST.E.R.1	2	2	5	1
ST.E.R.2a	1	1	1	7
ST.D.R.1	1	-	2	7
ST.E.R.T.2a	1	3	1	5
ST.E.R.T.2c	3	2	1	4
ST.D.1.	2	1	3	4
ST.D.2a	3	-	-	7
L.E.3	-	1	-	9
L.E.2c	-	2	1	7
ST.E.I.2d	5	1	2	2
Control 2d	-	-	-	10



**'INCLEMENT'**

Table 4.6 shows the number of times a score of 3, 2, 1 or 0 is given within each group of 10 for 'inclement'.

**TABLE 4.6**

To show number of people per group of 10, scoring 3, 2, 1 or 0, for  
'inclement' : (Oral data)

Group	Score 3	2	1	0
L.	2	-	1	7
S.	6	1	-	3
ST.E.1	2	6	1	1
ST.E.2a	2	5	-	3
BR.D.2a	4	4	-	2
BR.D.1.	3	5	2	-
N.ST.E.1	7	3	-	-
N.ST.E.2a	5	4	-	1
N.ST.E.R.2a	1	7	-	2
N.ST.E.R.1.	5	5	-	-
ST.E.R.1.	3	2	-	5
ST.E.R.2a	4	1	-	5
ST.D.R.1.	3	2	-	5
ST.E.R.T.2a	1	1	1	7
ST.E.R.T.2c	2	3	3	2
ST.D.1.	5	4	-	1
ST.D.2a	-	6	1	3
L.E.3	3	3	-	4
ST.E.I.2d	4	6	-	-
Control 2d	-	-	-	10

The main difference between the adults, S, and the children, is that all except one of group S, who knew the meaning of 'inclement', used a synonym for it, and thus scored 3. Many children who knew the meaning of 'inclement' did not use a synonym, and thus scored 2. Apart from the control group, only one group of children, ST.E.R.T.2a, scored 0 as often as the adult group. This supports the suggestion that 'inclement', though being a fairly rare word in the vocabulary of normal adults, is a word which may be learnt with ease, when it is met in a comprehensible explanatory context.

## Good definitions or uses of

'PRECARIOUS'

<u>Group</u>	<u>School</u>	<u>Responses scored 4</u>
1.	L.	"Insecure, not quite safe. (Make up:-) He balanced the book ' <u>precariously</u> ' on his head."
2.	L.	"Unsafe. (Make up :-) The mountain ledge was a very ' <u>precarious</u> ' place to sleep."
3.	S.	"In a dangerous position. (Make up :-) The car was balanced ' <u>precariously</u> ' on a lorry."
4.	S.	"Dangerous. (Make up :-) The man was in a ' <u>precarious</u> ' position."
5.	N.ST.E.	1 "Means when there's something dangerous. (Make up :- Circus ?) Might be doing something not very ' <u>precarious</u> ', but it could be a bit dangerous. (Do ?) Could be a big giant hurting someone."
6.	N.ST.E.	1 "Too dangerous. (Make up :-) It's too dangerous to walk near something bad. (Circus ?) They might be picking up a brick and throwing it and that's ' <u>precarious</u> ' and it might hurt someone."
7.	N.ST.E.	2a "It's danger. (Make up :-) It's danger 'cause there might be a giant. (Circus ?) He might fall off an elephant. (Why ' <u>precarious</u> ' ?) 'Cause he might hurt himself."
8.	N.ST.E.R.	1 "Dangerous, if the giants kill you or something. (Make up :-) Linda went into the woods and there lived some giants. (Circus ?) Doing a hand stand. (Why ' <u>precarious</u> ' ?) Because you might break your neck."
<u>Responses scored 3</u>		
9.	BR.D.	1 "In danger. (Make up :-) Someone is ' <u>precarious</u> '. (How ?) Slipping down a cliff. (Why ' <u>precariously</u> '?) Because if you might hurt yourself."
10.	N.ST.E.	1 "If you get bitten. (Why ?) If you get bitten by a switch. (Make up :-) That wall is ' <u>precarious</u> '. (Why ?) If someone knocks through it could easily hurt someone else. (Circus ?) Letting a lion out. (Why ?) 'Cause he might go after you. (Mean ?) That something dangerous might happen."
11.	N.ST.E.R.	2a "Throw you in the fire. (Why ?) Because it's dangerous. (Circus ?) Not set fire. (Else ?) Fight. (Why ?) Because it isn't friends. (Means ?) To not throw you in the fire."
12.	N.ST.E.R.	1 "If you're climbing up a very high ladder and it's fire, and it's alright for firemen but it's not alright for ordinary men. (Make up :-) If there was a very big door and you had a knife and you were trying to chop it down it would be ' <u>precarious</u> '. (Why ?) You wouldn't be able to do it any more. (Why could fire



be 'precarious' ?) It perhaps might catch fire onto you and onto the ladder. (Mean ?) Things that are very dangerous. (Circus ?) Walking on a tight-rope. (Why 'precarious' ?) There might not be something at the bottom to catch you."

- |     |           |    |   |
|-----|-----------|----|---|
| 13. | N.ST.E.R. | 1  | "Don't go too near the road, or anything like that. (Why ?) Because a car might come along or a lorry. (Circus ?) He might be doing a dangerous thing. (Why 'precarious'?) 'Cause he might fall off." |
| 14. | ST.E.R.   | 1  | "Danger. (Doing ?) Jumping onto a boat - he could be. Boat could be sailing across a river. (...Means ?) Don't fall off apparatus. ('Precarious' position is a ...?) Danger."                         |
| 15. | ST.E.R.   | 2a | "Take care. (Why ?) 'Cause the giant might get you. (Else ?) Crossing the road. (Why ?) 'Cause you might get run over. (Means ?) Take care."  |
| 16. | ST.E.I.   | 2d | "In case you don't fall. (Circus ?) He'd be falling from a roof. (Why 'precarious' ?) Because it's dangerous. (Mean ?) Could fall from a mountain."   |

#### TABLE 4.8

Good definitions or uses of

#### 'ENCUMBERED'

- |    | <u>Group</u> | <u>School</u> | <u>Responses scored 4</u>   |
|----|--------------|---------------|---|
| 1. | L.           |               | "Burdened with or by. (Make up :-) My progress was ' <u>encumbered</u> ' by the heavy rucksack on my back."   |
| 2. | L.           |               | "Laden with; burdened with. (Make up:-) She was ' <u>encumbered</u> ' by two heavy shopping bags."  |
| 3. | S.           |               | "Don't know. Something like to burden. Don't know. (Make up:-) Students were ' <u>encumbered</u> ' with a heavy work load."   |
| 4. | S.           |               | "Burdened with. (Make up:-) I was ' <u>encumbered</u> ' with a lame dog."   |
| 5  | N.ST.E.      | 1             | "Heavy things so you have to walk slowly and it makes you walk slowly. (Make up:-) My Mum is ' <u>encumbered</u> ' by something heavy and it makes her walk slowly. (By?) Big heavy sacks of gold. (Why ?) 'Cause they're heavy."   |
| 6  | N.ST.E.      | 2a            | "You have to go slowly because some things are slowing you down. (Make up :-) My Mummy's ' <u>encumbered</u> ' by her shopping. (What ?) They got a lot of stuff. (Like ?) The shopping. (Daddy ?) His jobs. (Why?) 'Cause his car keeps going down to the ground. (Why?) 'Cause it's heavy." |



7. N.ST.E.R. 1 "You get slowed down. (Make up:-) The man might get 'encumbered' by two big suit cases ...."
8. N.ST.E.R. 2a "If you're carrying something, you have to walk slow. (Why?) 'Cause it's heavy. (Make up:-) Trying to go fast. (By ?) Case or something or a shopping bag. (Mean ?) Slow you down."
9. ST.E. 1 "A cow can slow you down. 'Jack and the Beanstalk' - in that story, a cow 'encumbered' him when he was taking it to the market."
10. R.BR.E. 1 "If you've got something heavy on your back, you have to walk slowly, if you're 'encumbered' by a sack on your back. (Like ?) He would walk slowly. He'd be all tired 'cause whatever's on his back would be heavy."
11. R.ST.E. 1 "You go slow because you have to carry something that's very heavy, 'cause it was in that story of 'Naughty Jane' because he was too late. (Make up:-) 'Encumbered' by a bicycle. (Why ?) Because it's got a flat tyre. (Like ?) He'd be going slowly."
12. R.ST.E. 1 "Slowing you down. It was in the stories. In the 'King' story, he wouldn't have thrown it away if he wasn't 'encumbered'. (Make up :-) I'm being 'encumbered' by this heavy bag of bricks. (Like ?) Walking slowly. (Why ?) Because they're heavy. (Mean ?) Slowed down with the stuff you're carrying."
13. R.ST.E. 2b "The things are so heavy and they slow you down and they stop you from walking so fast. (Make up:-) 'Encumbered' by a big bike. (Why ?) Because it's heavy. (Like ?) Cross. (Why?) Because he wants to walk fast ..."
14. R.ST.E. 2b "If you've got something on your lorry and it's heavy and you're going ten and it doesn't make you go ten - ten miles an hour. (Like ?) Might have a bag and he's 'encumbered' by a big box. (Why ?) 'Cause it might have something heavy in it. (Mean ?) When you've got somat heavy in your box and it's 'encumbering' you. (Mean ?) It's making you slow down."
15. R.L.E. 1 "You're 'encumbered' by a statue. (Why ?) Because it slows you down. (Why ?) Because it's too heavy and it keeps on slowing you down. (Like ?) He'll have a big heavy thing over his back that 'encumbers' him and slows him down."
16. R.L.E. 1 "Means you're slow and you're carrying something very heavy. (Make up :-) If something's very heavy, that 'encumbers' you. (Like ?) He would be slow. (Why ?) Because it would be heavy. (What ?) A sack of food. I listened to the stories. That's how I know."

Responses scored 3

- |     |       |    |  |
|-----|-------|----|--|
| 17. | BR.D. | 1  | "You're carrying things and it's a lot too heavy. (How ?) Give them real heavy things to carry. (What ?) Big things and sacks. (Like ?) Walking very, very slowly."  |
| 18. | BR.D. | 2a | "Heavy. (Make up :-) When we go on our holiday my Daddy is ' <u>encumbered</u> ' by two heavy cases. (How ?) Give them things that are heavy. (Like ?) Tired."   |
| 19. | ST.E. | 1  | "My Daddy was going away on a big ship and he was ' <u>encumbered</u> ' by two big suitcases. (Like ?) Cross. (Why ?) Slowly. Some people would wish they hadn't been ' <u>encumbered</u> ' by heavy suitcases." |
| 20. | ST.E. | 2a | "When you're going to dinner and you're ' <u>encumbered</u> ' by two heavy suitcases. (How ?) With three bags. (Like ?) Walking slow, carrying three bags...."   |

TABLE 4.9

Good definitions or uses of

'ILLUMINATE'

- | <u>Group</u> | <u>School</u> | <u>Responses scored 3</u>   |
|--------------|---------------|---|
| 1.           | L.            | (It means ?) "Light up. (Make up:-) Switch the light on to ' <u>illuminate</u> ' the room."   |
| 2.           | S.            | "To ' <u>illuminate</u> ' something, you light it up. (Make up:-) The lights at Blackpool ' <u>illuminate</u> ' the surroundings."  |
| 3.           | S.            | "To throw light upon using an artificial light source. (Make up:-) The room was ' <u>illuminated</u> ' by an electric light. (Sun ?) Yes."  |
| 4.           | S.            | "It means to light up. (Make up:-) He ' <u>illuminated</u> ' the room by switching on the light."   |
| 5.           | S.            | "To shed light upon. (Make up:-) The talk was most ' <u>illuminating</u> '."  |
| 6.           | ST.E.         | 1 "Lit up. (Make up:-) The room is ' <u>illuminated</u> '. (How ?) By the light."   |
| 7.           | ST.E.         | 1 "Lighted up. (Make up:-) I've got a light in my bedroom and Daddy switches it on. In 'Jack and the Beanstalk', the house was lighted by a candle what ' <u>illuminated</u> ' it."   |
| 8.           | ST.E.         | 2a "It's a light that ' <u>illuminates</u> ' everything. I heard it in a story. (Make up:-) Make a light in your house. The light ' <u>illuminates</u> ' all the leaves and trees."   |
| 9.           | ST.E.         | 2a "Light. Well if a boy's playing football and breaks the window and breaks the light he has to buy another one to light up the house. (Make up:-) At night you watch the telly and put it on and it ' <u>illuminates</u> ' all the room." |



10. BR.D. 2a "It's light, like a candle and it makes the room go nice and light so you can see. (Make up :-) My Mummy puts the light on and it makes the room 'illuminate' and then she reads the books."
11. BR.D. 2a "It means that light brightens something up and you can see whatever it is, or what you want to do. In the night-time when it's dark you have to have something that 'illuminates' the room up so that you can see where you're going and won't bump into things."
12. BR.D. 1 "It lightens up the sky. (Make up :-) My mummy switches the light on and it 'illuminates' the room."
13. N.ST.E. 1 (Make up:-) " 'Illuminates' the whole room. (Mean ?) That you light the whole room."
14. N.ST.E. 1 (Make up:-) "My mummy 'illuminates' the room. (How ?) With a light. (Mean ?) The room's light."
15. N.ST.E. 1 "Means when you have a light on it's nice and 'illuminated' 'cause then you can see."
16. N.ST.E. 1. "It means something's lit up, the whole room. The sun's 'illuminating' this room. Really, the sun's 'illuminating' the whole school ...."
17. N.ST.E. 2a "When it 'illuminates' the pathway because we had 'illuminate' in the story. It looks welcome. (Room ?) By lights. (Why ?) 'Cause if they're bulbs they 'illuminate' the room. (Mean ?) Lighting up."
18. N.ST.E. 2a "It's light all over the room. (Make up:-) It's real (i.e. very) light. (Make up:-) 'Illuminating' the Christmas tree. (How ?) Put the lights on." (Did not hear the story containing this example !)
19. N.ST.E.R. 2a "That you light up the hall 'cause I've heard it in that story. (Make up :-) I 'illuminate' the room. (How ?) Put the lights on."
20. N.ST.E.R. 2a "Candles 'illuminate' the living room. (Mean ?) Lighting up the living room ..."
21. N.ST.E.R. 1 "Light. (Make up :-) The bulb and the moon and the sun they 'illuminate' everything. (Room ?) By lights."
22. N.ST.E.R. 1 "That something that lights up and it makes the house or something so it's not dark. (Make up :-) That if you switch a light on and it lights the bulb up and then you can see better in the house 'cause if you light the bulb up, the beam it shines down."



TABLE 4.10

Good definitions or uses of

	<u>Group</u>	<u>School</u>	<u>'OBESE'</u> Responses scored 3
1.	L.		"Extremely fat. (Make up :-) The ' <u>obese</u> ' man had to squeeze through the doorway."
2.	L.		"Fat, overweight. (Make up:-) Most ' <u>obese</u> ' people are recommended to go on a diet."
3.	S.		"That's if you're fat. (Make up:-) The man was very ' <u>obese</u> '."
4.	S.		"Fat. (Make up:-) Could I use the noun ? ' <u>Obesity</u> ' is commonplace in affluent nations."
5.	ST.E.	1	"I saw an ' <u>obese</u> ' animal in the woods. (Why obese ?) 'Cause it was so fat. (How could you make someone obese ?) By eating a lot. (What would be hard for an obese person to do ?) Hard for you to get through the door. (Why ?) 'Cause your tummy would be touching."
6.	ST.E.	1	" ' <u>Obese</u> ' means fat. (Make up :-) My dad is fat, (but he isn't !) (Make ?) Eat a lot of dinner, and if you drink a lot of beer you do !"
7.	ST.E.	2a	"It means fat. (Make up:-) I have had a story about an ' <u>obese</u> ' woman in a book at home. (Make ?) When you eat lots and lots and lots of food. (Hard ?) You wouldn't be able to get through a thin door."
8.	ST.E.	2a	"It means when somebody's real (i.e. very) fat and they can't walk properly because they've got such a fat tummy. (Make up:-) Isn't that lady's tummy ' <u>obese</u> '."
9.	BR.D.	2a	"Fat. (Uses arms to show large space which is ' <u>obese</u> ') (Make up:-) As big as two doors. D.G. is ' <u>obese</u> ', in Mrs. D's class." (Excellent example !)
10.	BR.D.	2a	"Is fat. ' <u>Obese</u> ' means that it's real hard and heavy to move .... (Make ?) Eating too much."
11.	BR.D.	1	"Fat. (Make up:-) I am ' <u>obese</u> '. (Make ?) Eat so much food."
12.	BR.D.	1	"Fat. (Make up:-) I saw an ' <u>obese</u> ' man ... (Make ?) By eating a lot."
13.	N.ST.E. . .	1	"That wine makes her ' <u>obese</u> '. (Mean ?) That you're fat. Me dad's fat. He eats too much and now he's slimming."
14.	N.ST.E.	1	"It means that somebody's fat. (Make up:-) If there's a big fat lady or man, they might not be able to get through a door. They'd have to squeeze and squeeze!"

15. N.ST.E. 2a "Real big. (Make ?) Eating and drinking all the time. (Make up:-) Eating and drinking and you don't stop eating and drinking. (Mean ?) You're real big. (Up and down, or round ?) Round and fat."
16. N.ST.E. 2a "'Obese' man. (Like ?) Fat tummy and his head would look funny on his fat body. (Hard ?) Bend. (Why ?) 'Cause he's got a fat body. (Make ?) With too much dinner."
17. N.ST.E.R. 2a "When someone's fat. (Make up:-) When you look horrible. (Why ?) Because they're 'obese', that's why! (Hard ?) Bend down. (Why ?) Because he's fat and they can't bend down when they're fat ... (Make ?) Eating too much. (Mean ?) Fat."
18. N.ST.E.R. 2a "'Naughty Jane', she ate one chicken up ... (Like ?) They're fat. (Hard ?) Bend down. (Why ?) 'Cause they was too fat. (Make ?) Eating a lot of food and drinking a lot. (Mean ?) She was too fat."
19. N.ST.E.R. 1 "Fat. (Make up:-) I saw a gentleman who was 'obese'. I looked out of the window, and he was very, very fat. He looked like this."  
(Demonstrates !)
20. N.ST.E.R. 1 "Fat. (Make ?) By eating too much things. (Hard ?) Bend over. (Why ?) Because he's too fat... (Make up:-) A lady can't bend over the bed to make it because she's 'obese'."
21. ST.E.R. 1 "Quite fat. (Make ?) 'Cause you eat too much. (Hard ?) Can't get into something very well. (E.g. ?) A toy car. Fat. (Make ?) Eat too much. (Hard ?) Difficult to walk because their legs are too fat."
22. ST.E.R. 2a "Fat. (Make up ?) Sometimes grandmas are fat ... Fat ... (Hard ?) Bend over."
23. ST.E.R.T. 2c "Fat and tubby. (Make ?) Eat a lot of food. (Hard ?) Play a game. (Means ?) Fat."
24. ST.E.R.T. 2a "When you're real fat and you eat and drink a lot.. (Hard ?) Kill rabbits, 'cause the rabbits would run away. Rabbits can run ever so fast. ('Obese' people run fast ?) No, 'cause they're real fat."
25. ST.D. 1 "Eat too much. (Like ?) Greedy. (Mean ?) Fat. (Make up:-) Fat person."
26. L.E. 3 "Fat. (Make up:-) A woman. (Make ?) Eating too much food."
27. L.E. 3 "Fat. (Make ?) 'Cause you eat too much. (Hard ?) You'd be slowed down. (Not 'obese' ?) You could be thin."



28. ST.E.I. 2d "When you're fat. (Make up:-) Like a big giant ... (Which way big ?) Out-way. (Hard ?) Bend down. (Why ?) Because he's fat he wouldn't want to bend down. (Make ?) If you eat too much food."
29. ST.E.I. 2d "You're 'obese' when you're fat. My dad's fat ... (Tell you?) No, I know it. (How ?) 'Cause me dad's so fat and I know. (Make up:-) 'Obese' when you're fat and eat too much."

TABLE 4.11

Good definitions or uses of

'EMBELLISH'

	<u>Group</u>	<u>School</u>	<u>Responses scored 3</u>
1.	L.		"To adorn. (Make up:-) Her dress was richly ' <u>embellished</u> ' with jewels and furs - or should it be 'by' ? I'm not quite sure."
2.	L.		"To give a fuller explanation or to decorate a statement or object. (Make up:-) The column was ' <u>embellished</u> ' by carved ivory leaves."
3.	S.		"He ' <u>embellished</u> ' the cake with candles. (Means?) To put ornaments on, to decorate."
4.	S.		"Decorate. (Make up:-) He ' <u>embellished</u> ' the picture frame with gilt."
5.	S.		"Decorate. (Make up :-) The room was ' <u>embellished</u> ' with tapestries."
6.	S.		"Decorated. (Make up:-) The dish was ' <u>embellished</u> ' with angelica and garlic."
7.	ST.E.	1	"It means all clothes are pretty with all patterns ... (Make up:-) My mummy has pretty dresses - ' <u>embellished</u> ' dothes."
8.	ST.E.	1	"Pretty. I ' <u>embellish</u> ' my Christmas tree. (How ?) You put - hang little snowmen and little round shiny balls on."
9.	ST.E.	1	"My daddy, on his coat, it was all ' <u>embellished</u> ' with beautiful patterns. You could ' <u>embellish</u> ' a jumper with patterns .. (Mean ?) Make it nice."
10.	ST.E.	1	"Decorated. (Make up:-) The trifle is ' <u>embellished</u> '. (How ?) With fruit on."
11.	ST.E.	2a	"You can ' <u>embellish</u> ' something and it's real (i.e. very) pretty ... Once I was going to Hornsea and I saw a train that was real ' <u>embellished</u> ' with all flowers and stripes." (This is a decorated holiday train which runs from Hull to Hornsea.)



12. ST.E. 2a "When something's decorated with painted silver. (Make up:-) I 'embellished' the windows with curtains."
13. ST.E. 2a "It means all pretty patterns on things. You can decorate the room with them and you have them when it's Christmas. (Make up:-) I want to 'embellish' the room with all nice things."
14. BR.D. 2a "It means all things are 'embellished' and things like silver and gold. (Make up:-) Yesterday my mummy 'embellished' a cake with some silver icing and little round balls and they were all colours." (Before picture !)
15. BR.D. 1 " 'Embellished' with gold, or pretty. (What would you do to 'embellish' something ?) Make it pretty.. (How ?) Materials or colours ..."
16. BR.D. 1 "Put candles and 'embellish' the table for someone's birthday. (Other things ?) Flowers, candles, light, water. (Mean ?) Nice, lovely."
17. BR.D. 1 "It's lovely, shines. (Make up:-) A castle is 'embellished' by lovely things."
18. BR.D. 1 "Pretty. (Make up:-) Look at that 'embellished' Christmas tree. (Like ?) With ornaments on and sometimes a fairy at the top."
19. BR.D. 1 "Make it pretty. (How ?) With nice things. (Like?) Diamonds ... (What else could be 'embellished'?) A coat, with diamonds."
20. N.ST.E. 1 "Pretty patterns on a coat. This (jumper) is 'embellished' with reindeers. (Why is that 'embellished'?) It makes it look pretty."
21. N.ST.E. 1 "Make it nice. (Make up:-) I can 'embellish' a table. (How ?) Cloths. (Why?) They'd make it look nice."
22. N.ST.E. 1 "I 'embellish' things. (How ?) With pretty patterns."
23. N.ST.E. 1 "It means that something's 'embellished' with nice ribbons .. (Why ?) Because they're so pretty. (Mean?) That it's 'embellished' with little patterns, or could be with little stripes, or could be with little circles even."
24. N.ST.E. 2a " 'Embellish' your ring. (How ?) With some pretty stones .. (Mean ?) Make something pretty."
25. N.ST.E. 2a "With pretty laces on your hair and your dresses and clothes and some make-up on your eyes, and lipstick. Some nice new shoes with laces on - tap dance shoes. (Make up:-) Can't. (Hat ?) Put some laces and flowers on. (Why ?) That would make it look pretty."
26. N.ST.E.R. 2a "I've heard it. Where you put all things on a coat or dress to 'embellish' it. It was in 'Naughty Jane'. She put all ribbons round. (Mean?) That you put all things on a cape or coat or jumper to make it look pretty...."

27. N.ST.E.R. 1 "It means if there's some things round a dress or something, and it makes it look pretty, but it's a different word."
28. N.ST.E.R. 1 " 'Embellished' chicken. (Like ?) It's pretty. It's got bits of tomato and that to make it pretty."
29. N.ST.E.R. 1 "Pretty. (Make up:-) My mummy 'embellished' her dress. (How ?) Putting a bit more material or something. (Hat ?) Putting flowers on it. (Why ?) It would make it look pretty."

TABLE 4.12

Good definitions or uses of

'INCLEMENT'

	<u>Group</u>	<u>School</u>	<u>Responses scored 3</u>
1.	L.		"Unpleasant. Article. (Make up:-) What ' <u>inclement</u> ' weather for you to be out, Madame. (Other ?) Suppose so. Can't really think of it applying to much else now."
2.	L.		"Means bad, doesn't it ? (Make up:-) People have not been out of doors on account of the ' <u>inclement</u> ' weather."
3.	S.		"Harsh. (Make up:-) The weather was pretty ' <u>inclement</u> '."
4.	S.		"The weather was ' <u>inclement</u> '. (Means ?) Not pleasing. Drizzle and rain."
5.	ST.E.	1	"Weather that isn't very nice. When it's raining. There is ' <u>inclement</u> ' weather so I am running home quickly. (Like ?) Foggy, or a storm."
6.	ST.E.	1	"The weather. (Like ?) When it's showery, raining. (Mean ?) Horrible weather. (Make up:-) It is showery."
7.	ST.E.	2a	"When it's nasty weather. It was ' <u>inclement</u> ' weather last year. (Like?) Winter and snowing. Raining."
8.	ST.E.	2a	"If it was cold and ' <u>inclement</u> ' it would be winter. (Like ?) Windy, snow, rain. (Means ?) Weather."
9.	BR.D.	2a	"It means the bad, horrible weather, when it's raining. If you want to go out in the ' <u>inclement</u> ' weather, have to have hat, rain-coat and wellies..."
10.	BR.D.	2a	"I think it is heavy weather. (Like ?) If it's raining or snowing or thundering or lightning. (Make up:-) If it was raining and you couldn't get out, put something on ..."
11.	BR.D.	1	"The weather is bad. (Like) When it's raining and thundering and lightning. (Anything else ?) Hail-stones coming down."



12. BR.D. 1 "Horrible weather. When my cousins came to my house, it was 'inclement' weather. (Like ?) Lightning, hailstones, raining, snowing."
13. N.ST.E. 1 "That it's raining outside or snowing very fast. And there's one thing people don't like to be out in, when it's lightning and it blows chimney pots down. (Make up :-) 'Inclement' weather can be very nasty. You can die in coldness."
14. N.ST.E. 1 "It's 'inclement' weather. (Like ?) Horrid. (Doing ?) Misty, dark, grey, cloudy, and raining and thundering."
15. N.ST.E. 2a "Get out the 'inclement' weather. (Like ?) Snowing. (Anything else ?) Thundering and rain... (Mean ?) It's a horrible day."
16. N.ST.E. 2a "It's real (i.e. very) cold and it's raining. (Anything else ?) The clouds would be banging together. (Called ?) Thundering. (Make up:-) A storm. (Make up:-) You put your coat on and your hood up because it's raining and 'inclement' weather. (Mean?) Real (i.e. very) horrible."
17. N.ST.E.R. 2a "When it's a nasty storm. (Like ?) Nasty winter and storm. (Mean?) Nasty weather."
18. N.ST.E.R. 1 " 'Inclement' weather. (Like ?) Cold, windy, dull, nasty. The sky p'raps might fall down, thundering... (Make up:=) 'Inclement' weather makes us wet."
19. N.ST.E.R. 1 "It's bad weather. (Make up:-) If you're walking and it's very bad, you say it's 'inclement' but it's just a different word than bad weather. (Like ?) Very cold and very windy, snowing."
20. ST.E.R. 1 "Means bad, doesn't like it. Miss Farmer told me a story about a soldier and 'inclement' was in it. (Mean ?) Bad weather, rain, snow, and hailstones."
21. ST.E.R. 1 "We've had that in one of the stories, horrible 'inclement' weather. All snowy and cold, or a storm and a poor lady out in horrid 'inclement' weather ..."
22. ST.E.R. 2a "When it's snowy or rainy. (Make up:-) Yesterday it was 'inclement' weather, and I had to stop in. (Like ?) Frosty, windy, bad weather."
23. ST.E.R. 2a "Nasty weather. (Make up:-) It was 'inclement' outside. (Like ?) Raining, snowing."
24. ST.D.R. 1 " 'Inclement' means the weather is cold. 'Inclement' when it's thundering."



25. ST.D.R. 1 "If someone goes shopping and it's cold weather. (Mean ?) Weather. (Like ?) Raining, snowing."
26. ST.E.R.T. 2a " 'Inclement' weather. (Like ?) Cloudy, rainy, windy, blowy. (Make up:-) Can't. (Sunny ?) No, 'cause it makes you warm. (Good ?) No, bad weather."
27. ST.E.R.T. 2c "It's snowing, raining, thundering. (Means ?) It's not a very nice day. (Make up:-) I go out when it rains."
28. ST.E.R.T. 2c (Like ?) "Sunny, raining, snowy. It's about weather. I think it's all sorts of weather. (Is it 'inclement' to-day ?) (Sunny.) No, it's sunny. (What sort of weather is 'inclement'?) Rain, snow, wind. (Good, bad, or all sorts of weather ?) I think it's bad weather. (Make up:-) It is not 'inclement' to-day."
29. ST.D. 1 "The weather's cold. (Make up:-) Snow might be coming down. (Anything else ?) Rain, a cold day. (Means ?) Horrible weather."
30. ST.D. 1 "The weather has changed to badness. (Make up:-) 'Inclement' weather. (Like ?) Windy, snowing. (To-day ?) No, because the wind isn't blowing so strong."
31. L.E. 3 " 'Inclement' weather, with the snow down, with the rain, and with the fog. (Anything else ?) Cold. (Mean ?) Nasty weather."
32. L.E. 3 " 'Inclement' weather. (Like ?) Raining and snowing. (Anything else ?) Windy. (Mean?) Horrible weather."
33. L.E. 2c " 'Inclement' weather. (Like ?) Rainy, windy, snowy. (Mean ?) Nasty weather."
34. ST.E.I. 2d "That the weather's so bad that it means it's 'inclement'. (Make up:-) It means that the weather's so 'inclement' that it's a storm. (Like ?) Snowy, frosty, windy, stormy ..."
35. ST.E.I. 2d "When the weather's real (i.e. very) nasty. (Like ?) Might be raining, and thundering. (Anything else ?) And windy."

very good answers when invited to guess. As for Christopher Robin, where "If Pooh's right then I'm right, if he's wrong it wasn't me !" (Milne 1965), the invitation to guess involves the acknowledged reduction of responsibility. No blame can attach to being wrong, and you might be right ! This was particularly important on the Pre-test where the aim was to reveal those five-year-olds who already knew the difficult words. (In fact, not one did.)

The second reason for inviting guesses, on both the Pre-test and Post-test was to uncover the strategies children would use in attempting definitions. Throughout the testing, children were encouraged to talk, in the hope that strategies could be identified from the guesses and mistakes. It is because of this, that most of the children said more than most of the adults.

### Perseveration

Quite common on the P.P.V.T. is the perseveration of a pointing response to a particular corner. This happens with young children who have not fully understood the task, with children who reach one word that they don't know, and "give up", even though they do know the following words, and with some children who reach their ceiling, and don't know any more of the words presented. Since the child is forced to make a pointing response, perseveration is quite a good strategy, when no other clues about the word are available. At least he will be right some of the time if he points consistently at one corner. The chances of being right by chance varying of the corner pointed at, would be considerably fewer.

However, it is not such a good strategy for oral definitions, since it is clear (a) that the response is perseverative, (b) possible to say don't know", (c) possible to use available clues such as the sound of the word, and (d) fairly unlikely that the same meaning will be requested more than once.

Yet, one adult, and many children, gave perseverative responses in the Oral situation, (on the Oral Post-test).

The adult, (L.) gave "extravagant" as a response to 'obese' where it was probably a guess, then later, to 'precarious'. Since this adult only knew the meaning of one of the difficult words ('illuminate' means to make things bright and big") she perhaps felt the need to say something, and said the first



suitably long word that came into her head.

Many children perseverated. This happened in two ways. The first, probably true perseveration, occurred when a child gave the meaning of one of the easier "buffer" words, asked earlier in the Test, in response to one of the difficult words. For example "You ride it" was often given in response to 'illuminate' and some of the other difficult words following "bicycle".

In the second case, some children would give the meaning of one of the difficult words (e.g. "nasty weather") in response to one or more of the inappropriate difficult words. The thinking behind this may have been "I know that one of these difficult words means "nasty weather". I shall say "nasty weather" each time a difficult word comes up. Then I'm bound to get it right." In fact, a child was only given credit for a correct response, where it had been perseverative, if the perseveration stopped after the correct word. If, however, the perseverative response was given to words coming after the appropriate difficult word, no score was given. This did not happen very often.

#### Random guess

It is very difficult to know how random a guess is. As is made clear in the homophone section, responses which seem to have no obvious association with the key word, may yet be far from random, as in the case of "sleeping" for 'encumbered' where the link is almost certainly the homophonic "bed", since so many children gave similar responses.

There are sometimes clusters of responses, where no cue is given to the association, yet several children respond in a similar way. One example is where, for 'encumbered', four children give meanings to do with clothes; "old clothes, scarecrow", "wearing something", "dressing up", " 'encumbered' with clothes". The association could be via "covered", a homophone given by three children, or via "cupboard", a homophone given by four children. But since no child volunteered the clue (e.g. "clothes in a cupboard") these are only conjectures. In the same way, many of the idiosyncratic responses (e.g. "take



away", "smoking", "painting", "junk, throw away", "squashed", "clown juggling", "hungry", "camping", all given for 'encumbered') could be more than random guesses.

Occasionally, one could identify a guess by the behaviour of the child at the time. It sometimes happened that, faced with a difficult word and being encouraged to guess, a child would gaze about the room, and out of the window, and, for example, seeing trees guess "leaves".

Little certainty attaches to the labelling of a response "random guess" rather than "homophone", although when many children give the same response, one can be fairly confident. For example, "hungry" in response to 'encumbered' could be a homophone, or elicited by some other association with 'encumbered', or merely by the child's physical state at the time.

#### Homophones and homophone chains

The most common response after "don't know", was a homophone or a homophone chain, on the Pre-tests. Children also gave homophones on the Post-test, when they did not know the meaning of the word. Some of the adults also gave homophonic responses.

In 1896, James Sully reported the use of homophones by young children in some of their attempts to give meaning to new words. Among the examples he quotes are the following :- 'ham-chovies' for 'anchovies', 'worm-maid' for 'mermaid', 'world-wind' for 'whirlwind', and 'no-mans' for 'gnomes'.

Those practiced in giving the Verbal Definitions Test in the Binet or W.I.S.C. test batteries will be familiar with the phenomena of homophonic responses. Fairly common responses are "spinach" for "espionage" and "net" for "brunette".

Following Bruner's (1967) three modes of representation, one would expect a clang response from young children, concentrating on the physical dimensions of the word. Other experimenters, such as Barnes (1896) and Riess (1946) have also noted that children tend to interpret unfamiliar words in terms of homophonic relationships. Barnes (1896) asked 1,500 children aged 7 - 14 years for the meaning of "armor". The erroneous definitions frequently stemmed from

phonic analogy: armor is "to hold a thing by your arm", "in a river" (Amur); "an anchor", etc.

More recently, Riess (1946) confirmed the tendency of the young child to relate words in terms of sound patterns through conditioning experiments. He established in children of 7 to 15 years of age, a conditioned (electrodermal) response to certain printed words, by reinforcement with a buzzer. He then tested the amount of transfer of the electrodermal response from the conditioned words, a homophone, an antonym, and a synonym (e.g. conditioned word : father; homophone : farther; antonym : mother; synonym : dad). In the youngest 7 - 9 year group, the transfer was greatest from the original stimulus word to the homophone. With the 10 to 12 year group, the homophone dropped into second place, the antonym receiving the greatest amount of transferred relationship. The oldest group, 13½ to 15 years of age, demonstrated greatest transfer to the synonym, with the homophone receding to third place.

These results support those of Werner and Kaplan (1950) who found in their study of the identification of word meanings, that the younger children (aged 8.6 - 9.5), frequently responded with homophones, while the older children (aged 12.6 - 13.5) hardly ever did. They suggest a developmental process, involving a shift from a homophonic to a semantic interpretation, between the ages of 8.9 and 10.8.

However, Werner and Kaplan also acknowledge that abstract and concrete symbolic modes of operating necessarily co-exist even in mature adults. This was certainly the case with those Laundrette adults of the present study, who gave 14/60 homophonic responses. The University students gave 3/60 responses which were possibly homophonic in part. One was "unforgiving" for 'inclement' relating to the archaic use of the word. The second was "don't know", followed by "garnish" for 'embellish'. "Something like unfaithful" could be a possible homophone for 'inclement' or it could be a guess. However, since this group scored 0 only 5/60 times, there was not much opportunity for homophonic responses, as the students knew the difficult words. How educated adults would respond to words that they did not know, has not been explored in this study. It is,



therefore, not certain that the homophonic response is linked to developmental level, even when this is related to a notion of spiral development such as that postulated by Werner and Kaplan.

The following pages in this section examine the homophonic responses of the children and adults in the present experiments. Homophone chains are discussed at the same time, since these are linked with a homophone, through a semantic transformation.

As Sully (1896) remarked, children's perception of rhyme is sometimes incongruous to adult ears. For example, eight children said that 'encumbered' means "sleeping", "asleep in bed", "bed", or "go to bed". At first the association is not clear, but with eight children giving similar responses it seems likely that it is more than a guess with no link. One of the children provided the clue by saying "You go to bed. That rhymes up !" The homophone chain is clear in this example. "Sleeping" would seem to have no obvious association with 'encumbered', yet "asleep in bed" given by three children shows that the link is through a homophonic response.

The homophones used by the adults were often similar to those volunteered by the children. For example, ten children (out of 265) gave "bell", and three "belly" for 'embellished'. One adult (L) said 'embellished' means "Health, is it ? A bit sickly. Not because it says belly !" But she could not use the word, or suggest another reason for saying it means illhealth.

For 'precarious', twelve children and three adults (L) said "careful". (Sometimes, in the Post-tests, children (and adults) were able to show that a 'precarious' situation is one where you should be careful, rather than meaning careful, see page 208.)

For 'encumbered' nine children and one adult (L) gave "uncomfortable".

Some of the homophones given by adults differ from those of the children in being more advanced words, such as "abyss" for 'obese', or "clemantine" and "clemency" (and "unforgiving") for 'inclement'. The archaic meaning of 'inclement' was "unforgiving, unkind, harsh in judgement", but according to the



Concise Oxford Dictionary , 'inclement' now means "severe, of weather." Thus, to say 'inclement' means "refusing clemency" is not to respond stupidly, but to use such knowledge and strategies as are available, to work out a reasonable definition.

The homophone chain, "unforgiving", coming from "clemency", shows that in this aspect, too, adults replicate the behaviour of children, see page 207.

Another common response by children, is a combination of a homophonic response with the correct meaning of the word, or part of the meaning.

"Careful" for 'precarious' is one example of this, also given by adults.

Although "scared" was not given on the Pre-test, it was given three times on the Post-test as a definition of 'precarious' without any indication that the children knew what the connection was. Thirteen children gave "scared" or "frightened" as a response, showing that it was the situation that was frightening or scaring, see page 209.

Forty-four children said 'obese' means "beast"; four said "monster"; and twenty-four gave the names of animals, such as fox or alligator. Seventy-four children said "obese" means "horrible", "cruel", "nasty" and similar definitions. At least seven children said on the Post-test "Fat. Horrible because fat". And several children restricted the "fat" to "giant" or "animal". (Seventeen children said 'obese' means "giant", probably caused by semantic confusion, which will be discussed later). It should be noted that children often use the word "beast" to mean horrible, as in "You beast!" or "You're beastly!" and the story of 'Beauty' (and the Beast, which was 'obese') may have reinforced this usage.

The following Tables (4.13 - 4.18) show the main homophones and homophone chains, used for each word. Since children often gave several responses, the numbers show merely the frequency with which a particular association was made. They cannot be regarded quantitatively in comparison with numbers of correct answers, or "don't knows".

TABLE 4.13

Frequency of Homophones and Homophone chains for 'Precarious'on the Oral Post- and Pre-testsNumber of  
times givenHomophone and Homophone chain

13	Care, Care about people. Take care of things. Take care of me. Care for someone. I don't care.
11	Careless. Not careful. Not take care. Not looking what doing.
12	Careful. Be careful,
4	Take care. Keep care.
6	Careful crossing road.
10	Scared. Frightened.
2	Jealous.
1	Precious
1	Peculiar
20	Various other single suggestions, some of which may be homophones or homophone chains, but the cue is not obvious.

TABLE 4.14

Frequency of Homophones and Homophone chains for 'Encumbered'on the Oral Post- and Pre-testsNumber of  
times givenHomophone and Homophone chain

11	Uncomfortable. Not encomfort. Comfy.
6	Bird. Watch birds. Fly with wings. Aeroplane. Annoy, like seagulls.
8	Bed. Go to bed. Asleep in bed. Sleeping.
4	Not kept company. Sad. All alone. No one in house.
4	Cupboard
3	Covers. Covered. Covers to keep you warm.
3	Cardboard.
2	Encucumber. Cumber.
1	Humber
21	Various other single suggestions, some of which may be homophones or homophone chains, but the cue is not obvious.

TABLE 4.15

Frequency of Homophones or Homophone chains for 'Illuminate'on the Oral Post- and Pre-testsNumber of  
times givenHomophone and Homophone chain

10	Moon. Space rocket to the moon. Space. Go up and land on moon. Lunar module. Fly. Rocket.
5	Ill. Doctor 'cause poorly. Hospital nurse. Eat wrong food. Not well. Headache.
2	In a minute.
1	Drink the miluminate.
1	Lemonade
1	Bloom.
27	Various other single suggestions, some of which may be homophones or homophone chains, but the cue is not obvious.

TABLE 4.16

Frequency of Homophones and Homophone chains for 'Obese'on the Oral Post- and Pre-testsNumber of  
times givenHomophone and Homophone chain

74	Horrid. Not kind. Nasty. Horrible. Cruel. Wicked.
44	Beast. Obeast. Beastie. Oh beast.
29	Animal. Monster. Name of animal, such as alligator, goat, fox, dragon, lion.
3	Fierce.
13	Police. Robber. Robese, pinch. Steal. Burglar. Snatch things.

The unusually high number of homophone chains for 'obese' is partly because the 106 children of Experiment II heard the stories with 'obese' mentioned without an explanatory context.



TABLE 4.17

Frequency of Homophones and Homophone chains for 'Embellished'

<u>on the Oral Post- and Pre-test</u>	
<u>Number of times given</u>	<u>Homophone and Homophone chain</u>
10	Ring bells. Ring a bell. Bells.
3	Belly.
5	Jelly. Jellies.
9	Polish. This occurred only once on a Pre-test, and may therefore be the result of a semantic component as well, see page 51
3	Bellished
1	Vanish
1	Varnish
1	Berries.

TABLE 4.18

Frequency of Homophones and Homophone chains for 'Inclement'

<u>on the Oral Post- and Pre-tests</u>	
<u>Number of times given</u>	<u>Homophone and Homophone chain</u>
6	Clever.
5	Drink the inclemence, poorly, like medicine. Drink medicine. Doctor. Prick (i.e. inoculation or immunisation or vaccination)
5	Eat a lemon. Lemonade. Yellow.
3	Sounds like Clarence. Clement. Clemence.
2	Climber. Climb.
25	Various single attempts, some of which may be homophones or homophone chains, but the cue is not obvious.

## Homophone-Semantic Chain

A second form of chaining occurred quite frequently, particularly in response to 'obese', which seventy-two children thought they knew, having heard it thirty times without an explanatory context. For example, 38/72 children said 'obese' means "nasty witch", or "horrible giant", or "wicked beast", or a similar combination. Here the homophonic, or homophone-chain elements of the word (horrible, obeast, nasty) are combined with semantic elements gleaned from the stories (about 'obese' giants and witches).

Another example of this kind of association can be seen in the many children who used the homophone "care" (in the form of take care, be careful, careless, etc.) and added part of the meaning of 'precarious'. Some of these attempts follow in Table 4.19.

TABLE 4.19

### Examples of homophone-semantic chains

<u>Score</u>	<u>Group</u>	<u>School</u>	
1	L.E.	2c	(Means?) "Be careful . (Make up:-) If you go right near a bonfire. (Why would that be 'precarious'?) Because you'll burn yourself. (Means ?) Be careful."
1	ST.D.	1	(Means?) "Not careful crossing the road. (Make up :-) A boy is not very careful, he could get knocked down. (Other times when it could be 'precarious' ?) Make them blind 'cause they can't see. (What happens then ?) If you turn you might walk in road and get knocked down. (Means ?) You aren't careful enough."
1	ST.E.R.T.	2c	(Means?) "Don't run across the road.. (Why would that be 'precarious'?) You might get knocked down by a bus or a car. (Any other things you could do that might be 'precarious'?) Kicking a ball in the road and going and getting it. (In countryside ?) Yes. You might fall into a drain. You might fall down a hole. (Mean ?) Running across the road and not taking care."
1	ST.E.R.	2a	(Means?) "Take care. (Why ?) 'Cause the giant might get you. (What else could be 'precarious'?) Crossing the road. (Why ?) 'Cause you might get run over. (Means ?) Take care."
1	ST.E.R.	1	(Means?) "You've got to be careful when you cross roads 'cause you might get run over.. (Make up:-) You've got to be careful when you jump on things 'cause you might fall down ... (Means ?) Careful."



A third common example, again from 'precarious', is the combination of the homophone "scared", or homophone chain "frightened", with part of the meaning of 'precarious', or a 'precarious' situation taken from the stories, as in Table 4.20.

TABLE 4.20

Examples of homophone-semantic chains

<u>Score</u>	<u>Group</u>	<u>School</u>	
0	ST.E.R.	1	(Means?) " <u>Precarious</u> " of a lion. You'd get eaten up or something. (Means ?) Scared. (Make up:-) " <u>Precarious</u> " of a wolf."
1	ST.E.	2a	(Means?) "Frightened. (Make up:-) ' <u>Precarious</u> ' going away from a witch. (Means ?) Real frightened."
1	N.ST.E.	1	(Means?) "That you're frightened. (Make up:-) My daddy is ' <u>precarious</u> '. (Why ?) 'Cause a dark forest - it's so dark, he's got no light to see. (Circus ?) Might be high in the sky on a great big swing. (Why ' <u>precarious</u> ' ?) 'Cause if he falls, that's the end of him. (Mean ?) That you're frightened."
1	N.ST.E.	1	(Means?) "When you're scared. (Make up:-) I was scared. (Circus ?) He might be jumping. (Why ' <u>precarious</u> ' ?) He might be frightened that he fell off."
1	N.ST.E.R.	1	(Means?) "When you're frightened. (Make up:-) No. (Circus ?) Teaching a tiger. (Why ' <u>precarious</u> ' ?) Because it might eat you. (Mean ?) That you're frightened."
1	N.ST.E.R.	1	(Means?) "You're frightened. (Make up:-) I have a dog. (Why ' <u>precarious</u> '?) Don't know. (Circus ?) Burning his hands. (Why ' <u>precarious</u> '?) 'Cause you'd get burnt up."

Semantic confusion

Sometimes children confounded the meaning of one difficult word with that of another. This was different from cases of perseveration, where the same response was given to several different difficult words. In the case of semantic confusion, the meanings of two difficult words are in some way compounded.

The most frequent confusion was between the difficult words 'illuminate' and 'embellish'. The stories of Experiment I contained a Christmas tree, which was 'illuminated' by fairy lights, and 'embellished' with decorations and a pretty silver star. Also, a table was 'illuminated' by candles, which made it look



special. (The exact contexts are in the Appendix on page 303.) Some children were able to distinguish between these alternatives. But many, especially in the ST.E.R. groups completely confused 'illuminate' with 'embellish'. The ST.E.R. groups heard each potentially confusing context five times, and heard fewer alternative contexts which might have helped them to separate 'illuminate' from 'embellish' and 11/20 gave responses to 'illuminate' that would have been appropriate for 'embellish'. Only 3/20 gave responses to 'embellish' which would have been appropriate for 'illuminate'. An example which shows clearly the semantic confusion follows:-

<u>Score</u>	<u>Group</u>	<u>School</u>	
1	ST.E.R.	1	"The fairy light ' <u>illuminated</u> '. (Like?) Flashing. (Other things?) Stars, sun. (How?) It shines. Diamonds, ' <u>illuminate</u> ' - shine. (Do?) Mummy ' <u>illuminates</u> ' the Christmas tree. She puts fairy lights on and a star at the top."

For this child, 'illuminate' seems to have connotations of shiny, light-reflecting, decorations. Other examples are given on page 95.

In later Experiments, the two words 'illuminate' and 'embellish' were separated spatially and logically, by altering the local contexts so that an object was not both 'illuminated' and 'embellished', nor 'embellished' by 'illumination'. This resulted in no confusions between these two words being made by either the N.ST.E. or the N.ST.E.R. groups on the Oral Test, and only one child, who made clear distinctions on the Oral Test, confused 'illuminate' with 'embellish' on the Pointing-oral Test. In this situation, there was one child who invented a context in defining 'illuminate', which correctly used a Christmas tree.

Occasionally, 'encumbered' was compounded with 'precarious' as in this example:-

<u>Score</u>	<u>Group</u>	<u>School</u>	
1	N.ST.E.	1	"Slippery. (Make up:-) A man's ' <u>precarious</u> ' by some suitcases. (Why?) Because the path was slippery. (Circus?) Slip. (Why?) 'Cause it was slippery."

The context that led to this confusion was in 'Naughty Jane' :-

"When his friend heard him shouting, and saw the knife, he dropped both his cases. He was scared of the man with the knife. He knew it would be 'precarious' to run on the slippery snow, but he had to take the risk ..."

This kind of example illustrates the important role of variety of context in

allowing the child to test out partially formed hypotheses about words. The context quoted should allow associations to be made between 'precarious' and scared, knife, slippery, snow, risk and, indirectly, falling. The example quoted above was limited to one of these possibilities, slippery, and recalls the suitcases, in turn recalling other contexts where 'encumbered' was the main feature. Another child, who also found "slippery" the salient feature, still managed to isolate part of the meaning of 'precarious', although his 'precarious' situations were limited to those produced by 'inclement' weather:-

<u>Score</u>	<u>Group</u>	<u>School</u>	
2	ST.E.	2a	'Precarious'. "I don't know. (Guess) Slippery. (Make up:-) Well, if it's bad weather you can go out but if it's too ' <u>precarious</u> ' and slippery you needn't. (Q.) Because they'd be dangerous. (Q.) Just the weather."

Other children managed to isolate out the features belonging to 'encumbered' 'precarious', and 'inclement' with a great deal of precision. Some even used one difficult word, in their description, or definition of another, or used situations such as 'inclement' weather to illustrate, but not to limit, their definition of 'encumbered' or 'precarious'. Some examples, each from the Pointing-oral Test, follow in Table 4.21.

TABLE 4.21

Examples taken from the Pointing-oral Post-test, which show one difficult word, or situation, used in the description of another difficult word

<u>Score</u>	<u>Group</u>	<u>School</u>	
3	BR.D.	1	'Inclement' Pointing-oral. "Or it wouldn't have rain. (Mean ?) Very rainy and hail and snow, 'cause snow ' <u>encumbers</u> ' you if it's too high and very thick. (Mean ?) Oh, it's a horrid day."
3	BR.D.	1	'Encumbered' Pointing-oral. "'Cause he's ' <u>encumbered</u> ' with a big heavy sack. (Q.) Very slow. (Else ?) Heavy snow. (Q.) 'Cause if you're carrying something heavy, it gives a bit more weight. (Q.) When you're very slow ..."
3	ST.E.	1	'Obese' Pointing-oral. "She's fat. (Mean ?) Fat. (How make ?) Eat a lot. (Hard ?) Run and walk. (Q.) 'Cause her body would ' <u>encumber</u> ' her."



### Over- and under- inclusion

Many of the children who scored 2/3 did so because they failed to draw the right boundaries around the meaning of a word. As Olson (1970) has said, "to know the use of a word, then, is not to know only what it includes, but also what is excluded or partitioned by the word."

Examples of both over- and under-inclusion are common in the pro-formas. 'Inclement' was several times taken to mean either all kinds of weather, including sunny weather; or rainy weather, excluding cold, or stormy weather.

'Encumbered' in Experiment I was often limited to a meaning involving being obstructed by something heavy, rather than to being impeded by anything, heavy or light, which slowed progress. On a few occasions, the meaning of 'encumbered' was extended to mean "stopped", as by traffic lights, rather than merely slowed down.

'Embellish' was sometimes taken to include not only decoration, but washing and brushing clothes, so that they looked "nice". In Experiment I, this over-inclusion was partly the fault of the stories. The mistake was deliberate, insofar as the word "nice" in a local context was included, in order to help the children develop a meaning for 'embellish'. However, "nice" as used by the children; has a very generalised meaning, including neat, tidy, clean, good, pleasant, as well as pretty. Examples of two of the misleading local contexts follow:-

- |                                  |  |
|----------------------------------|--|
| 'Drummer', page 1.               | "He went to look and found a lovely piece of cloth. It was as white as snow, 'embellished' with leaves and flowers made into the cloth. It was so nice that he put it in his pocket."                                  |
| 'How the Sea got Salty', page 1. | "Everything was nice to look at. The windows had curtains 'embellished' with patterns which made them look very pretty. The tables were made of shiny woods, and the floors were covered with thick carpets and mats." |

All 7/30 local contexts which included the word "nice" were altered after the analysis of Experiment I, so that children would be helped to be more precise in their perception of the meaning of 'embellished' and thus in their examples and definitions of 'embellished' when tested.

There were some examples of under-inclusion for 'embellish'. Sometimes children limited it to a particular context heard in a story, such as "'embellished'



with gold patterns". In this case, either the "gold" or the "patterns", or the "coat" could be the limiting factor. Even when their attention was drawn to the limited nature of their response, by being asked whether anything else could be 'embellished', or whether things could be 'embellished' by anything other than gold, such children would stick to their convictions.

For 'obese', several kinds of under-inclusion occurred, some as a result of homophonic responses, which are discussed on page 204. An interesting over-inclusion seemed to occur through children using 'obese' as synonymous with "big" rather than "fat". Although such children could no doubt identify height and breadth or roundness, both concepts would be included in "big". Therefore, for these children, 'obese' meant tall and fat. Some examples follow.

The first examples have been taken from children who distinguished very clearly between "tall" and "fat".

<u>Score</u>	<u>Group</u>	<u>School</u>	
2	N.ST.E.	2a	Pointing-oral. "'Cause she's drinking coffee all the time. (Mean ?) When she gets fat. (What would be hard for an 'obese' person to do ?) You have to squeeze through a door sideways."
3	ST.E.	2a	Oral. "It means fat. (Make up:-) I have had a story about an 'obese' woman in a book at home. (How make 'obese' ?) When you eat lots and lots and lots of food. (Hard ?) You wouldn't be able to squeeze through a thin door."

The next examples come from children who said that 'obese' means "big" in the sense of "fat and tall".

2	R.ST.E.	1	Pointing-oral. "Something very fat. (Make up:-) My father's 'obese'. (Like ?) He'd be fat and big. (Hard ?) Get in a door without banging his head. (Why ?) If he was 'obese' he'd be big, the door would be little and he'd be taller than the door."
2	N.ST.E.	2a	Oral. "You're 'obeast'. (Like ?) Fat. (How make ?) Drinking and eating. (Hard?) Hard to wear his clothes. (Why ?) 'Cause he's getting too fat for them. (Mean?) You're tall and real fat. (Tall ?) Yes."
3	ST.E.	1	Oral. "Very big, very fat. (Like ?) Very fat. (How make ?) Eat a lot of things. (Hard ?) Cook things - they might be too big, - 'cause the cooker would be too low down. (Tall or fat ?) Fat person and a bit tall. (Could you be 'obese' if short ?) No. ('Obese' means ?) It's very fat."
2	ST.D.	2a	Pointing-oral. "'Cause it's fat and very tall. (Means?) Big and fat."

### Discussion of strategies

The six different strategies illustrated, plus the examples of over- and under-inclusion, are suggestive. Since they are employed by both children and adults, they are probably universal modes of acquiring the meanings of new words which, whether innate or learned, are more or less automatic or natural responses to the new situation.

They throw some light on the theoretical arguments about vocabulary and concept acquisition.

McNeill (1970), has postulated the early development of a word dictionary, as opposed to a sentence dictionary. He argues that a word coupled with transformation rules, would lead to a much smaller dictionary than a sentence dictionary, where every "sentence-meaning" would have to be stored in many places, one for each transformation. Following this, he discusses whether the development of such a word dictionary would be horizontal or vertical, or both. Horizontal development would lead to the addition of semantic features to words already in the dictionary, as well as the addition of new words. This would permit words to be in a child's vocabulary which would have different semantic properties from the same words in the vocabulary of an older child or adult.

This is exactly what seems to be happening in the many cases of partly correct definitions given by the children in this study. With both over- and under-inclusions, the word enters the five-year-old's dictionary with some of the semantic features which would be included by a knowledgeable adult. Presumably, further exposure to the word in a variety of contexts would help the child to refine his idea of the meaning of the words, by adding appropriate, and discarding inappropriate semantic features. Inferential evidence exists in this study. All four repeat groups (ST.E.R. and ST.E.R.T.) scored less well than ST.E. groups. The repeat groups were more confused, and their definitions were often over- or under-inclusive. However, there is no evidence of how many exposures it would take to make a child change from an inadequate hypothesis about a word, to a more adequate one.

There is some evidence that the child's dictionary is organised vertically, which would result in all, or most of the semantic features of a word entering the dictionary at the same time as the word, but being present in several unrelated places. Semantic development would then consist of vertically collecting the separate occurrence of semantic features, into a related whole. McNeill (1970) cites an experiment by Anderson and Beh (1968), where 6- and 7-year-olds heard word lists in which there were syntagmatic and paradigmatic associates <sup>(1)</sup> and tried to recognise words that were repeated in the lists. the 7-year-olds, much more than the 6-year-olds, confused paradigmatic associates, saying, for example, that "go" had appeared earlier on the list, when, in fact, the word had been "come". Such confusions of recognition are dependent on a vertical organisation of the dictionary. It is possible for one semantic marker, if it is unified vertically, to cause a recognition error. But many semantic markers, if they are not unified vertically, cannot cause this type of mistake.

In the present study, there is a little evidence which could be taken to support the notion of a vertically organised dictionary. Some children seemed to learn the meaning of a word from one particular context. For example, one child gave the following response for 'encumbered':-

ST.E.I. "A cow can slow you down. 'Jack and the Beanstalk', in that story a cow 'encumbered' him when he was taking it to the market. (How could you make someone 'encumbered'?) Put something heavy on them."

'Jack' was the first of ten stories heard, and it seems that this child noted most of the semantic features belonging to 'encumbered' at that time. (This is not to say that his idea of the word may not have been modified through exposure to a variety of contexts during the other nine stories. He did not restrict the meaning of the word to burdensome animals.) By using the almost synonymous phrase "slow you down", in exemplification of 'encumbered', all the semantic features already attached to "slow you down" would be added to the dictionary entry 'encumbered'. At the same time a vertical link would be established between 'encumbered' and "slow you down".

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(1) (syntagmatic = different grammatical classes  
paradigmatic = same grammatical class)



Another kind of example of possible vertical organisation arises where children use one "difficult" word in their description of another :-

BR.D.1. (Pointing-oral). Child points at correct picture, saying  
"Or it wouldn't have rain. (Mean ?) Very rainy and hail and snow, 'cause snow 'encumbers' you if it's too high and very thick. (Mean ?) Oh, it's a horrid day."

ST.E.1. (Pointing-oral) Child points at correct picture, saying  
"She's fat. (Means ?) Fat. (Make someone 'obese' ?) Eat a lot. (Hard for 'obese' person to do ?) Run and walk. (Why ?) 'Cause her body would 'encumber' her."

It seems unlikely that 'encumber' would enter the dictionary as a semantic marker for 'inclement' or for 'obese' at the time these words were incorporated. Yet in each case, 'encumber' correctly augments their meaning. This suggests that vertical as well as horizontal organisation is present in the young child's word dictionary.

One of the major theoretical arguments in recent years, developed by Katz and Fodor (1963) and continued by Olson (1970), concerns the relative independence of meaning from referents.

"Meaning is rarely expressed in terms of the concrete referents of perceptual features of the objects themselves, but primarily in terms of other entries in the semantic system" (Olson 1970 b page 120).

and again

"... a primary aspect of semantics, the fact that every entry is defined in terms of other entries, not in terms of the referents" (page 120).

The results of the present study seem to vindicate these assertions of Olson's. Both input and output was in terms of verbal contexts. While on the Post-tests, children could point at the correct picture, they were also able to say in their own words what the difficult words meant, and in many cases, to use the difficult words in original contexts, taken from their own life experience. In many cases, the referent such as an 'obese' witch, or a giant swaying 'precariously' at the top of a beanstalk never had been, and never would be, present.

The mistakes the children made, which have been outlined in this Chapter are mainly because the children had used words imprecisely to define the new words. Their efforts illustrate very clearly the way in which, in Olson's words, "Meaning may tentatively be described in terms of a cluster of component meanings" (page 121).

The following Chapter investigates the difference in ease of acquisition of the difficult words, manifest in matched children from different schools.

## CHAPTER FIVE

### INVESTIGATION OF THE DIFFERENCE BETWEEN SCHOOLS 1 and 2a



## CHAPTER FIVE

### INVESTIGATION OF THE DIFFERENCE BETWEEN SCHOOLS 1 AND 2a

#### Introduction

One of the most interesting of the phenomena in the replication of Experiment I was the apparent difference in learning behaviour between children matched for P.P.V.T. I.Q. at Schools 1 and 2a. Although the results of School 1 replicated those of School 2a, the mean scores were, on the whole, higher. On two Tests, the difference between schools was significant ( $F = 7.17$ , significant at .01 level, for Oral data, and  $F = 3.86$ , almost significant at .05 level, for Pointing-oral data, see pages 91, 92 and 93 ). This difference between schools was unexpected, given that the groups had been matched for age and for verbal P.P.V.T. I.Q.

Observation of Experiment I Post-test results, suggested that the main difference fell between the low scorers at the two schools. The high scorers did not differ significantly at the two schools,  $F = 0.14$ ,  $p = < .05$  N.S., see Table 5.1. The low scorers on the Oral Test differed significantly because of the 8 children scoring zero at School 2a, see Tables 5.2 and 5.3. For these analyses, high scores were 8 and above for ST.E. and BR.D. groups, and 5 and above for ST.E.R. and ST.D. groups. This difference between groups in what was counted as a high score, was because the ST.E.R. and ST.D. average scores were considerably lower than those of the other two groups, (see group means on page 91 ).

Tables 5.1, 5.2 and 5.3 summarise three one-way analyses of variance on the Oral data from the basic groups in Experiment I, showing the difference between high scorers, and that between low scorers at Schools 1 and 2a.

The difference between Schools 1 and 2a for the low scorers, not including those who scored zero, was insignificant ( $F = 1.557$ ). However, when the zero scorers were included,  $F$  rose to 7.457, significant at the .01 level (for the Oral Test).

TABLE 5.1

Difference between high scorers, (high scores = 8 and above for ST.E. and BR.D. groups, and 5 and above for ST.D. and ST.E.R. groups) on Oral data at Schools 1 and 2a from Experiment I

School	N	Mean			
1	26	8.999			
2a	14	9.430			
Source	df	SS	MS	F	P
Treatments	1	11.88	11.88	0.138	NS
Error	38	3265.72	85.94		
Total	39	3277.6			

TABLE 5.2

Difference between low scorers, not counting zero scores, (low scores = below 8 for ST.E. and BR.D. groups and below 5 for ST.D. and ST.E.R. groups) on Oral data, at Schools 1 and 2a, from Experiment I

School	N	Mean			
1	13	4.84			
2a	18	3.55			
Source	df	SS	MS	F	P
Treatments	1	3.652	3.652	1.557	NS
Error	29	68.048	2.346		
Total	30	71.700			

TABLE 5.3

Difference between low scorers, including those who scored zero on Oral data, at Schools 1 and 2a, from Experiment I

School	N	Mean			
1	13	4.84			
2a	26	2.46			
Source	df	SS	MS	F	P
Treatments	1	28.3178	28.3178	7.469	.01
Error	37	140.2720	3.791		
Total	38	168.5898			

A difference in the same direction, between School 1 and the other schools was observed in subsequent experiments. The following sections describe an attempt to match groups on additional criteria, and an investigation of the possibility that the Experimental Tests required types of reasoning ability not demanded by the Vocabulary Tests on which the groups had been matched.

Passive versus active vocabulary (W.I.S.C. Oral Vocabulary Test)

Because of the apparent discrepancy between the Stanford-Binet Vocabulary Test results (described on page243, in the 'Possible Social Class Causes' section), and the Experimental results, it was decided to use a measure of active oral vocabulary in addition to the passive Peabody Picture Vocabulary Test, as a basis for matching groups for Experiment II. The W.I.S.C. Oral Vocabulary Test was chosen for this purpose, because the scoring procedure is less lenient, and more specific than that of the Stanford-Binet.

Table 5.4 shows the summary of a one-way analysis of variance on the W.I.S.C. Scaled Vocabulary scores for the matched R.ST.E. groups from Experiment II.  $F = 1.47$  (statistically insignificant), showing that the R.ST.E. groups at Schools 1 and 2b were successfully matched for active as well as passive vocabulary score.

TABLE 5.4

One-way analysis of variance on W.I.S.C. Vocabulary Scaled scores, at Schools 2b and 1, from groups matched on P.P.V.T. I.Q. and age in

<u>Experiment II</u>					
	School	Group	N	Mean	
	2b	R.ST.E.	10	14.1	
	1	R.ST.E.	10	13.4	
Source	SS	DF	VE	F	P
Between Groups	2.45	1	2.45	1.74	NS
Error	25.3	18	1.41		
Total	27.75	19			

Table 5.5, repeated from Table 3.45 (page 143 ) gives the correlation matrix for  $N = 53$ , all from School 1, from Experiment II. The P.P.V.T. I.Q. range is from 87 - 140.



TABLE 5.5

Correlations between P.P.V.T., W.I.S.C. vocabulary, age, Pointing-oral and Oral scores, on 'encumbered' plus 'precarious' taken from children at School 1, from Experiment II

School 1 N = 53	P.P.V.T.	W.I.S.C. Vocabulary	Age	P.O.
W.I.S.C. Vocab.	0.605	-----	---	---
Age	0.368	0.215 NS	---	---
P.O.	0.487	0.441	0.254 NS	---
O.	0.546	0.406	0.282	0.715

On a two-tailed test, a correlation of

0.273 is significant at .05 level

0.322 " " " .02 level

0.354 " " " .01 level

Thus, although there is a very strong correlation of 0.605 between the W.I.S.C. Vocabulary Scaled Score, and the P.P.V.T. I.Q. Score, the strongest correlation with Oral and Pointing-oral scores are still for the P.P.V.T.

In spite of very close matching of groups on P.P.V.T. and W.I.S.C. and age, for Experiment II, the difference between schools was not completely eliminated. On the Oral Test, for 'encumbered' and 'precarious',  $F = 1.39$  (insignificant), but on the Pointing-oral Test,  $F = 8.38$ , significant at the .01 level (see page 131).

#### Types of reasoning ability (W.I.S.C. Selected Sub-tests)

Although the Vocabulary Test is the best single measure of intelligence, giving, in a large majority of cases, "an intelligence quotient within 10 per cent of that secured by the entire scale" (Terman and Merrill 1937), it seemed just possible that there might be differences in reasoning ability between children at the two schools, which the vocabulary tests had not revealed.

To check this possibility, all the seventy-eight children (by this time, two children, one at each school, were unavailable) of the basic groups in Experiment I, were given three W.I.S.C. Sub-tests, the General Information, the

General Comprehension, and the Similarities Sub-tests. Advantage was taken of this opportunity of being with the children again, to collect additional information. The data collection form may be seen in the Appendix on page 300.

Results of W.I.S.C. Sub-tests

As would be expected, the Scaled scores of the three Sub-tests did differentiate the two bright I.Q. groups from the six standard I.Q. groups,  $F = 5.62$ , significant at the .025 level. There was, however, no difference between schools in the Scaled Sub-test scores,  $F = 0.08$ , insignificant. Table 5.6 gives a summary of a two-way analysis of variance on the W.I.S.C. Scaled Sub-test scores, for children in the four basic groups of Experiment I. (The scores of the two missing children were taken to be the same as the mean score for their group, for the purpose of this analysis.)

TABLE 5.6

Summary of a two-way analysis of variance on the Scaled scores of the three W.I.S.C. Sub-tests, for children in the four basic groups in

		<u>Experiment I</u>			
Total N = 80		ST.E.	ST.D.	ST.E.R.	BR.D.
School 1	Mean	35.5	32.6	31.0	35.7
School 2a	Mean	34.5	31.0	30.7	37.9
Source	SS	DF	MS	F	P
Between Schools	2.45	1	2.45	0.08	NS
Between Groups	500.55	3	166.85	5.62	.01
Schools/Groups	44.55	3	14.85	0.50	NS
Within cell	2138.40	72	29.70		
Total	2685.95	79			

$F_{max} = 2.50$  Permitted  $F_{max} = 8.95$  ( $K = 8, n = 9$ ).  
Variances are homogeneous.

A two-way analysis of variance on the scaled scores of the three standard groups, showed again that there was no difference between schools,  $F = 0.69$  (statistically insignificant). The difference between the standard groups was insignificant ( $F = 2.98$ ).

Table 5.7 summarises a two-way analysis of variance for the Scaled W.I.S.C. Sub-test scores, for the three standard groups at Schools 1 and 2a.

TABLE 5.7

Summary of a two-way analysis of variance on the Scaled W.I.S.C. Sub-test scores, for the three basic standard groups of children in Schools 1 and 2a, for Experiment I

Total N = 60		ST.E.	ST.D.	ST.E.R.	
School 1	Mean	35.5	32.6	31.0	
School 2a	Mean	34.5	31.0	30.7	
Source	SS	DF	MS	F	P
Between Schools	14.02	1	14.02	0.44	NS
Between Groups	189.10	2	94.55	2.97	NS
Schools/Groups	4.23	2	2.12	0.07	NS
Within cell	1713.50	54	31.73		
Total	1920.85	59			

F max = 2.50    Permitted F max = 7.8 ( K = 6, n = 9 ).  
Variances are homogeneous.

Discussion of W.I.S.C. Sub-test results

The W.I.S.C. Sub-test results failed to differentiate between schools, suggesting that the verbal reasoning of the children at the two schools was comparable.

Table 5.8 shows a summary of the correlations between the W.I.S.C. Scaled Sub-test scores, the three Experimental scores, the P.P.V.T. I.Q. scores, and age. The three standard groups were put together, giving an N of 60 with a P.P.V.T. I.Q. range of 100 - 120, but combining three different treatments. The two difficult treatments, ST.D. and BR.D. were examined together, giving a P.P.V.T. I.Q. range of 100 - 140+, (see Table 5.9).

The correlations of the W.I.S.C. Sub-test score with each of the Experimental Tests are significant at above the .01 level, in spite of the differences in treatment between the three standard groups. The Experimental treatments correlate strongly ( < .01 level ) with each other. However, the W.I.S.C. Sub-test scores miss the .05 level of significance on a two-tailed



TABLE 5.8

Summary of the Pearson Product Moment Correlations between the W.I.S.C. Scaled Sub-test score, the Experimental Test scores, P.P.V.T. I.Q. scores and age, for children in the standard groups in Experiment I

N = 60.	P.P.V.T.	W.I.S.C. Sub-test	O	PO	P
W.I.S.C. Sub-test	0.213 * almost	-	-	-	-
O	0.159	0.352 **	-	-	-
PO	0.097	0.555 **	0.688 **	-	-
P	0.060	0.493 **	0.645 **	0.904 **	-
Age	0.178	0.035	-0.002	-0.060	-0.002

\* .05 level = 0.250

\*\* .01 level = 0.325 (two-tailed)

in correlating with the P.P.V.T. I.Q. scores. This suggests that the W.I.S.C. Sub-test Scale is related to abilities used in the Experimental situation, which differ slightly from those used in the P.P.V.T. Also, the P.P.V.T. I.Q. range of 20 points is probably too small. There are no significant correlations for the P.P.V.T. I.Q. Scale, possibly because the standard groups were initially matched for P.P.V.T. I.Q. and differences in scoring on the Experimental Tests would be more closely related to the differences in treatments than to I.Q. level, when the I.Q. range is only 20 points. (It will be recalled from page 102 that when a P.P.V.T. I.Q. range of 40 points is included, with the same treatment, the P.P.V.T. correlations with the Test scores are strong,  $p < .01$  in the case of L.E. and ST.E.) There are no significant correlations for age, presumably because both the P.P.V.T. I.Q. and the W.I.S.C. Sub-test Scaled scores have an age allowance.

Table 5.9 shows the correlations obtained when the ST.D. and BR.D. results are pooled, giving a P.P.V.T. I.Q. range of 40 points, and involving the same (difficult) treatment.

TABLE 5.9

Summary of the Pearson Product Moment Correlations between the W.I.S.C. Scaled Sub-test score, the Experimental Test scores, P.P.V.T. I.Q. scores and age, for children having the difficult treatment in Experiment I

N = 40	P.P.V.T.	W.I.S.C. Sub-test	O	PO	P
W.I.S.C. Sub-test	0.452 **	-	-	-	-
O	0.312 *	0.297 * almost	-	-	-
PO	0.429 **	0.268 * almost	0.482 **	-	-
P	0.281 N	0.209	0.290 N	0.820 **	-
Age	0.129	-0.106	0.353 *	0.035	0.012

\* .05 level = 0.304

\*\* .01 level = 0.393 (two-tailed)

When the P.P.V.T. I.Q. range is extended to 40 points, and the same (difficult) treatment is involved, the correlations support those found in Experiment I (page 102). The P.P.V.T. I.Q. score correlates significantly with the Oral and Pointing-oral Test scores, and nearly reaches significance for the Pointing score, on a two-tailed test. The correlation between the W.I.S.C. Sub-test score and the Experimental Test scores is reduced now that the P.P.V.T. I.Q. range is 40 points, though it is near significance (for a two-tailed test), for the Oral and Pointing-oral scores. The W.I.S.C. Sub-test score correlates strongly ( $p < .01$ ) with the P.P.V.T. I.Q. score with the range of 40. It would, therefore, appear, that when the P.P.V.T. I.Q. range is comparatively large, and the treatment identical, the P.P.V.T. score is the best indicator for success on the Experimental Tests. When the P.P.V.T. I.Q. range is small, and the treatments vary in difficulty, the W.I.S.C. Sub-test Scaled score becomes the best indicator of success on the Experimental Tests.

The correlations for age are again not significant, except in the case of the Oral scores, where  $r = 0.353$ , significant at the .05 level. Inspection of the Oral data, arranged by age, for the ST.D. and BR.D. groups of both schools, revealed two cut off points, at between 5.7 and 5.8, and between 5.10 and 5.11, suggesting that the older children may be making higher scores in the Experimental Tests.

Table 5.10 shows a summary of a one-way analysis of variance on this data.

TABLE 5.10

Summary of a one-way analysis of variance, on the Oral results  
of ST.D. plus BR.D. groups, at Schools 1 and 2a, from Experiment I  
arranged by AGE

<u>Age Group</u>	<u>N</u>	<u>Mean Score</u>
5.3 - 5.7	11	5.55
5.8 - 5.11	17	5.23
6.0 - 6.3	12	7.00

Source	DF	SS	MS	F	P
Between Groups	2	16.95	8.475	0.6049	NS
Within Groups	37	518.15	14.01		
Total	39	535.1			

Although the correlation between age and Oral score is significant at .05 level, a one-way analysis of variance on the Oral data from the ST.D. and BR.D. groups arranged by age gives an F of 0.61 which is not significant at the .05 level. Thus, there is little evidence to support the suspicion that the older children tend to make higher scores than the medium and young children, under the conditions of the difficult treatment, apart from the correlation of age with Oral score.

As would be expected, the Oral, Pointing-oral and Pointing scores continue to correlate with each other ( $p < .01$ ), except in the case of Oral with Pointing scores, where  $r = 0.29$  which just misses significance at the .05 level, on a two-tailed test. This lends support to the idea that the Oral Test is more difficult than the Pointing and Pointing-oral Tests. It is easier to recall the meaning of a word when only four alternatives are presented, than it is when associations from the whole of one's past experience are available.

A one-way analysis of variance was computed, on the W.I.S.C. Sub-test Scaled scores, of the ST.E. and BR.D. groups, arranged according to success on the Oral Test. High Oral scorers were those who scored 8 and above. Low Oral scorers were those who scored 7 and below. The ST.E. and BR.D. groups were chosen



because their Oral scores were comparable, suggesting that the two treatments (easy and difficult) were comparable for the two P.P.V.T. I.Q. ranges, (standard and bright). The whole P.P.V.T. I.Q. range was 100 - 140+. Table 5.11 shows a summary of the analysis.

TABLE 5.11

Summary of a one-way analysis of variance on the W.I.S.C. Sub-test Scaled Scores, of ST.E. and BR.D. groups from Schools 1 and 2a, from Experiment I, arranged in two groups according to the value of the Oral scores

(high = 8 - 15; low = 7 - 0)

	<u>Oral score</u>	N	<u>Mean W.I.S.C. score</u>		
High	8 - 15	21	36.57		
Low	7 - 0	19	33.33		

Source	DF	SS	MS	F	P
Between Groups	1	250.00	250.00	11.15	< .005
Within Groups	38	837.60	22.42		
Total	39	1027.60			

Table F = 8.83 for 1 and 38 DF at .005 level.

When the treatments are of comparable difficulty for the two P.P.V.T. I.Q. ranges, (total range 40 I.Q. points), there is a highly significant difference  $F = 11.15$ ,  $p < .005$  on the W.I.S.C. Sub-test scores as arranged by high or low Oral score. This strongly suggests that the W.I.S.C. Sub-tests of verbal reasoning use qualities of thinking which are also used in the Experimental Test situation. This suggestion is consistent with the correlations between W.I.S.C. Sub-test score and Experimental Test scores already observed.

A one-way analysis of variance was run on the Oral scores of the difficult groups (ST.D. and BR.D.) arranged by value of W.I.S.C. Sub-test score, to see whether the W.I.S.C. Sub-test score differentiated between high and low Oral scorers, given a wide P.P.V.T. I.Q. range of 40 points, and the identical difficult treatment. Table 5.12 gives a summary of this. Inspection suggested two cut-off points at between W.I.S.C. Sub-test scores 38 and 37, and 32 and 31.

TABLE 5.12

Summary of a one-way analysis of variance, on the Oral scores of ST.D. and BR.D. groups, from Schools 1 and 2a, from Experiment I, arranged in three groups according to value of W.I.S.C. Sub-test Scaled Score

<u>W.I.S.C. Sub-test</u> <u>Scaled Score</u>		<u>N</u>	<u>Mean Oral Score</u>		
47 - 38		12	6.83		
37 - 32		14	7.5		
31 - 20		14	4.5		

Source	DF	SS	MS	F	P
Between Groups	2	36.57	18.28	2.065	NS
Within Groups	37	324.53	8.768		
Total	39	361.10			

The analysis showed that  $F = 2.065$ , statistically insignificant. Thus, although the W.I.S.C. Sub-test Score correlates at near the .05 level on a two-tailed test, with the Oral score for the combined ST.D. and BR.D. groups, the relationship is not strong enough for the high and low W.I.S.C. scorers to pick out the high and low Oral scorers. The means of the Oral scores arranged according to value of W.I.S.C. score show a slight tendency in this direction. An analysis of covariance reveals the relationship more clearly.

An analysis of covariance was computed (see Table 5.13) in order to examine the effect of the W.I.S.C. Sub-test score, compared with the effect of the P.P.V.T. I.Q. score, and age. The scores from the Oral, Pointing-oral, and Pointing Tests, of children from the three standard groups at both schools, were used. The standard groups were used because they gave the largest possible N, were matched for P.P.V.T. I.Q., and because the correlations between Experimental score and W.I.S.C. Sub-test score (see page 224) were above .01 level.

The results of the analysis of covariance show that the treatment effect is significantly reduced by the W.I.S.C. Sub-test score, and is not much affected by either age or P.P.V.T. I.Q. score. This is consistent with the results of other analyses already described in this Chapter.

TABLE 5.13

Summary of the results of analysis of variance and analysis of covariance  
on the Oral, Pointing-oral and Pointing data, the W.I.S.C. Sub-test Scores,  
the P.P.V.T. I.Q. Scores, and Age, for the three standard groups at Schools  
1 and 2a, from Experiment I

N = 60 throughout

Analysis of Variance

Analysis of Covariance

vv P.P.V.T. W.I.S.C. Age

O	F = 5.56	p < .01	F = 3.40	p < .05
P.O.	F = 8.75	p < .001	F = 4.37	p < .025
P	F = 9.12	p < .001	F = 5.51	p < .01

vv W.I.S.C. Age

P.P.V.T. effect

O	F = 5.56	p < .01	F = 3.48	p < .05	.08
P.O.	F = 8.75	p < .001	F = 4.48	p < .025	.11
P	F = 9.12	p < .001	F = 5.19	p < .025	- .32

vv Age

W.I.S.C. effect

O	F = 5.56	p < .01	F = 5.63	p < .01	2.15
P.O.	F = 8.75	p < .001	F = 8.27	p < .001	3.79 *
P	F = 9.12	p < .001	F = 8.75	p < .001	3.56 *

vv W.I.S.C.

Age effect

O	F = 5.56	p < .01	F = 3.11	p > .05 *	.37
P.O.	F = 8.75	p < .001	F = 5.19	p < .01	- .71
P	F = 9.12	p < .001	F = 6.07	p < .01	- .88

\* .05 level F = 3.17      .01 level F = 5.01  
 .025 level F = 3.93      .001 level F = 7.77  
 .005 level F = 5.80      df = 2 and 54 or 2 and 56

W.I.S.C. Comprehension Test. Question 4

Inspection of the raw scores of the W.I.S.C. Sub-tests revealed that there was one question which seemed to differentiate between the two schools quite clearly. This was Comprehension Question 4, "What is the thing to do if a fellow (girl) much smaller than yourself starts to fight with you ?"



The scoring instructions given in Appendix A of the W.I.S.C. Manual (Wechsler 1949) are as follows :- "General : not to fight with him.

2 points: Just walk away; tell him (her) you don't want to fight.. Don't hit him; find out what's the matter.

1 point: Tell him you don't want to hurt him... Ask someone to stop him ... Tell him not to fight.

0 points: I'd just let him fight ... Let him win. (Q.) If he's littler don't hit him so hard ... Don't do anything."

While the common response at School 1 was "Ignore him. Tell him you don't want to fight," the common response at School 2a was "Fight him back." It is possible that children at School 2a did not understand the meaning of the word "smaller", but not likely, as these children scored comparably well on both the P.P.V.T. and the Stanford-Binet Oral Vocabulary Test (see page 245). It seems more probable that for children of this age, there is a cultural difference in the moral implications generated by "much smaller than ...". It is easy to imagine harassed mothers saying to younger siblings "Don't hit him, he'll hit you back, and he'll hurt you !" Or to their five-year-old "Don't come running to me with your tales ! Hit him back. He'll soon learn to leave you alone." This has the opposite expectations to the ones neatly expressed by one little girl "I'd stop it. (Q.) Well it is naughty to fight and little girls don't fight really," and another boy "Leave him alone, - if he was your own size you could fight with him, but if he's smaller you know you'll beat him."

If these two values, one dismissing fighting as a possibility, the other condoning fighting if the sizes are equal, are culturally acquired, it seems reasonable to suppose that attitudes such as "I'd fight him back and I'd fight him much harder." "Beat him", "Just bash her in and she'll start crying!" are also culturally acquired. \*

However, whether the cause of the differential response was ignorance of specific meaning, or differing cultural values, the Question 4 responses significantly differentiated between School 1 and School 2a. Table 5.14 shows a summary of  $\chi^2$  on the number of responses scored 2 or 1, compared with the number of responses scored 0, at the two schools.

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\* Since writing this Chapter, the author has discovered one reference to the probable cultural bias of Question 4, by Mussen, Conger and Kagan (1974)

TABLE 5.14

Summary of  $\chi^2$  on the W.I.S.C. Comprehension Sub-test Question 4 scores for Schools 1 and 2a, for all the children in the basic groups in

Experiment I

(N = 79, because one child was by this time unavailable)

Question 4 :-	Score 2 or 1	Score 0	Total
School 1	25 (19.75)	14 (19.25)	40
School 2a	15 (20.25)	25 (19.85)	39
	<u>Σ 40</u>	<u>Σ 39</u>	<u>Σ 79</u>

$$\chi^2 = 5.597 \text{ at 1 df, } p < .025$$

(Table  $\chi^2 = 5.02$  at 1 df for .025 level)

At School 1, 14 out of 40 children scored zero, while at School 2a, 25 out of 39 children scored zero for Question 4. This difference is significant at .025 level ( $\chi^2 = 5.597$ ).

Furthermore, when the Experimental Test scores of the three standard groups at Schools 1 and 2a, are grouped according to score on Question 4, significant differences are found on both the Oral and the Pointing Tests. Table 5.15 summarises the three one-way analyses of variance.  $F = 4.25$ ,  $p < .05$  for Oral,  $F = 3.58$ ,  $p > .05$  for Pointing-oral, and  $F = 4.25$ ,  $p < .05$  for Pointing data.

Of all the explored indicators of social class difference (car ownership, telephone ownership, ownership of both car and telephone, proportion of first-borns, and parental interest), it is the W.I.S.C. Comprehension Question 4 that differentiates both between schools, and between low and high scorers across schools. This suggests that it might indeed be an indicator of slight differences in ways of thinking about social values, which might in turn be related to differences in cognitive functioning, as observed in the Experimental Test results. The rest of the W.I.S.C. Sub-test analyses, as direct measures of verbal reasoning, support this view.

In part one of the third revision of the Stanford-Binet Intelligence Scale,

TABLE 5.15

Summary of results of three one-way analyses of variance, on Oral Pointing-oral and Pointing scores, arranged by result of W.I.S.C. Comprehension Test Question 4, for children in the three standard groups, at Schools 1 and 2a, from Experiment I

Total N = 59.

	N	Means:-	Oral	P.O.	P
Q.4. score 2 or 1 :-	25		7.12	10.36	4.12
Q.4. score 0 :-	34		4.94	8.20	3.41

ORAL

Source	DF	SS	MS	F	P
Between Groups	1	68.39	68.39	4.25	.05
Within Groups	57	916.52	16.08		
Total	58	984.91			

POINTING-ORAL

Source	DF	SS	MS	F	P
Between Groups	1	68.85	68.85	3.58	NS
Within Groups	57	1093.32	19.18		
Total	58	1162.17			

POINTING

Source	DF	SS	MS	F	P
Between Groups	1	7.23	7.23	4.25	.05
Within Groups	57	96.88	1.7		
Total	58	104.11			

Table F = 4.00 for 1 and 57 df at .05 level.

Terman and Merrill (1961) discuss the possibility that some items may discriminate against low socio-economic children. They state that in the case of the Stanford-Binet test, all such items reported have been checked,

"by computing the percentages of successes and failures for occupational group 6 against groups 1 to 5 separately for each item of the test," and have been "found to be failed no oftener than the other items at that level by the low-status group as compared with the high-status group."



In other words, they are claiming that what at first looks like an individual item discriminating between social classes because of cultural effects, is in fact, no more discriminatory than other items at the same level. So the observed difference is presumed to be related to intelligence, rather than to cultural bias.

The same is probably true of the W.I.S.C. But in suggesting that "Fight him back" might be as correct an answer for a child from one home environment, as "Ignore him" is for a child from a different environment, one is not necessarily questioning the scoring system. The fact that one response scores 0 while the other scores 2 points, is related to the wider environment, in which the "Ignore him" response is acceptable, and in which each child is judged on the same terms.

It therefore seems legitimate to note the difference between responses (which was not significant for other items in the three W.I.S.C. Sub-tests), and to regard this difference as one clue in the quest for the causes of the differences in Experimental scores achieved by matched groups of children. Since it is possible that one question out of roughly forty questions on the three Sub-tests, might differentiate the schools by chance, undue weight must not be placed on this clue. On the other hand, neither should it be completely ignored.

#### Conclusions about W.I.S.C. Sub-test results

1. The total W.I.S.C. Sub-test score did not differentiate between schools.
2. It did differentiate between low and high scorers of BR.D. and ST.E. groups, across schools, on the Oral Test.
3. It did not differentiate between low and high oral scorers of ST.D. and BR.D. groups, across schools, but
4. the analysis of covariance showed that the W.I.S.C. Sub-test score significantly reduced the treatment effect, when the three standard group scores were pooled, across schools.
5. Question 4 of the W.I.S.C. Comprehension Sub-test did differentiate between schools, and between low and high scorers for the Oral and Pointing scores.

6. A difference in reasoning ability postulated to account for the difference between low and high scorers in the Experimental Tests, is supported by the W.I.S.C. Sub-test correlations.
7. A difference between Schools 1 and 2a, postulated to account for the difference between the low scorers at the two schools, is supported by the results of Question 4 of the W.I.S.C. Comprehension Sub-test.

P.P.V.T. I.Q. ranges

Further evidence of a potential difference between schools, arises in the P.P.V.T. I.Q. ranges at the schools. Table 5.16 sets out the number of children tested at each school, during the three Experiments, with the P.P.V.T. I.Q. range, the standard deviation, and the mean P.P.V.T. I.Q. score.

TABLE 5.16

To show the total number of children tested on the P.P.V.T. at each school, with the P.P.V.T. I.Q. range, standard deviation and the mean P.P.V.T. I.Q. score, during the course of all three Experiments

School	N	Range (P.P.V.T. I.Q.)	SD	Mean
1	173	86 (56 - 142)	14	107
2a	154	84 (61 - 145)	18	98
2b	33	67 (67 - 134)	16	99
2c	24	58 (80 - 138)	13	100
2d	102	77 (55 - 132)	17	92
3	40	60 (55 - 115)	11	77

From Table 5.16 it can be seen that while the P.P.V.T. I.Q. range at School 1 was similar to that of the other schools (apart from School 3) the mean I.Q. was higher. A one-way analysis of variance confirms a significant difference between schools, see Table 5.17 where  $F = 2.54$ , significant at the .05 level. Table 5.18 shows that the P.P.V.T. I.Q. scores at School 1 are also significantly different from those at Schools 2a, 2b, 2c and 2d,  $F = 9.95$ , significant at the .005 level.

TABLE 5.17

Summary of one-way analysis of variance on P.P.V.T. I.Q. scores  
of all children tested, at Schools 1, 2a, 2b, 2c, 2d and 3

School	N	Mean P.P.V.T. I.Q.
1	173	107
2a	154	98
2b	33	99
2c	24	100
2d	102	92
3	40	77
	<u>Σ 526</u>	

Source	SS	DF	VE	F	P
Between Groups	1282	5	256.4	2.544	.05
Error	52396	520	100.76		
Total	53678	525			

TABLE 5.18

Summary of one-way analysis of variance on P.P.V.T. I.Q. scores of  
School 1 versus Schools 2a, 2b, 2c and 2d

Source	SS	DF	VE	F	P
Between Groups	948.37	1	948.37	9.95	.005
Error	46123.56	484	95.296		
Total	47071.93	485			

Because not every child in the appropriate age group was tested, these analyses have to be treated with some caution. Head teachers had several reasons for wishing certain children or classes not to be involved in the Experiments. The most frequent of these was that the children concerned were already disturbed, and leaving the class for testing would unsettle them further. At Schools 2b and 2c, additionally, two teachers of classes in the required age range were probationers, and the head teachers decided that these two classes should not take part in the Experiments, in case the probationary



teachers might be adversely affected. There is no way of knowing whether or not the scores of the untested children at each school would have altered the observed P.P.V.T. I.Q. range or mean for each school. As far as can be ascertained, however, there seem to be more children of high I.Q. at School 1, at any one time, and fewer children of high I.Q. at School 3, compared with Schools 2a, 2b, 2c and 2d. It was for this reason that children from School 1 were used in each Experiment, even though the experimental groups at different schools were matched for age, sex and P.P.V.T. I.Q.

The Pre-test data from Experiment I were scrutinised, to find out whether there was an observable difference between Schools 1 and 2a, at that stage. Findings are reported in the "Don't Know" section, which follows.

"Don't Know" data

The Pre-test data for the four basic groups (ST.E., ST.D., ST.E.R. and BR.D.) in Experiment I, showed no significant difference between schools, in the number of "don't know" responses, ( $\chi^2 = 3.61$ , insignificant). There was, however, a significant difference between schools ( $\chi^2 = 11.08$  significant at .001 level) when the two BR.D. groups were compared. Each child had six opportunities to guess the meaning of an experimental word. At School 1 there was only one guess out of sixty, whereas at School 2a there were eleven out of fifty-four guesses. Table 5.19 summarises the  $\chi^2$  test of significance on the Pre-test data.

TABLE 5.19

Summary of  $\chi^2$  on the Pre-test data for BR.D. groups at Schools 1 and 2a, from Experiment I

School	Group	N	Guesses	"don't know"	Total
1	BR.D.	10	1 (6.36)	59 (54.06)	60
2a	BR.D.	9	11 (5.64)	43 (47.94)	54
			<u>£ 12</u>	<u>£ 102</u>	<u>£ 114</u>

$\chi^2 = 11.08$  at 1 df, significant at .001 level.

From this evidence, it looks as though children in the BR.D. group at School 1 know when they don't know. More children in the BR.D. group at School 2a are likely to give an unrelated guess, in the situation where they have no means of knowing the meaning of the experimental words.

This situation was reversed for the Oral Post-test, when the children, having heard the experimental words in the stories, had some reason to believe that they knew what the words meant. There was a highly significant difference between schools ( $\chi^2 = 44.49$  at 1 df) in willingness to verbalise. Table 5.20 shows a summary of the  $\chi^2$  test of significance on the Post-test Oral data.

TABLE 5.20

Summary of  $\chi^2$  on the Post-test Oral data taken from the responses of

80 children in the "basic" groups, in Experiment I

School	N	Response "don't know"	any other	Total
1	40	18 (47)	222 (193)	240
2a	40	76 (47)	164 (193)	240
		<hr/>	<hr/>	<hr/>
		≤ 94	≤ 386	≤ 480

$\chi^2 = 44.49$  at 1 df significant at above .001 level. (Table  $\chi^2 = 10.83$ ).

Children at School 1 were much more likely to make an oral response of some kind than children at School 2a, on the Oral Post-test. This suggests that more children from School 1 had the confidence to guess at the meaning of a word, in an appropriate situation.

#### "Confusions" data

The word 'illuminate' was particularly useful in differentiating the strategies used in Experiment I. Table 5.21 shows a summary of  $\chi^2$  for the Oral Post-test data for the basic groups at Schools 1 and 2a.

The contexts of the stories in Experiment I were such that they permitted confusion between the meanings of 'illuminate' and 'embellish'. Children at School 1, especially in the ST.E.R. group (7/10) were, in their search after meaning, inclined to give a response for 'illuminate' which showed confusion

with 'embellish'. Children from School 2a were more inclined to give a guess (unrelated to any feature of the word, as far as can be seen) or to respond "don't know".

This suggests that more children from School 1 were actively seeking the meaning of the words, at least during the Oral Post-test, (and probably during the stories as well, since it is unlikely that the difference would be solely one of recall).

TABLE 5.21

Summary of  $\chi^2$  on the Oral Post-test data for 'illuminate' taken from the responses of 80 children in the "basic" groups, in Experiment I

School	N	Guesses	Confusions	"don't know"	Total
1	40	2 (4.9)	21 (13.25)	4 (8.837)	27
2a	40	8 (5.58)	6 (13.75)	14 (9.164)	28
		<u>10</u>	<u>27</u>	<u>18</u>	<u>55</u>

$\chi^2 = 14.95$  at 2 df significant at .001 level. (Table  $\chi^2 = 13.81$ ).

Causes of difference between schools

The possible causes of the observed difference in learning behaviour between children at Schools 1 and 2a, are discussed in two groups.

In the first group, causes which could be regarded as accidental or extraneous to the school situation, are investigated. These include the possibility of the original matching of children being inadequate because of the P.P.V.T. I.Q. transformation rules; because the Experimental Tests required different abilities from those matched on the P.P.V.T., (W.I.S.C. Sub-tests were given to explore this hypothesis, to all the children in the "basic" groups in Experiment I); possible experimenter effect; and possible help from teachers at one of the schools.

In the second group, possible causes of difference which might arise from social class differences between the school catchment areas are discussed. In this section, home background, telephone and car ownership, birth order, parental attitude, and the effect of altering the experimental instructions, are explored. Additional tests were given to children who had taken part in Experiment I.



These included the Stanford-Binet Oral Vocabulary Test, and 'Delayed Post-tests', to children from the ST.E. groups. Possible social class differences in the way in which children perceive the experimental situation are discussed.

Finally, a pilot study on five individual children at two schools, using a different experimental approach, is described.

#### Possible extraneous causes of difference between schools

##### P.P.V.T. I.Q. Test, revised scores

The results of the Stanford-Binet Vocabulary Test (see page 243) were a little puzzling, and raised doubt about the efficiency of the P.P.V.T. I.Q. test as a basis for matching groups, even though there was a significant correlation between the P.P.V.T. I.Q.s and the Oral and Pointing-oral Test scores in Experiment I (see page 102).

It was suspected after Experiment I that (a) children gaining a high P.P.V.T. I.Q. were older, and (b) that older children often made higher scores on the Oral and Pointing-oral Tests (see page 225). Therefore, a revision of the transformation of raw scores to P.P.V.T. I.Q. was made by filling in the gaps, which for five-year-olds can often be as much as 12 I.Q. points at the 5.5/5.6 cut-off point.

All the children at School 1, used in Experiment II (52 children, with a P.P.V.T. I.Q. range of 87-140), were given the Revised P.P.V.T. I.Q. scores, but the correlation between Revised P.P.V.T. I.Q. scores and 'Original P.P.V.T. I.Q. scores was so good,  $r = .979$ , that the Revised scores were not used as a basis for matching in later experiments.

In addition, the Revised P.P.V.T. I.Q. scores did not reveal a difference between schools, for groups matched on P.P.V.T. I.Q. Table 5.22 shows a summary of a one-way analysis of variance for the "basic" groups from Experiment I, ( $F = 0.02$ , NS).

In view of these results, the original transformation scores cannot be faulted, and cannot be regarded as the cause of the difference between schools.

Since the P.P.V.T. correlated significantly with Oral and Pointing-oral data for Experiment I (see page 102), it was decided to continue to use the P.P.V.T. as a basis for matching groups.

TABLE 5.22

One-way analysis of Revised P.P.V.T. scores of the "basic" groups  
from Experiment I

School	N	Mean
2a	40	116.03
1	40	116.35

Source	SS	DF	MS	F	P
Between Groups	2.12	1	2.12	0.02	NS
Error	10406.07	78	133.41		
Total	10408.19	79			

Number of questions asked by tester

In view of the significant difference between schools in "don't know" responses on the Oral Post-test, a check was made on the number of questions asked by the Experimenter or independent tester, in case technique had altered. It could be the case that School 1 children were benefitting from the practice and experience gained by the testers at School 2a.

However, all children who remained silent, or who said "don't know" were invited to guess and to "make up something to say, using the word 'x'", and there was no significant difference in numbers of questions asked to encourage the children to say what they knew, between the two schools.

Independent tester versus Experimenter

Since the independent tester tested 31/40 children on the Oral Post-test at School 1, a check was made to see whether this could account for the scoring difference between the two schools. One-way analysis of variance showed no significant difference between scores of children tested by the Experimenter or by the independent tester,  $F = 0.42$  at School 2a,  $F = 0.1$  at School 1, and  $F = 1.2$  for both schools together, with  $N = 80$  (30 tested by Experimenter, and 50 tested by independent tester).

Boys versus girls

It was not possible to match groups exactly for sex and the results were based on responses of 45 boys and 35 girls, for the basic groups of Experiment I. Twenty of the girls were from School 2a, and fifteen from School 1. Although

it has long been recognised that during childhood, girls are verbally superior to boys (McCarthy 1954), it seemed just possible that a sex difference might account for the difference between schools. However, a one-way analysis of variance on the Oral data gave an F of 0.58, supporting the claim that there was no significant difference between the sexes in this case. (This was probably because the children had been matched for verbal P.P.V.T. I.Q.)

Possible teacher help

The experimental groups had been carefully formed in such a way that each group consisted of children from several different classes, and the I.Q. range within each class was represented in each group, as far as was consistent with the I.Q. range for the group (e.g. the ST.E. group had a P.P.V.T. I.Q. range of 100 - 119). Groups were formed in this way, so that any possible teacher influence on children's learning of the words, could be checked. The teachers had all agreed to co-operate by not divulging the meanings of any unusual words the children might ask about, without first consulting the Experimenter, and there was no reason to suppose that they had not honoured this agreement. However, it was possible to check, since if a teacher had inadvertently explained the meaning of any of the experimental words, one would expect all the children in her class to benefit. This benefit would be spread across the experimental groups, but might account for the difference between schools. Table 5.23 shows a summary of a one-way analysis of variance, on the Oral scores of children from three classes at School 1.

TABLE 5.23

One-way analysis of variance on oral scores of children from three classes

<u>School 1.</u>		<u>in School 1, Experiment I</u>			
Class	N	Mean			
W	16	6.75			
G	10	8.70			
B	14	7.07			
Source	SS	DF	MS	F	P
Treatment	24.8	2	12.4	0.89	NS
Error	517.3	37	13.98		
Total	542.1	39			



The one-way analysis of variance confirms that there was no significant difference between the scores attained by children from different classes at School 1 ( $F = 0.89$ , insignificant).

### Teaching methods

Unstructured observation of the teaching methods used, in the various classes in the six schools, by the Experimenter, herself a qualified primary school teacher, suggested some differences between School 1 and the others. In many little ways, School 1 seemed more formal in approach than the others. Less time seemed to be given to creative arts such as painting, modelling, dancing and music making. There was possibly more emphasis on class teaching and oral instruction. At School 2a there were positive and conscious efforts to increase the children's use of language, including extension of vocabulary, through direct teaching. There was a more practical approach. For example a teacher would extract articles from a chest, and a group of children round her would be asked to name the items and to say something about them, if they could. Television programmes were watched with the children. The moon-landing was shown on television after school hours and many children stayed at school to watch it. Work followed in the form of discussions, model making, drawing and painting, the beginnings of writing and reading, and sometimes drama. At School 1, there would be more probably an approach less practical, and more verbal. A story might be told, which the children would then attempt to retell. It would be a caricature to suggest that Schools 1 and 2a were at polar opposites. All the teachers involved were dealing with 5-6 year old children, and many of the techniques used would be similar in any school. However, there seemed to be a tendency in the direction described. It was noticeable, though statistically insignificant, that 4/10 children from School 2a responded to the 'Mars' item on the Stanford-Binet vocabulary test "Mars is a planet". None of the nine children at School 1 referred to planets in any way. Similarly, eyelash was correctly identified by 8/10 children at School 2a, and 6/9 children at School 1. Such differences may have been caused by coincidental direct teaching at School 2a.

This very tentative evidence about difference in emphasis in teaching

method seemed to be supported by the behaviour of children during the experimental testing.

Possible social class causes of difference between schools

Stanford-Binet Oral Vocabulary Test

One possibility that could account for the difference in performance between School 1 and the other schools, is that the groups had been matched on the non-oral P.P.V.T. I.Q., while the tests showing the schools difference were Oral and Pointing-oral. It might be that children at School 1 were better at oral performance than other children. To check whether this could be the case, children from the ST.E. groups at Schools 1 and 2a were given an oral vocabulary test, from the Stanford-Binet Intelligence scale, a few months after the completion of Experiment I. However, when allowance was made for age, children from School 1 having a mean age of about five months less than children from School 2a at the time of the Stanford-Binet testing, there was no significant difference between schools, although the trend was in favour of School 2a, at the 0.1 level.

Table 5.24 shows the summary of a one-way analysis of variance, on the extrapolated Stanford-Binet Vocabulary I.Q.s which include an age allowance.

TABLE 5.24

Summary of a one-way analysis of variance, on the extrapolated  
Stanford-Binet I.Q.s for children in the ST.E. groups, at Schools  
1 and 2a, from Experiment I

	School	N	Mean		
	1 ST.E.	9*	131		
	2a ST.E.	10	143		
Source	DF	SS	MS	F	P
Treatments	1	636.4	636.4	3.161	.1
Error	17	3428.9	201.7		
Total	18	4065.3			

F = 4.45 at .05 level for 1 and 17 DF.

\* N = 9 at School 1 because one child was by this time unavailable.

Table 5.25 gives the results of a one-way analysis of variance on the ages of children in the ST.E. groups, at the time of testing.  $F = 7.94$ , significant at the .05 level, showing that the difference between ages was significant, and did, in fact, have to be taken into account when comparing the Stanford-Binet Vocabulary scores of the two groups.

TABLE 5.25

Summary of a one-way analysis of variance, on the ages of children  
in the ST.E. groups at Schools 1 and 2a, from Experiment I, at the time  
of the Stanford-Binet testing

School		N	Mean			
1	ST.E.	9*	73.2			
2a	ST.E.	10	78.1			
Source	DF	SS	MS	F	P	
Treatments	1	92.7	92.7	7.938	.05	
Error	17	198.5	11.68			
Total	18	291.2				

$F = 4.45$  at .05 level for 1 and 17 DF.

\* N = 9 at School 1 because one child was by this time unavailable.

Table 5.26 gives the results of a one-way analysis of variance on the raw scores of the Stanford-Binet Vocabulary Test. The Stanford-Binet scoring system is very lenient for children of this age range, and a simple + or - score is administered. There is no age allowance incorporated directly into the scoring system, as there is, for example, for the P.P.V.T. I.Q. scores. However, it is possible to follow the Stanford-Binet instructions to compute an extrapolated I.Q. so that children of different ages may be compared. That this was necessary in the present case, will be seen from Table 5.26 where  $F = 7.87$ , significant at the .05 level, unexpectedly in favour of children at School 2a. The greater part of the observed difference is accounted for by the greater age of children at School 2a, at the time of the Stanford-Binet testing.

It seemed possible that the leniency of the Stanford-Binet scoring system could be militating against children at School 1, whose definitions sometimes seemed qualitatively better than those of children at School 2a, even though the children at School 2a knew more words.



TABLE 5.26

One-way analysis of variance on scores from Stanford-Binet  
Vocabulary Test, for children in the ST.E. groups at Schools 1  
and 2a from Experiment I

School	N	Mean	SS	Variance
1	9*	8.00	594	2.25
2a	10	9.6	930	.93

Source	SS	DF	MS	F	P
Treatments	12.2	1	12.2	7.87	.05
Error	26.4	17	1.55		
Total	38.6	18			

$F = 4.45$  at .05 level for 1 and 17 DF.

\*  $N = 9$  at School 1 because one child (P.P.V.T. I.Q. 110) was by this time unavailable.

To test this hypothesis, the children's definitions were re-scored according to the W.I.S.C. vocabulary scoring instructions, which allow scores of zero, one or two. However, a one-way analysis of variance showed a significant difference between schools, in favour of School 2a,  $F = 6.08$ , significant at .025 level. The Stanford-Binet scoring system was therefore vindicated.

#### Conclusions about Stanford-Binet Vocabulary Test

Although School 2a children unexpectedly scored significantly higher on the Oral Stanford-Binet Vocabulary Test, much of the difference between schools is accounted for by the difference in ages of the two groups at the time of the Stanford-Binet testing. There remains a slight (significant at .1 level) trend in favour of children at School 2a, showing that it is not simply the lack of ability to define words orally, which differentiates children at School 2a, from those at School 1, in the Experimental Tests.

#### Delayed Post-tests

When the Stanford-Binet Oral Vocabulary Test was administered to the children of the ST.E. groups at Schools 1 and 2a, the opportunity was taken to

give a Delayed Oral Post-test on the experimental words. It was several months since the children had heard the words, at the time of the experimental Post-tests. Unfortunately, children at School 1 had heard the words more recently than children at School 2a.

Even so, the difference between schools in the number of words remembered was enormous, and probably too large to be accounted for simply by the difference in proximity to the previous exposure to the difficult words.

Table 5.27 shows the mean scores for words remembered on the Delayed Post-test, compared with scores on the Oral Post-test from Experiment I.

TABLE 5.27  
Summary of the scores for the Delayed Oral Post-test, compared with  
scores for the Oral Post-test of Experiment I, for the ST.E. groups,  
at Schools 1 and 2a

School	Group	N	Oral Score	$\bar{x}$	Delayed Score	$\bar{x}$	N
1	ST.E.	10	100	10.0	49	5.4	9
2a	ST.E.	10	64	6.4	7	0.7	10

While three children at School 2a remembered one word each, giving two good definitions and one vague definition, scoring a total of 7 for the whole group, only two children at School 1 failed to score, the other seven children scoring between five and nine each, making a total of 49.

Thus, children at School 1 were much better at remembering the meanings of the experimental words (though it must be remembered that they had had less time in which to forget them).

Table 5.28 summarises other interesting data from the Delayed Post-test, which closely follows the trends already described for Experiment I, in other sections. Children from School 1 gave half the number of homophonic responses of those at 2a, and 63% of the "don't know" responses of those at School 2a.

School 1 children also gave more responses confusing 'illuminate' and 'embellished'. The homophonic responses "beast" are recorded separately, because they may also be responses arising from semantic sources, in that the beast in 'Beauty and the Beast' was 'obese' for Experiment I. The numbers follow the same trend as those for Experiment I. More School 1 children

TABLE 5.28

Summary of homophonic and "don't know" data from the Delayed OralPost-test, for the ST.E. groups from Experiment I, at Schools 1 and 2a

School	Group	N	Homophones	"beast"	confusions	"don't know"
1	ST.E.	9	4	3	4	24
2a	ST.E.	10	8	6	0	38

remembered more words, gave fewer homophonic responses, and demonstrated more semantic confusion than children at School 2a. The definitions given were, in many cases, good, all except one scoring 3 or 2 points, in spite of the time gap between last hearing the experimental words, and the Delayed Post-test. Some examples of good definitions follow. It is interesting that not one out of nineteen children remembered 'inclement' while on the Oral Post-test for Experiment I, sixteen out of twenty scored points for their definitions of 'inclement', all except one of these scoring 2 or 3. It may be that 'inclement' is learnt easily because it is associated with a limited set of contexts, but perhaps because it is learnt by association, and without much effort, it is also easily forgotten. The difference between words was discussed in detail on page 169.

Examples of definitions given by children on the Delayed Oral Post-test, scored 3 unless otherwise stated.

'Illuminate' 2a ST.E. "It's a light. (Q.) Put the lights on."  
1 ST.E. "I remember that word. It means light. Sometimes it lights up the bedroom. It goes (i.e. operates on) with electric. It makes something light. (Q.) Switch a light on."

'Encumbered' 1 ST.E. "That means when you're 'encumbered' with something that's too heavy. (Q.) 'Cause it makes you go slowly when you're in a hurry."

1 ST.E. "Is it when you're carrying something and it's too heavy ? (Q.) Making your hands ache. (Q.) That when you're holding something and it's too heavy." (Score 2)

1 ST.E. "Yes. It means heavy and you can't pull it very well. It was in 'Jack and the Beanstalk' I think. (Q.) Put all bags on and junk. (Q.) 'Cause it would make you heavy." (Score 2)

'Obese' 1 ST.E. "Means sort of fat. (Q.) By eating a lot."  
1 ST.E. "Fat. (Q.) By eating a lot of food."

'Inclement' (No-one remembered 'inclement')



'Precarious' 2a ST.E. "It might mean dangerous."  
 1 ST.E. "When it's dangerous. (Q.) When you're - might be walking on a thin line (demonstrates balance). (Q.) 'Cause it's dangerous if you don't hold on."  
 1 ST.E. "Is it when you're frightened ? (Q.) A dangerous animal or something." (Score 2)

'Embellish' 1 ST.E. "Pretty, it means pretty. You can hang things on the Christmas tree to make the Christmas tree pretty. Make it pretty. (Q.) Pretty wall paper."

1 ST.E. "When you make yourself beautiful. (Q.) Make it beautiful with all pictures that's nice."

1 ST.E. "The Christmas cake might have little decorations on. (Q.) If there was a ribbon I might find a little plastic flower to stick on it. (Q.) Decorate."

1 ST.E. "We had one ! (Q.) You might be getting dressed up pretty for a party. (Q.) You might have some clothes. (Q.) Put them on myself and make myself pretty."

#### Conclusion about the Delayed Post-test:

The Delayed Oral Post-test differentiated between schools overwhelmingly in favour of children from School 1. It is not clear to what extent this difference was caused by the longer time gap experienced by School 2a children, or by the better verbal memories of children at School 1 which would support other results, including those of Experiment I. The fact that at a later stage, at the time of the W.I.S.C. Sub-tests, see page 222, School 1 children could recall more of the experimental stories than could children of School 2a, is consistent with the suggestion that School 1 children are more actively involved in listening to the stories, and perhaps in thinking about them, and remembering them.

#### Effect of altering instructions

Given that the ST.E. group at School 2a seem to have learned the meanings of words from their normal environment as well as, or even better than P.P.V.T. matched children from School 1, as evidenced by the results of the Stanford-Binet Vocabulary Test, it may be something peculiar to the experimental situation that is hindering one group, or assisting the other. It seemed possible that children from School 1 would be more likely to know that they were going to be asked about the meanings of the words at the end of the stories as their parents might be more likely to tell them the contents of the letter to parents.

To control for this possibility, a ST.E. group was run at School 2d (ST.E.I), which is comparable with School 2a in terms of I.Q. range and locality. The normal procedure was followed, with children being matched for age and

P.P.V.T. I.Q. The only difference was that this group, ST.E.I, was given the instructions on page 290 , pointing out that at the end of the stories they would be asked about the stories and words. Before each story, these children were reminded of the instructions through questioning, see page 290. It was hypothesised that the results of the new ST.E.I. group would equal, or improve on, those of ST.E. School 1. However, the ST.E.I. group results fell below ST.E. School 1 on Oral, and below both ST.E. School 1 and ST.E. School 2a on the Pointing-oral Tests. Table 5.29 gives the means for the three groups.

TABLE 5.29

To show the mean scores achieved by children in the ST.E. groups at Schools 1 and 2a in Experiment I(a) and those in the ST.E.I.group at School 2d, in Experiment I(b), on the Oral and Pointing-oral Tests

ORAL				POINTING-ORAL			
School	Group	N	$\bar{x}$	School	Group	N	$\bar{x}$
1	ST.E.	10	10.1	1	ST.E.	10	12.3
2a	ST.E.	10	6.4	2a	ST.E.	10	11.7
2d	ST.E.I.	10	8.2	2d	ST.E.I.	10	9.7
F = 1.42 NS.				F = 1.16 NS			

One-way analysis of variance on the scores, (including scores of 4 for 'encumbered' and 'precarious', where appropriate) showed that the differences between the three groups were not significant on any test (F = 1.42 NS for Oral data and F = 1.16 NS for Pointing-oral data).

Thus it would seem that knowing they were to be asked about words following the stories, did not help children from School 2d to learn the words.

These results also lend support to the idea that children were not being given the meanings of the difficult words at home, or by any other adults, since, knowing that they would be asked about the words in the story, one might expect this group to be more likely than any other to try to find out about

the words from external sources.

It is still possible that knowledge about the questions at the end of the stories may have affected children at the two categories of school differentially, so that children at School 1 could benefit while those at 2a and 2d would not. In this case, one would expect other factors also to differentiate children of School 1 from the others. Several such factors were investigated.

#### Home background

An attempt was made to discover whether there were any readily accessible differences in home background, that would correlate with the observed difference in performance between children of School 1 and School 2a.

In appearance, the majority of the children at each school seemed comparable. They were mainly clean, appropriately dressed, and healthy looking. The "free dinners" index, normally a useful guide (see for example, Wedge and Prosser 1973) who used this and supplementary benefit as the decisive criteria for "low income" status, even though only one third of eligible children with fathers in full-time work received free school meals, according to a Government report 1967 ), did not distinguish between School 1 and School 2a, though it clearly differentiated School 3, where it accompanied a syndrome of social problems, such as single parent families; high unemployment; low incomes; prison record; ill-health; and poor living facilities including small, damp rooms, overcrowding, outside toilet, lack of hot water, and disintegrating back-to-back, terraced property. But at School 3 it was not possible to form a group of standard P.P.V.T. I.Q. children. There were only two children in the age range with P.P.V.T. I.Q. over 100, being 104 and 115 respectively.

Any differences between the backgrounds of children at School 1 and School 2a would be much less extreme.

The children from the two schools, in the four basic groups, (ST.E., ST.D., ST.E.R. and BR.D.) of Experiment I, were interviewed individually, at a later stage, by the Experimenter. They were given the Information, Comprehension and Similarities Sub-tests from the W.I.S.C. At the same time, they were asked to give their full address, and they were asked about other siblings,



to ascertain birth order, and about telephone and car ownership.

In addition, the children were asked the following questions about the stories:-

"Can you remember a long time ago, when I came and told you stories ? Which stories can you remember ? Tell me about them. What happened in that story?"

After the children had recalled some of the stories and the events in them they were asked :-

"Who else tells you stories ?"

"Does anyone else tell you stories ? When ?"

The data collection sheet may be seen in the Appendix, on page 300.

### Housing

Although teachers were in some cases able to give information about home ownership and living conditions, it was not feasible to check this information, and it was available for too few children to be useful.

At the time of the Stanford-Binet testing, ST.E. children had been asked questions about their homes, designed to elicit information about multiple occupation, and shared facilities. It quickly became apparent that children of this age could not answer such questions accurately, since they did not distinguish between relatives staying temporarily with the family, and "aunties" sharing facilities in the same house, on a permanent basis. The situation was further confounded by the fact that some children lived with grandparents or older siblings, although they had frequent access to their parents. The initial attempts were so obviously unsound, that this means of gathering information was abandoned. Instead, at the time of the W.I.S.C. Sub-tests, children were asked to give their addresses, since these could be easily checked against the school register. It was thought that there might be a social class difference between five-year-olds who were able to give their address and those who were not. However, all the children were able to give their address in full, and no difference between schools emerged here.

There were, nevertheless, some obvious features about the housing in the two catchment areas. School 1's catchment area consisted of several types of housing. There were some small, neat, terraced houses, comparable with those of the catchment area of School 2a. The largest section of housing consisted

of small and medium semi-detached houses, with well-stocked gardens in tree lined streets. There was a further section of large semi-detached houses with large front and back gardens. It is thought that knowledgeable parents, concerned with the academic success of their children, tried to obtain housing within the School 1 catchment area, because School 1 had a recognised success rate on the entrance examination to the local direct grant secondary school.

The catchment area of School 2a consisted mainly of small, well-maintained terraced housing, in streets with tiny gardens and corner shops.

Thus, although there were observable differences in the housing of the catchment areas of the two schools, the extremes of wealth and poverty were not apparent. Further indices of social class difference were sought.

#### Parental occupation

At the time of the Stanford-Binet Vocabulary Test, children from the ST.E. groups at Schools 1 and 2a, had been asked to say what their parents "did" to earn money. Not surprisingly, five-year-old children were unable to define their parents' occupations in much detail, unless the parent belonged to a well-defined profession, such as teaching or architecture. For example, a man working at Hull Brewery could be employed in management or floor-sweeping, or anywhere in between.

The teachers, although able to give information about the parental occupations of many of the children, were not certain about both parents in every case.

There did not seem to be any difference between schools, in the number of children who did not know what their father worked at, or in the kinds of occupation mentioned. Also evidence from the sixties suggests that there are likely to be many intra-class, as well as inter-class, influences differentiating children's achievements at school (see the review by Banks, 1971). It was decided that the sample of eighty would not be large enough to indicate important correlations between parental occupation and child achievement. As time was limited, this complicated question was not followed up by home interviews.

### Evidence about differential parental help

In Experiment II, the word 'obese' was included in the revised stories thirty times (three in each story) without an explanatory context. As well as demonstrating experimentally the need for an explanatory context if the difficult word is to be learnt, this acted as a control on the role of outside influence on the children's acquisition of the difficult words.

Not only did the children fail to acquire the word 'obese', only 5/82 having any idea at all of its meaning, but the difference between schools was minimal. At School 2b, 1/27 children, and at School 1, 3/55 children scored on the Pointing-oral Test. (One child from School 1 gave a picture description, which being unsubstantiated on further questioning, was scored zero.)

This would suggest that the amount of help being given to School 1 children, either through direct instruction, or through hearing the words used in the everyday conversation of the home, is negligible. Therefore, differential parental help cannot be regarded as a major causal component in the difference between schools.

### Parental attitude

Reporting in 1964, Douglas stated that :

"The influence of the level of the parents' interest on test performance is greater than that of any of the other three factors - size of family, standard of home, and academic record of the school - ..... and it becomes increasingly important as the children grow older. Greater as judged by the level of statistical significance of its effect." (p.57)

It is possible to criticise this conclusion, on the grounds that the measures Douglas used to ascertain parental interest, partly on

"comments made by the class teachers at the end of the first and at the end of the fourth primary school years, and partly on the records of the number of times each parent visited the schools to discuss their child's progress with Head or class teacher" (p.53)

were inadequate. However, in 1968 (p.83) Douglas, Ross and Simpson were able to write :-

"At the primary stage the level of parental interest is a major factor in school success, and for many of the able boys and girls it is a decisive element at fifteen or sixteen years when they choose to stay on at school, and later when they choose whether or not to enter higher education. We are impressed by the consistency of the assessment of parental attitude throughout the early lives of these boys and girls ... Further, there is a similarity in the assessments of school interest made during the primary and secondary school years. Few of those reported as giving their children little encouragement with their



work at primary school are more favourably assessed at the secondary stage ..."

Other researchers, particularly Sewell, Haller and Portes (1969); The First Report of the National Development Study [1958 Cohort] (1967) and Wiseman (1967) have found that parental attitude, although based on subjective estimates by teachers, correlates strongly with academic achievement, even when effects of social class and high I.Q. are partitioned out. Wiseman (1967) stated that:

"Educational deprivation is not mainly the effect of poverty: parental attitude and maternal care are even more important than the level of material needs."

By 1972, Davie, Butler and Goldstein were able to claim:

"There can be no doubt about the value of a personal interest by parents in their children's progress."

Because of the long-term consistency that Douglas found, and the continued importance attached to parental interest by researchers, including those interested in preschool development (see, for example, Moore 1968), it seemed reasonable to ask the teachers and Head teachers at Schools 1 and 2a to rate the parents of the experimental children for interest shown in their children's schooling. This was done in an informal way, when the teachers were gathered for their morning coffee.

The Experimenter held an alphabetical list of all the children at the school involved in the four basic groups of Experiment I. Teachers picked out the names of the children in their class whose parents they were sure were "interested". There were some parents that teachers were not prepared to comment on, as they felt they did not know them and their attitudes. The fact that the parents of a five- or six-year-old had not been to see the class teacher (many children being brought to school by siblings, relatives, or neighbours, or being left at the school gate) was not taken to imply parental lack of interest, as Goodacre (1968) has suggested might be the case. The passing remarks of the teachers about the attitudes of the parent, were recorded verbatim, but the session was kept short so that the teachers' spontaneous responses would be obtained and discussion would be minimal.

#### Results of parental attitude rating

The immediate response of the Head teacher at School 2a, was that the task could not be done, as all her parents were interested. The only parents

that she felt showed no interest were ones who had already been excluded from the study because their children's I.Qs were too low for them to be placed in an experimental group.

However, it was suggested that out of forty sets of parents, some would probably be more interested than others, and both the Head and the class teachers agreed to try to nominate the most interested, on this basis. Table 5.30 gives a summary of the ratings for School 2a, and Table 5.31 for School 1.

TABLE 5.30

Comparison of the results of teachers' ratings of parental interest with the children's scores on the Oral Post-test, for School 2a

		School 2a	ORAL				
Group	Interested Parents	High scorers		Low scorers		Remaining high scorers	
		N	Score	N	Score	N	Score
BR.D.	6/10	5 high	( $\bar{x}$ = 11)	1 low	(0)	0	
ST.E.	3/10	All 3 high	( $\bar{x}$ = 12)	0 low		1	(11)
ST.E.R.	2/10	1 high	(10)	1 low	(0)	1	(9)
ST.D.	<u>2/10</u>	<u>1 high</u>	(8)	<u>1 low</u>	(0)	<u>0</u>	
	£ 13/40	£ 10 high		£ 3 low		£ 2	

12/40 children had Oral scores between 8 and 16 (high)

13/40 parents were rated "interested" (perhaps very interested)

Of the 12 high scorers, 10 had "interested" parents, 5 being in the high I.Q. group (BR.D.)

These results suggest an interrelation between parental attitude, I.Q. and experimental treatment, for the scores for the Oral Post-test.

Of forty children, twelve had high scores (8 or above). Of these twelve children, ten had parents rated as "interested", and of these, five (or 50% of the achievers with "interested" parents), were in the BR.D. group, having relatively high I.Q.s. Thus, on the one hand, children whose parents were rated as definitely not being interested, were not included in the study on grounds of low I.Q. Of thirteen "interested" parents, six had children in the high I.Q. group, and only one of these achieved a low score (of 0) despite the

difficulty of the experimental condition. The average Oral score of the remaining five children was 11.

In the three standard groups, matched for I.Q., there were seven out of thirty high scorers, five out of the seven having "interested" parents. Of the seven high scorers, four were in the ST.E. group, three having "interested" parents (scores 16, 13, 8) and for the remaining boy (score 11) although not rated "interested" the father is said to have a good job. No child with "interested" parents achieved a low score in this group.

In the ST.E.R. group, two children had "interested" parents. One had a high score (10) and the other a score of 0. One child in this group whose parents were not rated "interested" achieved a score of 9.

In the ST.D. group, two children had "interested" parents. One had a score of 8, and the other a score of 3. No child in this group, with the difficult experimental condition, achieved a score of above 8.

To achieve a score above 10, at School 2a, a child will be in either the bright difficult or standard easy group, and will almost certainly have "interested" parents. There was, however, one child with a combination of high I.Q. and "interested" parents for whom the difficult treatment appeared overwhelming, and who achieved a score of 0. The mother in this case was described as "educated and dominant".

TABLE 5.31

Comparison of the results of teachers' ratings of parental interest with the children's scores on the Oral Post-test, for School 1

Group	Interested Parents N = 17	School 1 ORAL		High scorers		Low scorers		Remaining high scorers	
		N	Score	N	Score	N	Score	N	Score
BR.D.	7/10	5 high	( $\bar{x}$ = 10)	2 low	(3, 7)	0			
ST.E.	4/10	All 4 high	( $\bar{x}$ = 11.9)	0 low		3	(11,13,14)		
ST.E.R.	2/10	1 high	(10)	1 low	(5)	2	(10, 10)		
ST.D.	4/10	0 high		4 low	(4,5,6,7)	2	(8,10)		
	17/40	10 high		7 low		7			

17/40 children had Oral scores between 8 and 15 (high)

17/40 parents were rated "interested"

Of the 17 high scorers, 10 had "interested" parents, 5 being in the high I.Q. group (BR.D.)



These results again suggest an interrelation between parental attitude, I.Q. and experimental treatment, for the scores for the Oral Post-test.

Of forty children, seventeen had high scores (8 or above). Of these seventeen children, ten had parents rated as "interested", and of these five (or 50% of the achievers with interested parents), were in the BR.D. group, having relatively high I.Q.s. There were four experimental children whose parents were rated as definitely not interested in supporting the school's aims. These parents were described as undisciplined, lacking control and spoiling the child, while claiming to be strict. All four children were low scorers, two in the ST.E.R. group, (scoring 5 and 7) and two in the ST.D. group, (scoring 3 and 4). Of seventeen "interested" parents, seven had children in the high I.Q. group, and five of these achieved high scores of average 10, in spite of the difficulty of the experimental condition. The two BR.D. low scorers with "interested" parents achieved scores of 3 and 7.

In the three standard groups, matched for I.Q. there were twelve out of thirty high scorers, five out of the twelve having "interested" parents. Altogether seven out of twelve high scorers were in the ST.E. group, four having "interested" parents, and three having parents who rated as "averagely interested", "funny", and "don't know". No child with "interested" parents achieved a low score in this group.

In the ST.E.R. group, two children had "interested" parents. One had a high score of 10 and the other a low score of 5. Two children whose parents were not rated "interested" made high scores of 10.

In the ST.D. group, the normal pattern was not followed. Of the four children with parents rated "interested" not one achieved a high score (4,5,6,7). There were, however, two children whose parents were not rated as "interested" who achieved scores of 8 and 10, most unusual for this difficult condition. Of these two, one mother was described as "overactive", evidence for this being that she had telephoned the teacher's home. This could be simply another way of saying that this mother was very interested ! Not enough was known about the parents of the other child for the teachers to feel able to comment.

The results follow those for School 2a, though there is a little more

deviation at School 1. To achieve a score of above 10 at School 1, a child will be in either the bright difficult, or the standard easy group, and is likely to have "interested" parents. The exception to this generalisation were three children with parents not rated as "interested", who achieved scores of 10 (two in ST.E.R. group and one in ST.D. group). There were also two low scoring children with "interested" parents, in the BR.D. group.

#### Discussion on parental attitude

It appears, therefore, that in spite of the subjective nature of the method used (which was not supported by a careful check on the number of visits made to the school by parents, as were the ratings used by Douglas (1964) and others) and in spite of the fact that in some cases new teachers who did not yet know all the parents had replaced teachers who had left the school, the parental attitude as rated by the teachers does have some use.

"Interested" parents tend to be those whose children are of high I.Q. or whose children, if in ST.E. groups, make high scores. This is true at both schools. One may speculate about the relationship between parental interest and high I.Q. Do interested parents act in ways that facilitate their child's intellectual development? Or do intelligent children succeed at school, and therefore attract and reinforce their parents' interest. Or do teachers simply note the intelligent children, and attribute "interest" to their parents? The findings of Douglas (1964) suggest that the latter is not the case.

"The children whose parents show a high level of interest not only make higher average scores in the tests at eight and eleven years, but also improve the level of their performance between these ages so that they pull ahead. After allowing for the influence of social class, the children whose parents show a high level of interest improve their scores .....

The children with interested parents pull ahead of the rest whatever their initial starting ability ...." (page 56, see also page 58. My underlining)

In the present Experiment, not all the high I.Q. children had parents rated "interested". Some were rated "average". Some high scoring children did not have "interested" parents. This was particularly so at School 1, where there were seven cases, as compared with two at School 2a. In other words, two slight differences between the schools are revealed, (a) School 1 has four more "interested" parents than School 2a, and (b) School 1 has five more

high scoring children whose parents are not rated as "interested". Also, children with "interested" parents who make low scores, do better at School 1 than School 2a. The average score for these at School 1 is 5.3 while that for School 2a is 1.

This difference between low scorers with "interested" parents mirrors that found for all the low scorers. Since none of the factors so far discussed in this Chapter account for the observed difference, other possibilities must be considered.

Douglas (1964) found that although parental interest greatly influenced their children's school progress, the extremes between high interest and little interest being most marked,

"There are, however, a substantial number who work hard even though they are given little encouragement at home. The middle class children are less influenced by their parents' attitudes than the manual working class children are and tend to work hard even when their parents lack interest. This may reflect the high educational aspirations of the neighbouring middle class families from which they draw their friends or the relatively high academic level of the primary schools they attend."

Douglas (1964) leaves these comments as suggestions which need exploring. Although he found that middle class children from poor homes were likely to know middle class children from better homes, and felt that manual working class children would have no such potential benefit, his data did not allow him to investigate the matter further.

Four small clues are available from the data of the present Experiment. First, School 1 is known to have good results in the entrance examination to the local direct grant school. Second, many of the houses in School 1's catchment area are more expensive and better endowed specially than those of School 2a. Third, telephone ownership differentiated the two schools. Fourth, School 1 is the only school at which it was possible to form a second bright group (I.Q. 120 - 140 +) within the time span of the Experiments. This is to say, that at School 1, at any one time, there are more bright children, and therefore, more "interested" parents than at School 2a. It seems quite probable that under the influence of more bright children with "interested" parents, children with ordinary parents should raise their aspirations and alter their work habits and modes of cognitive processing to achieve more than they might have done elsewhere.



It is not unreasonable to suppose that teachers also would be influenced by having to attend to more bright children, and fewer very low I.Q. children, and might alter their methods, and their expectations for the average children, accordingly (see for example, Nash 1973 and 1976, and Pidgeon 1970).

Such factors as parental attitude and the influence of children on each other, are elusive, and are difficult to substantiate. Nevertheless, the factors examined in this Chapter show that there are few gross differences between the schools and their teaching methods and children, which might account for the observed differences in behaviour. It was not feasible to give parents questionnaires designed to explore their achievements, motivation and values (Banks, 1971). It is not even certain that such techniques are far enough advanced to differentiate between groups so similar, where some overlap is highly likely. But it does seem sensible to postulate slight differences in preschool experience and in the experience of the first years at school, arising from differences in the ways parents cater for their children's intellectual and emotional needs, reinforce aspects of the school experience, and encourage their children to attend and participate in the learning process inside and outside the school, to account for the observed differences in behaviour, in the absence of more tangible and quantifiable differences.

#### Birth order

Since Galton (1874), observers have pointed to the academic achievement of first-borns, which tends to be greater than would be expected from their non-verbal intelligence test scores. (See, for example of more recent work, Douglas 1964 and 1968, and Oberlander and Jenkin, 1966. Schachter 1963 and Bradley 1968 have reviewed the literature concerned with the academic achievement of first-borns. While there is considerable evidence of the superiority of first-borns' achievement at college, the research on school-related behaviour presents contradictory evidence, and is therefore inconclusive, but suggestive.) It was just possible that if School 1 parents were more "middle class" than those of School 2a, there could be more small families, and therefore more first-borns and only children in the School 1 sample.

To collect information about birth order, each child was asked to name all brothers and sisters older than himself, including any no longer at home. These were recorded by the experimenter. The child was asked to give their ages. Then he was asked to name each sibling younger than himself, and these names and ages were recorded. As Nisbet and Entwistle (1970) have confirmed, it is necessary to use this sort of method because young children are not very clear about number and order. In addition, it was found on the pilot study, that babies had to be asked about separately, as many five-year-olds did not include babies in the category "brother or sister".

There was no significant difference between schools in the number of first-born children in the experimental groups, there being eighteen out of thirty-nine first-borns at School 1 and seventeen out of thirty-nine at School 2a.

For the three standard groups (ST.E., ST.D. and ST.E.R.) first-borns did not score better than the other children, in the experimental conditions. (One-way analysis of variance gave  $F = 0.34$  NS for the Oral,  $F = 0.38$  NS for the Pointing, and  $F = 0.32$  NS for the Pointing-oral conditions.)

There was, however, a noticeable preponderance of first-borns in the two bright (BR.D.) groups, seven out of ten at School 1 and eight out of ten at School 2a.

#### Telephone and car ownership

It was thought that although Hull has an independent, and relatively cheap, telephone system, telephone ownership might distinguish between the children at the two schools. This would be a useful criterion because it would be possible to check on the children's evidence.

The children were asked if there was a telephone at home, and the number was recorded if they knew it. If they said they had one, but did not know its number, they were asked where it could be found. A spot check with the directory was performed later, and no inconsistencies were revealed.

Although telephone ownership distinguished clearly between schools, see Table 5.32, it did not separate the high scorers from the low scorers within schools, see Table 5.33.

TABLE 5.32

To show the distribution of telephone and car ownership at Schools 1 and 2a, for children in the basic groups, in Experiment I

	N	Telephone	No Telephone	Car	No car
School 1	39	31	8	22	17
School 2a	39	16	23	10	29

TABLE 5.33

To show the distribution of telephone and car ownership among the high and low scorers\* on the Oral Test at Schools 1 and 2a, for children in the basic groups in Experiment I

		N	Telephones	Cars
School 1	high scorers	17	13	7
	low scorers	<u>22</u>	<u>18</u>	<u>15</u>
		← <u>39</u>	← <u>31</u>	← <u>22</u>
School 2a	high scorers	12	8	2
	low scorers	<u>27</u>	<u>8</u>	<u>8</u>
		← <u>39</u>	← <u>16</u>	← <u>10</u>

\* Note on high and low scorers. Children scoring 8 or above out of 18 on the Oral test were regarded as high scorers. Low scorers were those who scored less than 8.

N = 39 at each school, because by this time one child from each school was unavailable.

Car ownership also distinguished clearly between Schools 1 and 2a, see Table 5.32. However, as with telephone ownership, car ownership failed to differentiate the high and low scorers within schools see Table 5.33.

Table 5.34 summarises the results of one-way analyses of variance on the scores of children having, for example, telephones, contrasted with the scores of children who have not. The only case where there is a significant difference between the haves and have nots, is for the responses to Question 4 of the W.I.S.C. General Comprehension Test. This was discussed in the W.I.S.C. Sub-test section on page 230.



TABLE 5.34

Summary of results of one-way analyses of variance, on the ORAL, POINTING, and POINTING-ORAL scores of the three standard groups of Experiment I, divided according to telephone and car ownership, first-born, and results of Question 4 of the W.I.S.C. General Comprehension Test

Total N = 58	ORAL	POINTING	POINTING-ORAL
Telephone/No Telephone	F = 1.7	F = 0.005	F = 0.54
Car/No Car	F = 0.0003	F = 0.79	F = 0.08
Both telephone and car/Neither	F = 0.54	F = 0.26	F = 0.08
Both + either/Neither	F = 0.78	F = 0.32	F = 0.07
First-born/Later born	F = 0.34	F = 0.38	F = 0.32
Question 4	F = 4.25*	F = 4.25*	F = 3.58

\* Significant at .05 level. Table F for 1 and 57 df at .05 level is F = 4.00

#### Situational factors

Several researchers working in various areas (e.g. Goffman 1964 and Cazden 1970), have recently drawn attention to the problem of situational factors in evaluation of results of work in which people from differing cultural groups are the subjects. In particular, Labov (1969 and 1970) has strongly attacked the 'deficit theory' as an account of ethnic and social class differences in intellectual performance. His attack is launched from three main standpoints.

(1) The claim that all languages are functionally equal. Labov has analysed non-standard Negro English, and claims that it is used to present complicated arguments by young negroes who would usually be regarded as linguistically retarded and academically hopeless.

(2) Labov attacks psychologists, and Bereiter and Englemann (1966) in particular, for their lack of knowledge about language, especially non-standard dialects. Bereiter and Englemann (1966) report a remedial teaching programme in which carefully structured verbal bombardment is aimed at extremely deprived preschoolers, on the grounds that these children are unable to use language either as an effective tool for communication or for thinking. Whereas Labov analyses phrases such as "They mine" in terms of rules of contraction, which

follow logical and predictable patterns, Bereiter and Englemann viewed such phrases as "a series of badly connected words". (Further discussion about the methods used by Bereiter and Englemann will be found in Chapter One.)

- (3) The most important of Labov's attacks is his indictment of experimental method when cross-cultural groups are involved. He shows that
- (a) Formal experimental equivalence of operations does not ensure de facto equivalence of experimental treatments. While all children may be asked the same question, (e.g. 'Tell me everything you can about this') whether this is interpreted as a request for information, commands for action, or as threat of punishment is not under experimental control.
  - (b) Different sub-cultural groups are likely to interpret the experimental situations differently.
  - (c) Different aspects of the experimental task are important for different sub-cultural groups.

In support of his arguments, Labov shows how by altering the situation from one of standard interviewing procedure, to one where the same interviewer goes to the boy with one of his friends and some potato crisps, the results can be altered. In the first situation, the eight-year-old answers in monosyllables, and would certainly be regarded as linguistically and culturally deprived. In the second situation, the interviewer, now relaxed on the floor, introduces taboo subjects which the two boys take up eagerly. Although the reported exchanges are still short, there are, as Labov illustrates, several grammatical devices used with fluency and effect by the boys.

In spite of his clear demonstration and arguments, it is possible to criticise Labov on three points. First, although he shows that not all middle-class verbal habits are functional and desirable, by quoting the verbosity of an educated upper-middle-class Negro, who says very little in a large number of words, he does not give examples of middle-class speech, where flexibility and detailed precision exemplify the language at its best.

This leads into the second criticism, also made by Cole and Bruner (1971), that, although the black child can respond effectively in familiar non-threatening

surroundings, he may not be able to

"utilize language of a decentered type, taken out of the context of social interaction, used in an abstract way to deal with hypothetical possibilities and to spell out hypothetical plans."

If certain uses of language are essential for the achievement of certain goals in a particular setting, then it is not enough to say that these uses are not part of the natural milieu of the children in question. Whether or not they are intelligent, or have the untutored capacity to use language in the required ways, becomes irrelevant in the battle for economic and occupational status and power, if this is not demonstrated through performance.

"When cultures are in competition for resources, as they are to-day, the psychologist's task is to analyse the source of cultural difference so that those of the minority, the less powerful groups, may quickly acquire the intellectual instruments necessary for success of the dominant culture, should they so choose." (Cole and Bruner 1971).

Dr. A. M. Clarke (1973), has made the third important criticism, which demolishes Labov's argument about the logic of non-standard English. Dr. Clarke has shown that, in the evidence quoted by Labov (1969), it is the interviewer who supplies the logic in the conversation, through his careful and persistent questioning of Larry. Although, at the end of each section, Larry is able to string together statements in the form of "if... then..." propositions, this only happens after the interviewer has extracted each stage separately from Larry.

Labov himself acknowledges that standard English provides its user with an advantage in explicit analysis not available to the user of non-standard English.

The children in the present Experiments can barely be described as belonging to different sub-cultures, as the differences between them are not nearly so extreme as those between the black ghetto and middle-class white American children, considered by Labov. However, it is pertinent to inspect the experimental method in the light of Labov's third criticism.

It would seem that the experimental situation meant the same to children at Schools 2a and 1, insofar as the testing procedures are involved. Earlier sections in the present Chapter have investigated possible differences here, without revealing any. Since it was possible to form matched groups on the basis of the P.P.V.T. scores, it should be safe to assume that for these groups



the testing situations were functionally equivalent.

The remaining situation is the story-telling and listening one. It could well be the case that children from the two schools have differing expectations about what is expected of them when they are asked to listen to stories, and not to interrupt with questions. From the individual evidence which follows, it would seem that some children at least interpret the situation as one where they are actively involved, making silent hypotheses, and testing these against the evidence as the stories progress. It could be the case that for other children story-time is a time for passive listening and enjoyment, with no consequences for future behaviour. It is easy to imagine how such a difference in approach to the situation could have arisen through differential past experience at home or at school. Attempts to find out about such previous experience are described in the next section.

### Stories

It was thought that one reason for the better performance of the children in School 1 might be that they were more used to hearing stories and possibly to discussing them, asking questions about them and having these answered, and to extracting information from them, than children at School 2a. It was hoped to elicit information about whether, and how often, stories were read or told to the children at home.

The first question, about which of the experimental stories the child could remember, was introduced partly to get the child talking, but a clear difference between schools emerged. The possible total of stories recalled was 312 for each school, because the ST.E.R. groups heard only two stories, and two children were not available for questioning. However, the more stories any one child recalled, the less likely was he to recall additional stories because of the time factor, and the experimenter's indicated approval of the effort so far. Children from School 1 recalled 56 stories, and could have recalled more if given more time. Children from School 2a recalled 27 stories and were not able to recall more with ease.

This difference in ability to recall stories may be more important than appeared at the time of interviewing. It could be interpreted as evidence

supporting the view that School 1 children were more actively involved in listening to the stories, and that the effects of listening lasted longer. A little more evidence supporting this view was discussed on page 246, where the Delayed Post-test results were discussed.

An attempt to discover whether, and how often, children heard stories at home was not altogether successful. The pilot study revealed that not all five-year-olds distinguish between story books and comics. It was not always possible to be sure that certain individuals understood the distinction.

A second problem was the lack of time awareness of some children. It was possible, for example, to check the responses about stories heard in school, against responses of children in the same class, as well as by consultation with the class teacher. A few children were not able to recognise that they heard a story in school almost every day, or about three times a week. The results which must therefore be regarded as tentative are set out in Table 5.35.

TABLE 5.35

Summary of the reported frequency of stories heard by the children of Experiment I, at home

Stories heard	N	Often	Sometimes	Never	Comic only
School 1	39	19	11	7	2
School 2a	39	9	21	9	0

Insofar as the children and Experimenter together correctly interpret "often" and "sometimes", it would appear that there was a difference between schools in the frequency of stories heard at home. However, there is no difference between schools in the number of children who claim never to hear stories at home.

These data are tantalizing because they reveal an area where detailed home-to-home observation might have led to a clearer indication of a specific differentiating influence on the children, had such a study been feasible.

Some research has been reported by Denehberg (1970) which suggests strongly that the cognitive environment provided in the home for the preschool child, significantly influences intellectual development and academic achievement.

One of the measures which was found by Van Alstyne (1929) and by Milner (1951)

to correlate strongly with vocabulary development at three years, and reading readiness test scores at six years, was frequency of story reading by the parent to the child (see also Chapter One).

It would seem, therefore, that differential exposure to story telling in the preschool and first school years could, in part, account for the difference in ability to learn new vocabulary from stories, of children from School 1 and School 2a, whose passive and active Vocabulary Test results are similar.

### Pilot study on individual children at two schools

#### Introduction

In an attempt to find out more about the ways children alter their conceptions of the meanings of words, five children were selected from two schools, Schools 2b and 1. Four of the children were matched for age and P.P.V.T. I.Q., having I.Q.s of 110. The fifth child, from School 1, was chosen because she was so bright (P.P.V.T. I.Q. 140), aware, and able to express herself very clearly, as evidenced by her performance in Experiment II. It was thought that one of the causes of the difference between schools may be that children at School 1 were better able to monitor their own progress, to raise several hypotheses about the words they heard, and to test these against further evidence in the stories. It was thought that Child 5, particularly, might be able to externalise some of her thought processes regarding the acquisition of new vocabulary.

#### Procedure

All the children already knew the Experimenter, because they had taken part in Experiment II, three months earlier. There was, therefore, no need to give the P.P.V.T. or Pre-tests.

The children were seen individually, and after rapport had been established, were given the following instructions :-

"To-day I am going to read you a story. I want you to listen very carefully. At the end, I will ask you some questions, so I want to be sure that you understand. If there is anything that you don't understand, stop me, and ask.

What am I going to do at the end ?

What must you do if you don't understand ?"

At the end of the story, the children were asked :-



- (1) "Have you heard this story before ?
- (2) Did you notice any new words ?
- (3) What did the King's letter say ?
- (4) What did the robbers' letter say ?"

They were then asked to give the meanings of the following words, and the same constraints were adhered to as had been for the experimental Oral Post-tests :-

"shoes"  
'obese'  
'inclement'  
'embellish'

### Story and words

The story chosen for the individual study was the five-year-old version of 'Lucky', one of the ten stories heard by the children during Experiment II, a few months earlier. Alterations were made, so that 'encumbered' and 'precarious' which were the main words used during Experiment II, were now removed, as was 'illuminate' which had been heard three times. The difficult words left in the story were 'inclement' (which had been heard four times), 'embellish' (which had been heard three times), and 'obese' (which had been heard thirty times without an explanatory context). These words were heard three times each in the present story. Thus, the "load", and the expected number of interruptions was kept to a reasonable level (three words, nine potential interruptions).

### Method

The method was the same as that used in the Experiments, except that only one child heard the story at a time, and the child was invited and expected to interrupt whenever he did not understand anything. This was to see whether the children would consciously notice the difficult words, and whether any other features of the story caused difficulty. All interruptions and responses were recorded.

If, and when, a child did stop the story reading, the point was noted, as well as what he said. That part was re-read, and the child was asked to say what he thought was meant. He was then encouraged to "Listen carefully and the story will help you, but stop me again if there is anything else you don't understand."

### Results

The results of the individual studies are summarised in Table 5.36, which shows Experiment II results for comparison.

Summary of results of five children, at School 2b and School 1, using data from Experiment II, and from the five individual studies

Child and School	Child	School	Child	School	Child	School	Child	School
P.P.V.T. I.Q.	1	2b	2	2b	3	1	4	1
Experiment II	llo		llo		llo		llo	
'encumbered'	Oral	PO	Oral	PO	Oral	PO	Oral	PO
'precarious'	0	0	3	3	0	0	1	2
Interruptions	0	0	0	0	0	0	4	4
Word	3		0		0		0	
Context	2		0		0		0	
'obese'								
Post-test 0	beast, not nice		nasty		dk		old	horrible, cross
Post-test PO	man sitting PD		fight		dk		old	not nice
individual	greedy		fight		angry		fat King ✓	horrible
'inclement'								not nice
Post-test 0	dk		dk		dk		dk	naughty man
Post-test PO	All stones PD		slowing down		dk		bricks falling PD	instrument
individual	dk		dk		dk		dk dangerous	wind, rain ✓
'embellish'								dk
Post-test 0	dk		dk		dk		dk	dk
Post-test PO	house falling PD		killed tiger PD		dk		shot lion PD	dk
individual	dk		dk		King is mean		mad, cross King	emb. hat, feathers ✓
Questions								
1. Heard story ?	No	Yes dk	No		No		No	Yes ✓
2. New words ?	Yes ✓	No	No		No		No	Yes ✓
3. King's letter	marry X	Kill ✓	Kill ✓		Kill ✓		Kill ✓	Kill ✓
4. Robbers' letter	marry ✓	marry ✓	marry ✓		marry ✓		marry ✓	marry ✓

2 dk = don't know

3 PD = picture description

0 = Oral  
PO = Pointing-oral



Although the results are on too few cases to permit statistical comparisons there are some interesting features in the individual's data.

Child 1, who made no score in Experiment II, interrupted most often, asking about 'obese' twice, 'embellish' once, and two contextual questions - "Why under a star ?" and "Why was the letter sealed with glue, and not just licked and stuck down ?". It would seem that this child was alert and thinking, but not able to cope with the five-year-old context. Whenever a context for a difficult word was given, in the form of a picture on the Pointing-oral Test, Child 1 used it, and gave a picture description as the meaning of the word.

During the story, his second interruption for 'obese' led him to say, having heard the context again, "I think he had too much food and he eated it all". When asked about the words at the end of the story, this had become reduced to "He's greedy. (Make up.) The King was 'obese'." This is a sensible hypothesis about the word, which would also be appropriate for the two other contexts in the story.

A contrasting case is Child 3 at School 1, who seemed very negative, and content to respond "don't know" to everything. However, her answers to the questions about what the King and the robbers wrote, were correct, so it would appear that she was listening, and understood the story. Her guess "angry" for 'obese', would make sense in the last context in which it was heard, though not in the previous two contexts. This child did not interrupt once, and claimed that there were no new words in the story. Her guess "The King is very mean" for 'embellish' has no obvious source in the story.

Child 5, who scored 14/16 for 'encumbered' and 'precarious' in Experiment II was both conscious of problem solving, and able to be explicit, as had been hoped. She interrupted four times, twice for words, 'inclement' and 'obese', and twice for contexts. Her comments are reported verbatim, because they show her posing herself alternative hypotheses, and monitoring the meaning of the story as it was told.

Child 5. P.P.V.T. I.Q. 140. Interruptions.

1. At first occurrence of 'obese'. "What does 'obese' mean ? Does it mean he's greedy ? It could mean he wasn't very nice."

(The latter was the conclusion she had reached at the end of Experiment II



three months earlier, having heard 'obese' thirty times without an explanatory context)

2. "What does 'stung when they hit the face' mean ? A bee can sting and it hurts. (Can you think what it means ?) It was kind of in ice and it could hurt."

3. "What does 'inclement' weather mean ? I've got a bit of an idea - horrible weather." (This came at the first occurrence of 'inclement', but had been forgotten by the time other questions had been answered at the end of the story.) This child was one of the few who made any score for this word, having heard it only four times, during Experiment II.

4. "It's really Lucky that's the lad."

(This comment came at the appropriate point in the story, in answer to the King's question "Is that your lad", before the miller's answer was heard.) This is clear evidence of the 'problem-solving' attitude that Child 5 had, not only listening and asking questions, but attempting answers herself.

It is this ability to pose alternative answers, which differentiates Child 5 from Child 1, and which may account for a cumulative score of 14, compared with a score of zero, for the two most difficult words in the Experiments.

Further evidence of the way in which Child 5 remembered and considered evidence, and attempted precision in her thinking was given in her answers to the questions, the relevant sections of which are reported verbatim.

#### Child 5. Answers to Individual Post-test

Question 1. (Heard a story ?) "Yes. You remember when I came in with those other groups ? That's when I heard it."

Question 2 (New words ?) "Obeast isn't a new word, I know. (How ?) Because I've heard it before in the story. I've heard it in other stories you told me as well."

There was one new word in the story - can't remember - after the feather thing - feather hat. (Here she correctly identifies the first context in which 'embellish' appeared.)

I think father was a new word. I don't think you've said that before. (Means ?) Daddy."

('Obese'?) "Two things it might mean - I think I said in the story. I'll try to think what I said in the story.

(1) 'Obese' means you don't look very nice. (This is probably recalled from three months earlier.)

(2) I don't think this is what I said in the story - you're really a naughty man, something like that."

('Embellish'?) "I think I talked about 'embellish' didn't I ? I don't think I stopped you. You know - the feather part - that was 'embellish' wasn't it ? (She was right about each point made. When asked to make up something to say using the word 'embellish', the response was :-)

'Embellished' feathers. Does it mean a kind of number of feathers ? Or does it mean feathers in your hat - you've got some feathers in your hat ? It could mean that in another language. (Make up) You have an 'embellished' hat. (Q. Like ?) It's got feathers in it. (Q. Else ?) Don't know."

(It seems probable that it would not need many more stories, with 'embellished' used in a variety of contexts, for Child 5 to generalise from " 'embellished' feathers", and " 'embellished' hat," to 'embellished' meaning decorated by additions. It is not clear why she missed the two contexts at the end of the story, where a dress and shirt were 'embellished' with lace frills, which would have given her the idea she needed, although the use of the words "anything else" in the instructions may have deterred her from stopping the reading even if she did notice the contexts.

The other four children were neither as talkative as Child 5, nor as self-aware. The evidence from their transcripts is similar to that gained from the analysis of the erroneous responses. There are several cases of semantic association with a difficult word. An example, from Child 4 at School 1, follows :

Child 4. P.P.V.T. I.Q. 110

'Obese'. "No. (Guess) I think it means it's fat and it's a King. (Make up) There was a King who lived in a palace with the queen. (Make up using.) There was a King and an 'obeast' and a queen. (How many ?) Servants, King, queen. (Q. Who was 'obese' ?) King." (It can be seen that several processes are going



on at the same time in this transcript. Child 4 correctly arrives at the meaning of 'obese', and attaches it to the correct person from the story. But it seems as though this meaning is not very stable, for in trying to use the word in a sentence, he slips back to the homophone chain or homophone 'obeast'. The further question seems to jolt him back to his first definition of 'obese'.

### Discussion

This method of investigating how children learn the meanings of words from context, and how consciously they notice new words, and how far they understand what they hear, is effective as a supplement to the analysis of errors. The disadvantage of the method is that it is even more time-consuming than the other mode of working with five-year-olds. The advantage is the rich source of information yielded, which cannot easily be obtained in other ways.

The great difference between Child 5 and the others, is her mode of approach, which involves her in asking questions, and answering them with more than one alternative, so that there is constant interaction between present environment, past situations, possible solutions, and judgement in the light of all these and additional information.

The problem now becomes, is this a characteristic of the highly intelligent alone, or could other five-year-olds be trained or taught to behave in a similar way. And if they were, would this mode of operating transfer to other problem-solving situations in their daily lives ?

There is no direct evidence on this problem in the present Experiments. However, there is some indirect information which should be taken into account.

Within one or two training sessions, using only a few exemplars, it was possible to elicit from five-year-olds definitions for ordinary words (from the W.I.S.C. or Stanford-Binet Oral Vocabulary Tests) much better than those normally expected of this age group.

This being the case, it would surely be possible to influence thinking and problem-solving behaviour, through specific, regular, teaching situations. It may be possible to introduce situations where children have to ask questions and attempt to find answers to them, (compare Berlyne 1960 ). Indeed, this



is possibly one of the achievements of the Nuffield Science programmes, and some of the mathematics courses recently introduced to some of our primary, middle and secondary schools.

Much further work would need to be done, to see whether such a questioning/answering approach would generalise to, and be appropriate in, the problem-solving areas of daily life.

#### Conclusions about the difference between schools 1 and 2a

Extraneous causes of the observed difference in learning behaviour of children at Schools 1 and 2a, were dismissed after investigation.

There was some evidence of social class differences and intellectual differences between the schools, manifest through indices such as car and telephone ownership, and P.P.V.T. I.Q. range, as well as in the observed experimental results. None of the material indices differentiated between low and high scorers within each school, although they did differentiate between schools.

The only evidence of difference in reasoning ability between schools (of a cultural rather than an intellectual nature.) arose from Question 4 of the W.I.S.C. General Comprehension Sub-test. Scores on this question differentiated both between schools, and between low and high scorers within schools. It is possible that this finding is merely coincidental, although the cultural bias of this question has been recognised recently (Mussen, Conger and Kagan 1974). There was no difference between schools in the scaled scores of the three W.I.S.C. sub-tests.

The effect of parental attitude was quite marked within schools, though parental interest failed to discriminate between schools. There is slight evidence that several qualities, which could account for the difference between schools in experimental results, are to be found more frequently at School 1 than at School 2a. These may be listed as follows :-

Active interest in listening to stories and words.

Ability to use trial and error procedure to monitor own results (individual's evidence).

Ability to make symbolic rather than ikonic associations.

Confidence to guess, and ability to talk.

Clarity and precision in thinking and speaking.

Teaching methods geared to verbal approach, to cater for more "bright" children, and fewer "low" I.Q. children.

Parental interest. (Because there were more very bright children at School 1, at any one time, there would also be more, positive parental interest, supporting both children and staff.)

It is probably a combination of such factors that has contributed to different experimental results from matched groups of children.

Chapter Six provides, for convenience, a brief summary of the main findings of this experimental investigation.

## CHAPTER SIX

### SUMMARY OF MAIN FINDINGS AND CONCLUSIONS OF THE INVESTIGATION



## CHAPTER SIX

### SUMMARY OF MAIN FINDINGS AND CONCLUSIONS OF THE INVESTIGATION

For the reader's convenience, the main experimental findings are reprinted here, from page 173, and their implications are then considered.

1. Stories proved to be a very good medium for the structured teaching of new vocabulary. Five-year-old children, even of low verbal I.Q., were able to learn the meanings of words through words, and without the mediation of referents or pictures. This supports, experimentally, claims made by several workers, in particular McNeill (1966) and Olson (1970).

2. All children were able to learn something about the six difficult words from the stories. Only one child out of 210 children managed to score zero on both Post-tests. (This child had a P.P.V.T. I.Q. of 89.)

3. As would be expected, there was a strong association between verbal I.Q. (whether passive or active) and scores gained on the experimental Tests. The correlations were not perfect because there were considerable individual differences in scores at any I.Q. level.

4. Words differed in the ease with which they were acquired. The two new concepts 'encumbered' and 'precarious' were difficult for most children, even under improved conditions.

5. The experimental conditions themselves affected the acquisition of the words. The type and number of stories (easy or difficult version, and the number of times a story was heard) were important experimental variables.

6. The type and number of local contexts, that is, the clarity and proximity of local contexts, the number of times these were heard, and the

number of words included in each story, also affected results. Load was not a critical factor when improved local contexts, and better spacing of the 'difficult' words, were introduced.

7. Single trial learning was not a major factor in the acquisition of the words from the stories.

8. Children at one school do not necessarily behave in the same way as matched children at another school, given similar treatments. The difference between schools may be summarised from the evidence on 'illuminate' plus 'obese' in the following way.

Provided there is sufficient variety in local context (in this case, six exemplars), provided that the local contexts are clear, and do not inadvertently lead to confusions, provided that the words are not very difficult, and provided that the six contexts are embedded in ten different stories, standard I.Q. children from School 2a will do as well as standard I.Q. children from School 1, on both measures.

Another finding, incidental but nevertheless important, was that :

9. The quality of verbalisation of five-year-old children, for example in definitions, and in sentences about the 'difficult' words, improved with training, compared with the definitions ordinarily expected of children of this age for the well-known Verbal I.Q. Tests.

10. The strategies used by the children and adults, in their attempts to give the meanings of the "difficult" words add a little support to suggestions by Brown and McNeill (1966), McNeill (1970), and Olson (1970a), about the ways in which meaning is "collected" and stored. Both the horizontally and the vertically organised dictionaries are upheld. A filter or punch card model, which allows retrieval by sound, temporal association, part of speech, and many relational concepts such as opposites, as well as cross-referencing for inclusion

and exclusion of elements of meaning, seems the most probable at the moment. If this were the case, then the homophonic response, as well as being a primitive ikonic response (Bruner, Olver and Greenfield 1966), could also be seen as a preparation for an essential component of the adult storage system.

### Discussion

This study has far-reaching implications for teachers as well as for psychologists because it has demonstrated experimentally that children can learn the meanings of 'difficult' words without these words being specifically defined.

(1) The 'difficult' words were learned without the aid of referents. The children picked up the relevant parameters of the words, through their use in context. The meanings were learned through the mediation of other words or meaning components. This may, in fact, be a major way in which new words are attained during the child's daily life.

(2) According to McNeill (1966),

"the speech of adults from which a child discovers the locally appropriate manifestation of the linguistic universals is a completely random, haphazard sample ...."

However, this study shows that the learning of words may be brought under experimental control. Whereas the normal exposure to words is sporadic and unstructured, in the story it can be frequent and structured. The frequency of exposure, the level of explanatory context, and the variety of context are variables that affect word learning, and that can be effectively predetermined, in the story.

It must be pointed out that there is no implication in this study that children should learn the meanings of difficult words only



through hearing stories. Certain structured experiences also enhance cognitive development (as in the work of Bryant 1974 for example). However, intervention by a proficient language user can help children attain higher levels of performance earlier. The story telling method is only one form of such intervention, but it is important because it may represent the manner in which young children consider new or abstract ideas, as well as words, which they meet in their ordinary environment.

There remains as an interesting problem, the subtle difference between schools, in the performance of matched groups of children. The performance of children at School 2a differed in two ways from the performance of matched groups of children at School 1.

(a) Children at School 2a generally performed less well than children at School 1.

(b) Children at School 2a performed better when the variety of stories was greater, whereas number of stories made no difference to children at School 1, provided that the same six local contexts were clear.

It may be, as the tentative evidence from the pilot study (p.268) suggests, that more children at School 1 than at School 2a, adopt a self-questioning and hypothesising orientation to the stories, which might enable them to pick up more from a repeated story than a child content to sit back easily, basking in the familiar. It may also be possible deliberately to inculcate such an attitude, perhaps via the story reading and question asking method.

One of the skills we ought deliberately to teach in schools (as the writer was taught by her father at the age of six or seven, when she met the word 'summit' in 'Kidnapped', Stevenson 1946), is how to

use a written or oral context to work out the meaning of a new word.

The Bullock Report (1975) argued for a conscious effort on the part of teachers of children of every age group and every level of ability, from the preschool deprived child to the sixth former, to develop language policies. These involve assessing present performance, specifying objectives in terms of pupils' needs, providing suitable learning situations, and monitoring pupil progress and teacher effectiveness.

Some of the notions embodied in these recommendations have had strong supporters in America, such as Bereiter and Engelmann (1966) and Blank and Soloman (1968). There has been in England in some quarters, however, a climate of opinion against such analysis and the types of sharp, demanding, precise teaching indicated by it (see for example comments by Parry and Archer, 1974).

In some Local Education Authorities, this attitude is encouraged by the Advisers, at least for nursery and infant education. It is the writer's experience in teaching both student teachers and practicing teachers, that there is an emotional opposition to the strategies advocated by Bereiter and Engelmann, and by Blank and Soloman. In addition, Bereiter and Engelmann's classification example quoted in detail with the teacher's questions, the children's replies, and observations about the teaching strategy, is one that arouses hostility, anger and resistance. Although the authors give brief examples of how to teach at least fourteen other classes, it is the classification of things as weapons or nonweapons that constitutes the detailed example, and that is cited as such in the Open University 'Language and Learning' Block, 'Deprivation and Disadvantage?' (1973).

Even though the Editor warns readers

"You may find the choice of topic disconcerting, but you should concentrate on the process involved",

many students and teachers do not overcome their original hostility to the strategy sufficiently to attempt a fair appraisal of the example when the exemplar is so emotive.

The Schools Council has been instrumental in helping teachers to reconsider teaching and learning strategies, through its support of several language projects. Among these is the Communication Skills in Early Childhood Project, which is directed by Joan Tough (1973, 1976, 1977).

The work of the project has been enthusiastically received, with some 1350 teachers working in eighty-eight different groups during its second phase. When it is first introduced to teachers (and students) concern is sometimes expressed because the approach is more structured and focused on the achievement of language use for specified cognitive or social purposes than is usual in this country. However, as they become familiar with the principles of observing and recording children's use of language, and of fostering communication skills through dialogue, it is hoped that the approach will prove to be practical and useful for them.

Other researchers, such as Barnes (1976) and Stratta, Dixon and Wilkinson (1973) have studied methods of teaching by which the teacher can be freed to give older children the individual and small group attention in dialogue, implied by Tough's work. Some of these methods include enabling the children to use language for problem-solving in the absence of the teacher. Some of the conversations



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and discussions recorded illustrate convincingly the effective strategies the members of a small group or pair can bring to bear on areas as diverse as physics, history or a poem. This is not to eliminate the teacher's role, but rather to extend it, since the value of the discussion for each group depends both on prior training in discussion techniques and skills, and on the provision of suitable materials and problems.

Another Schools Council Project, The Development of Writing Abilities (11-18) (Britton et al 1975) also advocates a more structured method of working. This project examines the relation between speech and writing, and in detail, the functions of writing and the effects of the writer's sense of audience. Once again, teachers (of older pupils this time) are being asked to consider current performance and needs, task demands and implications, and to organise themselves to meet specified objectives. The authors suggest that writing is one of the major means by which a person acquires Bruner's (1975) "analytic competence". This competence, similar to Piaget's formal operations, is described by Bruner as involving "the prolonged operation of thought processes exclusively on linguistic representations, on propositional structure, accompanied by strategies of thought and problem-solving appropriate not to direct experience with objects and events but with ensembles of propositions".

The present study has shown that even young children are able to learn about new words (and concepts) from exclusively linguistic representations. The carefully structured story, therefore, gives the teacher (and researcher) a powerful tool, in which the level of explanatory context, the variety of context and the frequency of exposure may all be predetermined.

It is not claimed that the particular 'difficult' words chosen for this study are especially valuable acquisitions for five-year-old children. Rather, they were selected for reasons to do with experimental control and method. The value lies in the potential of the story as a means of deliberately reinforcing and delimiting concepts being taught in practical sessions, and possibly as a means of enabling children to acquire certain abstract concepts. (In fact, some teachers of young children do use stories such as The Three Bears, and The Three Billy Goats Gruff to reinforce concepts of relative size, though in a less deliberate way than is being suggested here.)

### Conclusions

This study has attempted to add to what is known about the processes by which preliterate five-year-old children acquire new vocabulary when referents and definitions are unavailable to them.

It is unique in that the method developed provides both an approximation to the manner in which children are sometimes exposed to new vocabulary in daily life, and a means of bringing this manner under experimental control. Little of this kind has been attempted before. In addition, the manipulation of experimental variables such as variety and level of explanatory context permits the investigation of strategies used. These are revealed through analysis of errors made in defining and using the difficult words learned. In this study, certain modes of problem-solving were observed in both children and adults.



The storytelling method developed and the insights about processes of vocabulary acquisition gained in this study may prove to be a useful starting point for further work:

(a) Would it be possible to teach difficult concepts to standard I.Q. children, by presenting the prerequisite sub-concepts first, in a much longer programme of story reading?

(b) How is the transition from a less to a more adequate definition of a word accomplished?

(c) Would specially constructed stories prove to be equally effective for the controlled teaching of other things, such as moral concepts, relational concepts, and even the grammatical constructions which young children find difficult to comprehend in their first readers?

The author believes that the advantages of story reading in allowing detailed prestructuring, coupled with a positive motivational element, make the story reading method one which would reward further research.

Seen in the wider context, this study offers further support to the notion discussed in Chapter One, that developmental levels may be advanced to some extent by appropriate, and in the case of Experiments like this, relatively short, experiences. It controverts the 'wait and see' mentality which is so common in the teaching profession, and in those, for example, who take an essentially static view of pre-destined development.

## APPENDIX

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DEFINITIONS OF DIFFICULT WORDS, TAKEN FROM  
'THE CONCISE OXFORD DICTIONARY'

Embellish, v.t. Beautify, adorn; heighten (narrative) with fictitious additions. Hence -MENT n. [ME, f. OF EM(bellir f. bel f. L bellus handsome), see -ISH]

Encumbered

Encumber, v.t. Hamper (person, movement, action, with burden, difficulty, etc.) burden (person, estate, with debts); fill, block, (place with lumber etc., lit. & fig.). Hence -MENT n. [ME, f. OF EN - (combrer CUMBER)]

Encumbrance, n. Burden; annoyance; impediment; without - , having no children; claim, mortgage, etc., on property. [f. OF encombrance (as prec., see -ANCE)]

Illuminate (-oo-, -u-), v.t. Light up, whence -ANT a. & n.; give spiritual or intellectual light to; throw light upon (subject); shed lustre upon; decorate (buildings etc.) profusely with lights as sign of festivity; decorate (initial letter in manuscript etc.) with gold, silver, & brilliant colours. So -ATION, -ator, nn., -ative a., (-oo-, -u-). [f. L IL (luminare f. lumen -minis light), see -ATE]

Inclement, a. (Of weather or climate) severe, esp. cold or stormy. So ENCY n. [f.F, or L IN (clemens CLEMENT)]

Obese a. Corpulent. So obes'ITY n. [f.L OB(esus p.p., = having eaten, of edere eat)]

Precarious a. Held during the pleasure of another, as -tenure; question-begging, taken for granted, as a - assumption; dependent on chance, uncertain, as makes a -living; perilous, as the life of a fisherman. Hence -LY adv., -NESS n. [f. L precarious obtained by entreaty (prex, prec-prayer, see -ARY) + -OUS] (Peril = danger.)

CRITERIA FOR SCORING OF ORAL DEFINITIONS

	<u>Score</u>
<u>'EMBELLISH'</u>	
Idea of making something look pretty, nice, beautiful, lovely, through addition of something e.g. flowers, lace, decorations, pattern:	3
As above but with confusion involving shiny, or tidy, without clear idea of adding something to decorate:	2
Looking nice, looking pretty, without idea of adding anything, e.g. " 'Embellish' means look nice.(Q) I would go and tidy it." "I would make it clean and shiny." :	1
<u>'ENCUMBERED'</u>	
Idea of being slowed down, impeded, by weight, or slow animal; weighted down:	3
Heavy, without idea of being slowed down, or burdened:	2
As above, but without clear idea of being hampered, and with confusion:	1
<u>'ILLUMINATE'</u>	
Light - to light up - switch on light if not 'illuminated' would be dark:	3
Light - but possibly confusion with bright or sparkly, or warmth. If clear that it means light, but adds other meanings or restricted to one situation - e.g. fairylights:	2
If thinks it means light among other things, such as shiny, pretty, tidy, or if not very confident and clear that it means lighting up or to light up, or light:	1
<u>'INCLEMENT'</u>	
Nasty weather, not nice weather, horrid weather e.g. very wet, stormy, very cold, very snowy, windy, icy, hailing. Not sunny. Must use synonym:	3
Nasty weather, but tied to one example such as rainy. Or not nice weather, including a mild cloudy day:	2
Weather - may be wet, may be sunny; or other confusions:	1
If just sunny:	0

		<u>Score</u>
<u>'OBESE'</u>	Fat, very fat; <u>and</u> in answer to question how? e.g. "By eating a lot":	3
	Fat and tall, or fat and kind or any confusion, where sure it means fat, but generalised to include extra ideas:	2
	Fat giant, or examples given which show use restricted to one type of person or sex. Horrid, nasty, ugly because fat:	1
<u>'PRECARIOUS'</u>	Dangerous - with element of chance as suggested by e.g. "Might get hurt." Child's answers or examples suggest uncertainty or balance, e.g. "My daddy was ' <u>precarious</u> ' on a wall and he fell off. Why was that ' <u>precarious</u> '? 'cause it was thin. What does ' <u>precarious</u> ' mean? Dangerous."	3
	Idea of danger, but more a certainty, "He would fall":	2
	Some idea of danger, balance, uncertainty, but with unclear conception, e.g. "Keeping away from naughty things or naughty people.(Q) In case it might hurt you.(Q) What does ' <u>precarious</u> ' mean? Something the thing does is ' <u>precarious</u> '." :	1
	Careless, careful; taking care and not taking care; if without further explanations:	0



REVISED CRITERIA FOR SCORING OF ORAL DEFINITIONS OF  
'ENCUMBERED' AND 'PRECARIOUS'

Score

'ENCUMBERED'

Idea of being slowed down, impeded, by weight or slow animal; weighted down.

Weighted down, not able to move properly - if in child's first attempts to define and use word:

4

If clearly elicited by non-leading questions:

3

Heavy, without idea of being slowed down, or burdened; or slow, without idea of being made slow by something e.g. bulk or weight:

2

Unclear expression of idea of being slowed, e.g. being stopped at traffic lights, if nothing added. Muddled use of heavy:

1

'PRECARIOUS'

Dangerous - with element of chance as suggested by e.g. "Might get hurt." Child's answers or examples suggest uncertainty or balance, e.g. "My daddy was 'precarious' on a wall and he fell off. Why was that 'precarious'? 'cause it was thin. What does 'precarious' mean? Dangerous."

If in child's first attempts to define and use word:

4

If clearly elicited by non-leading questions:

3

Idea of danger, but more a certainty "He would fall":

2

Frightened, falling or some idea of danger, balance, uncertainty, but with unclear conception, e.g.

"Keeping away from naughty things or naughty people.

(Q) In case it might hurt you. (Q) What does 'precarious' mean? Something the thing does is 'precarious.' :

1

Careless, careful; taking care and not taking care; if without further explanations:

0

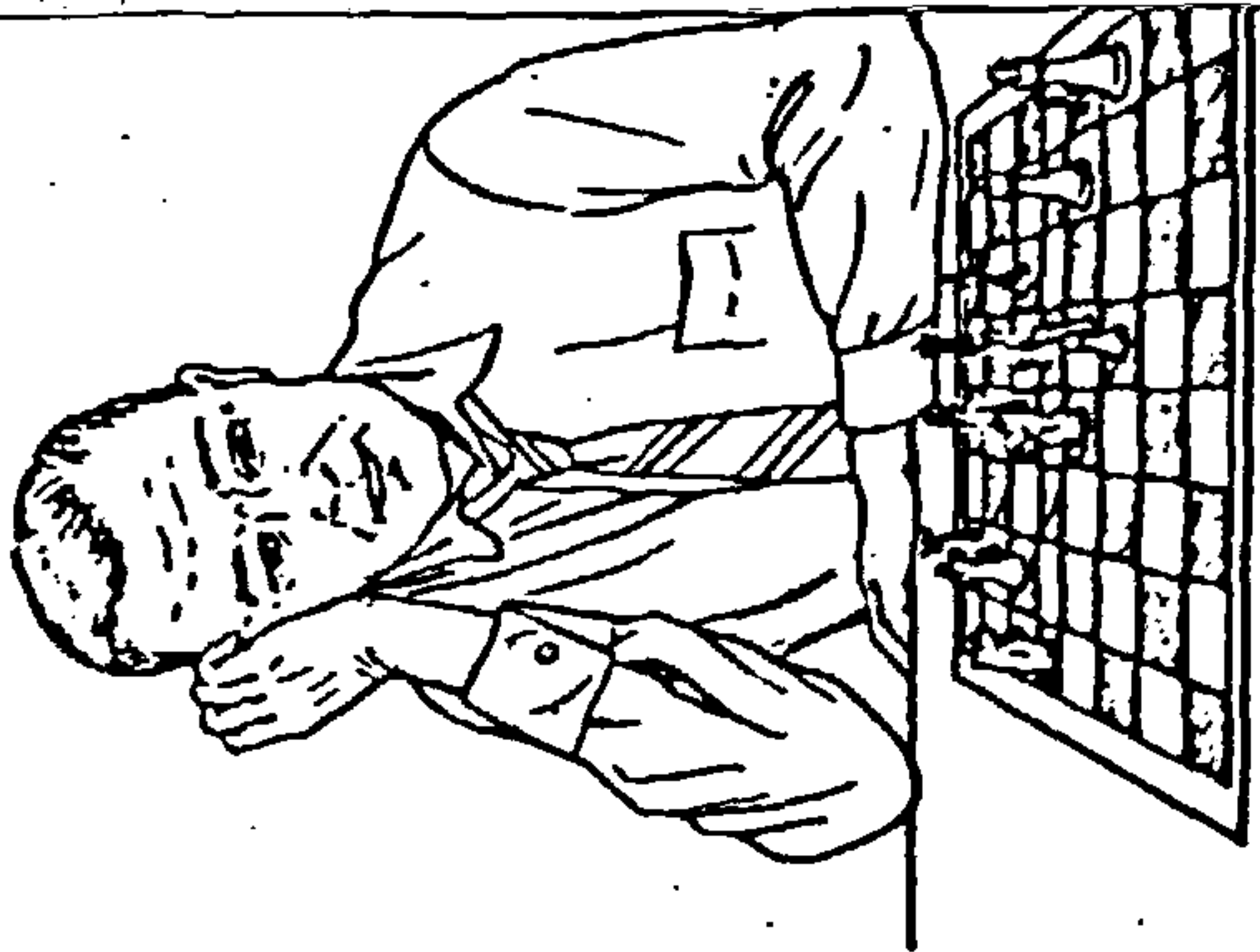
## COPIES OF PICTURES REPRESENTING THE SIX DIFFICULT WORDS

The pictures were selected from the P.P.V.T. (Dunn 1959), as described on page 36. They are presented in the order in which they appear in the P.P.V.T. as follows:

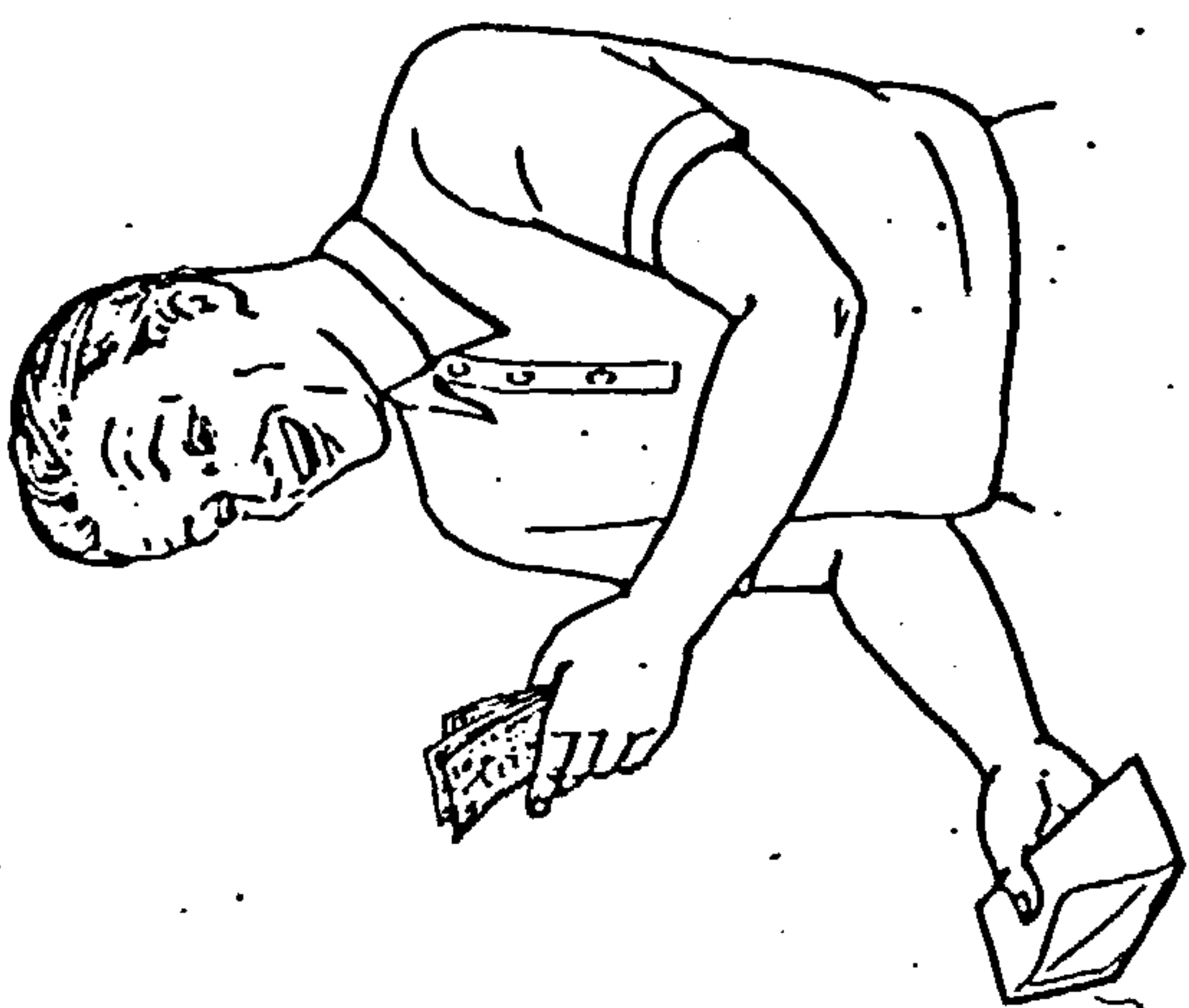
### Page

105	'illuminate'
110	'encumbered'
129	'obese'
131	'inclement'
134	'precarious'
140	'embellish'

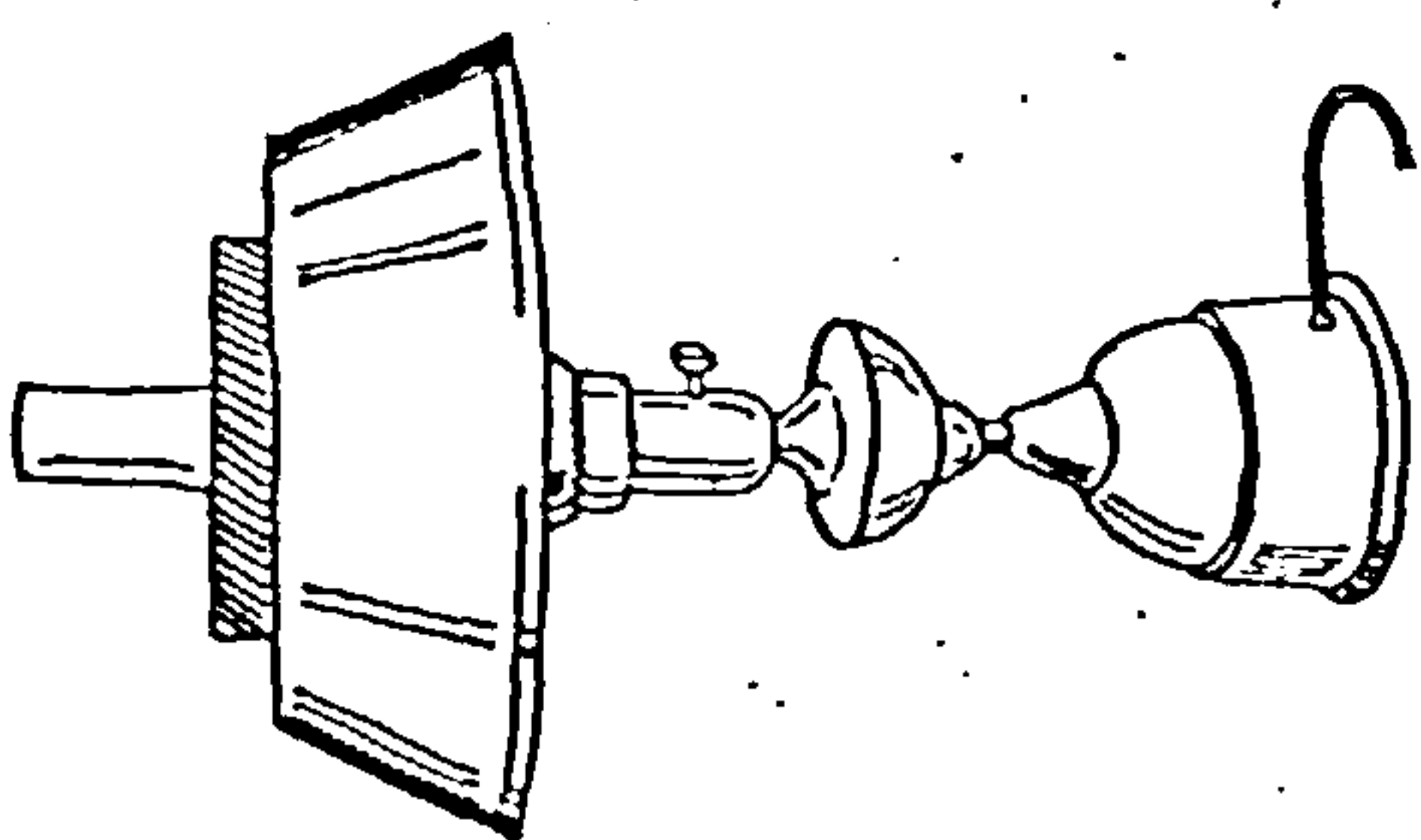
The pictures of the difficult words were interspersed among pictures representing easy words, for the Pointing Pre- and Post-tests, as described on page 45.



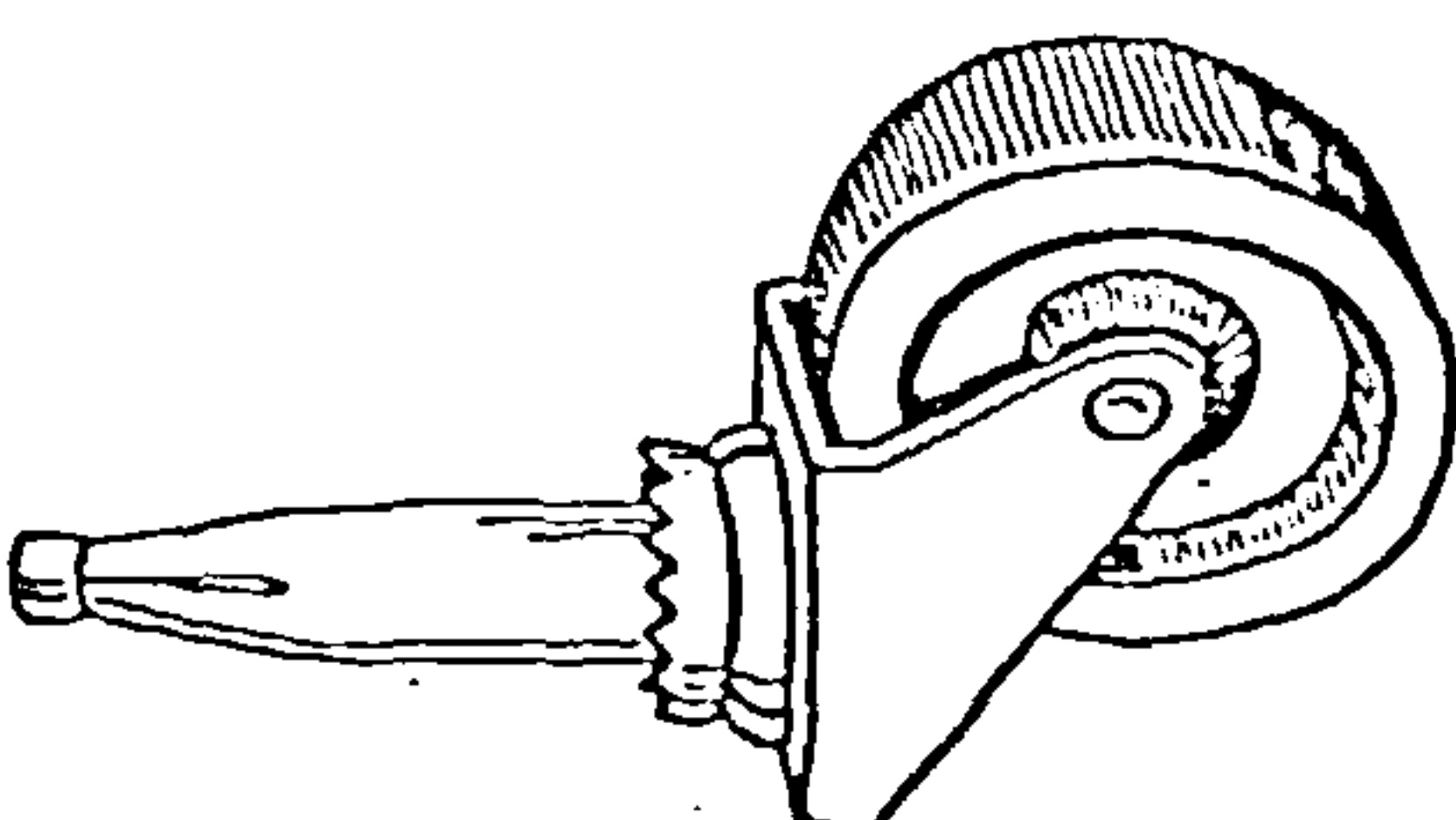
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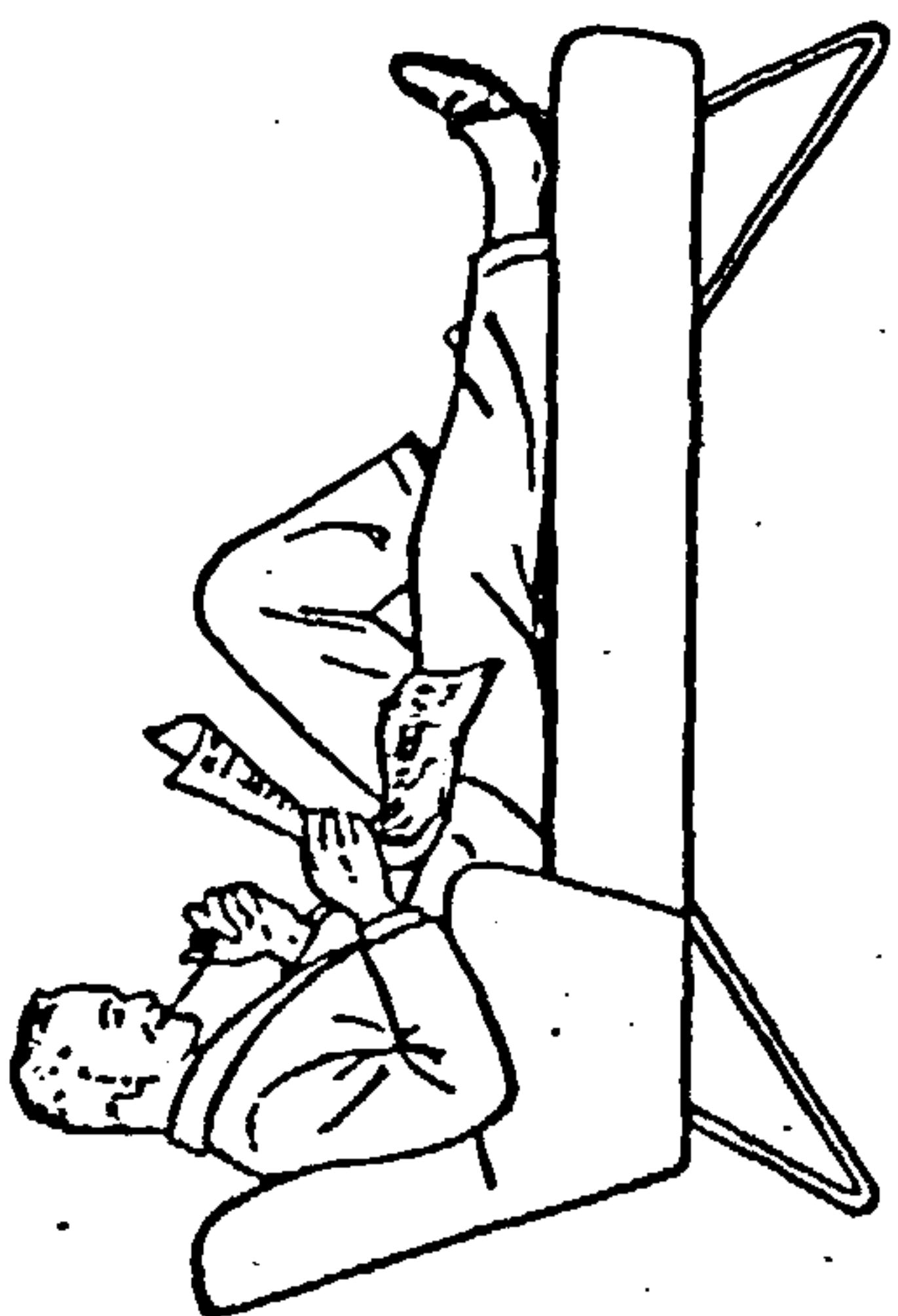
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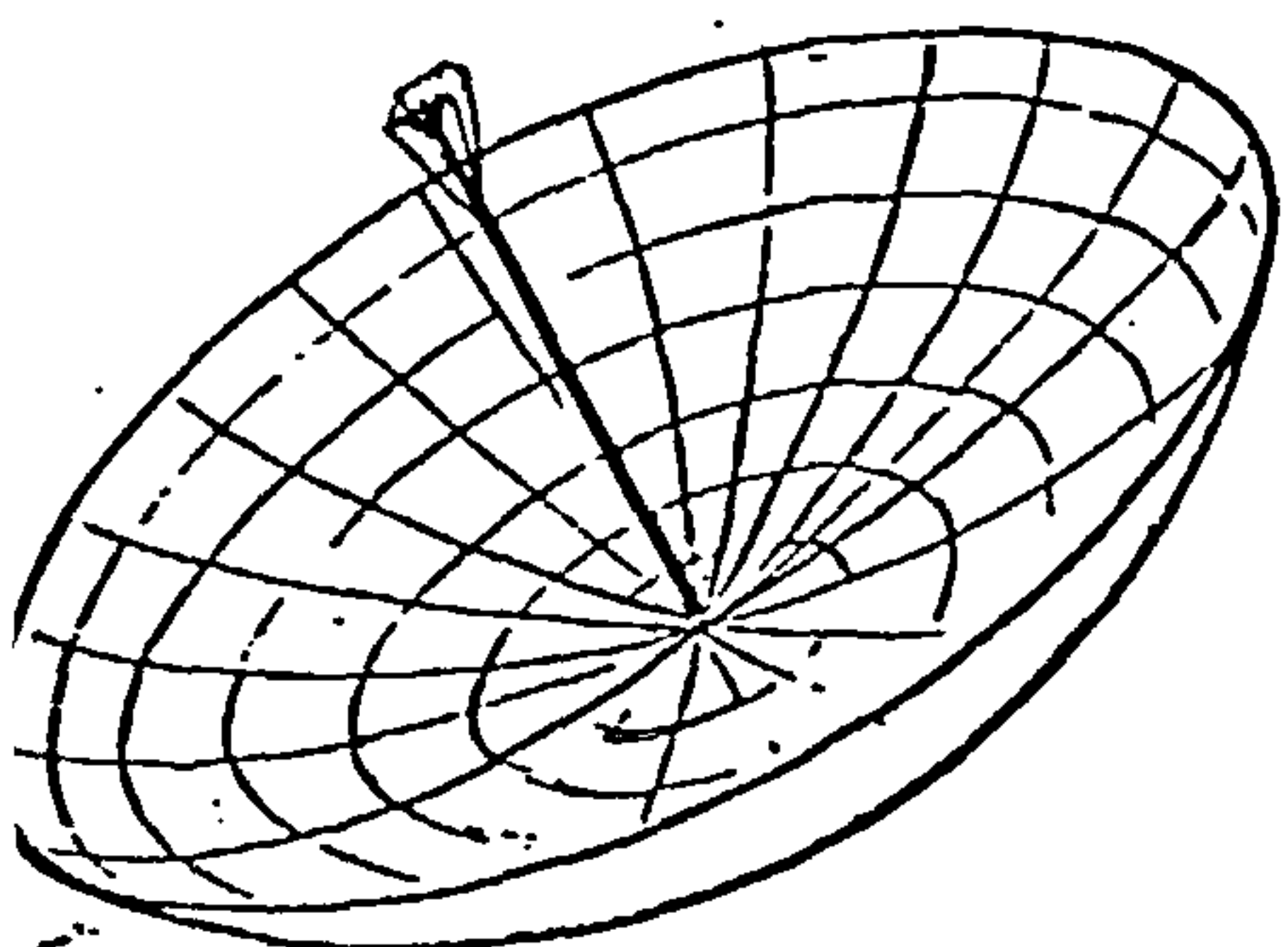
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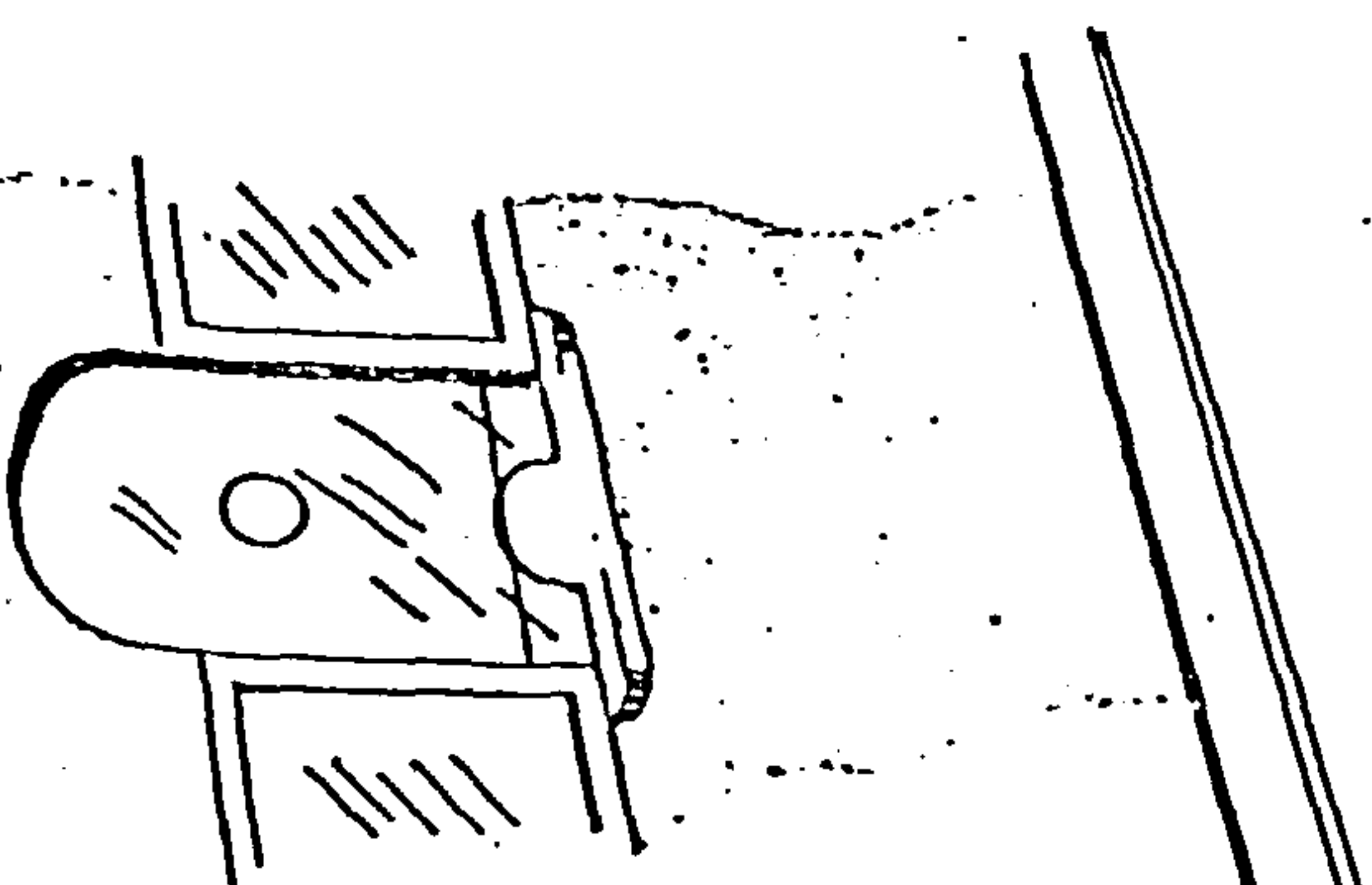
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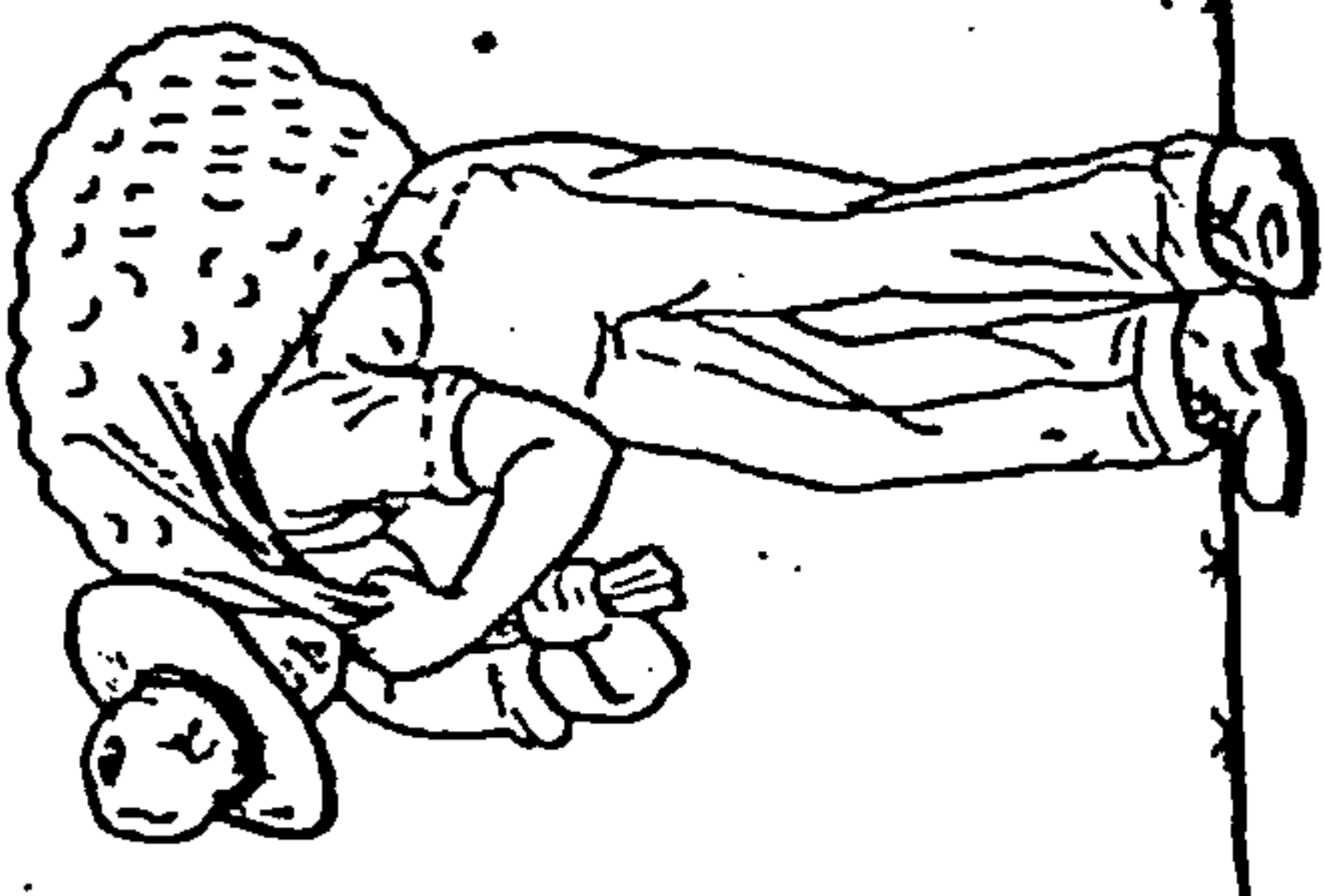
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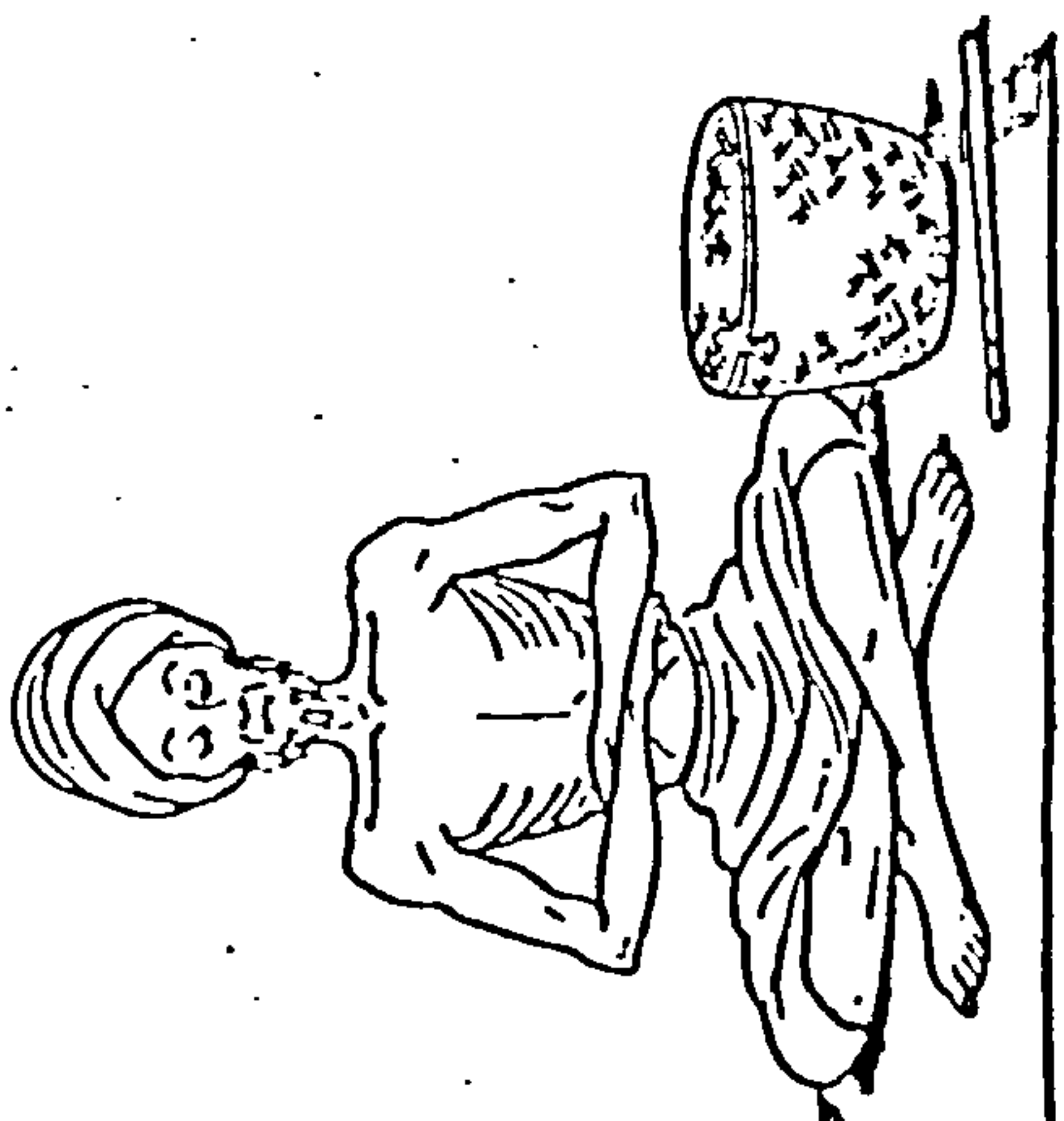
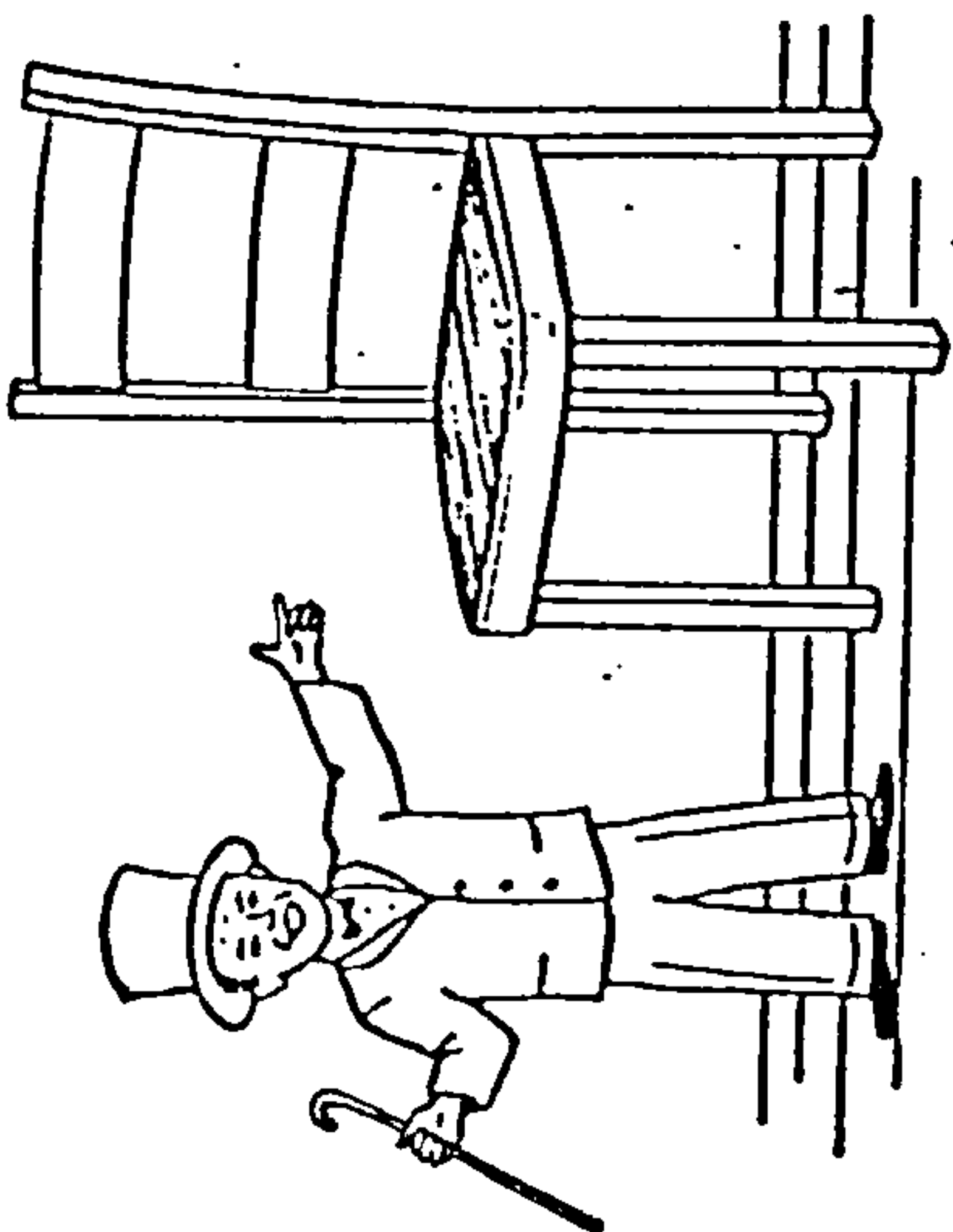
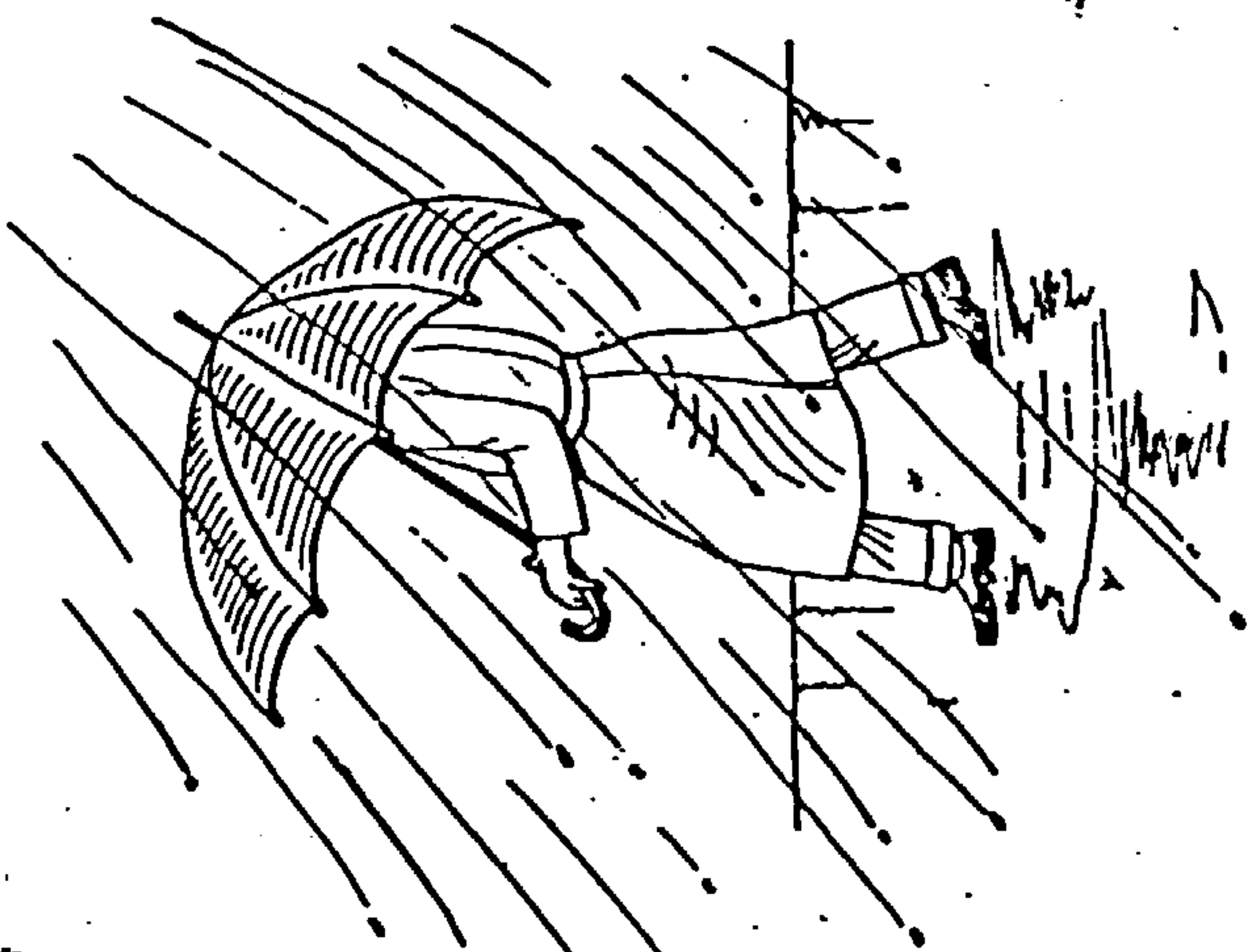
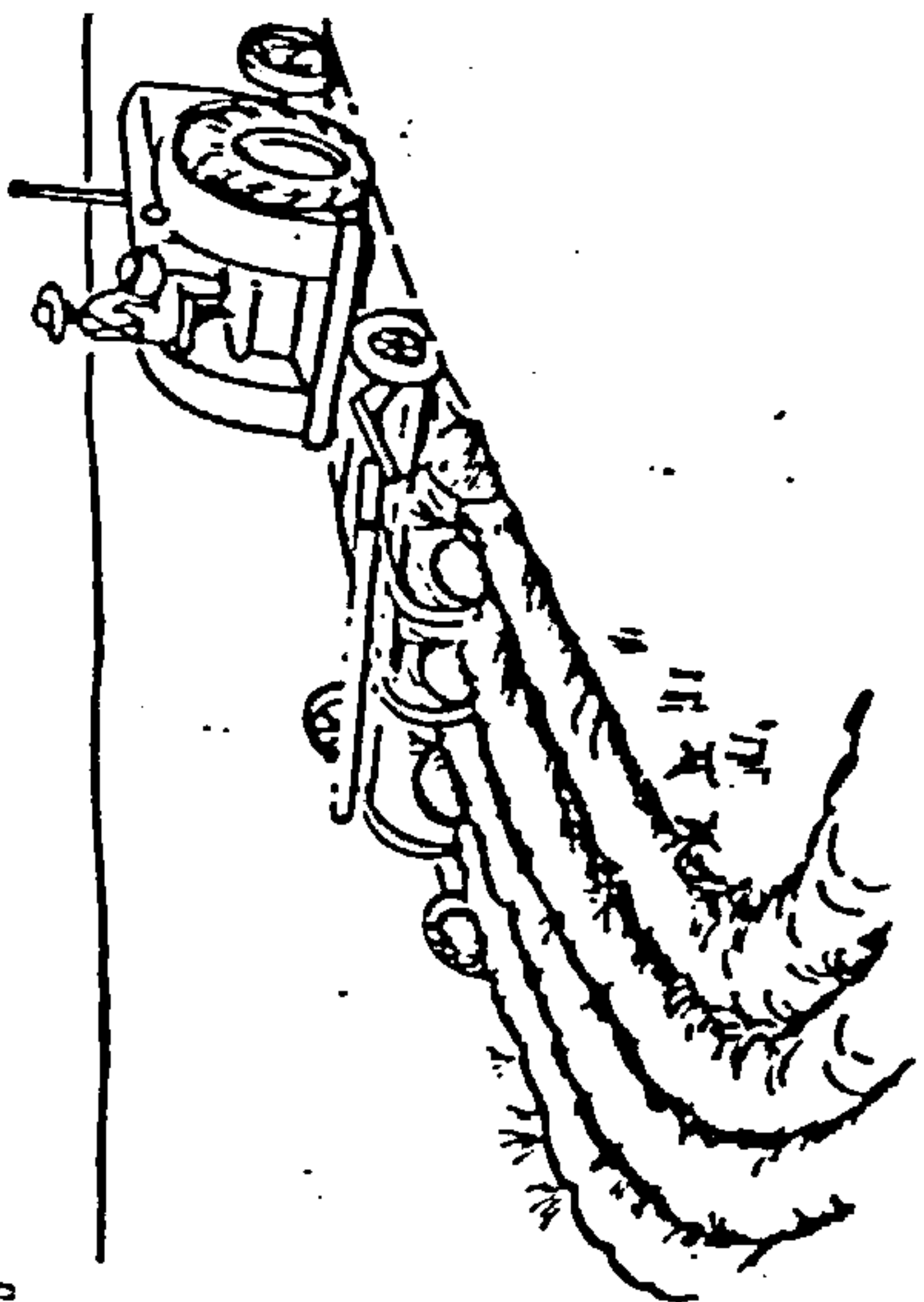
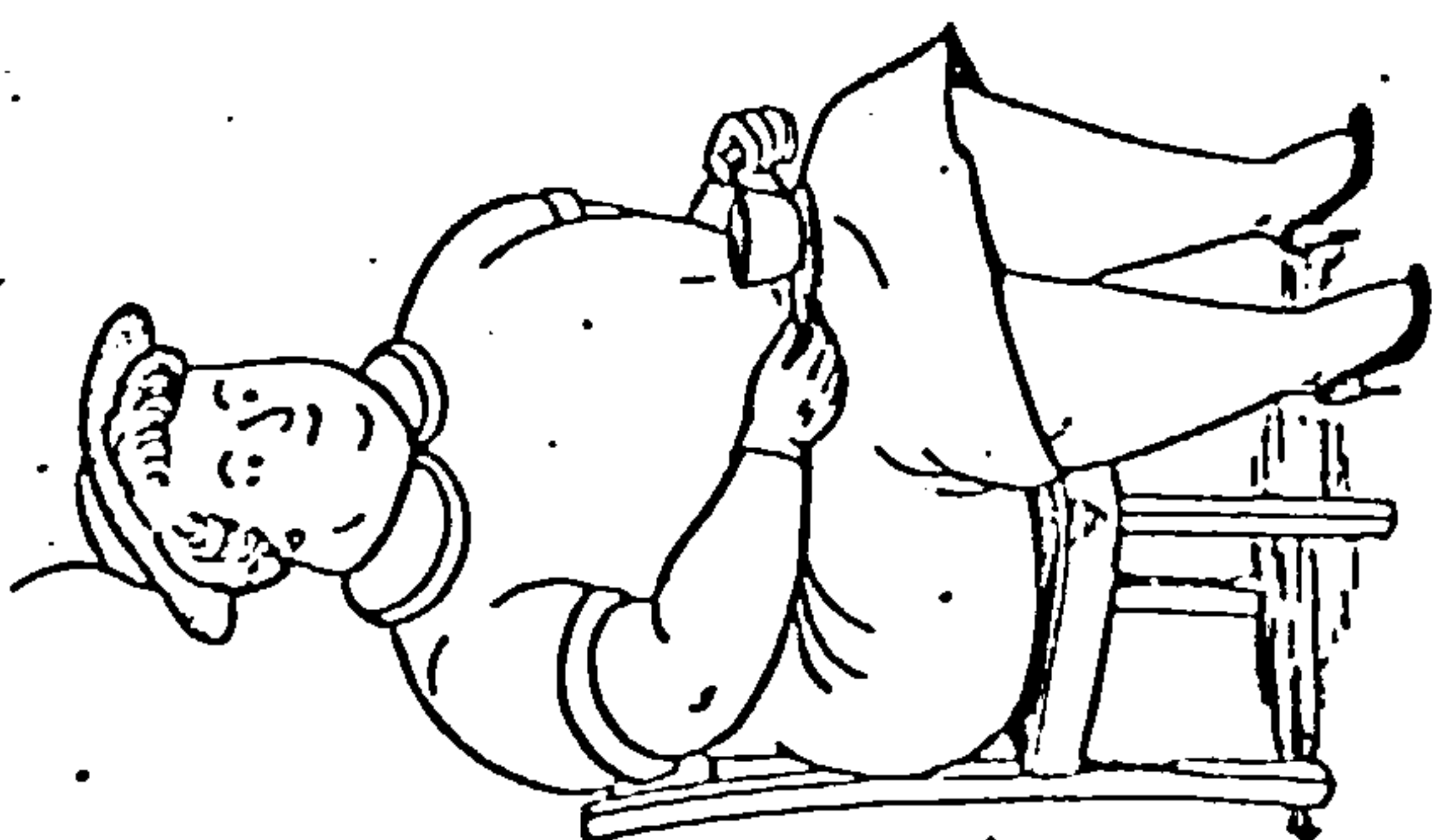
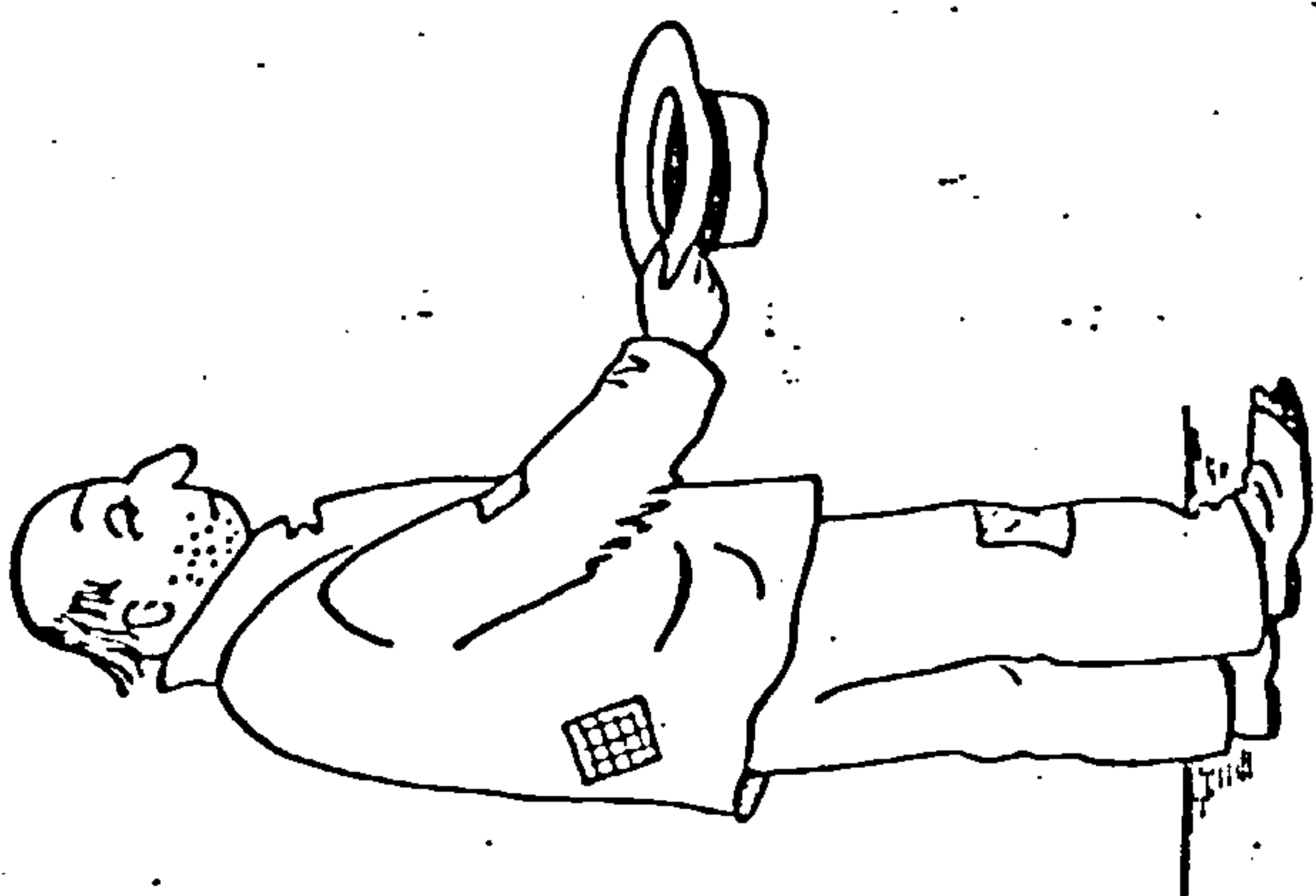
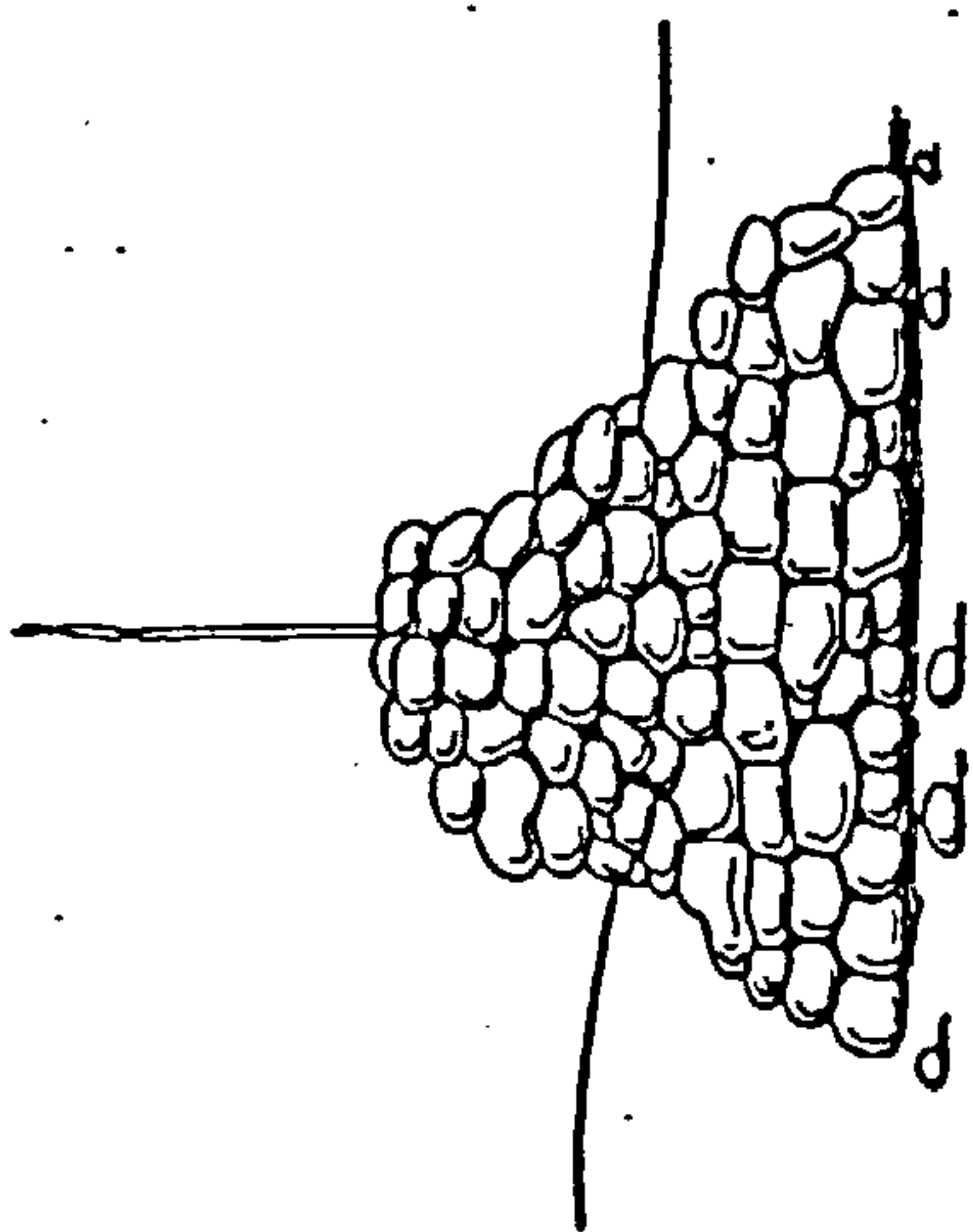
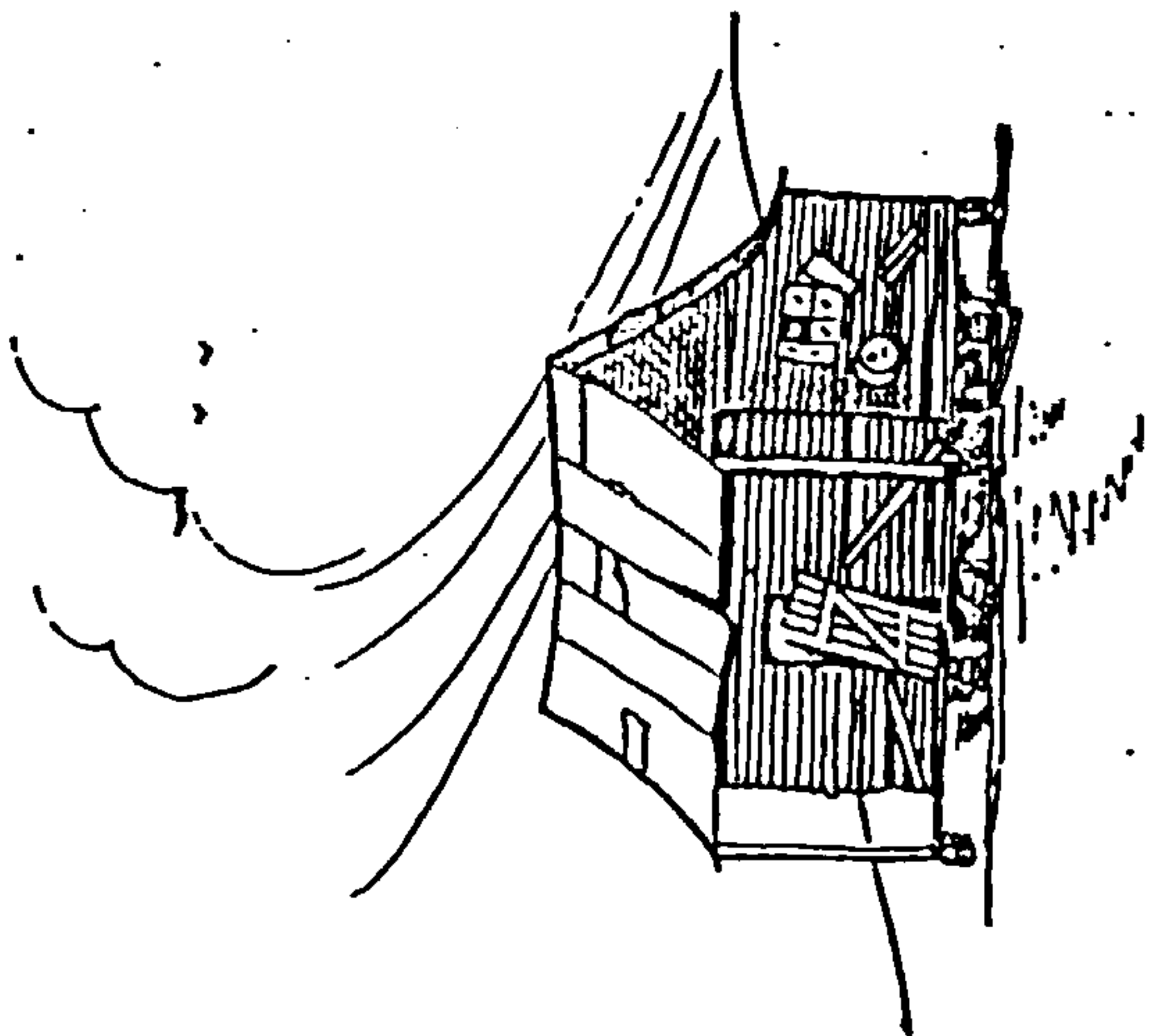


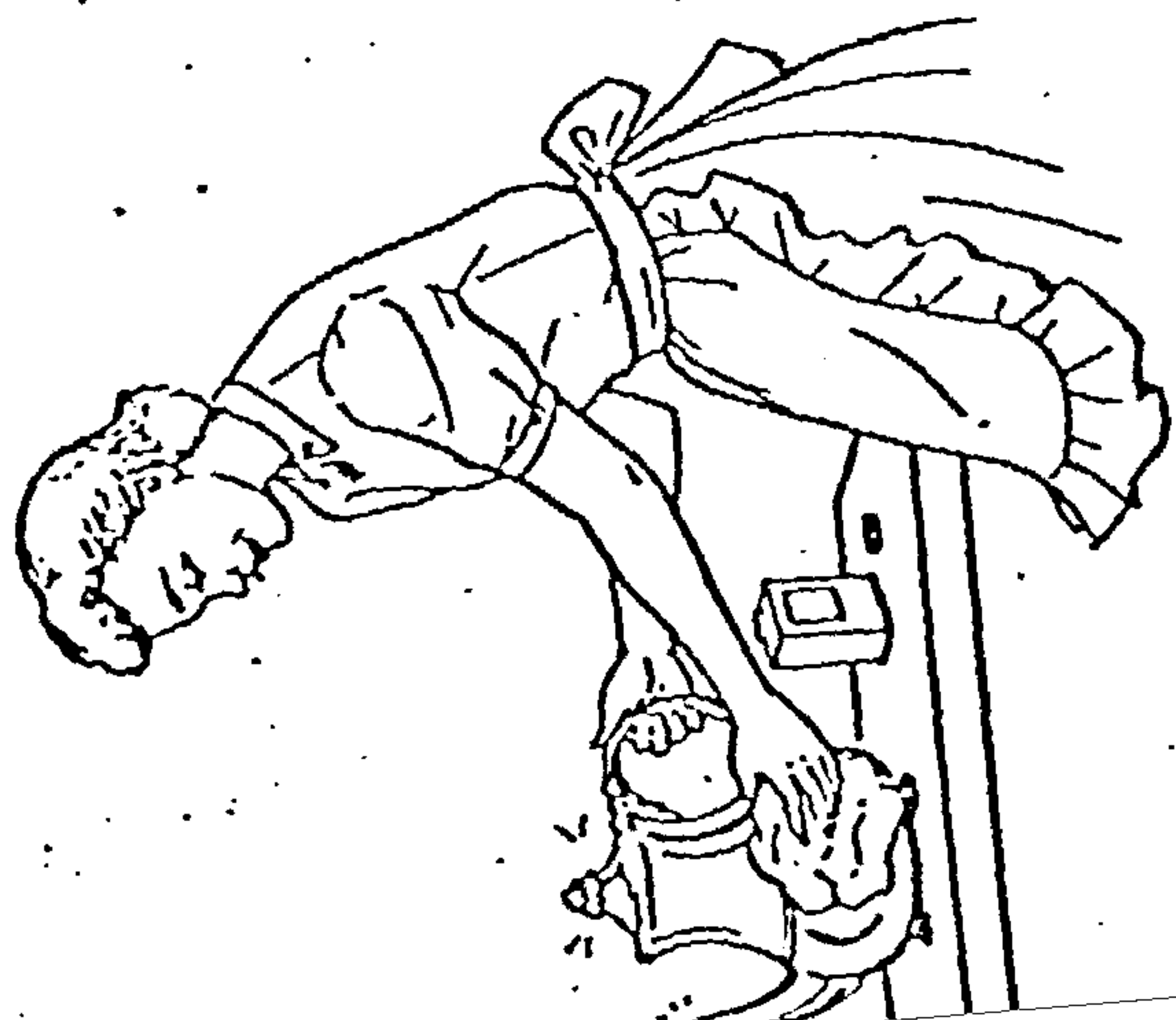
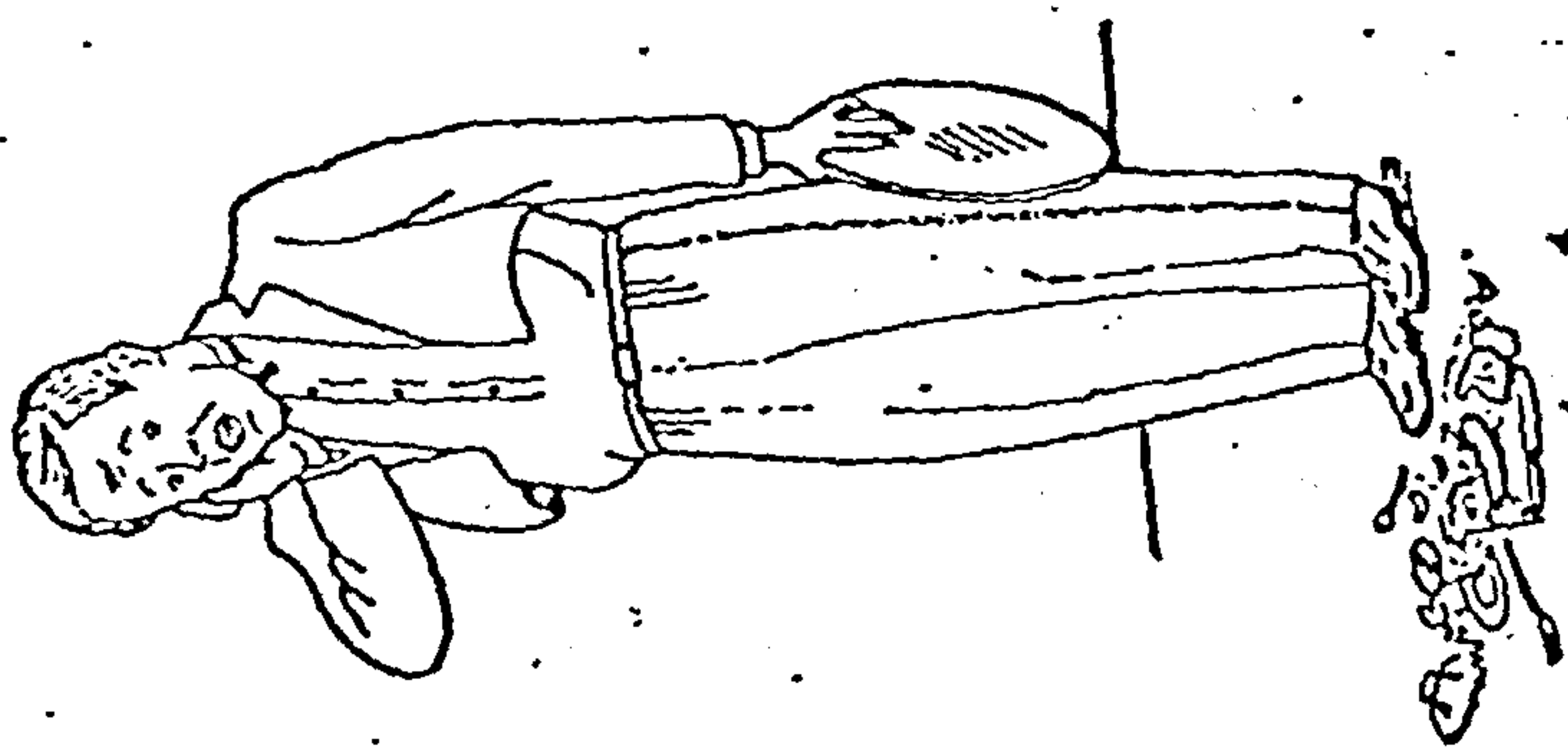
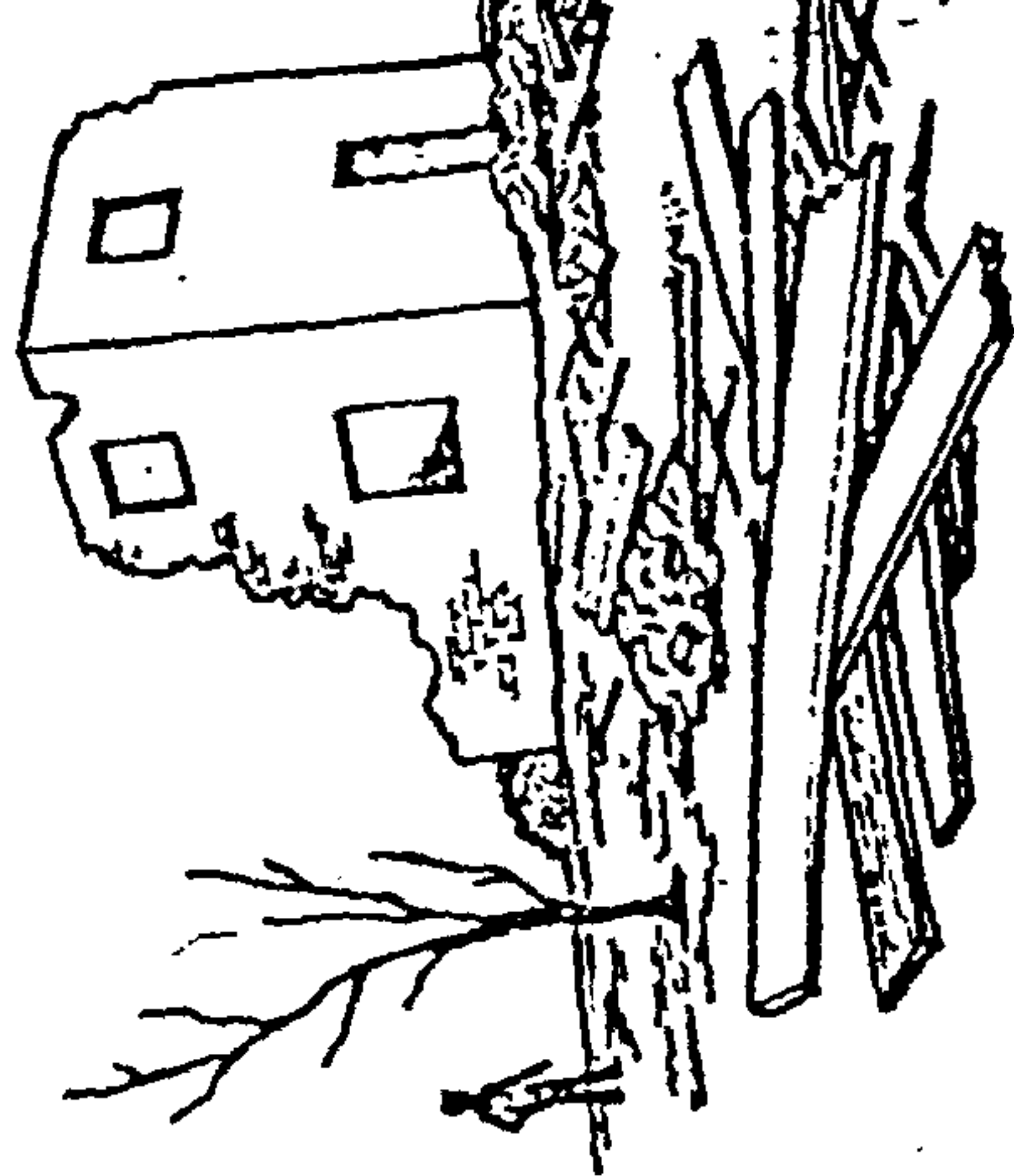
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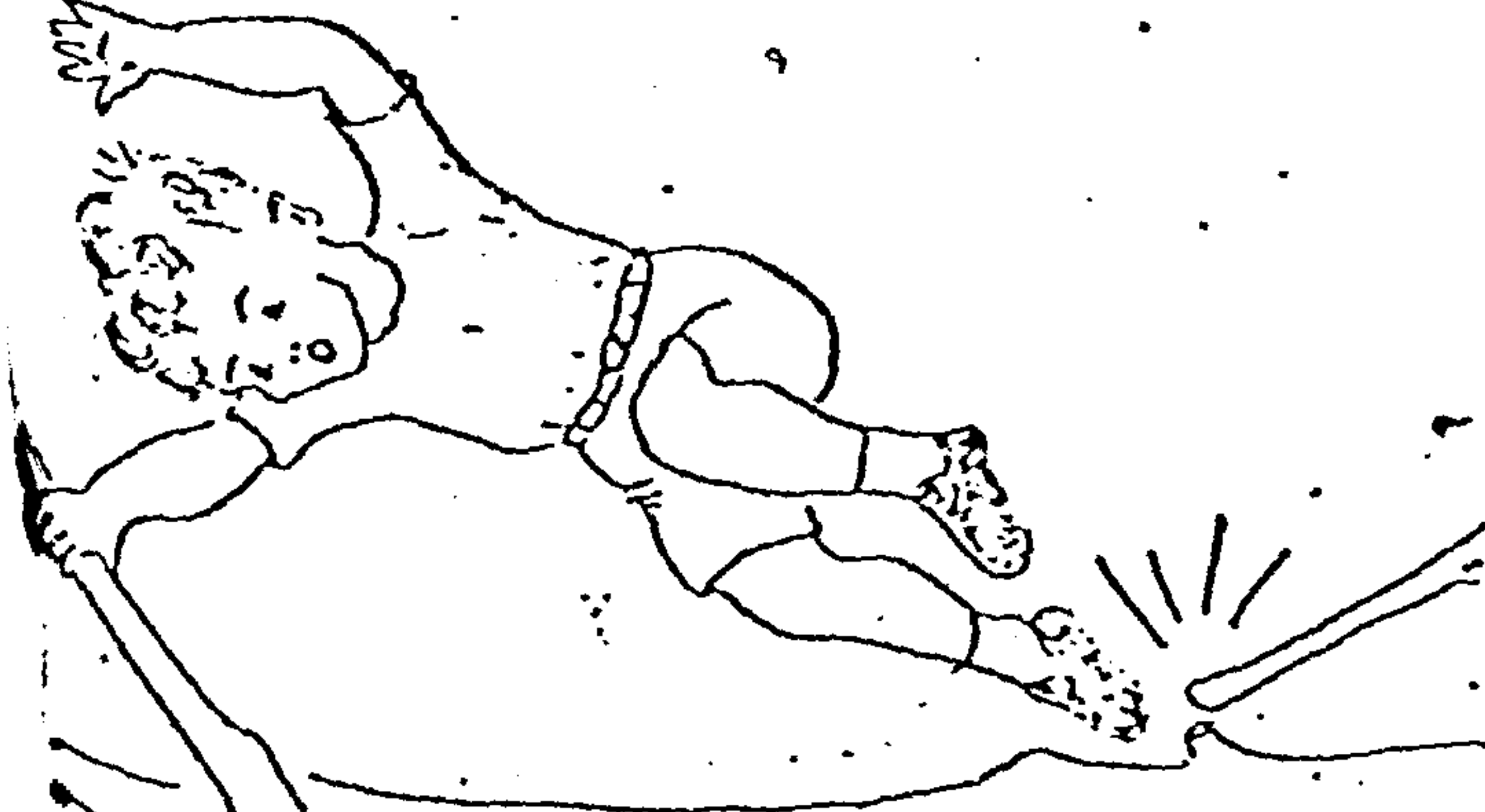
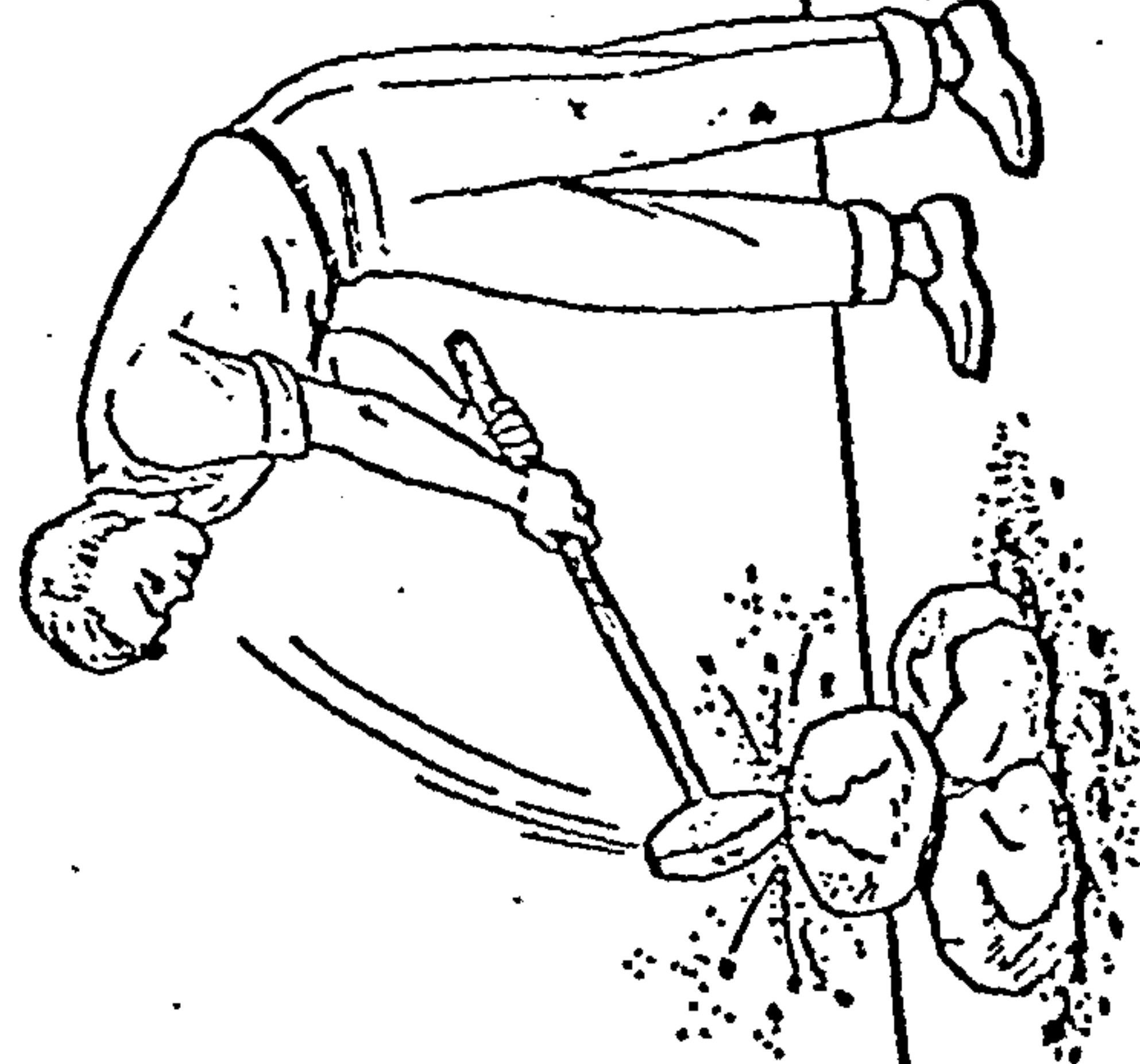
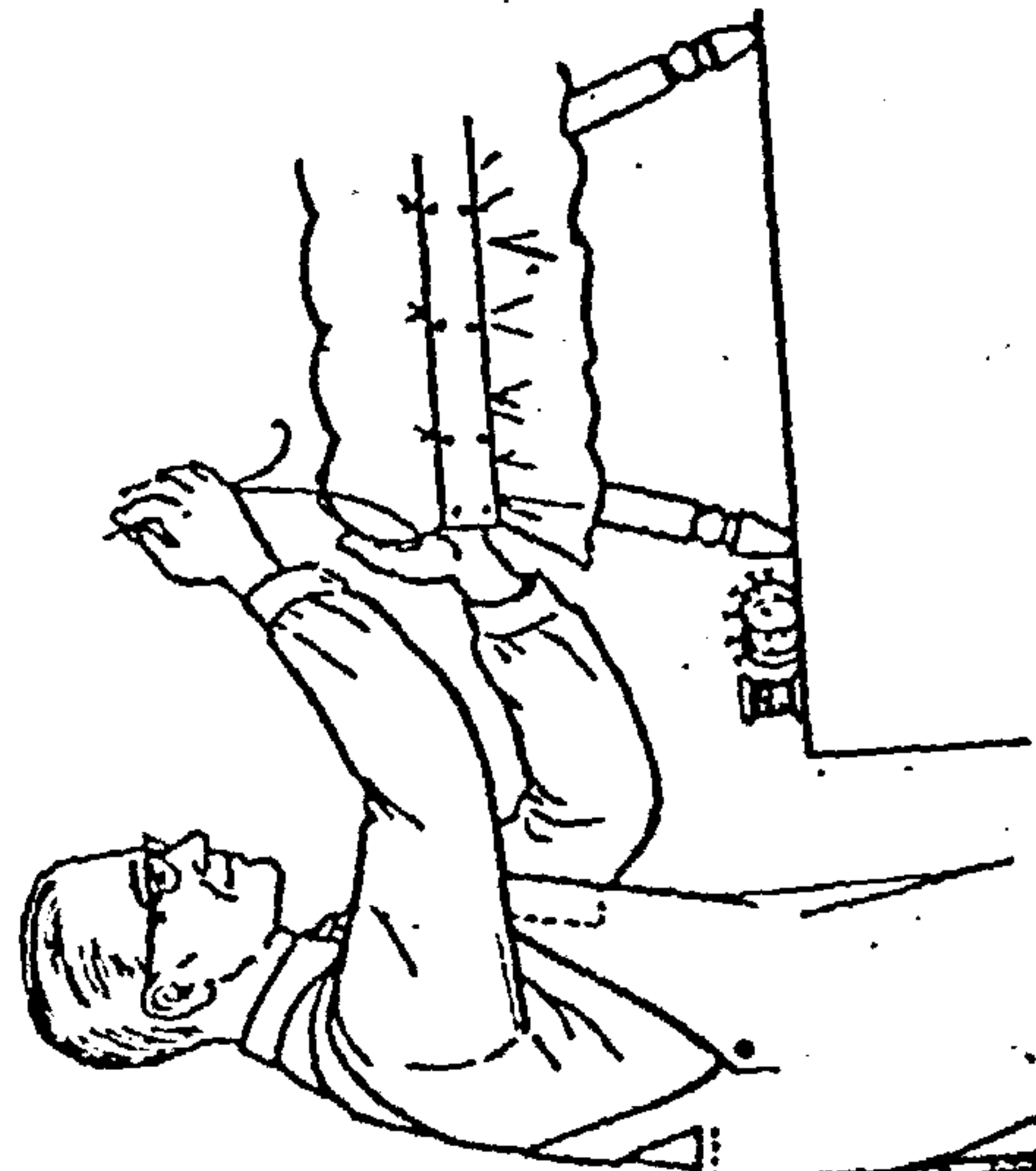
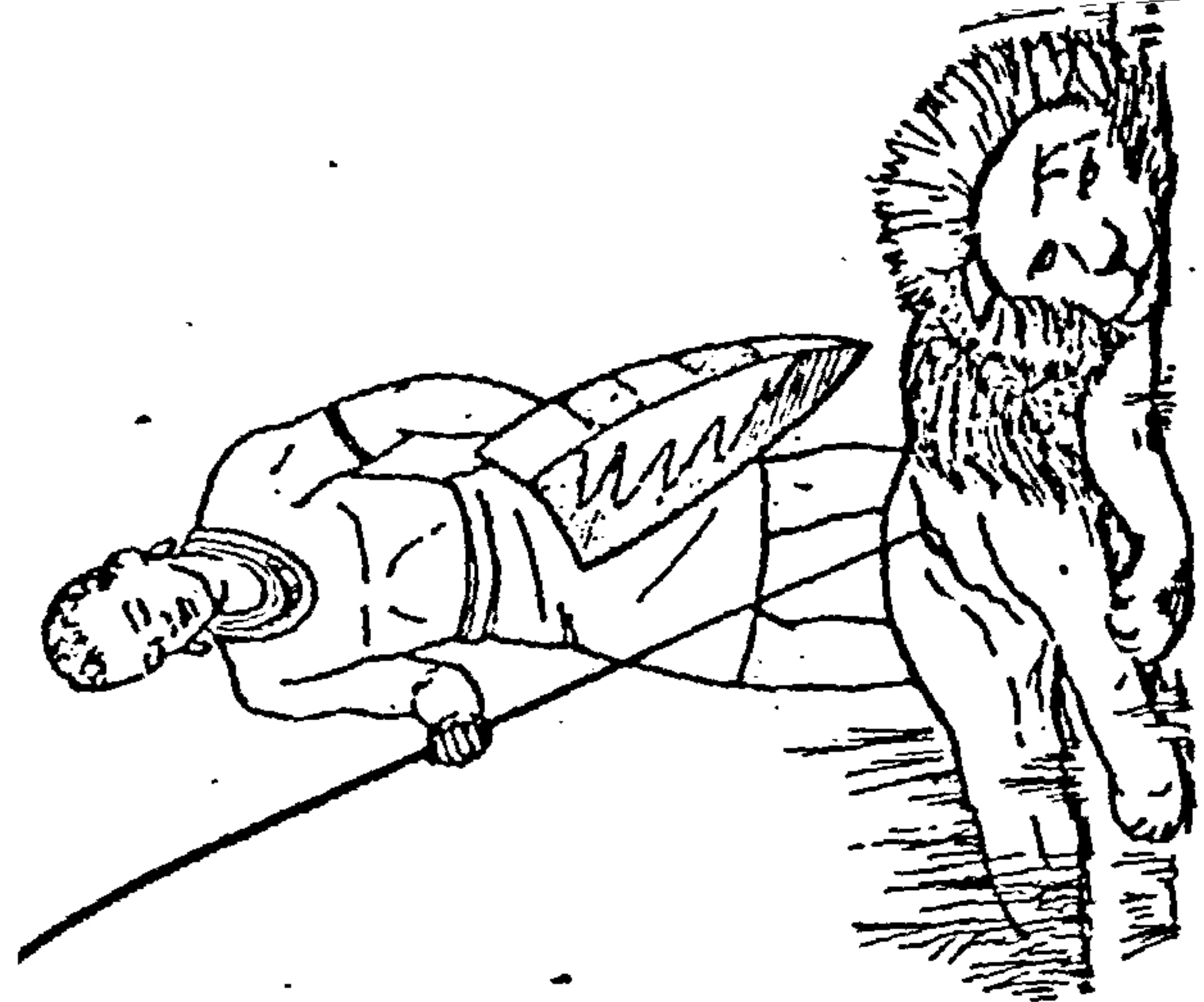


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INSTRUCTIONS FOR STORIES FOR ALL GROUPS EXCEPT ST.E.I.

"Every day, for the next two weeks, I am going to come and read you a story. I want you to listen very carefully. One day, when you have heard all the stories I shall ask you some questions about them. So you must listen carefully.

But there is one thing I'm not allowed to do. I'm not allowed to answer any questions. So you mustn't interrupt. Just listen. Today's story is called ...

Are you ready? Good."

INSTRUCTIONS FOR STORIES FOR ST.E.I. GROUP

"Every day, for the next two weeks, I am going to come and read you a story. I want you to listen very carefully. One day, when you have heard all the stories, I shall ask you some questions about the stories and the words. So you must listen carefully.

But there is one thing I'm not allowed to do. I'm not allowed to answer any questions. So you mustn't interrupt. Just listen. Today's story is called ...

Are you ready? Good."

On days following the first story, children in each group were reminded of the instructions by the following questions which were asked in random order:-

"What is it that I'm not allowed to do?

"What is it that you mustn't do?

"What must you do?"

"What will I do when you've heard all the stories?"

If the children did not correctly answer the last question, they were helped as follows:-

"I'll ask you questions about ...

Children from all groups except ST.E.I. then responded:-

"the stories"



Later on, they did not need help. Children from the ST.E.I. group responded:-

"the stories and the words", or something similar, so that they were reminded that they would be asked about the words.

## INSTRUCTIONS FOR PRE-TEST AND POST-TEST POINTING-ORAL

For Experiment I, the POINTING-ORAL PRE-TEST followed on from the P.P.V.T., and so there was no need for additional instructions. Similarly the children knew what to do when they came to the POINTING-ORAL POST-TEST. However, the trial series from the P.P.V.T. Manual (Dunn 1959 page 7) was given for the POINTING-ORAL POST-TESTS for each of the three Experiments, with amended instructions from the manual, as follows.

Turn to Example A and say: "See all the pictures on this page."  
(Indicate this by pointing to each in turn.) "I will say a word, and I want you to put your finger on the picture of the word that I say. Let's try one. Put your finger on 'bed'." When a subject makes the desired response, turn to Example B saying: "That's fine. Now put your finger on 'fish'." When the subject does this, say "Good. Now make up something to say to me, using the word 'fish' ... What is a 'fish'? Talk loudly, so that I can write down what you say." Then turn to Example C saying: "Good! Show me 'butterfly'. That's fine, now make up something to say using the word 'butterfly'."

(The children in Experiments II and III had all completed the POST-TEST ORAL, and were familiar with the process of talking about words while the experimenter wrote down what they said, so the amended instructions posed no difficulties.)

The instructions continued: "Well done! Now I'm going to show you some other pictures. Each time I say a word, you put your finger on the picture of the word that I say. You may not know all the words that I say but I want you to look carefully at all the pictures, and choose the one you think is right. It doesn't matter if your're wrong, and you might be right anyway! Now point to ..."

If children were reluctant to talk, additional questions were asked about the easy words to encourage them. When children appeared to know the meaning of, or something about, a difficult word, questions were asked, following the Oral Post-Test schedule for Experiment I or for Experiment II and III, as appropriate.

## INSTRUCTIONS FOR ORAL PRE-TEST AND POST-TEST, EXPERIMENT I

"I want to see how many words you know. I will say a word, and I want you to tell me what it means. Sometimes you won't know the word I say. Don't worry if that happens. Will you talk very loudly, so that I can write down what you say? Let's start with the word 'HAT'. Tell me all you can about the word 'HAT'. Off you go."

If child is stuck, prompt:-  
What is a hat for?  
What is a hat made of?  
Where would you see a hat?  
What else can you tell me about a hat?

Be encouraging.

When child has given the meaning of the word, say:-  
"Make up something to say to me, using the word — ."

For older children:-  
"Make up a sentence using the word — ."

### WORDS

1. hat
2. jump
3. book
4. bicycle
5. illuminate
6. sing
7. encumbered
8. quickly
9. inclement
10. join
11. obese
12. knife
13. precarious
14. coat
15. embellish
16. money
17. horse



EXAMPLES OF QUESTIONS TO ENCOURAGE CHILDREN TO TALK  
ABOUT WORDS, EXPERIMENT I

What is a ... for?

What would you do ...?

How would you ...?

How would I know ...?

Where would I look?

Where would you see ...?

What sort of a thing is it?

What kind of a thing ...?

If something is ... what is it?

What's another word for ...?

How would mummy use ...?

Does your daddy ...?

Does anyone you know ...? Tell me about that.

Make up something to say to me, using the word ...

My mummy ...

Have you got a brother or sister? Tell me about ...

What else could be ...? Could you ...?

What are things like before you ...?

What are things like after you ...?

## INSTRUCTIONS FOR ORAL POST-TEST, EXPERIMENTS II AND III

When the child is comfortable:-

"I want to see how many words you know. I am going to say a word and I want you to tell me what it means, like you did with Miss Farmer.

Some of the words are rather hard, and maybe you don't know them, but will you do your best? Will you tell me all you can?

The first word is hat. Tell me all about hat. What is a hat?"

### QUESTIONS FOR ORAL POST-TEST, EXPERIMENTS II AND III

Hat

1. What is a hat?
2. Make up something to say using the word hat.
3. What is a hat for? or  
What is a hat made of?  
( e.g. My daddy wears a big black hat on his head on  
Sundays. (He doesn't really!) Does mummy wear  
a hat? Tell me about it.)

Jump

1. What does jump mean?
2. Make up something to say using the word jump.
3. What part of you do you jump with? (Show me.)
4. What would you do if you jumped? (What would it look like?)

Quickly

1. What does quickly mean?
2. Make up something to say using the word quickly.
3. Why might you have to go quickly?

Encumbered

1. What does encumbered mean?
2. Make up something using the word encumbered.
3. If someone was encumbered, what would he be like? Guess.
4. Why would that make him encumbered? or  
What might he be encumbered by?

Bicycle

1. What is a bicycle?
2. Make up something to say using the word bicycle.
3. What is a bicycle for? or  
What has a bicycle got?

Illuminate

1. What does illuminate mean?
2. Make up something to say using the word illuminate.
3. How could you illuminate a room? Guess.
4. Why would that illuminate it?

Money

Precarious

1. What does precarious mean?
2. Make something up using the word precarious.
3. If someone was doing something precariously at a circus,  
what might he be doing? Guess.
4. Why would that be precarious?

Knife

Obese

1. What does obese mean?
2. Make up something using the word obese.
3. If someone was obese, what would he be like? Guess.
4. If someone was obese, what would it be hard for him to do?  
Why?
5. How could you make someone obese?

Join

Embellished

1. What does embellished mean?
2. Make up something to say using the word embellished.
3. How could you embellish a hat? Guess.
4. Why would that make it embellished?



Coat

Inclement

1. What does inclement mean?
2. Make up something to say using the word inclement.
3. If it was inclement, what would it be like? Guess.
4. What would it be like if it was not inclement?
5. Why?

Horse

1. What is a horse?
2. Make up something to say using the word horse.
3. What has a horse got? or  
What is a horse used for?

Do you think that mummy knows what all these words mean?

POINTING AND POINTING-ORAL PRE-TEST LIST

Item Resp.

Key Word

Name:

School:

- |    |       |     |            |
|----|-------|-----|------------|
| 24 | _____ | (4) | baking     |
| 23 | _____ | (4) | ringing    |
| 22 | _____ | (2) | encumbered |
| 21 | _____ | (1) | snake      |
| 20 | _____ | (3) | ladder     |
| 19 | _____ | (4) | illuminate |
| 18 | _____ | (2) | hitting    |
| 17 | _____ | (1) | nail       |
| 16 | _____ | (3) | obese      |
| 15 | _____ | (1) | pulling    |
| 14 | _____ | (2) | jacket     |
| 13 | _____ | (1) | inclement  |
| 12 | _____ | (1) | lamp       |
| 11 | _____ | (2) | climbing   |
| 10 | _____ | (3) | embellish  |
| 9  | _____ | (1) | bell       |
| 8  | _____ | (2) | children   |
| 7  | _____ | (1) | precarious |
| 6  | _____ | (4) | finger     |
| 5  | _____ | (4) | shoe       |
| 4  | _____ | (3) | dog        |
| 3  | _____ | (2) | horse      |
| 2  | _____ | (4) | bus        |
| 1  | _____ | (2) | table      |

POINTING AND POINTING-ORAL POST-TEST LIST

Final POINTING LIST

Name:

School:

- |    |     |            |
|----|-----|------------|
| 24 | (1) | sewing     |
| 23 | (1) | pouring    |
| 22 | (2) | encumbered |
| 21 | (4) | bee        |
| 20 | (2) | bat        |
| 19 | (4) | illuminate |
| 18 | (4) | tying      |
| 17 | (3) | leaf       |
| 16 | (3) | obese      |
| 15 | (4) | catching   |
| 14 | (1) | skirt      |
| 13 | (1) | precarious |
| 12 | (2) | fan        |
| 11 | (4) | blowing    |
| 10 | (1) | inclement  |
| 9  | (4) | can        |
| 8  | (1) | key        |
| 7  | (3) | embellish  |
| 6  | (3) | block      |
| 5  | (1) | ball       |



DATA COLLECTION FORM FOR W.I.S.C. SUB-TESTS  
AND ADDITIONAL INFORMATION

Name

Father's occupation

Mother's occupation

Birth order

Clothing

Nose

Telephone

Flat

Cleanliness

Car

House

1. INFORMATION

- 1 Ears
- 2 Thumb
- 3 Legs
- 4 Animal-Milk
- 5 Water-Boil
- 6 Shop-Sugar
- 7 Pennies
- 8 Days-Week
- 9 Discoverer-America
- 10 Things-Dozen
- 11 Season-Year
- 12 Colour-Rubies
- 13 Sun-Set
- 14 Stomach
- 15 Oil-Float
- 16 Romeo-Juliet
- 17 Fifth-November
- 18 O.H.M.S.
- 19 British-Man
- 20 Chile
- 21 Pounds-Ton
- 22 Capital-Greece
- 23 Turpentine
- 24 London-Edinburgh
- 25 August Bank Holiday
- 26 South Pole
- 27 Barometer
- 28 Hieroglyphic
- 29 Genghis Khan
- 30 Lien

2. COMPREHENSION

- 1 Cut-Finger
- 2 Lose-Balls (Dolls)
- 3 Loaf-Bread
- 4 Fight
- 5 Train-Railway Line
- 6 House-Brick
- 7 Criminals
- 8 Women-Children
- 9 Bills-Cheque
- 10 Charity-Beggar
- 11 Civil Service-Examination
- 12 Cotton-Fibre
- 13 Members of Parliament
- 14 Promise-Kept

#### 4. SIMILARITIES

#### STORIES RECALLED

- 1 Lemons-Sugar
- 2 Walk-Throw
- 3 Boys-Girls
- 4 Knife-Glass
- 5 Plum-Cherry
- 6 Cat-Mouse
- 7 Beer-Wine
- 8 Piano-Violin
- 9 Paper-Coal
- 10 Ounce-Yard
- 11 Scissors-Copper Saucepan
- 12 Mountain-Lake
- 13 Salt-Water
- 14 Liberty-Justice
- 15 First-Last
- 16 49-121

At school?  
How often?

At home?  
How often?

Other?  
How often?

"Can you remember a long time ago, when I came and told you stories? Which stories can you remember? Tell me about them. What happened in that story?"

When the children have recalled some of the stories and events in them, ask:-

"Who else tells you stories?"

"Does anyone else tell you stories? When?"

LETTER SENT TO THE HEAD TEACHER OF EACH SCHOOL WHICH TOOK  
PART IN THE EXPERIMENTS

School Address

Psychology Department,  
28 Newland Park,  
The University,  
HULL.

Dated for each Experiment

Dear

Here, at last, is the letter I promised, setting out roughly what I hope to do in my experiment. The experiment is being designed to try to find out how children learn words in the ordinary daily conversation of the home. My hunch is that where adults use language that the children can, on the whole, understand, the children will pick up the meaning of some more difficult words because they understand the general context. But when adults talk to each other, and use a vocabulary the children do not understand, the children will not learn any new, more difficult words.

Therefore, I have re-written ten folk stories. I have an "easy" context and a "difficult" context for each story. In each story, six difficult words are used three times. I hope that five-year-old children will learn the difficult words from the "easy" context, but not from the "difficult" context.

First of all, I shall have to give each child a vocabulary test, by himself. This will take about fifteen minutes + fifteen minutes, for each child, as one part of the test is pointing at pictures, and the second part is saying what words mean. On the basis of this test, I will form matched groups of five-year-olds. I expect this initial testing to take at least two weeks, because I will have to test more children than will be selected for the groups, and will have to use at least two infant schools.

Once the groups are formed, I will read each group one story every day for two weeks. The stories take about twelve minutes to read. I would imagine that each group of ten would be away from the classroom for about fifteen to twenty minutes each day. I will fit in with the teachers concerned to ensure that I do not interfere more than can be helped with special lessons and on-going work.

At the end of the story-reading-fortnight, each child will be tested individually (by a colleague who will not know which group the child was in) to see if the children have learnt the six difficult words. The test is shorter here, and should take about fifteen minutes per child.

After that, I will leave you in peace again, while I try to work out the results and what they may mean! I will, of course, let you know the results when I have done this.

I am most grateful to you for letting me use your school for my experiment, and hope I will not disrupt things too much.

Yours sincerely,

Irene M. Farmer (Miss)  
(Teacher and Research Worker)



LETTER SENT TO THE PARENTS OF EACH CHILD WHO TOOK PART IN THE EXPERIMENTS

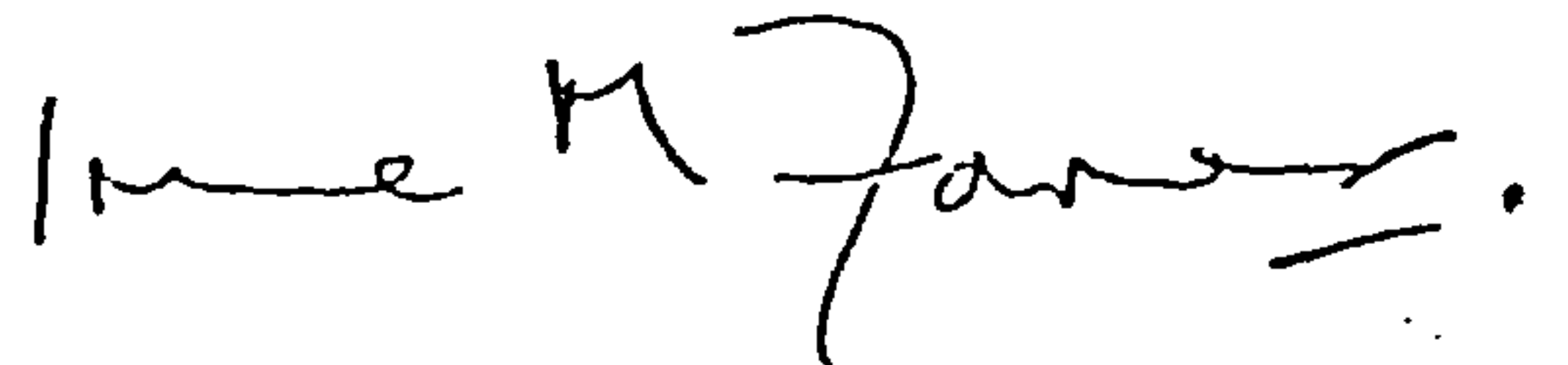
Dear Parents,

Your child has been selected to hear a special story every day for the next two weeks. We are trying to find out how children learn difficult new words. The stories will teach the children some new words. In order to be sure that the stories are teaching the words, we need to know that the children are not learning the meanings elsewhere. We would therefore be most grateful if you would not answer your child's questions about the meanings of difficult words during the next three weeks.

It would also be helpful if you would let me know if you expect your child to be away on holiday, during term time.

Thank you for your co-operation.

Yours sincerely,

A handwritten signature in dark ink, appearing to read 'I.M. Farmer', with a stylized flourish at the end.

I.M. Farmer  
Teacher and Research Worker.

Context for embellishedHow the sea got salty

p.1 Everything was nice to look at. The windows had curtains embellished with patterns which made them look very pretty. The tables were made of shiny woods, and the floors were covered with thick carpets and mats.

p.2 One present was a bowl made out of pure gold. The sides of the bowl were embellished with pictures of trees and birds and animals. It was beautiful and Prince John liked it very much.

p.2 After Sue and Lu had gone, King George said "Can I take those two giant women home with me?" Prince John said "Yes, you can", because he was so pleased with the embellished golden bowl with its beautiful pictures that King George gave him.

King George could hardly wait to get home.

Why the hippo took to the water

p.2 It seemed nicer than ever this year. The hippo wives had taken a lot of care to make nice cakes and jellies, and had embellished the table with green leaves and flowers, so that it all looked very pretty. But the animals did not get the food.

p.2 He would watch the hippos very carefully. It was easy for him to hide because his shell was coloured brown and green and yellow, and was embellished with patterns. He looked like a pile of dead leaves if he hid in leaves.

p.3 Spring came and the flowers and leaves came out. Flowers embellished the trees and made them look very pretty, and smell sweet. The sun got strong again, and made dark shadows in the woods.

Beauty and the beast

p.1 But she worked hard in the house from early morning till late at night. She did not need lipstick and make up to embellish her pretty face. She wanted to look after her father and her three brothers.

p.3 There was even an ice-cream, shaped like a bird. It was embellished with nuts and cherries in patterns, for feathers.

Just as they finished eating, in came the most horrible looking animal Beauty had ever seen.

### Context for embellish continued

p.3 Inside, was a piano with music, and a shelf with books. There was a big mirror with its edge embellished with carved patterns and gold paint. Beauty thought "The animal would not give me all these nice things if he were going to eat me today."

### The shoes that were danced into holes

p.2 So the king gave the soldier some new clothes. He gave him warm trousers, and a beautiful coat made of purple cloth, embellished with gold patterns on the sleeves. That night they took the soldier to a small bedroom next to the princesses' room.

p.2 They skipped about and put on their most beautiful dresses. The dresses were lovely colours, embellished with ribbons and lace and pretty beads. Only the smallest princess looked sad, for she was scared that something was wrong and that this time they might be found out.

p.4 So he married the biggest princess that same day, and everyone was happy and danced all night. The King gave the soldier a new coat all embellished with the gold and silver and diamond leaves from his three sticks, to make a sparkling pattern. The King said that the soldier would rule his lands later on.

### Jack and the Beanstalk

p.1 There was a bare wooden table and some chairs downstairs, and the beds upstairs, and that was all. There were no pretty things to decorate the house, like ornaments or curtains, so, you see, the house was not embellished in any way. The only thing they had was one cow.

p.2 Then she gave Jack a nice bit of pie. The pastry was embellished with patterns cut into it with a knife. It looked nice and tasted good.

p.4 Jack's mummy was very happy. "Tomorrow, she said to Jack "I will go to market and buy some pretty curtains to embellish the windows. That will make our house look nice and cosy."



## Context for embellish continued

### Jenny and James

p.1 Then the witch would catch her and put her in a cage. The witch liked to embellish the big hall of her castle with cages of beautiful singing birds. She had got lots and lots of birds, but there were still bare patches on the wall that she did not like.

p.1 She was engaged to a nice young man called James. He had given her an engagement ring made of gold, embellished with a lot of small diamonds, to show his love. They used to spend most of their time together.

p.1 They were getting married in the autumn, before the inclement winter weather arrived with its cold winds, and rain and snow. Jenny's dress was going to be made of white lace, embellished at the neck with a bunch of sweet-smelling white flowers. She would wear the same white flowers to make her hair pretty.

### The Drummer

p.1 He went to look, and found a lovely piece of cloth. It was white as snow, embellished with leaves and flowers, made into the cloth. It was so nice that he put it in his pocket.

p.4 As he got out of the fire, the log he held changed into the pretty girl who had helped him! He saw her white skirt, embellished with leaves and flowers which made it so pretty. Then he knew that the girl was Linda, the princess he had come to find.

p.4 Linda turned her magic ring. It was silver, embellished with pearls and looked special. And they found themselves at the drummer's home.

### Naughty Jane

p.1 She was always happy. She wore a long skirt, and her shoes were embellished with red ribbons. She felt very pleased with herself.

p.2 "It's a bit like having a birthday cake with the candles. Yes, candles do embellish a table and make it look nice." While she was there, she had another glass of wine, which made her feel very happy.

p.3 But naughty Jane was thinking again! She brushed her hair and put new ribbons to embellish her shoes. She made herself look very pretty.

Context for embellished continued

Lucky

p.1 He dressed himself like a rich man. His hat was embellished with feathers, and he rode a black horse. He was obese because, being a king, he always had more than enough to eat.

p.4 They both had new clothes. The princess had a shiny dress, embellished with lace frills all over it. Lucky's shirt was embellished with lace frills at the neck, to match the princess's dress.

p.4 The princess had a shiny dress, embellished with lace frills all over it. Lucky's shirt was embellished with lace frills at the neck, to match the princess's dress. They lived very happily together.

David

p.1 All the shiny decorations on the tree glittered in the pretty lights. The very top of the tree was embellished with a silver star. It added just the right touch to a very pretty tree.

p.2 Then, for pudding, he had a whole jelly and a whole trifle to himself. The trifle was embellished with blobs of cream, and little silver balls and looked very pretty. The giant had a good supper.

p.4 The flashing fairy lights illuminated the Christmas tree, and made everything sparkle. The decorations embellished the branches and made them look ever so pretty. The Queen was as big and obese as ever, because she had eaten so many sweets that she had put on weight.

## Experiment I

### Context for encumbered

#### How the sea got salty

p.1 The men rode on four of the horses. The other horses were encumbered with heavy bags, and so they could not walk quickly, and the journey took five days. The bags had in them food for the journey and presents for King George's friends.

p.2 But the giant women were a great help, because they moved the fallen trunks off the roads. The horses were not so encumbered with bags and presents on the way home. This was lucky because the roads were wet and slippery and it was precarious and dangerous to walk.

p.3 Then Sue and Lu ground more and more salt. The ship got heavier and heavier, and was so encumbered by the piles of salt that it stopped sailing. Then Sue and Lu ground strong winds, as well as salt.

#### Why the hippo took to the water

p.2 But he got very tired when he followed them. His short legs were encumbered by the heavy snow on his shell. His life was very precarious this winter, for the weather was cold enough to kill a tortoise.

p.3 Everyday he followed the hippos along the dry sandy path to their pond. The sun was hot and his shell, which was very heavy, encumbered him. But he would not give up.

p.3 But he would not give up.

"I would be very silly," he thought, "if I took my shell off in the hot summer because it encumbers me and makes it difficult for me to walk. It is so useful at other times of the year."

#### Beauty and the beast

p.2 It had a horrid head with long teeth. It was encumbered by its long tail which got in the way and tripped it up. It looked very angry and upset.

p.3 It's tail was long and hairy. Beauty thought "It would walk more easily if it were not encumbered by such a long tail. The tail gets in its way."



Context for encumbered continued

p.4 Beauty looked at his ugly face. She saw the way his long tail encumbered him when he walked, and got in his way. She saw his short legs which had to carry such a big, obese, tummy.

The shoes that were danced into holes

p.3 Her prince could not understand why his boat tipped about so much, and it seemed much heavier than usual. He felt encumbered because however hard he rowed, he could only just make the boat move through the water.

p.3 He felt enumbered because however hard he rowed, he could only just make the boat move through the water. Yet he could see no reason why his boat should be heavier than usual, nor why his arms should be weaker, nor why he should feel so encumbered.

On the other side of the lake was a big castle, with bright lights and music coming from it.

p.3 The princes rowed them back across the lake, and this time the soldier sat beside the biggest princess. Her prince was the strongest of them all, and he did not feel encumbered by the extra weight in his boat. When they reached the other side, the soldier hurried quickly through the brightly lit trees, ran up the steps, and was back in bed by the time the princesses came up the stairs.

Jack and the Beanstalk

p.1 Jack walked quite quickly. But he was encumbered by the cow, which could not walk as quickly as Jack wanted to walk. Soon there were houses at the side of the road instead of trees.

p.1 Then he hurried home. He got home very quickly, because he could go as fast as he wanted, now that he was not encumbered by the cow. His mummy was surprised to see him so soon.

p.3 Jack was glad the bad weather had gone, because the sky was clear and there was no wind, as he rushed along the road to the top of the beanstalk. He was not encumbered much by the hen, because he tucked it out of the way, under his arm. He slipped down the beanstalk very much more quickly than he had climbed up it.

Context for encumbered continued

Jenny and James

p.2 Some time later, the witch came back, and once again, James stared because she was so big and heavy and ugly. Her large tummy must have encumbered her walk, for she walked more like a duck than a person. She was talking to herself, and at that moment the moon rose, and James suddenly found that he could move again.

p.2 He tried not to hurt it as he climbed down the steep slopes of the mountain. He was heavily encumbered by the hurt animal, because he could not use his arms to climb with.

The hot summer days passed, and autumn came.

p.3 He thought to himself, "I must give up my job, and go and look for the red flower to save Jenny. I can't take the sheep because they would encumber me. They would only be in the way, and slow me down."

The Drummer

p.2 He walked round the edge of the hat and played his drum. He was not encumbered because there was no-one to get in his way up there. The giant thought the drum was telling the other people to go home, so he walked through the woods quite happily.

p.3 The drummer started work at once. But he was encumbered by the bad tools she had given him. The chopper was too blunt to cut down trees, and the handle broke when he tried to use it.

p.4 But though he did not stop to rest, he could see he would never get all the piles of wood into one big heap in time. The logs were very heavy, and he was encumbered by the size of the pile. He could not reach the top of the pile to put logs on it.

Naughty Jane

p.1 "I will go and meet my friend. He may be encumbered by a heavy case. That may be slowing him down.

p.2 "My friend is just behind me. He was heavily encumbered with two big suitcases. That is why he was so late."

p.3 "Thank you, good woman, for telling me," he said out loud. "Quick," said Jane, "you must hurry." And she watched her master's friend trying to hurry through the snow, heavily encumbered by two big suitcases.

Context for encumbered continued

Lucky

p.2 "Goodbye, Lucky," said his mummy and daddy, as the king rode away.

However, as soon as the wicked king was away from the village, he said to himself, "This wooden cot is encumbering my horse. It is too heavy."

p.2 "Now there is no danger that the princess will ever marry that poor woman's son," he said. "And my horse can go home without being encumbered by that heavy wooden cot." So he rode home, very pleased with himself.

p.3 Not long after, the bad robbers came home. They were encumbered with heavy bags. They were tired because the bags had been hard to carry.

David

p.1 All the servants were happy. They had gone round the shops with the queen's long shopping list, and had come back to the palace encumbered with parcels and packages, which were heavy to carry, and difficult to walk with. But they did not mind.

p.3 The people were so glad to know the answer, that they gave David two donkeys. The donkeys were encumbered by sacks of gold that weighed them down.

So David went on slowly to the next town.

p.4 They gave David two donkeys heavily laden with sacks of gold. The donkeys were encumbered by the heavy sacks, and could not walk quickly. So David, with his four donkeys, set out for the palace.



## Experiment I

### Context for illuminated

#### How the sea got salty

p.1 Every day he walked from the big hall to one of the small rooms where he kept his gold and money. This room was illuminated by lots and lots of candles, so that the gold and silver shone and sparkled in the bright light. The King looked at his lovely things and then turned sadly to his best treasure.

p.2 This was lucky, because the roads were wet and slippery and it was precarious and dangerous to walk.

As soon as they got home, King George took Sue and Lu to the room with the bright illuminations which lit up his gold and silver and made it shine and sparkle. He showed them the magic grinding stones and the handle.

p.3 No-one told Sue and Lu to stop grinding. So perhaps they are still there, on the dark, badly illuminated sea bottom, grinding salt to this day. That may be why the sea is so salty.

#### Why the hippo took to the water

p.2 All that autumn, the tortoise followed the hippo and his seven fat wives. The autumn sunshine shone brightly and illuminated the dead leaves on the ground. It made them look brown and yellow in its bright light.

p.3 The sun got strong again, and made dark shadows in the woods. The tortoise hid in the dark where the illumination was bad, and no one could see him. He stretched out his neck and listened most carefully, but the hippos still did not say the name of the King.

p.3 It was very hot. The animals were glad to drink and swim in the river which sparkled in the illumination of the sun's bright light. The tortoise was very sad.

#### Beauty and the beast

p.1 The man and the three boys got up every morning while it was still dark. Only the moon illuminated the fields where they worked, until the sun got up. They worked from early morning till evening.

Context for illuminate continued

p.1 To make matters worse, the sky got dark and it started thundering. From time to time, a flash of lightening illuminated the sky and trees, and he could see that he was still lost in the woods. Then it was dark again.

p.1 "It was a nice dry morning when I set off." He was very tired, when at last, he saw some light illuminating a path through the trees. The man followed the path of light, which led to a big castle.

The shoes that were danced into holes

p.2 So they said she must have caught it on a nail, and went on.

When they reached the bottom of the steps, the soldier was surprised by the bright illumination which lit up everything. The trees here had silver leaves which twinkled in the bright light.

p.3 "It is only someone shooting in the woods."

Soon they came to more trees which were brightly illuminated by lots of orange lights. The leaves themselves were pure gold.

p.3 Once again the soldier broke off a bit, which worried the smallest princess.

Then, beside a lake, were trees so bright that they did not need any extra illumination at all, because the leaves were diamonds. The diamond made it seem much lighter than it really was, because they were so shiny and light themselves.

Jack and the Beanstalk

p.1 Early next morning, when it was still dark, Jack set out for market with the cow. One candle illuminated the cottage, because they could not afford to use more candles to give more light. Jack looked back as he turned the corner.

p.1 Jack looked back as he turned the corner. He could see the candle illuminating the whole window. It also lit up a little bit of the garden.

p.1 There were other people walking to market to sell or buy things. The sun was getting up, and the road was brightly illuminated by the sun's light. It was easier to see the other people hurrying on their way.

## Context for illuminate continued

### Jenny and James

p.1 One evening was so nice that they walked further than usual. Sunlight came through the trees, and illuminated the green grassy banks and shone on the early spring flowers. They talked of their wedding plans.

p.1 James was sad too. The sun was setting, illuminating the woods with a pinky light. James carefully looked through the bushes, and suddenly saw the castle wall quite near to them.

p.2 And James did not know what to do, so he just walked. Luckily the moon was bright, and illuminated the woods quite clearly, for James would have bumped into tree stumps and fallen down holes if it had been very dark.

At last he came to a village, where he took a job as a shepherd.

### The Drummer

p.1 He tried to see who was talking. But the room was badly illuminated and only a little light came through the curtains. So he could hardly see.

p.2 By this time the sun was up. It illuminated the mountains, still far away, and the drummer could see them clearly now. One mountain was higher than the rest, and it looked bluer.

p.4 So the drummer got up early, before it was light. The moon illuminated the piles of wood just enough for him to see what he was doing. He worked through the early hours of the morning, and on and on.

### Naughty Jane

p.2 It was getting dark, so Jane went round the house putting on the lights. She switched on the light to illuminate the hall, to welcome her master when he came back. She lit the candles on the table, so that the knives and forks sparkled in the illumination.

p.2 She switched on the light to illuminate the hall, to welcome her master when he came back. She lit the candles on the table, so that the knives and forks sparkled in the illumination. "Candles always make a table look special," she said to herself.



p.2 She opened the oven door to look at the chicken. It was a new oven, and when she opened the door, a light came on which illuminated the inside of the oven. So she could see quite clearly that the chicken might spoil at any moment.

### Lucky

p.1 So the woman took the king into her sitting-room. It was badly illuminated because the windows were so small, and did not let much light into the room. At first the king could not see the baby at all.

p.1 The woman lit a candle, and held it near the baby's carry-cot. The candle illuminated the pretty face and tiny hands of the baby, and the king could see quite clearly.

p.3 But Lucky got lost in the dark woods. When he saw a light, he went towards it. It was the light of a cottage, illuminating the trees around. Lucky knocked at the door, and an old woman opened it.

### David

p.1 There was a big Christmas tree in the hall. It was illuminated with lots of fairy lights of different colours. They switched on and off, one after the other, so that the tree was always winking and twinkling.

p.2 David went on his way, and at last he saw the Black Woods. Never before had David been in woods which were so dark and badly illuminated when it was daylight outside. He almost felt like going back.

p.4 The palace was as he had left it. The flashing fairy lights illuminated the Christmas tree, and made everything sparkle. The decorations embellished the branches and made them look ever so pretty.

## Experiment I

### Context for inclement

#### How the sea got salty

p.1 Other servants set off for the very cold places in the north of his lands. Here they found men who were strong because they cut down big trees, and carried them to the rivers in cold and inclement weather. But they could not turn the handle to make the stone grind.

p.2 The weather was stormy and Prince John thought it dangerous to go in the thunder and lightening. But King George said that the horrid inclement weather would not stop him. The journey took a long time and was very precarious because the storm tore down trees and blocked the roads.

p.3 The piles of salt got bigger and the wind howled. The ship started to go round in circles because of its weight and the inclement windy weather. Then the ship sank, and all the salt sank with it.

#### Why the hippo took to the water

p.2 Winter came with its cold rain and snow. This is the time of year when tortoises usually find a warm hole under the ground and sleep till the inclement weather has gone. But our tortoise had made up his mind not to sleep.

p.3 Then storms and winds came, and tore the leaves from the trees and broke the branches. All sensible animals sheltered from the inclement weather. The hippos were sensible and kept dry in their most secret cave.

p.3 The hippos were sensible and kept dry in their most secret cave. The weather was so inclement that they would not go outside at all. The tortoise was the only animal out in those storms because he had a job to do.

#### Beauty and the Beast

p.1 The snow got down his neck, and soon he was very wet. "I have never known such inclement weather to come on so quickly" he said to himself. "It was a nice dry morning when I set off."

Context for inclement continued

p.2 "Thank you good fairy" he said aloud "for thinking of my breakfast" and he drank the chocolate.

As he left the castle, he saw that the snow and inclement weather had gone, and he was in a lovely rose garden. "At least I can take Beauty her rose" he thought, and picked one.

p.4 Sometimes she would go in the garden, when it was warm and sunny. Other days, it was too inclement out of doors, and Beauty stayed by the warm fires. She heard the winds howling and the rain outside.

The shoes that were danced into holes

p.1 One stormy night, a poor soldier who had been hurt in a fight was walking through the woods. He was upset about the horrid inclement weather, for the rain soaked him and he had nowhere to go. An old lady saw him and took pity on him.

p.1 The fire was warm and his clothes were soon dry, but they could hear the rain beating on the roof. "Where were you going in this wet, inclement weather?" asked the old lady. "I really don't know." said the soldier.

p.2 The soldier thought this was a bit of luck. So the next day, when the wet inclement weather had gone, and the sun had dried the paths, and the birds were singing again, the soldier thanked the old lady and went to see the king.

The king made him welcome, because no-one had tried to find out where the princesses danced for a week or two.

Jack and the Beanstalk

p.2 So he thought he would go along the road. He bent his head, and walked forward in the inclement weather.

But the mud grew thicker and more slippery.

p.2 "Oh please," begged Jack. "The inclement weather has made me cold and wet, and I can't walk another step." "All right" said the woman "but you must be quick.

p.3 This made Jack run even faster, but it woke the giant, who ran after them. The inclement weather had gone, but the road was still muddy from all the rain. Luckily for Jack; the giant was very sleepy, and very heavy because he was so obese, and he got stuck in the mud lots of times.



Context for inclement continued

Jenny and James

p.1 They used to spend most of their time together. Now that the cold winter was over, and the cold, inclement weather had turned into warm spring, Jenny and James liked to walk together by the river or through the woods. One evening was so nice that they walked further than usual.

p.1 They talked of their wedding plans. They were getting married in the autumn, before the inclement winter arrived with its cold winds, and rain and snow. Jenny's dress was going to be made of white lace, embellished at the neck with a bunch of sweet-smelling white flowers.

p.4 The girls were glad to see their young men again, and every one was happy. Jenny and James got married that same night, before the inclement weather of the cold winter came. They put the red flower in a safe place, in case they might need it again one day.

The Drummer

p.2 "What do you want?" she asked. "Shelter from the inclement, nasty weather, food, and a bed for the night," said the drummer at once. "Yes, it will rain hard," said the woman.

p.3 Then she gave him food and a bed for the night. The drummer slept well, in spite of the rain beating on the window, and when he woke up in the morning, the inclement weather was over, and the sun was drying up the puddles of rain.

After breakfast, the woman took the drummer to the door of the cottage.

p.4 Then when you have done it, take her with both hands and throw her into the fire."

A cold wind was blowing, and the drummer stayed near the fire to keep warm in the inclement weather, while he was waiting for the witch. When she came, and he saw how obese she was, he thought he might not be able to lift such a fat woman to throw her into the fire.

Context for inclement continued

### Naughty Jane

p.1 She felt very pleased with herself.

One cold day, when the weather was too inclement to go out unless you had to, the man she cooked for came to the kitchen. "Jane," he said, "a friend is coming for supper.

p.1 So he put on his warm winter coat, and his hat and his scarf. He did not want to catch cold when he went out into the cold and inclement weather.

Jane went back to the kitchen.

p.2 So naughty Jane ate the whole chicken! She looked out of the window again, at the empty road, and the inclement weather. The snow was quite thick now, and it looked nasty and cold outside.

### Lucky

p.2 The hail was falling in big bits which stung as they hit the face. The king hurried to shelter from the inclement weather. The mill was the nearest place.

p.2 The mill was the nearest place. "May I shelter from the inclement weather?" he asked. "Of course, Your Majesty," said the miller's wife.

p.3 Then the king wrote his name, and sealed the letter with glue. He gave Lucky the gold pieces, and Lucky went out into the horrid, inclement weather. The obese king sat in the miller's best chair, which he nearly broke because he was so heavy.

### David

p.1 "Don't worry. I shall come back to you before the inclement winter weather leaves the land." "Good-bye," she said, tying his scarf round his neck, to keep out the snow.

p.1 "Take care." And out he went, into the snow and nasty, inclement weather.

After walking a long, long time, David got to the next town.

p.4 The nearer he got to the palace, the deeper the snow got. The weather was very, very nasty and inclement. The donkeys slid about precariously in the snow.

## Experiment I

### Context for obese

#### How the sea got salty

p.2 One evening, Prince John told a story about a big fight he had had with some very strong men. They were so obese that they used long ropes instead of belts round their fat tummies. He told how he won the fight with his spears and arrows.

p.2 When Sue and Lu came into the room, King George could hardly believe his eyes. Never had he seen such huge obese women. They each wore two skirts sown up at the sides, because they were too fat to fit one skirt.

p.3 "Can you turn the handle?" he asked. The obese giant women could hardly bend, they were so fat, but they lifted up the stones and put them on a table and started to turn the handle. "Grind me money, and nice things" said King George, very pleased, "and money and happiness for all my people."

#### Why the hippo took to the water

p.1 He had seven wives. Each wife was very obese and fat and clumsy. Sometimes Henry was cross with one wife and pleased with another.

p.1 So they had to go home, sad and hungry. And Henry and his seven obese wives laughed till the tears ran down their flabby cheeks, and their fat sides shook. And when they had laughed at the joke, they ate up all the good things.

p.4 He ran without seeing where he was going. His obese flabby body bumped into trees and crashed through bushes. Then he flopped heavily into the river, where he hid his whole body.

#### Beauty and the beast

p.2 At that moment he heard a frightening roar, and saw a very ugly animal coming towards him. It was like a big, round, obese bear, with its tummy sticking out a long way. It had a horrid head with long teeth.



Context for obese continued

p.3 It was fatter than anything she had seen before. It was so obese that Beauty felt sorry for it, even though she was afraid of it. It's tail was long and hairy.

p.4 She saw the way his long tail encumbered him when he walked, and got in his way. She saw his short legs which had to carry such a big, obese, tummy. She did not know whay to say or what would happen.

The shoes that were danced into holes

p.1 They all slept in the same big room with their ten beds next to each other. Their mummy, the queen, was a big obese woman, but she was nice to look at, and was kind and jolly, as many fat people are. Every night when she had tucked up the ten princesses, she switched off the light and locked the door so that her little girls would be safe.

p.4 Then he told the King about all he had seen, and brought out the three sticks, and the golden cup and spoon to show that what he said was true. The obese queen was so glad to know the truth at last, that she shook the soldier's hand, and all the fat on her arms wobbled about!

Then the King called in his ten pretty girls, and asked them if the soldier had told the truth.

p.4 The soldier had to make up his mind which princess he wanted to marry. He thought the biggest girl was most like the queen, and might get obese as she got older. But he thought that the queen looked happy and kind and he did not mind how fat she was.

Jack and the Beanstalk

p.2 "Fee, foh, fi, fum,  
I smell the blood of an Englishman  
Be he alive or be he dead,  
I'll grind his bones to make my bread!"

A very big man, tall and obese, with a waist as big as a tree trunk, came into the kitchen. "What nonsense you talk," said the woman, and put a plate, piled high with food, in front of the giant.

## Context for obese continued

p.2 "What nonsense you talk," said the woman, and put a plate, piled high with food, in front of the giant. Jack thought that even though the giant was big, and very obese, he would not have room for all the food.

When he had eaten, the giant asked for his special hen.

p.2 The inclement weather had gone, but the road was still muddy from all the rain. Luckily for Jack, the giant was very sleepy, and very heavy, because he was so obese, and he got stuck in the mud lots of times. Otherwise he would have caught up with Jack.

## Jenny and James

p.1 During the day, she made herself into a cat, or an owl, but at night she changed back to a woman. She was very ugly and obese, and she got fatter and fatter. She lived on wild animals and birds that she caught by magic.

p.2 Her skin was a yellow colour, and her nose was long and hooked over to reach her chin. She was so obese that she waddled instead of walking, for her fat knees knocked into each other. James tried to tell Jenny to fly away and hide, but he could not open his mouth.

p.3 There were lots of birds in cages hung on the walls. The obese, old witch was bending down, though with difficulty because her tummy was so fat, feeding some of the birds.

The witch was very angry when she saw James standing in her big hall.

## The Drummer

p.1 The giant was as tall as the trees. He was so obese that his legs were fat and round like tree trunks. "You cheeky little worm," shouted the giant.

p.2 It was opened by a woman with red eyes and a hooked nose. She was so obese that she nearly filled the doorway and her head looked funny, stuck on her fat body. "What do you want?" she asked.

p.4 A cold wind was blowing, and the drummer stayed near the fire to keep warm in the inclement weather, while he was waiting for the witch. When she came, and he saw how obese she was, he thought he might not be able to lift such a fat woman to throw her into the fire. "What a nice big fire," said the witch, "but see, in the middle of the fire is one log that does not burn.

## Context for obese continued

### Naughty Jane

p.1 Once there was a cook called Jane. She was very obese, because she ate so much of her own good food. She was always happy.

p.1 She often drank a glass of his wine because it made her feel happy. But it also made her obese, and she had to keep making her clothes bigger to make them fit her.

When she went back to the kitchen, the chickens smelt very good.

p.2 It tasted very good. You can see why she was so obese. She never stopped eating and drinking.

### Lucky

p.1 His hat was embellished with feathers, and he rode a black horse. He was obese because, being a king, he always had more than enough to eat. So he ate too much, and this made him fat.

p.3 He gave Lucky the gold pieces, and Lucky went out into the horrid, inclement weather. The obese king sat in the miller's best chair, which he nearly broke because he was so heavy. He waited until the storm had gone.

p.4 When the King came home and found out what had happened, he was so angry that his face got redder and redder. He was so obese, and so red, that the Queen was scared he might pop! "Why isn't he dead?" shouted the King.

### David

p.1 Most people in the palace were happy. The kind, obese queen was happy because she had lots of nice presents for people. And she knew that some of her friends were going to give her presents of her favourite sweets.

p.1 This was a pity really, because so many sweets would only make her even fatter. But no-one minded how plump and obese she was, because she was so kind.

All the servants were happy.

p.4 The decorations embellished the branches and made them look ever so pretty. The Queen was as big and obese as ever, because she had eaten so many sweets that she had put on weight. Mary was happy to see David, safely home, and wanted to hear his story.



## Experiment I

### Context for precarious

#### How the sea got salty

p.2 But King George said that the horrid inclement weather would not stop him. The journey took a long time and was very precarious because the storm tore down trees and blocked the roads. But the giant women were a great help, because they moved the fallen trunks off the roads.

p.2 The horses were not so encumbered with bags and presents on the way home. This was lucky because the roads were wet and slippery and it was precarious and dangerous to walk.

As soon as they got home, King George, took Sue and Lu to the room with the bright illuminations which lit up his gold and silver and made it shine and sparkle.

p.3 Then Sue and Lu ground strong winds, as well as salt. The sailors climbed the ropes and jumped precariously across from rope to rope, to try to make the sails catch the wind. Sue and Lu went on grinding salt and windy weather.

#### Why the hippo took to the water

p.2 His short legs were encumbered by the heavy snow on his shell. His life was very precarious this winter, for the weather was cold enough to kill a tortoise. Also, he was often in danger of being trodden on by the large heavy feet of the hippos as he hid in the snow.

p.3 The tortoise was the only animal out in those storms because he had a job to do. He crept precariously close to the cave, and if one of the hippos had come out it would have seen him. But the secret name was never said.

p.3 He hid himself in the sand on the path which the hippos walked along to get to their private pond. This place was very precarious because lots of clumsy hippo feet might tread on him, and any one of them might hurt him. He heard them coming noisily through the woods and tucked in his legs and most of his head.

#### Beauty and the beast

p.2 "You cannot go" said her brothers. "It is far too dangerous and precarious for you to go. The animal might kill both of you."

### Context for precarious continued

p.4 She did not know what to say or what would happen. It was precarious for her. She could not tell a lie, but she did not know what he would do if she told the truth.

p.4 Her daddy was very glad to see her. Soon he got a bit better. He slept better, and the illness which made him precariously sick, so that she thought he might die, went away. But Beauty was so busy looking after him, that she stayed longer than a week.

### The shoes that were danced into holes

p.1 And if I don't find out, no one will care." "Well, it needn't be as precarious and dangerous as you think," said the old lady, "and you need not get your head chopped off. As long as you take care: not to drink any of the wine they bring you at night, and act as if you're asleep, you will find out where they dance."

p.2 The King made him welcome, because no one had tried to find out where the princesses danced for a week or two. The job was too precarious and they were afraid their heads would be chopped off. So the King gave the soldier some new clothes.

p.3 The smallest princess was the last to be ready. The soldier jumped precariously into her boat and nearly made it tip over and spill them into the water. Her prince could not understand why his boat tipped so much, and it seemed much heavier than usual.

### Jack and the Beanstalk

p.2 But the mud grew thicker and more slippery. Jack tried to walk, but found himself sliding precariously into the sharp rocks that were each side of the muddy road.

Then he saw a very big house, with rocks all round it, at one side of the road.

p.3 "Now is my chance" thought Jack. "This house is too precarious for me. I might get eaten by that giant at any moment."

p.3 There was not time for the giant to climb to the top of the beanstalk again. He swayed precariously from side to side. He was angry and frightened.

Context for precarious continuedJenny and James

p.2 He looked at her and saw her slowly changing into a bird. He forgot his own danger and jumped precariously to hold her. But his jump must have put him into the magic circle of the castle.

p.2 At other times the sheep tried to get food in dangerous places. They jumped precariously from one ledge to another, and where one went, others would follow, however unsafe it looked. Although they were usually all right, sometimes a sheep fell.

p.2 Although they were usually all right, sometimes a sheep fell. Then James had to climb precariously down the little ledge to help it. It was always difficult for him to lift the frightened sheep up to safety.

The Drummer

p.2 The drummer started to climb the mountain. But after one precarious step he gave up, because the sides were as slippery as glass, and he nearly fell.

At that moment, he saw two men quarrelling about a chair.

p.4 He had to climb up.

It was a precarious job, standing on logs which slipped from under his feet, and trying to put heavy branches in safe places. But again, the girl came to help him.

p.4 The drummer at once stepped into the fire and brought out the log, without being burnt even a little bit. This was a very precarious thing to do, but the girl had said the fire would not hurt him, and he was not afraid. As he got out of the fire, the log he held changed into the pretty girl who had helped him!

Naughty Jane

p.2 "I'll put the chickens on the table at once," she said. She quickly hid what was left in the oven, and was precariously close to getting caught, because her master walked through the kitchen with the knife to cut the chickens a moment later. He took the knife to sharpen it on the step outside the back door.

p.3 But when he heard the sound of the knife being sharpened, he thought it must be true. "I have come precariously close to losing both my ears," he thought. "They might be chopped off at any moment."



Context for precarious continued

p.3 I only want one.'" When his friend heard him shouting, and saw the knife, he dropped both his cases and started to run precariously through the slippery snow. He slid about and fell over in his hurry to get away from the man with the knife!

Lucky

p.1 The old ladies pointed the way to Mrs. Brown's cottage. When he got to the cottage, he got off his horse, rather precariously, because the horse was so big. He nearly fell off, but managed to save himself.

p.2 And he went to the river. Then he got off his horse, most precariously, because there was nothing he could stand on, and he fell the last little bit. He untied the cot, and threw it, and Lucky into the river!

p.2 The miller's boy saw the wooden cot, and thought it was a chest of gold! He got a long stick, and reached out over the water very precariously, and tried to pull the cot to the edge. Twice, he nearly fell in.

David

p.2 I think I can help you. It is too precarious for you to stay as you are, though. The giant might find you at any moment.

p.4 The weather was very, very nasty and inclement. The donkeys slid about precariously in the snow. They nearly fell over.

p.4 Mary was happy to see David, safely home, and wanted to hear his story. "I had some precarious moments," he said. "It was a dangerous business.

Context for embellish

Beauty

p.1 Her name was Beauty, because she was so beautiful. She did not need to embellish her beauty by using aids such as lipstick and powder and eyeshadow. She preferred to attend to her father and brothers, who in any case, liked her as she was.

p.2 She thought the animal must be going to eat her because it had prepared such delicious food. There was even an ice-cream cunningly modelled in the shape of a bird, embellished with a variety of nuts arranged like feathers. As they finished their meal, a ghastly creature entered.

p.3 She was very surprised, but entered and found a piano with music, and a shelf with books. There was also a massive mirror with edges embellished in luxurious carvings and gold paint. Then it occurred to her "if he were going to eat me today, he would not provide so much for my amusement."

Salt

p.1 All his things were lovely to look at. The windows were hung with richly coloured materials, embellished with embroidery and jewels which made them appear very fine. The tables were made of rare woods and precious marbles, while the floors were covered with foreign carpets and rugs.

p.2 One was a goblet worked in purest gold. The sides of the goblet were embellished with curious carvings of strange creatures and plants. It was beautiful, and delighted Prince John.

p.2 As soon as they were outside the room, King George begged Prince John to let him take the two giant women back to his palace. Prince John was so delighted with his embellished golden goblet, with its beautiful and unusual carvings, that he gave King George the giant women in return.

King George was at once impatient to reach home, and called his men together.

Shoes

p.2 The undertaking was too precarious, and they feared they would be executed, like those who had tried before them. So the king, had the soldier dressed in royal garments, with fitted trousers, and a fine waistcoat of purple satin embellished with gold trimming at cuff and collar. At night, he was shown into a small bedroom alongside the princesses' room.

Context for embellished continued

p.2 They leapt out of bed, and quickly opening drawers and cupboards skipped about, putting on their most beautiful dresses. The dresses were of gorgeous colours and materials, embellished with sequins and laces. Only the youngest looked unhappy, for she had an uneasy feeling that they would be caught.

p.4 So he married the eldest princess that very day, amid great rejoicing and festivities. A new waistcoat was prepared for the soldier, even more embellished than before, for they mounted the gold and silver and diamond leaves from his twigs to make a spectacular pattern. The king declared that the soldier should rule the kingdom after his death.

Hippo

p.2 The jungle animals looked hopefully at the tortoise and the tables laden with food. It looked more delicious than ever this year, for the hippopotamus wives had carefully embellished the delicacies with garlands of green leaves so that it was lovely to look at as well as inviting to the tummy. But the animals had to depart empty.

p.2 However, the tortoise had decided to watch the hippopotamus family very closely, and try to gain their secret. It was quite easy for him to conceal himself, as his shell was of various brownish yellows, embellished with leaf-like shapes and patterns, so that he resembled a pile of dead leaves if he hid among leaves, or a small mound of stones and earth if he stayed motionless at the edge of a path.

All that autumn he followed the hippopotamus and his seven fat wives.

p.3 Spring followed winter, and flowers and buds opened. Blossoms embellished the trees, adding to their appearance, and perfuming the air. The sun grew strong again, and produced deep shadows in the woods.

Drummer

p.1 One day, he was playing as usual, when a flash of white caught his eye. When he investigated, he found a piece of fine material, white as snow, embellished with white flowers and leaves woven into it. It was so fine and rare, that he slipped it into his pocket, and forgot it until he was in bed.

p.4 As he issued from the fire, the log changed into the pretty girl who had helped him. He recognised by the white skirt, embellished with white leaves and flowers woven into the material, that she was his princess. The witch grabbed at the girl, but the drummer took hold of the witch with both hands, and using all his strength, flung her into the fire, which instantly burnt her up.



Context for embellished continued

p.4 The witch grabbed at the girl, but the drummer took hold of the witch with both hands, and using all his strength, flung her into the fire, which instantly burnt her up. Then the princess turned her wishing ring, which was silver embellished with rare sapphires. They found themselves happily back at the drummer's home.

### Jane

p.1 She was a happy person. She wore a long blue skirt, and she embellished her shoes with red satin ribbons. She felt very pleased with herself.

p.2 "It's like having a birthday cake with candles. Yes, candles do embellish a table, and make it look pleasing." While she was there, she helped herself to another glass of wine, which made her feel in good spirits.

p.3 But naughty Jane was scheming again. She brushed her hair and threaded her satin ribbons to embellish her shoes. She made herself look very attractive.

### Jenny

p.1 Then the witch would capture her and lock her in a cage. The witch took pleasure in embellishing the enormous hall in her castle with beautiful caged singing birds. She had collected many rare and beautiful birds, but there were still bare patches which caused her displeasure.

p.1 In a nearby village, there lived a pretty and good-natured girl called Jenny, who was engaged to a pleasant young man called James. He had presented her with an engagement ring of gold embellished with a small cluster of diamonds, to express his love for her. They were rarely out of each other's company, and now that the icy blasts of winter with its inclement weather had given way to the jubilant days of spring, Jenny and James liked to wander together by the river or through the woods.

p.1 They were to be married in the autumn, before the onslaught of the inclement winter weather with its severe cold and storms. Jenny's dress was made of white lace, embellished at the neck with a bunch of lilies-of-the-valley, and she would decorate her hair with some more of the same white flowers. They were so busy talking that they were startled when they entered a clearing they had never seen before.

Context for embellished continuedJack

p.1 Apart from the beds upstairs, the only furniture was a wooden table and some chairs. Everything was bare boards and the house was not embellished in any way. All they owned was one cow.

p.2 Then she gave Jack a large piece of pie. The crust was embellished with zig-zag patterns made out of the extra pastry. It was delicious.

p.4 Jack's mother was very content. "Tomorrow," she said to Jack, "I will go to market and choose some pretty curtains to embellish our windows. That will make our house attractive and comfortable."

Lucky

p.1 He was an unpleasant sort of person. He disguised himself as a rich man, and his hat was embellished with waving plumes. His horse was black as jet.

p.4 They both had new clothes. The princess had a shiny dress made of satin, embellished with lace frills all over it. Lucky's shirt was made to match the princess's dress, and it was embellished with frills at the neck.

p.4 The princess had a shiny dress made of satin, embellished with lace frills all over it. Lucky's shirt was made to match the princess's dress, and it was embellished with frills at the neck. They lived very happily together.

David

p.1 And all the shiny decorations glittered in the attractive little lights. The very top of the tree was embellished with a magnificent silver star, which contributed just the right finishing touch.

Most people in the palace were happy.

p.3 Then for pudding, he had a whole jelly and a whole trifle to himself. The trifle was embellished with criss-crosses of cream, and tiny silver balls, and looked very attractive. The giant enjoyed his supper.

p.4 The colourful fairy lights illuminated the Christmas tree and made everything glitter. The decorations embellished the branches and made them look most attractive. The queen was as plump and obese as ever, because she had eaten so many of her favourite chocolates that she had put on weight.

Context for encumbered

Beauty

p.2 It was like an enormous, obese bear, with a very stout belly, and a monkey's head, and great long teeth and claws. It was encumbered with an incredible tail, which made its movements ungainly and made it look even worse. It seemed furious.

p.2 It was enormous and gross, and even in her fear, Beauty had pity because it was so obese. Its tail was reptile-like, but hairy, and Beauty felt it would have had less difficulty in moving, had it not been encumbered by such a tail.

"Have you come of your own freewill?" demanded the beast.

p.3 But tell me, you think I'm very ugly, don't you?" Beauty looked at his misshapen body, at the way his long reptilian tail encumbered his walk, at his thick legs which had to carry a disproportionately obese and gross stomach, and at his long claws and teeth. She felt that she was in a precarious position, for she could not tell a lie, but she did not know what the consequences would be if she told the truth.

Salt

p.1 He journeyed with three strong men and eight horses. Four of the horses were ridden by the men, but the others were heavily encumbered by packages and baskets containing provisions for the journey and gifts for his friends. The weight of the parcels was so great as to slow down the progress of the horses, and the journey therefore lasted for several days.

p.2 But the giant women assisted them on their way by removing all the great tree trunks that blocked the roads. The horses were less encumbered with goods and provisions on the return journey, which was fortunate, as the roads were slippery, and the foothold precarious.

When they arrived home King George directly ushered Sue and Lu into the room with the remarkable illuminations which made his gold and silver shine and sparkle as though it itself was alight.

p.4 Then Sue and Lu ground very rapidly more and more salt, and windy weather. The ship became burdened with mountains of salt and was so encumbered that it stopped sailing. The sailors tried to arrange the sails to take the strain of the wind and the weight by leaping precariously through the rigging, adjusting the ropes.



Context for encumberedShoes

p.3 The youngest princess was the last to be ready, and the soldier leapt precariously aboard, causing the boat to sway violently, just when her prince was pushing off. The prince could not understand why his boat shuddered so, and why it felt so heavily burdened, and why he felt so encumbered, when his arms should have been stronger than before. He explained with embarrassment to the princess that row as he might, he could not keep up with the others, but he didn't know why he felt so encumbered.

p.3 The prince could not understand why his boat shuddered so, and why it felt so heavily burdened, and why he felt so encumbered, when his arms should have been stronger than before. He explained with embarrassment to the princess that row as he might, he could not keep up with the others, but he didn't know why he felt so encumbered.

On the opposite shore stood a castle, with bright lights and merry music coming from it.

p.3 The princes rowed them back across the lake, and this time, the soldier placed himself beside the eldest princess. Her prince was the most muscular of them all, and he was not as encumbered as his younger brother had been by the extra body his boat was transporting. The moment they were across, the soldier hurried through the brightly lit trees, raced up the stairs, and was back in bed by the time the princesses had ascended.

Hippo

p.2 It was simple for him to hide near their home when it snowed, for snow soon enveloped his shell, and if he tucked in his head and legs he became invisible. But he found it exhausting to follow them on his short legs, encumbered by the heavy weight of snow encasing his shell. His hold on life was most precarious this winter, for not only was the cold severe enough to kill a tortoise, but he was constantly in danger of being trampled underfoot by the hippopotamus family as he camouflaged himself with snow.

p.3 Daily he followed the hippopotamus and his wives along the dry sandy path to their personal pool. The sun was scorching and his shell, which was heavy, encumbered him considerably, but he would not yield.

"I would indeed be stupid," he thought, "if I removed my shell in the discomfort of the hot summer because it encumbers me and makes movement awkward."

p.3 The sun was scorching and his shell, which was heavy, encumbered him considerably, but he would not yield.

"I would indeed be stupid," he thought, "if I removed my shell in the discomfort of the hot summer because it encumbers me and makes movement awkward. It is invaluable during the other seasons of the year."

Context for encumbered continued

### Drummer

p.2 The drummer walked round the rim of the hat beating his tattoo. He was not encumbered, for there was nothing to impede him in his lofty position. And the giant thought the drum beats were a message bidding the comrades to return home, so he strode contentedly through the never-ending trees.

p.3 "To-day you must cut down every tree in the forest, split each trunk into logs, and pile them according to size before it gets dark." He set to work at once, but was encumbered by the poor quality tools she had given him, for the axe was of lead and its edge bent over, and the wedges were useless tin. He was beginning to give up, when a pretty girl came from the house with a basket of food for him.

p.4 But though he had not ceased in his labours, there were far more logs to be piled than he could manage in the time left. He was encumbered by the colossal weight of the logs which were tremendously heavy, as well as by the height of the pile, which was already immense. It was a precarious task, balancing on logs which rolled from under his feet, while trying to place cumbersome branches in safe positions.

### Jane

p.1 "That is true," said her master. "Perhaps he is encumbered by a heavy case. That may be slowing his progress."

p.2 "My guest is just behind me. He was heavily encumbered with two enormous suit-cases. That is why he took so long to walk from the station."

p.3 "You must hurry." And she watched her master's guest trying to hurry through the snow, heavily encumbered by two enormous suitcases. Fat Jane then hurried back to the kitchen.

### Jenny

p.2 Eventually, the witch returned, and once more, James noted her figure, cumbersome and ungainly. Her weight was too much for her legs, for she moved more like a duck than a person, and was obviously encumbered by her shape and size. She was muttering to herself, and at that moment, the moon rose, and James found that he had been released.

p.2 It was always difficult for him to lift the frightened animal to safety. But when it was injured, he would have to balance the sheep across his shoulders, trying not to aggravate the wound, and slither down the steep slopes of the mountainside, heavily encumbered by the frightened creature.

The hot summer days retreated, and autumn came.

Context for encumbered continued

p.3 Then one night, he dreamt he found a flower as red as blood, with a glowing pearl in its centre, and that this flower helped him to rescue Jenny. Next morning, he gave up his job, for he did not want to be encumbered by a flock of bleating, wandering sheep, on his search. The sheep would only hinder his progress.

Jack

p.1 As Jack turned the corner, he could see the glow of the candle illuminating the window.

He strode along, but was encumbered by the cow, which refused to walk as rapidly as he wished. The trees at the sides of the road gradually gave way to houses, and other people were appearing.

p.2 Jack accepted the beans and hurried home. He was able to walk very quickly, now that he was not encumbered by the slow pace of the cow. His mother was amazed by his speedy return.

p.3 Otherwise, he would have caught Jack with his great strides. Jack was not greatly encumbered by the hen, because he stowed it out of the way, under his arm, as he raced along the road to the top of the beanstalk.

He slithered and slipped down the beanstalk, very much more quickly than he had ascended it.

Lucky

p.2 However, as soon as he had left the village, the King said to himself. "This wooden cradle is encumbering my horse. It is uncomfortable for him and it weighs him down.

p.2 "The boy will drown. And my horse can make for home without being encumbered by that heavy, cumbersome cradle." So the King rode home very pleased with himself.

p.3 Soon after, the bad robbers returned. They were heavily encumbered with large bags. They were exhausted because the bags had been hard to carry.

David

p.1 All the servants were happy. They had taken the queen's long shopping list round all the shops, and had returned to the palace encumbered with parcels and packages which were heavy to carry, and which almost prevented movement. But they did not mind, because they thought that some of the presents were for them.

p.4 The people were so glad to know the answer to their problem, that they presented David with two donkeys. The donkeys were encumbered by enormous sacks of solid gold, which weighed them down.

David walked on slowly to the next town.

p.4 So they gave David two donkeys heavily laden with great sacks of gold. The donkeys were encumbered by the heavy sacks, and could not move easily.

So David, with his four donkeys, set out for the palace.



Context for illuminated

Beauty

p.1 Once upon a time there lived a man with three sons and a daughter. The three sons and their father arose each morning before dawn, when only the moon illuminated the heavens, and walked to the arable land to plough and sow seeds before the heat of the day. They worked till night came.

p.1 To make matters worse, the sky darkened and thunder boomed. Occasionally, a flash of lightening would illuminate the scene, and he would see that he was no nearer to the edge, and then it was dark again. The rain seeped through his clothing, and soon he was soaked.

p.1 "It promised to be fair when I set out this morning." Fatigue was overcoming him when he became aware of a bright beam of light, illuminating a route to a splendid castle. As there was no-one around, and the door was open, he entered.

Salt

p.1 Daily, he would pass from the great hall to one of the smaller rooms where his treasures and riches were stored. This room was lit by an enormous number of candles, which so illuminated the room that the gold and silver glistened and sparkled and danced as if it were brightly burning flames. The king would look at his lovely collection, and then turn sadly to his best treasure.

p.3 The horses were less encumbered with goods and provisions on the return journey, which was fortunate, as the roads were slippery, and the foothold precarious.

When they arrived home King George directly ushered Sue and Lu into the room with the remarkable illuminations which made his gold and silver shine and sparkle as though it itself was alight. He pointed to the grinding stones and their handle.

p.4 Then the ship sank, and all the salt with it.

No-one told Sue and Lu to stop grinding, so possibly they are still there on the dark, badly illuminated, mysterious sea-bed, grinding salt to this day. That may be why the sea is salt.

Context for illuminated continuedShoes

p.2 They all looked, but could see nothing, so assumed she had caught it on a nail, and went on.

When they reached the bottom of the steps, the soldier was, for a moment, blinded by the brilliance of the illumination which made everything glitter. The trees had leaves of silver which twinkled in the splendid light.

p.3 But the eldest maintained that it was merely someone shooting in the woods.

Soon they approached another grove, where trees with golden leaves glowed in a golden illumination provided by invisible amber lights. Once again the soldier snapped off a twig, causing the youngest princess more anxiety.

p.3 Once again the soldier snapped off a twig, causing the youngest princess more anxiety.

Then, beside the lake, were trees which needed no special illumination, for their leaves were diamonds which reflected repeatedly, the rays of light which reached them, making it all seem brighter than the hottest day. The soldier added a diamond twig to his collection, and the youngest princess was again disturbed, but the others ignored her.

Hippo

p.2 All that autumn he followed the hippopotamus and his seven fat wives. The autumn sunshine came filtering through the leaves, illuminating the dead leaves strewn on the ground, and lighting up their glowing yellows and browns in its rays. The tortoise was unseen, and listened with care to all that was said, but not once was the king's name mentioned.

p.3 The sun grew strong again, and produced deep shadows in the woods. The tortoise hid in the deepest shadows, where the illumination was poor and he would be least seen. He extended his neck and listened with concentration, but still the secret name was not repeated.

p.3 The animals were glad to refresh themselves in the cool water of the river. The ripples they made as they swam sparkled and flashed in the sun's fierce illuminating beams. The tortoise was despairing.

Drummer

p.1 "You will have it back," said the drummer, "if you tell me who you are." He strained his eyes to see who was talking, but the room was poorly illuminated, with only a faint light filtering through the curtains, so that he could barely see. But the voice answered him, "I am the daughter of a king, but am trapped by a wicked witch at the top of the glass mountain.



Context for illuminated continued

p.2 And the giant thought the drum beats were a message bidding the comrades to return home, so he strode contentedly through the never-ending trees.

By this time, the sun had risen, illuminating the feathery tree-tops and the distant mountains, which the drummer could now see quite clearly. One mountain seemed to stand higher than the rest, and seemed more blue in colour, and the drummer guessed it to be the glass mountain.

p.4 So the drummer rose before it was light, and started to carry the wood from the little piles to make a great big pile. The faint moonlight was just sufficient illumination for him to be able to see what he was doing, but there were dark shadows everywhere. He worked through the early hours of the morning, on and on, until noon.

Jane

p.2 It was getting dark, so Jane went around the house putting on the lights. She switched on the light to illuminate the hall, so that her master would feel welcome when he returned. She lit the candles on the table so that the dinner service and the glasses sparkled in their illumination.

p.2 She switched on the light to illuminate the hall, so that her master would feel welcome when he returned. She lit the candles on the table so that the dinner service and the glasses sparkled in their illumination. "Candles always make a dinner table seem special," she said to herself.

p.2 She opened the oven door to look at the remaining chicken. It was a new oven, and when she opened the door, a light was automatically switched on to illuminate the interior of the oven. So she could see quite clearly that the chicken was liable to be spoilt at any moment.

Jenny

p.1 The sun was setting. Half was below the hill, and half still above, illuminating the woodlands with an eerie pink glow. James carefully peeped through the bushes, and suddenly saw the castle wall quite close to them.

p.1 One evening was so pleasant that they walked further than usual. Sunlight flickered through the lacy branches, illuminating the ferns and early spring flowers. They discussed their wedding plans.

p.2 James was lost and despairing, so he just walked. Fortunately, the moon was radiant, and illuminated the scene quite vividly. Otherwise, James would have twisted his ankle in holes, and stumbled into treestumps, in the dark.



Context for illuminated continued

### Jack

p.1 So Jack set off before dawn on the following morning. The cottage was illuminated by a solitary candle, because they could not afford the expense of using more candles to light the rooms. As Jack turned the corner, he could see the glow of the candle illuminating the window.

p.1 The cottage was illuminated by a solitary candle, because they could not afford the expense of using more candles to light the rooms. As Jack turned the corner, he could see the glow of the candle illuminating the window.

He strode along, but was encumbered by the cow, which refused to walk as rapidly as he wished.

p.1 They too, were going to buy or sell at the market. The sun was rising, and gradually the road was illuminated by the bright rosy light. It became easier to recognise some of the other people hurrying on their way.

### Lucky

p.1 So the woman showed the King into her sitting-room. It was badly illuminated because the windows were minute, and did not let much light enter the room. At first the King was not able to see the baby at all.

p.1 But the woman lit a candle and held it near the cradle. The candle illuminated the charming face and the chubby hands of the little baby, and the King was able to see quite clearly. "What a nice baby!" exclaimed the King.

p.3 Eventually he saw a light, and went towards it. It turned out to be the light of a cottage, illuminating the trees around. Lucky knocked at the door, and an old woman opened it.

### David

p.1 A tall Christmas tree stood in the hall. It was illuminated by flashing fairy lights, which blinked on and off, making the frost on the tree sparkle. And all the shiny decorations glittered in the attractive little lights.

p.2 The following day, David continued his journey, and at last he saw the Black Woods. Never before had David been in woods which were so gloomy and badly illuminated, when it was bright daylight outside. He felt like retreating.

p.4 The palace was as he had left it. The colourful fairy lights illuminated the Christmas tree and made everything glitter. The decorations embellished the branches and made them look most attractive.

Context for inclement

Beauty

p.1 The rain turned to hail, and the hail to snow. "Never have I known such a sudden onslaught of inclement weather," he thought. "It promised to be fair when I set out this morning."

p.4 Some days were sunny and warm, and she would wander in the garden smelling the perfume of the roses, and delight in the birds' song. Other days it was too inclement to be outside, and Beauty was contented to remain by the fires, listening to the gales outside. She would play the piano, or listen to music created for her by the beast.

p.4 She would play the piano, or listen to music created for her by the beast. But the garden was always charming after inclement weather, with roses radiant and emerald grass sparkling in the water left by the storm. Her only sadness was the time each night when the animal asked if she would be his wife, and she had to say 'no' and hear his sorrowful.

Salt

p.1 Other servants departed for the icy cold regions to the north of his estates. Here, there were men grown strong from cutting down trees and hauling them to the rivers in the freezing inclement weather of the northern lands. But they could not turn the handle to make the stones grind.

p.2 King George was at once impatient to reach home, and called his men together. The weather was stormy, with thunder and lightening, and winds uprooting the trees, but though it was dangerous, King George would not be delayed by inclement weather. The journey was tiring and precarious, for trees were blown down suddenly across their path, and roads were impassable.

p.4 Sue and Lu continued to grind salt and windy weather. The wind roared and the piles of salt grew even bigger, and the ship started a circular motion caused by the weight of the salt and the inclement weather. Then the ship sank, and all the salt with it.

Shoes

p.1 One stormy night, a poor soldier who had been wounded in battle was passing through the woods. He was cursing the inclement weather, for he was drenched by the rain and had nowhere to go. An old lady saw him and took pity on him.

p.1 The fire was warm, and his clothes were soon dry, but they were conscious of the rain beating on the roof. "Where were you going in this dreary, inclement weather?" asked the old lady.

"I really don't know," replied the soldier.



Context for inclement continued

p.2 The soldier thought his fortunes must be changing. So the next day, when the drenching inclement weather had passed, and the sun had dried up the water, and the birds were singing again, the soldier thanked the old lady and set forth to offer his services to the king.

The king greeted him and made him welcome, because no-one had tried to discover the secret for several weeks.

Hippo

p.2 The tortoise was unseen, and listened with care to all that was said, but not once was the king's name mentioned.

Winter arrived with its bitterly cold rain and snow, and this was the time that tortoises normally hibernate under the ground, venturing forth only when the inclement weather has disappeared. But our tortoise had decided to stick to his task, and whenever possible he hid close to the home of the hippopotamus, listening.

p.3 He extended his neck and listened with concentration, but still the secret name was not repeated.

Then came the time of storms and gales, when branches were torn from the trees, and all intelligent creatures protected themselves from the inclement weather. The hippopotamus and his wives retreated to their most sacred cavern.

p.3 The hippopotamus and his wives retreated to their most sacred cavern. The weather was so inclement that they would not venture out even for a short walk. The tortoise was the only animal outside during these tempests, for he had his task to do.

Drummer

p.3 "What do you want?" she demanded. "Refuge from the inclement weather about to engulf us, sustenance, and a bed for the night." replied the drummer promptly. "Yes, it will pour torrents," agreed the woman.

p.3" "I'm not afraid of work," said the drummer, so she retreated in to the room to let him enter, and then gave him food and a comfortable bed. The drummer slept well in spite of the rain hammering on his window, and when he awoke in the morning, the inclement weather had disappeared, and the sun was evaporating the last traces of the rainwater. After breakfast, the woman took him to the door, and pointed at the dark forest.



Context for inclement continued

p.4 Then, when you have done it, take her with both hands and throw her into the fire."

An icy blast was blowing, and the drummer hugged the fire to shelter from the inclement weather while he awaited the arrival of the witch. When she came, and he realised just how obese she was, he feared he might not be capable of lifting such a portly woman to throw her into the fire.

Jane

p.1 She felt very pleased with herself.

One bitterly cold day, when the weather was too inclement to venture out in, unless you had to, her master came to the kitchen. "Jane," he said, "I'm expecting a guest for supper.

p.1 I will go to meet him and assist him." So he put on his thick winter coat, and his hat and scarf, so that he would avoid catching cold when he went out into the inclement, cold weather.

Jane returned to the kitchen.

p.2 So naughty Jane devoured the whole chicken! Then she looked out of the window again, at the deserted road, and the inclement weather. The snow was growing thick now, and it looked decidedly nasty, and cold, outside.

Jenny

p.1 He had presented her with an engagement ring of gold embellished with a small cluster of diamonds, to express his love for her. They were rarely out of each other's company, and now that the icy blasts of winter with its inclement weather had given way to the jubilant days of spring, Jenny and James liked to wander together by the river or through the woods. One evening was so pleasant that they walked further than usual.

p.1 They discussed their wedding plans. They were to be married in the autumn, before the onslaught of the inclement winter weather with its severe cold and storms. Jenny's dress was made of white lace, embellished at the neck with a bunch of lilies-of-the-valley, and she would decorate her hair with some more of the same white flowers.

p.4 The girls were glad to see their young men again, and everyone was happy. Jenny and James decided to marry that very night, before the inclement weather of the bitter winter returned. They hung the red flower round Jenny's neck, as a token of their love.

Context for inclement continued

Jack

p.2 Tired as he was, there was nowhere to rest, so Jack determined to follow the road. Bending his head to the inclement weather, he stepped out briskly.

But the mud grew thicker and more slippery.

p.2 "Please can I come in and get dry?" asked Jack. "The inclement weather has soaked me, and I am freezing cold." "Oh no, my dear," said the woman.

p.3 This made Jack run even faster, but it woke the giant, who gave chase. The inclement weather was retreating, leaving a clear, blue sky, but the road was still muddy as a result of all the rain. Luckily for Jack, the giant was very drowsy, and extremely heavy because he was so obese, and continually got stuck in the mud.

Lucky

p.2 The hail was falling in big sharp stones which stung as they hit the face. The King hurried to take refuge from the inclement weather. The mill was the nearest place.

p.3 He hammered on the door, and the miller's wife came rushing to open it. "I would like permission to shelter from the inclement weather," said the King. "Certainly, your Majesty," said the miller's wife.

p.3 Then the King wrote his name, and sealed the letter. He gave Lucky two gold pieces, and Lucky ventured out into the nasty inclement weather. The obese King sat himself in the miller's best chair, which nearly collapsed because he was so heavy.

David

p.1 "Don't worry yourself. I will return to you before the inclement winter weather has departed." "Goodbye," she said, tying his scarf round his neck, to keep out the snow.

p.1 "Take care." And so he set forth, out into the snow and harsh, inclement weather.

After travelling for many hours, David reached the next town.

p.4 The nearer he came to the palace, the deeper grew the snow. The weather was very severe, harsh, and inclement. The donkeys skated precariously in the snow.



Context for obese

Beauty

p.2 Instantly he heard a terrible roar, and saw approaching him the most hideous animal he had ever seen. It was like an enormous, obese bear, with a very stout belly, and a monkey's head, and great long teeth and claws. It was encumbered with an incredible tail, which made its movements ungainly and made it look even worse.

p.2 As they finished their meal, a ghastly creature entered. It was enormous and gross, and even in her fear, Beauty had pity because it was so obese. Its tail was reptile-like, but hairy, and Beauty felt it would have had less difficulty in moving, had it not been encumbered by such a tail.

p.3 But tell me, you think I'm very ugly, don't you?". Beauty looked at his misshapen body, at the way his long reptilian tail encumbered his walk, at his thick legs which had to carry a disproportionately obese and gross stomach, and at his long claws and teeth. She felt that she was in a precarious position, for she could not tell a lie, but she did not know what the consequences would be if she told the truth.

Salt

p.2 Each evening they would relax after their food, and listen to court musicians performing, or tell each other tales of battle and adventure. On one occasion, Prince John told of a terrible battle he had fought against a race of brave and enormous men, who were so obese that they had specially prepared girdles to wear round their bodies instead of belts. Prince John was victorious only because of his strong weapons, and had captured two of their women for slaves.

p.2 When Sue and Lu entered the room, King George could hardly believe his eyes. He was impressed by the size of the women, for he had never before seen women as obese as these. They each wore two skirts, stitched at the sides, for they could never have squeezed their bulky forms into one skirt.

p.3 "Can you turn the handle?" he demanded.

The obese slave women bent to raise the stones with much difficulty, because of their tremendous width. However, they succeeded in setting them on a strong table and started to turn the handle.

Shoes

p.1 They shared the same large room, and their twelve beds stood in a long row next to each other. Their mother, the queen, was an ample obese woman, who, never-the-less, had a pleasant expression and was kind and happy, as many portly people are. Every night, when she had tucked up the twelve princesses, she would switch off the lights and secure the door, so that no harm should come to the sleeping girls.



Context for obese continued

p.4 Then he described to the king all that he had seen, showing him the three twigs and the cup and spoon of gold as proof. The obese queen was so relieved to know the truth at last, that she shook the soldier's hand most vigorously, making her ample shoulders shake.

Then the king summoned his twelve daughters, who were unable to deny the truth of the soldier's tale.

p.4 Meanwhile the soldier was thinking about which of the twelve girls he should marry. He decided that the eldest was most like the queen, and that she would probably become increasingly obese as she grew older. But he also thought that the queen looked happy and kindly, and he did not mind how fat his wife was if she were the same.

Hippos

p.1 He was also the richest creature in the forest, for no other animal could afford to keep as many wives as Henry. He had seven wives, each one more enormous, obese, and bungling than the next. Sometimes he would be displeased with one, and praise another, but there was never jealousy among the wives, for they all knew that they possessed a secret known by no other animal.

p.1 All the animals tried to guess the king's name, but though they thought of long and unusual names, they never imagined that it might be 'Henry'. So they had to return sorrowfully and empty to their homes in the jungle, leaving Henry and his seven obese wives shaking their flabby sides in laughter. When they had enjoyed the joke, they greedily ate all the food themselves.

p.4 I have just been seeing if the river is ready for you, oh King Henry!"

With a terrible groan, King Henry dropped his head in shame, and charged off blindly through the jungle, his obese, stout and fleshy body crashing into trees and bushes until he flopped heavily into the river, where he hid his whole body. His wives shamefully lumbered after, crying "Henry, oh husband.

Drummer

p.1 It was not long before the combined noises woke a giant who was asleep in the bushes nearby. The giant was as tall as the trees he stood among, and he was so obese that his legs were stout and round as the trunks of the trees. "You cheeky little worm," roared the giant, "how dare you disturb my sleep before the sun is up?"

## Context for obese continued

p.3 A large drop fell, and the drummer hurried to the house and knocked on the door, which was opened by a woman with red eyes and a hooked nose. She was so obese that she nearly filled the doorway, and her head looked odd stuck on her corpulent body. "What do you want?" she demanded.

p.4 An icy blast was blowing, and the drummer hugged the fire to shelter from the inclement weather while he awaited the arrival of the witch. When she came, and he realised just how obese she was, he feared he might not be capable of lifting such a portly woman to throw her into the fire. Then the witch said "See, in the centre of the fire is one log that does not burn.

## Jane

p.1 Once there was a cook called Jane. She was very obese because she wouldn't stop eating her own good cooking. She was a happy person.

p.1 She often drank a glass of his wine, because it made her feel happy. But it also made her obese, and she had to keep letting out her clothes to make them fit.

When she returned to the kitchen, the chickens smelt very good.

p.2 It melted in her mouth, it was so good. That is the reason why she was so obese. She never had enough self-control to stop herself eating and drinking whatever was around.

## Jenny

p.1 During the day she took the form of a cat or a screech owl, but at night she regained her own shape. She was hideous to look at, crooked and obese, and she grew always stouter, living on wild animals and birds that she captured by her magic.

She also caught people!

p.2 By now the sun had set and out of the bushes hobbled a nasty old woman. Her skin was yellow, her long nose hooked over to reach her chin, and she was too obese to walk with comfort, for her podgy knees knocked together. James tried to instruct Jenny to fly away and hide, but he was struck dumb.

p.3 He followed the sounds until he came to a large hall which was lined by thousands of birds in cages along the walls. The obese, old witch was stooping with some difficulty because of her stoutness, feeding some of the birds.

She was furiously angry when she noticed James standing in her hall. Her skin changed from yellow to green, and she puffed up like a toad, becoming even stouter in the process, and spat poison at James.



Context for obese continuedJack

p.3 Be he alive or be he dead,  
I'll grind his bones to make my bread."

A colossal man, lofty and obese, with a vast waistline, entered the kitchen.

"What nonsense you talk," said the woman, setting before the giant a plate piled so high with food, that Jack thought the giant could not possibly eat it all, tall and obese though he was.

p.3 A colossal man, lofty and obese, with a vast waistline, entered the kitchen.

"What nonsense you talk," said the woman, setting before the giant a plate piled so high with food, that Jack thought the giant could not possibly eat it all, tall and obese though he was.

After eating, the giant demanded that his special hen be brought to him.

p.3 The inclement weather was retreating, leaving a clear, blue sky, but the road was still muddy as a result of all the rain. Luckily for Jack, the giant was very drowsy, and extremely heavy because he was so obese, and continually got stuck in the mud. Otherwise, he would have caught Jack with his great strides.

Lucky

p.1 His horse was black as jet. He was obese, since, being royalty, he always had more than was good for him to eat. So he ate too much, and this made him enormously fat.

p.3 He gave Lucky two gold pieces, and Lucky ventured out into the nasty inclement weather. The obese King sat himself in the miller's best chair, which nearly collapsed because he was so heavy. He waited till the storm had disappeared.

p.4 When the King reached home, and discovered what had happened, he was so angry that his face got redder and redder. He was so obese, and so red, that the Queen was afraid in case he popped! "Why isn't he dead?" shouted the King.

David

p.1 Most people in the palace were happy. The good-natured, obese queen was happy because she had bought lots of exciting presents for people. And she knew that some of her friends were going to give her special presents of her favourite chocolates.

p.1 This was unfortunate, because so many chocolates would only make her even larger. But no-one minded how stout and obese she was, because she was so good-natured.

All the servants were happy.

p.4 The decorations embellished the branches and made them look most attractive. The queen was as plump and obese as ever, because she had eaten so many of her favourite chocolates that she had put on weight. Mary was delighted to see David safely home, and wanted to hear his story.



Context for precarious

Beauty

p.2 But Beauty said she would gladly die in her father's place.

When her father returned to the castle, Beauty accompanied him, although he maintained that it was too precarious and hazardous for her. She said she would prefer death to life without him.

p.3 Beauty looked at his misshapen body, at the way his long reptilian tail encumbered his walk, at his thick legs which had to carry a disproportionately obese and gross stomach, and at his long claws and teeth. She felt that she was in a precarious position, for she could not tell a lie, but she did not know what the consequences would be if she told the truth.

"Yes," she said slowly, "I do think you are ugly, but you are also kind."

p.4 He gave her a magic ring which would transport her wherever she wished.

Her father was overjoyed at seeing her again, and soon, the times when, feverish, he hung precariously between life and death, passed, and he slept peacefully and started recover. But she was so engrossed in caring for him that she stayed longer than a week.

Salt

p.2 The weather was stormy, with thunder and lightening, and winds uprooting the trees, but though it was dangerous, King George would not be delayed by inclement weather. The journey was tiring and precarious, for trees were blown down suddenly across their path, and roads were impassable. But the giant women assisted them on their way by removing all the great tree trunks that blocked the roads.

p.2 But the giant women assisted them on their way by removing all the great tree trunks that blocked the roads. The horses were less encumbered with goods and provisions on the return journey, which was fortunate, as the roads were slippery, and the foothold precarious.

When they arrived home King George directly ushered Sue and Lu into the room with the remarkable illuminations which made his gold and silver shine and sparkle as though it itself was alight.

p.4 The ship became burdened with mountains of salt and was so encumbered that it stopped sailing. The sailors tried to arrange the sails to take the strain of the wind and the weight, by leaping precariously through the rigging, adjusting the ropes. Sue and Lu continued to grind salt and windy weather.

Context for precarious continuedShoes

p.1 If I were successful, that would give me a wife and kingdom, and if I failed, well, no-one would miss me."

"But it needn't be as precarious and perilous an undertaking as you imagine," said the old lady, "and you need not say goodbye to your head. As long as you manage to avoid drinking the wine they bring you at night, and pretend you're sleeping, you will find out."

p.2 The king greeted him and made him welcome, because no-one had tried to discover the secret for several weeks. The undertaking was too precarious, and they feared they would be executed, like those who had tried before them. So the king had the soldier dressed in royal garments, with fitted trousers, and a fine waistcoat of purple satin embellished with gold trimming at cuff and collar.

p.3 They were busy stepping into twelve little boats, waiting by the shore, each containing a prince eager to row them to the other side. The youngest princess was the last to be ready, and the soldier leapt precariously aboard, causing the boat to sway violently, just when her prince was pushing off. The prince could not understand why his boat shuddered so, and why it felt so heavily burdened, and why he felt so encumbered, when his arms should have been stronger than before.

Hippo

p.2 But he found it exhausting to follow them on his short legs, encumbered by the heavy weight of snow encasing his shell. His hold on life was most precarious this winter, for not only was the cold severe enough to kill a tortoise, but he was constantly in danger of being trampled underfoot by the hippopotamus family as he camouflaged himself with snow. Yet still, he heard nothing.

p.3 The tortoise was the only animal outside during these tempests, for he had his task to do. He sidled precariously close to the cavern, and would have been noticed immediately if a hippopotamus had ventured to the entrance. Yet the secret was well kept.

p.3 He buried himself in the sand on the path which led to the private pool of the king and his seven wives. This position was highly precarious, for thirty-two enormous, clumsy hippopotamus feet might tread on him, and anyone might crush him into smithereens. He heard them noisily crashing their way through the jungle, and pulled in his legs and most of his head.



Context for precarious continuedDrummer

p.2 When they reached it, he asked the giant to put him at the top, but the giant only muttered in his beard and strode quickly away. The drummer attempted to climb the mountain, but one precarious step was sufficient to convince him that it was impossible, for the sides were as slippery as a glass mirror, and he nearly broke his ankle with the one step he tried.

Then he noticed two men engrossed in argument about a saddle.

p.4 He was encumbered by the colossal weight of the logs which were tremendously heavy as well as by the height of the pile, which was already immense. It was a precarious task, balancing on logs which rolled from under his feet, while trying to place cumbersome branches in safe positions. But once again, the girl came to help him.

p.4 The drummer stepped into the fire without hesitation, and brought out the log, without being burnt in the slightest. This was a particularly precarious thing to do, but the girl had promised the fire would not harm him, and he was more concerned about the witch than himself. As he issued from the fire, the log changed into the pretty girl who had helped him.

Jane

p.2 "I'll put the chickens on the table immediately", she said. She quickly hid the remains of her chicken in the oven, and was precariously close to being found out, because her master came through the kitchen to sharpen the carving knife, ready to cut up the chickens. He took the knife to sharpen it on the step outside the backdoor.

p.3 But when he heard the sound of the knife being sharpened, he thought it must be true. "I have come precariously close to losing both my ears in this encounter," he thought. "They might have been severed from my head at any moment."

p.3 And he rushed to the front door, waving the carving knife and shouting, "Stop! Stop! I only want one!". When his guest heard the shouting and saw the carving knife, he dropped both suitcases, and raced precariously through the slippery, treacherous snow. He slid about and fell over in his rush to escape from the irate man with the carving knife!



Context for precarious continuedJenny

p.2 He looked at her, and saw her gradually changing into a nightingale. Forgetting his own danger, he leapt precariously to help her or hold her and protect her, but in vain. His jump must have put him within the magic circle of the castle, for at once he became frozen to the spot, unable to move or speak.

p.2 At other times, the sheep tried to get food in dangerous places. They jumped precariously from narrow ledge to narrow ledge, and where one led, others would follow, however unsafe the ledges appeared. Although they were usually all right, sometimes a sheep would tumble, and James would have to climb precariously down the narrow crumbling ledges to help it.

p.2 They jumped precariously from narrow ledge to narrow ledge, and where one led, others would follow, however unsafe the ledges appeared. Although they were usually all right, sometimes a sheep would tumble, and James would have to climb precariously down the narrow crumbling ledges to help it. It was always difficult for him to lift the frightened animal to safety.

Jack

p.2 But the mud grew thicker and more slippery. The road became treacherous, and Jack frequently found himself sliding precariously into the sharp, jagged rocks lining the edges.

It was with some relief that he saw a vast mansion standing amid some rocks to the side of the road and made his way towards it.

p.3 Then the giant put his head on his arms, and sank into a deep sleep.

"Now is my opportunity to escape from this precarious position," thought Jack. "If the giant wakes while I am still here, he will surely eat me."

p.4 There was not time for the giant to climb to the top of the beanstalk again. He swayed precariously to and fro, half-way down the beanstalk, shrieking with terror and bellowing with rage. "You'll suffer for this when I catch you," he yelled.

Context for precarious continued

Lucky

p.1 The old ladies indicated the direction of Mrs. Brown's house.

When he reached the cottage, the King dismounted, rather precariously, because his horse stood so tall. He almost fell off, but he succeeded in saving himself.

p.2 And he rode to the river. Then he dismounted, most precariously, because there was nothing he could support himself on, and he dropped the last little bit to the ground. He unstrapped the cradle, and threw it, and Lucky, into the river!

p.2 The miller's boy saw the wooden cradle, and thought it was a treasure chest! He got a long pole, and reached out over the water, very precariously, and tried to pull the cradle near to the edge. Twice, he was in danger of falling in.

David

p.2 I think I can assist you. It is too precarious for you to retain your human shape though. The giant might discover you at any moment.

p.4 The nearer he came to the palace, the deeper grew the snow. The weather was very severe, harsh, and inclement. The donkeys skated precariously in the snow. Their legs nearly slipped from under them.

p.4 Mary was delighted to see David safely home, and wanted to hear his story. "It was a precarious business," he said, "and I risked my life at times. But here are the two golden hairs for your father, the King."

## Experiment I

### Contexts for Repeat Stories, Easy Versions

#### Context for illuminate

##### The shoes that were danced into holes

p.2 So they said she must have caught it on a nail, and went on.

When they reached the bottom of the steps, the soldier was surprised by the bright illumination which lit up everything. The trees here had silver leaves which twinkled in the bright light.

p.3 "It is only someone shooting in the woods."

Soon they came to more trees which were brightly illuminated by lots of orange lights. The leaves themselves were pure gold.

p.3 Once again the soldier broke off a bit, which worried the smallest princess.

Then, beside a lake, were trees so bright that they did not need any extra illumination at all, because the leaves were diamonds. The diamond made it seem much lighter than it really was, because they were so shiny and light themselves.

#### David

p.1 There was a big Christmas tree in the hall. It was illuminated with lots of fairy lights of different colours. They switched on and off, one after the other, so that the tree was always winking and twinkling.

p.2 David went on his way, and at last he saw the Black Woods. Never before had David been in woods which were so dark and badly illuminated when it was daylight outside. He almost felt like going back.

p.4 The palace was as he had left it. The flashing fairy lights illuminated the Christmas tree, and made everything sparkle. The decorations embellished the branches and made them look ever so pretty.

#### Naughty Jane

p.2 It was getting dark, so Jane went round the house putting on the lights. She switched on the light to illuminate the hall, to welcome her master when he came back. She lit the candles on the table, so that the knives and forks sparkled in the illumination.

Contd/....



Context for illuminate continued

p.2 She switched on the light to illuminate the hall, to welcome her master when he came back. She lit the candles on the table, so that the knives and forks sparkled in the illumination. "Candles always make a table look special," she said to herself.

p.2 She opened the oven door to look at the chicken. It was a new oven, and when she opened the door, a light came on which illuminated the inside of the oven. So she could see quite clearly that the chicken might spoil at any moment.

The Drummer

p.1 He tried to see who was talking. But the room was badly illuminated and only a little light came through the curtains. So he could hardly see.

p.2 By this time the sun was up. It illuminated the mountains, still far away, and the drummer could see them clearly now. One mountain was higher than the rest, and it looked bluer.

p.4 So the drummer got up early, before it was light. The moon illuminated the piles of wood just enough for him to see what he was doing. He worked through the early hours of the morning, and on and on.

The shoes that were danced into holes

p.2 So the king gave the soldier some new clothes. He gave him warm trousers, and a beautiful coat made of purple cloth, embellished with gold patterns on the sleeves. That night they took the soldier to a small bedroom next to the princesses' room.

p.2 They skipped about and put on their most beautiful dresses. The dresses were lovely colours, embellished with ribbons and lace and pretty beads. Only the smallest princess looked sad, for she was scared that something was wrong and that this time they might be found out.

p.4 So he married the biggest princess that same day, and everyone was happy and danced all night. The King gave the soldier a new coat all embellished with the gold and silver and diamond leaves from his three sticks, to make a sparkling pattern. The King said that the soldier would rule his lands later on.

David

p.1 All the shiny decorations on the tree glittered in the pretty lights. The very top of the tree was embellished with a silver star. It added just the right touch to a very pretty tree.

p.2 Then, for pudding, he had a whole jelly and a whole trifle to himself. The trifle was embellished with blobs of cream, and little silver balls and looked very pretty. The giant had a good supper.

p.4 The flashing fairy lights illuminated the Christmas tree, and made everything sparkle. The decorations embellished the branches and made them look ever so pretty. The Queen was a big and obese as ever, because she had eaten so many sweets that she had put on weight.

Naughty Jane

p.1 She was always happy. She wore a long skirt, and her shoes were embellished with red ribbons. She felt very pleased with herself.

p.2 "It's a bit like having a birthday cake with the candles. Yes, candles do embellish a table and make it look nice." While she was there, she had another glass of wine, which made her feel very happy.

p.3 But naughty Jane was thinking again! She brushed her hair and put new ribbons to embellish her shoes. She made herself look very pretty.

The Drummer

p.1 He went to look, and found a lovely piece of cloth. It was white as snow, embellished with leaves and flowers, made into the cloth. It was so nice that he put it in his pocket.

p.4 As he got out of the fire, the log he held changed into the pretty girl who had helped him! He saw her white skirt, embellished with leaves and flowers which made it so pretty. Then he knew that the girl was Linda, the princess he had come to find.

p.4 Linda turned her magic ring. It was silver, embellished with pearls and looked special. And they found themselves at the drummer's home.

## Context for encumbered

### The shoes that were danced into holes

p.3 Her prince could not understand why his boat tipped about so much, and it seemed much heavier than usual. He felt encumbered because however hard he rowed, he could only just make the boat move through the water.

p.3 He felt encumbered because however hard he rowed, he could only just make the boat move through the water. Yet he could see no reason why his boat should be heavier than usual, nor why his arms should be weaker, nor why he should feel so encumbered.

On the other side of the lake was a big castle, with bright lights and music coming from it.

p.3 The princes rowed them back across the lake, and this time the soldier sat beside the biggest princess. Her prince was the strongest of them all, and he did not feel encumbered by the extra weight in his boat. When they reached the other side, the soldier hurried quickly through the brightly lit trees, ran up the steps, and was back in bed by the time the princesses came up the stairs.

### David

p.1 All the servants were happy. They had gone round the shops with the queen's long shopping list, and had come back to the palace encumbered with parcels and packages, which were heavy to carry, and difficult to walk with. But they did not mind.

p.3 The people were so glad to know the answer, that they gave David two donkeys. The donkeys were encumbered by sacks of gold that weighed them down.

So David went on slowly to the next town.

p.4 They gave David two donkeys heavily laden with sacks of gold. The donkeys were encumbered by the heavy sacks, and could not walk quickly.

So David, with his four donkeys, set out for the palace.

### Naughty Jane

p.1 "I will go and meet my friend. He may be encumbered by a heavy case. That may be slowing him down.

p.2 "My friend is just behind me. He was heavily encumbered with two big suitcases. That is why he was so late."

Contd/.....



Context for encumbered continued

p.3 "Thank you, good woman, for telling me," he said out loud. "Quick," said Jane, "you must hurry." And she watched her master's friend trying to hurry through the snow, heavily encumbered by two big suitcases.

The Drummer

p.2 He walked round the edge of the hat and played his drum. He was not encumbered because there was no-one to get in his way up there. The giant thought the drum was telling the other people to go home, so he walked through the woods quite happily.

p.3 The drummer started work at once. But he was encumbered by the bad tools she had given him. The chopper was too blunt to cut down trees, and the handle broke when he tried to use it.

p.4 But though he did not stop to rest, he could see he would never get all the piles of wood into one big heap in time. The logs were very heavy, and he was encumbered by the size of the pile. He could not reach the top of the pile to put logs on it.

Context for inclement.

The shoes that were danced into holes

p.1 One stormy night, a poor soldier who had been hurt in a fight was walking through the woods. He was upset about the horrid inclement weather, for the rain soaked him and he had nowhere to go. An old lady saw him and took pity on him.

p.1 The fire was warm and his clothes were soon dry, but they could hear the rain beating on the roof. "Where were you going in this wet, inclement weather?" asked the old lady. "I really don't know." said the soldier.

p.2 The soldier thought this was a bit of luck. So the next day, when the wet inclement weather had gone, and the sun had dried the paths, and the birds were singing again, the soldier thanked the old lady and went to see the king.

The king made him welcome, because no-one had tried to find out where the princesses danced for a week or two.

David

p.1 "Don't worry. I shall come back to you before the inclement winter weather leaves the land." Good-bye," she said, tying his scarf round his neck, to keep out the snow.

p.1 "Take care." And out he went, into the snow and nasty, inclement weather.

After walking a long, long time, David got to the next town.

p.4 The nearer he got to the palace, the deeper the snow got. The weather was very, very nasty and inclement. The donkeys slid about precariously in the snow.

Naughty Jane

p.1 She felt very pleased with herself.

One cold day, when the weather was too inclement to go out unless you had to, the man she cooked for came to the kitchen. "Jane," he said, "a friend is coming for supper."

p.1 So he put on his warm winter coat, and his hat and his scarf. He did not want to catch cold when he went out into the cold and inclement weather.

Jane went back to the kitchen.

Contd/....

Context for inclement continued

p.2 So naughty Jane ate the whole chicken! She looked out of the window again, at the empty road, and the inclement weather. The snow was quite thick now, and it looked nasty and cold outside.

The Drummer

p.2 "What do you want?" she asked. "Shelter from the inclement, nasty weather, food, and a bed for the night," said the drummer at once. "Yes, it will rain hard," said the woman.

p.3 Then she gave him food and a bed for the night. The drummer slept well, in spite of the rain beating on the window, and when he woke up in the morning, the inclement weather was over, and the sun was drying up the puddles of rain.

After breakfast, the woman took the drummer to the door of the cottage.

p.4 "Then when you have done it, take her with both hands and throw her into the fire."

A cold wind was blowing, and the drummer stayed near the fire to keep warm in the inclement weather, while he was waiting for the witch. When she came, and he saw how obese she was, he thought he might not be able to lift such a fat woman to throw her into the fire.



## Context for obese.

### The shoes that were danced into holes

p.1 They all slept in the same big room with their ten beds next to each other. Their mummy, the queen, was a big obese women, but she was nice to look at, and was kind and jolly, as many fat people are. Every night when she had tucked up the ten princesses, she switched off the light and locked the door so that her little girls would be safe.

p.4 Then he told the King about all he had seen, and brought out the three sticks, and the golden cup and spoon to show that what he said was true. The obese queen was so glad to know the truth at last, that she shook the soldier's hand, and all the fat on her arms wobbled about!

Then the King called in his ten pretty girls, and asked them if the soldier had told the truth.

p.4 The soldier had to make up his mind which princess he wanted to marry. He thought the biggest girl was most like the queen, and might get obese as she got older. But he thought that the queen looked happy and kind and he did not mind how fat she was.

### David

p.1 Most people in the palace were happy. The kind, obese queen was happy because she had lots of nice presents for people. And she knew that some of her friends were going to give her presents of her favourite sweets.

p.1 This was a pity really, because so many sweets would only make her even fatter. But no-one minded how plump and obese she was, because she was so kind.

All the servants were happy.

p.4 The decorations embellished the branches and made them look ever so pretty. The Queen was as big and obese as ever, because she had eaten so many sweets that she had put on weight. Mary was happy to see David, safely home, and wanted to hear his story.

### Naughty Jane

p.1 Once there was a cook called Jane. She was very obese, because she ate so much of her own good food. She was always happy.

Contd/.....

Context for obese continued

p.1 She often drank a glass of his wine because it made her feel happy. But it also made her obese, and she had to keep making her clothes bigger to make them fit her.

When she went back to the kitchen, the chickens smelt very good.

p.2 It tasted very good. You can see why she was so obese. She never stopped eating and drinking.

The Drummer

p.1 The giant was as tall as the trees. He was so obese that his legs were fat and round like tree trunks. "You cheeky little worm," shouted the giant.

p.2 It was opened by a woman with red eyes and a hooked nose. She was so obese that she nearly filled the doorway and her head looked funny, stuck on her fat body. "What do you want?" she asked.

p.4 A cold wind was blowing, and the drummer stayed near the fire to keep warm in the inclement weather, while he was waiting for the witch. When she came, and he saw how obese she was, he thought he might not be able to lift such a fat woman to throw her into the fire. "What a nice big fire," said the witch, "but see, in the middle of the fire is one log that does not burn."

## Context for precarious

### The shoes that were danced into holes

p.1 "And if I don't find out, no-one will care." "Well, it needn't be as precarious and dangerous as you think," said the old lady, "and you need not get your head chopped off. As long as you take care not to drink any of the wine they bring you at night, and act as if you're asleep, you will find out where they dance.

p.2 The King made him welcome, because no-one had tried to find out where the princesses danced for a week or two. The job was too precarious and they were afraid their heads would be chopped off. So the King gave the soldier some new clothes.

p.3 The smallest princess was the last to be ready. The soldier jumped precariously into her boat and nearly made it top over and spill them into the water. Her prince could not understand why his boat tipped so much, and it seemed much heavier than usual.

### David

p.2 I think I can help you. It is too precarious for you to stay as you are, though. The giant might find you at any moment.

p.4 The weather was very, very nasty and inclement. The donkeys slid about precariously in the snow. They nearly fell over.

p.4 Mary was happy to see David, safely home, and wanted to hear his story. "I had some precarious moments," he said. "It was a dangerous business."

### Naughty Jane

p.2 "I'll put the chickens on the table at once," she said. She quickly hid what was left in the oven, and was precariously close to getting caught, because her master walked through the kitchen with the knife to cut the chickens a moment later. He took the knife to sharpen it on the step outside the back door.

p.3 But when he heard the sound of the knife being sharpened, he thought it must be true. "I have come precariously close to losing both my ears," he thought. "They might be chopped off at any moment."

Contd/.....



Context for precarious contined

p.3 "I only want one!" When his friend heard him shouting, and saw the knife, he dropped both his cases and started to run precariously through the slippery snow. He slid about and fell over in his hurry to get away from the man with the knife!

The Drummer

p.2 The drummer started to climb the mountain. But after one precarious step he gave up, because the sides were as slippery as glass, and he nearly fell.

At that moment, he saw two man quarrelling about a chair.

p.4 He had to climb up.

It was a precarious job, standing on logs which slipped from under his feet, and trying to put heavy branches in safe places. But again, the girl came to help him.

p.4 The drummer at once stepped into the fire and brought out the log, without being burnt even a little bit. This was a very precarious thing to do, but the girl had said the fire would not hurt him, and he was not afraid. As he got out of the fire, the log he held changed into the pretty girl who had helped him!

## Experiment II

### Final contexts for revised easy five-year-old stories.    Embellished

#### Jack and the Beanstalk

p.1. There was a bare wooden table and some chairs downstairs, and the beds upstairs, and that was all. There were no pretty things to decorate the house, like pictures or curtains, so, you see, the house was not embellished in any way. The only thing they had was one cow.

#### Jenny and James.

p.1. They were getting married in the autumn, before the winter weather arrived with its cold winds, and rain, and snow. Jenny's dress was going to be made of white lace, embellished at the neck with a bunch of sweet-smelling white flowers. She would wear the same white flowers to make her hair pretty.

#### Why the Hippo took to the Water.

p.2. It seemed nicer than ever this year. The hippo wives had taken a lot of care to make nice cakes and jellies, and had embellished the table with green leaves and flowers, so that it all looked very pretty. But the animals did not get the food.

How the sea got salty

p.1. The men rode on four of the horses. The other horses were encumbered with heavy bags, and so they could not walk quickly, and the journey took five whole days. The bags had in them food for the journey and presents for King George's friends.

p.2. The two giant women went with him. The horses were not so encumbered with bags and presents on the way home. So they were able to walk quite quickly.

p.3. Then Sue and Lu ground more and more salt. The ship got heavier and heavier, and was so encumbered by the piles of salt that it stopped sailing. Then Sue and Lu ground strong winds, as well as salt.

Why the hippo took to the water

p.2. The snow soon covered his shell, and if he tucked away his head and legs he could not be seen. But he got very tired when he followed them because his short legs were encumbered by the heavy snow on his shell. It was hard for him to keep up.

p.3. Every day he followed the hippos along the dry sandy path to their pond. The sun was hot, and his shell, which was very heavy, encumbered him. So he had to follow slowly.

p.3. But he would not give up.

"I would be very silly," he thought, "if I took my shell off in the hot summer because it encumbers me and makes it difficult for me to walk. It is so useful at other times of the year."

Beauty

p.2. It had a horrid head with long teeth. It was very much encumbered by its long tail which got in the way and tripped it up. It looked very angry and upset.

p.3. Its tail was long and hairy. Beauty thought "It would walk more easily if it were not encumbered by such a long tail. The tail gets in its way."

p.4. Beauty looked at his ugly face. She saw the way his long tail encumbered him when he walked, and got in his way. She saw his short legs and sharp claws.



## Encumbered

### The shoes that were danced into holes

p.3. Also, it seemed much heavier than usual. He felt encumbered because however hard he rowed, he could only just make the boat move through the water. Yet he could see no reason why his boat should be slower than usual, nor why his arms should be weaker, nor why he should feel so encumbered.

p.3. He felt encumbered because however hard he rowed, he could only just make the boat move through the water. Yet he could see no reason why his boat should be slower than usual, nor why his arms should be weaker, nor why he should feel so encumbered. What could be slowing him down?

p.3. The princes rowed them back across the lake and this time the soldier sat beside the biggest princess. Here prince was strongest of them all, and so he did not feel encumbered by the extra person in his boat. He did not even notice that his boat was heavier than usual, and he was not slowed down.

### Jack and the Beanstalk

p.1. Jack liked to walk quite quickly. He was a bit cross because he was encumbered by the cow. He had to pull the cow along, because the cow could not walk as quickly as Jack wanted to walk.

p.2. He got home very quickly, because this time he could go as fast as he wanted. This time he was not encumbered by the cow. His mummy was surprised to see him so soon.

p.3. Jack was glad the bad weather had gone, because the sky was clear and there was no wind, as he rushed along the road to the top of the beanstalk. He was not encumbered much by the hen, because he tucked it out of the way, under his arm, and it was not very heavy! He slipped down the beanstalk very much more quickly than he climbed up it.

### Jenny and James

p.2. He tried not to hurt it as he climbed down the steep slopes of the mountain. He was awfully encumbered by the hurt animal, because he could not use his arms to climb with. The animal got in his way, and he had to go very slowly.

p.3. "I must give up my job, and go and look for the red flower to save Jenny. I can't take the sheep because they would encumber me. They would only be in the way, and slow me down."

### Encumbered

p.4. Then all the young men thanked James, and Jenny, and helped to carry the gold back to the party in the village. They went slowly and carefully because they were encumbered by the weight of the gold. They took it in turns to carry the wooden chest.

### The Drummer

p.2. He walked round the edge of the hat and played his drum. He was not at all encumbered by anything, because there was nothing to get in his way up there. The giant thought the drum was telling the other people to go home, so he walked through the woods quite happily.

p.3. The drummer started work at once. But he was encumbered by the bad tools she had given him. The chopper was too blunt to cut down trees, and the handle broke when he tried to use it.

p.4. But though he did not stop to rest, he could see he would never get all the piles of wood into one big heap in time. He was very encumbered because the logs were heavy and the heap got bigger and bigger. It was hard, slow work, climbing to the top each time.

### Naughty Jane

p.1. "I will go and meet my friend. He may be encumbered by a heavy case. That may be slowing him down.

p.2. "My friend is just behind me. He was heavily encumbered by two big suitcases. That is why he was so late."

p.3. "Quick," said Jane, "you must hurry." And she watched her master's friend trying to hurry through the snow, once again encumbered by the two big suitcases, which banged his legs and got in his way.

Jane then ran back into the kitchen.

### Lucky

p.2. However, as soon as the wicked king was away from the village, he said to himself, "This wooden cot is encumbering my horse. The cot is too big.

p.2. "Now there is no danger that the princess will ever marry that poor woman's son," he said. "And my horse can go home without being encumbered by that great wooden cot." So he quickly rode home, very pleased with himself.

p.3. Not long after, the bad robbers came home. They were encumbered with great big heavy bags. They were hot and bothered because the bags had been awkward to carry.

## Encumbered.

### David

p.1. All the servants were happy. They had gone round the shops with the queen's shopping list, and had come back to the palace encumbered with parcels and packages, which were heavy to carry and difficult to walk with. But they did not mind.

p.4. The people were so glad to know the answer, that they gave David two donkeys. The donkeys were encumbered by sacks of gold that weighed them down.

So David went slowly on to the next town.

p.4. They gave David two donkeys loaded with sacks of gold. The donkeys were encumbered by the big sacks, and could not walk quickly.

So David, with his four donkeys, set out for the palace.



## Experiment II.

### Final contexts for revised easy five-year-old stories.    Illuminate.

#### Beauty

p.1.    The man and the three boys got up every morning while it was still dark. Only the moon illuminated the fields where they worked, until the sun got up. They worked from early morning till evening.

#### Naughty Jane

p.2.    It was getting dark, so Jane went round the house putting on the lights. She switched on the lights to illuminate the hall, to welcome her master when he came back. She lit the candles on the table, so that the knives and forks sparkled in their light.

#### Lucky

p.1.    Then the woman lit a candle, and held it near the baby's carry-cot. The candle illuminated the room, so the King could see the baby's pretty face and tiny hands. "Yes," he said.

## Experiment II

### Final contexts for revised easy five-year-old stories    Inclement

#### Beauty

p.1. The snow got down his neck, and soon he was very wet. "I have never known such inclement weather to come on so quickly" he said to himself. "It was a nice dry morning when I set off."

#### The Shoes that were Danced into Holes

p.1. The fire was warm and his clothes were soon dry, but they could hear the rain beating on the roof. "Where were you going in this wet, inclement weather?" asked the old lady. "I really don't know," said the soldier.

#### The Drummer

p.3. The wind howled and the hailstones beat down on the roof. But the drummer slept well, and when he woke up in the morning, the inclement weather had gone and the sun was shining brightly.

After breakfast, the woman took the drummer to the door of the cottage.

#### David

p.1. "Don't worry. I shall come back to you before the inclement winter weather leaves the land." "Good-bye," she said, tying his scarf round his neck, to keep out the snow.

## Experiment II

### Final contexts for revised easy five-year-old stories    Obese

#### How the sea got salty

p.2. One evening Prince John told the King about a country where everybody was very big and strong. He told the King about a fight he had with their obese men. He won the fight because the men had spears and arrows and they didn't.

p.2. King George could hardly believe his eyes. Never had he seen such obese women.

After Sue and Lu had gone, King George said, "Can I take those two giant women home with me?"

p.3. "Can you turn the handle?" he asked. The obese women lifted up the stones and put them on a table and started to turn the handle. "Grind me money, and nice things," said King George, very pleased, "and money and happiness for all my people."

#### Why the hippo took to the water

p.1. He had seven wives. Each wife was very obese. Sometimes Henry was cross with one wife and pleased with another.

p.1. So they had to go home, sad and hungry. And Henry and his seven obese wives laughed till the tears ran down their cheeks, and their sides shook. And when they had laughed at the joke, they ate up all the good things.

p.4. Then he flopped into the river, where he hid his whole body. His obese wives ran after him calling "Henry, husband. Wait for us!"

#### Beauty

p.2. When he told his children what had happened to him, they were very unhappy. The three boys said "We will go and kill this horrid obese animal, so that you will not have to die." But their daddy said "I am afraid there is magic in the castle.

p.3. Just as they finished eating, in came the most horrible-looking animal Beauty had ever seen. It had nasty sharp claws and was so obese that Beauty felt sorry for it, even though she was afraid of it. Its face was ugly with sharp teeth sticking out of its mouth.

p.4. "Thank you," he said. "A wicked witch changed me into that obese animal. She said that I must stay like that until a girl said she would marry me because she wanted to."



## Obese

### The shoes that were danced into holes

p.1. They all slept in the same big room, with their ten beds next to each other. Their mummy, the queen, was an obese woman, but she was nice to look at, and she was kind and jolly. Every night when she had tucked up the ten princesses, she switched off the light and locked the door so that her little girls would be safe.

p.4. Then he told the king about all he had seen, and brought out the three sticks and the golden cup and spoon to show that what he said was true. The obese queen was so glad to know the truth at last, that she shook the soldier's hand.

Then the king called in his ten pretty girls, and asked them if the soldier had told the truth.

p.4. The soldier had to make up his mind which princess he wanted to marry. He thought the biggest girl was most like the queen, and might get obese as she got older. But he thought that the queen tooled happy and kind and pretty, and he hoped the biggest girl would be like that too.

### Jack and the Beanstalk

p.3. I'll grind his bones to make my bread!"

A very big man, tall and obese, wearing a brown leather jacket, came into the kitchen. "What nonsense you talk," said the woman, and put a plate, piled high with food, in front of the giant.

p.3. "What nonsense you talk," said the woman, and put a plate, piled high with food, in front of the giant. Jack was very frightened of the obese giant, and he kept very still in the oven.

When he had eaten, the giant asked for his special.

p.3. The nasty weather had gone, but the road was still muddy from all the rain. Luckily for Jack, the obese giant was very sleepy, and very clumsy, and he got stuck in the mud lots of times. Otherwise he would have caught up with Jack.

### Jenny and James

p.1. Once upon a time there was a big castle in the middle of a wood. An obese old woman lived there all alone. She was a witch!

p.2. Her skin was a yellow colour and her nose was long and hooked over to reach her chin. She was obese and her knees knocked into each other. James tried to tell Jenny to fly away and hide, but he could not open his mouth.

## Obese

p.3. There were lots of birds in cages hung on the walls. The obese old witch was bending down, though with difficulty because she was so stiff, feeding some of the birds.

The witch was very angry when she saw James standing in her big hall.

## The Drummer

p.1. The birds were just waking up, and they flew about, screaming with fright. There was so much noise that it woke up an obese giant who was asleep in the bushes nearby. The giant was as high as the trees.

p.2. A drop fell, and the drummer hurried to the house and knocked on the door.

It was opened by an obese woman with red eyes and a hooked nose. "What do you want?" she asked.

p.4. Then he knew that the girl was Linda, the princess he had come to find. The obese witch tried to catch Linda. But the drummer got hold of the witch with both hands.

## Naughty Jane

p.1. Once there was an obese cook called Jane. She liked her work. She was always happy.

p.1. Snow was still falling, and she could not see her master. When obese Jane got back to the oven, she smelt burning. "Oh dear!" she said. "The chickens will spoil."

p.3. "Would you like to come and have supper with me?" "Oh yes, please," said obese Jane. "I would like that very much."

## Lucky

p.2. And the baby was wrapped up and put in the cot, and the lid was fixed on. The obese king got on his horse, and the cot with the baby in it was tied on to the back of the saddle. "Goodbye, Lucky," said his mummy and daddy, as the king rode away.

p.4. They tore up the King's letter, and wrote another. They did not like the obese king, so they made the new letter very different from the one the king wrote. They wrote "A lad will bring you this letter."

p.4. They lived very happily together.

When the obese king came home and found out what had happened, he was so angry that his face got redder and redder. He was so red, that the Queen was scared he might pop!

## David

p.1. Most people in the palace were happy. The kind, obese queen was happy because she had lots of nice presents for people. And she knew that some of her friends were going to give her presents of her favourite books.

p.1. And she knew that some of her friends were going to give her presents of her favourite books. No-one minded how obese she was, because she was so kind.

All the servants were happy.

p.4. The decorations made the branches look ever so pretty. The Queen was as obese as ever. Mary was happy to see David, safely home, and wanted to hear his story.

## Experiment II

### Final contexts for revised easy five-year-old stories. Precarious.

#### How the sea got salty

p.2. He took a short cut through a dark wood. This was a precarious thing to do, because bad men hid in the wood. The robbers might attack King George and his men.

p.2. Then they broke their spears. "That was a precarious situation," said King George. "Thank you, Sue and Lu, for saving us."

p.3. Then Sue and Lu ground strong winds, as well as salt. The sailors climbed the ropes and jumped precariously across from rope to rope, to try to make the sails catch the wind. They might have fallen into the sea!

#### Why the hippo took to the water

p.2. The weather was cold enough to kill a tortoise, so his life was in danger. It was precarious for him as well, because he risked being trodden on by the large heavy feet of the hippos as he hid in the snow. Yet still he did not hear the secret name.

p.3. The tortoise was the only animal out in those storms because he had a job to do. He crept precariously close to the cave, and if one of the hippos had come out, it would have seen him. But the secret name was never said.

p.3. He hid himself in the sand on the path which the hippos walked along to get to their private pond. This place was very precarious for him, because lots of clumsy hippo feet might tread on him, and any one of them might hurt him. But he had to take the chance.

#### Beauty

p.2. "You cannot go" said her brothers. "It's far too dangerous and precarious for you to go. The animal might kill both of you."

p.4. She was very frightened and did not know what to say or what would happen. It was a precarious moment for her. She could not tell a lie, but she thought he might kill her if she told the truth.

p.4. Then one day, she saw in her mirror that her daddy was very ill. He hung balanced precariously between life and death. There was a chance that he would die.



## Precarious

### The shoes that were danced into holes

p.1. And if I don't find out, and my head is chopped off, no-one will care." "Well, it needn't be as precarious and dangerous as you think," said the old lady, "and you need not get your head chopped off. As long as you take care not to drink any of the wine they bring you at night, and act as if you're asleep, you will find out where they dance."

p.2. The king made him welcome, because no-one had tried to find out where the princesses danced for a week or two. The job was too precarious and they were afraid their heads might be chopped off. It was too risky for them.

p.3. The smallest princess was the last to be ready. The soldier jumped precariously into her boat and nearly made it tip over and spill them into the water. Her prince could not understand why his boat tipped about so much.

### Jack and the Beanstalk

p.2. It was very dangerous to walk on the road because there were sharp rocks all over the place. Jack slid precariously around, and nearly cut himself on the rocks.

But the mud grew thicker and more slippery.

p.3. "Now is my chance," thought Jack. "This house is too precarious for me. I might get eaten by that giant at any moment."

p.3. There was not time for the giant to climb to the top of the beanstalk again. He <sup>w</sup>seayed precariously from side to side. He was very frightened and angry.

### Jenny and James

p.1. He forgot the risk. He jumped precariously to hold her. But his jump must have put him into the magic circle of the castle.

p.2. At other times, the sheep tried to get food in dangerous places. They jumped precariously from one rock to another, and where one went, others would follow, however unsafe it looked. Although they were usually all right, sometimes a sheep fell.

p.2. Although they were usually all right, sometimes a sheep fell. Then James had to climb precariously down the little ledge to help it. It was always difficult for him to lift the frightened sheep up to safety.

## Precarious

### The Drummer

p.2. But he found it was very dangerous. After one precarious step he gave up, because the sides were as slippery as glass, and he nearly fell. At that moment, he saw two men quarrelling about a chair.

p.4. It was hard, slow work, climbing to the top each time. It was also a precarious job, balancing on logs which rolled from under his feet, and trying to put big branches in safe places. But again, the girl came to help him.

p.4. Fetch it out for me." The drummer could see it was a very precarious thing to do. The one thing that could save him was not to be frightened because Linda had promised he would not get burnt.

### Naughty Jane

p.2. "I'll put the chickens on the table at once," she said. She quickly hid what was left in the oven, and was precariously close to getting caught, because her master walked through the kitchen with the knife to cut the chickens a moment later. He took the knife to sharpen it on the step outside the back door.

p.2. But when he heard the sound of the knife being sharpened, he thought it must be true. "I have come precariously close to losing both my ears," he thought. "They might be chopped off at any moment."

p.3. He was scared of the man with the knife. He knew it would be precarious to run on the slippery snow, but he had to take the risk. He slid about and fell over in his hurry to get away from the man with the knife!

### Lucky

p.1. The old ladies pointed the way to Mrs. Brown's cottage. When he got to the cottage, he got off his horse, rather precariously, because the horse was so big. He nearly fell off, but managed to save himself.

p.2. He got a long stick and tried to pull the cot to the edge. It was very precarious for him because he had to reach right over the water. He nearly fell in and could have drowned.

p.3. "If they find you, they will probably kill you! It's too precarious. You can't risk getting killed."

### David

p.2. I think I can help you. It is too precarious for you to stay as you are, though. The giant might find you at any moment, and eat you up.

p.4. The weather was very, very cold. The donkeys slid about precariously in the snow. They nearly lost their balance and fell over.

p.4. Mary was happy to see David, safely home, and wanted to hear his story. "I had some precarious moments," he said. "It was a dangerous business."

Jack and the Beanstalk

p.1      There was a bare wooden table and some chairs downstairs, and the beds upstairs, and that was all. There were no pretty things to decorate the house, like pictures or curtains, so, you see, the house was not embellished in any way. The only thing they had was one cow.

p.2      Then she gave Jack a nice bit of pie. The pastry was embellished with patterns cut into it with a knife. It looked pretty and tasted good.

p.3      Jack's mummy was very happy. "Tomorrow," she said to Jack, "I will go to the market and buy some pretty curtains to embellish the windows. That will make our home look pretty and costly."

The Shoes that were danced into Holes

p.2      So the king gave the soldier some new clothes. He gave him warm trousers, and a beautiful coat made of purple cloth, embellished with gold patterns on the sleeves. That night they took the soldier to a small bedroom next to the princesses' hall.

p.2      They skipped about and put on their most beautiful dresses. The dresses were embellished with ribbons and lace and pretty beads. Only the smallest princess looked sad, for she was scared that something was wrong and that this time they might be found out.

p.4      So he married the biggest princess that same day, and everyone was happy and danced all night. The king gave the soldier a new coat all embellished with the gold and silver and diamond leaves from his three sticks, to make a pretty pattern. The king said that the soldier would rule his lands later on.

Beauty

p.1      The girl's name was Beauty, because she was very pretty. She did not need lipstick and make-up to embellish her pretty face. But she worked hard in the house from early morning till late at night.

p.2      There was even an ice-cream, shaped like a bird. It was embellished with nuts and cherries in patterns, for feathers.

Just as they finished eating, in came the most horrible-looking animal Beauty had ever seen.



## Embellished

p.3 She was very surprised when she came to a door which said, "Beauty's room" in large gold letters. Inside was a big mirror with carved patterns and gold paint which embellished its edge. Beauty thought, "the animal would not give me all these things if he were going to eat me to-day."

## Naughty Jane

p.1 So she cut up some tomatoes and got some bunches of parsley and stuck them on the chickens to embellish them. They looked ever so pretty. Then she took just a little taste of the chicken gravy and butter.

p.2 She quickly put on her best apron. It was embellished with ribbons all round the edge. The ribbons made it pretty. "Master, master!" she shouted.

p.3 She brushed her hair and changed her skirt. She put on a pretty brooch to embellish her jumper. When her master came in again, he did not know what to do.

## Jenny and James

p.1 Then the witch would catch her and put her in a cage. The witch liked to embellish the big hall of her castle with cages of beautiful singing birds. She had got lots and lots of birds but there were still bare patches on the walls that she did not like.

p.1 She was engaged to a nice young man called James. He had given her an engagement ring made of gold, embellished with a lot of diamonds. They used to spend most of their time together.

p.1 They were getting married in the autumn, before the inclement winter weather arrived with its cold winds, and rain, and snow. Jenny's dress was going to be made of white lace, embellished at the neck with a bunch of sweet-smelling white flowers. She would wear the same white flowers to make her hair pretty.

## How the Sea Got Salty

p.1 He lived in a big and beautiful palace. The windows had curtains embellished with patterns which made them look very pretty. The tables were made of shiny woods, and the floors were covered with thick carpets and mats.

## Embellished.

p.1 King George had lots of servants. They all wore red uniforms embellished with gold buttons and looked very smart. He sent servants to look in all the towns of the land for the strongest men.

p.2 One present was a bowl of pure gold. The sides of the bowl were embellished with pictures of trees and birds and animals. It was beautiful and Prince John liked it very much.

## Lucky

p.1 He dressed himself like a rich man. His hat was embellished with feathers, and he rode a black horse. He was a nasty King.

p.4 They both had new clothes. The princess had a long dress embellished with lace frills. A special shirt was made for Lucky.

p.4 A special shirt was made for Lucky. It was embellished with lace frills at the neck, to match the princess's dress. Everyone said that the frills decorated the clothes and made them pretty.

## The Drummer.

p.1 He went to look, and found a lovely piece of cloth. It was white as snow, embellished with leaves and flowers, made into the cloth. It was so pretty that he put it into his pocket.

p.3 She wore a ring made of silver. The silver ring was embellished with little pearls, and was beautiful. "Why are you sad?" she asked.

p.4 As he got out of the fire, the log he held changed into the pretty girls who had helped him! He saw her white skirt, embellished with the leaves and flowers which made it so pretty. Then he knew that the girl was Linda, the princess he had come to find.

## Why the Hippo took to the Water.

p.1 Sometimes Henry was cross with one wife and pleased with another. When he was especially pleased with a wife, he would embellish her ears with large pink flowers, which made her look very pretty. But the wives liked him and they liked each other, because they all knew a secret.

p.2 It seemed nicer than ever this year. The hippo wives had taken a lot of care to make cakes and jellies, and had embellished the table with green leaves and flowers, so that it all looked very pretty. But the animals did not get the food.

## Embellished

p.2     He would watch the hippo's carefully. It was easy for him to hide because his shell was coloured brown and green and yellow, and was embellished with pretty patterns. He looked like a pile of dead leaves if he hid in leaves.

## David

p.1     There was a big Christmas tree in the hall. It was embellished with lots of trimmings to make it look pretty. There were little snowmen, and icicles, and parcels and glitter frost.

p.1     There were little snowmen, and icicles and parcels and glitter frost. And the very top of the tree was embellished with a silver star. It added just the right touch to a very pretty tree.

p.3     Then, for pudding, he had a whole jelly and a whole trifle to himself. The trifle was embellished with blobs of cream, and little silver balls, and looked very pretty.



Jack and the Beanstalk

Jack liked to walk quite quickly. He was a bit cross because he was encumbered by the cow. He had to pull the cow along, because the cow could not walk as quickly as Jack wanted to walk.

He got home very quickly, because this time he could go as fast as he wanted. This time he was not encumbered by the cow. His mummy was surprised to see him so soon.

Jack was glad the bad weather had gone, because the sky was clear and there was no wind, as he rushed along the road to the top of the beanstalk. He was not encumbered much by the hen, because he tucked it out of the way, under his arm, and it was not very big. He slipped down the beanstalk very much more quickly than he climbed up it.

The Shoes that were danced into holes.

Also, it seemed much heavier than usual. He felt encumbered because however hard he rowed, he could only just make the boat move through the water. Yet he could see no reason why his boat should be slower than usual, nor why his arms should be weaker, nor why he should feel so encumbered. What could be slowing him down?

The princes rowed them back across the lake and this time the soldier sat beside the biggest princess. Her prince was strongest of them all, and so he did not feel encumbered by the extra person in his boat. He did not even notice that his boat was heavier than usual, and he was not slowed down.

Beauty

It had a horrid head with long teeth. It was very much encumbered by its long tail which got in the way and tripped it up. It looked angry and upset.

Its tail was long and hairy. Beauty thought, "it would walk more easily if it were not encumbered by such a long tail. The tail gets in its way."

Beauty looked at his ugly face. She saw the way his long tail encumbered him when he walked, and got in his way. She saw his short legs and sharp claws.

Naughty Jane

"He may be carrying a very big suitcase. It may encumber him and slow him down. I will go to help him carry it."

"My friend is just behind me. He was heavily encumbered by two big suitcases. That is why he was so late."

"Quick," said Jane, "you must hurry." And she watched her master's friend trying to hurry through the snow, once again encumbered by the two big suitcases, which banged his legs and got in his way. Jane then ran back into the kitchen.

Jenny and James

He tried not to hurt it as he climbed down the steep slopes of the mountain. He was awfully encumbered by the hurt animal, because he could not use his arms to climb with. The animal got in his way, and he had to go very slowly.

"I must give up my job, and go and look for the red flower to save Jenny. I can't take the sheep because they would encumber me. Then would only be in the way, and slow me down."

Then all the young men thanked James, and Jenny, and helped to carry the gold back to the party in the village. They went slowly and carefully because they were encumbered by the weight of the gold. They took it in turns to carry the wooden chest.

How the sea got salty

The men rode on four of the horses. The other horses were encumbered with heavy bags, and so they could not walk quickly, and the journey took five whole days. The bags had in them food for the journey and presents for King George's friends.

The two giant women went with him. The horses were not so encumbered with bags and presents on the way home. So they were able to walk quite quickly.

Then Sue and Lu ground more and more salt. The ship got heavier and heavier, and was so encumbered by the piles of salt that it stopped sailing. Then Sue and Lu ground strong winds, as well as salt.

Lucky

"Goodbye, Lucky," said his mummy and daddy, as the King rode away. However, as soon as the wicked King was away from the village, he said to himself, "this wooden cot is encumbering my horse. The cot is too big."

## Encumbered

"Now there is no danger that the princess will ever marry that poor woman's son," he said. "And my horse can go home without being encumbered by that great wooden cot." So he quickly rode home, very pleased with himself.

Not long after, the bad robbers came home. They were encumbered with great big heavy bags. They were hot and bothered because the bags had been awkward to carry.

## The Drummer

He walked round the edge of the hat and played his drum. He was not at all encumbered by anything, because there was nothing to get in his way up there. The giant thought the drum was telling the other people to go home, so he walked through the woods quite happily.

The drummer started work at once. But he was encumbered by the bad tools she had given him. The chopper was too blunt to cut down trees, and the handle broke when he tried to use it.

But though he did not stop to rest, he could see he would never get all the piles of wood into one big heap in time. He was very encumbered because the logs were heavy and the heap got bigger and bigger. It was hard, slow work, climbing to the top each time.

## Why the hippo took to the water

He asked all the other animals to come and eat with him. Henry's wives came out carrying huge baskets of food, which encumbered them and made them walk very slowly. But every year the same thing happened.

The snow soon covered his shell, and if he tucked away his head and legs he could not be seen. But he got very tired when he followed them because his short legs were encumbered by the heavy snow on his shell. It was hard for him to keep up.

Every day he followed the hippo's along the dry sandy path to their pond. The sun was hot, and his shell, which was very heavy, encumbered him. So he had to follow slowly. But he would not give up.

"I would be very silly," he thought, "if I took my shell off in the hot summer because it encumbers me and makes it difficult for me to walk. It is so useful at other times of the year."

## David

All the servants were happy. They had gone round the shops with the queen's long shopping list, and had come back to the palace encumbered with parcels and packages, which were heavy to carry, and difficult to walk with. But they did not mind.

The people were so glad to know the answer, that they gave David two donkeys. The donkeys were encumbered by sacks of gold that weighed them down. So David went slowly on to the next town.

They gave David two donkeys loaded with sacks of gold. The donkeys were encumbered by the big sacks, and could not walk quickly. So David, with his four donkeys, set out for the palace.



Jack and the Beanstalk.

He could see the cottage quite well. The light outside the door illuminated the path. It lit up the doorway, and made it look welcoming.

By this time the sun was up. It illuminated everything for miles around, and Jack could see quite clearly now.

When Jack woke up, next morning, his room was quite dark. He tried to see what was there, but the room was badly illuminated because only a little light came through the curtains. So he could hardly see.

The shoes that were danced into holes.

But sometimes the girls were very naughty. One of them got up and she switched on the light to illuminate the hall so that they would all be able to see. One morning, she unlocked the door as usual.

They seemed to be in a magic wood. The moon illuminated everything, enough for him to see quite well. The trees here had silver leaves which twinkled in the moonlight.

On the other side of the lake was a big castle, with beautiful gardens and they could hear music coming across the water. The light outside the door illuminated the path. It lit up the doorway and made it look welcoming.

Each prince helped his princess out of the boats, and they went up the steps and into the castle. They switched on the lights to illuminate the hall, so that everyone would be able to see.

Beauty.

The man and the three boys got up early before it was daylight. Sometimes the moon illuminated everything enough for them to see quite well, until the sun got up. They worked from early morning till evening.

It was a big castle. The light outside the door illuminated the path. It lit up the doorway and made it look welcoming.

In the evening, she found a table laid for her, with hot food ready. But the room was a bit dark, so Beauty lit the candles on the table, and they illuminated the whole room. She was sitting down to eat when she heard the animal's voice.

## Illuminate

### Naughty Jane.

It was getting dark, so Jane went round the house putting on the lights. She switched on the light to illuminate the hall so that they would be able to see when they came home. Then she went into the dining room to lay the table.

She put out knives and forks and spoons and glasses and a bowl of flowers in the middle. But the room was a bit dark, so Jane lit the candles on the table, and they illuminated the whole room. While she was there she had another glass of wine, which made her feel very happy.

So they went to a café quite near to the house. The lights outside the door illuminated the path. It lit up the doorway, and made it look welcoming.

### Jenny and James.

It was still early. Luckily, the moon illuminated everything enough for him to see quite well, for James would have bumped into tree stumps and fallen down holes if it had been very dark. At last he came to a village, where he took a job as a shepherd.

The gates were standing open, as they had left them, and the castle was quiet. They switched on the light to illuminate the hall, so that they would be able to see. They went from the hall to the siderooms, and found a kitchen and a bedroom.

So James touched all the walls, and a hidden door opened. They tried to see who was there, but the room was badly illuminated because only a little light came through the curtains. So they could hardly see.

### How the sea got salty.

Every day he walked from the big hall to one of the small rooms where he kept his gold and money. He tried to see what was there but the room was badly illuminated because only a little light came through the curtains. So he could hardly see.

Then he lit the candles on the table. The candles illuminated the whole room so he could see ever so much better. The king looked at his gold and silver and lovely things and then turned sadly to his best treasure.

He lit the candles on the table. The candles illuminated the whole room, so they could see ever so much better. He showed them all his gold and silver.

## Illuminate.

### Lucky

He tried to see who was there. But the room was badly illuminated because only a little light came through the curtains. So he could hardly see.

Then the woman lit the candles on the table. The candles illuminated the whole room so they could see ever so much better the baby's pretty face and tiny hands. "Yes," he said. "What a nice baby."

When he saw something, he went towards it, and found a cottage. The light outside the door illuminated the path. It lit up the doorway and made it look welcoming.

### The drummer

"You will have it back," said the drummer, "if you tell me who you are." He tried to see who was there, but the room was badly illuminated because only a little light came through the curtains. So he could hardly see.

By this time, the sun was up. It illuminated everything for miles around, and the drummer could see quite clearly now. Far away were the mountains.

So the drummer got up early, before it was daylight. The moon illuminated everything enough for him to see quite well. He worked through the early hours of the morning, and on and on.

### Why the hippo took to the water

He got up early before it was daylight. The moon illuminated everything enough for him to see quite well, but the hippo's stayed in bed. In the early morning, he had to hide in the woods again.

By this time the sun was up. It illuminated everything for miles around, and the tortoise could see quite clearly now. He took care not to be seen himself, and he listened to all that the hippo's said.

So he crept under some leaves and slept the rest of that day and all night. When he woke up the sun illuminated everything for miles around, and the tortoise could see quite clearly. He looked around and saw some other animals getting ready for the Hippo's party.

### David

But instead, he followed a wellworn path which led to a big, black cave. The light outside the door illuminated the path. It lit up the doorway and made it look welcoming, in spite of the Black Woods.

"And now you must creep down inside my belt and hide." Then the giant's grandmother switched on the light to illuminate the hall, so that they would be able to see. She laid the table ready for the giant's supper.

By this time the sun was up. It illuminated everything for miles around and David could see quite clearly now. He walked quickly till he came to the town with the apple tree that was dying.



## Contexts for Experiment III - Inclement

### Jack and the Beanstalk

p.2        So he thought he would go along the road. He bent his head, and walked forward in the inclement weather.

But the mud grew thicker and more slippery.

p.2        "Oh please," begged Jack. "The horrid inclement weather has made me cold and wet, and I can't walk another step." "All right," said the woman, "but you must be quick.

p.3        This made Jack run even faster, but it woke the giant, who ran after them. The inclement weather had gone, but the road was still muddy from all the rain. Luckily for Jack, the giant was very sleepy, and very clumsy, and he got stuck in the mud lots of times.

### The Shoes that were danced into Holes

p.1        One stormy night, a poor soldier who had been hurt in a fight was walking through the woods. He was upset about the horrid inclement weather, for the rain soaked him and he had nowhere to go. An old lady saw him and took pity on him.

p.1        The fire was warm and his clothes were soon dry, but they could hear the rain beating on the roof. "Where were you going in this wet, inclement weather?" asked the old lady. "I really don't know," said the soldier.

p.1        The soldier thought this was a bit of luck. So the next day, when the inclement weather had gone, and the paths were dry, and the birds were singing again, the soldier thanked the old lady and went to see the king.

### Beauty.

p.1        The snow got down his neck, and soon he was very wet. "I have never known such inclement weather to come on so quickly," he said to himself. "It was a nice dry morning when I set off."

p.1        Thank you, good fairy," he said aloud, "for thinking of my breakfast" and he drank the chocolate.

As he left the castle, he saw that the snow and inclement weather

## Inclement

had gone, and he was in a lovely rose garden. "At least I can take Beauty her rose" he thought, and picked one.

p.2 This time, he found his way easily through the woods. It was daylight, and the snowstorm and inclement weather had gone. He soon got home.

## Naughty Jane

p.1 She worked for a man who was very kind to her, and her job was to make his food.

One cold day, when the weather was too inclement to go out unless you had to, the man she cooked for came to the kitchen. "Jane," he said, "a friend is coming for supper.

p.1 So he put on his warm winter coat, and his hat and his scarf. He did not want to catch cold when he went out into the snow and inclement weather.

Jane went back to the kitchen.

p.2 So naughty Jane ate the whole chicken: She looked out of the window at the empty road and the inclement weather. The snow was quite thick now, and it looked nasty and cold outside.

## Jenny and James

p.1 They talked of their wedding plans. They were getting married in the autumn, before the inclement winter weather arrived with its cold winds, and rain, and snow. Jenny's dress was going to be made of white lace, embellished with a bunch of sweet smelling flowers.

p.2 The hot summer days passed, and autumn came. The autumn weather was inclement, because the wind blew a lot. James was very sad this autumn, for it was the time he and Jenny were going to get married.

p.3 James still held the red flower, which took them safely through the woods to Jenny's village. The inclement windy weather had gone now, and the autumn evening was quite warm. The village people were so pleased to see their girls again that they had a party.

## Inclement

### How the sea got salty

p.1 Other servants set off for the very cold places in the north of his lands. Here they found men who were strong because they cut down big trees, and carried them to the rivers in cold and inclement weather. But they could not turn the handle to make the stones grind.

p.3 They stopped grinding money and happiness. Instead they made rats and toads and storms and snow and horrible inclement weather. came out.

They made a strong enemy with a big army land on King George's shores.

p.3 The piles of salt got bigger and the wind howled. The ship started to go round in circles because of its weight and the inclement windy weather. Then the ship sank, and all the salt sank with it.

### Lucky.

p.2 The hail was falling in big bits which stung, as they hit the face. The king hurried to shelter from the horrid inclement weather. The mill was the nearest place.

p.2 The mill was the nearest place. "May I shelter from this awful inclement weather?" he asked. "Of course, your Majesty," said the miller's wife.

p.3 Then the king wrote his name, and sealed the letter with glue. He gave Lucky the gold pieces, and Lucky went out into the horrid inclement weather. The king sat in the miller's best chair.

### The Drummer

p.2 "What do you want?" she asked. "Food, a bed for the night, and shelter from the inclement weather," said the drummer at once. "Yes, there's going to be a storm," said the woman.

p.2 The wind howled and the hailstones beat down on the roof. But the drummer slept well, and when he woke up in the morning, the inclement weather had gone and the sun was shining brightly.

After breakfast, the woman took the drummer to the door of the cottage.



## Inclement

p.3      The drummer had to wait a long time for the old woman to come. A nasty wind started to blow, and the drummer wished he had somewhere to shelter from the inclement weather. At night the old woman came to see his work.

### Why the Hippo took to the water

p.1      Yet still he did not hear the secret name.

At last, the nasty inclement weather went away. Spring came, and the leaves opened on the trees. Flowers came out, and the birds began to sing.

p.2      The hippo's were sensible and kept dry in their most secret cave. The weather was so nasty and inclement that they would not go outside at all. The tortoise was the only animal out in those storms because he had a job to do.

### David.

p.1      "Don't worry. I shall come back to you before the inclement weather leaves the land." "Good-bye," she said, tying his scarf round his neck, to keep out the snow.

p.2      It was so nasty out of doors. He was glad to be inside out of the inclement weather.

At the next town he came to, the same thing happened.

p.4      The nearer he got to the palace the deeper the snow got. The weather was very inclement! The donkeys slid about precariously in the snow.

Jack and the Beanstalk

The giant was as tall as the trees. But he was obese as well, and his legs were fat and round like tree trunks. "What nonsense you talk," said the woman, and put a plate, piled high with food in front of the giant.

It tasted good. You can see why he was so obese. He never stopped eating and drinking.

The giant was killed because of his heavy fall. Jack saw how obese he was. "He is very fat," he thought.

The shoes that were danced into holes

She often drank a glass of wine because it made her feel happy. But it also made her obese, and she had to keep letting out her clothes to make them fit her. Every night when she had tucked up the ten princesses, she switched off the light and locked the door so that her little girls would be safe.

It tasted good. You can see why she was so obese. She never stopped eating and drinking.

He thought the biggest girl was most like the queen. The queen was so obese that she had to go sideways to squeeze through the door, and her head looked funny stuck on her fat body. But he thought that the queen looked happy and kind and pretty, and he hoped the biggest girl would be like that too.

Beauty

At that moment he heard a frightening roar and saw a fat animal coming towards him. It was as tall as the trees, but it was obese as well, and its legs were fat and round like tree trunks. It had a horrid head with long teeth.

When he told his children what had happened to him, they were very unhappy. The three boys said "we will go and kill this horrid obese animal, so that you will not have to die." But their daddy said "I am afraid there is magic in the castle."

Just as they finished eating, in came the most horrible-looking animal Beauty had ever seen. It was so obese that it had to be sideways to squeeze through the door, and its head looked funny stuck on its fat body. Beauty felt sorry for it, even though she was afraid of it.

She wished herself back in the castle garden, where she found him lying. Beauty saw how obese he was. "He is very fat" she thought.



## Obese

### Naughty Jane

Once there was an obese cook called Jane. She was so fat she could hardly bend.

She often drank a glass of his wine because it made her feel happy. But it also made her obese, and she had to keep letting out her clothes to make them fit her. When she went back to the kitchen, the chickens smelt very good.

It tasted very good. You can see why she was so obese. She never stopped eating and drinking.

### Jenny and James

She often drank a glass of wine because it made her feel happy. But it also made her obese and she had to keep letting out her clothes to make them fit her. James tried to tell Janny to fly away and hide, but he could not open his mouth.

There were lots of birds in cages hung on the walls. The obese witch was feeding some of the birds. She was so fat she could hardly bend.

Then he saw the wicked old woman quietly going out of the hall, hiding something behind her cloak. She was so obese that she had to go sideways to squeeze through the door, and her head looked funny stuck on her fat body. He ran after her and touched her with the red flower.

### How the sea got salty

They were as tall as the trees. But they were obese as well, and their legs were fat and round like tree trunks. He told the king about a fight he had with these men.

King George could hardly believe his eyes. They were so obese that they had to go sideways to squeeze through the door, and their heads looked funny stuck on their fat bodies. After Sue and Lu had gone, King George said, "can I take those two giant women home with me?"

"Can you turn the handle?" he asked. The obese women were so fat they could hardly bend. But they lifted up the stones and put them on a table and started to turn the handle.

### Lucky

He often drank a glass of wine because it made him feel happy. But it also made him obese, and he had to keep letting out his clothes to make them fit him. When he got to the village the King stopped his horse near a group of women sitting in the sun outside a little house.



## Obese.

And the baby was wrapped up and put in the cot, and the lid was fixed on. The obese King got on his horse. He was so fat he could hardly bend.

It tasted good. You can see why he was so obese. He never stopped eating and drinking.

## The Drummer.

The giant was as tall as the trees. But he was obese as well, and his legs were fat and round like tree trunks. "You cheeky little worm," shouted the giant.

It was opened by a fat woman with red eyes and a hooked nose. She was so obese that she had to go sideways to squeeze through the door, and her head looked funny stuck on her fat body. "What do you want?"

At last she came. The drummer saw how obese she was. "She is very fat," he thought.

## Why the hippo took to the water

No other animals could afford to have as many wives as Henry. He had seven obese wives. Sometimes Henry was cross with one wife and pleased with another.

It tasted good. You can see why they were so obese. They never stopped eating and drinking.

He was ashamed because someone had found out his secret name. The tortoise saw how obese he was. "He is very fat," he thought.

## David

And she often drank a glass of wine because it made her feel happy. But it also made her obese, and she had to keep letting out her clothes to make them fit her. No-one minded how fat she was, because she was so kind.

The giant was as high as the trees. But he was obese as well, and his legs were fat and round like tree trunks. "I can smell man," he said.

It wasn't long before the wicked giant was asleep again. David saw how obese he was. "He is very fat," he thought.

Jack and the Beanstalk

It was very dangerous to walk on the road because there were sharp rocks all over the place. Jack slid precariously around, and nearly cut himself on the rocks. Then he saw a very big house, with rocks all round it, at one side of the road.

"Now is my chance," thought Jack. "This house is too precarious for me. I might get eaten by that giant at any moment."

There was not time for the giant to climb to the top of the beanstalk again. He swayed precariously from side to side. He was very frightened and angry.

The Shoes that were danced into holes

"And if I don't find out, and my head is chopped off, no-one will care." "Well, it needn't be as precarious and dangerous as you think," said the old lady, "and you need not get your head chopped off. As long as you take care not to drink any of the wine they bring you at night, and act as if you're asleep, you will find out where they dance."

The king made him welcome, because no-one had tried to find out where the princesses danced for a week or two. The job was too precarious and they were afraid their heads might be chopped off. It was too risky for them.

There were ten princes sitting in the boats, waiting to row them to the other side of the lake. The smallest princess was the last to be ready. The soldier jumped precariously into her boat and nearly made it tip over and spill them into the water. Her prince could not understand why his boat tipped about so much.

Beauty

"You cannot go" said her brothers. "It's far too dangerous and precarious for you to go. The animal might kill both of you."

She was very frightened and did not know what to say or what would happen. It was a precarious moment for her. She could not tell a lie, but she thought he might kill her if she told the truth.

Then one day, she saw in her mirror that her daddy was very ill. He hung balanced precariously between life and death. There was a chance that he would die.

Naughty Jane.

But it was dangerous for her because her master might walk in at any time. It was very precarious. Just then her master walked



## Precarious.

into the kitchen with a knife to cut the chickens.

But when he heard the sound of the knife being sharpened, he thought it must be true. "I have come precariously close to losing both my ears," he thought. "They might be chopped off at any moment."

He was scared of the man with the knife. He knew it would be precarious to run on the slippery snow, but he had to take the risk. He slid about and fell over in his hurry to get away from the man with the knife!

## Jenny and James.

He forgot the risk. He jumped precariously to hold her. But his jump must have put him into the magic circle of the castle.

At other times, the sheep tried to get food in dangerous places. They jumped precariously from one rock to another, and where one went, others would follow, however unsafe it looked. Although they were usually all right, sometimes a sheep fell.

Then James had to climb precariously down the little ledge to help it. It was always difficult for him to lift the frightened sheep up to safety.

## How the sea got salty

He took a short cut through a dark wood. This was a precarious thing to do, because bad men hid in the wood. The robbers might attack King George and his men.

Then they broke their spears. "That was a precarious situation," said King George. "Thank you, Sue and Lu, for saving us."

Then Sue and Lu ground strong winds, as well as salt. The sailors climbed the ropes and jumped precariously across from rope to rope, to try to make the sails catch the wind. They might have fallen into the sea!

## Lucky.

The old ladies pointed the way to Mrs. Brown's cottage. When he got to the cottage, he got off his horse rather precariously, because the horse was so big. He nearly fell off, but managed to save himself.

He got a long stick and tried to pull the cot to the edge. It was very precarious for him because he had to reach right over the water. He nearly fell in and could have drowned.

"If they find you, they will probably kill you! It's too precarious. You can't risk getting killed."



## Precarious

### The Drummer.

The giants might kill you. It is too precarious. You cannot help me."

But he found it was very dangerous. After one precarious step he gave up, because the sides were as slippery as glass, and he nearly fell. At that moment, he saw two men quarrelling about a chair.

"Fetch it out for me." The drummer could see it was a very precarious thing to do. The one thing that could save him was not to be frightened because Linda had promised he would not get burnt.

### Why the hippo took to the water

The weather was cold enough to kill a tortoise, so his life was in danger. It was precarious for him as well, because he risked being trodden on by the large heavy feet of the hippos as he hid in the snow. Yet still he did not hear the secret name.

The tortoise was the only animal out in those storms because he had a job to do. He crept precariously close to the cave, and if one of the hippo's had come out, it would have seen him. But the secret name was never said.

He hid himself in the sand on the path which the hippo's walked along to get to their private poind. This place was very precarious for him, because lots of clumsy hippo's feet might tread on him, and any one of them might hurt him. But he had to take the chance.

### David

"I think I can help you. It is too precarious for you to stay as you are, though. The giant might find you at any moment, and eat you up."

The weather was very inclement. The donkeys slid about precariously in the snow. They nearly lost their balance and fell over.

She was glad to see him safely home, and she wanted to hear his story. "I had some precarious moments," he said. "It was a dangerous business.

<u>Contexts for</u>	<u>Experiment III</u>	<u>Repeat Group</u>
<u>Illuminate</u>		

### Naughty Jane

It was getting dark, so Jane went round the house putting on the lights. She switched on the light to illuminate the hall so that they would be able to see when they came home. Then she went into the dining room to lay the table.

She put out knives and forks and spoons and glasses and a bowl of flowers in the middle. But the room was a bit dark, so Jane lit the candles on the table, and they illuminated the whole room. While she was there she had another glass of wine, which made her feel happy.

So they went to a café quite near to the house. The lights outside the door illuminated the path. It lit up the doorway, and made it look welcoming.

### The Drummer

"You will have it back," said the drummer, "if you tell me who you are." He tried to see who was there, but the room was badly illuminated because only a little light came through the curtains. So he could hardly see.

By this time, the sun was up. It illuminated everything for miles around, and the drummer could see quite clearly now. Far away were the mountains.

So the drummer got up early, before it was daylight. The moon illuminated everything enough for him to see quite well. He worked through the early hours of the morning, and on and on.

## Embellish

### Naughty Jane

Then she thought the chickens looked a bit bare. So she cut up some tomatoes and got some bunches of parsley and stuck them on the chickens to embellish them. They looked ever so pretty.

She quickly put on her best apron. It was embellished with ribbons all round the edge. The ribbons made it pretty.

She brushed her hair and changed her skirt. She put on a pretty brooch to embellish her jumper. When her master came in again, he did not know what to do.

### The Drummer

He went to look, and found a lively piece of cloth. It was white as snow, embellished with leaves and flowers, made into the cloth. It was so pretty that he put it into his pocket.

She wore a ring made of silver. The silver ring was embellished with little pearls, and was beautiful. "Why are you sad?" she asked.

As he got out of the fire, the log he held changed into the pretty girl who had helped him! He saw her white skirt, embellished with the leaves and flowers which made it so pretty.



## Encumbered

### Naughty Jane

"He may be carrying a very big suitcase. It may encumber him and slow him down. I will go to help him carry it".

"My friend is just behind me. He was heavily encumbered by two big suitcases. That is why he was so late."

"Quick," said Jane, "you must hurry." And she watched her master's friend trying to hurry through the snow, once again encumbered by the two big suitcases, which banged his legs and got in his way. Jane then ran back into the kitchen.

### The Drummer

He walked round the edge of the hat and played his drum. He was not at all encumbered by anything, because there was nothing to get in his way up there. The giant thought the drum was telling the other people to go home, so he walked through the woods quite happily.

The drummer started work at once. But he was encumbered by the bad tools she had given him. The chopper was too blunt to cut down trees, and the handle broke when he tried to use it.

But though he did not stop to rest, he could see he would never get all the piles of wood into one big heap in time. He was very encumbered because the logs were heavy and the heap got bigger and bigger. It was hard, slow work, climbing to the top each time.

## Inclement

### Naughty Jane

One cold day, when the weather was too inclement to go out unless you had to, the man she cooked for came to the kitchen. "Jane," he said, "a friend is coming for supper.

So he put on his warm winter coat, and his hat and his scarf. He did not want to catch cold when he went out into the snow and inclement weather. Jane went back to the kitchen.

So naughty Jane ate the whole chicken! She looked out of the window again at the empty road and the inclement weather. The snow was quite thick now, and it looked nasty and cold outside.

### The Drummer

"What do you want?" she asked. "Food, a bed for the night, and shelter from the inclement weather," said the drummer at once. "Yes, there's going to be a storm," said the woman.

The wind howled and the hailstones beat down on the roof. But the drummer slept well, and when he woke up in the morning, the inclement weather had gone and the sun was shining brightly. After breakfast, the woman took the drummer to the door of the cottage.

The drummer had to wait a long time for the old woman to come. A nasty wind started to blow, and the drummer wished he had somewhere to shelter from the inclement weather. At night the old woman came to see his work.

## Obese

### Naughty Jane

Once there was an obese cook called Jane. She was so fat she could hardly bend. She worked for a man who was very kind to her, and her job was to make his food.

She often drank a glass of his wine because it made her feel happy. But it also made her obese, and she had to keep letting out her clothes to make them fit her. When she went back to the kitchen, the chickens smelt very good.

"I'd better get that burnt wing out of the way," and she quickly cut it off, and ate it all up! It tasted very good. You can see why she was so obese. She never stopped eating and drinking.

### The Drummer

The giant was as tall as the trees. But he was obese as well, and his legs were fat and round like tree trunks. "You cheeky little worm," shouted the giant.

It was opened by a fat woman with red eyes and a hooked nose. She was so obese that she had to go sideways to squeeze through the door, and her head looked funny stuck on her fat body. "What do you want?" she asked.

At last she came. The drummer saw how obese she was. "She is very fat," he thought.



## Precarious.

### Naughty Jane

But it was dangerous for her because her master might walk in at any time. It was very precarious. Just then her master walked into the kitchen with a knife to cut the chickens.

But when he heard the sound of the knife being sharpened, he thought it must be true. "I have come precariously close to losing both my ears," he thought. "They might be chopped off at any moment."

He was scared of the man with the knife. He knew it would be precarious to run on the slippery snow, but he had to take the risk. He slid about and fell over in his hurry to get away from the man with the knife!

### The Drummer

"The giants might kill you. It is too precarious. You cannot help me."

But he found it was very dangerous. After one precarious step he gave up, because the sides were as slippery as glass, and he nearly fell.

"Fetch it out for me." The drummer could see it was a very precarious thing to do. The one thing that could save him was not to be frightened because Linda had promised he would not get burnt.

LIST OF FOLK STORIES USED IN THE EXPERIMENTAL STUDY

Jack and the Beanstalk ..... (Jack)

The Shoes that were Danced into Holes ..... (Shoes)

Beauty and the Beast ..... (Beauty)

Naughty Jane ..... (Jane)

Jenny and James ..... (Jenny)

How the Sea got Salty ..... (Sea)

Lucky ..... (Lucky)

The Drummer ..... (Drummer)

Why the Hippo took to the Water ..... (Hippo)

David ..... (David)

Source material for some of the stories was obtained from Rhoda Power's book (1930) How it Happened. New York: Cambridge University Press.

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Tables re-printed here for ease of reference.

TABLE 2.4

Summary of Groups in Experiments I(a), I(b), II and III  
showing number of children in each condition and  
abbreviated group names

<u>Abbreviations</u>	<u>Experiment I(a)</u> (Part 1 repeated in Part 2)		
		<u>Part 1</u> <u>Children</u>	<u>Part 2</u> <u>Children</u>
ST. = standard (P.P.V.T. I.Q. 100-119)			
E. = easy versions of stories	1. ST.E.	10	10
D. = difficult versions of stories	2. ST.D.	10	10
R. = repeat (two stories, five times)	3. ST.E.R.	10	10
BR. = bright (P.P.V.T. I.Q. 120-140)	4. BR.D.	10	10
C. = control (difficult words omitted from stories)	5. ST.C.	10	--
L. = low (P.P.V.T. I.Q. 80-97)	6. L.E.	10	10
	<u>Experiment I(b)</u>		
	7. ST.D.R.	10	--
I. = altered instructions	8. ST.E.I.	10	--
T. = two different stories	9. ST.E.R.T.	10	10
	<u>Experiment II</u>		
R. = revised (two words only, with improved contexts)	10. R.ST.E.	10	10
	11. R.BR.E.	10	--
	12. R.L.E.	10	--
	<u>Experiment III</u>		
N. = new (improved contexts for all six words)	13. N.ST.E.	10	10

TABLE 2.9

Summary of the code numbers of the six schools

School with above average I.Q. range	1
Schools with normal I.Q. range	2a
	2b
	2c
	2d
School with below average I.Q. range	3



Chart to summarise the MAIN EXPERIMENTAL VARIABLES  
and the EXPERIMENTS in which they occur

Main Variables	Differences between	Experiments			
		1(a)	1(b)	2	3
VERBAL I.Q. 3 levels	<u>bright</u> <u>standard</u> <u>low</u>	bright v standard v low within and across schools	standard	bright v standard v low within 1 school	standard
STORIES 2 versions	<u>easy</u> <u>difficult</u>	easy v difficult	easy and difficult	easy	easy
STORIES 2 conditions	<u>variety</u> = 10 stories x 1 hearing <u>repetition</u> = 2 stories x 5 hearings	variety v repetition	repetition 2 difficult v repetit- ion 2 diff- erent easy	variety but reduced load	2 words in 6 contexts variety v repetition
"difficult" WORDS	<u>6 words</u>	6 words difference between words	6 words	2 words revised contexts	6 words new revised contexts
LOCAL CONTEXT	2 conditions <u>variety</u> v <u>repetition</u> 30 6 contexts per word	variety v repetition	repetition difficult v repetit- ion differ- ent easy	2 words revised contexts variety	variety v repetition 2 words 'x' 6 contexts 10 stories
LOAD number of times word heard	2 conditions <u>full</u> = 180 exposures = 6 words x 3 contexts x 10 stories <u>reduced</u> = 100 exposures. = 2 words x 3 contexts x 10 stories + 1 x 30 + 10	full load 180 exposures	full load 180 exposures	reduced load 180 exposures	full load 180 exposures
SCHOOLS (Chapter FIVE)	6 schools with 3 I.Q. ranges	4 schools 3 I.Q. ranges	4 schools 2 I.Q. ranges	2 schools 2 I.Q. ranges	2 schools 2 I.Q. ranges
EXPERIMENTAL CONTROLS	3 types	no "difficult" words 1 group	altered instructions 1 group	no context for one word throughout	-