

A SURVEY OF READING ABILITY.

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By

Charlotte M. Fleming, M.A., Ed.B.

Mistress of Method, Training College,
Jordanhill, Glasgow.

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1930

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P R E F A C E

This survey was undertaken to meet a need which arose in connection with the work of the Educational Clinic at Glasgow University. When the staff of the Clinic desired to assess the reading ability of children from different schools, they found that there were no existing reading tests with adequate norms for Scotland. A reading test of a new type was therefore constructed by me, and with it a measurement was made of the performance of children at different ages, from different districts, and in schools of varying social level. At the same time, a new group test of intelligence was standardised. As a consequence the Clinic is now able to provide norms for the guidance of those who wish assistance in estimating the progress of their pupils in reading or in intelligence.

There have been many investigations into reading ability; but this book, as far as I can ascertain, is the first to combine a survey of the performance of several thousands of pupils with an intensive study of backward children who have been referred to an Educational Clinic. It is thus able to provide evidence on a large scale as to the relationship between intelligence, skill in reading, age and social status. And (from smaller groups) it can offer/

offer data on the variations of reading ability with attendance at school, different methods of teaching, and differing rates of perception.

The investigation was carried out at a time when methods of teaching in Glasgow were, in the infant-room, on phonic lines and, in the senior departments, confined to oral class-work. It has thus a value for comparative purposes when these teaching methods shall have been modified by the evidence which it contains, as to the low degree of success in silent reading which is consequent on such ways of teaching.

The significance of the detailed case-studies which form the latter part of the volume is increased by the opportunity we have of comparing problem pupils with more normal children from the same districts and the same types of homes. In this respect, also, this investigation breaks new ground.

Since completion of the work, the new reading tests which I devised have been adopted for use by the Scottish Council for Research in Education.

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PART I.

Construction of Tests.

-oCo-

(a) Circumstances which led to the Use of Group Tests.

In the course of the work of Glasgow University Educational Clinic it was found to be unsatisfactory to measure the ability of educationally backward children without some knowledge of the performance of the more normal group from which they came. Further, it soon appeared that it was necessary to provide some means of assisting teachers in determining which of their pupils were failing to make reasonable progress. After the mechanics of reading had been mastered, estimation of progress was much less objective than it was in the case of arithmetical weakness or even of speech defects. Many teachers were of the opinion that they had no pupils for whom assistance in reading was required. A test was needed to reveal inequalities in performance. It was also found from practical experience that the responsiveness of pupils in different parts of the city varied very much. (cf. Sandiford 373, Yerkes and Anderson 479). Therefore it seemed desirable to work out norms for different districts and for different types of schools. No such norms were in existence.

For these reasons it was decided to examine the reading ability of as many pupils as could be reached in Glasgow and its neighbourhood.

A silent reading test was chosen instead of an oral one, because it was believed that the power to read is properly estimated by a measurement of skill in extracting information from a printed page, and not by the speed or accuracy of pronunciation or "word-calling". Group tests were preferred to individual tests, because of the need to work within the limits of the school time-table, and the consequent impossibility of conducting an individual examination of thousands of pupils.

(b) Characteristics of Chief Existing Group Tests.

A Survey was therefore made of the chief group tests of silent reading (v. Bibliography 485-531), and information as to each was collected from the test itself and the author's published reports. These details do not seem to have been brought together before in a complete form. They are accordingly given in the Appendix, along with an analysis of the differing types of material used by different workers.

The chief impression left by such a scrutiny of methods of measurement in the field of reading was that there has been a growing recognition of the complexity of the process, combined with widely differing views of its nature. The earlier tests - up to about 1919 - were chiefly concerned with an estimate of the rate and accuracy of silent reading. (Brown 485, Starch 520, Gray 498). Their authors did not differentiate very clearly between one type of reading and another. Their special aim was to draw attention to the importance of silent reading as contrasted with oral. Rate was measured by counting the words read in a specified time (Starch 520, Gray 498, Brown 485). Comprehension was judged by asking the pupils to reproduce in writing (Brown 485, Starch 520) or orally (Gray)/

(Gray 498) the substance of what they had read, and counting the number of words which correctly reproduced the thought (Starch 520, Gray 498) or the number of ideas which corresponded to those in the passage read (Brown 485). A similar purpose was served by the addition of questions to be answered along with reproduction of the passage from memory (Gray 498) or by giving questions after a reading test of a predetermined length from which rate was estimated. (Fordyce 494, Curtis 491). On some occasions, questions were combined with directions (Kansas 506), or were to be answered by underlining one word out of several given ones (Monroe 509) or by marking "yes" or "no". (Curtis 491).

Through the use of these earlier tests, attention was drawn to the need of defining more clearly the nature of the processes involved in reading. Discussions began as to what was meant by "reading ability", and the author of each set of tests justified his selection of method or material by his analysis of the essential character of reading.

As/

I. Ballard 11.12.14. Otis 317, Starch 388, Thorndike 416, Kelly 253, Monroe 287, 290, Gray 175, Curtis 88, Pressey and Pressey 347. Burgess 53, 54. Gray 172, Woody 475. Gray and Zirbes 185. Sangren 374, 375; and also - though less intimately related to actual test material - Freeman 131, Whipple and Curtis 455, Brown 43, Horn 231, O'Hern 315, Yoakam 480, Hulten 235, Wilson 465. Gray and Leonard 180. Gray 181, 183. Straits 398, Gates 148. Brueckner and Cutright 45, Leonard 265 and Book 30

As a consequence, the characteristics of reading tests were modified. With the exception of such later tests as Stone (523) Iowa (505) and Sangren-Woody (519) rate was no longer measured directly by word-counting, but indirectly by setting a time-limit to the total test. The response was rendered more relevant and objective by narrowing it down from general reproduction to sentence or phrase answers (I), to single words (II), to numbers on the test papers (III) or to marks in connection with sentences, stories or pictures (IV). The change of method is illustrated by a comparison of the free reproduction allowed by Brown in 1916 with the estimation of "power to summarise" made by the Van Wagenen Reading Scale in 1921 or the Iowa Advanced Examination in 1927. In the two latter merely a mark or the number of a correct statement is to be written on the answer paper.

A/

I. Thorndike-McCall, 527. Cavins 488.

II. Stanford 522, New Examiner 510, Orleans 518.

III. Thorndike 524, 526. Stone 523. Kennon 507. Iowa 505.
Markham 508.

IV. Burgess 486, Haggerty 501, Pressey 512, Van Wagenen 528
Pressey 514, Stanford 522, Pressey 513, Holley 503
Chapman 489, Detroit 492, Williams 531, Northumberland 511,
Whipple 530, Watkins 529, Detroit 493, Iowa 505, Gates
496, 497, Holzinger-Chapman 504, Orleans 518, Pressey 517,
Sangren-Woody 519.

A similar increase in definiteness is to be seen in the changed conception of the use of reading tests. In the early days in America they were employed for the purpose of a general survey of the rate and power of comprehension attained by large groups of children. More recently, they have become much more varied in type, and elaborate diagnosis of individual needs is attempted by their means (I).

Allied to this is the recent development of tests of vocabulary (II) which is associated with increasing interest in the word-knowledge possessed by children at different ages (III) and with vocabulary studies of a more general kind (IV).

Detailed evaluation of the various reading tests is given at different periods by many writers (V).

- I. Stone 523, Gray 172, Stanford 522, Geiger 152, Northumberland 559, Iowa 505, Gates 496, Detroit 493, Pressey Diagnostic 517, Gates 497, Sangren-Woody 519.
- II. Thorndike 526, Pressey 512, 513, 515, Kennon 507, Holley 503, Markham 508.
- III. Chamberlain 69, Whipple 454, Pelsma 323, Rowe 363, Heilig 204, Boyd 33, Langenbeck 259, Nice 302, Grant 168, Drever 118, 119, Bush 66, Brandenburg 35, 36, 37, Bateman 18, 19, Gregory 190, Dolch 115, 116, Haggerty 195.
- IV. Jones 243, Otis 317, Thorndike 418, Packer 320, Gates 150, Washburne 444, Dolch 114, 117, Wiley 463, Stephenson 394, Shambaugh 378, 379.
- V. e.g. Monroe 285, 287, 290, 291, 293, 295, Monroe, De Voss and Kelly 286, Whipple 456, 457, Gates 139, Gray 175, Wyman and Wandle 478, Capps 68, Gregory 189, Stone 395, Smith 386, Oglesby 314, Zirbes 484, Gray 182, 183, Brooks 41, Current and Ruch 93, Odell 312, Rock 360 Mosher 297.

It is not included here.

(c) Reasons for Constructing a New Test.

None of the existing tests of reading was finally chosen as the instrument of measuring. There were several reasons for this. The more recent tests were too elaborate and too expensive for use on a large scale. The earlier ones were of a type not suited to the kind of teaching which the children in Glasgow were receiving. At the time the work was begun, I found that in hardly any classroom was systematic instruction in silent reading being given. The method in use was the class-method of oral reading whereby one child reads a paragraph aloud while the others follow the words on their own books and answer oral questions as to details of the story. The reading books were being studied minutely as source books for spelling and intelligence (i.e. definition of words). Progress was very slow. Sometimes sixteen to eighteen months were spent on one book. There was no training in rapid reading, and rarely an opportunity of reading for pleasure. It was felt therefore that a "silent reading test" should be of such a type as to offer suggestions to teachers who (as was abundantly confirmed in the sequel) had probably never given their pupils the experience of reading silently for a definite purpose. Further, to such pupils - quite untrained in silent reading - many of/

of the existing varieties of tests were too complicated, and seemed (to judge from the errors made when the tests were tried) to measure intelligence rather than ability to read. This applied especially to tests of the Completion type and to those involving crossing-out, underlining, or any kind of following of special directions.

It was accordingly decided to use a form of test consisting of several questions followed by a short story in which the answers to the questions could be found. This involves no elaborate and uncertain counting of words or of ideas as do tests which measure comprehension by reproduction. It demands no puzzling or surprising activities from children unaccustomed to independent following of printed directions. It is typical of the training in reading for comprehension which pupils should have as a preparation for private study.

This form - of a story preceded by questions - was not found in the tests examined, though it was used by Hulten (235). It seemed therefore necessary to devise a new test. It was decided to make the new test out of material similar to that in the books in use at the various stages of the Junior and Senior school - namely simple narrative involving action, developing into historical/

historical and geographical description. To avoid the possibility of previous knowledge on the part of the pupils, it was determined to make new reading material, and not to use extracts from existing books.

(d) Construction of the New Test.

The task upon which I embarked was to find five reading tests suitable for the pupils of the junior and senior school - of ages roughly from 8 to 12 - of such a nature that there should be a clearly marked difference in performance at the various ages. Hence it was necessary to find five tests whose differences in difficulty were great enough to be significant. (The type of test in which the sections are qualitatively different was deliberately chosen in preference to that advocated by Burgess(53, 54), in which attainment is measured by the amount of professedly equivalent material covered in a given time (cf. Chapman and Cook 73). It was felt that for the sake of determining the level of ability reached by the pupils it was best to use a number of stories of different difficulty (I))

The characteristics of a good test are that it is reliable, valid, objective, reasonably simple to give, not requiring a large amount of time for scoring.

Satisfactory/

- I. This follows the precedent set by Starch 520. Gray 498, 499, Thorndike 524, Monroe 509, Kelly 506, Haggerty 502, Pressey 512, Thorndike-McCall 527, Stanford 522, Williams 531, Watkins 529, Gates 497, Orleans 518, Pressey 517, and advocated by Brown 43, Buckingham 50 and Sangren 374.

Satisfactory norms should also be available, and duplicate forms of known equivalence. Its cost should not be excessive in relation to the amount and significance of the information yielded. It should be long enough to decrease the effect of chance factors such as temporary physical disturbances, fatigue or emotional upsets. As little time as possible should be spent on extraneous activities (I). An attempt was made to comply with these requirements.

A time limit for each test was chosen in order to make conditions uniform. Five minutes was the time selected because of its ease in measurement, and because it seemed long enough to allow adequate experience and not so long as to cause fatigue. Experiments were first made with individual children of various ages to discover roughly how many words they could read and questions they could answer in five minutes. Next a series of fourteen stories was composed ranging in length from 60 to 176 words and in verbal difficulty from simple monosyllabic words to words like "manoeuvres", "executed", and/

I. Ballard 14, Franzen and Knight 127, Wood 471, Ruch 368, Current and Ruch 93, Freeman 133, Iowa Manual 505, Odell 313.

and "intercourse". Each of the stories was preceded by four questions - two of which could be answered by what Courtis (88) calls "observational" reading, and two requiring some interpretation of the passage read. It was hoped by these questions to measure the power of comprehension and the rate of understanding the passages prescribed. The instructions given were - "Here are some questions to answer. Their answers can be found by reading the story below."

The stories were then scrutinised carefully and the four which showed most promise of interest to pupils and most variety in length and apparent difficulty, were typed out and tried as group tests on 357 children of different ages in different schools in order to discover to which age each was suited.

In this search it was decided to take results from pupils who seemed average in ability, normality being estimated from the class in which they found themselves at a given age. A rough classification of ages was made as follows:

Junior II	Age 8
Junior I	Age 9
Senior III	Age 10
Senior II	Age 11
Senior I	Age 12.

It was however very soon found that these were by no means/

means the ages of pupils in certain districts of Glasgow at these stages. The attempt therefore to consider only the papers of those children who seemed normal according to a preconceived scheme was given up. It was decided rather to try to discover what was the actual performance of as many pupils as could be reached, postponing until after the investigation the attempt to say to which stage any test was most normal, and postponing also the attempt to say whether pupils of a certain age were doing the work normal to that age.

The tests were accordingly given to pupils in eight different schools, those tests which seemed easiest being given to the younger pupils.

In this more controlled measurement, precautions were taken to safeguard the results from the possible causes of error which revealed themselves as the work went on. The chief complications were found to be the following:- (1) pupils in certain schools are drilled into replying always in a sentence. They therefore replied to their questions in sentences. The length of sentence varied very much and differences of speed in writing introduced a very variable quantity into the test scores. For this reason the instructions were framed so as to include the directions - "In each answer use not more than three words."

(2) In spite of this precaution, some children insisted on embarking on sentences and wasted their whole time in such fashion. To minimise the number of these, smaller pieces of paper were given for the writing of the answers, until by trial it was found that the best size was 2 inches by 8 inches. This permitted the writing of only one word or, at most, two in a line, and considerably lessened the variability due to extraneous activities.

(3) Very many of the younger pupils seemed quite unable to understand what was meant by "Here are some questions to answer. Their answers can be found by reading the story below." Some of them spent the entire time in an attempt to copy the story. Others copied the questions. In the preliminary investigation, 220 papers in all out of 2328 showed this error. Further in 239 papers out of 2328, no attempt to write anything was made.

To minimise the number of such failures, practice material was added - at first in the form of writing down the answer to a simple question such as "How many blackboards are in this room?"; later in the form of a story preceded by questions, the answers to which had to be written down on their slips of paper. With these precautions, the errors of omission or transcription practically disappeared.

The wording of the instructions was also altered so as to include the word "write" -" Their answers can be found by reading the story below. When you have found them, write them on your paper." etc. (v. Appendix).

Additional tests were also sought for. A fifth test was tried with 93 children. It proved to be very similar in result to number II and number I. A sixth test was therefore made decidedly more simple, and a seventh more difficult than any of the first five. Number IV and number V were dropped because of their apparent similarity in difficulty to II and I when given to the same classes.

Tests I, II, III, VI, and VII were then tried with 141 pupils, giving all five tests by the rotatory method to each group of children - one fifth of the pupils beginning with Test I, one fifth with Test II, and so on, passing round the papers until each pupil had done all five. This served to minimise the effect of practice and the variations due to differences in personal ability.

From these trials it appeared that test I, II, and VI were too similar (v. Table I). Number II was therefore omitted. Number VI was modified by the omission of the word "Baby" which was responsible for most of the wrong answers.

This/

This was tested with 99 pupils, and a new test was devised to be less difficult than number VII and more difficult than number III. These five again were tried out with groups of pupils - again using the rotatory method to distribute the practice effect.

The average results showed more clear-cut differences than had yet appeared. Their significance was accordingly examined by calculating the probable error of the difference of the means (v. Pearson³¹²) (I). In doing this, account was taken of the age of the pupils in that the results of Tests VI, III, and I were considered as they appeared in the answers from the younger pupils - in Gairbraid Sen. IV (average age 10.5), Mt. Florida Jun. II (average age 7.9) and Govanhill Sen III (average age 9.2). With the older pupils these three tests showed less range of difference (the average result being over three marks). This is probably due to the fact that, as the later use of the tests on a large scale showed, these tests are suited to average pupils of ages eight to ten. For the same reason Tests VIII and VII were at this point given only to pupils in the senior school (Govanhill Sen. II, average age 11 and Sen. I, average age 11). Further, in this examination those papers in which/

$$I. P.E. \text{ diff. of means } = \sqrt{(P.E. \text{ mean}_1)^2 + (P.E. \text{ mean}_2)^2}$$

Table I.

Preliminary Results of Five Reading Tests.

Test.	I. Mean P. E. mean	II. Mean P. E. mean	III. Mean P. E. mean	VI. Mean P. E. mean	VII. Mean P. E. mean
141 pupils.					
Baird Florida Jun. II	2.09 ± 0.15	2.37 ± 0.16	1.47 ± 0.15	2.32 ± 0.15	0.69 ± 0.10
Govanhill Sen. III	3.29 ± 0.09	3.39 ± 0.10	2.19 ± 0.14	3.56 ± 0.07	1.20 ± 0.10
Baird Baird Sen. IV.	3.00 ± 0.20	3.21 ± 0.16	2.05 ± 0.20	3.65 ± 0.09	0.79 ± 0.18
Test	I.	III.	VI. mod.	VII.	VIII.
99 pupils.					
Baird Baird Sen. IV	Mean P. E. mean 3.00 ± 0.20	Mean P. E. mean 2.05 ± 0.20	Mean P. E. mean 3.70 ± 0.09	Mean P. E. mean 0.79 ± 0.18	Mean P. E. mean -
Govanhill Sen. II	3.77 ± 0.11	3.36 ± 0.13	3.90 ± 0.04	2.50 ± 0.13	3.18 ± 0.16
Govanhill Sen. I	-	3.83 ± 0.05	-	1.82 ± 0.11	2.95 ± 0.10

which any test came first were eliminated in considering the results in order to minimise practice effects still further, and to avoid, as far as possible, the influence on the pupil of uncertainty as to what was required by the novel type of test. This reduced considerably the number of cases; but it added to the value of the results. Table I shows the average and the probable error of the mean for each test.

Significant differences were found between tests VI (modified) and I, I and III, III and VIII, VIII and VII. It was therefore decided to use these five tests in their order of difficulty - VI, I, III, VIII, VII.

The five were carefully examined in the light of an analysis of all the wrong answers received to any question. The questions in some cases were reworded to remove ambiguity, e.g. "Which island did the swans live on?" was changed to "Which of the islands....." "What did the swans like to eat?" became "What did Nan give the swans to eat?" "With what did the conjurer do his trick?" was modified to "With what things did the conjurer do his trick?" "What word did the aeroplanes trace on the sky?" reappeared as "What was the word that the aeroplanes traced on the sky?" "What kind of trees grew in the island's orchards?" was altered to "What kind of fruit trees grew in the island's orchards?"

Answers/

Answers to be considered right were decided upon; the order of questions was modified so that in each test it would be the same relative to the chronological sequence of the story; a few verbal changes were made in the text and then the five tests were sent to the printer.

The size and nature of the type used was that recommended in the report of a British Association Committee appointed to enquire into the influence of schoolbooks upon eyesight (38). The tests were printed on foolscap sheets of paper - three on one sheet and two on another so that the paper could be folded over to reveal only one test at a time. They were numbered A B C D E in order of difficulty. Method and details of administering were carefully prescribed. These are given in the Appendix along with copies of the preliminary and final forms of the tests.

(e) Correlation with Other Measures of Reading Ability.

Evidence of the validity of the tests was meanwhile sought by correlating the results with the teacher's estimate of the reading ability of the pupils. This was done in the case of one class of 37 pupils whose teacher was a graduate student of Education in the University. It was considered that her verdict on the children would be more reliable than that of the average teacher who had shown no present interest in problems of education.

The resulting figure was $r = +.46 \pm .09$ (by the "product-moments" formula). This is not very high; but it has to be taken into consideration that the teacher's judgment was based on performance in the ordinary oral class work. It has frequently been found that the correlations between reading tests of different types are not high - probably because each kind of test measures a somewhat different aspect of that total reaction which we call reading.

To estimate to what extent the disparity in result was due to the difference between oral and silent reading, correlations were also worked out between performance in the two equivalent forms of the reading tests (v. infra p.) -
the/

the one given silently and the other individually and orally, (the story being read aloud by the pupil and the questions spoken by the teacher). Further, the errors made in oral reading were noted, and their number was subtracted from 20 to make an accuracy score. The resulting figures for a class of 39 children were: correlation of Silent Reading with Oral Comprehension $+.42 \pm .09$; correlation of Silent Reading with Oral Accuracy $+.41 \pm .09$ and correlation of Oral Accuracy with Oral Comprehension $+.38 \pm .09$. These figures are very near that quoted above for the correlation between the results of the new test and a teacher's estimate of reading ability.

After the test had been standardised in this preliminary way, Gates' book - "A Reading Vocabulary for the Primary Grades" - became accessible (150), and analysis of the vocabulary of the tests was made in terms of his list of the words which are suitable for children in the infant school. Each word was replaced by its number in Gates' classification, while those words which were not in his list were written out in full. The following was the result. It may be noted that the number of words outside the scope of a primary vocabulary is greater in the later than in the earlier tests.

Form A/

Form A.

Instructions: 184, 34, 274, 1482, 4, 1038.

137, 1039, 130, 16, 457, 71, 146, 1, 147, 1373.

127, 6, 38, 457, 61, 303, 61, 8, 41, 236.

14, 74, 421, 594, 527, 215, 845, 15, 122, 1039.

A.

1. 425, 372, 193, 34, 5, 1, 147.

2. 91, 77, 1, 100, 24, Jane's 199.

3. 91, 65, 1, 165, 85.

4. 205, 77, Jane's 377.

Jane, 42, 30, 288, 35, 199, Jim, 42, 30, 75, 174, Nell, 42,
30, 459, 165. 51, 652, 137, 377, 366, 37. 1, 288, 85,
295. 1, 75, 85, 1481, 174, 1, 165, 77, 182,, 24,
88. 91, 291, 22, 77, 4, 655, 61, 252.

B.

1. 205, 24, 1, Islands, 65, 1, swans, 257, 8.

2. 91, 65, Nan, 43, 1, swans, 4, 262.

3. 425, 372, 138, swans, 142, 219.

4. 91, 77, 1, 100, 24, 1, 454, 62, 136, 272, Tom, 4, 1, 556.

Tom, 174, Nan, 85, 4, 19, 4, 1, 556, 8, 1, 1139, 769,
24, 1, 427, 220, 219, 77, 30, 880, 272, 215, islands. 8,
1, 39, 24, 200, 32, swans, 42, 137, 47. 51, 637, 118, 15,
158, 205, 1, 193, 905, 135, 1, 60. 12, 196, 51, 42, 32,
138/

138, swans, 272, 61. Tom, 174, Nan, 284, 47, 4, 395, 91, 51, 42, 18.

C.

1. 425, 372, 744, 142, 20, 1, 336.
2. 91, 790, 24, 1006, 42, Dora, 20, 35, 375, 336.
3. 272, 91, 443, 65, 1, conjurer, 14, 33, trick.
4. 425, 372, 1105, 142, 8, 1, 164.

127, Dora, 1014, 35, 353, 375, 35, 430, 115, 30, 336.
53, 48, 30, 726, 164, 272, ioing 8, 1, 105, 174, 8, 22,
53, 168, 249, 232, 1105 - 12, 15, 264, 788, 97, Dora, 42,
257. 219, 142, 1, 585, 1169, 24, 744, 20, 1, 336. 51,
17, 394, 534, 1, 149. Dora, 42, 4, 840, 1, 1105. 51,
42, 701, 174, strawberries, 174, 1270. 127, 1, 1105,
142, 327, 801, 211, 347, snuffed, 61, 81, 174, Dora, 293,
1, 164. 371, 616, 51, 36, 20, hide-and-seeK, 174,
musical, 218. 12, 26, 581, 30, 337, 174, 680, 65, 30,
conjuring, trick, 272, 32, 1181. 1, 403, 24, 1, 336,
118, 270, 194, 189.

D.

1. 425, 207, 77, Lapo, 66, 1, Currian, frontier.
2. 91, 77, 1, 845, 97, 1, 798, traced, 8, 1, 247.
3. 91, 77, 63, important, industry, 5, Pance.
4. 91, 71, 1, 100, 24, 1, Capital, 24, Pance.

5, 1927, 1, 612, 24, Curryland, 174, 33, suite, 1277, 30, 592, 4, 1, neighbouring, 874, 24, Pance, 174, 142, 182, 101, 1391. 66, 1, frontier, 4, Lapo, 1, Pance, capital, 51, travelled, 71, 30, special, 190, 1, carriages, 24, 205, 142, luxuriously, upholstered, 5, light, 148, velvet, comfortable, 174, 42, 296, specially, 570, 15, 1, occasion. 1, 1457, 24, 32, 892, 906, 71, interesting, 174, 182, enjoyable. 127, Lapo, 71, 1014, 1, 427, 71, 457, 4, 16, 8, holiday, 5, honour, 24, 1, visitors. 97, 1117, 30, 689, reception, 71, 1283. 1, 679, 37, excursions, 142, 48, 4, 1, famous, 292, refineries, thirty, 906, 107, 174, 4, 63, aerodrome, 220, 32, 892, 798, executed, manoeuvres, 174, traced, 8, 1, 247, 1, 100, 24, 1, visitors, 874. 22, 3, expected, 97, 1, friendly, intercourse, 240, begun, 276, prove, 24, lasting, benefit, 4, 455, 874.

E.

1. 5, 91, direction, 195, one, 1017, 4, 574, 66, Appleby, 4, 1014, Uton.
2. 91, 790, 24, 1006, 69, 958, 5, 1, island's, orchards,
3. , 20, 91 1453, 24, 1, 788, 401, 200, 744, 38, 789, Appleby.
4. 5, 91, 874, 3, Uton.

204, 816, 788, 1291, 30, 336, 24, pleasure, seekers,
168, 80, 5, 30, yacht, 66, 1, 138, seaport, 686, 24, Uton,
5, 1138, Andica. 51, intended, 4, cruise, northwards,
777, 1, coast, 174, 485, 4, spend, 215, 37, 20, Latton.
325, 329, 51, 1014, Latton, 205, 3, due, 1158, 66, Uton,
30, 1065, easterly, gale, 1332, 61, directly, 81, 4, 362.
Fog, 118, 8, 174, 1, 469, drifted, 5, 380, 15, 1248, 37.
127, 1, storm, 42, 673, 51, 457, 891, 327, 30, 369, island,
due, 1109, 66, Uton.

219, 51, anchored, 4, renew, 137, stock, 24, vegetables
174, 1063, 60, 51, discovered, 97, 1, island, 71, 116,
Appleby, 174, 97, 22, 806, 156, 100, 66, 1, chief, product,
24, 156, orchards. 22, 896, 240, 875, 30, haven, 371, 137,
toil, 97, 51, vowed, 4, return, 264, 788, 4, 18, 156, 1470,
123, 595.

2. The Construction of a Set of Group Tests in General Intelligence.

Following the same order as in the case of the Tests of Silent Reading we shall consider -

- (a) the circumstances which led to the use of
this kind,
- (b) the characteristics of existing group tests,
- (c) reasons for constructing a new set,
- (d) the construction and initial standardising of
the tests,
- (e) the correlation of the tests with certain other
measures of general ability.

We shall then present evidence as to the reliability of the tests of Intelligence and the tests of Reading.

(a) Circumstances which led to the Use of Group Tests.

Very early in the course of the enquiry the question arose as to how far success in reading was related to the possession of what we call "general intelligence". This has - until very recently - received less attention than it seems to deserve. (v.Gray 175,183. Theisen 414). After the final form of the Silent Reading Test had been determined by experiment with 690 pupils, search was therefore made for a group test of intelligence which could be employed along with the Reading Test without excessive encroachment on the time of teachers and pupils.

(b) Characteristics of the chief existing Group Tests.

Analysis was made of the contents of accessible group intelligence tests (v. Bibliography 532-582). The results of this work are given in the Appendix. I do not propose to give a historical account of the development of mental tests, nor to discuss the principles involved in them. That has been already done both for American and British workers (I). It is sufficient here to notice that the most satisfactory modern group tests are those which contain two or three different types of material each of which correlates highly with intelligence. The frequency with which the different forms of material have been used may be judged from the details given in the Appendix. There also it may be seen how one type of material merges into another so that in arranging them it is difficult to differentiate between them. Accounts of the contents of each test are found in many books, as well as in the authors' published reports (II). They are therefore not included here/

- I. Whipple 456, Terman 405, 409, Dockerill & Fennings 112, Patterson 321, Miles & Butterworth 282, Yoakum & Yerkes 481, Trabue & Stockbridge 428, Franzen 128, Valentine 431, Capps 68, Trabue 429, Chapman 72, Colvin 84, Ballard 13, 14, Gates 143, Wallin 441, Colvin 85, Wood 471, Bishop 25, Pintner 340, Freeman 133, Jones 244, Hardie 199, Oates 304, Kefauver 251.
- II. Gregory 189, Whipple 459, Bell 22, Doherty & MacLachy 113, Bell/

and Otis 318, Pintner & Toops 332, Pintner 333,
Buckingham & Monroe 46, Myers 300, Pressey 346,
348,350. Pintner & Fitzgerald 334, Thorndike
417, Terman 407, Thurstone 421, Pressey 343,344,
345,349,351. Whipple 458, Pintner & Cunningham
337, Pintner & Marshall 336, Monroe 292, Dearborn
& Lincoln 103,105, Pintner 339,341, Haggerty 192,
Bird 24, Dale 585, Whipple 460,461.

(c) Reasons for Constructing a New Test.

Construction of a new test of intelligence was undertaken because few of the existing group tests were suitable for the Scottish pupils whose ability I wished to measure. Further, those which might have been used required too much time to give or were too expensive.

Accordingly it was decided to put together new material which could be standardised along with the reading test, and whose norms would therefore be comparable to those of the reading test - in the manner of the most recent achievement examinations.

(d) Construction of the New Test.

After a consideration of many published reports of results of group testing (v. Bibliography) and after trying out the best known intelligence tests with various classes it was decided to use four types of material in the new test:

- (1) Analogies.
- (2) Completion.
- (3) Classification.
- (4) Reasoning - of various forms.

The actual material used in the preliminary trials and in the final form may be seen in the Appendix.

Non-language tests such as

Obedience to Oral Directions,
Copying designs, Recognition of Form,
Picture-completion,
Picture-comparison,
Picture-classification,

Detection of Absurdity in pictures, were tried on a few pupils; but the construction of group tests on these lines was refrained from quite deliberately.

It is recognised, of course, that there might be expected to be a very close inter-relation between reading/

reading ability and intellectual power as measured by verbal intelligence tests. Some skill in reading is necessary before tests in print can be understood and some intellectual ability is required before printed material can be interpreted.

It might therefore be held that in order to estimate the connection between success in reading and the possession of what is commonly called "general intelligence", we should have used tests of a non-verbal character. To this we may reply (1) that our printed tests of intelligence were intended for children who had already learned to read and to whom the use of printed material was not an obstacle; (2) that the difficulty of the intelligence tests did not depend upon the difficulty of comprehending the words of which they were composed; (3) that evidence has been produced that non-linguistic forms of tests such as analogies, classification, and completion, correlate highly with linguistic forms (v. Davey 583, Jones 244); (4) that most language intelligence tests have been criticised on the ground that they depend on scholastic attainment. They have none the less proved to be very valid measures of intelligence as estimated in other ways.

It may also be added that non-verbal tests, other than/

than pictorial forms of the verbal ones, have not yet established their validity. For these reasons, tests for illiterates were definitely excluded.

(1). The first type of material selected was a sheet of analogies. In compiling these, use was made, through the courtesy of Dr. Dawson, of a list in use in the Psychological Department, Jordanhill Training College. Much indebtedness is also due to the suggestions in Burt's "Manual of Mental and Scholastic Tests".

The value and reliability of the "analogy" test has been indicated by the frequency of its use since its introduction by Burt in his earlier investigations on higher mental processes. Discussions are to be found in most books on mental testing and also in authors' reports on tests in which it is employed (I).

It is of interest to note that, while certain experimenters follow Burt's precedent in leaving free choice for the fourth term in the series, others provide four or five possible answers, and ask the pupils to underline/

I. v. especially Burt 64, 61. Vickers & Wyatt 436.
Whipple 456. Ballard 13, 14. Van Wagenen 433.

II. Burt 64, Trabue 581, Roback 571, West Riding 582,
Crichton 543, Chapman 539.

underline or write down the number of the word they consider correct (I).

This more controlled form of the test was the one adopted because of the greater possibility of objective evaluation, and because of its elimination of unnecessary writing. It was arranged that the missing word was always from the fourth place in the analogy as this was judged to make the test more suitable for children than the varying position favoured by Otis in his Advanced Examination. Contrary to the precedent of Richardson (573), Thurstone (577) and Kuhlmann-Anderson (553), only one word was omitted from each sentence. The instructions given were "Draw a line under the word which fits in best to finish these sentences." and the first sentence was - "Tall is to Short as Giant is to Man, Big, Dwarf, Little.

It was decided to type twenty-five sets on a sheet because of Burt's report that pupils of fourteen had an average score of 22-5 in five minutes (64 p. 226). A note was taken in the preliminary trials of the time at which any pupil professed to have completed the test. The results seemed to justify the selection of twenty-five analogies as a possible maximum.

(2)/

I. Otis 561, 562, Terman 576. Northumberland Mental 557, Northumberland Standardised 559, Simplex 573, Haines 548, Scott 574, Army 532, Illinois 550.

(2) The second form of test used was the completion test. Since its introduction by Ebbinghaus, this test has also been used in very many investigations into intelligence. Discussions are given by such writers as Weiss 448, Burt 61, Whipple 456, Trabue 427, as well as by the authors of the more general accounts referred to above.

In its earlier forms it consisted of mutilated prose with letters, syllables, words or phrases elided, the examinee being asked to restore it to its original form. Certain investigators have used it in a method somewhat similar to this (I). By others its range has been narrowed, and its objectivity increased by providing four or five possible words or phrases from which the best is to be selected (II). As in the case of the analogies test, this more controlled type was that chosen.

New material was used for this as had been done in the Silent Reading Tests. It took the form of a story with blanks and the instructions "Draw a line under the word/"

- I. Trabue 581, National 556, Pintner 564, Northumberland Mental 557, Roback Mentality 571, Burt 537, Chelsea 540.
- II. Trabue 581, Haggerty 547, Illinois 550, Army Alpha 532, Otis Advanced 561, Otis Classification 562, Burt Mental and Scholastic Tests 537, Haines 548, Spearman 575, Northumberland Standardised 559.

word which fits in best to the empty space in the same line of the story. "John White was a lucky uncle, boy, box." etc. It was arranged with twenty omissions.

(3) The third test was a classification one - The value of the classification test is also indicated in discussions of the group tests which incorporate it along with others. Like the Analogies test and the Completion test, it requires ability to recognise relationships; but its chief emphasis is on ability to classify. It has a close kinship with the tests grouped in the Appendix as Similarities, Number Series, Logical Selection, but its typical instructions are: "Look at the set of words..... One word does not belong with the others.... With your pencil draw a line right through it." McCall (554). By most workers except Tomlinson (582), it has been used in the controlled form, asking one word out of a number of given ones to be marked or written down (I).

Probably its most enthusiastic supporter is McCall (554) who claims by the use of one hundred sets of carefully selected words to get a test more valid than the/

I. Terman 576, Northumberland Mental 557, Otis 562, Pressey 567, 570, Thurstone 577, Spearman 575, Simplex 573, Bixler 535, McCall 554, Kuhlmann-Anderson 553.

the Stanford Revision of the Binet Scale, and almost as valid as one form of the National Intelligence Test.

The wording of instructions which we used was similar to that of McCall - "Cross out the words which have no connection with the others in the same line."

Our first line was:

House Roof Walls Sea Windows.

(4) The fourth test was a composite one, comprising tests of reasoning ability in various forms. It is modelled upon several in use in the Psychology Department of the Jordanhill Training College and upon tests given by Burt (64). It includes tests involving arithmetic, visual memory, recognition of form, power to decipher a code, simple knowledge of clocks and of days of the week.

Tests similar to these may be noted in the summary given in the Appendix, under the headings - Reasoning, Clocks, Orientation, Code, Mirror, Following Directions, Arithmetic, Information.

Discussions of such material are found in the authors' reports on these tests and also in Burt 63, Winch 470, Johnson and Gregg 242, Dearborn and Brewer 102, Dearborn and Lincoln 104.

The actual material of this, as of the other three tests, was new.

The/

The first three tests were tried out with time limits of five minutes each, and note was taken of pupils who finished quickly. The fourth test was tried first without a time limit on a low Senior class of 43 pupils. A record was made of the time each pupil took. The range was found to be from 9.5 to 20 minutes, the average being 12.25 minutes. Only 8 pupils asked for more than 15 minutes and these were not able to answer any more questions in the latter part of the time. It was judged therefore that a reasonable time-limit for the test was 15 minutes. Those who were capable of attempting the questions seemed able to do so in that time. The tests were given to 119 pupils.

It was evident, however, from the number of pupils completely correct in the Completion Test and the Classification Test, that these were too easy for Senior pupils. Each test was therefore analysed carefully. The number of incorrect answers to each question in each was noted. In the Analogies Test, the Classification, and the Completion Test the questions were arranged in sets of equal difficulty. Certain of those which had proved equal were cut out or modified, and all were rearranged in order of difficulty. New and more difficult lines were added. The Completion Test was lengthened/

lengthened to 25 omissions. Practice material was devised for each of the first three tests. In the Reasoning Test the questions were rearranged in apparent order of difficulty. (No pupils had attained complete correctness in it).

The wording of the instructions was also modified in the Analogies Test and the Completion Test in order to remove ambiguity (v. Appendix).

It was next arranged that the tests be printed on single sheets of foolscap size as this was less expensive than printing them in the form of a booklet. Each sheet before use was folded over, so as to show on the outside only the space for name, age, school, etc. and the practice material provided. Directions for giving were carefully drafted, tested out with students and adhered to so as to secure the maintenance of uniformity. It was decided to give the Classification Test first as the pupils seemed to have least difficulty in following instructions in it.

The question of evaluation of answers now arose. This is a matter upon which detailed reports of other experimenters are difficult to obtain. It was found that most records contained mere statements as to how the answers were to be weighted, and omitted information as to the method followed in arriving at the proportion-
ate/

proportionate values indicated. It was decided to correlate the results of each Test with the Mental Age (Binet tests - Burt's version) for as many pupils as could be reached, to multiply the percentage scores in each test by the resulting figure, and to find what correlation the weighted total had with the individual Binet score.

Only those papers were considered in which the score was not modified by writing in words or other errors of method.

The correlation with actual scores in 46 cases was

Classification	+0.69 _± .05
Analogies	+0.69 _± .05
Completion	+0.48 _± .08
Reasoning	+0.63 _± .06

The percentage scores in each test were multiplied by these figures. These weighted results were then summed, and the correlation worked with the Mental Age as determined by Binet (Burt). It was found to be +0.72_±.05. This was judged sufficiently high to warrant proceeding with the tests in a form modified in the light of analysis of the answers.

This weighted calculation was equivalent to multiplying the actual test results by

Classification/

Classification	2.8
Analogies	2.8
Completion	2.4
Reasoning	6.3

Since multiplication of the scores $\frac{X}{25}$ $\frac{X}{25}$ $\frac{X}{20}$ $\frac{X}{10}$ by these figures was somewhat clumsy, it was decided to maintain the general weighting proportion by according 50 marks to the Reasoning Test and 25 to each of the other three.

In all the tests the number correct was reckoned as the score. There has been much discussion of the most valid method of marking tests where an alternative or multiple response is provided (I); but, on the whole, the balance of evidence, where the number of possible responses is increased to four or more very carefully selected ones, seems in favour of the straightforward counting of correct answers with no attempt to weight for chance (II). In the first three tests this method was therefore adopted. In Test IV the distribution of the fifty marks was determined/

-
- I. Hahn 196. Odell 309. West 449. Dunshee & Manuel 120. Miller 284. Richards & Kohs 358. Remmers & Remmers 354. Ruch & Degraff 369. Boyd 34. Wood 472. Christensen 79. McLusky & Curtis 270. Curtis & Woods 94. Greene 187. Foster & Ruch 125. Fritz 136.
- II. Wood 471. West 450, 449. Holzinger 225. Asker 4. Ruch & Stoddard 367, Freeman 133.

determined after analysis of the frequency and nature of the mistakes made; e.g. in question 6 the answer "West" was given very much more frequently than "2 miles". It was accordingly valued at two marks while the distance "2 miles" was awarded three marks. Similarly, in question 8, three marks were awarded for the solution of the first word "So" and one mark for each of the other words. In questions 2 and 7 one mark was given for each clock face correct and five if all four were correct. In question 4, two marks were given for the correct proportion of the sides and three for correctness of the angle between.

Instructions for scoring were typed out and their effectiveness tested upon students in training until a form which seemed satisfactory was reached.

The tests were then ready to be standardised by use with a representative sample of city children.

(e) Correlation with Another Measure of Intelligence.

Correlation of the test with the Binet-Burt individual score was made in order to determine the degree of its validity. Details for one hundred pupils are shown below.

Table II.

Correlation of Preliminary Intelligence Tests with Binet-Burt.

	Mean	S.D.	P.E.m	r	P.E.r
Binet Mental age	126.38 mths.	19.84	± 1.34	+0.82	± 0.02
Group Intelligence Test Score	66.46 mks.	24.65	± 1.66		

This correlation is higher than that found in the preliminary standardising of the test. It seems high enough to justify us in believing that the new group test is an adequate measure of intelligence as commonly understood.

(f) Evidence as to Reliability.

The reliability of the Reading Test and of the Intelligence Test was investigated by repeating the tests with five classes at differing intervals. There were 234 pupils in these five classes on the occasion of the original testing; but through absences and removals the numbers fell to 194 at the re-tests. The intervals between the first and the second testing were 1 month, 4 months, 6 months, and 12 months. Correlations between the two sets of results were worked for each group.

There has been much discussion of the best method of estimating the reliability of a test (I). Without entering upon the theory of this matter, as it is outside the scope of this report, we may observe that the simple correlation between first and second performances seems the criterion most frequently employed by test-makers. It is also of interest to note Kelley's observation (252) that to secure a reliability coefficient of 0.40 from a group/

I. Whipple 456. Otis & Knollin 319, Kelley 252. Rugg 370.
Nygaard 303. Wood 471. Ruch 368. Current & Ruch 93.

Table III.

Reliability Coefficients. Tests of Reading and of Intelligence.

Number of Pupils	Average Age at Re-test	Dates	Reading Tests.			Intelligence Tests.				
			Average	S.D.	P.E.m	Correlation	Average	S.D.	P.E.m	Correlation
47	142.31	May 1929	15.07	3.05	0.31		78.59	13.39	1.32	
		June 1929	16.07	2.71	0.28	+ .82±.03	83.18	11.53	1.13	+ .94±.01
37	114.68	Feb. 1929	9.85	4.27	0.46		44.50	14.96	1.66	
		June 1929	11.38	4.04	0.44	+ .89±.02	53.74	17.90	1.98	+ .80±.04
39	121.38	Dec. 1928	9.44	4.10	0.44		45.73	14.13	1.53	
		June 1929	12.26	3.69	0.40	+ .75±.05	61.58	18.08	1.95	+ .76±.05
31	115.90	June 1928	9.97	4.58	0.52		40.24	11.73	1.31	
		June 1929	13.14	3.75	0.43	+ .80±.04	59.40	16.48	1.85	+ .77±.05
40 (38 in Intell. Test)	119.55	Dec. 1928	9.70	4.12	0.44		44.50	12.85	1.40	
		Dec. 1929	13.37	3.92	0.42	+ .56±.07	63.68	15.77	1.72	+ .82±.04

group composed of children in a single grade is probably indicative of greater, not less, reliability than to secure a reliability coefficient of 0.90 from a group composed of children from the second to the twelfth grades inclusive. The correlation between the first and second performance of separate classes in our new tests was in each case definitely above 0.40 as is shown in Table III.

Therefore it would seem as if we may claim that the reliability as well as the validity of these tests is sufficient.

PART II.

The Standardisation of these Tests.

-000-

1. A Survey of Schools in Glasgow - arranged in Groups
According to the Prosperity of the Pupils.

It was found very early in the course of examining pupils from various districts that the differences between school performance in different districts of Glasgow was marked. It was desired to standardise the tests of Reading and of Intelligence in such a way that the norms obtained would be valid and representative. If test results are to be representative, they should stand for the performance of the entire population that is to be measured, or for a selected section of that population which includes variations of social status, age, sex, and school level in something like the proportion in which these variations occur in the total unselected population.

We shall first of all speak of differences in social status. Difficulty was experienced in obtaining information as to the relative prosperity of the homes of pupils in different schools. It was found that to ask questions such as "How many rooms are there in your house?" produced an attitude of defensiveness on the part of some pupils, and that protests from the homes ensued. More offensive still would have been a direct question as to family income. Direct information as to which schools were in the poorest districts of the city, and which in the best, could thus not be obtained by a questionnaire/

questionnaire addressed to the pupils examined. Nor could it be found in any published report of recent years. The latest relevant report of a statistical nature which I could trace was one from a publication of the Scotch Education Department dated 1907. This was a report by Dr. W. Leslie Mackenzie and Captain A. Foster upon a collection of statistics as to "the physical condition of children attending the Public Schools of the School Board for Glasgow". It contained lists of averages of height and weight of boys and girls arranged in groups according to the social level of the different districts of Glasgow.

"Group A - schools in the poorest districts of the city.
Group B - schools in poor districts of the city.
Group C - schools in districts of a better class.
Group D - schools in districts of a still higher class
in which is included four out of the five Higher
Grade Schools in the city."

The pupils reported upon were 36,883 boys and 35,974 girls. These details were interesting; but information collected in 1905-1906 could not be regarded as definitive for an investigation in 1927-1929. A further discrepancy was introduced by the fact that the schools reported upon belonged to the old school board area/

area of Glasgow, and the list excluded many of those now under the administration of Glasgow Education Authority. A list of the schools in their groups is of interest however. It is not clear upon what evidence the classification was made; but it is confirmed by a table showing the number and percentage of children from houses of one room, two rooms, three rooms and four rooms in each group of schools. The lists are as follows. I have underlined the names of the schools in each group which were ultimately included in my investigation.

Group A.Schools.

Annfield	<u>Oakbank</u>
Barrowfield	Oatlands
Calton	<u>Parkhead</u>
<u>Camlachie</u>	<u>Quarry Brae</u>
Campbellfield	Queen Mary Street
Dalmarnock	Rockvilla
<u>Dobbies Loan</u>	Rosemount
Hayfield	Rose Street
Hozier Street	Rumford Street
Kelvinhaugh	<u>St. Rollock</u>
Kennedy Street	Springfield
Mathieson Street	Strathelyde
Milton	Wolseley Street.

Group B.

Adelphi Terrace	Haghill
Alexander's	Henderson Street
Anderston	<u>Keppochhill</u>
Bishop Street	Martyrs'
<u>Camden Street</u>	<u>Newlands</u>
Centre Street	Overnewton
Dennistoun	<u>Petershill</u>
Dovehill	St. James's
Dunard Street	Springbank
<u>Elmvale</u>	Springburn
Finnierson	Townhead
Freeland	<u>Tureen Street</u>
Grove Street	Washington Street

Wellpark.

Group C.

<u>Crookston Street</u>	Kay
Golfhill	Napiershall
Gorbals	<u>St. David's</u>
Greenside Street	St. George's Rd.
John Street	Sir.J.N.Cuthbertson.

Thomson Street.

Group/

Group D.

Abbotsford	Provanside
Alexandra Parade	Shields Road
Garnetbank	Whitehill
Kent Road	Willowbank

Woodside.

In the attempt to obtain information as to the social status of the schools, it was remembered that, in every school in Glasgow, children whose parents make claims for them for Food or Clothing have their cases enquired into carefully, and that care is taken, as far as possible, to render the distribution of these things over the city as equitable as possible. It was judged, therefore, that if we could find the percentage of necessitous children in each school we should have a fairly reliable measure of the differences in social status of the average pupils attending the different schools. It was realised that in certain very self-respecting homes applications for food and clothing would not be made until a much lower level of subsistence was reached than was the case with other types of parents. Application for aid is not always an indication of actual income. It might be expected however/

however, to be symptomatic of the prosperity of the home. Further, schools on the whole are fairly homogeneous in character. It is well known that schools have a reputation among the parents of a district, and that, on the whole, children from similar homes are sent to one school. For these reasons it was decided to base our estimation of the social status of any school upon the percentage of "necessitous" pupils in it.

Through the courtesy of a member of Glasgow Education Authority, I had access to their "return of roll, attendance, etc." This is issued monthly. It gives the schools of the Eastern, Western and Southern "School Management Committees" arranged according to location; and for each school it shows the average number of scholars on the roll during the period, the average number in attendance, the percentage of number on roll in average attendance, the percentage of attendance for the corresponding period of last year, the number reported as requiring Food or Clothing or both, the average number of absences due to exclusions by the Authority's Medical Officers and Sanitary Authorities (including contacts) and the average number of absences due to other illness.

Of these, the first and the fifth - average number of scholars on roll and number reported as requiring food or/

or clothing or both - were of special interest to me.

I decided to use the report for mid-winter in each of the two sessions (1927-28 and 1928-29) in which the tests were standardised. This had the advantage of representing the worst season of the year when "necessitous" cases would probably be most urgent. It also was the same period in both years and was sufficiently near to the actual time of testing. The two measurements together served to indicate the reliability of the figures based upon them.

The periods of the two reports used were "four weeks ended 27th January 1928", (218 schools) and "four weeks ended 1st February 1929", (223 schools).

For each of the schools the percentage of necessitous pupils was calculated. This gave an order of prosperity for the two periods. The average of the two percentages for each school was taken and the schools were arranged according to this average in five groups:

- A. no children necessitous.
- B. .01 - 1 per cent necessitous.
- C. 1.01 - 2 per cent necessitous.
- D. 2.01 - 3 per cent necessitous.
- E. 3.01 - 8 per cent necessitous.

Full/

Table IV.

Position of Schools in which Testing was done.

Percentage necessitous	Position in Jan'y 1928	Position in 1929	Average Position
-	Annette Street. Mt. Florida. Hillhead	Annette Street Mt. Florida. Hillhead.	Annette Street Mt. Florida. Hillhead.
.01-1	Hill's Trust. Ibrox, St. David's Petershill, Kinning Park, Garrioch. Calder Street. Victoria.	Hill's Trust. Ibrox. St. David's Kinning Park Garrioch. Gairbraid, Calder St. Victoria, Quarry Brae, Elmvale.	Hill's Trust. Ibrox. St. David's Petershill. Kinning Park Garrioch. Calder St. Victoria.
1.01-2	East Park, Gairbraid, Keppochhill. London Rd. Newlands Elmvale, Camden St. Quarry Brae.	East Park Petershill Keppochhill. London Rd. Newlands Camden St. Crockston St. Parkhead. Harmony Row. Camlachie.	East Park. Gairbraid. Keppochhill London Rd. Newlands Elmvale Camden St. Quarry Brae. Crockston St. Parkhead.
2.01-3	Crockston St. Parkhead Oakbank, Tureen St. St. Roch's	- - Oakbank, Tureen St. St. Roch's	Oakbank. Tureen Harmony Row, St. Roch's.
3.01-4	Harmony Row.	Dobbie's Loan	Camlachie.
4.01-5	Camlachie	-	
5.01-6			Dobbie's Loan
6.01-7			
7.01-8	Dobbie's Loan		

Full details of the actual figures and the percentages are given in the Appendix. An attempt was then made to test pupils from schools in each of the five social groups. Table IV shows the position in 1928, in 1929, and the average position of the schools in which testing was done.

It is noteworthy that in only five out of twenty-seven cases is the average position different from that in 1928, and in only seven cases is there any change from 1929 to the average position. This relative stability seems to confirm the grading into five groups. Table V shows the schools which changed position. In it the plus or minus indicates whether the change was into a higher or a lower social group.

Table V.

Change in Position of Schools.

1928 → average position		Average position → 1929	
Crookston Street	+1	Petershill	-1
Parkhead	+1	Gairbraid	+1
Harmony Row	+1	Quarry Brae	+1
Camlachie	+1	Elmvale	+1
Dobbie's Loan	+2	Harmony Row	+1
		Camlachie	+2
		Dobbie's Loan	+2

It/

It is not known to me whether the higher position of these schools in January 1929 is due to an increase in the prosperity of the homes in that year or to an increase in the severity of the investigation before food and clothing was granted to the children. The former seems more probable than the latter. In any case the changes in position are in most cases very slight - as may be seen from the actual figures given in the Appendix .

It is of interest that, in the report of the Scotch Education Department in 1907, Camlachie and Dobbie's Loan fall into the group containing the schools in the poorest districts of the city, and into section E with us Camden Street, Elmvale, Keppochhill, and Newlands are bracketed together by them, and in our grouping fall into section C. St. David's is put by them in the group in districts of a better class and in section B of ours. Quarry Brae, Petershill, Parkhead and possibly Oakbank seem to have improved in status - to judge from the schools with which they are arranged in 1907. Tureen Street and Crookston Street seem to have gone down.

It is recognised that the five types of inferred social status among the schools of Glasgow are not discrete and discontinuous. The figures given in the Appendix, and the slight variation in the grouping noted above, confirm/

confirm this. The arrangement forms rather a continuous series than a set of separate groups. The combining into groups is only adopted as a means of determining how far the sample of Glasgow children may be said to be representative of different varieties of home circumstances. The grading is less accurate than it was desired to make it; but it is as near a representation of the complete school population as I was able to reach.

2. The Testing of a Representative Sample of Pupils.

It should be noted at this point that in establishing norms for the tests of Reading and of Intelligence an effort was made to avoid inaccuracies. Such sources of error as variation in time, mistakes due to imperfect, hasty or incomplete instructions, errors in scoring and recording, variation in degree and uniformity of the pupils' application during examination, imperfect comprehension on the pupils' part of what was required, were minimised by the following precautions.

(1) The instructions for giving and for marking the tests were carefully worked out and tried by myself on groups of my students in "criticism" lessons (i.e. lessons given by students in presence of a supervisor). They were modified until a form had been reached which seemed comprehensible to an average teacher.

(2) The testing was done by myself or by students under my supervision in every instance except in Crookston Street School, in St. David's, and in Dalry. In the first of these it was done according to directions by an Ed.B. graduate, and in the two latter by Ed.B. graduate students. Thus I am personally responsible for the accuracy/

accuracy of the timing and administration in the case of practically every paper given.

(3) All the papers without exception were marked by myself - in the Reading Tests and Test IV of the Intelligence Test according to the scheme given in the Appendix, in Tests I, II, III with the aid of stencils prepared (v. Appendix V).

(4) All the recording of results and the statistical work based thereon was done by myself with the aid of a calculating machine for the use of which I am indebted to Dr. Thouless of the Psychology Department of Glasgow University.

(5) The fact that pupils are stimulated to do their best by the presence of a stranger, with or without a student, in the room, serves to give promise that they throughout the tests were giving their maximum attention to the work in hand.

(6) Practice material for each test was provided in order to secure that pupils did not fail through complete unfamiliarity with the type of work required. Through this precaution the number of papers which had to be cancelled because of errors in method was reduced to .44 per cent.

The/

The tests were first given in the schools, and to the classes of the Junior or Senior schools, which I had as demonstration centres. Then visits were paid to schools from which children had been sent to the Educational Clinic and the classes containing the "problem pupils" were tested. After many schools had been reached in these ways the numbers of pupils examined were arranged (1) according to the social group in which the school was found, (2) according to the age of the children, (3) according to the class in school in which they were found, (4) according to the sex of the pupils. An effort was made to secure representation under each category proportionate to the numbers in each ^{such} subdivision in the entire school population. Where numbers were short, an introduction was obtained into other schools and testing of the necessary classes was carried out.

Most of the work was done in the forenoon. The Reading Tests were always given first. In some cases an interval of one week passed between the Reading Test and the Intelligence Test. In no instance was the interval longer than three weeks. Some of the results were got in the Spring and Summer term of 1928 and most of the remainder in the Spring and Summer term of 1929.

Irregularities,

Table VI.

Types and Frequency of Errors in Method and Numbers of Absentees.

	A. Number with Words written in		B. Number with Underlining of Several Words		C. Number Correct so far as They went.		D. Number with each first word underlined.		E. Number who Transcribed		F. Number absent or omitting a part.	
	Boys.	Girls	Boys.	Girls	Boys.	Girls	Boys.	Girls	Boys.	Girls	Boys.	Girls.
Rest I.	-	1	-	-	12	15	-	-	-	-	-	-
II.	13	3	3	5	5	1	1	7	-	-	-	-
III.	6	2	1	-	13	23	1	1	1	-	-	-
IV.	-	-	-	-	-	1	-	2	-	-	-	-
I, II, III.	-	-	1	-	-	-	-	-	-	-	-	-
II, III.	-	-	2	2	-	-	-	-	-	-	-	-
Total	19	6	7	7	30	40	2	10	10	5	120	133
Totals	25	14	14	14	70	70	12	12	15	15	253	253

Irregularities due to variations in seasonal or diurnal efficiency are therefore likely to be slight (cf. Kuhnes 258, Stainer 588, 589, Rusk 372).

In all, 2980 children were examined. Of these, however, 253 papers were discounted through absence at some part of the test and 54 through failure to follow the correct method in the practice material provided.

v. Table VI.

The results of these 307 pupils were disregarded. (v. sections A, B, E, and F of Table VI). The papers of those listed in columns C and D were included since there was no means of discovering the exact reasons for their stopping short or underlining always the first word of each line. In addition to those whose errors or partial absences are shown in Table VI there were 146 pupils who completed only the Reading Test or only the Intelligence Test. Their results were also omitted. Hence 2527 pupils completed both tests according to a correct method. The figures got from their papers are therefore available for the establishment of norms.

We shall consider the type of these children under the four categories suggested above - social status, age, class, sex.

I./

Table VII.

Details of Primary School Population and Numbers Tested.

Type of School	Average Number of Pupils	Number Tested	Per cent Tested.
A.	11542	215	1.86
B.	60337.5	926	1.53
C.	52557	781	1.49
D.	25054.5	335	1.34
E.	10960	188	1.71
Total	160451	2445	1.52

I. Representation of Glasgow pupils according to the social group in which the school is found.

Table VII gives a summary of the numbers tested in each group of schools, along with the average number in the primary school population in the first month of 1928 and of 1929. (Detailed figures are given in Appendix VI). It will be noted that the total number in that table is 2445. The difference between this number and the total 2527 is accounted for by the inclusion in the latter of 21 pupils from a private school, of 29 pupils from Dalry - a small country town in Ayrshire - and of 32 pupils from the youngest class in a secondary school.

The percentage reached of the total population of the primary schools, i.e. of pupils who have not gone on from an elementary to a secondary school, was 1.52. The schools which were grouped socially as "A" schools were represented by 215 pupils out of a total of 11,542. This is a percentage of 1.86. Group B. were similarly represented by a percentage of 1.53 of their number, group C by 1.49, group D by 1.34, and group E by 1.71.

The percentages are not quite identical in each group; but it was found that this was as near an equal proportion from each grade of school as could be reached without undue selection. Teachers were not permitted to/

Table VIII.
Pupils Tested.

Age	Total	Class	Boys	Girls	Total
6	4				
7	148	Jun. II	250	245	495
8	423	Jun. I	274	250	524
9	469	Sen. III	263	316	579
10	385	Sen. II	208	243	451
11	464	Sen. I	177	158	335
12	387	Adv.	90	32	122
13	205				
14	42	Private School	-	21	21
Total	2527				2527

to choose pupils for examination and taking classes as whole^s makes it very difficult to secure an equal percentage from each type of school. Twenty pupils too many for example ^{may} make an appreciable difference.

The percentages, however, of each social group are not very different.

The pupils tested may therefore be claimed to be reasonably representative of the five groups of schools arranged according to social status.

II. Representation of Glasgow pupils arranged according to age.

Table VIII shows the number of pupils reached at each age.

From ages eight to twelve the numbers are large enough to provide a reliable sample of the population. There are very few of age 6, and few of age 7 because the tests were given in the Junior or Senior Departments, and at those ages few children are out of the infant-room. The numbers at age 13 and age 14 are also lower, because many thirteen year old pupils have left the Primary Schools and are to be found in the Advanced Divisions or the Secondary Schools. To make the figures at these ages more representative, five advanced classes and one secondary class were tested. The results for age 13 are from/

Table IX.

Classes Tested.

Group of Schools	Number of Pupils		Jun. II	Jun. I	Sen. III	Sen. II	Sen. I	Adv.	Total.
	Boys	Girls							
A.	99	148	-	1	1	2	1	1	6
B.	447	479	6	5	5	3	3	1	23
C.	434	347	4	3	5	3	3	4	22
D.	169	166	1	2	2	2	1		8
E.	98	90	2	1	1	1	1		6
Total	1247	1230	13	12	14	11	9	6	63
Dairy	15	14			1				1
Private School	-	21							
Total	1262	1265							

from 125 primary pupils and 80 more advanced ones. Those for age 14 include 25 primary and 17 advanced. Averages and correlations were not worked for ages 6 or 14 as the numbers in those years were much too few to give information that was at all reliable.

III. Representation of Glasgow pupils according to stage in school.

Table IX shows the numbers of classes tested at each of the chief subdivisions of the primary school, and in each of the social groups of schools.

Some difficulty was experienced in making this classification because class names vary considerably from school to school. All classes below Junior I were however roughly grouped as Junior II, and all classes below Senior II were combined as Senior III. Details and actual class-names are given in Table XX.

Sixty-four classes in the twenty-eight schools were reached and a mixed group of 21 girls from the private school. The latter are excluded from the calculations for class norms. The number of classes in the five social groups were 6, 23, 22, 8, and 6. These, with the exception of group A, are in something like the proportion of elementary schools in the groups - 28, 60, 55, 27, 22. (v. Appendix). Twenty-five classes in the Junior department/

department were tested, and thirty-five in the senior. This is as near the proportion of 2 classes to 3 as could be attained in the attempt to test entire classes and at the same time attain proportion in numbers from differing social groups, ages, etc.

IV. Representation of Glasgow pupils arranged as boys and girls.

Reference to Tables VIII and IX will show the numbers of boys and girls reached at each age and stage and from each type of school.

From it we see that the numbers of boys and girls are practically equal at Junior II, Junior I, and Senior I stage. They are not far different at Senior II. They are nearly equal in schools of type B, D, E, and the total number reached is very similar for both boys and girls.

Because of the evidence set forth above it is believed that the sample of pupils who were examined is sufficiently representative to warrant our expectation that the norms obtained will be typical of the performance of the pupils of the city. From Tables X and XI to be shown in Section 3 it will be seen that average results obtained when 1954 pupils had been tested were very little different from those resulting from the more perfect sampling of the children on which the final figures are based/

based. This confirms our faith in the stability of the norms.

Table X.

Tests of Reading and of Intelligence. Averages for Age Groups .

Based on the Testing of 2527 pupils.

Test	Age												
	7	8	9	10	11	12	13						
Number	148	423	469	385	464	387	205						
Mean	3.99	7.83	10.40	13.04	14.75	16.04	15.91						
S.D.	3.92	4.68	4.54	4.22	3.91	3.23	2.74						
P.E.m	±0.22	±0.15	±0.14	±0.15	±0.12	±0.11	±0.13						
Intelligence	Mean	23.62	36.77	58.60	68.32	78.27	76.78						
	S.D.	12.35	16.17	18.88	19.75	18.72	18.65						
	P.E.m	±0.68	±0.53	±0.65	±0.62	±0.64	±0.88						

3. The Establishment of Norms for Glasgow in the Tests of Reading and of Intelligence.

The results which are of most general interest for districts outside of Glasgow are the age norms. It is therefore proposed to give these first.

Because our enquiry was originally into Reading Ability, I have treated the results of the Reading Tests in more detail, giving the figures for the Intelligence test only when these seem of special importance.

Table X shows the average scores in the Total Tests for each of the age groups from seven to thirteen. It should be noted that the age of each pupil was counted as that at his last birthday, i.e. pupils of age 8 years to age 8 years and 11 months were put into the group called "age 8". This procedure was adopted as being the most suitable if the tests were used on a large scale by teachers, since it is that followed in ordinary class registration.

It will be seen from these figures that the differences between the age group averages in the Reading Tests, taking them in pairs in the order seven to thirteen, are 3.84 ± 0.27 , 2.57 ± 0.21 , 2.64 ± 0.21 , 1.71 ± 0.19 , 1.29 ± 0.16 and $-.13 \pm 0.17$, while those for the Intelligence Tests/

Tests are 13.15 ± 0.86 , 10.89 ± 0.76 , 10.94 ± 0.85 , 9.72 ± 0.90 , 9.95 ± 0.89 and -1.49 ± 1.09 .

The drop in average reading score at age 13 seems to be due to the selective nature of that group which consisted of 125 primary pupils and 80 from advanced classes. The 125 were pupils who had not succeeded in passing the Control Examination which is the entrance to the secondary schools. Their ability was therefore low. The fact that the average score of age 13 in the intelligence test is also lower than that for age 12 confirms the suggestion that this is the explanation. The lowness of performance in both tests at age seven may be due to lack of development in reading ability at that age. This would handicap the pupils in both tests which, it will be remembered, were devised for pupils of the Junior school who might be expected to have mastered the mechanics of reading. It will be recollected that fewer pupils were reached at that age because the tests were given only in the Junior and Senior School, and many pupils of age seven were not yet out of the infant room.

Because of these marked inequalities at age 7 and age 13, and also because of the smaller number of pupils reached at those ages, it would appear that the norms are/

Table XI.

Tests of Reading and of Intelligence. Averages
for Age Groups. Based on the Testing of
1954 children.

Test	Age	8	9	10	11	12
	Number	355	336	316	406	301
Reading	Mean	7.76	10.29	13.40	14.96	16.13
	S.D.	4.64	4.56	4.15	3.79	3.22
	P.E.m	±0.17	±0.17	±0.16	±0.13	±0.12
Intelligence	Mean	36.34	47.02	59.80	68.77	78.07
	S.D.	16.17	16.76	19.03	20.02	18.39
	P.E.m	±0.58	±0.62	±0.72	±0.67	±0.71

are most satisfactory from ages eight to twelve. These are the ages for which it was originally desired to find tests.

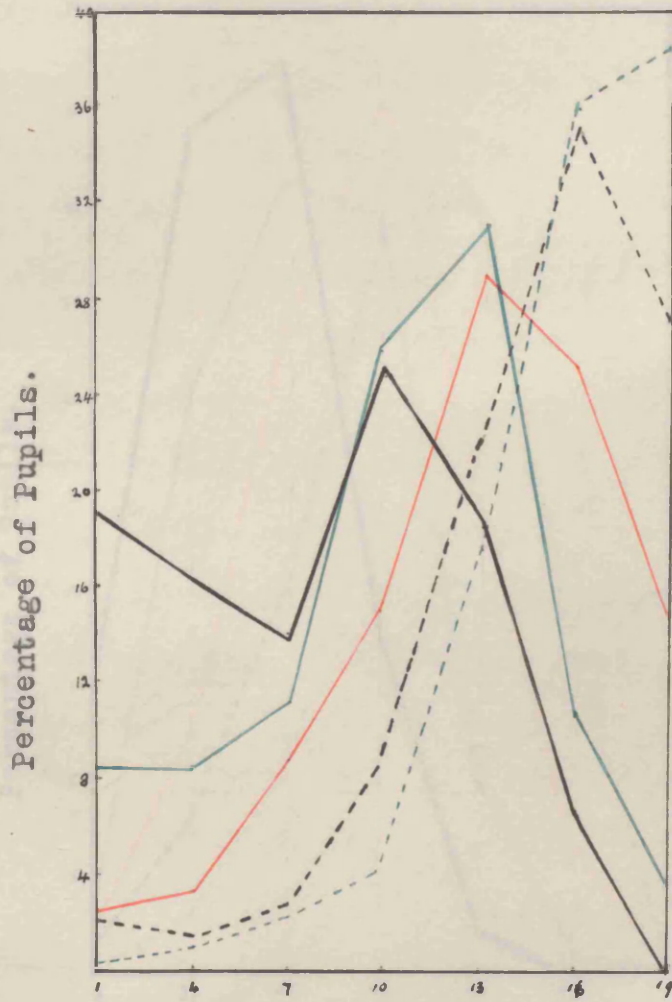
Table XI is of value as giving some indication of the stability of these norms. It gives figures based on the work of 1954 pupils calculated at a date before the final representative sampling of the city schools was made. The changes in the averages as compared with Table X are very slight from ages eight to twelve. The numbers at ages 7 and 13 were at that point in the investigation too small to be quoted.

From the detailed figures on which Table X is based, the results were combined into seven larger groups for effectiveness of impression, and Figures I to IV were constructed from the percentage distributions based on this.

Figures I and II show the percentage distribution at the various ages in the Reading Test and the Intelligence Test.

Figure I.

Percentage Distribution. Reading Test.

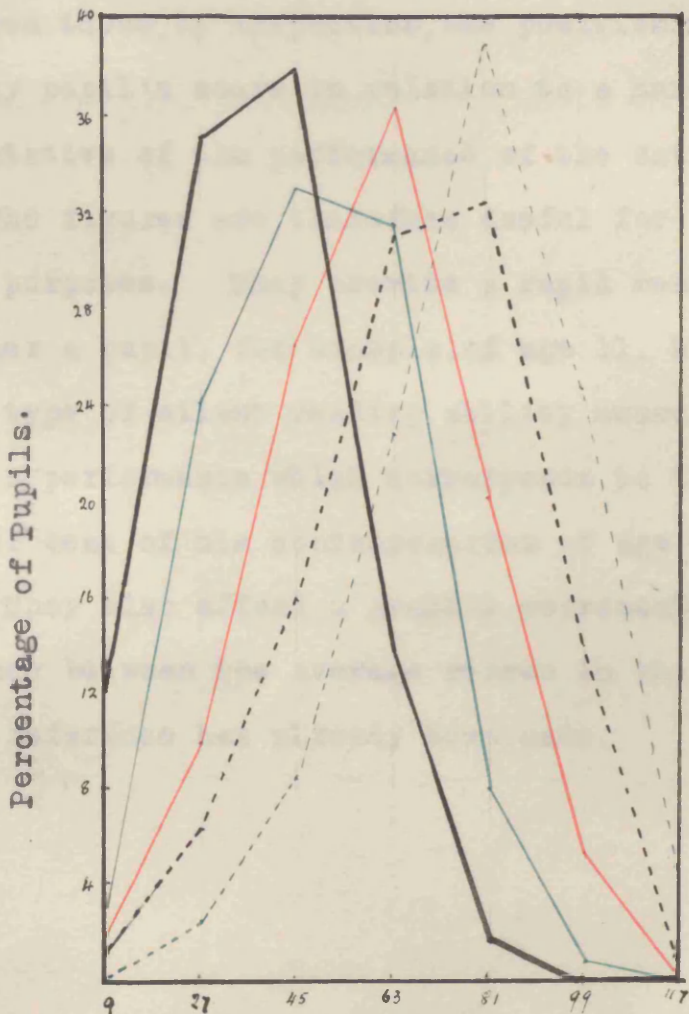


Mean Score.

- Age 8 ———
- Age 9 ———
- Age 10 ———
- Age 11 - - - -
- Age 12 - - - -

Figure II.

Percentage Distribution. Intelligence Test.

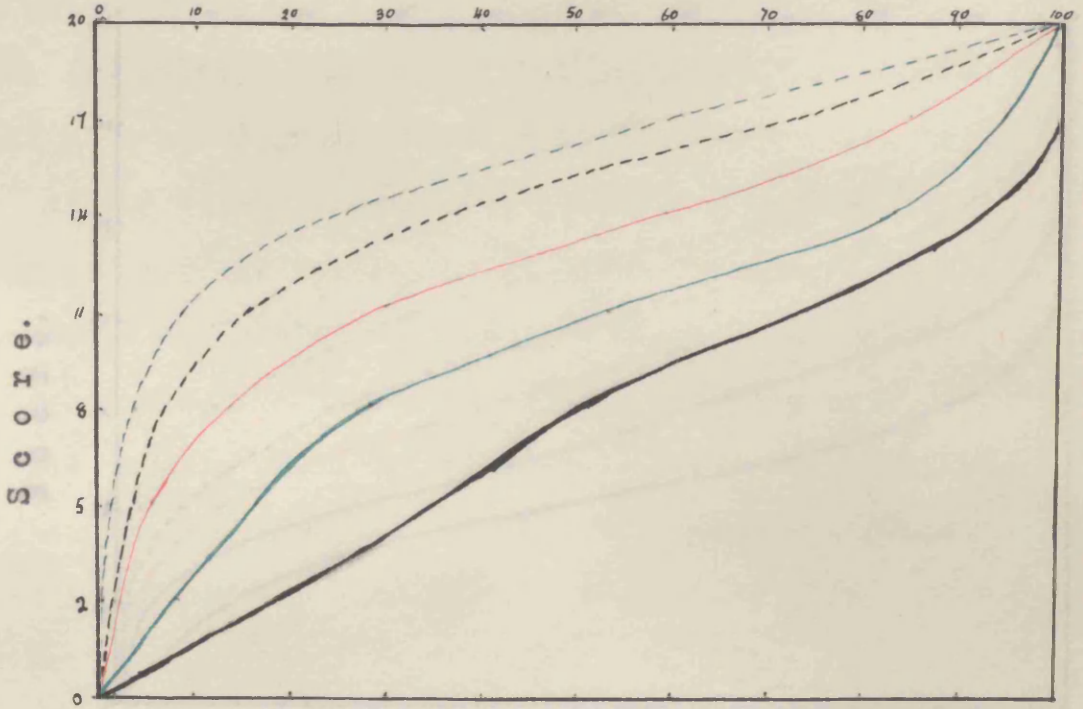


Mean Score

- Age 8 —————
- Age 9 —————
- Age 10 —————
- Age 11 - - - - -
- Age 12 ·······

Figures III and IV give percentile curves for the two tests. From these, by inspection, the position may be judged of any pupil's score in relation to a hundred scores representative of the performance of the entire population. The figures are therefore useful for interpretative purposes. They provide a rapid means of measuring whether a pupil, for example, of age 11, has reached, in the type of silent reading ability measured in these tests, a performance which corresponds to that of a certain per cent of his contemporaries of age 8, 9, 10 or 12. They also afford a graphic representation of the difference between the average scores in the age group to which reference has already been made.

Figure III.
Percentile Curves. Reading Test.

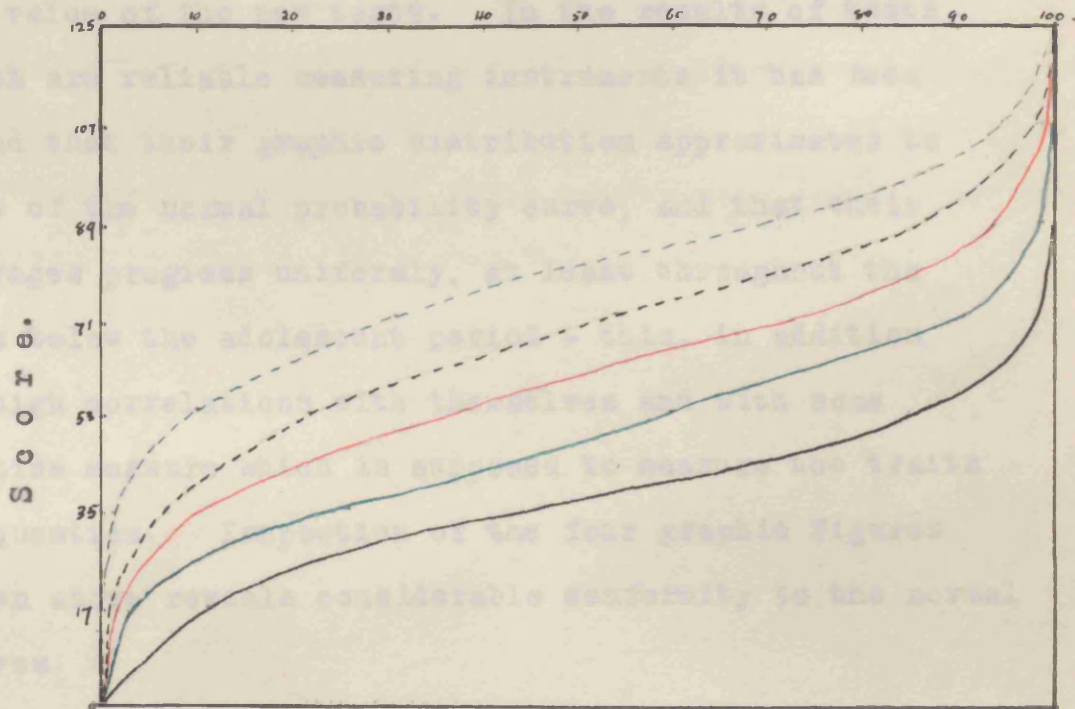


Mean Score.

- Age 8 —————
- Age 9 —————
- Age 10 —————
- Age 11 - - - - -
- Age 12 - - - - -

Figure IV.

Percentile Curves. Intelligence Test.



Mean Score.

- Age 8 —————
- Age 9 —————
- Age 10 —————
- Age 11 - - - - -
- Age 12 - - - - -

Age	Mean Score	Standard Deviation
8	77 - 80	12
9	80 - 83	12
10	83 - 86	12
11	86 - 89	12
12	89 - 92	12

The details given in this section and shown in Figures I to IV provide a further means of estimating the value of the new tests. In the results of tests which are reliable measuring instruments it has been found that their graphic distribution approximates to that of the normal probability curve, and that their averages progress uniformly, at least throughout the ages below the adolescent period - this, in addition to high correlations with themselves and with some outside measure which is supposed to measure the traits in question. Inspection of the four graphic Figures shown above reveals considerable conformity to the normal curves.

If it is desired to express a pupil's performance in terms of a "Reading Age" or an "Intelligence Age" this may be done roughly from the following table.

Table XII.

Conversion of Score into Ages.

Age	Reading Score	Intelligence Score.
7	3 - 6	19 - 30
8	7 - 8	31 - 42
9	9 - 11	43 - 53
10	12 - 13	54 - 63
11	14 - 15	64 - 73
12	16	74 - 83

This/

This was derived from Table X, taking into consideration the fact that, for example, the average age of pupils in age-group 7 is $7\frac{1}{2}$ years, and therefore the corresponding score is that for an age midway between 7 and 8. The small range of marks necessitates the lack of precision shown in this Table. The same information is given graphically in Figure V.

Figure V.

Average Scores for Age Groups. Reading Test.

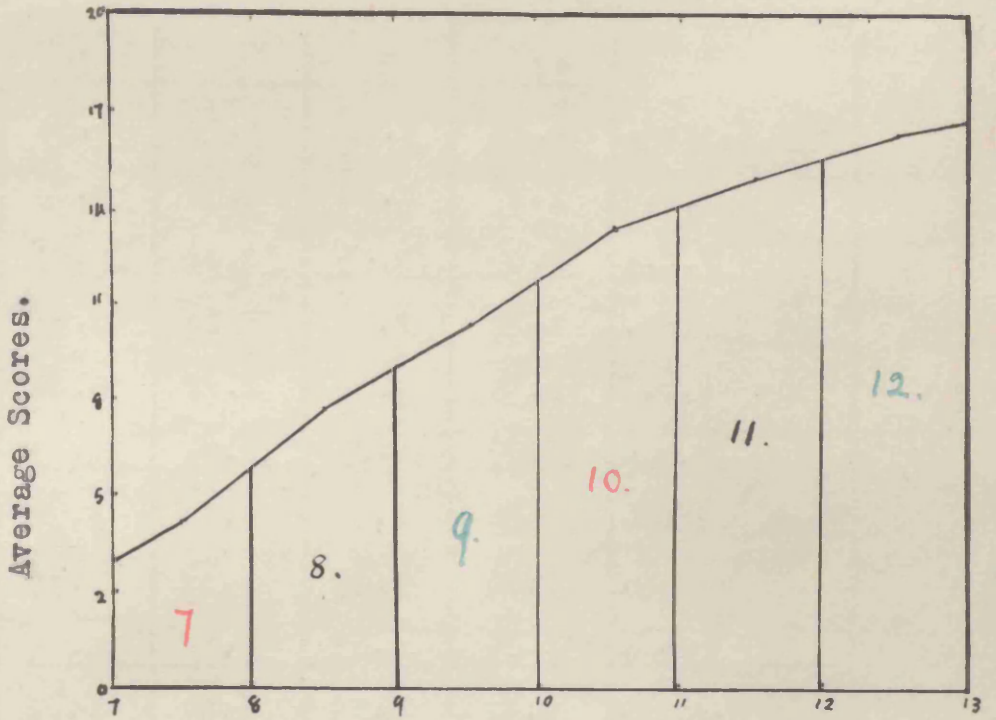


Table XIII.

Average Results in Each Test for Different Ages.

	7	8	9	10	11	12
<u>Test A.</u> Aver.	1.49	2.56	3.23	3.61	3.80	3.89
S.D.	1.47	1.50	1.30	0.89	0.68	0.52
P.E.m	±0.08	±0.05	±0.04	±0.03	±0.02	±0.02
<u>Test B.</u> Aver.	1.40	2.45	3.04	3.47	3.66	3.80
S.D.	1.36	1.45	1.22	0.86	0.77	0.56
P.E.m	±0.07	±0.05	±0.04	±0.03	±0.02	±0.02
<u>Test C.</u> Aver.	0.66	1.52	2.24	2.76	3.22	3.46
S.D.	1.10	1.48	1.44	1.33	1.14	0.96
P.E.m	±0.06	±0.05	±0.04	±0.04	±0.03	±0.03
<u>Test D.</u> Aver.	0.32	0.75	1.07	1.84	2.35	2.83
S.D.	0.21	0.85	1.03	1.34	1.35	1.18
P.E.m	±0.01	±0.03	±0.03	±0.05	±0.04	±0.04
<u>Test E.</u> Aver.	0.15	0.53	0.78	1.38	1.77	2.07
S.D.	0.41	0.74	0.91	1.10	1.06	1.09
P.E.m	±0.02	±0.02	±0.03	±0.04	±0.03	±0.04

We have now to look at the performance of Glasgow children in the five Reading Tests considered separately.

Table XIII gives the average Results in each test for the different ages.

It can be seen by inspection that the increase in each test is clear-cut from year to year. Tests D and E do not appear to be too easy for pupils of ages 11 or 12 to judge from the fact that the average score is below three marks for either test at those ages.

An average of about three marks is attained for Test A by pupils of eight years, for Test B by pupils of nine years, for Test C by pupils of ten years, and for Test D by pupils of twelve years. This suggests that possibly the tests belong to something like these ages.

Table XIV shows details of Distribution of Ability in the separate tests - giving percentages of pupils with no marks and with full marks in each test.

There is some difference of procedure among investigators as to when a test is said to be "a test for age so and so". It is customary to decide by the percentage of pupils who pass it with perfect correctness. Binet in his pioneer work called a test for a certain age one in which about 65 per cent of the pupils of that/

Table XIV.

Percentage Distribution of Ability in Separate Reading Tests.

Test	Age	7	8	9	10	11	12	13
A.	Full Marks	16.89	41.84	66.74	78.96	89.01	94.06	96.60
	No Marks	35.81	15.84	8.32	1.82	1.72	0.52	0.49
B.	Full Marks	8.78	30.73	47.97	64.94	77.80	85.53	79.02
	No Marks	37.16	16.78	7.25	1.82	1.94	0.78	0.49
C.	Full Marks	4.05	14.18	26.65	41.30	58.41	69.51	64.39
	No Marks	65.54	37.59	17.27	9.35	5.17	2.58	--
D.	Full Marks	--	--	4.26	16.62	28.23	38.24	34.15
	No Marks	77.03	47.28	32.84	16.88	9.91	4.13	6.34
E.	Full Marks	--	--	0.64	2.60	3.45	10.08	11.22
	No Marks	86.49	60.05	47.55	27.01	14.22	8.01	5.85

that age were successful (but he grouped the pupils by their age at their nearest birthday) Burt (64) assigned his tests to the ages at which 50 per cent of the children were successful - reckoning age as that at the last birthday. Taking this lower estimate, test A would seem from inspection of Table XIV to be the test for age 8-9, test B for 9-10, test C for 10-11. Test D seems rather hard for age 12-13, while test E would seem too difficult to be called the test for any of these ages.

Taking a higher estimate, we would require to say that test A was suitable to age 9, test B to age 10, test C for ages 11 or 12, and test D and E too difficult for the present average performance of the children tested.

In addition to age norms, it is of interest to consider the average performance of pupils at different stages in school life.

These figures are of less general interest than are the age norms, since classification of pupils in other districts may not be according to the same scheme as in Glasgow. They are, however, of some value as indicating the present level of success in tests of the type described. Detailed class results are given later in Table XX (v.p.). From these the average results from/

from each set of classes were calculated. These averages are shown in Table XV.

Table XV.

Reading Tests - Average Results for Classes at Different Stages.

Class	Jun.II	Jun.I	Sen.III	Sen.II	Sen.I	Adv.
Mean	5.87	9.52	13.75	15.40	16.61	17.70
S.D.	4.70	5.61	3.73	2.94	2.41	1.92
P.E.m	±0.14	±0.17	±0.11	±0.09	±0.09	±0.10

Average class results for schools of differing social level are given later in Table XXI (p.). They are of interest as providing norms for schools in different districts and attended by pupils of varying home circumstances.

The publication of such figures is sometimes criticised on the ground that the standard set when averages are used as norms is too low, and tends to become lower every year because of the dynamic character of human achievement. To keep pace with the improvement in performance which generally follows the use of test material of a definite kind, age and class averages, to remain representative, would require to be revised from year to year. It is therefore realised that the figures we/

We have given represent merely the average success of pupils in various classes and at various ages in the years 1928 and 1929. They are not to be taken as standards, but rather as minima below which ideal class or age results should not fall.

To meet this criticism of lowness of standard certain test makers publish the results of the class with the best average, and claim that a similar level should be aimed at by others (e.g. Gates 497). If our class nomenclature were uniform throughout the country, we might do this with advantage; but since there are differences of classification, it is of more value to notice rather the average score in the total Reading Test of classes which, according to our test, are most nearly of average intelligence for their age.

The identity of these classes was decided by inspection of Table XX (p.) which shows average results for various classes and Table X which gives average intelligence and reading scores at different ages.

Each of the age groups represents a range of twelve months. It can therefore be represented by an age midway between it and the next. A search was made in each group of classes for a class of average age nearest to $8\frac{1}{2}$, $9\frac{1}{2}$, $10\frac{1}{2}$, $11\frac{1}{2}$, $12\frac{1}{2}$ whose intelligence score was nearest/

nearest the average for the age in question. These may be reckoned as classes of average intelligence for their age. The classes which best fulfilled these requirements were -

Table XVI

Average Reading Score of Classes of Average Intelligence for Their Age.

	Average Age	Average Reading	Average Intelligence	Type of School
Gairbraid Sen.I.	148.48	17.46	78.51	C.
Hill's Trust Sen.II	140.04	14.83	67.88	B.
Keppochhill Sen.III	131.54	12.76	58.73	C.
Victoria Jun.I.	117.33	11.44	52.19	B.
Garrloch Jun.II	103.90	10.23	38.43	B.

Another possible one was Newlands Jun.I. 118.11 12.35, 51.35. This was not taken because it was less near group B in social status and group B contains the median school socially.

These results are therefore noted as representative of the performance of classes of average intelligence for their age.

It is interesting to see that for Junior II, Jun.I, Sen.III and Sen.I the score is higher than that shown for combined class scores in Table XV. The drop in Senior II is possibly due to the difficulty mentioned above/

above in differentiating between one class and another because of the differences in nomenclature in the different schools. Whatever be the reason, the figures seem to provide quite a fair way of estimating the progress in reading of any class which takes the tests.

4. The Construction of Equivalent Forms of the Tests.

After norms for Glasgow had been thus worked out for the two tests, it was decided to devise a second form of each test for the convenience of teachers who might wish to estimate progress by re-testing a class after an interval of some months.

In order to do this, a return was made to the material originally tried but discarded as being not significantly different from that which was chosen for the first form of the reading test (v. Appendix IV). Of the eight stories which were given to 690 pupils in the preliminary investigation, numbers 6, 1, 3, 8 and 7 were, it will be remembered, retained as the first form of the reading test. Number 2 was used as practice material, and numbers 4 and 5 were very similar in result to number 1. Number 5 was accordingly selected for use in the second form of the reading test and number 4, since it was longer, was modified for use in the second form of the Completion test.

New stories were then constructed as similar as possible in difficulty of vocabulary, number of ideas, and/

and type of material to the remaining stories in the first form of the reading test. After careful scrutiny these were tried out with a class which had, a fortnight before, taken the first form of the test. Results are shown in Table XVII.

Table XVII.

Form A and Form B of Reading Tests.

	Test A.	Test B.	Test C.	Test D.	Test E.	Total
Form A.						
Aver.	3.76	3.48	2.78	1.93	1.26	13.46
S.D.	0.77	0.80	1.23	1.26	0.97	3.81
P.E.m	±0.08	±0.08	±0.12	±0.13	±0.09	±0.38
Form B.						
Aver.	3.87	3.63	3.00	1.74	1.35	13.78
S.D.	0.45	0.60	0.75	1.05	0.91	2.83
P.E.m	±0.04	±0.06	±0.07	±0.10	±0.09	±0.28

In each case the difference of the means was decidedly less than three times the probable error of the difference, therefore it seemed that there was no significant difference between the results in form A and form B. The correlation between the two forms was accordingly calculated. It proved to be $r = +.71 \pm .05$. This was very similar to the result got when form A was given a second time to a class after a short interval. The correspondence seemed close enough/

enough to warrant our using form B as an equivalent form of the reading test.

A similar method was used in constructing a second form of the intelligence test; but more difficulty was experienced in attaining equivalence. The material discarded in making form A was re-examined and incorporated with new material. This was tried out with a class, and correlations and probable errors were calculated. The differences in the Analogy test, the Completion test and the total score proved to be significant and the correlation of the two total forms was only $+ .57 \pm .07$. It was decided therefore to analyse the answers, to compile another form in the light of this analysis, and to give the two forms on one day by rotatory method to another class.

In this analysis of the answers, only the work of pupils who had attempted every question in each examination was considered. Form B seemed rather easier than form A, therefore in each test certain of the questions were made more difficult by modifying the wording or by replacing them by other questions. Details are shown in the Appendix. The results of trying out this new form - which we shall here call

B₂ - are shown below -

Table XVIII.

Form A and Form B₂ of Intelligence Test.

	<u>Form A.</u>	<u>Form B₂</u>
Classification		
Aver.	15.78	13.68
S.D.	6.63	5.79
P.E.m	± 0.72	± 0.63
Analogies		
Aver.	8.76	9.47
S.D.	4.92	5.48
P.E.m	± 0.53	± 0.59
Completion		
Aver.	10.65	9.17
S.D.	4.60	6.08
P.E.m	± 0.50	± 0.66
Reasoning		
Aver.	9.5	12.37
S.D.	5.2	5.43
P.E.m	± 0.56	± 0.59
Total		
Aver.	44.62	44.15
S.D.	16.67	17.86
P.E.m	± 1.80	± 1.93

The difference between the two forms is not significant except in the case of the Reasoning test where the difference of the means is 2.87 and the probable error of the difference is 0.81. Form B, of the Reasoning test was accordingly tried with this class as it /

it had proved before insignificantly different from Form A. Its correlation with form A worked out on this occasion as $+0.65 \pm 0.06$, and the difference of its mean results was 2.67 with a probable error of .80. This was judged to allow of its employment as part of the total new form, especially since, with its inclusion in place of Reasoning test B₂, the correlation of the total scores was raised to $+0.83 \pm 0.03$ and their averages were not significantly different. These four tests therefore - Classification B₂, Analogies B₂, Completion B₂, and Reasoning B - were printed as the equivalent form of the Intelligence test.

Form B of the Reading test and Form B of the Intelligence test, obtained in this way from the testing of 84 pupils, are given in the Appendix. They have not yet been tried out on a larger scale.

P A R T III.

Reading Ability of Groups of Children.

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Table XIX.

Distribution of Reading and Intelligence in an Entire School.

Year		6	7	8	9	10	11	12	13	14
Jun. V	Chron. Age	1	32	10	1	1				
	Reading Age	26	13	2	3	1				
	Mental Age	10	19	13	3	-				
Jun. IVB	Chron. Age	-	7	29	4	-	2			
	Reading Age	18	14	3	5	-	2			
	Mental Age	15	17	9	-	1				
Jun. IVA	Chron. Age		5	35	2	2				
	Reading Age	12	14	8	10					
	Mental Age	3	11	16	12	2				
Jun. III	Chron. Age			21	15	1	1	1		
	Reading Age	9	9	1	8	4	8			
	Mental Age	2	6	11	11	3	4	2		
Jun. II	Chron. Age			21	20	2	2			
	Reading Age	1	2	-	16	11	10	3	2	
	Mental Age			9	14	16	5	1		
Jun. I	Chron. Age			3	29	14	2			
	Reading Age		5	4	13	13	8	1	4	
	Mental Age		3	8	14	11	8	4		
Sen. V	Chron. Age				8	24	1	1		
	Reading Age		1	2	5	5	12	1	8	
	Mental Age			2	1	9	14	8		
Sen. IVB	Chron. Age					13	12	10	1	
	Reading Age		4	2	11	10	6	1	2	
	Mental Age		3	8	8	10	4	3		
Sen. IVA	Chron. Age				4	21	9	5	1	
	Reading Age		1	1	1	4	8	1	24	
	Mental Age	1		2	4	7	7	10	9	
Sen. III	Chron. Age					7	27	6		1
	Reading Age					4	15	7	15	
	Mental Age				2	13	10	10	6	
Sen. II	Chron. Age						33	14	3	
	Reading Age				2	5	15	9	19	
	Mental Age				4	6	9	16	15	
Sen. IB	Chron. Age					1	14	23	4	
	Reading Age					1	6	2	33	
	Mental Age					1	2	3	36	
Sen. IA	Chron. Age					1	2	10	17	4
	Reading Age			1	3	3	8	4	16	
	Mental Age				1	8	4	5	15	

In the course of the general survey described above, some 4000 children were tested and upwards of 20,000 papers were marked. There were two impressions left after working through this material: the first was that of the wide range of individual differences of ability within age groups and class groups; the second was that of the apparent simplicity of the passages which proved too difficult for the pupils at various ages. We shall consider these in turn.

Examination of figures I and II shows the overlapping of the age groups. A small proportion of the pupils of age eight, for example, do as well as a large proportion of age twelve, and a small percentage of age twelve do as badly as a large percentage of age eight. A similar scattering is seen when we consider the results of separate classes. Probably the most interesting example of this is in the figures got from one school in which all the pupils - 540 - were tested on one forenoon. The resulting scores were converted into reading ages and mental ages. Chronological ages were also calculated. Table XIX shows the number of children in each class who fall into the various age groups for chronological age, reading age and mental age.

It is noteworthy that in eight of the thirteen classes/

classes most of the pupils are of one chronological age, and that in the remaining five most of them are found in two consecutive years. In the case of reading, however, in only three classes - Junior V, Senior IVA and Senior IB - do a large number of children fall into one group, in only three classes is the range of ability so low as four years, while in seven classes the difference between the best and the worst reader is six years or more. When we look at the distribution of the intelligence ages, we find that only one class is relatively homogeneous, and that in eleven classes the range is five years or more. In the same classroom pupils of intelligence age seven and twelve may be sitting side by side, and pupils of reading age six and thirteen. This scattering of ability and overlapping of grades is no new phenomenon. It has been reported ever since educational testing became definite, and it appears in the published reports of practically every test.

In earlier years it was attributed to the inefficiency of the teacher (v. Curtis 87); but it has since been found to occur in such a widespread form that we are forced to look further afield for an explanation and a remedy. We have to beware of attributing it to one cause or another without considering many factors which may/

may possibly affect the success of the pupils. Before examining the concomitant variants of this wide range of performance, we may remind ourselves of the low degree of reading success which is found at each age. This was shown in Table XIII and Table XIV. Tests D and E would seem to be rather hard even for pupils of chronological age twelve; and Test A is none too easy for children of eight. The same thing is indicated by the percentage distribution shown in Figure I. Only 38.50 per cent of age twelve have a score of eighteen to twenty marks in the total test. Similarly from Table XIX we see that some senior pupils of this school have a reading age as low as nine. What then are the factors which accompany success in reading?

One way of answering this question is to acquire all the information we can about the children whose performance is in question, and examine its degree of relationship to their reading ability. This we shall endeavour to do.

In this section of the report, wherever it is possible to use statistical formulae, I have deliberately made use only of the simple observed correlations between any two types of measurement. More elaborate methods of partial correlations and regression equations have been employed/

employed by certain workers and criticised by others (I).
Into this controversy I do not propose to enter. The
hazards involved in attempts to disentangle by statistical
means the inter-related influences are very great.
(v. Burks 55 and Burks and Kelley 56). I have endeavoured
to collect information under as controlled conditions as
I could, and I set down the results of the simple
calculations based on these details.

I. Burt 62 and 64; Thomson 415; Holzinger and Freeman 226
and 227.

(1) Reading Ability as found in Schools of Different Social
Level.

It has sometimes been suggested that ability to benefit by schooling varies from district to district according to nationality and social status. (I). We have no means of discussing the observed effect of racial inheritance. In Glasgow that is not so obvious a problem as it is in many American cities, (II), or even in London (Winch 586), but we have some evidence as to variation in ability in relation to the social position of the home.

Many different methods have been followed in the attempt to assess the relative prosperity of pupils' homes. In some cases, investigators have depended upon the general opinion of the headmaster of a school, supplemented by that of the attendance visitor; in other cases, representative townsmen have been called in to evaluate (Jones 245). Others workers have relied on answers to questionnaires (Chapman and Wiggins 77). Some have secured information as to the taxes paid by the parents. (Stroud 399), the possession of a telephone (Kornhauser 257) or the occupation of the father (Collins 82. Haggerty and Nash/

I. e.g. Gray & Marsden 173, Cobb 80, Colvin & Allen 85;
Franzen 129, Pintner 341, Freeman 134.

II. cf. Theisen 414, Whipple 456, Colvin & Allen 85, Gray 183.

and Nash 193, Jones and Carr-Saunders 584, Winch 586).

Probably the most detailed attempts have been the weighted reports based on "socio-economic scales" such as that of Chapman and Sims in which an investigator, after visiting a home, records his impressions as to the possession of a telephone, a motor, central-heating, a piano, daily papers, the appearance of the furniture and the size of the house. (I).

As was explained above, none of these methods was followed in our investigation; but the schools were grouped according to the percentage of pupils in each who, in the winter of two successive years, claimed public relief in the form of food or clothing. Five grades of prosperity were recognised. For convenience they are labelled A, B, C, D, E. Table XX gives the results of each of the classes tested, arranged according to its stage and to the grade of school. Full details are given in order to show the variability in average characteristics of schools in relation to class nomenclature as well as to age, intelligence, and reading score. As was noted above, this variety served to make comparison between one school and another/

I. Chapman & Sims 75. Courtis 90. Heilman 205, 206.
Chapin 70. Freeman 135, Chauncey 78. and also Burks 57,
Hollingworth 222.

Average Results in all Classes Tested.

School	Class	Number.		Age			Reading			Intelligence.		
		Boys	Girls	Mean	S. D.	P. Em.	Mean	S. D.	P. Em.	Mean	S. D.	P. Em.
A.												
B. Garrioch	Jun. II	20	20	103.90	5.20	±0.55	10.23	4.76	±0.51	38.43	12.70	±1.35
Victoria	Jun. II	20	25	111.01	8.69	±0.87	11.93	3.10	±0.31	52.60	10.95	±1.10
Victoria	Jun. III	21	18	109.60	10.31	±1.11	8.15	5.29	±0.57	43.23	16.37	±1.77
Victoria	Jun. IVa	28	16	101.59	6.57	±0.67	5.16	3.39	±0.35	35.91	11.10	±1.13
Victoria	Jun. IVb	19	23	102.36	9.34	±0.97	4.07	3.55	±0.37	24.14	11.24	±1.17
Victoria	Jun. V	26	19	94.30	4.66	±0.47	3.27	3.17	±0.32	25.80	9.18	±0.92
C. East Park	Jun. III	18	19	94.26	6.76	±0.75	4.16	3.88	±0.43	21.51	13.85	±1.54
Elmvale	Jun. III	23	20	93.03	4.66	±0.48	2.53	1.98	±0.20	17.40	6.83	±0.70
Gairbraid	Jun. IV	13	23	88.83	4.47	±0.50	2.25	1.92	±0.22	18.0	10.26	±1.15
Newlands	Jun. V	17	27	100.68	4.72	±0.48	4.48	3.45	±0.35	26.70	11.28	±1.15
D. Tureen Street	Jun. II	19	13	105.13	3.79	±0.45	7.47	4.51	±0.54	33.53	12.76	±1.52
E. Dobbies Loan	Jun. II	15	11	113.96	7.79	±1.03	7.58	2.76	±0.37	40.00	10.46	±1.38
Dobbies Loan	Jun. III	11	11	107.68	8.16	±1.17	5.36	4.01	±0.58	35.91	15.77	±2.27

Jun. I.

School.	Class	Number		Age			Reading			Intelligence.			
		Boys		Girls	Mean	S.D.	P. Em	Mean	S.D.	F. Em	Mean	S.D.	P. Em
A. Annette Street	Jun. I	17	26	112.66	9.48	±0.98	6.16	4.11	±0.42	52.77	12.92	±1.33	
B. Victoria Hill's Trust Kinning Park Ibrox Calder Street	Jun. I	26	22	117.33	7.17	±0.70	11.44	3.77	±0.37	52.19	13.91	±1.35	
	Jun. I	21	30	115.38	8.65	±0.82	9.0	4.31	±0.41	43.35	14.46	±1.37	
	Jun. Ib	26	18	110.68	8.89	±0.90	10.27	4.23	±0.43	44.09	14.79	±1.50	
	Jun. I	20	23	107.55	4.08	±0.42	10.07	4.11	±0.42	44.81	13.35	±1.37	
	Jun. Ib	17	14	104.08	5.61	±0.69	9.90	3.61	±0.44	41.74	13.62	±1.66	
C. Quarry Brae Newlands Parkhead	Jun. I	22	18	110.10	6.36	±0.68	10.0	3.97	±0.42	46.98	15.89	±1.69	
	Jun. I	25	21	118.11	7.18	±0.71	12.35	2.86	±0.28	51.35	12.38	±1.23	
	Jun. Ib	27	17	100.14	7.95	±0.81	7.75	3.79	±0.39	21.59	9.40	±0.96	
D. Harmony Row Oakbank	Jun. I	25	23	111.67	18.81	±1.83	7.94	3.30	±0.32	35.13	13.86	±1.35	
	Jun. I	24	21	109.23	6.16	±0.62	9.87	4.00	±0.40	40.60	11.91	±1.20	
E. Camlachie	Jun. I	24	17	116.72	8.06	±0.85	9.78	2.84	±0.30	29.24	11.80	±1.24	

Sen. III.

Total Reading and Intelligence Tests. Average Results in all Classes Tested.

School	Class	Number		Age			Reading			Intelligence			
		Boys		Girls	Mean	S.D.	P. Em	Mean	S.D.	P. Em	Mean	S.D.	P. Em
A. Mount Florida	Sen. III	13	27	141.0	6.52	±0.70	17.5	1.77	±0.19	82.75	12.54	±1.34	
B. Victoria	Sen. III	19	22	138.38	9.03	±0.95	15.78	1.92	±0.20	69.63	10.76	±1.13	
Victoria	Sen. IVa	25	15	130.50	10.35	±1.10	16.22	3.31	±0.35	68.80	18.25	±1.95	
Victoria	Sen. IVb	18	18	136.72	9.13	±1.03	11.42	3.50	±0.39	51.50	13.53	±1.52	
Victoria	Sen. V	15	19	123.85	6.29	±0.73	13.17	3.17	±0.37	65.15	11.91	±1.38	
St. David's	Sen. V	-	42	119.60	4.21	±0.44	13.07	2.96	±0.31	56.71	12.21	±1.27	
C. Crookston St.	Sen. III	19	12	136.47	4.61	±0.56	15.71	3.43	±0.42	69.61	20.46	±2.48	
Keppochhill	Sen. III	24	25	131.54	9.04	±0.87	12.76	4.92	±0.47	58.73	15.61	±1.51	
Camden St.	Sen. III	17	16	121.02	4.49	±0.53	12.55	2.78	±0.33	51.45	11.97	±1.41	
London Rd.	Sen. IV	21	24	126.74	12.35	±1.24	14.60	3.35	±0.34	57.40	17.22	±1.73	
Gairbraid	Sen. IV	22	15	118.36	8.78	±0.97	13.08	3.23	±0.36	62.86	11.77	±1.31	
D. Harmony Row	Sen. IV	17	29	125.62	11.76	±1.17	11.24	3.41	±0.34	51.93	13.91	±1.38	
Oakbank	Sen. V	18	21	133.50	7.63	±0.82	12.15	3.72	±0.40	52.46	17.24	±1.86	
E. Camlachie	Sen. III	20	17	139.66	13.99	±1.55	13.00	2.42	±0.27	49.49	10.02	±1.11	
Delry	Sen. IV	15	14	125.09	8.02	±1.00	13.93	2.51	±0.31	54.90	14.23	±1.78	

Sen. II.

School	Class	Number		Age			Reading			Intelligence		
		Boys	Girls	Mean	S. D.	P. Em	Mean	S. D.	P. Em	Mean	S. D.	P. Em
A. Mount Florida Annette St.	Sen. II	26	20	144.80	5.98	±0.59	18.09	1.52	±0.15	89.90	11.84	±1.18
	Sen. II	19	23	135.88	6.36	±0.66	16.14	2.69	±0.28	82.64	11.45	±1.19
B. Victoria Garrloch Hill's Trust	Sen. II	18	32	142.14	5.26	±0.50	15.82	2.43	±0.23	76.00	14.40	±1.37
	Sen. II	8	26	140.56	8.29	±0.96	15.56	2.32	±0.27	70.71	12.76	±1.48
	Sen. IIb	22	19	140.04	10.55	±1.11	14.83	2.88	±0.30	67.88	11.38	±1.20
C. Galbraid Camden St. Parkhead	Sen. II	27	16	141.31	13.48	±1.39	14.88	3.30	±0.34	69.30	13.59	±1.40
	Sen. IIb	18	24	134.26	9.33	±0.97	13.93	3.17	±0.33	57.14	14.92	±1.55
	Sen. IIb	16	28	134.05	10.65	±1.08	14.16	3.56	±0.36	60.05	13.44	±1.37
D. Oakbank Tureen St.	Sen. II	27	23	149.90	9.90	±0.94	16.48	2.27	±0.22	72.94	12.66	±1.21
	Sen. II	14	17	144.73	7.35	±0.89	15.03	2.75	±0.31	64.39	12.57	±1.52
E. Dobbies Loan	Sen. II	13	15	148.50	12.31	±1.57	13.21	2.53	±0.32	71.18	11.42	±1.46

Sen. I.

School	Class	Number		Age			Reading			Intelligence		
		Boys	Girls	Mean	S.D.	P. Em	Mean	S.D.	P. Em	Mean	S.D.	P. Em
A. Annette St	Sen. I	24	20	148.14	5.96	±0.61	16.41	2.27	±0.23	86.43	12.27	±1.25
B. Victoria Victoria Ibrox	Sen. I	15	19	156.79	9.48	±1.10	15.82	2.99	±0.35	78.12	18.00	±2.08
	Sen. I	18	24	146.17	7.14	±0.74	17.00	1.93	±0.21	93.14	11.24	±1.17
	Sen. I	17	15	152.75	8.97	±1.07	17.69	1.67	±0.20	88.94	11.91	±1.42
C. Crookston St Quarry Brae Gairbraid	Sen. I	13	10	153.50	6.88	±0.97	17.83	1.46	±0.21	86.17	14.12	±1.98
	Sen. I	26	13	148.78	6.62	±0.72	15.31	4.73	±0.51	82.46	9.31	±1.00
	Sen. I	24	19	148.48	10.78	±1.11	17.47	1.76	±0.18	78.51	11.20	±1.15
D. St. Roch's	Sen. I	25	19	147.68	5.92	±0.60	15.25	2.87	±0.29	73.95	11.31	±1.15
E. Dobbies Loan	Sen. I	15	19	153.38	10.01	±1.17	15.74	2.66	±0.31	74.41	10.10	±1.17

Advanced & Secondary.

School	Class	Number		Age			Reading			Intelligence		
		Boys	Girls	Mean	S.D.	P.Em	Mean	S.D.	P.Em	Mean	S.D.	P.Em
A.Hillhead	Form Ib	-	32	154.50	6.63	±0.79	18.72	0.92	±0.11	106.66	8.67	±1.03
B.Petershill	Adv. I	28	-	160.50	4.61	±0.59	16.75	2.21	±0.28	85.96	14.90	±1.90
C.Crookston St. Crookston St. Elmvale Elmvale	Adv. I	10	-	168.30	1.83	±0.39	18.70	0.90	±0.19	91.30	9.04	±1.93
	Adv. II	13	-	165.19	3.99	±0.75	17.85	1.87	±0.35	92.62	7.77	±1.45
	Adv. I	19	-	164.45	1.78	±0.27	16.63	2.08	±0.32	80.26	11.45	±1.77
	Adv. II	20	-	162.50	5.35	±0.81	17.80	1.75	±0.26	88.60	9.61	±1.45

another very difficult. Class results are given at this point, instead of figures for the children considered individually, because our criterion of social position was one which, by its nature, was applicable to groups of children rather than to individuals.

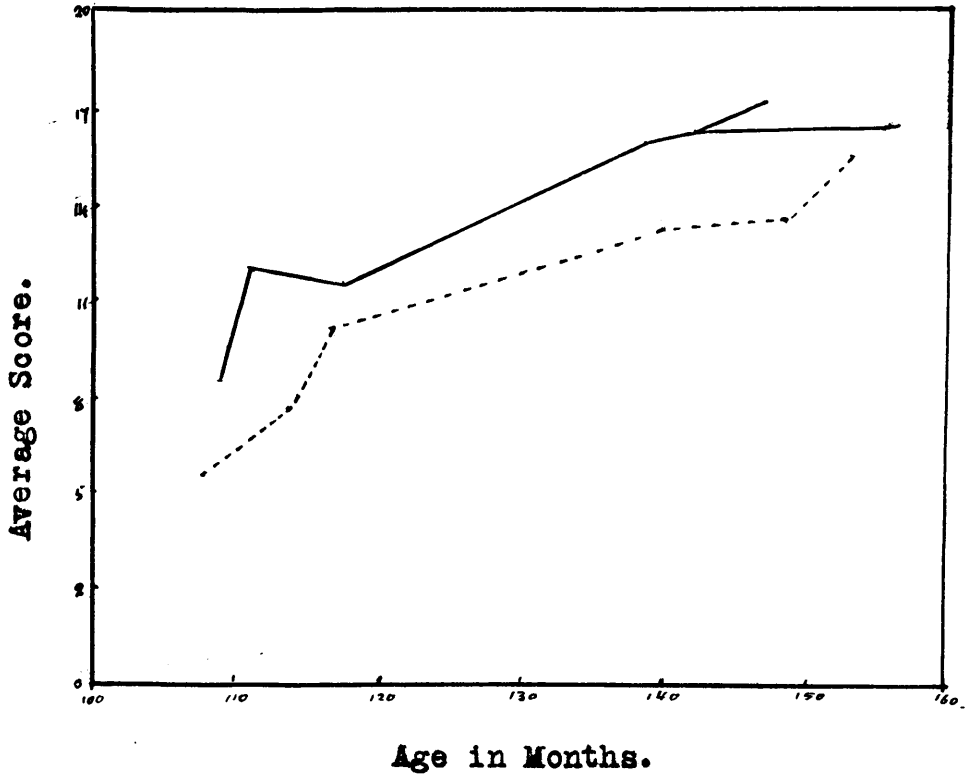
One way of comparing schools in different districts is to consider the performance of pupils of similar physical age. If the ten-year-olds in a particular school are much lower in test performance than the ten-year-olds in another school, but the thirteen-year-olds in the first school are better in the same tests than the thirteen-year-olds in the second, then we can say that whatever is measured has no definite relation to the location of the school. But if a school's rating remains the same no matter what age group or what test is used, then it would seem as if the character of the school determined its intellectual position. The only school in which pupils of every class were reached was Victoria. This school was in social group B. It is of interest to compare its record with that of schools in group E, which is furthest removed from it in prosperity.

The number of classes is too small to warrant working out a correlation between average class scores but inspection shows that for classes of similar age and nomenclature/

nomenclature in the two types of school viz. Junior III, Junior II, Junior I, Senior III and Senior II the score of Victoria school is distinctly better than that of a group E school. For Senior I the difference is not so marked, unless we consider the younger, brighter group at Victoria as representative of that school. This should probably be done, as the class at Dobbie's Loan was the best in the school. Looking at the intelligence score for these same classes, we find there also a definite superiority on the part of the school in the superior social group. The advantage is found right up the school (v. Figures VI and VII).

Figure VI.

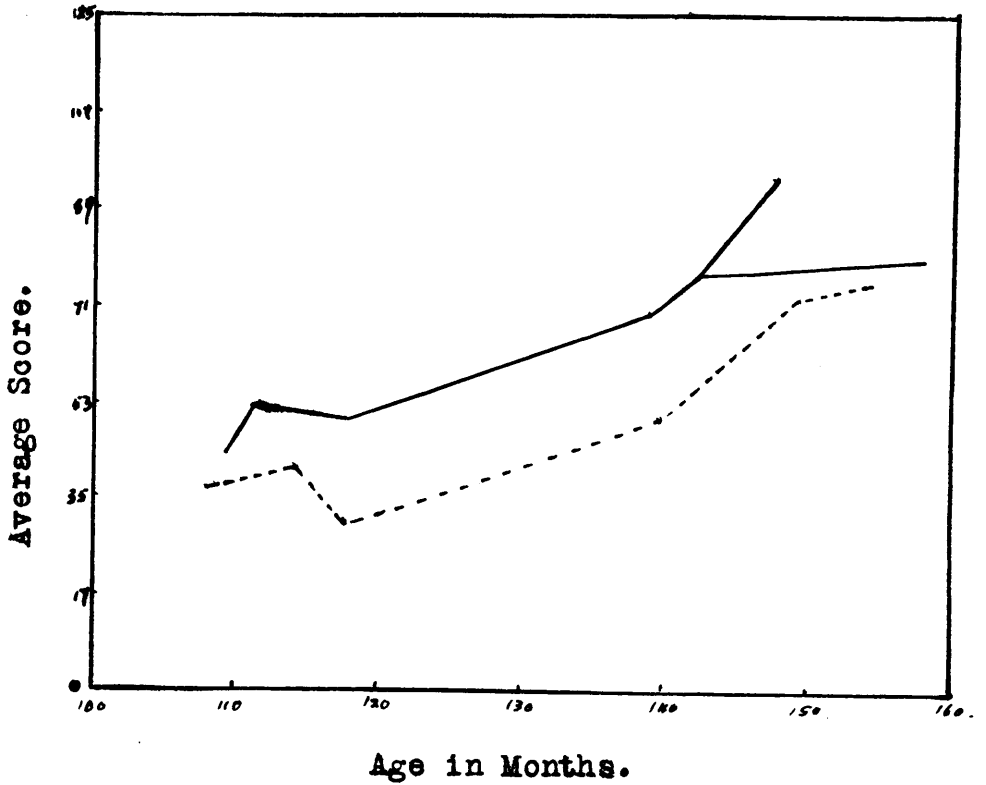
Average Reading Performance of Classes of Similar Age in Social Groups B and E.



Group B. ———
Group E. - - - - -

Figure VII.

Average Intelligence Score Classes of Similar
Age in Social Groups B and E.



Group B. ———
Group E. - - - - -

In certain other schools, more than one class was tested and we may compare these at different stages. Garrioch Junior II is practically a year ahead of Tureen Street Junior II in reading ability, as measured by these tests; and Garrioch Senior II is in advance of Tureen Street Senior II though the latter is on an average four months older. These schools belong respectively to groups B and D.

Groups C and E may be compared by Gairbraid and Dobbie's Loan schools in Senior II and Senior I. In both instances the reading performance of the school in section C is better even although the children are younger. Junior IV of Gairbraid school is so much younger than Junior III of Dobbie's Loan that comparison there is not feasible.

In the case of Annette Street and Oakbank - groups A and D - the superiority of group A is not so manifest. In Junior I, Annette Street seems ahead in intelligence, but slightly older and behind in reading ability. In Senior II the Annette Street pupils are about a year younger and a year more intelligent while their reading progress is very similar to that of Oakbank. When we consider Mount Florida and Oakbank however, for Senior III, section A are about six months older than the pupils in section D, but they are more than a year in advance in reading/

reading and in intelligence; for Senior II practically the same relationship holds except that the Mount Florida group in this case are younger. Comparing Annette Street Senior I with St. Roch's Senior I, section A does somewhat better in reading and decidedly better in the intelligence test.

The difference between group B and group C is not so marked. Victoria Junior IV compares in age with Newlands Junior V, and their average reading scores are 5.16 and 4.48 while their intelligence ranks as 35.91 and 26.70. Victoria Junior I and Newlands Junior I are practically equal in average age and intelligence, and their reading averages are 11.44 and 12.35.

Hill's Trust Junior I is more than a year ahead of Parkhead Junior IB both in chronological age and in intelligence; but their reading performance is not a year in advance. Hill's Trust Senior IIB is six months older and more intelligent than Parkhead Senior IIB, yet in reading they are almost the same. Ibrox Junior I and Quarry Brae Junior I are very similar in age, intelligence and reading, while the Senior I classes in the two schools are almost proportionately different in the three measurements. Victoria and Crookston Street may likewise be compared. In Senior III they are almost identical in age, reading power, and intelligence. In Senior/

Senior I, Crookston Street (section C) is slightly younger, yet does better both in the reading and the intelligence test.

Between groups C and D also, the direction of the difference is not constant. Camden Street Senior III is much younger than Oakbank Senior III, but in reading and intelligence it attains to nearly the same level.

Camden Street Senior IIB and Oakbank Senior II are rather more than a year apart in all three measurements.

Gairbraid Senior IV is more than a year younger than Oakbank Senior IV, not quite a year different in average intelligence score, and but little different in reading.

Gairbraid Senior II is younger than Oakbank Senior II in chronological age, reading and intelligence.

Groups A and B may be compared in the case of Mount Florida Senior III, Victoria Senior III, Mount Florida Senior II and Victoria Senior II. In these two schools group A does much better. The same is found when we look at Annette Street and Victoria, in Seniors I and II.

Returning to groups more widely apart, we find again a distinct difference between groups so widely apart as A and E in classes such as Annette Street Senior I and II and Dobbie's Loan Senior I and II.

From all these instances it would seem as if differences do exist between pupils of the same age and class/

Table XXI.

Average Results for Classes in Different Groups of Schools.

	Age			Reading			Intelligence		
	Mean	S.D.	P. Em	Mean	S.D.	P. Em	Mean	S.D.	P. Em
	Advanced	154.50	6.63	+0.79	18.72	0.92	+0.11	106.66	8.67
B.	160.50	4.61	+0.36	16.75	2.21	+0.28	85.96	14.90	+1.90
C.	164.60	4.21	+0.36	17.60	1.92	+0.16	87.32	10.95	+0.94
A.	148.14	5.96	+0.61	16.41	2.27	+0.23	86.43	12.27	+1.25
B.	151.46	9.29	+0.60	16.83	2.37	+0.15	87.17	15.30	+0.99
C.	149.69	8.82	+0.58	17.29	1.82	+0.12	81.66	11.66	+0.77
D.	147.68	5.92	+0.60	15.25	2.87	+0.29	73.95	11.31	+1.15
E.	153.38	10.01	+1.17	15.74	2.66	+0.31	74.41	10.10	+1.17
A.	140.54	8.50	+0.61	17.15	2.37	+0.17	18.43	12.21	+0.86
B.	141.02	8.20	+0.49	15.42	2.59	+0.16	71.91	13.50	+0.81
C.	136.54	11.82	+0.70	14.33	3.12	+0.19	62.19	15.09	+0.90
D.	147.43	9.47	+0.71	15.35	2.52	+0.17	71.67	12.73	+0.95
E.	148.50	12.31	+1.57	13.21	2.53	+0.32	71.18	11.42	+1.46
A.	141.00	6.52	+0.70	17.5	1.77	+0.19	82.75	12.54	+1.34
B.	129.79	11.24	+0.54	14.10	3.39	+0.16	62.48	15.33	+0.77
C.	126.94	10.99	+0.53	13.73	3.83	+0.19	59.71	15.54	+0.75
D.	128.51	11.08	+0.81	11.66	3.57	+0.26	52.18	15.54	+1.14
E.	139.66	13.99	+1.58	13.00	2.42	+0.27	49.49	10.02	+1.11
A.	112.66	9.48	+0.98	6.16	4.11	+0.42	52.77	12.92	+1.33
B.	111.69	8.65	+0.40	10.10	4.11	+0.19	45.52	14.57	+0.67
C.	110.61	10.38	+0.61	10.07	4.02	+0.24	39.93	18.36	+1.09
D.	110.49	7.48	+0.52	7.71	3.22	+0.22	37.77	12.92	+0.90
E.	116.72	8.06	+0.85	9.78	2.84	+0.30	29.24	11.80	+1.24
A.	113.68	9.74	+0.41	7.09	5.09	+0.21	33.47	13.77	+0.58
B.	94.47	6.69	+0.36	3.38	3.09	+0.16	21.04	11.38	+0.61
C.	105.13	3.79	+0.45	7.47	4.51	+0.54	33.53	12.76	+1.52
D.	111.08	8.55	+0.83	6.56	3.57	+0.35	38.31	13.56	+1.32

class in various social groups, that the more prosperous score more highly both in reading and in intelligence, and that the differences are most distinct between sections most widely separated by economic conditions. To procure further evidence on this, the marks of the pupils in various types of schools at each stage were grouped together, and average scores were calculated. These are shown in Table XXI. The sequence of difference here is not always clear-cut in order from A to E; but inequalities are illuminated by the figures showing average age or average intelligence, and also by the details in Table XX of the differing nomenclature and ages in different schools. In table XXI also the differences between sections widely apart in economic status are more marked than those between contiguous groups.

It seems therefore that we are justified in believing that differences in the reading ability measured by our tests correlate to a positive degree with social status, and that they do not disappear in the pupils' educational careers.

Such a conclusion is similar to that reached by other workers in connection with intelligence tests (I), and measures/

I. Winch 586. Haggerty & Nash 193. Chapman & Wiggins 77.
Freeman 135. Collins 82. Stroud 399. Chauncey 78.

measures of school achievement (I), but it has to be advanced with caution in view of the warnings of Pintner (338) and Curtis (91) that we have to beware of attributing to nationality, social conditions, or teaching, poor results that are really explicable by low intelligence or immaturity. We have also to remember evidence brought forward recently that the influence of the home environment is very slight (II). Further, within the classes of any one social group it is obvious from table XX that there are wide differences of performance; and our observation of the detailed results of an entire school showed that equalisation of opportunity in type of home and schooling does not equalise achievement (cf. Hollingworth 222). The nature of our criterion of social status permits a comparison of schools only, and not of individual pupils or their relatives, and therefore no calculated correlation of pupils' performance in each section has been attempted. From the data at our command, we cannot offer any evidence as to whether it is the environmental or the hereditary side of home-life which is connected with differences in reading ability (cf. Burks 57 and 58) .

More/

- I. Winch 469. Kornhauser 257. Burt 62,64, Gray 175. Freeman 135. Collins 82. Gesell & Lord 154. Goodenough & Shapiro 166. Chauncey 78.
- II. Curtis 90,91. Rogers 362. Davis 587. Burks 57. Heilman 206, Freeman 134. Jones & Carr-Saunders 584.

More direct comparison of individual children is possible on a large scale in connection with the factors of age and of intelligence. We shall attempt this next.

(2) Reading Ability as Conditioned by Age.

The correlation of age and the reading ability measured by our tests may be estimated in three ways, (a) we may consider how far they show relationship within small groups delimited by stage, school, and social status; (b) we may compare them in the case of children of equal intelligence; (c) we may correlate them over the whole range of pupils from ages 7 to 13. The first method was used in connection with one entire school which was tested on one forenoon. This was judged to be valuable evidence as it enabled us to equalise school influence, previous practice, economic status, and diurnal influence as far as this could be done.

If age were one of the strong factors in determining success in reading, we should expect to find a decided position correlation between it and reading performance. Such a condition would mean in general that the older the child at a given stage the better his reading. Inspection of table XX, which shows the average results for various classes, reminds us that this is not the case. The score of the younger classes is usually higher than that of the older ones in the same group of classes. Table XXII collects the figures for each of the classes of Victoria School/

school. In that school also it is evident that the younger classes at various stages e.g. Senior Ib, Senior IVa, Senior V, Junior II, average better than the older ones.

Further evidence to this effect is given by Table XXIII, which shows, for these same thirteen classes, the correlation between reading score, age and intelligence.

Table XXIII

Correlation of Reading with Age and Intelligence in Victoria School.

	Age	Intelligence
Senior Ia	-.42 ±.09	+.77 ±.05
" Ib	-.37 ±.09	+.25 ±.10
" II	-.38 ±.08	+.59 ±.06
" III	-.16 ±.10	+.22 ±.10
" IVa	-.32 ±.09	+.78 ±.04
" IVb	-.33 ±.10	+.76 ±.05
" V	+.15 ±.11	+.69 ±.06
Junior I	-.06 ±.10	+.61 ±.06
" II	-.46 ±.08	+.36 ±.09
" III	-.27 ±.10	+.71 ±.05
" IVa	+.09 ±.10	+.47 ±.08
" IVb	-.18 ±.10	+.32 ±.09
" V	-.25 ±.09	+.59 ±.06

In every case but Senior V and Junior IVa the correlation with age is negative. In Senior V it is +.15 and in Junior IVa, +.09. Both of these classes were intelligent and young for their stage and relatively homogeneous in age (v. Table XIX). A positive correlation however of

.15 is very low. We may therefore conclude that chronological age at any stage of school life is little indication of probable success in reading. The younger children of a class on the whole excel the older (I).

A second measure of the relationship was made by correlating the age and reading ability of pupils who most nearly attained the age-average marks for ages 9 and 11 in the intelligence test. All the pupils therefore whose marks were 47, 48, 49 or 67, 68, 69 were selected, and the correlation of their reading ability with their chronological age was calculated. The resulting figures were $r = +.24 \pm .06$ (100 pupils) and $r = +.17 \pm .06$ (99 pupils). These figures, though positive, are not high. They suggest that other factors than age affect the success of the pupils. The older children, even if of equal mental level, do not read with much more skill than the younger ones.

A third way of estimating the relationship between age and reading is to examine how far they are connected over the whole of the age-groups of all the pupils. The actual age of 2481 pupils from ages 7 to 13 therefore was correlated with their reading scores: the resulting figure was

$$r = +.63 \pm .01$$

The/

I. Similar conclusions are reported by other investigators such as Gates 139. Theisen 414. Curtis 90.

The difference between this result and that of the correlations within single classes or groups is probably due to the fact that in each total age group we are dealing with pupils of about the same intelligence quotient. The performance of the "old-dull" pupils is balanced by that of the "young-bright", and the positive relationship is similar to that revealed by the steady increase of age averages shown in Table X. Reading ability seems therefore to depend not so much upon actual age as upon increasing mental maturity (I).

Before passing on to consider the data we have as to the relationship of reading with intelligence, it is interesting also to consider any evidence of differing growth at different ages (cf. Gates 139). It will be remembered that the age averages progressed with fair uniformity, the difference between successive years in the age-group seven to thirteen being 3.84, 2.57, 2.64, 1.71, 1.29 and -.13. The slight increase between ages 9 and 10 occurs both in the reading results and in the intelligence test results. It possibly corresponds to the period of rapid progress in silent reading noted by Gray (174, 175, 182, 183) and Arthur (3), in grades two to four. In view of the absence of direct training in silent reading to which/

I. cf. Beik 20, Courtis 90, 91, Wheeler 453.

which reference has already been made, the development of ability to read for comprehension may occur slightly later in Glasgow than in the American schools.

The decrease of the increment as the pupils pass further into adolescence is a phenomenon which has been discussed in connection with many physical and mental measurements (I). The great individual differences which are found at each age somewhat lessen the significance of our figures since they represent merely average performance at each age, but it may be noted that the standard deviations decrease along with the averages. It is not possible from such records to pronounce with certainty upon the effect of adolescence on the development of reading. We can merely note the general tendency. There is need of detailed studies and testing of many individuals - following each through the entire periods of childhood and adolescence. It does, however, seem as if the rate of progress were lessening as the pupils became older. The abrupt interruption at age 13 has already been noticed and a probable explanation has been found in the selected character of that group. Reference to tables XX and XXI enables us to compare with the average records of age 13 the performance of/

I. cf. Whipple 456, Murdock 299, Henmon & Livingstone 208, Baldwin 8, Symonds 401, Freeman 133.

of pupils of about that age who had made normal school progress and were found in the "Advanced Classes". The average for these advanced classes is above that for Senior I (Table XXI) and these classes included, as may be seen from Table XX, some pupils no older than those in Senior I. The marked decrease in the average at age 13 seems therefore less an evidence of retarded progress associated with age than of a decrease associated with general weakness of intelligence or of the ability measured by school examinations. We have not enough cases to discuss the response shown by pupils aged fourteen.

Variations in rate of progress at the different ages may also be estimated from Figures I to IV (v.p. 69) It is noticeable that in figure I the curves for ages 7 and 8 show a large number of pupils whose score is extremely low. The curves for the test at these ages are much further from the type of normal probability than are those for ages 9, 10 and 11. There are several possible reasons for this. It may be because the ability to read, being not a necessary feature of growth but an acquired characteristic, does not conform in distribution to measurements such as height, weight, or even general intelligence.

It may be because of the lack of direct training in silent reading in the school curriculum at the time the tests/

tests were given. Pupils of age 8 had perhaps not had time to recover from the effects of a biased method of teaching reading which laid all the emphasis on oral reproduction of words and gave no training in reading for a purpose or following printed directions. Older pupils get certain incidental practice from blackboard work in other subjects, such as arithmetical problems, grammar, nature study. This may have served to render them more skilful in silent reading. Younger pupils - at about age 8 - have still not recovered from the methods used in teaching at the initial stages. It may have been, therefore, that the test was too hard for many of these pupils of age 7 and 8. An easier test might have got results similar to those shown in the polygon for age 9. Inspection of the records shows that the pupils failing so badly at age 7 and 8 were nearly all of intelligence age much less than 7 or 8 according to the results of the intelligence test. They had possibly not attained the mental level necessary for success in a test of this type. At age 12, on the other hand, the polygon appears truncated at the upper side. This would suggest that the test as a whole is too easy for the older pupils. As against this, is the fact that only $\frac{28}{387}$ pupils of age 12 attained full marks and only $\frac{13}{205}$ at age 13. Had the percentage distribution been shown for each mark in the/

the range of marks instead of for seven groups, the resulting polygons would have appeared more normal. Table XXIV shows the percentage of retarded pupils at each age. It is calculated from the figures of the distribution in the total test, and gives the percentage of pupils who are below the average performance of their age by one or two years.

Table XXIV.

Percentage of Retarded Pupils at each Age.

		8	9	10	11	12	13
Per cent more than one year retarded	Reading	24.11	23.02	18.44	20.69	25.58	39.02
	Intelligence	25.29	27.29	27.27	22.63	22.10	51.71
Per cent more than two years retarded	Reading	-	11.09	11.95	8.41	11.11	29.27
	Intelligence	-	8.10	11.43	14.66	10.08	25.85

It is interesting that there is a lessening of the number at about age 10 or 11, and an increase again as we go further into adolescence. These figures may be taken as indicative of the numbers of pupils who at present in Glasgow seem to require special attention in reading. Their existence serves as a reply to those teachers mentioned earlier who were sure that they had among their pupils no children requiring special attention in reading. We shall return to this problem later when/

when we consider the use which may be made of our tests in diagnosis of difficulty.

(3) Reading Ability as Varying with Different Grades of
Intelligence.

One of the chief hindrances to an estimation of the influence of intelligence upon reading is the close interrelation of reading ability and intellectual power as measured by intelligence tests.

It has been brought as a criticism against almost every reading test that it is measuring not pure reading ability but some related power such as reading for a specific purpose (Ballard 11,14. Curtis 88. Pressey and Pressey 347), ability to attend (Pintner and Marshall 336) or ability to draw (Chapman and Cook 73). And in the same way, even such universally accepted tests of intelligence as the Binet ones have been declared to be the product of schooling to the extent of about fifty per cent (Burt 64, Wechsler 447) and the association of success in mental tests with linguistic ability has been proved on more than one occasion. (v.Gates 141, Colvin and Allen 85).

This matter has already been discussed in Part I. It is sufficient here to remind ourselves that our reading tests were deliberately chosen so as to exclude the unexpected and novel in method or manner, and so as to approximate to the type of reading ability required in the/

the average reading books at different stages. While by their construction they set a new model for teaching methods, by their content they were selected so as to enable teachers to discover which pupils were best acquiring the power to interpret ordinary printed matter. The intelligence tests also made use of a type of response which had been proved by other investigators to be a valid measurement of intelligence.

If it be granted that our intelligence tests correlate highly with mental ability, and that our reading tests are a reasonably reliable and valid means of estimating varying degrees of progress in reading, we may therefore, with the reserve necessary because of recognised inter-relation of our measuring tools, ask what correlation we find between the results of our two types of test.

We have calculated this in two ways (a) by a correlation of results at each of the ages 7 to 13; (b) by a correlation for individual classes for an entire school and for various other groups of children. If there is a large degree of influence between intellectual ability and reading, we should expect to find a definite positive correlation. The chief figures we got are shown (a) in Table XXV and (b) in Table XXIII.

Table XXV.

Correlation between Reading and Intelligence.

Age	7	8	9	10	11	12	13
r	+0.60	+0.72	+0.68	+0.75	+0.75	+0.69	+0.76
P.Er	±0.04	±0.02	±0.02	±0.02	±0.01	±0.02	±0.02

Inspection of these tables shows that the correlation is positive in each case. It is uniformly high in the age groups (which involve a wide range of intelligence quotients) and it varies from class to class inside the grouping of pupils we find in Victoria School (Table XXIII)

This suggests that success in the kind of reading required by our tests corresponds very closely to general mental ability. Confirmation was sought by testing 110 of our pupils - taken at random from ten schools - with the Binet individual tests (Burt's version, Burt 64). The correlation between their performance and the results of the reading test was $r = +0.73 \pm 0.03$ (I).

From/

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- I. Evidence similar to this is being accumulated by other workers, e.g. Terman 405, Dickson 108, Merrill 281, Theisen 414, Gates 139, Davis 97, Pintner 338, Gates 140, Colvin & Allen 85, Hollingworth 220, Gates 145, Goodenough 163, Curtis 90, Freeman 133, Wilson 466, Stalnaker & Roller 387, Denworth 106, Hollingworth 222, Burks 57, 58, Heilman 206, Taylor 403, Van Wagenen 435, Terman 412.

From the relative stability of the correlation at different ages, one would judge that intelligence affects not only the rate of learning but also the relative efficiency of the pupils later. Had the correlation been less as the pupils grew older, it might have been thought that the initial stages of the process were those which were most influenced by intellectual maturity.

The effect of this recognition of the large part played by intelligence in association with progress in reading may be to revolutionise our attitude to many school problems. Before discussing this, however, we should examine the other information which we have been able to secure.

Along with the interest recently shown in the association between success in intelligence tests and success in the various school subjects, has come the suggestion that we should express the relationship between them by a ratio to be called the "accomplishment quotient". The assumption is that educational abilities in completely normal children may be expected to correlate to unity with mental age. Much discussion has centred round this, and there has been considerable disagreement as to terminology (I).

The/

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- I. Stebbins & Pechstein 392, Ruch 365, Freeman 133, Torgerson & Shuman 425, Torgerson 426, Wilson 466, Popenoe 342, Burks 58, Wilson 468 and Odell 313. Toops 423.

The formula most frequently accepted is that of the ratio of educational age to mental age. One of the disadvantages attached to its use is the incompatibility of the norms of many tests of intelligence in relation to tests of accomplishment. In order that the ages calculated from two sets of measurements may be reliably compared, it is desirable that the norms shall have been obtained under the same conditions and from the same groups of children. To satisfy this necessity, compound tests of achievement and intelligence have been devised (I). From the use of such examinations an accomplishment quotient can be calculated with fair reliability.

The norms for our two tests were worked out concurrently; therefore it seems feasible to compare the quotients attained by pupils in the two. The results of 540 children in Victoria School were therefore calculated in terms of Accomplishment Quotient and Intelligence Quotient. 226 pupils were found to have an I.Q. above 100 but an A.Q. below 100, and 185 pupils had an I.Q. below 100 and an A.Q. above 100; further 173 pupils had an A.Q. above 100 and 161 were below 100 in A.Q.

The figures suggest that under the conditions of learning which are prevalent in that school, more pupils fall/

I. e.g. Illinois 550, Pintner 564, Northumberland 511, Stanford 522, Otis Classification 562.

fall below the possible limits set by their intelligence quotient than rise above them.

It has been judged by certain investigators that the A.Q. approximates to unity when the pupils are pushed to the limits of their improvement (I). The chief value of its calculation is therefore to provide an incentive to increased attention to the individual progress of the children. Pupils of high I.Q. may have a low A.Q. if they are required to work in classes whose average is below their mental level. There is a tendency for production to remain about the median performance of the group. Duller pupils tend to receive greater stimulation from the teacher and from the example of their class-mates (II). There is possibly need of more frequent promotion for bright pupils according to success in each subject so that their effort may not be diminished by comparison with pupils of lower educational age.

Whatever be the exact relationship of intelligence and scholastic ability, it is evident that we should carry further our study of individual pupils, and enquire whether variations from expected performance may not be due, as our correlation figures suggest, to some other factors affecting/

I. v. Toops 423. Torgerson & Shuman 425, Torgerson 426.
Freeman 133.

II. Richards-Nash 359, Freeman 133, Van Wageningen 434.

affecting progress.

A series of experiments has accordingly been carried out with small groups of pupils. The results will now be considered.

(4) Reading Ability as Influenced by Different Methods
of Teaching.

It was difficult to estimate this in Glasgow because at the time our investigation was begun, there was remarkably little difference in the essentials of method throughout the schools of the city. The prevalent method of teaching beginners was on phonic lines, with emphasis on isolated words arranged according to a system of phonetic rules. The books in use were constructed according to a definite scheme of word selection and many of the sentences taught were of the type -

"let us pet a cat or a kit.

a kit is a pet for us.

a wet dog ran on. is it a pet for us?

set a cat on a mat if it is wet.

a fat hen met a fox.

I met a man and a pet dog.

a dog ran at a fat rat.

a dog can get up on a box."

There was no emphasis on reading for meaning, no use of flash cards, no training in thought-getting. Similarly, in the junior and senior school, the reading lessons were on purely oral lines and were invariably conducted as class/

class lessons.

There were, however, two schools to which I had access, which were not under the Glasgow Education Authority, and in them there was some variation of method. One was in Clydebank and one in a Glasgow suburb. The former was comparable in social level to a school in group B, the latter to the best of the schools in group A. Classes in these schools were accordingly tested.

In the school comparable to group B, teaching methods in the Infant Room were largely modelled on those of Miss Mackinder (Mackinder 272) which implied considerable independence on the part of the children and some training in initial recognition of words as wholes. In its junior department three of the classes had for the last three years been doing work on individual lines. They had therefore had considerable practice in silent reading. One of these was chosen, and, along with it, a class of almost equivalent stage, which had, since the Infant Room, done only class work.

We have therefore in this school a chance of comparing the performance of two classes which have had experience in the infant room different from that of average Glasgow children and, in addition, of contrasting the work of two classes of similar infant room history but different subsequent training.

In/

In the other school infant room methods were based on visual apprehension of sentences and words and the teaching of the older classes was on individual and experimental lines.

Results from the three classes are given in Table XXVI.

Table XXVI.

Results in Schools using more Individual Methods.

School	Age	Reading	Intelligence
Clydebank Sen. Ic	Aver. 134.07	14.14	73.43
	S.D. 9.46	3.35	12.31
	P.Em ±0.98	±0.35	±1.28
" Sen. II	Aver. 125.76	15.61	68.37
	S.D. 11.14	2.04	11.70
	P.Em ±1.11	±0.20	±1.16
College Sen. II	Aver. 134.66	17.34	87.84
	S.D. 8.65	1.91	13.07
	P.Em ±0.95	±0.21	±0.14

The two latter classes are the two which were trained on individual lines.

Reference to Table XX enables us to compare the performance of these classes with that of Glasgow ones of similar social level and age. Clydebank Senior Ic is much/

much younger than any Senior I class in Glasgow. To find one comparable, we have to look back to the Senior II groups. This is probably due merely to a difference of nomenclature in the two districts. In Senior II (group B) the nearest school in age is Hill's Trust whose average age is 140.04 months (S.D.10.55 \pm 1.11). This is about six months older than Clydebank Senior Ic. In reading ability the Hill's Trust class is not far distant - 14.83 (S.D.2.88 \pm 0.30) as compared with 15.14 - but its intelligence score is lower - 67.88 (S.D.11.38 \pm 1.20) in contrast to 73.43. Garrioch school Senior II in the same group is similar in intelligence and reading to the Clydebank class - its results being for reading 15.56 (S.D.2.32 \pm 0.27) and for intelligence 70.71 (S.D.12.76 \pm 1.48). Its average age, however, is also older - 140.56 (S.D.8.29 \pm 0.96). It would seem therefore that there is a slight advantage in favour of the Infant room methods of the Clydebank school. This is apparent also when we look at the average results of classes in different groups of schools as shown in Table XXI. The average reading score for Senior II classes of group B schools is 15.42 (S.D.2.59 \pm 0.16) and their intelligence average is 71.91 (S.D.13.50 \pm 0.81). This is not far removed from that of Clydebank Senior I. The age average however is much older - 141.02 (S.D.8.20 \pm 0.49). It appears as/

as if the Clydebank children, though younger, were up to the average performance of these Glasgow schools of similar social status.

Turning now to methods in the Junior School, we find that Clydebank Senior II which has continued its training on individual lines is on an average about eight months younger than Clydebank Senior I, and fourteen months younger than Hill's Trust Senior II. It is similar in intelligence score to Hill's Trust Senior II but behind Clydebank Senior I. In reading, however, it is ahead of both classes - its average being 15.61 as compared with 15.14 for Clydebank Senior I and 14.83 for Hill's Trust Senior II. It would seem therefore as if its practice in silent reading had given it a decided advantage, for the purposes of our test, over much older classes and even over more intelligent ones.

College School Senior II which has also been trained by individual methods shows a similar advantage over a class comparable in age. Annette Street Senior II has an average age of 135.88 (S.D.6.36 \pm 0.66). This is very near to that of College school. Its reading average is 16.14 (S.D.2.69 \pm 0.28) and its intelligence 82.64 (S.D.11.45 \pm 1.19). Both these scores are below the performance of the College school. It appears allowable to trace part of/

of this difference to the more independent methods of working encouraged in College School.

The number of these instances is too small to enable us to pronounce with much assurance; but the figures we have given seem to justify us in suggesting that ability in reading for comprehension may be improved by the training given by school work on individual lines to an extent greater than that which is attained by older children taught to read on class and oral lines.

Evidence has been brought forward by other investigators that methods of teaching have some effect on progress in reading (I). Further, a belief in the efficacy of improved methods is implied by all those who write directions for remedial work or for improving reading instruction (II). On the other hand, certain reports would seem to indicate that differences of method have a relatively trifling effect - along with other environmental factors - upon performance in reading. Gray (183) and Courtis (90,91) would probably claim that we are merely justified in saying/

- I. Pintner 329, Mead 277,278, Pintner & Gilliland 330, Theisen 413,414, Fernald & Keller 124, Remer 353, Gates 146,147, Peyton & Porter 328.
- II. e.g. Whipple 457, Gray 177,179,181,182,183,184,185, Horn 231, Hoover 228, O'Hern 315, Hawley 202, Gray 172, Gates 140,149, Pennell & Cusack 324, Geiger 152, Wheat 451, Bolenius 28,29, Perrin 325, Hoover 229, Heller & Courtis 207, Ballou & Hardy 15, Watkins 446, Zirbes 484, Herriott 212.

saying that we have here another example of the specific effect of training. Pupils who have been given practice in silent reading have improved in ability to read silently. (I). It is, however, very difficult to differentiate between a "difference of method of teaching reading" and a "provision of varying amounts of practice in a specific type of reading". The pupils in the two classes we tested certainly did better than those of similar age, social status, and intelligence, in schools where a different type of tuition prevailed.

(I) Peters 326, Gilliland 158, Hoover 228, O'Brien 307, 308, Valentine 432, Gray 183, Gilliland 159, Gates 142, Miles 283, Alderman 1, Averill & Mueller 6, Simpson 380.

(5) Reading Ability as Affected by the Influence of
Different Teachers.

This is even more difficult for us to estimate than is the effect of differing methods. Five classes were tested at varying intervals; but, of these, two were still under their previous teachers. Examination of the results of the three others shows very little variety in the amount of change in the class averages (v. Table III). The correlations between first and second testings of reading are +.75, +.80 and +.56. The differences in average score are 2.82 (six months' interval) 3.17 and 3.67 (twelve months' interval). The variation here is not high. It may, however, be that, in the last instance, the influence of the teacher had worked to raise the performance of several children whose score was so much higher on the second testing as to reduce the correlation of the two test results to +.56. Inspection of the actual class results shows that this alteration in status affects only four pupils (whose record increased by 9 to 10 marks), and I had no opportunity of examining the children more closely to discover fuller details of their circumstances and history.

Observation of the class results of Victoria School Table XXII reveals discrepancies from class to class; but they are all associated with variations in average age or/

or intelligence score. We are not able to trace them definitely to variations in teachers' ability.

In Table XX, one of the Junior I classes - Annette Street - is seen to be markedly low in reading average by comparison with other classes of similar age and intelligence. It is in a Group A school socially, and might have been expected, therefore, to be rather above the level of the performance of the others. This class had suffered through absence and illness of teachers in the months prior to testing. There is a possibility therefore that the lowered score is a reflection of this. Such an example, however, is rather an instance of the effect of lack of regular tuition than of the direct influence of one person.

There have been relatively few attempts to trace differences in reading progress to the effect of different teachers. One would expect such an influence to exist; but it is a factor which it is practically impossible to isolate, not only because of the complex nature of the influences which have their share in determining children's reaction to teaching, but also because estimation of relative success in teaching is a measurement which it is wellnigh impossible for an outsider to make (I).

It/

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- I. Discussions of the problem are found in Reymert 356, Pintner 338, Theisen 414, Arthur 3, Gray 183, Miles 283, Burks 58, Taylor 403.

It is possible that, under present Glasgow conditions of selection and training of teachers, the differences in efficiency between one and another are so slight that, over a number of years, their effect is negligible. Further, every child comes under the tuition of more than one teacher. This will serve still more to neutralise personal effects. So far as our evidence goes, it would seem as if we had no grounds to question the conclusion of Pintner (338), Curtis (91) and Taylor (403) that estimated teaching ability has very little measurable effect upon the achievement of the children - especially as compared with intelligence or educational maturity.

(6) Reading Ability as Dependent upon Length of Attendance at School.

This was examined in the case of one class which had been out of the Infant Room for four months. Particulars were obtained for each pupil of the date of his enrolment at school, and his chronological age, and all the children were tested by the two tests.

The resulting correlations with silent reading ability were:

Reading and Intelligence $r = +.78 \pm .04$

Reading and Age $r = -.25 \pm .10$

Reading and Number of Months since beginning attendance at school $r = -.34 \pm .10$

The first two figures correspond to what we have found in other classes (v. Table XXIII). The latter figure therefore suggests that it is not the time we spend at school that matters so much as how and by whom it is spent.

The same question was considered in connection with all the schools tested. The percentage of pupils in average attendance was noted for each school in Table XX. It was found, however, that every school except three had a percentage of attendance between 81 and 90. This meant that the differences of attendance were too slight to be significant/

significant. The three exceptions were Hillhead, Camden Street and Harmony Row and all three had attendance between 71 and 80. These belong respectively to social groups A, C and D. Camden Street Senior III had the same percentage of attendance and the same average intelligence as Harmony Row Senior IV group. It was four months younger; but did better in reading. Harmony Row Senior IV was younger than Oakbank Senior V which belonged to the same social group, but it was not far different in reading or in intelligence. Camden Street Senior III was further behind Keppochhill Senior III in age than in either reading or intelligence. The performance of the Hillhead class was also higher than that of classes with which it was comparable in age or intelligence. There is therefore nothing in these figures to contradict the finding indicated by a negative correlation - that performance in reading tests does not depend upon length or regularity of attendance at school. (I).

It/

- I. References by other workers to the effect of school attendance are found in reports such as: Theisen 414, Harlan 200, Odell 310, Terman 411, Hildreth 214, Goodenough 165, Hollingworth 222, Denworth 106, Burks 58, Heilman 206, Of these, all find the correspondence to be very low, though Theisen 414, and Odell 310 report a small positive relationship.

It is interesting to note that we reach a conclusion comparable to that which was suggested in connection with the effect of teachers. It would appear that under the existing equality of exposure to educational influences we must look for intrinsic rather than extrinsic associations with success in reading. From school to school there is very little measurable difference in average attendance or in type of teacher,; but the differences of performance remain. Having considered, as far as we were able, the effect of teachers, methods, and attendance, let us examine what evidence we have as to the children's differing rates of perception and as to their varying experience in reading.

(7) Reading Ability as Associated with Different Rates
of Perception and Learning.

In the early days of investigations into reading ability an attempt was made to relate it to ability to recognise form, (Huey 234) and a comparison was drawn between success in reading and success in tests of perceptual rapidity (Freeman 131, Gray 172, O'Brien 307). Closely allied to this, was the study of variations in the span of vision and of differences in type and speed of eye movements (I). Typical conclusions reached from this work were that there is an optimum speed and ability for each individual, conditioned, for example, by his breathing in the case of oral reading (Gray 169); by his neuro-muscular coordination (Courtis 87), his speed of thought (Peters 326) or muscular reaction time (Wager 472) in the case of reading in general.

Interest in this type of inquiry has been recently revived by the attention drawn to the importance of kinaesthetic training (v. Fernald and Keller 124, Cowan 92) and/

- I. Huey 234, Dockeray 111, Gray 172, Gray 177, Buswell 67, Valentine 432, Wheat 451, Wager 472, Kerr 254.

and it is noteworthy that one of the latest tests suggested for determining whether pupils are ready to learn to read is a test of matching ability, which involves presumably both recognition of form and speed of reaction (Smith 385).

In the case of the children tested individually - whose performance will be reported later - tests of speed and of perception were used, such as tapping, formboard, memory (visual, auditory, hand-motor), cancellation and substitution. For groups of children only the two latter were employed (I).

Cancellation was selected by us in order to afford some opportunity of observing the pupils' method of attack, and power of concentration, as well as their attitude and rate of work. The children were supplied with a sheet of mixed letters and asked to cross out every "a". A time limit of three minutes was set. Marking was done by recording the number of correct cancellations. The substitution test was the Digit-Symbol one standardised by Dearborn/

I. Tests of this kind were very much discussed some years ago (v. for example on the formboard Wallin 439, Dearborn, Anderson & Christiansen 101, Whipple 456; on substitution, Dearborn 99, Baldwin 7, Gray 170, 171, Hill 215, Kline 256, Dearborn & Brewer 102, Whipple 456, Dearborn & Lincoln 104, and, more recently, Peterson 327; on cancellation, Hill 215, Kline 256, Whipple 456; on tapping, Whipple 456 and Hollingworth 221); but there are signs that interest in differences of perceptual reaction is reviving e.g. Gates 148, 149.

Dearborn. With it, also, a time limit of three minutes was set, and the score was calculated as equal to the number of correct substitutions.

These tests were tried out with two classes of 38 and 35 pupils - one in the College School and the other in Harmony Row.

Table XXVII.

Correlations of Reading with Cancellation and Substitution Tests.

Class	Correlation with Cancellation	Correlation with Substitution	Correlation with Intelligence
College Sen. II	+0.19 ± 0.11	+0.14 ± 0.11	+0.44 ± 0.09
Harmony Row Sen. II	+0.33 ± 0.10	+0.38 ± 0.10	+0.68 ± 0.06 (32 pupils)

The figures would suggest that there is some correspondence, between rate of cancellation, ability to learn a code for substitution, and skill in reading for comprehension. Success in perceptive reactions seems to be related to success in silent reading.

The correlation is not, however, very high, and gives us no reason to think that, in the case of these two classes, there is a relationship comparable in extent to that which prevails between performance in the reading test/

test and performance in the intelligence test. We have also to remember that success in the tests of perception may itself in turn be associated with the pupils' level of intelligence.

(8) Reading Ability as Related to Amount of Reading.

As will be remembered, the amount of silent reading done in school was found to be very small in the Glasgow schools. In order to attempt to measure the relationship between reading success and the extent of reading-practice it seemed therefore necessary to estimate the quantity of reading done out of school. This is difficult to gauge. We had no opportunity of visiting the homes, finding the extent of the home library or hearing reports from parents. There was no school record of books read. It was judged, however, that the amount of reading done would probably be in proportion to the number of books which the children could report that they had read. If one is interested in books, one can usually remember the titles of a fair number. The children in three classes were, accordingly, given fifteen minutes in which to write down the names of all the books they had ever read at home.

There were very obvious differences in the number reported: but the correlations with reading ability, though positive, were not high - $+0.39 \pm 0.09$, $+0.02 \pm 0.10$, and $+0.03 \pm 0.10$. The differences in these figures may have been due to the exclusion of magazines and weekly papers from the list. The first correlation was got in College School where/

where the homes of the pupils are such that a large number of books is probably possessed by all. The two latter were from a school of group B, and in it the number of story papers read each week was proportionately greater than the size of the home libraries (I).

A study of the effect on reading ability of increased acquaintance with books is a question which might with advantage be taken up by public libraries. One would expect that the more reading an individual did, the more his success in reading would increase. On the other hand, it may be that the lowness of our correlation is due to the great complexity of what we call "reading". Interest in reading stories may not correlate very highly with the remembrance of their titles, nor the latter with power to answer questions of the type involved in our reading tests.

It is a reminder of the variety of attitudes and purposes associated with reading (II), and it is also a reminder of the low degree of correlation often found between one reading test and another - which is probably attributable/

- I. Discussions of a problem similar to this are found only rarely e.g. Theisen 414, Gray 183, Good 160, 162.
- II. cf. Thorndike 416, Whipple 457, Curtis 88, Smith 386, Horn 231, Yoakam 480, Streitz 398, Gray & Leonard 180, Gray 181, 183, Sangren 374, Brueckner & Cutright 45.

attributable to a difference in the type of activity required (I).

The comparative lowness of the average number of books reported by the three classes tested - 23.66, (S.D.8.20 \pm .90) 11.07 (S.D.5.47 \pm .57) and 12.28 (S.D.4.93 \pm .49) - reminds us of the need of stimulating children's reading by book-clubs of various kinds (cf.Olcott 316, Hewins 211, Blanchard 26), and also of the necessity of carrying still further the investigations which have recently been begun into "what children like to read" at different ages (II). Only by ability to supply children with ample material which they will find interesting can we hope to increase the range and the value of their home-reading.

I. Gates 139, Wyman & Wendle 478, Monroe 290, 293, Courtis 89, Current & Ruch 93, Mosher 297.

II. Anderson 2, Bell & Sweet 21, Munson & Hoskinson 298, Buckingham 49, Leonard 264, Horn 232, Gray 183, Terman 411, Washburne & Vogel 445, Jordan 246, Yowell 482, Vogel & Washburne 437, Elder 121, and Grace 167.(for adults)

(9) Reading Ability in our Tests as Conditioned by the
Type of Question.

It will be remembered that in devising the tests of reading, two out of four questions were intended to test the pupil's power to read in what Curtis (88) calls the "observational" fashion and two to test the child's ability to "interpret" or "analyse" what he was reading. The distinction is similar to what Book (30) implies in his analysis of reading, though his use of the words is rather different.

By taking the answers to the tests in detail it is possible to use them in the diagnostic fashion favoured by modern test makers. The tests were originally intended for the purposes of the wider survey; but in the case of one class, Kinning Park Junior I, a specimen analysis was made of the responses in order to determine whether the pupils of that class required remedial training in ability to read for the "general impression", or in the power to read in a studious fashion, noting the implications of what they read.

The score for each question was recorded for each pupil, and the percentage of failure in interpretation out of total failure was calculated for each. Out of 44 pupils, 15 failed equally in observational and interpretive reading,

9 had the larger proportion of their errors in answer to the "observational" questions and 20 had theirs in the answers to the interpretive ones. The class as a whole therefore seemed to require practice in interpreting and analysing reading material.

The same conclusion was reached by summing the total marks gained by the class in the answers to each question, and comparing the totals for the two types of question. The total class score for the observational questions was higher than that for the interpretive.

Evidence may also be obtained as to which pupils are relatively slow in their working and therefore require speed drill in silent reading. The slower pupils are those who fail to complete tests in the allotted time. A note was therefore taken of the children who were slow in one, two, or three tests. Thirteen children failed to finish in the given time in one test, eight were slow in two tests, and nine in three tests. It has been frequently demonstrated that speed in reading can be increased by suitable practice. The latter pupils certainly seem to require some such training.

These suggestions for the use of the tests in diagnosis are only tentative. The tests were devised rather for use as a simple first measurement than for detailed study of the individual/

individual children. Our results do, however, suggest that success in reading ability is affected by the type of question, and that the children whose answers we have discussed would have made a higher final score had the questions been all of the "observational" type. They are apparently in their reading characterised by a "passive attitude" of mind, and are paying relatively less attention to "precision of understanding" (I).

I. Evidence as to the effect of type of question is given by Hulten 235 and Distad 110. They reach the same conclusion as to the variance of reaction as our results seem to suggest.

Summary.

The evidence we have so far examined, seems to indicate that there is a marked positive relationship between reading achievement and intelligence, some difference of level corresponding to different social environments (the performance of pupils from more prosperous homes being better than that of those from poorer homes), some association with different rates of perception, varying amounts of reading, and differing methods of teaching. On the other hand, the effect of age and length of time at school (within small groups) seems very slight, and the influence of individual teachers cannot be traced.

We are not able, from the nature of our results, to attempt to disentangle the share of "nature" and "nurture" in the progress of the children. Possibly behind the differences of social environment are variations in the intelligence of the parents. These differences may be inherited by the children. Possibly reading achievement and intelligence have a reciprocal effect upon each other, while both may be affected by some common environmental factor.

Further examination of these same problems was carried on in connection with children referred to the Educational Clinic on account of difficulties in learning to/

to read. The evidence so obtained will now be presented.

PLAN IV.

Reading Ability of Individual Children.

Introduction.

The records which follow are as full as it was possible to make them. In some instances they are incomplete because the parents or teachers failed to bring the children to subsequent interviews.

Wherever it could be done, the following tests were used:-

1. Binet (Burt 64).
2. Burt's Reading Tests (64).
 - I. Accuracy. Graded Vocabulary.
 - II. Letters and Figures.
 - III. Speed.
 - IV. Comprehension. Graded Directions.
 - V. Continuous Prose Test.
3. Burt's Spelling Test VI. (64).
4. Cancellation (Whipple 456).
5. Substitution (Whipple 456).
6. Tapping.
7. Formboard (Visual).
8. Memory. Visual.
Auditory.
Auditory and Visual - Hand-motor.
9. Silent Reading (new group test).
10. Intelligence (new group test).

These tests were chosen to supply evidence as to the pupils' general perceptive reaction and method of working (cf. Gray 172). The children were also asked to write a list of the books they had at home, and if it was feasible they were set to write a composition on "A Dream". In most cases, however, their powers were not sufficiently advanced for this task. In addition, each was requested to go to an eye specialist in order to exclude the possibility of concealed eye weakness.

Many of the children accepted invitations to return at intervals for further testing, and we have thus an opportunity of observing to some extent their progress from month to month. Such a study is worth making because of the help it gives us in tracing the solution of children's difficulties in Reading. It has not yet been attempted very often (cf. Judd 248, Freeman 133).

Before setting out our results in detail, it may be well to remark that our fuller investigation of these individual children confirms the impression we have already gained as to the complexity of the reading process and the multiplicity of the factors which contribute to its successful accomplishment. Just as in the study of problem or delinquent children we have to notice all the details which may possibly be associated with the correct interpretation/

interpretation of our case (I), so in the same way, we find that in reading difficulties there are many contributory circumstances. One of these, however, frequently stands out as most influential. Its identity may sometimes change as fuller knowledge is obtained; but it is usually possible to classify according to one noteworthy concomitant.

In the studies which follow I have arranged the children under headings corresponding to what seems the most prominent feature of each case. I have, however, endeavoured to set down impartially all the information obtained. Material is therefore provided for a different interpretation if that should seem to be necessary.

The most frequent and obvious accompaniment was an intelligence quotient below one hundred. This was found in forty-seven cases out of fifty. I have noted it as it occurs; but have arranged under the heading "Low Intelligence" only those reports in which no other prominent detail was found.

The importance of detailed study of home conditions and personal characteristics is becoming more and more recognised, especially where there is a discrepancy between mental age and school achievement (II). For this reason

I/

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- I. Burt 65, Sayles & Nudd 376, Ellis 122, Sayles 377.
II. Mateer 276, Richards 357, Buckingham 47, Stone 396,
Leland/

I make no apology for presenting in detail the facts I was able to discover about each pupil, and I give a full account of the suggestions made and the course of tuition followed because, without a knowledge of these, mere statistics as to test results are of little assistance to our comprehension of individual pupils. (I).

Leland 262, Gray 148, Streitz 397, Sayles & Nudd 376, Ellis 122, Hincks 216, Sayles 377.

I. In recent years special attention has been given to the resemblances of siblings (cf. Cobb & Hollingworth 81) Averill & Mueller 5, Thorndike 420, Jones 245, Burks 57, Willoughby 464). Success has been proved to vary to some extent with the prosperity of the home, and with the size of the family (Chapman & Wiggins 77). Special hazards have been anticipated in the life-stories of only children (Fenton 123) of the eldest, the youngest, of twins, the middle one of a family (Goodenough & Leaky 164). The evil effect of parental instability or indulgence has been noted (Woolley 476 and 477, Sayles 377). All such discussions are apposite to the cases we group under the heading "Home Conditions".

In a similar way the effect of eye weakness has been found to be considerable (Burnham 59, Leland 263) and the association between ill-health and scholastic or intellectual retardation has been discussed (Dearborn 100, Zigler 483, MacPhail 273, Burnham 60, Dawson & Conn, 98, Kerr 254, Stalnaker & Roller 387, Hoefer & Hardy 219, Cowan 92, Wheeler 453/

Wheeler 453).

Wise promotion at school would need to take account of all such factors, but without cooperation between home and school little can be done.

1. Personality.



I.

I.G. first came to my notice at the age of eleven years and four months. He was in the fourth quarter of class Senior III (average age 10.1 years). He was reported to be "so poor at reading that his teacher could make nothing of him". He was allowed to sit with the other pupils, and he worked away; but he was weak in all his subjects with the exception of drawing (and even that was of poor quality).

His conduct in the classroom was very quiet. If any adjectives were applicable to his behaviour, they were "dreamy, inattentive, listless, untidy, over-docile". In appearance he was undersized and pale. In manner he was diffident. Attendance at school was regular. There was no history of meningitis, scarlet fever, or headaches.

When his ability to read was examined, this was his reaction:-

up - "I don't know."
no - "on."
an - "in."
sun - "men"
for - "or"
big - "I don't know that letter" (pointing to "g").
pay - "my"
sad - "S A P" (spelling out the letters).
pot/

pot - "tea"
one - "on-ee"
wet - "W E T" (spelling).
that - "I don't know."
love - "me"
went - "me"
some - "I don't know."

With all other words shown he immediately adopted the device of spelling aloud, and seemed satisfied that he had hereby accomplished something. He was tried with the letters of the alphabet, to find how far he had attained accuracy in reading or in writing them. He was found to confuse p and b, d and p, i and g, y and g, F and R, V and Z, b and d, K and Z, X and Z, q and p.

He seemed very conscious of his inability to spell. "I know I canny spell. I'm no good at spelling." "I know I'm wrong", he exclaimed rather pathetically, after making unintelligible signs! When he was asked to write "the pretty little girls", he struggled along for some time, and then said: "Those are not words except the first". I looked, and found he had written "the" before proceeding to meaningless scrawls. "How do you know that one is right?" I asked. "I saw it in the reading book and copied it". "My brother taught me to spell my own name", he added.

In/

In response to my suggestion that he write down any words he knew, he said: "There are three ways of writing "to", and he wrote "to", "two", and "too". Then he wrote "ti", but added: "That is wrong", and, on being encourage to try again, he put "it". His last attempts were "soul" which he pronounced correctly, and "omy" which he said was "our".

His work was a curious mixture of complete inability and a reflection of the teaching of the upper classes of the school. In dictation exercises he worked steadily alongside his neighbours producing words of exactly the same size as those the other pupils were writing, but of complete illegibility. In all oral work he was quite smart. In arithmetic he was moderately near the class level.

His ability in other directions was examined. His intelligence was found to be that of a boy of nine years and seven months. His intelligence quotient, therefore, was 84.5. There seemed nothing in his general mental ability to explain a boy of eleven having such marked incapacity in reading. His eyesight was tested by an eye specialist and the sight was reported quite normal.

The defect - right lateral homonymous hemianopia - often associated with acquired word-blindness was not there

(v.Hinshelwood 218). Nor was his accuracy of perception and memory for objects less than that of others with greater reading ability (cf.Head 203). Results of testing were:

Substitution	29.	
Cancellation	23.	
Formboard	R.H. 18 sec.	L.H. 19 sec.
Tapping	R.H. 132	L.H. 89.
Pictures	9.	
Memory for Letters	Auditory 5	
	Visual Articulatory 5	
	Visual 0	
	Auditory Visual - Hand Motor 6.	

Success in the Binet tests was irregular. He passed in recognition of absurdities and in answering difficult questions, while he failed to give the date or the names of the months of the year.

His attitude to testing was quite good, except for some diffidence of manner. He was not without pride in his own work. On completing the test of counting backward, he said: "It's my first time trying", and when set to copy a square he observed: "That is not very good, I need a ruler." In tests of speed and skill of hand he did well, and concentrated on them in a business-like manner. With the/

the formboard he was inobservant of the exact order directed, but deliberately seemed to work for speed. It is of interest to note that his auditory memory seemed more highly developed than his visual memory, and that his visual memory span was increased if he was permitted to mutter as well as to look. This seems allied to his method of attempting to read words by spelling them aloud letter by letter.

From the results of this testing, it seemed that his was not a case of normal word-blindness with associated defective visual perception, either congenital or acquired. It was decided to make an attempt to find how far it would yield to special treatment (cf. Hinshelwood 217, 218, Wilson 467).

The method he adopted when asked to read was, in most cases, to spell the words aloud, letter by letter. As far as could be discovered, this was his attempt to apply the system he dimly remembered from his infant-room days. His training had been on phonic lines. He had failed to understand what he was to do, and as he grew older he had got into the way of naming the letters instead of trying to sound them. He had proved unable to make the transition from letters to words. It was obvious that the first necessity was to change his way of approach to the reading process. It was decided to start to tutor him on/

on kinaesthetic and visual lines, making use of his interest in drawing and handwork. He undertook to come each week for an hour's tuition, and professed great willingness to learn.

One of the problems when we have to deal with such pupils is to re-establish self-confidence and self-respect, which have been badly damaged after many years of failure and rebuke at school. The absence of unpleasant associations is one of the advantages attached to a complete change of method. In order to encourage the pupil still further, it is wise to refrain entirely from telling him when he makes mistakes. He should be stimulated to believe he is doing well and because of that try to do still better. An effort was therefore made to give this pupil nothing but praise.

In order to win interest in the reading process, he was asked to tell me a story which I promised I would write down and help him to learn to read. This was done in an effort to give him material which would be alive to him. He reacted at once to the suggestion, and began a tale with such zest that I believed it to be a true narrative. "Last night I saw a cat up on the roof. Before I could reach it, it fell down. It landed on its feet and nearly killed itself. It broke its paws. It was lying down/

down moaning with pain. I took it to its master. He bandaged it up and took it to the cat and dog home. It was very badly hurt. It died with pain." (What was behind this story I have not been able to discover. It may be of interest to some to interpret the boy in the light of his choice of an incident.)

These words, then, we set ourselves to learn.

One by one I wrote them on the blackboard, setting him to learn each one as a whole before passing on to the next. The method of learning was as follows:- I wrote the word in his presence, telling him what it was. Then I told him to trace it over with his finger, pronouncing it as a whole as he did so. I asked him to do this over and over again until he thought he knew it. When he thought he knew it, we covered the word (or rubbed it out) and he took the chalk and wrote it for himself on the blackboard, pronouncing it again as a whole as he did so. If he failed, we began at the beginning again. We attempted only two or three new words on each occasion. At the end of the lesson I gave him those words printed on cards and tested him with rapid recognition of them as flash-cards. Any one he did not know, I told him, and we returned to the practice of it on the blackboard again. The cards were given to him to take home at the end of the lesson/

lesson, and at the beginning of the next lesson we revised those cards as rapidly as possible.

This method, it will be noted, makes use of muscular and of visual memory in the attempt to learn the words. Emphasis is put on the form of the words as wholes. Attention is directed away from the constituent letters or sounds. Speed of recognition is encouraged. Material is provided on which the child can practice with any adult who will tell him the words (cf. Fernald and Keller 124, Hinshelwood 218, Remer 353).

In the course of the more intimate knowledge consequent upon these weekly lessons, several points emerged. Some of these would have been obvious in any class-room. Others were found out only because of the contact with the home which was made as a result of the special attention given.

It appeared that he was the youngest of eight children of ages ranging from thirty downwards. His father was a carter. They lived in a two-roomed house and had no books at home. One of his brothers, however, read "The Rover". All the others in the family had learned to read quite well; but all the others were taught by Miss X. He had been taught by Miss Y. This latter fact was the mother's explanation of his weakness. In the course of her/

her story, however, the fact emerged that he was absent for eleven weeks with a cut eyebrow and for sixteen weeks with a bad knee. These absences occurred at the infant-room stage. He was not kept back when he returned to school, but was promoted with the other pupils. This seemed to us much more momentous than any change of infant-teacher. Enquiry was therefore made to find how far the story of absences was true.

On investigation at school the tale was confirmed in substance. He had lost ground at the start and had each year been sent on with the other children to the next class. "For the proper organisation of the school, there must be an equal number of children in each class" had been the reason given. Those responsible for the treatment were now dead, and an attempt was being made to remedy the damage.

It is easy to picture the effect of this handling of the pupil. He was very biddable and very quiet. He sat with the others through the hours of the day; but he had not found the key to their mysteries. He had not learned to read, and he lacked the self-assertion to draw attention to that fact. He was also possessed of a good verbal memory, and had raised to a fine art the practice of copying from his neighbours and learning by heart the words they/

they read from their books. In all probability he was always taken last, because he was a poor reader, and by the time he was reached he could recite the words on the page of the Reader. It had been noticed that he "seemed to be living in a world of his own" and "made grimaces sometimes for no apparent reason".

The level of orderliness and discipline in his home did not seem to be high. There was little apparent control. "He would do better if he didna' play bools so much at night" was the wearied comment of his mother. At the same time, she treated him as a baby, and carried his books and cap for him.

Very soon after the training began, it was apparent that there was some complication of character which probably had some relationship with his complete backwardness in reading. Upon the slightest pretext he would break his promise to come. Upon one occasion he had "no good boots". On another, someone asked him to play football. On others, he stayed off with no excuse whatever, and when, after three weeks' absence and two postcards to his home, I went adross to his school to enquire, I found that each week he had asked away from school as usual and next day had reported that he had "got on fine" with me, and knew all his cards.

If/

If his behaviour with me was symptomatic of his normal attitude to school, (as it seems to have been), it is little wonder that, combining irregularity, slyness, and lack of truthfulness, with quite a good verbal memory, he should have passed through years of schooling without learning to read.

He also showed a marked degree of self-consciousness, self-distrust, and lack of independence. If he were left alone at the blackboard, or alone with his cards, or asked to answer a question across the room, he would do nothing. He would only react if the contact were almost personal in its proximity. There seemed an absence of all normal self-reliance.

These characteristics, combined with absence at an early stage, and steady promotion under the class system, are interesting accompaniments of his poor performance in reading. The failure of such a pupil to take his share in the class-work would easily be overlooked in a class run on class lines, and worked by mass methods.. It would be felt that there was no time to attend to him, and he would be so self-effacing that there would be little reminder of his presence.

In the course of tuition it was noteworthy that frequently he relapsed into his former methods of attempted phonic/

phonic analysis in the form of spelling; but that the order of the letters was often reversed e.g. "cat" was spelled aloud as "t a c" or "up" written as "pu". On other occasions he would write "c a w" for "saw", "roos" for "roof", "ud" for "up", "hlia" for "help", "daws" for "paws". After fifteen half-hours of tuition he was tested again. This time he read 13 words in Test I and therefore his reading age was 5.3 years. He made only two errors in the alphabet - q for g and p or d for g. In the test for speed which formerly was quite beyond him, he read 25 words in 60 seconds, and 16 of these were correct.

Thereafter his absence became even more frequent; but three months later his performance was still maintained at a point above his initial one. On this occasion his reading age was 5.7 years and he had 18 words correct in the third test.

A year later - in June 1930 - he was examined again. In the interval there had been no attempt to tutor him. His score on this occasion was

Reading Test I 5.2 years.

Test II 1 error - d for b

Test III 21 words.

Test IV correct to sentence 2.

This shows a decrease in Test I but an improvement in Tests/

Tests II, III and IV.

This level of achievement is distressingly below his mental age; but it is sufficient to justify the contention that, had regular individual practice been given at an earlier stage, his abnormality would probably have been little more than was to be expected from his somewhat low level of intelligence.

His seems rather a case of special disability in reading than of congenital word-blindness.

II.

Tom M. came from a two-apartment house in which lived five adults and three children. His father was a plater. There was a brother aged twelve who had undergone treatment for tuberculous joints. Tom himself had suffered from rickets, and in early childhood had had chickenpox, whooping-cough and measles.

On interview he proved to be a very small boy for eight years and nine months. His appearance was dirty and uncared for; but he himself was very willing to be friendly. Conduct in class-room and playground was said to be good, and one could easily believe that he would not assert himself very strongly against authority.

His weakest subjects were reading and spelling and it was reported that he had left the infant-room without knowing his "sounds". (His older brother had done the same). Arithmetic was said to be normal. He was now in a Junior III class with pupils of average age eight.

On testing, the following was his performance:

Mental age $6\frac{9}{12}$ (Terman).
I.Q. 78.1
Reading Test I Age 5.0
Test II 15 errors.
Test III 18 words correct.
Test IV Failure.
Test VI Spelling age 5.6
Cancellation 14.
Substitution 18.
Formboard R.H. 33 sec. L.H. 31 sec.

In attempting to read, his method with most words was to point to the letters and mutter each aloud (spelling the word). As a variant on this he sometimes sounded the letters. He was uncertain of the name of many letters, saying F for E, D for B, C for K, E for I, L for M, C for G, V for N, X for V, P for Y, O for Q, and (with small letters) f for s, f for v, p for h, d for b, x for z, and p for q. In reading words he made mistakes such as "but" for "up", "said" for "his", "have" for "my", "joy" for "just", "there" for "that", "are" for "or", "on" for "no", "by" for "my", "did" for "big", "said" for "sad".

The most noteworthy feature of his performance in the tests as a whole was his lack of perseverance. He was easily interrupted, and easily discouraged. He was quick to say "I can't". How far this was due to physical languor and how far the same characteristic was encouraged by his home and its attitude is difficult to say.

It was decided to go back to the beginnings of reading and tutor him on non-phonetic lines using the Winnetka material. He was asked to come back each week for half an hour, and a start was made with sentence recognition, drawings, labels, stories, exactly as is suggested in the Winnetka Manual (Teachers' Edition of "My Reading Book"). There were signs of interest, and for six weeks he appeared with/

with exemplary punctuality. He got as far as recognition of the first four story cards in sentence form:-

1. This is Jack. "I am going to fly my kite," said Jack.

2. "Bowwow", said Jip.

"Play with me."

3. "Come, Jack", said the baby,

"Play with me."

4. "Run with me," said Jack.

Jip ran and Jack ran.

The baby ran too.

Then there was absence, and in spite of visits to the school and postcards to his home, he did not reappear for three months. There was then a further absence of five months followed by complete disappearance. During this time there were conflicting stories of illness, and support of our efforts from the home was markedly lacking. It seems another case of lack of perseverance combined with a low grade of intelligence.

His brother Nisbet was a frequent companion on his visits to the Clinic, and he also was tested. Results for him were similar.

Age $12\frac{4}{12}$.

Mental age $9\frac{2}{12}$.

I.Q. 71 (Terman)

Test I Reading age 8.9

Test III 65 words.

Test IV Sentences 6, 7, 10 and 15 correct.

Cancellation/

Cancellation 41.
Substitution 32.
Formboard R.H.33, L.H.41.

With neither of the boys was there any evidence of eye defect. The older one was slow in reading, and his attempts at silent reading were obviously retarded by lip movement. In the new silent reading group test his score was 11; but his performance in cancellation and substitution was quite rapid. It is interesting to find that his reading ability is relatively as low as his brother's. Both of them had apparently been promoted steadily up the school without regard to their progress in reading, and a certain amount of skill had come to the older one. In both cases, the reading performance is more nearly related to the mental age than to the chronological age or to the length of attendance at school.

III.

John S. was a "lifeless, expressionless reader". This seemed to be the chief complaint the school had to make of him, save that in manner he was "listless", "over-docile" and "undecided". He was aged eleven and eleven months and was in the fourth quarter of a class of average age $10\frac{9}{12}$. Attendance and behaviour were very good. There was no record of infantile illness; but he was said to have been as a child, a very indistinct speaker whose speech defect lasted for years after coming to school.

On interview he proved to be nervous-looking and sensitive. There was no evidence of speech difficulty, though his manner was hesitant. He was careful under testing; yet easily discouraged. His attitude was much too passive. In reading he seemed unconcerned as to whether the words he uttered made sense or did not. His expression was that of one who would accept anything in this strange world. There was no sign of power to react, and no apparent development of a critical faculty. He seemed lacking in self-confidence and self-assertion.

The results of testing were:

Mental age $9\frac{10}{12}$.
I.Q. 82.5
Test I. Reading age 9.3
Test VI Spelling age 11.1
Cancellation 22.
Formboard R.H.20 sec. L.H.26 sec.

There/

There was no evidence of eye defect.

His home was reported to be "giving him every advantage", but upon further enquiry it may be doubted whether this was the case. He seemed one who required modification of temperament and outlook even more than educational aid. His reading age was not far off his mental age, and his spelling seemed well advanced.

He was the middle one of five children - a boy and a girl older, and a boy and a girl younger than himself. His mother was particularly concerned with his welfare. He did not like books; but he had some prizes from the Morning Meeting, Sunday School, and Band of Hope. He played no games (except football rarely). His older brother (18 years old) had a cricket set which he did not use; but John had never played with it. He was not interested in engines, electricity, wireless or photography. When questioned as to what he did at night, he said that he did his lessons and then went to bed. His mother confirmed this, explaining that they did not allow him out to the street because of "rough boys". "He is always wanting out; but we say he is to do his lessons. And the next time we look he is still just fiddling away with something."

These records suggest the evil effect of repression at home. Probably the same attitude is associated with the reported/

reported early speech defect. An attempt was made to stimulate his self-respect by praise, and the following report was sent to the school:

"Backwardness in reading and spelling would probably disappear could he be given encouragement towards self-confidence, belief in his own powers, determination to complete work which he has begun. Out-door games, plenty of sleep, attention to physical health, unsupervised intercourse with boys of his own age would all be helpful in this direction. Membership in a well-managed club would also be beneficial. Participation in dramatic performances would assist in stimulating expressive reading. Interest in spelling might follow the use of word-building games, and the reading of short stories of a kind which he enjoys. It is important, however, that distaste be not created by over-pressure. Attention to general development will produce results of more value than will any increased emphasis on lessons. The same line of treatment should be followed in school."

Later details are not available. When he was invited to return to the Clinic he replied that he was unable to come/

come as he was working on a Saturday. This was perhaps the parents' way of giving intercourse with the outside world.

IV.

John P. was sent to us because of special weakness in spelling, existing alongside no great skill in reading or composition. He was in the fourth quarter of a Senior III class of average age eleven, and his age at the time of his first visit was thirteen years and one month.

He was an anxious-looking boy, somewhat small for his age, and very obviously nervous under examination.

His home life was said to be quiet and harmonious. His mother was a charwoman, and there was an older boy of fifteen. The father had deserted the family ten years before. There was no evidence of any special conflict at home; but it is possible that while the mother was out working the nourishment of the children may have been irregular. Possibly because of this, he had had a large share of childish ailments - chickenpox, measles, scarlet-fever, diphtheria and, more recently, bronchitis and bladder trouble. Attendance at school for the last two years was said to have been very good; but before that time there had been a considerable amount of absence.

Conduct in class-room and playground was unobjectionable, and the adjectives applicable to him were "excitable" nervous, timorous, undecided, over-docile, shy." Such qualities might well be concomitants of lack of skill in oral/

oral reading.

On testing the results were:

Mental Age $11\frac{11}{12}$ (Terman).

I.Q. 91.08.

Reading Test I 12.5 years.

Test III 95 words.

Test IV Correct to sentence 15.

Test VI Spelling age 10.1.

Cancellation 40.

Substitution 33.

Tapping R.H.125. L.H.106.

Formboard R.H.20 sec. L.H.16 sec.

Memory: Visual 7 letters.

Auditory 8 letters.

Auditory Visual Hand Motor 6 letters.

Books at Home 5.

Picture 10 points.

Eyesight. Glasses not prescribed.

There seems in this no evidence of perceptive slowness to account for his reading age being behind his chronological age. On the contrary it is interesting to note that his reading ability in Test I (knowledge of isolated words) seems in advance of his mental ability, though his speed and silent reading success are nearer those of a ten year old boy.

This may be associated with his good performance in the tests requiring agility and perseverance.

An attempt was made to give him better methods of working. The following report was sent home:

"He is slow and hesitant in reading; but his difficulty does not seem to be lack of knowledge of words. Any reading done outside of school should be/

be commended; but he should also be encouraged to work and play with other boys. His whole school performance might be improved, if arrangements could be made to bring him to the special interest of a good Brigade Leader or social worker of that type, who would stimulate him to activity and decision."

It was felt that what he required was greater robustness of attitude and outlook.

His does not seem an instance of repression at home leading to lack of confidence. It seems rather one of nervous shyness coupled with absence and slightly subnormal intelligence - these leading to general lack of success in school work. He was born in December 1914 and his formative years would be affected by the war atmosphere as well as by trouble between his parents. There was probably little intellectual stimulus at home, and certainly there were few books to arouse a desire to read.

Five months later he and his class at school were given the group reading and intelligence tests. His results were 15 and 81, while the class average was 15.56 and 70.71. This shows an improvement. After a further five months his spelling had developed to that of age 12.7.

On/

On that occasion he was interviewing employers to obtain work as a message boy, and he failed to reappear when summoned a week later. Six months afterwards when a further attempt was made to reach him, he was reported to have left school. Since then no information is available.

9. canceling.

H. D. T. 1919



V.

M.D. first came to us at the age of 12 years and 5 months. She was decidedly backward in all school work with the exception of sewing, drawing and writing. Reading was exceptionally bad, and there was difficulty in getting her to remember messages correctly when she was sent shopping by her mother.

On interview she seemed pleasant and willing. Her schooling had been quite regular, except that she did not go to school till she was six, because at that time she had no settled home. The mother and father had separated, and there had been an interval before the mother found regular work. Now she and the child were living in a furnished room. Great friendliness existed between them, and the girl seemed to have been wisely handled, and to be helpful, tidy and clean. Present conduct, attendance and health at school were reported to be very good.

On testing her the following were the results:

Age $12\frac{5}{12}$.
Mental age $8\frac{4}{12}$ (Terman).
I.Q. 67.2.
Tapping R.H. 99, L.H. 90.
Formboard R.H. 28 sec.
Picture 9 points.
Reading Test I 7.7 years.
Test II, Confusion of X and Z.
Test III 54 words correct.
Test IV Sentences 7, 8, 9, 10.
Cancellation 27.
Substitution 39.
Memory: Auditory 5 digits.
Auditory Visual Hand Motor 6 digits.

Her/

Her eyes were examined by a specialist and no abnormality was found.

In silent reading there was excessive articulation and excessive attention to phonic analysis - along with a limited knowledge of vocabulary. She had made a certain progress in the art of reading, and what seemed necessary was to train for speed and accuracy, to increase her span of perception, and to lead her to expect to find meaningful material in print. Her attitude to testing was good. She was careful and deliberate, prompt to begin and prompt to stop. She showed some skill of hand and was helpful in small ways such as reading her own tapping record.

It was decided to tutor her once a week with flash cards worked on the tachistoscope, direction cards, and word study. Praise was uniformly given whether she was right or wrong, and a record was kept in her presence of her progress from week to week.

The cards of the Winnetka and the Beacon readers were used, and each was exposed again and again until she read it correctly - a note being kept of the number of exposures required. She was told whenever her performance was better than that of the week before; but no notice was taken of mistakes. Easy stories were lent to her, and a patient hearing was given to her accounts of their contents.

Games/

Games involving reading were played, and a note was taken of the time she took to react to printed directions. Familiarity with words was developed by setting her to build up words from letters and to make collections of words alike in some way. The fluency of her reading was improved by reading aloud a simple comedy alternately with the teacher.

At the beginning it was noteworthy that she was very apt to guess at words from the first few letters, e.g. she would say "cry" for "carry", "join" for "journey", "obetion" for "obtain", "trouble" for "tongue", "shelt" for "shelves", "bewor" for "beware", "belife" for "belief". She did not seem to be sure when her pronunciation was a word and when it was not; but she was very willing to risk failure.

In the course of the fuller knowledge obtained through weekly meetings, it was found that she had missed the early teaching in reading through going to school later than most other children. Since then she had been hurried on, and she was now in a Senior V class whose average reading score in our new test proved to be 12.15 (S.D. 3.72 \pm 0.40). Her difficulty seems, therefore, one of those consequent upon the mass teaching and over-rapid promotion of children of less than normal mental ability.

The/

The unhappiness in her home prior to her parents' separation may have had a depressing effect on her; but it seems to have occurred before her school days began. There was nothing to indicate anything except the best relations between her mother and herself.

The most notable feature of her period of tuition was her steadiness, regularity and faithfulness of character. This was in marked contrast to many of the other children, most of whom were spasmodic in attendance, and untrustworthy in performance. She, on the other hand, always did what was prescribed for her, and very soon showed interest in books and stories.

An interesting development was her fondness for poetry. She would both read it, attempt to compose it, and learn it by heart. Her recitation of little poems grew to be one of the chief portions of the afternoon's work.

After three months' tuition she was tested again. Her reading age in Burt Test I was now 10.1 years, Test II had no errors, and in Test III she read correctly 76 words in one minute. This indicated an improvement of over two years according to the London norms.

From school came the report that she was more responsive in every way, much more self-reliant, and much better/

better in reading.

The following winter she asked of her own accord if she might return, and in the course of it her intelligence was retested. It showed a slightly higher figure - I.Q. 71.8. Her health through that winter was somewhat broken; but she still came with marked regularity. She did not, however, get so much undivided attention as before, but she helped with the younger children. At the end of the session i.e. a year and a half after her first coming to us, she left school, and went to a domestic science college. At the time of leaving school her reading was again examined. It had fallen slightly but was still above the first level. Results were:

Test I 9.2 years.
III 79 words correct.
IV Sentences 7, 8, 10 correct.
V 7 questions correct.

(Her mother was present on this occasion which may have somewhat affected her attention).

Throughout the next session, up to June 1929, she continued to attend. Exactly two years after her first visit her performance on re-testing was:

Test I 8.5 years.
III 81 words.

It would seem therefore that her performance did not naturally remain at the higher level reached by close personal attention. She had, however, retained her willingness to read simple stories.

VI.

Malcolm C. came to us at the age of eight years and six months. There was a difference of opinion between his home and the school as to the wisdom of promoting him out of the infant-room. The parents were aware that in his first year at school he had been absent for eight months and in his second year for three months - because of measles, whooping-cough and tonsillitis. They wished him to do the work of the infant-room over again. The teachers had put him into a Junior II class of average age seven and a half years, and they refused to retard him any further. We were asked to give our advice.

The home seemed quite a comfortable one. The father was a gardener in one of the public parks. They had a house of five apartments. Both mother and father were concerned as to the boy's progress and willing to help him at home. There was one sister twenty months younger. (Her I.Q. was later found to be 108.). The boy was said by his father to be "impulsive", "nervous", "sensitive", "slightly lacking in concentration" and "not in robust health". His strong subjects at school were thought to be Writing and Drawing, while Reading and Arithmetic were weak.

On interview the boy proved friendly, rather small, and short-sighted in appearance. Glasses had recently been prescribed by a specialist; but he rubbed his eyes frequently and frowned as if there were still some eye-strain/

strain present.

The results of testing were:

Mental age $7\frac{8}{12}$ (Terman).
I.Q. 90.2
Reading Test I 7 years.
Test II correct.
Test III 35 words correct.
Test IV up to sentence 6.
Cancellation 16 (scattered through the sheet).
Substitution 12.
Tapping R.H.102. L.H.79
Formboard R.H.33 sec. L.H.27 sec.
Picture 15 points.

This performance is in the motor and memory tests above that of others of his mental age.

It was difficult to find out exactly what mistakes had been made in the relationship of home and school. The attitude was evidently wrong; but there was no alternative school to which the child could be sent. He had mastered the rudiments of reading and therefore it seemed as if the school were right in discouraging special retardation. What was required was provision of sufficiently easy reading material, training in rapid silent reading, and some stimulus towards self-confidence. His I.Q. was not very low; but with a history of infant-room absence it was easy to associate it with slow and uncertain reading ability.

The following report was sent to his parents:

"He has mastered the elementary processes in learning to read. His power of reading aloud accurately/

accurately is greater than his speed or his skill in silent reading. What he needs, therefore, is a supply of sufficiently easy reading material so that he can read with pleasure to himself. He needs much practice at home. Games involving reading, such as "Alice in Wonderland", "Playing Cards" and "Word-Making and Word-Taking" with a box of letters, would be helpful; but he must not be made to think of them as a task. He should be set to read, as quickly as he can, sentences printed on cards - as indicated at the Clinic - with the suggestion that it is a game; and he should be given practice in silent reading of directions and questions.

Every encouragement should be given. Attention should be drawn to his successes and no notice taken of mistakes during tuition. It should never be said in his hearing that he is backward in any direction. Such remarks inevitably produce backwardness and nervousness, and have a bad effect on the general health."

A friend undertook to tutor him, and very soon it was reported that the infant mistress had also begun to give him special attention at school.

Three/

Three months later he was examined again; but there was little difference in performance;

Test I Reading Age 7.3 years.
Test III 29 correct.

He was advised to write words from memory on slips of paper and learn them in that way.

After another five months he was recalled. There was not much evidence that instructions had been carried out. He professed to have learned words and sentences; but he had forgotten to bring the cards on which they were printed. Results of testing were:

Test I Reading Age 7 years.
Test II E for K.
Test III 42 correct.

He seemed bright and interested and more confident than before.

Detailed instructions as to a visual method were next given to him, viz.

1. He should read silently cards of directions of the type of those enclosed and show by writing or actions that he understands.

2. He should have a box of letters, and practice making words - e.g. small words out of the letters of long ones like "Mesopotamia".

3. The words of a page of a Reader should be written on cards, one word on each card. He should read the page and/

and the cards, and set the words in the right order, sentence by sentence. When he knows them thoroughly he should play the game "Spot" - the cards are shuffled, one is turned over at a time; if he can read it correctly, he gets it; if not, his partner gets it. Note the number of successes each day, and encourage him to work for complete knowledge of that page.

4. Emphasis should be put on the appearance of each word as a whole. He should be told that he is to learn to recognise each one, as he would a picture or pattern.

5. If he does not know a word at once, he should be told it, then set to learn it by looking at it, saying it, building it up from the box of letters, and, last, writing it from memory. He should do this until he is correct at least three times. Mere copying is little use.

6. Sentence recognition may also be helped by copying out a sentence from a Reader, telling him it is on page so and so of his book, and letting him hunt till he finds it.

Six months later he returned with the prescribed sentences on cards, and reacted to them successfully - though slowly. His performance in the tests on this occasion were:

Test I Reading age 7.4 years.
Test II b for d.
Test III 59 words correct.
Test/

Test IV up to sentence 12.

Test VI Spelling age 7.7 years.

In Test V he soon became tired. He read quite fluently from his reader which was one used in school by eight year old children.

The progress made in fourteen months was relatively slight except in speed of reading simple words (Test III), and in helpfulness of attitude. It is not possible to estimate how much personal attention he received during those months; but one cannot but believe that with an I.Q. of 90 more rapid improvement could have followed had regular tuition for comprehension in reading been given. Without such special coaching, children of that mental level seem under present conditions to fall steadily behind their class-mates - especially when a complication such as absence is co-existing.

A year later, rather more progress had been made.

Results were then:

Reading Test I 8.3 years.
Test III 74 words correct.

Attendance at school had been more regular, and perhaps the effects of the work of the previous months were showing after a lapse of time.

VII.

A.F. had been a defective speaker since infancy.

Treatment had been given by doctors and dentists; but at seven years and seven months he was brought to the Clinic for assistance. After some progress towards intelligible speech he was referred to me at the age of eight years and nine months as it had been discovered that he was definitely retarded in reading.

His home life was said to be good, both parents being anxious for his welfare. He had one sister - two years older than himself - and a baby brother. There was no history of absence from school, no infantile ailments except measles, no special characteristics in conduct at home or in the class-room. He seemed a normal child except for the speech defect.

He was in the third quarter of a class of average age six months less than his own. His strong subjects were Arithmetic and Writing, and his weak ones Reading and Spelling.

At the interview he proved to be rather anxious in manner and obviously keen. The results of testing were:

I.Q. 100.
Reading Test I 7.7 years.
Test III 56 words.
Test IV Correct to sentence 8.
Tapping R.H. 108, L.H. 80.
Formboard R.H. 62 sec. L.H. 29 sec.

His/

His sense of form seemed weak; but he showed decided ability to learn - his speed with the right hand at the formboard increasing from 120 seconds to 30 seconds. There were indications of eye strain.

It was evident that he had been taught to read by an unwise method - on phonic lines with much emphasis on oral work. His pronunciation was still very bad; but, allowances being made for this, he read with some sign of understanding - up to the limit of 7.7 years.

It was suggested to the teacher that with his bad speech he was not a suitable child for the phonic method, and that this was the reason of his poor analysis and synthesis. It was pointed out that attention should be given to comprehension, and that correct oral reading was impossible for him until his speech was more normal.

The following report embodies the instructions given:

"His reading is on the whole less retarded than might have been expected with such a marked speech defect. It is important that his success be judged by his ability to comprehend, rather than to pronounce.

Correction of speech should be made apart from the reading lesson. He should be trained towards accurate silent reading, and given little oral work/

work. The following methods will help:

(1) He should read silently cards of directions (v.p.183).

Above all, he should be encouraged. A word or two of new work every day in reading and writing from memory will lead him far on the way to successful reading and spelling - provided it is associated with pleasurable experiences."

Five months later he was re-examined. His performance was practically the same in reading:

Test I 7.7 years.
Test II 0 for Q. I for L.
Test III 57 words correct.
Test IV Correct to sentence 8.
Picture 13 points.
Cancellation 23.
Substitution 27.
Memory: Visual, 6 letters.
Auditory, 4 letters.
Auditory Visual Hand Motor, 5 letters.

A simple list of printed directions was given to him to learn, and testing of his eyes was carried through. Glasses were found necessary.

A month later he was recalled, and reacted correctly to 41 cards of his direction cards at about 5 seconds' exposure each. He was reminded of the necessity for speed. In Test I his reading performance was practically unchanged.

A year after his first interview by me he was re-tested. A marked improvement had taken place. Whether this was due to/

to the help of the glasses or of the more visual methods of tuition it is impossible to say. His reading age in Test I was now 8.7 years - a year's progress. In Test III he was correct in 65 words in one minute. In test IV he responded correctly up to sentence 10.

His reaction to the reading cards was much quicker - averaging half a second. In the new group reading tests his score was 3 and in the intelligence test 34. His spelling age in Test VI (Burt) was 8 years.

Silent reading ability, it was evident, still required development. He still muttered much, and his speech was still somewhat clumsy. A more advanced set of directions was given, and he was asked to keep a record of all the stories he read in a book entitled:

"My Books: A book is mine when I have read it."

On his reappearance a year later - June 1930 - there was a decided improvement in speech and his reading ability had increased to

Test I	9.8 years.
Test III	77 words.
Test IV	Correct to sentence 12.

He had not remembered to bring his list of books read; but he reported that he had filled three pages with their titles.



VIII.

Edward A. could be trusted to perform with care and capacity any task allotted to him - provided it was outside the school curriculum. He was good at drawing and handwork; but in arithmetic, reading and spelling he was weak. This fact obviously depressed him, and he was referred to us for help.

He was the eldest of a family of three. His father was a jeweller and the home life was comfortable. He was well cared-for, well-behaved at home, and on friendly terms with his two younger brothers. In playground and class-room his conduct was excellent. The adjectives deemed applicable to him were "depressed, dreamy, timorous, and shy"; but at the same time it was reported that he was popular with his comrades and a leader in their games. The depression and timidity apparently were only in evidence in relation to his school work.

There was no record of illnesses; and attendance at school during the previous two years had been very regular.

His age when he came to us was thirteen years and one month, and he was in the fourth quarter of a Senior II class of average age eleven years and four months.

On testing, the following results were obtained:

Mental age $10\frac{10\frac{1}{2}}{12}$.
I.Q. 83.12.
Reading Test I 9.8 years.
Test III 64 words correct.
Test IV Correct to sentence 10
Spelling/

Spelling Test VI 10.9 years.
Tapping R.H.69 L.H.70.
Substitution 40.
Formboard R.H.25 sec. L.H.22 sec.
Memory: Visual 8 letters.
Auditory 7 letters.

New Group Silent Reading	3	Class Average 15.56
New Group Intelligence	35	Class Average 70.71

He worked carefully and accurately; but his rate was slow. It seemed, however, as if his progress in school subjects had been almost as rapid as was to be expected from his mental age. The following is the report which was sent to school incorporating suggestions for treatment.

"His general level of intelligence is not high, and therefore it is to be expected that his progress in school work will be slower than normal. It seems at present nearly up to his capacity. He would be much helped if he could be put on to work on individual lines - allowed to advance at his own rate with material of the stage he has reached.

In reading he suffers from lack of knowledge of words, and he is still attempting phonic analysis of unknown combinations of letters. He requires practice in rapid recognition of simple material and experience in silent reading.

His personal qualities of willingness and carefulness/

carefulness should help him to overcome his difficulties if he is encouraged to proceed at the pace best suited to himself."

These suggestions were carried out, and the boy was given individual material in reading and arithmetic. Four months later he was re-tested. Results on this occasion were:

Reading Test I	10.7 years.
Test III	68 words.
Test IV	Correct to sentence 10.
Spelling Test VI	11.9 years.

He had made about a year's progress in Test I and Test VI. An even more satisfactory result was the evident improvement in self-respect. He was admired and envied by the other boys for the special privilege he enjoyed of working at his own books while they did class-work. This seemed to have reacted very favourably on him, and his expectations were no longer of disappointment or depression.

His seems another instance of the ill effect of class methods of teaching and promotion on a pupil whose natural rate of work is slow, and whose intelligence is subnormal. He had come to dislike reading. This dislike was probably a consequence of his unhappy association with books in school. He connected failure and disgrace with printed material. There may also have been a concealed eye defect. He held his book as if he had difficulty in seeing/

seeing. His eyes had been tested by a school doctor; but no glasses were prescribed. An effort was made to have another examination made, but so far as our information goes that was not done.

A year later the boy had left school, become a messenger for a firm of electrical engineers, and seemed interested and happy in his work. His reading and spelling could not again be tested.

3. Home Conditions.



IX.

Alec. N. was the second youngest of five children. The family occupation was fruit hawking, and both father and mother were drinkers - especially the mother. The home was a house of two apartments, and the parents' neglect of the children had moved a neighbour to take Alec in and allow him to sleep in her house.

The boy was thought to be word-blind. At the age of ten years and seven months he was able to read only one word - "the". He was, in spite of this, in a Senior IV class along with pupils of average age 10. A new Infant Mistress had, however, come to the school, and she had taken him into the beginners' class. After one month's tuition there, he was reported to be reading with ease Beacon Reader I. At this point he was referred to us for examination.

His conduct in the class-room was quiet and attentive. The adjectives applicable to him were "changeable, dreamy, excitable, nervous, timorous, undecided and shy". Attendance at school had been, for the last two years, fairly regular. Infantile ailments were whooping-cough, and measles. His present health was very good.

Strong subjects in school were Handwork and Drawing; but he was weak in Reading, Spelling and Arithmetic.

The results of testing were:

Mental/

Mental age $7\frac{9}{12}$.
I.Q. 73.2
Reading Test I 5.3 years.
Test II 5 errors.
Test III 14 words correct.
Cancellation 19.
Substitution 24.
Tapping R.H.66 L.H.31.
Formboard R.H.17 sec. L.H.18 sec.
Memory Visual 4 letters.
Auditory 5 letters.
Picture 14 points.

His attitude to the work was good. He concentrated on his tasks, and was careful, deliberate and obedient. There was no sign of defective perception or weak memory for form; but he frowned badly and held his head over to the left. He was referred to the eye specialist, and glasses were found to be necessary.

In reading there was nothing to indicate genuine word-blindness. He could recognise and reproduce words when shown how to learn them by the visual method. His writing was quite well-formed. Some of his failure in the tests of intelligence could be traced to the lack of a good home background. He was ignorant of the date, the names of the months, and his own birthday. He was inarticulate - unable to express differences. Giving credit for tests involving Dictation, Composition, Reading and Arithmetic his mental age was raised to $9\frac{4}{12}$ and his I.Q. to 88.2.

His method of attempting to read was not conspicuously faulty/

faulty. His recent training had been from the Beacon Readers which provide for sight recognition along with drill in phonics. His errors were "for" for "of", "hap" for "up", "die" for "day", "sup" for "sad", "weet" for "wet", "owned" for "one", "wall" for "now", "hit" for "that", "kill" for "girl", "weet" for "went", "is" for "so", "you" for "he". In the case of the letters, he said H for E, K for G, O for Q, o for u, d for g. The chief necessity seemed to be to continue the special work which the school was already doing. The report to his teacher accordingly stated:

"He will be very much benefited by the work begun by sending him four weeks ago to the infant class for reading. This should be continued. He should be encouraged to progress more rapidly than the others by lending him extra books to read - old Primers or specimen copies etc; but care should be taken not to hurry him unduly. He should be given regular training in rapid recognition of words and sentences, printed on cards and shown for one second."

To stimulate his progress, he was asked to come to the Clinic each week, and there he was given practice in recognition/

recognition of the Beacon and Winnetka cards with one second's exposure on the Tachistoscope. He was also encouraged to read his word cards rapidly, and to build up from a box of letters any words about which he was in doubt.

He attended faithfully; but in the winter months, since he was poorly equipped with boots and clothes, he was often absent with cold or sickness. This irregularity is probably typical of his attendance at school.

In spite of such interruptions, his ability developed. At his first visit, he read correctly 38 of his own word-cards. At his eighth appearance, he was correct in 68. Beacon Card IV which on December 3rd required seventeen exposures before it was mastered, on January 14th was read correctly after five exposures. There seemed every reason to believe that, could he have had regular personal tuition, his reading would have become much more proficient.

His seems a case explicable by the depression caused by lack of home care, low intelligence and unwise promotion operating on a child of a docile nature. His eye defect may have served to increase the lack of interest in books which was probably associated with a home destitute of a library and devoid of intellectual stimulus/

stimulus.

With the amount of tuition we were able to give him, his progress was slow. At the end of seven months (and twelve visits to the Clinic) he was tested again. His score now was:

Reading Test I	5.6 years.
Test II	2 errors.
Test III	19 words correct.

There is some evidence of improvement; but at the age of eleven it is difficult to undo the ill effects of years of failure.

X.

D.S. was sent to us as a case of backwardness - "very poor both in Arithmetic and Reading". He was said to have a halt in his speech, but this proved to be slight. He was in the fourth quarter of a class of average age eight - he being ten on his first visit. He was an only child. There was little further information.

On interview he proved to be a fair-headed, open-faced boy with some eagerness, a sense of humour and some instincts of politeness. He was very well dressed, and had the cared-for look of a child on whom much attention had been lavished.

His home was a prosperous one. The mother was talkative and self-important. She was loud in her expressions of surprise that D. should be slow at school as his father was so clever. She answered many questions which were addressed to the boy. It appeared that he was rarely allowed out to play, and that he was never trusted to visit shops on his own account. He was still sheltered to excess and treated as a baby. There had been much absence in the earlier years at school coupled with criticism of the teachers because the child's progress had been slow.

His difficulties were discussed openly in front of him. The parents were much concerned to know if it

were/

were wise to "push the wee brain".

On examination the following results were obtained:

Age 10 years 2 months.
Mental Age 8 years 5 months.
I.Q. 82.8.
Reading Test I 6.9 years.
Test II 4 errors.
Test IV Correct up to sentence 6.
Substitution 42.
Cancellation 36.
Formboard R.H. 28 sec. L.H.27nsec.
Tapping R.H.100, L.H.73.
Memory, Auditory 7 letters.
Visual (simultaneous) 5 letters.
Visual (consecutive) 4 letters.
Picture 14 points.

His auditory memory was evidently more developed than his visual. Motor reactions were more rapid than those of others near his mental age.

His method in reading was to spell aloud and attempt to pronounce in syllables. There was much evidence of struggle. The chief errors were "as" for "his", "had" for "that", "sat" for "sad", "were" for "wet", "no" for "now", "were" for "went", "live" for "love", "joy" for "journey".

He seemed quite accustomed to read aloud without comprehension. When for example he failed to respond to sentence 7 of reading Test IV ("I have something in my pocket etc") and I asked him to read it aloud, he said - "I gave something in my poke which I use to tell the time. Do not say that it is comed; but tell me how/

how may hand your think is as was."

It was obvious that practice in recognition of words was needed. I advised the mother therefore to give him encouragement in reading simple stories, using the Winnetka method of teaching by sentence strips and flash cards, along with the building of individual words from a box of letters.

A month later he was re-examined. Reading had progressed; evidently there had been enthusiastic practice. His score was now -

I	7.3 years.
III	35 correct, 3 errors.
IV	6 sentences.

His errors were S A D (spelling) for "sad", "livg" for "love", "use" for "nurse", "do" for "known", "join" for "journey", "tiron" for "tongue".

The need of much silent reading practice was re-emphasised. The Winnetka books had been ordered, but had not yet come.

Some months later it was heard that he had had scarlet fever and had been nursed at home - another sign of excessive care - that the Winnetka books had come but had been found too easy (although he did not know all the words), that he had been put into a special class of backward pupils at school and liked it very much.

Eight/

Eight months after the second testing he was sent for again. Results of examination were -

Reading I	7.7
III	34 correct, 1 error ("of" for "for")
IV	Correct up to sentence 10.

In test I the errors were "said" for "sad", "torry" for "terror", "selves" for "shelves", and failure to read "obtain" and "tongue". Wherever he did not immediately recognise a word he spelled it out. In our new group silent reading test his performance was 2.0.0. for the first three tests.

The Winnetka material was not thoroughly known with the exception of the first story. It was evident that while professing to find it too easy, the parents had not made a thorough attempt to teach the words. Definite progress was made during the first period of enthusiasm; but the eight subsequent months showed no more improvement than the first month.

At this visit, examination of the eyes was made and glasses were found necessary.

More detailed directions for silent reading practice were sent to the school along with sets of sentences to learn.

The case seems one of those where low intelligence renders the process of learning to read slow and very easily upset by disturbing circumstances. These were here/

here provided by irregularity of attendance at school, change of school, and unwise petting at home.

Further invitations to the Clinic brought no response, but exactly a year after his first visit a report was sent from his teacher that he was getting on very much better, especially since the provision of glasses. A year and a half later - in May 1930 - through an accidental meeting, his mother told us that he had now gone to Glasgow High School and was doing well. Apparently he was at least doing well enough to cause no distress at home.

XII.

John B. was the youngest of a family of three. He came to us at the age of nine and five months as a case of defective speech; but on examination it was found that there was no defect but only extreme babyishness of utterance. His reading, however, was so poor as to indicate the need of special attention.

Home life was reported to be very good. His father was a foundry worker. They lived in a house of four rooms in an almost rural district at the edge of a country town. The older children in the family were a boy aged 16 and a girl aged 15. John was the baby of the family.

On enquiry it was found that much attention was given him at home. He was never allowed to go to school alone, and there was no need to give him responsibility at home or allow him to help by going messages or using his hands in housework.

The school report was that he was in the fourth quarter of a class of average age eight and a half. His strong subject was said to be Arithmetic, but he was weak in Reading, Spelling and Dictation. The adjectives applicable to him were "nervous" and "timorous" but he was reputed "intelligent" and "quick at learning repetition".

Conduct/

Conduct in class-room and playground was uniformly very good. Attendance in recent years had been markedly regular; but there was a record of infantile measles and whooping-cough.

At the interview he proved to be small and shy. Tears seemed near the surface. Away from his mother and teacher he answered more freely than when they were present. His performance was irregular. He seemed to have some literary ability but a poor sense of form. His reading was decidedly backward and consisted chiefly of synthesis attempted by means of muttered spelling. He had, however, made some progress. Results of testing were:

Mental age	$8\frac{3}{2}$.
I.Q.	88.05
Reading Test I	7 years.
Test II	g for c and Q for O.
Test III	27 words.
Test IV	Sentences 2 and 3 correct.

He held his head very near the book as he read. Eye sight testing was therefore suggested, but it was refused on the ground that he had already been tested by the school doctor and reported normal.

The following report, which was sent to his home and to his teacher, indicates our opinion of the case:

"His reading and spelling are poor through a wrong method of approach. In reading/

reading, he is attempting an analysis of words by spelling out the letters, and in spelling he is trying to reproduce what he hears. In both subjects help may be got by putting emphasis on the appearance of each word as a whole. His visual memory is much better than his auditory one. It should be suggested to him that he is to learn to recognise each word as he would a pattern or a picture.

At home, he should try to memorise at least one new word a day. He should be provided with attractive books with pictures, and a box with letters. The method should be (1) to look at the word, (2) to copy it down on a card, pronouncing each letter as he copies it, and pronouncing the word as a whole before and after, (3) to build it up from the box of letters. Then he should practise writing it from memory. He should collect the cards with words on them, and revise perpetually in the form of a game, turning them over as rapidly as possible to develop rapidity of recognition. He should be encouraged to play as much as he likes with the box of letters, e.g. seeing how many little words he can make with the/

the letters in a big one such as Mesopotamia or Arithmetic, etc.

In school, he should be given sentences on strips of paper to copy and recognise. The problem is to get him away from analysis to recognition of sentence-wholes and word-wholes. He should also be given packets of cards containing one word on each card - the whole to form a sentence.

He is asked to keep a note of the words learnt, and he will be invited to return to the Clinic later."

Six months afterwards he was recalled. There was some evidence of an attempt to follow suggestions. He had a box of word-cards and a book in which he had practised words. Results of testing showed slight improvement.

Reading Test I	7.2 years.
Test II	2 for 1.
Test III	28 words correct.
Cancellation	18.

A sheet of sentences for silent reading of directions was given to him.

At his next visit, six months later, he produced these sentences and reacted to them at an average rate of one per second. His hands in shuffling the cards seemed/

seemed clumsy, and it was felt necessary to emphasise again the importance of developing him by giving him manual training through tasks at home and games involving manipulation. There were still signs of the evil effects of protracted babyhood, though they were not so obvious as a year before. His performance as a whole, though careful, was very slow. He seemed to need encouragement and the development of self-confidence.

In the tests his results were:

Reading Test I	7.5 years.
Test III	42 words.
Test IV	Correct to sentence 10.
Test VI	Spelling age 9.8 years.
Substitution	28.
Picture	5 points.

He had made much less improvement in the recognition of words of graded difficulty (Test I) than in the test for speed of reading monosyllabic words (Test III) or for silent reading (Test IV). With him, however, the contributory cause, combined with subnormal intelligence and class instruction on phonic lines, seems to have been rather a continuance of the dependency of infancy than the irregular learning induced by absence. In his case also, since tuition was not given by myself, I am unable to estimate the degree of persistence shown in training him towards rapid reading.

At/

At the time of his third visit he was tried with one of the new group silent reading tests "Betty Gray..." (v. Appendix) in which he had failed completely on his first visit. He was correct in 3 out of 4 questions. In the other tests, however, his answers were incorrect, and in the new group intelligence test his score was only 17. His reading skill had not apparently reached the level to which the tests are appropriate.

A year later, June 1930, he was sent for again. On this occasion he produced with pride the titles of four books which he had read at home. His performance in the tests was:

Reading Test I	8.3 years.
Test III	42 words correct.
Test IV	Correct to sentence 12.

This showed much more rapid progress in Test I than had appeared in the previous year. There seems therefore reason to hope that he will continue to advance.

XIII.

O.M. was an only child who since four years of age had been brought up by her aunts and her grandmother. To them she was at the age of eight years and five months still a precious plaything whose "wee hands" and "wee feet" could do nothing for themselves. She was incapable of venturing anything on her own account, could not even dress herself, and required constant encouragement and reminders before she would persevere with the simplest tasks.

In appearance she was attractive and well cared for - obviously from a prosperous home; but her glance was indecisive and wandering.

From school it was reported that she was in her third year, yet was making no progress in reading or arithmetic. Handwork, sewing and writing were quite good. The adjectives applicable to her were "careless, changeable, dreamy, excitable, inattentive, lazy, unpersevering, shy" and, to a less extent, "listless" and "nervous". Her behaviour in the class-room was said to be "good, but silly". She varied from day to day. On some days they would make nothing of her; on other days she was quite good. In the playground she did not mix well with other children. Those of her own age thought her a baby. She had difficulty in learning games which involved/

involved following a pattern of directions. Her favourite employment was to walk about or look at pictures with another isolated and rather backward child. In school she seemed to spend much time in day-dreams; but no evidence could be obtained as to the content of her dreams. She talked very little and seemed unaccustomed to being expected to exchange ideas on any subject.

There was a record of early chickenpox, whooping-cough and a nervous affection which may have been St. Vitus' Dance. Recently her health had been good except for measles. Attendance at school had been somewhat irregular because of frequent holidays.

When tested she proved to have a mental age of 6 years and 4 months, and an I.Q. of 75.2. She was unable to read, very lacking in experience of money, and seemed to have little sense of form. Other results were:

Reading Test I	Age less than 4.
Test II	14 errors.
Test III	Failure.
Formboard R.H.	33 sec. L.H. 38 sec.
Tapping R.H.	55, L.H. 66.
Picture	4 points.

She was very slow in her movements and paid little attention to instructions; but in the Formboard Test she showed some ability to learn - her speed increasing from 56 to 35 seconds with the left hand.

In reading she attempted phonic analysis but began often/

often with the final letter e.g. "fo" for "of", "ta" for "at", "pu" for "up", "ma" for "an". She knew the names of few letters but could give their sounds. She succeeded in reading only one word - "or". With all the others she merely attempted to sound the letters and made no transition to the word.

When she was asked to write her name, she did it in mirror-writing beginning at the right hand, and did the same with the numbers 2 and 3. This was said to have begun three months before her visit to the Clinic. It did not apply to all her writing. She was able to copy words quite successfully.

There was no evidence of eye defect; but concealed weakness cannot be excluded since an examination by an eye specialist was refused. The existence of headache, watering of the eyes, or unusual position of the head was not known to the teachers.

Enquiries were made as to habits at home. She was believed to go to bed early. Stories were not read to her much by adults. She had never had the experience of helping other children - partly because of her being an only child and partly because her babyish manner led other children to instruct her. She rarely showed any desire to be independent and was never allowed out alone except to school. Her aunts, while petting her, depreciated/

depreciated her intelligence, saying in her presence, "I suppose she is quite hopeless".

It seemed a case of arrested development, due partly to prolonged babyhood and partly to low assertiveness and subnormal mental capacity. How far the latter might have been modified by a different home training it is difficult to say.

As treatment, it was suggested that the method of teaching reading be changed from one on phonic lines to one depending on kinaesthetic imagery and visual imagery - setting her to trace and try to write from memory whole words. Encouragement and partnership with other children were also advised. The following reports were sent (a) to the school and (b) to the home -

(a) "In mental development she is at present retarded; too much should therefore not be expected in progress in school subjects. The difficulty may be due partly to the fact that she is an only child, who may have had too much done for her, and too little chance of developing initiative and independence. Training should be given in the art of play, e.g. partnership reading and arithmetic games might be encouraged so that she has to work with others. If she could be set to help younger ones in matters in which she/

she is reasonably proficient, it would help to establish her confidence, and to break down her shyness.

In reading she is making excessive use of analysis. She would be helped by a method which is based on perception of form and also involves cooperative work. A good one is that outlined in the Teachers' Edition of "My Reading Book" (Rand, McNally and Co). In the meantime she could be set to learn whole words by the kinaesthetic method - look at it, say it, trace it out with the fingers, and then try to reproduce it from memory....."

(b) (to the home). "Too much pressure should not be exerted at present towards success in school subjects. It is essential that she be encouraged in regular habits, and given many opportunities to play with other children. Next in importance is the effort to develop independence by insisting on her doing as much as possible by herself and for herself. Her hands should be exercised by simple tasks in the house, and by games which involve skill of manipulation - as do most children's games. Negative suggestions should/

should be avoided; e.g. it should not be said in her hearing that she is backward or shy. Such remarks invariably have bad effects. She should be encouraged by wise praise whenever it is possible. These measures, coupled with regular attendance at school, should do much to help her."

A year later she was tested again. The results of the reading tests were:

Reading Test I	Age 4.9
Test II	4 errors.
Test III	17 words correct.

This showed some improvement; but comprehension seemed still very low.

After another year the report came from school that she was getting on very much better. She herself, however, was not seen.



XIII.

D.G. was one of the many undistinguished children who fill our class-rooms. He was submissive to school routine; but at the same time made only slow progress up the school. At the age of twelve years and seven months he was in the fourth quarter of a class of average eleven. He was a bad speller and a poor reader. He took little pride in his person and often seemed to care nothing at all about the impression he was making. At times he was emotional and excitable. More often he was "good", that is to say, inconspicuous in his behaviour. The adjectives considered applicable to him were "careless, inattentive, lazy, unpersevering" and "untidy".

The results of testing were:

Mental age 11.1
I.Q. 88.1
Reading Test I 9.6 years.
Test III 81 words.
Test IV Correct to sentence 11.
Spelling Test VI 10.4 years.
Cancellation 27.
Substitution 47.
Memory: Auditory 5 letters.
Visual 5 letters.
New group reading Test 10.

He was slow but seemed quite able to learn and to concentrate.

Our problem was, therefore, to get to know more about his home life and his attitude to things in general.

Inquiry/

Inquiry as to his home showed that his mother had died about a year before. Probably her death had been preceded by long months of ill-health - though of that I have no proof. Since then he had had to look after the house, and cook meals for his father and three older brothers, aged nineteen, seventeen and sixteen, and a younger sister aged ten. He often quarrelled with the youngest of his brothers, and he went to the Pictures once a week.

All this suggests that the trouble in school, the variability, and emotion showed, were connected with lack of care and consequent unhappiness. It is difficult to get fuller information about such a state of things; but what is indicated above seems sufficient to account for the apparent "laziness, inattention and untidiness".

It was not possible to arrange to give him special tuition, as he could not get away from housekeeping responsibilities; but a year later he was examined again to see what progress had been made under ordinary class conditions. Encouragement had been given to him in the interval, and an effort had been made to make him realise that someone was concerned in his progress. The testing showed that in the year he had made six months progress in reading and five months in spelling. At thirteen and/

and seven months he was sitting in the Qualifying classroom, but his reading was that of a ten-year-old, and there was no prospect of his passing the Control examination before fourteen years of age. Five months later he was seen again, and was found to be full of hope because he had just passed the examination and was going next session to a Secondary School. His reading age had advanced to 10.2 years.

His seems to be a case of the child of rather less than average intelligence who is unable to progress through school at a normal rate - especially when further handicapped by complications in his private life. Left to the mass-teaching which is prevalent in the schools, he was dropping further and further behind his age-grade.

XIV.

J.A. was not good at school work. She liked drawing; but all the rest of her lessons she abhorred. In particular, she had difficulty in reading fluently, never used books if she could avoid it, and was very poor at spelling. Her parents were ambitious for her; but they and her teachers found her "changeable, lazy, selfish, untidy and most difficult to understand."

Her age was thirteen years and nine months, and at first sight of her it seemed as if her chief troubles were those of difficulty of adjustment often found in adolescence. She was both reticent in manner and bored in attitude.

Under testing she proved decidedly nervous, and afraid of giving a wrong answer. Her replies were well expressed; but she often broke off in the middle and contradicted herself. She did not give foolish responses; but was quite ready to say "I don't know" and "I can't do that." She showed marked diffidence, and seemed accustomed to expect failure. She was over-dependent on instructions. Combined with this, was an excessive interest in the impression she was producing on her audience.

The results of testing were:

Mental/

Mental age 12.0
I.Q. 87.3
Reading Test I 14.2
Test III 93 words.
Test IV Correct to sentence 16.

In the Vocabulary Test she recognised quickly the words that she knew; but found difficulty in defining them to her own satisfaction. She gave sixty-six words in three minutes and made no long pauses and no repetitions. It did not seem therefore as if her "difficulty in reading fluently" were due to poor vocabulary.

In the general testing her ability was irregularly distributed. There was success in some of the fourteen year old tests along with failure in those for twelve years.

It is noteworthy how far behind her silent reading ability was compared with her skill in oral reading. The weakness in spelling was possibly associated with her lack of skill in reading for comprehension. Spelling mistakes were almost exclusively phonetic, e.g. "tutch, sucead, diside, ruf."

She had her own explanation of her difficulties. They were due to having missed the early stages of reading. She was first sent to school in England. The methods in use "would have been quite good" if she had continued there, but she came to Scotland. She lived in Stirling for/

for a year and did not go to school (possibly this period coincided with infantile illnesses of mumps, measles and chickenpox which were admitted). Then, when she was eight years old, she was sent to school; but not put back to the beginning. She was "never taught the combining of two letters" and so she is not good at lessons. Such was her account. Its chief interest is the evidence it gives of fixity upon the idea of inability, and consciousness of inferiority, combined with a desire to justify that inferiority by putting the blame upon unskilful teaching.

Upon my suggestion that she was not really very bad, and that I could help her to do quite well, she looked incredulous, and explained that she was always at the foot of the class. "How many are in the class?" I asked. "Four" was the answer.

Her parents were prosperous and she had been sent to a small private school. This latter circumstance may explain her constant expectation of assistance and her unwillingness to exert herself. The pupil in a large class meets often with too little individual attention. The pupil in a small class may suffer from too much.

The next item of importance which emerged as knowledge/

knowledge of her grew, was that she had one sister who was a twin, "a head and a half taller" than she, and in the same class at school. There have been cases on record of the damaging effect of close contact and comparison between twin children. This is possibly an instance of the same sense of inferiority with its evil consequences. The excessive proximity of a small class had probably aggravated the evil.

There was no chance of examining the twin sister, and further details are not available as the teacher, when invited to the Clinic, did not come, and an attempt to recall the child six months later brought no response.

XV.

David G. was the youngest of a family of three. He had two older sisters aged eighteen and eleven years. His introduction to us was on account of poor spelling and arithmetic combined with troublesome behaviour. In the course of examining him however it was discovered that he did not like reading. An attempt was therefore made to help him with that as well as with the other subjects.

When he came to us, his age was nine years and two months. He was in the lowest quarter of a Junior II class of average age eight and a half. His best subject was "general knowledge". Attendance for the previous two years had been satisfactory; but in the infant-room there was a record of absence through measles and whooping-cough, and he was said to have outgrown his strength and been nervously ill.

The adjectives applicable to him were "careless, excitable, impulsive, inattentive, nervous, restless, and unpersevering". In the class-room he was said to be "restless, and unable to control himself".

Results of testing were -

Mental/

Mental age $10\frac{3}{12}$.
I.Q. 111.82.
Reading Test I 9 years.
Spelling Test VI 7.7 years.
Cancellation 30.
Substitution 37.
Tapping R.H.137, L.H.113.
Formboard R.H.20 L.H.15.
Picture 15 points.
New group reading Test 6.

His rate of reading was very slow. He articulated visibly and attempted phonic analysis of each word. While reading he frequently screwed up his eyes, blinked, and held his head over to the left side. He would not admit that he ever had headaches or failed to see the blackboard in school. An attempt was, however, made to get the parents to take him to an eye specialist. (This has not yet been done, so far as we know).

In the course of the interview it was found that the home was a prosperous one. The family lived in a house of six rooms. The father was a commercial traveller, and the mother was interested in operatic work to which she gave a considerable amount of time. He had begun his education in a small private school; but at the age of six had gone to a public one. There he had been put into the infant class, and after a year had been promoted so that he missed a class. He had been unhappy at school until he came under the charge of his present teacher.

A contrast was drawn between him and his older sister aged eleven. She was said to be very quick at lessons, and at the top of her class in every subject. Further, she was very fond of reading, and amusingly proud of her skill in reading aloud. "Every morning", said her mother, "she reads stories to David before they get up. He likes to listen". Upon my exclamation that that was very bad for David, the mother explained that David read so slowly and so unwillingly that no one would listen to him. His sister was quite different.

This seems a case where a boy, though of more than normal intelligence, has lost interest in school perhaps originally because of ill-health, and secondarily because of the diffidence induced by comparisons with an aggressive and contemptuous older sister. He had become a good listener, and his thirst for stories had been satisfied in that way. Most of the books in the house belonged to the older sisters, and he made no real attempt to master their contents for himself.

In slow oral reading of isolated words, his performance was almost up to his chronological age, but decidedly below his mental level. In silent reading he was very much retarded. There seemed a possibility that his restlessness in class and his success in "general knowledge" lessons were both associated with a level of intelligence/

intelligence above that to be expected from his chronological age.

The following report was sent to the school.

"In intelligence he is above the average for his age. Reading and Spelling are, however, below average. This discrepancy may partly account for troublesome behaviour in school. It may be due to an unconscious effort on his part to regain his own self-respect by drawing attention to himself.

There is a possibility of an eye defect which would increase his antipathy to working steadily at books or at prescribed tasks. It is recommended that his eyes be examined by a specialist.

In reading he is suffering from excessive analysis. He "sounds out" each word too much. He needs training in rapid silent reading and "look-and-say" drill with flash-cards."

The parents were advised to prevent the sister reading to him, to make no comparisons between his ability and hers, and to try to develop an interest in books by giving him well-printed stories as presents. An effort was made to encourage him to a fresh start by suggesting that/

that his skill would rapidly increase and by promising to invite him back at a later date.

Three months afterwards, at a return visit in June 1930, his performance in Reading Test I had improved to that of a pupil of 9.3 years.

4. Physique.

XVI.

J.M. was sent to us at the age of eleven years and two months on account of slowness in reading, Arithmetic and other school subjects. He was in a class with pupils of average age ten and a half. He had no strong subjects. Attendance in the last two years had been 692 out of 806; but there was a record of measles, chickenpox, sunstroke - at about four years of age - fever (when about seven) and chorea for three years. Present health was said to be satisfactory. Conduct in class-room and playground was very good. Adjectives applicable were "dreamy, nervous, restless, shy".

On interview, the boy proved to be tall, pale, with a "retained" or introverted look. His manner was timid, anxious and quiet.

The home-life was apparently very good. The father was an engineer. There was one brother, aged fifteen, who was not abnormal.

The results of testing were as follows:-

Mental Age:	$8\frac{7}{12}$	(Terman)
I.Q.:	78.4.	
Reading	Test I;	6.8 years.
	Test II.	5 errors - M.X. b.k.q.
	Test III.	30 correct.
	Test IV.	Correct to sentence 5.
Spelling/		

Spelling Test VI. Age 6.8 years
Cancellation. 18.
Substitution. 23
Tapping. R.H.51. L.H.45.
Memory. Visual Simultaneous - 7 letters.
- 4 letters.

He was very accurate but rather slow in the tests for perception as compared with others of his mental age. Verbal memory seemed good. In reading there was preference for oral work. Silent reading was handicapped by much lip movement. His ability to read words was in advance of his power to comprehend what he was reading; but his oral reading ability was two years behind his mental age.

His teacher was willing to give extra time to special tuition. This was planned with a view to discovering whether rapid improvement would follow suitable training, and whether his reading ability could be raised up to or beyond his mental level. It was on the lines of that given to M.D. (Case V.) as there seemed a similarity in the type of difficulty.

Four months later he was recalled. He had been off school for six or eight weeks in the interval. As the Christmas holiday intervened, this meant that he had had about six weeks tuition. His performance was now:-

Reading/

Reading Test I. Age 7.1 years.
Test II. Correct.
Test III. 40 words.
Test IV. Correct to sentence 7.

There was a decided improvement in speed of silent reading and about four month increase in accuracy.

In view of this, they were advised to continue the treatment. A new factor was, however, entering into the situation. A special School was to be opened in his district and the mother wished to send him there. She was advised not to do this, at least until the summer, as the boy was making progress, and was likely to benefit more from association with normal children than from mixing with lower-grade defectives.

Three months later he was recalled and re-tested.

The results were:-

Reading Test I. Age 6.8.
Test III. 39 correct.
Test IV. correct to sentence 6.

The child was more obviously nervous in movement than before. The progress that had been taking place was checked. On enquiry we found that he had been sent to the Special School when it opened, had been there one week, and then had developed very acute nervous/

nervous symptoms. He had since been off school by doctor's orders, and will never go back. The headmaster of the ordinary school was willing to take him again when he was able to attend.

Since then, there is no information available. He was invited back six months later - in December 1928 - but did not come. It was reported that he was not yet attending any school.

The case is interesting as showing the extreme effect of absence and illness upon a child of low mental activity, the beneficial results which may follow, even in such a case, upon happy practice in a sympathetic atmosphere, and the evil effects of disturbing change of environment.



XVII.

Emily F. came to us as a pupil who though very good at oral work was extremely poor at spelling.

At the first interview, she proved to be a bright child, very willing to talk and quite mature in manner for her age. She had an older brother of fourteen, and a baby sister of two. The home seemed good, and the mother was willing that the girl be stimulated to do well. There was no evidence of infantile illness, or present irregularity of attendance. Conduct in class-room and playground were said to be excellent. The only adverse criticism was that she was careless. She was in a class of average age $10\frac{6}{12}$ and seemed "exceptionally intelligent".

The result of testing showed an I.Q. of 100.
(age $11\frac{8}{12}$).

Reading Test I. Age 10.4
Test IV. Correct up to sentence 14.
Test VI. Spelling Age 10.3.
Cancellation. 15.
Substitution. 39.
Tapping. R.H. 148. L.H. 116.
Form Board. R.H. 24. L.H. 22.
Memory. Visual \checkmark letters
Auditory 6 letters.
Auditory Visual 10 letters.
Picture. 20 points.
List of books at home. 24.

Her reading of simple continuous prose (in Binet Burt)
was/

was pleasant; but it was noticeable that she screwed up her eyes, and held the book close to her face. On questioning the mother, it was found that the father was very short-sighted, and had worn glasses since the age of 14. Emily admitted that her eyes were sore and that she did not like reading. She was referred to an eye specialist, and strain was reported for which a lotion was prescribed, but glasses were said to be unnecessary.

At her next visit to the clinic, four months later, her eyes were reported to be much better, and her spelling score had improved by six months.

During the next year she came at intervals to the clinic, bringing younger children from the same school. There was evidence of less disinclination to read. A year after her first visit to the clinic, her silent reading performance on our tests was 17 and her intelligence score was 82 - both over the twelve year old norms, the class average being 15.56 and 70.71. A year later again, her performance on Burt's reading tests were:-

Test I. Reading Age 12.9
Test III. 94 words.
Test IV. Correct to sentence: 15.
Test V. 16 questions.
9 errors.
1.50 minutes.

In the two years, her reading age had therefore increased by 2 years and five months. It was not yet so normal for her age as was her intelligence, but it seems feasible to judge that the difference in capacity is traceable to a disinclination to read associated with eye strain.

Her performance in spelling continued to improve along with her reading. A year and four months after her first appearance it was that normal to a child of 11.8. Four months later (after the summer holiday) it was back to 11.4; but eight weeks after that it was up to 12.6 years. In a year and ten months the improvement in spelling corresponded, therefore, to about 2.3 years.

Just before she left school - in June 1929 - she was re-examined. Both reading and spelling showed a marked improvement.

Test I.	Reading Age.	13.7 years
Test III.	112 words correct.	
Test V.	18 questions.	
	4 errors.	
	1.35 minutes.	
Test VI.	Spelling Age	13.4 years.

Chronologically she was three weeks over fourteen. She was interested and stimulated at this time. Word had just/

just come that she had passed the "Control Examination" which is the entrance to the secondary school. She was looking forward to leaving school and starting work. Perhaps the increased vitality of such a period had enabled her to stride forward rapidly in her last six months at school. There was now no evidence of eye strain.

5. Low Intelligence.



XVIII.

Ann M. was reported to us because she seemed "to have word-blindness and to be incapable of recognising the simplest words." She was ten years old when we first saw her and in manner was bright and active though small for her age. She was the second youngest of five children - the others being three boys of 17, 12 and 8 years and one girl of 15. They lived in a two-apartment house. Ann was well cared for, well equipped with clothes, and always accompanied either by her mother or the twelve-year-old brother.

In school she was said to be "fairly good at general intelligence and arithmetic" but at the foot of the class in reading. The class was Junior I - of average age nine. Recent attendance had been good except for absence with pneumonia. Infantile ailments had been measles and whooping-cough; but there was no record of very prolonged absence or other disturbing circumstances at the infant-room stage.

Before sending her to me, an attempt had been made to help her by putting her back into an Infant class for the reading lesson; but no visible progress had resulted.

The information obtained by testing was as follows:

Mental/

Mental age $7\frac{6}{12}$.
I.Q. 75.0
Test I Reading age 5.1
Test II 8 errors.
Test III 18 words correct.
Test IV Sentence 5 correct.
Cancellation 19.
Substitution 25.
Tapping R.H. 61 L.H. 58.
Formboard R.H. 29 sec. L.H. 23 sec.
Memory, Auditory 3 letters.
Auditory Visual Hand Motor 4 letters.
Visual 3 letters.
Picture 8 points.
New group reading test 6. Class average 9.87.
New Group Intelligence 36 Class average 40.60.

In reaction to the tests she always began by being eager and willing; but soon ceased to concentrate, sighed much over her task, and made sly attempts to copy wherever there was any possibility.

Her reading was done by attempted phonic analysis, and spelling in a whisper. She would sound out the letters and then synthesise them into a totally different word with some initial or terminal resemblance to the given one, e.g. wet was pronounced heat, girl - giry, went - pent, some - spoke, to - the, up - pup, or - for, no - to, his - sister, had - sad, that - date, just - jump, known - ken, sun - sut, big - bide, day - buy, one - on, now - nown. Of the letters she confused X and Z, D and B, G and C, Q and O, L and I, d and b, q and b, q and p, z and x. In Test III - monosyllabic words - she made mistakes such as his for is, he for we, ane for an, he for be, an/

an for and, doe for do, hof for if, has for as, yus for us, he for see.

The nature of these errors made us wonder if there were some associated eye defect. She often held her head near her work, and admitted that her eyes were sore at night. On the other hand, there was no sign of headaches, and the specialist who tested her eyes found them quite normal.

It was evident that she required assistance to enable her to differentiate between letters of somewhat similar shape, and also training in rapid recognition of words as wholes. She had struggled too long with an attempt to build up the words from their component letters. It was arranged that she come to us for help once a fortnight.

The instructions given in these lessons were:
"Look at the first word in your story. Copy it out into this book. Look into your box of letters and lift out the letters which make up the word. If you do not know what the word says, ask somebody. Look hard at it again and whisper the letters to yourself. Then cover up the word, and write it from memory on the opposite page. Do this over and over again till you know each word very well."

At the fourth meeting she was asked to print her
new/

new words on cards in the future, and thereafter we began to play the game of "Spot" with these cards.

At the sixth meeting she was correct in 42 words: She was beginning to try to read little stories on her own account. At the eighth meeting - three months after beginning work - she was tested again. Reading age was 5.6 years. In Test II she had five errors - B for D, O for Q, i for l, b for d, and p for q. In Test III she was correct in 19 words. This progress was not very great but an attack of rheumatic fever had intervened.

Summer holidays came at this point; but after they were over the work was resumed.. At her next appearance she had stopped making word cards, but she read 128 words of a story. She was reminded of the method to follow in learning new words and told to bring word-cards again as before. This she did. In the eleventh lesson, study of the Winnetka and Beacon Sight Reading Cards was begun and thereafter several of them were always exposed in the tachistoscope - each being shown over and over again until she had read it correctly. Along with this, the former methods were continued.

Testing was repeated at the thirteenth visit - eleven months after her first coming to the Clinic. Her reading age/

age in Test I proved to be 6.8. This was an increase of 1.7 years. Errors in letter recognition (Test II) had fallen to two - i for l and p for q. In Test III she was correct in 33 words, and in Test IV she succeeded in comprehending sentences 1 and 3.

After this test, tuition was continued for another five months. Her fluency steadily increased and rapidity in reading the flash cards developed.

She seems one whose progress might have been much less slow had more individual attention been possible at an early age. The level we reached was not high; but it was well above her performance when she first came to us.

Her brother William who came with her on several occasions was also tested. He was a boy of very ungracious manners and dour sleepy appearance.

Results of Testing at age 13 years 4 months were:

Mental age $11\frac{3}{2}$.
I.Q. 84.3
Test I Reading age 12.1
Test III 81 words.
Test IV Correct to sentence 15.
Test V 2 min. 10 sec.
2 errors.
8 questions correct.
Cancellation 16.
Substitution 25.
Formboard R.H. 46 L.H. 35.
New Group Silent Reading Test 10.
New Group Intelligence Test 59.

On examining his eyes it was found that glasses were necessary.

He shows a somewhat higher level of intelligence and school progress than his sister.

An interesting feature of the family was the determination of the mother that Ann should learn to read. At the beginning of the time she was somewhat hostile and on her guard; but later she became friendly and confided that Ann had to be "leathered" to make her do her reading. There seemed to be few books in the home, and little in the way of suggestion of the pleasure to be found in reading; there was however praiseworthy reliability and regularity of attendance at the special lessons I was able to provide. The mother was not without pride in the children, and let me know that Ann was leader in an exhibition performance given by the Guildry. In other directions than school work she was finding an outlet for her eager brightness of spirit.

XIX.

Jean C. was first brought to us at six and a half years old with the request that we do something to awaken the interest of the child. The adjectives applicable to her case were "inattentive, listless, nervous, shy, timorous, unsociable." She had been three months at school and had learnt nothing.

On interview she proved to be shy and shrinking - holding on to her mother's hand. The mother was sturdy, articulate and evidently prosperous. As soon as testing began, however, she became anxious and ill at ease. Whenever there was the slightest hesitancy on the part of the child, she interrupted with such remarks as - "She is very stupid", "She won't try", "She won't speak to you". The consequence was that Jean soon refused to answer questions which she obviously understood. Testing had to be abandoned. It showed, however, a low level for age six, and marked lack of muscular control and skill.

Very strong advice was given to the parents on the necessity for encouraging normal behaviour by right suggestions. They were recommended to develop independence by insisting on her doing as much as possible for herself; to exercise her hands by simple home tasks and by play, to allow her to associate more with other children, to praise her as much as possible in order to awaken self-confidence/

self-confidence and above all to persevere in hopefulness of attitude. She was invited to return in six months' time.

On her reappearance, a great improvement was noticed. She at once volunteered the remark "I am coming to see the pictures". On the way to the next room alone with me she continued "I've got a new hat, so I have. I'm going to get new fur gloves, so I am. I can read a and x." When she was given paper on which to copy a square and a diamond, she added of her own accord "I'll draw father's pipe.", and "This is "ix" - (x)."

Testing did not however yet indicate normal mentality.

The results were:

Age 6 years 11 months.
Mental age (Burt) 4 years 4 months.
I.Q. 62.6

It seemed, therefore, that in addition to the evil effects of excessive censure there was some defect of intelligence. There was as yet no reading ability to measure.

Six months later the child was recalled. On this occasion, the beginnings of reading were visible. In the Test for accuracy her performance was that of age 4.9. She made definite use of phonic analysis. In the alphabet test she attempted only four letters and had some doubt as to "t" and "e". This test, however, came last/

last and was cut short as there were evidences of fatigue. She was not yet able to write her name but the results of general testing were better -

Age 7 years 4 months.
Mental Age $4\frac{10}{12}$ years.
I.Q. 66.5

Mental age and Burt's Reading age were almost the same. Suggestions were given for work in Reading on Winnetka lines.

On this occasion it was noticed that her health seemed worse. There was very obvious mouth-breathing.

We recommended reference to a throat and nose specialist. He judged an operation to be necessary. This was performed at once.

Since then information is lacking. The child was inquired for a month later and summoned again six months later. On neither occasion was there any reply. We cannot therefore report whether the ground lost was ultimately regained and whether the mental level became more nearly normal.

XX.

C.E. was a more abnormal case than most of those with whom we have contact at the Educational Clinic. She had weighed only 3 lbs. at birth, had needed constant care and nursing, had not been judged well enough to go to school until she was over seven years old, and was now, at the age of eight, more suited to a class for defectives than to an ordinary school. Her parents were dead and the aunts by whom she had been reared were unwilling to part with her - there was no Special School in the village from which they came.

At the interview she proved very willing to be friendly, and to talk. There was evidence of quite skilful handling on the part of the aunts. Glasses had been provided to correct a squint. Her way of walking was peculiar. Her manner had the meaningless laughter, the exaggerated gestures, and the assertive noises of many imbeciles. There was marked lack of concentration under testing.

She proved to have a mental age of 5 and an I.Q. of 62.5. Her reading skill was non-existent. She made, however, a brave attempt, uttering sounds which seemed reflections of lessons heard in school - "hoo, am, mun, tuk, oat."

The/

The teacher reported that she was no trouble in school, and undertook to coach her individually.

Six months later she was recalled. Her I.Q. had fallen to 55.4 and no reading progress had been made. Since then requests for further visits have brought no response. Hers seems a case of failure to learn associated with pronounced mental defect.

1000 1000 1000 •

We have hitherto studied individual pupils who were presenting problems to their teachers. Wherever possible they were compared with average children by testing the classes from which they came, and also by testing the backward pupils with our new group reading tests. Another way of contrasting subnormal and normal children is to apply the same individual tests to both, and repeat the testing at similar intervals. Certain teachers, therefore, were asked to select children who were just "average" in their classes, and these children were studied in the same way as the backward children had been.

The following table shows the main test results for all the cases reported. It enabled a rapid comparison to be made of the relative performance of normal and subnormal. The identity of the pupils is indicated by the number or name under which they have been described; but they are arranged in this table in order of mental age. The columns show age, mental age, intelligence, quotient, results of Reading Tests I, II, III, IV, Spelling Test VI, silent reading (new group test), intelligence (new group test), Cancellation, substitution, and whether glasses were necessary ("Yes"), unnecessary ("-"), or suggested by us/

Table XXVIII.

Test Results for Children Studied Individually.

	Age	M.A.	I.Q.	I.	II	III	IV	VI	S.R.	Int.	Canc.	Sub.	Glasse
XIX	7.4	4.10 $\frac{1}{2}$	66.5	4.9	-	-	-	-	-	-	-	-	- Yes.
XX	8.0	5.0	62.5	0.	-	-	-	-	-	-	-	-	-
XII.	8.5	6.4	75.2	0.	14	-	-	-	-	-	-	-	-
William	6.5	6.4	98.7	7.4	1	62	6	-	-	-	18	3	-
II.	8.9	6.10	78.1	5	15	18	0	5.6	-	36	14	18	-
XVII.	10	7.6	75.0	5.1	8	18	5	-	6	-	19	25	-
VI.	8.6	7.8	90.2	7	-	35	6	-	0	-	16	12	-
IX.	10.7	7.9	73.2	5.3	5	14	-	-	-	-	19	24	Yes
XI.	9.5	8.3 $\frac{1}{2}$	88.0	7	2	27	3	-	-	-	18	28	Yes
V.	12.5	8.4	67.1	7.7	1	54	10	-	-	-	27	39	?
X.	10.2	8.5	82.8	6.9	4	-	6	-	-	-	18	42	Yes
XVI.	11.2	8.9	78.4	6.8	5	-	5	6.8	-	-	36	23	Yes
VII.	8.9	8.9	100.	7.7	-	30	8	-	1	-	18	27	-
I.	11.4	9.7	84.5	0	10	56	-	-	-	-	23	29	Yes
Annie.	10.	9.8 $\frac{1}{2}$	97.1	10.8	-	0	15	-	15	83	26	41	-
III.	11.11	9.10	82.5	9.3	-	78	-	11.3	-	-	22	-	-
Robert.	8.5	9.10	116.8	7.9	4	63	10.	8.2	4	32	29	25	-
XV.	9.2	10.3	111.8	9	-	-	-	7.7	-	-	30	37	?
James.	10.8	10.4	96.8	11.3	-	122	10	10.8	-	56	21	50	-
Jeanie	10.	10.5 $\frac{1}{2}$	104.5	9.1	-	73	12	10.1	10	52	14	36	-
VIII.	13.1	10.10 $\frac{1}{2}$	83.1	9.8	-	64	10	10.9	13	35	-	40	?
XIII.	12.7	11.1	88.1	9.6	-	81	11	10.4	3	-	-	47	-
XVII.	11.8	11.8	100.	10.4	-	-	14	10.3	10	-	27	47	-
IV.	13.1	11.11	91.1	12.5	-	95	15	10.1	14	-	15	39	?
XIV.	13.9	12.	87.3	14.2	-	93	16	10.4	-	-	40	33	-

us and refused by the parents ("?").

James.

James M. was a boy of age ten years and eight months in a Senior I class of average age ten. He was in the first quarter of the class but was said to do average work in each subject. Drawing and handwork were particularly successful. Attendance was regular, health was very good. In class he was attentive and interested in his work. No special adjectives were considered applicable to him. He seemed unobtrusively satisfactory and normal so far as the teacher's observation went.

At home there was an equal absence of distinguishing characteristics except that, though the father was alive, the father's occupation was not recorded. The mother was a dressmaker. They lived in a two apartment house. There was one other child - a brother.

Results of testing were as follows:-

Mental Age.	$10\frac{4}{12}$	
I.Q.	96.8	
Reading Test I.		11.3 years.
Test III.		122 words.
Test IV.		Correct to sentence 10. 2 minutes. 5 errors.
Spelling Test VI.		Correct in 9.5 questions.
Cancellation/		10.8 years.

Cancellation 21.
Substitution 50.
Memory. Visual 6 letters.
Auditory 4 letters.
Auditory Visual Hand Motor 5 letters.
New Group Reading Test. 10.
New Group **Intelligence Test. 56.**

He is seen to be well advanced in the oral reading of single words; but retarded in silent reading.

Four and half months later he was tested again.

On this occasion his performance was:-

Reading Test I. 12.4 years.
Test III. 125 words.
Test IV. Correct to sentence 12..

The most marked progress and success is again found in the oral reading of words. The training given in school was apparently helping him to develop rapidly along these lines, while doing little to bring his silent reading ability above that of an eight year old.

It is interesting to compare his reading performance with that of number XV. who while of similar mental age, had an intelligence quotient of 111.8 but a reading age of 9. James proved slower than he at cancellation but the substitution test revealed him as a more rapid learner of new associations. In three months it will be remembered David G. made a progress of only three months in Test I, while James advanced more than a year in four and a half months. In both cases part of the progress/

progress may have been due to increased familiarity with the test material; but there is a marked difference.

Jean.

Jean L. was ten years old and in the second quarter of a Senior I class of average age ten. She was said to be good at reading and composition; but weak in mental arithmetic. Her attendance had been regular, and her health good. As an infant she had had measles and whooping-cough; but there was no record of any serious illness since that time. In the classroom her conduct was excellent and in the playground it was very good. The only adjective specially applicable to her was "dreamy".

Her home-life seemed quite normal. Her father was a commercial traveller. Their house was one of two apartments. Both parents were alive, and there was only one other child - a brother aged seven.

When she was tested, her performance was:-

Mental Age	$10\frac{5\frac{1}{2}}{12}$
I.Q.	104.5..
Reading Test I.	9.1 years.
Test III.	73 words.
Test IV.	Correct up to sentence 12. (age 8).
Test V.	15 errors. 2 minutes 40 seconds. 2 questions correct.
Spelling Test VI.	10.1 years.
Cancellation/	

Cancellation. 14
Substitution. 36.
New Group Reading Test. 13 Class average 13.37
New Group Intelligence Test. 52. Class average
63.68.

In spite of her normal I.Q. she seemed a slow worker. It was noticeable that in addition to much lip movement, she seemed uncertain as to how to hold her book. It was sometimes far away, and sometimes close at hand. There was no history of an eye defect; but it was not possible to exclude it by an examination by a specialist.

On retesting her six months later, there was evidence of some improvement, but her reading was still distinctly below both her chronological and her mental age. Results were:-

Reading Test I.	9.7 years.
Test III.	86 words.
Test IV.	Correct to sentence 12 (age 8)
Test V.	5 errors.
	1 minute 45 seconds. 14.5 ques.
Spelling Test VI.	11.4 years.

She was still much given to articulation in attempted silent reading. She muttered out the spelling of words she did not know. She seems another victim of over-emphasis on phonic analysis of isolated words. In spite of the active-mindedness shown in the Binet (Burt) individual/

individual test, she had not at the age of ten learned to read rapidly and with pleasure to herself. It is difficult to understand why her teacher should have selected reading as one of her strong subjects. The selection, however, is one of the indications that there is a very great need for more use in the schools of standardised tests. This so-called "normal" pupil, while older than number XV was little further advanced than he in accuracy of reading, and her rate of improvement in six months was no more rapid than his in three. She is included among the normal children merely because she was placed there by the judgment of her teacher.

Annie.

Annie M. came from the same class as Jeanie L. She also was ten years old and in the second quarter of a class of average age ten. Her strong subjects were reading and composition, and she had no weak subjects. Her attendance had been regular, and except for anaemia, her health had been good. As an infant she had suffered from measles, whooping-cough, and mumps; but since that time there had been little cause of absence. Conduct both in classroom and playground was excellent. The only adjective applicable to her was "shy".

She/

She was one of a family of five children, having sisters aged twenty-one and nineteen, and two brothers aged fifteen and and eight. The father was a grocer. Both parents were alive, and their home was a house of two apartments. There was no hint of complications in the home-life.

On testing the following results were obtained.

Mental Age	$9 \frac{8\frac{1}{2}}{12}$
I.Q.	97.08.
Reading Test I.	10.8 years.
Test III.	78 words.
Test IV.	Correct to sentence 15 (age 11)
Test V.	6 errors. 1 minute 40 seconds. correct in 2 questions.
Spelling Test VI.	11.3 years.
Cancellation.	26.
Substitution.	41.
New Group Reading Test 15	Class average 13.37.
New Group Intelligence Test 8.3.	Class average 63.68.

Both in silent reading and in oral reading she was well in advance of her years, and justified the teacher's claim that reading was one of her strong subjects.

After an interval of five months, she was tested again and was found to be making steady progress. Her performance was:-

Reading Test I.	12.4 years.
Test III.	97 words.
Test V.	3 errors. 1 minute 30 seconds. 18 questions correct.
Spelling/	

Spelling Test VI. 12.2 years.

On this occasion, possibly through having experienced the testing before, she contrived to attend to the meaning as well as to read the words in Test V.

It is interesting to compare her with number I. She was of practically the same mental age; but her intelligence quotient was nearly normal. Her home circumstances were much more favourable, and character and dispositions were very different. In the cancellation test her performance was very similar, but she showed more rapidity in memorising the new associations of the substitution test. While his school-days were spent in furtive attempts to copy from his neighbours, she was going steadily forward and making rapid progress. It is difficult to say at what point the different trend became definite; but the success of Annie makes his failure the more to be regretted.

She may be compared also with number III. whose mental age was likewise similar to hers. In his case also there was a difference of temperament and probably home attitude.

Robert.

Robert F. was a much younger boy. He was aged eight years and five months, and his place was about the centre of a Junior I class of average age eight. He was good at reading, writing, and arithmetic, but weak in composition and slow at first in each new operation in arithmetic. Attendance during the two years previous to testing, had been regular, but there was a record of absence because of skin disease in two earlier winters. Present health was normal and the only infantile ailment reported was measles. In class his conduct was excellent. He was nervous, shy and eager to please. In the playground he was active, good-natured, and a good footballer for his age.

Home-life seemed satisfactory. Both father and mother were alive. The father was a housepainter. There was one sister a year older than Robert, and one brother two years younger. They lived in a house of two apartments.

So far, it seemed that the teacher was justified in selecting him as quite an average boy.

The results of testing him were:-

Mental Age	$9\frac{10}{12}$
I.Q.	115.8 .
Reading Test I.	7.9 years.
Test/	

Test II. Confusion of c and g, v and u, g
and j. j and q.
Test III. 63 words.
Test IV. Correct to sentence 10. (age 7)
Test V. 22 errors.
3.5 minutes.
5 questions correct.
Spelling Test VI. 8.2 years.
Cancellation. 29.
Substitution. 25.
Memory: Auditory 5 letters.
Visual 6 letters.
Auditory-Visual Hand Motor 6 letters.
New Group Reading Test. 4.
New Group Intelligence Test 32.

It is obvious that while above normal in the Binet (Burt) individual test, he was retarded in the ability to read words accurately and to show comprehension of printed material. His performance in the group intelligence tests fell between the norms for ages 7 and 8 - probably because of his backwardness in reading.

This lack of progress in reading is possibly, along with his slowness in arithmetic, associated with the absence from school which took place in two successive years. He had apparently been promoted almost steadily with his own age group. In spite of his intelligence the effect of this promotion is seen in his difficulties in school subjects.

Five months later he was tested again. Results on this occasion were:-

Reading/

Reading Test I. 8.9 years,
Test III. 83 words.
Test IV. Correct to sentence 12 (age 8)

This is a marked improvement and may be due to his native intelligence enabling him to make up for ground lost through early irregularity of attendance. He is, still, behind Annie and James who are near him in mental age; but he is well ahead of the problem children who appear above him in the table.

William.

Our last case is the youngest of the normal group. He was tested very recently and little is known of him, beyond the details of his actual performance in the tests; but he is included as an ordinary child of mental age six in whom it is instructive to compare with the worst of our backward pupils.

He was aged six years and five months, and was in the first quarter of an infant class of average age six. He had one sister aged nine. His strong subjects were reading and writing, and attendance at school had been exceptionally regular.

The results of testing were:-

Mental age	6 .
I.Q.	98.7
Reading Test I.	7.4 years.
Test II.	1 error.
Test III.	62 words.
Test IV.	correct to sentence 6.
Cancellation	18.
Substitution	3.

He had great difficulty in understanding how to proceed in the substitution test; but in the cancellation test he did better than many of our pupils who were older than he both mentally and physically. Performance in test I. was nearly as good as that of Number V. or Number VII, at the mental age of nearly nine years. In test III. he did as well as Robert with a mental age of nine years and/

and ten months. With favourable home circumstances, regular attendance, and good intellectual ability the process of learning to read has not been to him too difficult to master.

Conclusions.

Conclusions.

Our survey as a whole, in its study both of groups of children and of individual cases of special disability, points to the conclusion that general mental maturity is the most important single factor in the process of learning to read. The correlation of group reading and intelligence scores was consistently positive and high. Nearly all our problem children, though of varying ages and different types of homes, were subnormal in mental level. Given average exposure to educational influences, intellectual endowment has by far the most powerful influence in determining differences in achievement.

The mastery of the beginning of the process is, however, within the power of most children who are sufficiently intelligent to find a place in the ordinary schools of the country. We found some progress being made by a child of mental age so low as four years and ten and a half months - I.Q. 66.5. Those who fail are those in whom, by an unfortunate chance, subnormality of intellect is co-existent with unfavourable conditions of character or environment. There must have been many children in the schools whose mental ages were no greater than those of the pupils sent/

sent to us as backward. They probably managed to acquire the necessary skills because of the absence of complications in their home conditions, school attendance, health, and temperament. There must also have been many other pupils whose homes, health, and dispositions were very similar to those of the children whose failure in reading was so obvious. Their greater success seems attributable to greater native wit, which enabled them to keep abreast of their neighbours in spite of circumstances which handicapped their feebler companions.

All of our problem children came from schools in which the prevailing method of tuition was on phonic lines. The difficulty they found was in transferring to reading what they had learned in phonic drill lessons. Excessive emphasis on elements had led to a failure to make the necessary perceptive reactions to words and to larger units. They had misunderstood the directions given to them, and had apparently lost the expectation of making sense from what they read, or of being able to interpret the meaning of the symbols they saw.

In most cases, help was afforded by putting emphasis on larger units, and developing familiarity by tracing/

tracing, drawing, short exposures, and games of recognition. Such methods seem needed in schools which have hitherto paid too much attention to an exclusively phonic line of approach to reading. (I) (II)

What practical consequences may we then draw from the bulk of the evidence collected in this survey?

Two points emerge. In the first place, the marked improvement which took place in the performance of those individual children who were given tutorial help over a period of months, coupled with the benefit reported in the case of classes which received training on more individual lines, suggests that there is great need for some modification of the existing class methods of tuition and promotion. Children who fall behind through a lower level of maturity, or disturbed application associated with illness, absence or unhappiness should be able to receive personal attention. Under present conditions they are too often handicapped still further by being sent on with their class, and taught always in a class - at the rate and with the material/

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- (1) Discussions of the phonic method are found in Dale 95 Valentine 430; in Gill 157. Brown 43, Gates 146; and in Grupe 191, Freeman 132, Jenkins 241, Gates 151, Cordts and Broom 86.
 - (2) Evidence in favour of an "intrinsic" method similar to ours is given in Freeman 132, O'Brien 306, Smith 383, 384, Jenkins 241, Gates 151, Jagger 240, Book 31.

material suited to their neighbours rather than to themselves. More individualised methods of class organization would permit the teacher to give suitable instruction to children in difficulties. The beneficial effect of such methods has been frequently reported (v. Mackinder 272. Washburne 443, Macaulay 269.) It would seem as if they should be given a trial in Scotland - especially in the Junior and Senior School.

Methods of tuition in the Infant-room might also with advantage be rendered more individual as a preparation for the later stages, and, at the same time, more attention could be given to reading for meaning and less emphasis put on the pronunciation of isolated words.

Secondly, if children progress largely because they mature, if they tend to attain proficiency close to that of their mental level, it is probable that in schools we have been laying too much stress upon the mastery of subject-matter. We have been torturing the less intelligent pupils to force them to a degree of attainment above what is possible to them. We have been maiming the brighter children by limiting their efforts to the acquisition of a narrow range of factual/

factual knowledge. Moderate deviations in achievement either above or below the "norm" may well be educationally less significant than we have thought. The influence of the fuller knowledge gained through standardized tests may in the future modify our educational aims and ideals.

The schools of a wiser generation may employ the children in freer, happier, more rewarding ways. They may place more emphasis than we do upon the ethical and social ends of education, and care more than we do about making the school a wholesome place in which to live.

APPENDIX I and II.

Analysis of Contents of Tests.

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ANALYSIS OF TEST MATERIAL.

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I. Reading Tests.

II. Intelligence Tests.

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In this analysis of the material used in tests the exact words of the authors are not given except where inverted commas indicate their presence. It was judged that for the purposes of our summary a descriptive statement was all that was necessary.

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I. Types of Material used in Reading Tests.

Cancellation

Completion

Directions

Location of Information

Mixed Sentences

Oral Reading

Organization

Paragraphs followed by questions

Paragraph Reading for Habit Observation

Questions to answer

Riddles

Sentence Meaning

Speed Measurement

Story and Reproduction

Summarising

Word Meaning

Word Recognition

Word, Phrase and Sentence Reading

Cancellation.

Chapman Unspeeded Reading - Comprehension Test.

Paragraphs in each of which one word has been changed. Cross out the word which spoils the meaning. Example and practice "Speed does not count". 31 paragraphs. 30 minutes.

Holzinger - Chapman Unspeeded Reading - Comprehension Test. Similar to Chapman above.

Chapman - Cook Speed of Reading Test.

Paragraphs with one word changed, similar to Chapman Unspeeded. Examples and ample practice. "Work as fast as you can". 30 paragraphs. 2½ minutes.

Pressey Diagnostic. Test II. "Speed".

Sentences each with an extra word - a word that doesn't belong there. Draw a line round this extra word. Practice 28 lines. 1 minute.

Watkins' Silent Reading Test XIX. Section III

"One word is wrong in each line" of six words. "Put a cross under it when you find it", "Work as fast as you can."

Pressey Second Grade Attainment. Test II.

"Speed of Reading." Cross out the extra word in each sentence. Practice 25 lines. 3 minutes.

Orleans Public School, No. 38. Comprehension of a paragraph is to be shown by crossing out the one word out of four which is not the true completion of the sentence.

Completion

(a) Sentences.

Northumberland Standardised Set.II. Test 3.

Draw line under the one right word out of three given in brackets. Examples. 25 sets. (+ no.26 "rewrite the last paragraph in very simple words"....) 7 minutes.

Iowa... Advanced. Test VII. Part B. "Silent Reading - Memory". Questions on paragraph previously read - to be answered by writing the number of one of five numbered completions of the testing sentence. Sample. 5 sentences. 1 minute. (Not to be scored).

Watkins' "Silent Reading" Test VII. (7-9). Underline the one word out of two which completes the sentence. "Work as fast as you can", also Test VIII (5-8 and 10) Test XI, Section I. "Draw a line under the right word" out of two. Section II. "Put in the right number" to complete the sentence.

Watkins' Silent Reading. Test XII, Section I. "Draw a line under the right word."

Pressey/

Pressey Third Grade Attainment Scale. Test I.

"Spelling". Incomplete sentences. A word to complete the sentence to be written in by the pupils to dictation after class discussion. 24 lines.

Detroit Reading. Test I. Paragraph + 2 sentences of interpretation to be completed by underlining one word out of four. (Words common to primers and first readers). Sample and practice. 12 paragraphs. 8 minutes. Similarly Test II. (Words in first three thousand of Thorndike's "Teachers' Word Book"). 12 paragraphs. 7 minutes.

Orleans. Public School. Questions 1-7. Sentences to be completed by drawing a ring round one of four words. Printed practice directions. Questions 20, 21, 23, 27 are to test comprehension of a paragraph by writing in one word on each blank to make the sentence correct.

Holley. Sentence Vocabulary Scale. Draw a line under the one of four given words which best completes the sentence. "If you cannot be sure, guess". Sample, practice. 70 lines. No time limit.

(b) Story.

The New Examiner. No.1. Missing word to be written on answer paper. Number given for each omission.

Examples/

Examples. 22 paragraphs. 50 omissions. 15 minutes.
(10 minutes for adults).

Stanford Achievement Reading Test I. "Paragraph Meaning".

Paragraphs of increasing difficulty, with missing words. "Write just one word on each dotted line."

Practice. Primary: 20 paragraphs. 15 minutes.

Advanced: 29 paragraphs. 20 minutes. Score = number correct x 2.

Orleans Public School. Nos. 52-70. Paragraph with numbered blanks. "Read the paragraph very carefully and on each blank line write one word that will make good sense."

Directions.

Gates Silent Reading. Type C. "Reading to understand precise directions." Illustrated paragraphs to be read. Make a certain mark to show that you understand the paragraph. Uniform difficulty. 24 paragraphs. 8 minutes.

Gates Primary. Type 3. "Reading of Directions." Directions with pictures to each. Marks to be made. Increasing difficulty. Practice. 26 paragraphs. 20 minutes.

Burgess. Picture Supplement Scale. Picture and paragraph directing marks to be made to complete the picture.
20 paragraphs. 5 minutes.

Haggerty/

Haggerty. Reading Examination. Sigma I. Test I.

Sentences and paragraphs giving directions as to marks to be made on pictures or paper. Practice. 25 sets. 20 minutes.

Williams Primary Reading Test. Directions as to marks to be made on pictures, and questions on paragraphs. Practice. 49 responses. 20 minutes.

Watkins Silent Reading. Test I, II. Figures to colour. Test III, IV. Directions as to drawing figures and shapes. Test VI (1-6). Directions in relation to drawings. Test VII (1-3, 10-12). Test VIII (1,4,9). Test X (1,8,9). Test XII Section II. Test XIII. Test XV (1 and 8).

Burt. Mental and Scholastic Tests. Test 4. "Graded Directions Test (Comprehension)". Individual Test. 17 sections. Not intended for normal children above age 9.

Trabue Mentimeter No.20. "Reading:Directions."

Do exactly what the directions tell you to do. 12 sets of directions in connection with various figures, letters and sentences. 3 minutes.

Sangren-Woody Part VI. "Following Directions." 10 paragraphs. 1 direction after each. "Do what each paragraph tells you to do." 3 minutes.

Location of Information.

Iowa... Advanced. Test VI Part A. "Use of the Index".

Sample Index. Questions to be answered by a word or a number. Samples. 10 questions. 2 minutes.

Part B. "Selection of Key Words."

Question followed by 7 numbered words. Write down the number of the three words which if looked up in an index would give the answer. Sample. 20 questions 3 minutes.

Part C. "Alphabetizing." Lists of numbered words to be put in alphabetical order by writing down numbers. Sample. 3 sets of 10 words. 2 minutes.

Mixed Sentences and Paragraphs.

Iowa... Advanced. Test IV. "Sentence Organization."

Phrases and words in sentences mixed and numbered.

The correct order is to be shown by writing down the numbers. Samples. 15 lines. 4 minutes. Test V.

Part C. "Paragraph Organization". Sentences mixed and numbered. Show the correct order by writing numbers. Sample. 8 paragraphs. 3 minutes.

Oral Reading.

Gates. Graded Word Pronunciation Test. Forms I-IV.

Increasing difficulty. 100 words. 10 words in a line.

Pressey Fundamental Habits. Test II.

Ten phonetic words of five syllables each presented singly to the pupil who is to pronounce each slowly and carefully. Each syllable correct is to be counted (whether out of order or not).

Gray Standardized Oral Reading Check Tests. Five equal passages at each of four stages (Forms I-VIII). Type of error to be recorded in detail and number of seconds taken.

Gray Standardized Oral Reading Paragraphs. 12 paragraphs of increasing difficulty. (Forms I-VIII). Type of error to be recorded in detail, and number of seconds taken.

Burt. Mental and Scholastic Tests. No.1. "Graded Vocabulary Test (Accuracy)." Ten words to each age from four to fourteen.

Burt. Mental and Scholastic Tests. No.2. "Letters and Figures." No.3. "Two and Three Letter Monosyllables. Speed (with Normals) and Accuracy (with Defectives)." 120 two letter words and 20 three letter words. Read as rapidly as possible. 1 minute. No.5. "Continuous Prose/

Prose Test (Speed, Accuracy, Comprehension)."

Passage modified from Ruskin's "King of the Golden River" to be read aloud. Estimate made of fluency, accuracy, expressiveness. Comprehension tested by oral or written reproduction - marked by counting ideas or counting correct words. This may be supplemented by or supplanted by set of 20 questions or if preferred by a series of incomplete statements (not given).

Organization.

Sangren-Woody. Part VII. Three stories each followed by 4 statements. Number the statements to show the order in which they happened in the story - books inverted to prevent rereading. 8 minutes.

Paragraphs with Questions.

Kelly Reading (included as No.3 in "Pintner Educational Survey). One question on each of eight statements to be answered by a word or a mark. 2½ minutes.

Thorndike Reading (included as No.4 in Pintner Educational Survey). Eleven questions on three paragraphs. 3½ minutes.

Fordyce/

Fordyce. Test I. Paragraph to read for speed. 14 questions on it for quality.

Fordyce. Test II. Paragraph for speed. 10 questions.

Thorndike McCall Reading Scale. 10 paragraphs + 36 questions. 30 minutes. Practice.

Monroe Standardized Silent Reading. Revised. Test I and Test II. 17 paragraphs + questions. Draw a line under one word out of four or five. Practice. 4 minutes.

Pressey Diagnostic. Test III. "Paragraph Reading". 7 paragraphs. 4 questions on each - to be answered by drawing a line round one word or phrase out of four. Practice. 8 minutes.

Courtis Standard Research Tests. Silent Reading. No.2. After preliminary 3 minutes' test of speed, the story is reproduced in 15 paragraphs. 5 questions on each, to be answered by "yes" or "no". Practice on first paragraph. 5 minutes. A mark made at end of each minute.

Iowa Silent Reading Tests. Advanced Examination. Test I. "Paragraph Comprehension." Long passage in paragraphs to be read. Phrases marked off by numbered brackets. Questions to be answered/

Answered by writing opposite each question the number of the phrase which contains the correct answer. Sample. 15 questions. 6 minutes.

Part A. Social Science. Part B. Literature. 5. minutes. Part C. Science. 5 minutes.

Northumberland Standardized. Set II. Test 4.

5 stories. Questions on each. Underline the right word out of three or four. (+ no 6 ... "write a short description of your own school playground..."). 7 minutes.

Gates Silent Reading. Type A. "Reading to appreciate the general significance." Paragraph to read.

Draw a line under one word out of five to show how someone felt. Practice. 24 paragraphs. 6 minutes.

Type B. "Reading to predict the outcome of given events." Paragraph to read. Draw a line under one of four sentences to show what will probably happen next. Practice. 24 paragraphs. 8 minutes.

Type D. "Reading to Note Details." Paragraph. 3 questions to each, to be answered by drawing a line under one of four words. Practice. 18 paragraphs. 8 minutes.

Watkins Silent Reading. Test XXIV. Questions to answer by a ring round, a line under, or a cross over certain words/

words. 2 paragraphs, 4 marks to make.

Haggerty. Sigma III. Test III. "Paragraph Reading."

Understanding to be shown by underlining a word or a phrase, or checking false or true statements.

Samples and practice to be worked over by pupils unaided. 7 paragraphs. 20 minutes.

Pressey Third Grade Attainment Scale. Test III.

"Reading." Paragraph + 4 questions. Answer to each to be shown by putting a ring round one out of 4 suggestions. Practice. 6 paragraphs. 9 minutes.

Detroit Reading. Test III. Paragraph + 2 questions

(one interpretive and one factual) to be answered by underlining one of four words or phrases (words from Thorndike's Word Book). Practice, example. 12 paragraphs arranged in cycles - narration, description and social science. 6 minutes. Test IV is similar to the above. 5 minutes.

Orleans Public School. Paragraphs of increasing difficulty with one to seven questions on each.

Nos. 11, 14, 16, 19, 24-26, 28-35, 45-51 are in the form of questions to be answered by the writing of a word or phrase. Nos. 8, 9, 10, 12, 13, 15, 17, are to be answered by drawing a ring round one of four words. Nos. 22, 36, 37, 39 are to be answered by putting a check (✓) in front of one statement out of four.

Stone Narrative. Stories given to be read for rate and comprehension. Questions to measure grasp of (a) development of main plot, (b) development of parts of story (c) detail of story. Five possible answers to each question. Pupils write down number of correct answer on an answer sheet.

Preparatory Practice Test. No time limit. Material used is Grade IV - "The Long Slide" and "The Strange Bird" - the second not to be given on the same day but within the same week. 10 questions on each. (These stories are reproduced from Brown's Silent Reading Tests).

Grade V. "Old Mustard" followed by "Grandmother's Panther". 10 questions on each. Grade VI. "Scipio" and "The Hold-up Bear". 10 questions on each.

Grade VII. "The Gift of the Magi" and "After Twenty Years". 10 questions on each. Junior High School - "The Spy". 20 questions. (All material borrowed).

Van Wageningen English Literature Scale Alpha. Paragraph followed by one or more directions, each followed by a list of five words. Pupil is to show power of interpretation by underlining one or more words. 16 paragraphs. 45 minutes.

Whipple High School. Passage of several pages. Questions and directions interpolated to indicate comprehension. 10 minutes.

Cavins Tests in American Poetry. Test B. Four to ten questions on each of the eight poems used in Test A.

Kansas Silent Reading. 16 paragraphs. One question or direction on each. 5 minutes.

Trabue Mentimeter. No.21. "Reading: Interpretation." Three paragraphs. 16 questions. 10 minutes.

Sangren-Woody. Part III. "Fact Material." Six paragraphs. 20 questions to be answered by one word each if possible. 3 minutes. Part IV. "Total Meaning." 12 paragraphs. 1 question on each to be answered by underlining one word out of four. Sample. 2 minutes.

Paragraph for Habit Observation.

Pressey Fundamental Habits. Test I.

Four passages to be read silently by the pupils while the teacher with the aid of a mirror records for each of 10 lines (1) number of fixations (2) number of regressions (3) accuracy of return sweeps (4) and one of five different degrees of vocalisation.

Questions to Answer.

Haggerty. Reading Examination. Sigma I. Test 2.

Questions to answer by underlining "Yes" or "No".

Samples + practice. 20 questions. 2 minutes.

Watkins Silent Reading. Test VI. Questions 7-14.

Questions to be answered by underlining one of two words.

"Work as fast as you can." Test VII (4-6). Test VIII

(2 and 3). Test X (2-7) Underline "Yes" or "No".

Test XV (3-7) Underline "Yes" or "No".

(2) Questions to answer.

Test XVI Underline "day" or "night". 12 lines.

Test XVIII Underline "ground, air, water". 12 lines.

Haggerty. Sigma III. Test II. "Sentence Reading".

Underline "Yes" or "No". Samples. Practice. 40

questions. 3 minutes. (No interference in practice period).

Northumberland Standardized. Set II. English. Test 1.

Reading (Questions). Draw line under "Yes", "No",

"I do not know". Examples. 50 questions. (+ no. 51

"Now write out in your own words the meaning of the verse just quoted"). 7 minutes.

Iowa... Advanced. Test III. "Sentence Meaning."

Questions to answer by underlining "Yes" or "No". Do

not guess. Samples. 40 lines. 5 minutes. Part B.

is given at a second sitting and consists of corresponding/

corresponding 40 questions on same subjects. Score is number of pairs correct.

Stanford Achievement. Reading Test II. "Sentence Meaning".

Draw a line under "Yes" or "No". Sample. (Words chosen in accordance with frequency in Thorndike Word Book).

Primary: 40 sentences. 5 minutes.

Advanced: 80 sentences. 10 minutes.

Score is number right - number wrong.

Riddles.

Watkins Silent Reading. Test XV. Question 9. "Guess what I am. Draw a line under my name."

Test XVII. 4 riddles. Test XIX. Sections I and II.

Sentence Meaning.

Watkins Silent Reading. Test XX. "Draw a line under the words that mean Who." 12 lines. Test XXI.

"Draw a line under the words that mean When." 12 lines.

Test XXII. "Draw a line under the words that mean Where."

Courtis Standard. No.2. Part I. Story to be read silently for 3 minutes. A ring to be put round the last word read at the end of each half minute.

Iowa... Advanced Test VII. Part A. Silent Reading - Rate.

Passage to be read silently and as rapidly as possible.

Mark by a line round a word every 15 seconds. 2 minutes.

Monroe Standardized Silent Reading Revised. 17 paragraphs

+ questions to be answered by underlining one word

out of four or five. Practice. At end of 4 minutes

"draw a line through the number at the left of the

line which you were reading when the signal to stop

was given." (All words are numbered).

Brown Silent Reading. Story to be read for one minute.

Draw a circle round last word read. Count number

7 words per second.

Stone Narrative. Story to be read through. Cards shown

or numbers written on blackboard every five seconds

beginning at a given moment. Pupil looks up as

soon as he has finished, and records the last number

visible. Key given to translate this into number

of words per minute. (After 70 the interval between

numbers is 20 seconds).

Sangren-Woody. Part II. "Rate". Story to be read.

Mark put at end of each minute. 3 minutes.

Story/

Story and Reproduction.

Brown's Reading Test. No.I. "The Long Slide". Story to be read through silently. Time 1 minute. Ring to be put round the word reached. Reproduction in writing asked.

Starch Silent Reading Tests. One story for each grade. 30 seconds for reading. Mark to be put after the last word read. Reproduction in writing asked.

Gray. Silent Reading Tests. Three selections for differing grades. Time to read 100 words noted. Reproduction orally or in writing (above 3rd grade) + answers to questions.

Summarising.

Iowa... Advanced. Test V. "Paragraph Organization".

Part.A. "Selection of Central Idea." After each paragraph 5 numbered phrases are given. The number of the words most nearly giving the central thought of the paragraph is to be written down. 9 paragraphs. 3 minutes.

Part B. "Outlining." Paragraphs with phrases marked by numbered brackets. Heading of summary of each alongside. Numbers of phrases which complete summaries to be written below each. 4 paragraphs. 30 blanks. 3 minutes.

Van Wageningen Reading Scales in English Literature, in History and in General Science. Paragraph followed by 4 to 6 statements. Pupil is to mark "each statement which contains an idea that is in the paragraph or that can be derived from it." Sample + practice. 15 paragraphs. 45 minutes.

Cavins Tests in American Poetry. Test A. Copy out the lines which give the central thought of the poem. Practice. 8 poems. 40 minutes.

Sangren-Woody. Part V. "Central Thought." 10 paragraphs. 4 sentences after each. "Draw a circle around the letter before the statement that best tells the important thought of the paragraph." 5 minutes.

Word Meaning.

Thorndike Test of Word Knowledge. Write down the number of one word out of five which means the same or most nearly the same as a given word. 100 lines. 30 minutes.

Pressey Diagnostic. Test I. "Vocabulary." Draw a line round one word out of five which means the same as a given one. Practice. 25 lines. 3 minutes.

Stanford Achievement. Reading. Test III. Draw a line under the one word out of five which makes the sentence true/.

true. Samples. Primary 40 sentences. 5 minutes.
Advanced 85 sentences. 10 minutes. (Words from
Thorndike Word Book).

Pressey First Grade Attainment. Reading. Test I. Five
words in a line. Teacher reads one. Pupils draw a
line around this one. 25 lines.

Watkins Silent Reading. Test V. One picture to three
words. "Draw a line under the word that matches the
picture." Work as fast as you can. 12 lines.

Watkins Silent Reading. Test IX. Draw a line under
one word out of three which matches the picture.
12 lines.

Test X. (10-14). Underline two words out of four
which mean something e.g. "Which words mean travel?"

Test XXIII "Draw a line under the words that polite
children say, 'thank you', 'excuse me', 'pardon me'
etc." 8 situations.

Haggerty Sigma III. Test I. "Vocabulary" Underline
the best definition for each word - 4 given. Samples.
Practice. 50 lines. 5 minutes. (No interference
in practice period).

Orleans Public School. Nos.40-44. Comprehension of a
paragraph tested by giving ten possible synonyms for
five words from the paragraph. The pupil is to write
after each word the one which gives its meaning in the
paragraph.

Northumberland Standardized Set. II. Test 2. Reading. (Words)

Draw a line under the one word out of four which best shows the meaning of the word in big letters. Examples. 70 words (+ no. 71 "Now write a few sentences explaining what is meant by "school"."). 7 minutes.

Iowa... Advanced. Test II. "Subject Matter Vocabulary".

Statements correctly completed by one of five numbered words or phrases placed to the right. Write down the number of the correct one. Sample.

Part A. Social Science Vocabulary. 20 lines. 2 minutes

Part B. Science Vocabulary. 15 lines. 1½ minutes.

Part C. Mathematics Vocabulary. 15 lines. 1½ minutes.

Part D. English Vocabulary, 20 lines. 2 minutes.

Kennon Test of Literary Vocabulary. Write down the number of the one word out of five which means the same or most nearly the same as a given one. 100 lines. Time.

Markham English Vocabulary Tests. Sentences with one word in black type. Choose the one word out of five which most nearly corresponds in meaning with this given word. Place its number in brackets. Sample. 125 lines. No time limit but usually completed in one hour.

Thorndike Visual Vocabulary Scale Alpha. Sets of 10 words.

Instructions/

Instructions given. "Write the letter F under every word that means a flower", etc. 8 directions.

Trabue Mentimeter. No.19 "Reading Vocabulary." Mark the words as belonging to one of nine categories (Animal, Body, Bird, Colour, Clothes, Fish, Time, Tool, War). 40 words. 4 minutes.

Sangren-Woody. Part I. Underline the one word out of four which makes the sentence true. Sample. 40 lines. 3 minutes.

Word Recognition.

Gates Primary. Type 1. "Word Recognition." Picture + 4 words. Draw a ring round the one word that tells about the picture. Practice. 48 sets. 15 minutes.

Pressey Second Grade Attainment. Test III. "Recognition of Words". Cross out the word in each line of five words which is not a real word. Practice. 25 lines. 3 minutes.

Word, Phrase and Sentence Reading.

Gates Primary. Type 2. "Word, Phrase and Sentence Reading." Words, phrases and sentences with four pictures below each. Draw a ring round the picture which goes best with the story. Practice. 35 sets. 15 minutes.

Detroit Word Recognition. Words and phrases with pictures corresponding to each. Draw a line from the word to the picture. Practice. 40 sets. 4 minutes. (Words selected from Thorndike Word Book and Vocabulary of ten widely used readers.)

Pressey First Grade Attainment. Reading Test II. Sets of four sentences. Teacher reads one. Pupils draw line around it. 15 sets.

Watkins Silent Reading. Test XIV. Underline "Right" or "Wrong". 12 lines. "Work as fast as you can."

II. Types of Material used in Intelligence Tests.

Abstraction

Absurdities

Aesthetic Differences

Analogies

Arithmetic

Classification

Clocks

Code

Common Sense

Completion

Cubical Blocks

Directions

Disarranged Sentences

Discrimination of Size

Dot Patterns

Field

Geometric Figures

Imitation of Pictures etc.

Information (Sentence Meaning)

Logical Selection

Maze

Memory

Mirror

Mixed Letters

Moral Judgment

Notation

Number Series

Offense Evaluation

Opposites

Orientation

Paper Folding

Picture Sequence

Poetic Discrimination

Proverbs

Reasoning

Sequence

Similarities

Subsumption

Synonym - Antonym

Word-meaning

Abstraction.

Roback Mentality. Test I. Place in front of five terms the name of the general class which may be applied to each. Illustration. 30 lines. 10 minutes.

Absurdities.

Simplex. Test 30. Put a cross before statements which could not possibly be true, and make a circle before those that might be true. 6 sentences.

West Riding. Test E. "Incongruities". Write down whether the sentence is sensible or foolish. Give your reason if it is foolish. 23 statements. 15 minutes.

Northumberland Standardised. Set III. Test 9.

Underline each wrong (absurd) word in the sentences of a story. Example. 10 minutes.

Roback Mentality. Test 11. "Judgment Test." 30 sentences. Mark as "striking", "commonplace", "absurd", "tautological" or "joke", using first letter of each word. 15 minutes.

Ohelsea Mental Tests. No. III. 25 statements each of which contains something silly. Four explanations below each. Write on answer paper the letter before the one you think best. Time unlimited.

Crichton Test. Questions 6-9. One word altered to make meaning nonsensical. Write the misfitting words on answer paper.

Crichton Test. Questions 10-17. Mark as "witty", "expressing profound truth", "commonplace", or "nonsensical", using the first letter of these words. Write letters on answer paper.

Thurstone's Psychological Examination. Questions 3, 25, 41. Underline "logical" or "absurd" in reference to a statement. 50 questions in 30 minutes.

Pressey Primary Classification. Test II. "Absurdities". 20 pictures. Cross out what is wrong with each. Practice. 2 minutes.

Detroit Kindergarten. Individual Test VII. 6 pictures. "What's wrong with" this?

Kuhlmann-Anderson. Test 1. Nine pictures. "Put a dot on the part that is wrong." Practice. 20 seconds each.

Dearborn. Series II. Test 5. "Faulty Pictures." 25 pictures. Find what is wrong and put a cross. 5 minutes.

Detroit Engel. First Grade. Test IV. 7 pictures. Mark the wrong thing in each.

Burt/

Burt. Manual of Mental and Scholastic Tests. No.28.

Cross out the words or phrases which you think absurd in the story. No time limit. Group or Individual Test.

Ballard. Picture Tests. 4 pictures with something too much in each. Cross it out. Sample. No time limit.

Trabue Mentimeter. Test 2. 24 pictures. Demonstrations. Mark the thing that is wrong. 3 minutes.

Aesthetic Differences.

Pintner-Cunningham Primary. Test II. Sets of three pictures each. Mark the prettiest. 6 sets. 10 seconds each. Separate directions to each.

Analogies.

Otis Advanced. Test 7. Samples. Underline one word out of five. 25 lines. 3 minutes.

Terman Group. Test 7. Underline one word out of four. Examples. 20 sets. 2 minutes.

Simplex. Test 4A.4B. Underline one word out of four. Examples. 6 sets.

West Riding. Test D. Find the fourth word. Example. 30 lines. 5 minutes.

Northumberland Standardised/

Northumberland Standardised. Set III. Test 5. Last 14 sentences of completion test are analogies. Sets of three words inserted in sentences. One of each to be underlined to complete the analogy. In four cases the explanation is also to be completed.

Roback Mentality. Test 3. Write in the fourth word.

Illustrations. 25 lines. 10 minutes.

Haines. Form A. Test 6. Draw a line under one word out of four. Samples. 30 lines. 2 minutes.

Scott. Series I. Test C. Draw a line under one of four words. Samples. 25 lines.

Columbian. Test III. Write down on the answer paper one word out of four. Practice on blackboard. 16 sentences. 5 minutes.

Grichton Test. Questions 1-5. Find a fourth word.

Sample. Answer on answer paper.

Army Group Examination Alpha. Test 7. Underline one word out of four. Samples. 40 lines. 3 minutes.

Spearman's Measure. Test VI. Sentences are read with four possible completions of the analogies. Pupils are to write down the best. Practice. 26 sets. 8 seconds between each.

Northumberland/

Northumberland Mental, Tests No.1. Practice material for main test (given the day before the main test). 10 minutes. Samples. 14 lines. Underline one word out of three.

Otis Classification. Part II. Form A. Questions 4,9,15, 20,25,30,38,42,46,53,57,67,72. Write down the number of one of five words which completes the analogy. 75 questions. 30 minutes.

Illinois Examination. I and II. General Intelligence Scale. Test I. "Read the first three words. Then look at the last four words; find the one that belongs with the first three, and draw a line under it." Sample. Practice. 30 lines. 2 minutes.

Burt. Mental and Scholastic Tests. No.22. "In the blank space provided for the answer, fill in a fourth word standing in the same connection with the third word as the second word does with the first." Samples. 50 lines. 5 minutes.

Chapman. Group Intelligence Examination. Revised Form. Test III (in place of Sentence Understanding with Yes, No answer). 25 questions spoken with 8 seconds between each. Practice. "The object of this test is to find out and write the one word which bears the same relation to the third word as does the second to the/
the/

the first," e.g. No.51. vinegar ... sour, sugar..what?

Trabue Mentimeter. No.24. "Analogies or Mixed-Relations Test." "Write a fourth word which fits the third in the same way the second word fits the first."
Samples. 30 lines. 3 minutes.

Kuhlmann-Anderson Test 37. 20 sets of seven words.

Underline the two words which have the same relation to each other as the first two. Practice. 3 minutes.

Simplex Test 40. Underline two words out of five inside the bracket which have the same relation as the two outside. 6 sets.

Thurstone's Psychological Examination. Question I. Underline two words out of five with the same relation as camera and light. 30 minutes to 50 questions.

Arithmetic.

Otis Advanced Test 5. 20 questions. 6 minutes.

Ferman Group Test 5. 12 questions. 4 minutes.

West Riding Test C. 15 questions. No figuring allowed.
10 minutes.

Haines. Form A. Test 2. Samples. 20 questions. 5 minutes.

Scott's Tests. Series I. Test A. 17 questions.

Test F. Sample. 12 questions on coins.

Thurstone's Psychological Examination. Questions 11, 20, 35, are on coins. 50 questions in 30 minutes.

Question 27 is on multiplication. Questions 16,37 and 49 involve arithmetical reasoning.

Army Group Examination Alpha. Test 2. Samples. 20 questions. 5 minutes.

Pintner Educational Survey. Test 2. 18 questions. 5 minutes.

Pressey Intermediate Classification - every fourth question from no.4. "Practical Arithmetic." Draw a line under one of four answers to a question. Practice. $\frac{96}{4}$ sentences. $\frac{14}{4}$ minutes.

National Intelligence Tests. Form A. Test I. Arithmetical Reasoning. Practice. 16 questions. 5 minutes.

Kuhlmann-Anderson Test 7. Five sets of pictures, etc. Make as many dots as there are pictures. Practice. 20 seconds each. Test 14. Six sets of taps. Make as many dots as you heard taps. Practice. 15 seconds each. Test 36. 10 questions. Practice. 3 minutes.

Otis Classification. Part II. Form A. Question 18. 75 questions. 30 minutes.

Pressey Third Grade Attainment scale. Test II. "Arithmetic". Draw a line round the right answer - out of four. Practice. 24 questions. 6 minutes.

Illinois Examination. I and II. General Intelligence Scale. Test II. Write the answer in brackets. Practice. 16 problems. 3 minutes.

Pressey Intermediate Verifying - every fourth question from/

from no.4. Draw a line under one of four answers to a question. Practice. $\frac{96}{4}$ questions. $\frac{14}{4}$ minutes.

Haggerty Delta II. Exercise II. 20 questions to answer. 5 minutes.

Detroit Engel. First Grade. Test IX. "Counting." 4 sets of pictures. Mark 2, 4, 8, and 13 of the small pictures included in them. Separate directions.

Dearborn Group. Series I. Directions nos.8, 9, 13 (money) 14 (stamps), 18 (dominoes).

Chapman Group Intelligence Examination. Test II. 25 questions spoken twice with intervals of 5 seconds. Answers of one word or figure to be put on answer paper.

Chapman Revised Form. Test II. Eight seconds between each of 25 questions spoken twice each.

Ballard Picture Tests. Last item is 12 subtraction sums. No time limit.

Trabue Mentimeter No.10. Addition Tests. Demonstration. 12 sums of increasing difficulty. 4 minutes + 60 simple combinations. 30 seconds.
No.28. "Arithmetic Reasoning." Write answers. 14 problems. 4 minutes.

Kuhlmann-Anderson. Test 27. 66 numbers to be marked as divisible by 3, 4, or 5. Practice. 2 minutes.

Classification.

(a) Pictures.

Myers. Mental Measure. Test III. Rows of pictures in which two, three, four or five things are alike in some way. Draw a line under these. Practice. Separate directions for each of 10 lines.

Test IV. Rows of pictures in each of which are four things alike in some way. "Draw lines under them as you did before." 15 rows. 5 minutes.

Pintner-Cunningham Primary. Test III. "Associated Objects" Rows with 4 pictures in each. Mark the two things that belong together. 6 sets. Separate directions. 15 seconds to each.

Detroit Engel. First Grade. Test VI. Sets of pictures. "Mark the thing you use" in certain circumstances. 4 sets. Separate directions.

Pressey Primary Classification. Test III. "Classifications." 20 sets of pictures in each of which there are three things that are alike and one that is different. "Find the one that is different and cross it out." Practice. 2 minutes.

Detroit Kindergarten. Individual. Test III. Four sets of three pictures each. "Two of these things belong together. Show me the one thing which does not belong with them."

(b) Words.

Otis Classification. Part II. Form A. Question 1. Write in the brackets the number of one of the five things mentioned below "which does not belong with the others." 75 questions. 30 minutes.

Terman Group. Test 9. Cross out one word out of five.

Examples. 18 lines. 3 minutes.

Simplex. Test IA, IB. Cross out one word out of five.

Examples. 6 sets in each.

West Riding. Test H. Four words alike. One different.

Write down in what way the four are like each other.

30 lines. 5 minutes.

Bixler's. Part II. Cross out one word out of five.

Example. 4 sets of five lines each alternating with 4 sets of opposites.

Thurstone's Psychological Examination. Question 4. Cross out one word out of four. 50 questions in 30 minutes.

Spearman's Measure. Test III. "Classification." Write down one out of the four words read which means something most unlike the rest. Practice. 26 sets. 8 seconds between each.

Northumberland Mental. No.1. Test A1, B1. Cross out one word out of five. Samples in A1. 2 lines in A1. 6 lines in B1.

Pressey/

Pressey Intermediate Verifying. Every fourth question beginning with no.3. Draw a line under one of four words to show "which is different from all the others." Practice. $\frac{96}{4}$ questions. $\frac{14}{4}$ minutes.

Pressey Cross Out. Test II. "Logical Judgment". Cross out one word out of five which does not belong with the others. Example. Practice. 25 lines. 4 minutes.

McCall Multi-Mental Scale. 100 sets of five words. Cross out the one "which does not go with the others." Practice. 20 minutes.

Kuhlmann-Anderson Test 22. 15 sets of five words. Underline the one "which does not belong with the others." Practice. 2 minutes. Test 31. 15 sets of four words. Underline the word which has not the letter found in three others. Practice. 3 minutes.

Clocks.

Simplex. Test 10A. Clocks seen in a mirror. Numbers shown Write down the time. 6 faces.

Simplex. Test 10B. Clocks seen in a mirror. Only number XII shown. Write down the time. 6 faces.

(claimed as partly new)

Thurstone's Psychological Examination. Question 2. At what time after 9 will the hands of clock first be in a

straight line? 50 questions in 30 minutes.

Question 24. Hands reversed at 6.28. What time?

Question 40. Hands are together at 6.33. When will this next occur?

Dearborn Group Examination. Series I. Direction no.16.

Six clocks to be numbered according to directions, six blanks to be filled in according to directions.

Ballard. Picture Test. 1 clock. Put in hands showing half past three. No time limit.

Code.

Crichton Test. Question 27. Sentence given in code.

Figures put to represent letters. Translate the sentence. Remember (1) there are very few words of one letter (2) the letter most frequently at end of words is "e", (3) 3 stands for "l" and 4 for "t". No time limit.

Crichton Test. Question 28. Sentence given in code.

Symbols for letters. Translate the sentence. Remember the points noted in no.27, and notice that one of the words is the same as the other spelled backwards. No time limit. Answers on answer paper.

Northumberland Mental. No.1. Test A6, B6. Lines in a foreign language + translation. Underline words corresponding/

corresponding to the ones underlined in the English translation. Sample in A6. 7 lines in A6. 7 lines in B6.

Northumberland Mental No.2. Test A6. Code symbols given for five words. Find out which is for each, and write the meanings opposite. Test B6. Five similar code words to be assorted. Test C6. Five code words to be deciphered.

National Intelligence Tests. Form A. Test V. "Symbol-Digit." Symbol given for each of 9 numbers. "Make under each drawing the number you find under that drawing in the key." Samples. Practice. 120 drawings. 3 minutes.

Illinois Examination. I and II. General Intelligence Scale. Test IV. "Substitution." Symbol given for each of 5 numbers. "Write in the squares after each sign or group of signs the numbers which go with the signs." Sample and practice with different signs. Symbols arranged singly, then two, three, four and five at a time - ten sets of each. 3 minutes.

Haggerty Delta I. Exercise X. Pictures for 6 numbers. Put the right number below 48 pictures. Practice page. 1 minute.

Simplex/

Simplex. Test 9C. Message written backward, then each letter replaced by the one next but one before it in the alphabet. Example. Three sentences to put in code - final form. (claimed as new).

Northumberland Standardised Set III. Test 7. Question no.20 of "Simple Reasoning." Figures 1-26 represent letters of alphabet. (a) translate a message in code (18 numbers) (b) put question no.19 into code.

Roback Mentality. Test 12. "Cryptogram" Symbols for a sentence of nine words. Signs for "m" and for "with" given. Decipher the code. 15 minutes.

Bristol Reasoning. Question 10. Sentence in code and its translation given. Find the rule and write the code for "Hurry".

Chelsea Mental Tests. No.1. Code given - punctuation marks for five vowels and letter "h". 3 minutes to study examples. 25 questions in code to be answered by a word each. 10 minutes.

Otis Classification. Part II. Form A. Questions 43, 51, 62. Words from a foreign language given with translation. Write down the first letter of the word that means the same as a given one. 75 questions. 30 minutes.

Army Group Examination Beta. Test IV. Symbols for nine numbers. Six lines of numbers. Demonstration. 2 minutes.

Dearborn Group. Series I. Direction no.22. Dot patterns for nos.1 to 9 in geometric figures. Write in the corresponding numbers in 27 given figures. 1 minute.

Trabue Mentimeter. No.8. "Digit-Symbol Substitution."

"Make under each number the mark which should be there."

100 blanks. Demonstration. $2\frac{1}{2}$ minutes.

Kuhlmann Anderson. Test 16. 50 figures, numbers to be written in according to a key. $1\frac{1}{2}$ minutes.

Test 21. 12 sets of numbers, letters to be written in according to a key. Practice. 2 minutes.

Otis Primary Test 2. Practice. Marks to be put below 34 pictures. 1 minute.

Haines. Form X. Test 2. "Store keeping." Letters to be put below figures according to a scheme. Practice. 90 figures. 3 minutes.

Pintner Non-Language. Test 2. "Easy Learning." Three symbols (- x +) with numbers 1,2,3 below. These numbers to be put below 50 symbols. Samples. 1 minute.

Pintner Non-Language. Test 3. "Hard Learning." Nine symbols for each of nine numbers below. 50 symbols. Samples. $1\frac{1}{2}$ minutes.

Detroit Kindergarten. Individual Test II. Three pictures in top row. Four in each of other four rows. "Show me the one here that is not up there."

Common Sense.

(a) Verbal.

Otis Primary. Test 8. Ten questions, with three answers to each. Draw a line round numbers 1, 2 or 3 to show which answer is correct. Practice.

(b) Printed.

Terman Group. Test 2. "Best answer". Make a cross before the best answer out of three. Example. 11 sets.
2 minutes.

Simplex. Test 2A. 2B. Make a cross before the best answer out of three. Example. 6 sets.

Kohs' Ethical Discrimination. Exercise 1. "Social Relations".
Make a cross before the best answer out of three.
Sample. 20 sets. 3 minutes.

Exercise 6. "Moral Problems". Put a cross before the right answer out of three to each problem. Sample 10 problems. 1½ minutes.

Northumberland Standardised. Set III. Test 6. "Selecting Reasons." Underline the best answer out of three.
Sample. 20 sections. 5 minutes. (+ no. 21. "Why ought everyone to learn to read and write?" Give as many different reasons as you can.)

Roback Mentality. Test 2. "Problem Test". Eight questions to answer. 20 minutes.

Haines/

Haines. Form A. Test 7. "Practical Judgment." Make a cross before the best of three reasons. Sample. 16 statements. $1\frac{1}{2}$ minutes.

Haggerty Delta II. Exercise V. "Practical Judgment."

Put a cross before the best answer out of three for each question. Sample. 16 questions. 2 minutes.

Trabue Mentimeter. No. 29. "Practical Judgment Test." Mark the best out of 4 answers to questions. 24 questions. 3 minutes.

Columbian Test V. "Best Reason." Write down on the answer paper the letter that stands before the best reason or the best answer. Four answers to each. Practice on the blackboard. 16 statements. No time limit.

Crichton Test. Questions 18, 19, 24-26. Answers on answer paper. Problems. No time limit.

Army Group Examination Alpha. Test 3. "Make a cross in the square before the best answer to each question." Sample. 16 questions. $1\frac{1}{2}$ minutes.

Pintner Educational Survey. Test 3. "Reading - Kelly". Eight questions to be answered by a word or a mark. $2\frac{1}{2}$ minutes.

Pressey Intermediate Classification - every fourth question from no. 2. "Practical Judgment." Draw a line under one of four answers to a question. Practice. $\frac{96}{4}$ sentences. $\frac{14}{4}$ minutes.

Otis Classification. Part II Form A. Questions 16, 36.

Write down the number of the most important reason
out of five. 75 questions. 30 minutes.

Completion.

(a) Picture.

Kuhlmann-Anderson Test 20. 5 sets of figures. Put dots in
two which together would make up a given one. Practice.
20 seconds each.

Otis Primary. Test 3. Practice. Then 11 pictures. 2
minutes.

Haines. Form X. Test 4. Practice. 20 pictures. 3 minutes.

Pintner. Non-Language Test 4. "Completion." Sample.
10 pictures. 2 minutes.

Myers. Mental Measure. Test II. Practice. 14 pictures.
4 minutes.

Pintner-Cunningham Primary. Test VI. Incomplete picture
+ missing parts supplied outside it. Find what is
gone and mark it. Practice. 11 sets. 10-15 seconds
each.

Ballard Picture Tests. 4 pictures with something missing.
Put it in. Sample. No time limit.

Trabue Mentimeter. No.6. "Completion of Form Series."
20 sets. Demonstration. 5 minutes.

Dearborn/

Dearborn Group. Series II. Test 3. "Form Completion."

7 figures to be completed by drawing in and numbering segments similar to 4 given ones. Sample. Practice. 2 minutes.

Haggerty Delta I. Exercise VI. 16 pictures to complete.

Practice page. 3 minutes.

Haggerty Delta II. Exercise III. 20 pictures to complete.

3 minutes.

Army Group Examination Beta. Test VI. 20 pictures to

complete. Demonstration. 3 minutes.

Dearborn Group. Series I. Direction no.19. Incomplete

picture + 4 others. Draw a line through the one which completes it. 9 sets. "Stop when three fourths of class have finished."

Kuhlmann-Anderson Test 2. 8 incomplete pictures. Put a

dot where something is missing. Practice. 20 seconds

each. Test 13. 7 sets of patterns to be completed.

Practice. 1 minute.

(b) Sentences.

Simplex. Test 9A. Underline one word out of three which

makes the sentence sensible and right. Example.

6 lines. Test 9B. Write in the one word omitted.

6 lines.

Northumberland,

Northumberland Standardized. Set.III. Test 5. Draw a line under one of two or three words inserted in brackets. Examples. 20 sentences, (14 of which are analogies). 5 minutes. (+ no.21 - Make up similar examples of your own).

Haines. Form X. Test 5. Draw a line under one word out of four. Practice. Samples. 30 sentences. 4 minutes.

Chelsea Mental Tests. No.II. Questions 22 and 23. Ask what is the missing word at the end of a sentence. Time unlimited.

Army Group Examination Alpha. Test 8. "Information." Underline one word out of four. "If you cannot be sure, guess." Samples. 40 sentences. 4 minutes.

Pintner Educational Survey. Test 5. "Trabue." Write only one word on each blank. Eleven sentences. 4 minutes.

Spearman's Measure. Test V. "Completion." Sentences read aloud. Four words suggested for the last one. Pupils to write down the best. Practice. 22 sets. 8 seconds between each.

Northumberland Mental No.2. Test A2. Fill in one missing word to each space. 10 spaces. Test B2. "Fill in the missing words, and alter the letters to capital letters at the beginnings of the sentences. Only one word is missing from each space. Do not put in any commas." 12 marks.

National Intelligence Tests. Form A. Test II. "Sentence Completion." "Write on each dotted line one word to make the sentence sound sensible and right."

Practice. Samples. 20 sentences. 4 minutes.

Otis Classification. Part II. Form A. Questions 5, 14, 19, 24, 32, 44, 50, 63, 37. Write down the number of the one word out of five which completes the sentence. 75 questions. 30 minutes.

Illinois Examination. I and II. General Intelligence Scale. Test III. "Sentence Vocabulary." Draw a line under the one word out of four "which makes the truest sentence." Sample + practice. 30 lines. 2 minutes.

Haggerty Delta II. Exercise VI. "Information." Underline the one word out of four which makes the truest sentence. "If you cannot be sure, guess." Sample. 40 lines. 4 minutes.

Burt. Mental and Scholastic Tests. Test 25. Nos. 15, 18. No 16 Cross out the three wrong words in the sentence. No. 19. Ring round one correct word out of five.

Trabue Mentimeter. No. 18. "Range of Information." Mark the one word out of four which best completes the sentence. 40 sets. 4 minutes.

Trabue Mentimeter. No. 23. Write in the words which have been left out. 20 sentences. 10 minutes.

Dearborn/

Dearborn Group. Series II. Test 7B and 7C. Incomplete addition and subtraction sums to be completed by inserting figures in place of dots. Practice. 7B. 8 sets in 6 minutes. 7C. 12 sets in 6 minutes.

Kuhlmann Anderson. Test 3. Six sets of 4 pictures.

Short incomplete story read for each. "Make a dot on the picture that tells the end of the story. Practice. 30 seconds each.

(c) Story.

Otis. Advanced. Test 9. Story with numbered blanks and three possible words for each number. Underline the best one. Practice. 24 sets of words. 6 minutes.

Roback Mentality. Test 5. "Insertion Test." Passage printed without spaces between words. Occasional letters and words omitted. Words indicated by dashes. 15 minutes.

Burt. Mental and Scholastic Tests. No.26. Story. "In every blank space fill in one word, and one word only, to complete the sense of the story." No time limit. No.26. Argument. Similar method.

Cubical Blocks.

Scott. Series I. Test D. Write down the number of blocks in a series of 14 figures. Samples. Not known.

Crichton/

Crichton Test. Questions 20-23. Small cubes with sides of one inch were put together to form a solid cube with an edge of three inches. This was painted red outside and then broken up. Questions as to paint on the sides of little cubes. No time limit.

Thurstone's Psychological Examination. Questions 12-31. How many cubes are required for this figure? 50 questions in 30 minutes.

Otis Classification. Part II. Form A. Question 73. Large box with 3 small boxes in it and 4 very small boxes in each of small boxes. How many boxes in all? 75 questions. 30 minutes.

Army Group Examination Beta. Test II. Drawing of piles of cubes. Count how many in each. Demonstration. 16 sets. 2½ minutes.

Dearborn Group. Series II. Test 7A. Drawings of piles of cubes. Write down how many in each. Practice. 8 sets. 2 minutes.

Directions.

(a) Verbal.

Cole-Vincent Entrance. Test I. Five sets of pictures.

"Mark the one that can go the faster." 4 seconds to each set with introductory remarks between.

Test/

Test II. (a) Geometric figures. Make a certain mark in three of them. 5 seconds to first two. 6 seconds to third. (b) make ten X's in blank space. 40 seconds. Count them. 25 seconds.

Test III. Patterns composed of 12 squares. Pupils shown cards with X's inserted. Exposure of 8 or 10 seconds according to number of X's. Imitation, 10 or 15 seconds.

Test IV. 6 sets of three letters. Draw a line through the two that are just alike. Sample. Practice. 6 seconds for each.

Test V.a. 12 pictures. "Draw a line through every picture you know." 45 seconds.

Test V.b. Same 12 pictures. "Draw a line through every one of them that you do not know." 45 seconds.

Test VI. Three circles. "Draw a line through first or last according as it is morning or afternoon." 6 seconds.

Test VII. Four circles. Draw a line through first, last or second circle according as are 5, 6 or 7 years old. 8 seconds. Draw a line through third circle if are 8 years old or more. 5 seconds.

Test VIII. Twelve figures to copy in spaces at side. $3\frac{1}{2}$ minutes.

Test/

Test X. Five sets of four squares on a base line. Certain ones tapped on a demonstration card. Pupils to mark those tapped with X's. Practice. 10 seconds (for two taps). 15 seconds (for more than two).

Otis Primary. Test 1. 16 instructions in relation to pictures.

Haines. Form X. Test 1. Practice. 12 instructions in relation to a sheet of figures, words and numbers.

Haines. Form A. Test 1. 12 instructions in relation to a sheet of figures, numbers, letters and words.

Army Group Examination Alpha. Test 1. 12 instructions in relation to figures, numbers, words, letters.

Pintner Non-Language. Test 1. "Imitation." 12 lines with four dots in each. Sample on blackboard. Teacher moves pointer in definite order from one to another. Children to watch and imitate. Three demonstrations.

Pressey Primary Classification. Test I. "Directions." 20 pictures. Directions in relation to these.

Detroit Kindergarten. Test I. Individual. Point to one described picture out of three.

Haggerty Delta I. Exercise II. Directions in relation to pictures and diagrams. 10 sets. Practice page.

Myers Mental Measure. Test 1. Directions in relation to 12 sets of pictures and diagrams.

Detroit/

Detroit Engel. First Grade. Tests I-X. i.e. all.

Ballard Picture Tests. All.

Pintner-Cunningham Primary. Tests I-VII. i.e. all.

Detroit Engel. First Grade. Test X. 5 sets of pictures.

Line to be drawn on each in accordance with directions.

Separate directions for each.

Dearborn Group. Series I (all). 22 sets of pictures and figures. Separate directions for each. Time limit for 17 and 22. In others "stop when three-fourths of the class have finished." Directions of mixed type involving marks and drawings. Nos. 1-7, 10-12, 17.

Kuhlmann-Anderson. Test 9. Five sets of five pictures, one of each to be marked according to directions. 15 seconds each. Test 12. Six directions in relation to sets of circles and squares. 20 seconds each.

(b) Printed.

Otis Advanced. Test 1. Sample. 20 instructions. 5 minutes.

Simplex. Test 5A, 5B. 6 instructions.

West Riding. Test A. 15 instructions. 5 minutes.

Northumberland Standardised. Set III. Test I. 20 instructions. 5 minutes.

Roback Mentality. Test 10. 14 directions. 5 minutes.

Columbian/

Columbian Mental Tests. Test I. "Obeying Orders."

16 directions. 5 minutes. Answers on answer paper.

Thurstone's Psychological Examination. Question 32.

Otis Classification. Part II. Form A. Question 28, and 70.

75 questions. 30 minutes.

Burt. Mental and Scholastic Tests. No.25. "Instructions."

Directions of various types mixed with questions.

25 sets. No time limit.

Kuhlmann-Anderson. Test 34. Two sets of ten words to be numbered according to directions. Samples. 2 minutes.

Test 39. Page of varied directions. Practice. 3 minutes.

Disarranged Sentences.

Otis Advanced. Test 3. Samples. Underline "true" or "false". 25 lines. 1½ minutes.

Terman Group. Test 8. Examples. Underline "true" or "false". 18 lines. 3 minutes.

Simplex. Test 6A, 6B. Examples. Underline "true" or "false". 6 lines.

West Riding. Test G. Write in proper order. Example. 15 sentences. 6 minutes.

Northumberland Standardised/

Northumberland Standardised. Set III. Test 4. Draw line under "true", "false" or "not known". Examples. 25 lines. 5 minutes. (+ no.26 - Write out sentences in proper order.)

Haines. Form A. Test 5. Draw a line under "true" or "false". Samples. 25 lines. 2 minutes.

Columbian. Test II. "Mixed Sentences." "Make the sentence sensible and write down its last word" on the answer paper. Practice on blackboard. 16 lines. 5 minutes.

Thurstone's Psychological Examination. Question 17. Write the sentence if the words can be arranged to form a true sentence. 50 questions in 30 minutes. Questions 27, 39. Cross out one word so that the remainder can form a perfect sentence.

Army Group Examination Alpha. Test 5. Underline "true" or "false". Samples. 24 lines. "If you cannot be sure, guess." 2 minutes.

Otis Classification. Part II. Form A. Questions 13, 54, 58. "Do what this mixed up sentence tells you to do." 75 questions. 30 minutes. Questions 23, 29. "If...rearranged...with what letter would the last word of the sentence begin?" Question 49. (the third word....).

Illinois/

Illinois Examination I and II. Group Intelligence Scale.

Test V. "Verbal Ingenuity." "Find the extra word and draw a line through it." Sample + practice.

25 lines. 3 minutes (from Pressey "Cross out Tests").

Burt Mental and Scholastic Tests. Test 25. No.24. "If the sentence is untrue, put a line round the word which makes it wrong. But if the sentence is true, cross it all out."

Pressey Cross Out. Test I. "Verbal Ingenuity." Cross out the one extra word in the mixed sentence. Example.

Practice. 25 lines. 5 minutes.

Trabue Mentimeter. No.22. "Disarranged Sentences." "Put a period at the end of the word which would come last if the words on each line were arranged in a sentence." 25 sentences. Samples. 2 minutes.

Dearborn Group Series II. Test 6. "Disarranged Proverbs." Number the words in the correct order, and add one word to complete each. Practice. 10 lines, followed by 4 explanatory phrases to be allocated correctly, and a requested explanation of the first three proverbs. 10 minutes.

Kuhlmann Anderson, Test 30. 15 sentences mixed. Underline the first and last words. Practice. 3 minutes.

Discrimination of Size.

Pintner-Cunningham. Primary. Pictures showing 3 sizes of articles to fit a doll. Mark the one that is just right. Separate directions. 4 sets. 15 seconds each.

Detroit Engel. First Grade Test V. "Comparisons" Sets of diagrams. Mark the biggest one in each. 4 sets. Separate directions.

Dearborn Group Series I. Directions No.21. Copying of a ruler. Measurement with it.

Kuhlmann Anderson Test 19. Draw a line to show biggest, heaviest, etc. of three named objects. Practice. 70 seconds.

Dot Patterns.

Pressey Primary Classification. Test IV. 20 patterns made with dots - each with one dot too many. "Find the extra dot and cross it out." Practice. 2 minutes.

Pintner-Cunningham Primary. Test VII. Patterns - formed by connecting dots - to be imitated. Separate directions 15-120 seconds. 8 sets.

Detroit Engel/

Detroit Engel. First Grade. Test VII. "Symmetries."

Patterns with one dot missing. Draw the ball gone from each pile. 6 sets.

Trabue Mentimeter. No.4. 24 patterns - each with one dot too many. Draw a ring round the extra dot. Demonstration.

Kuhlmann Anderson Test 11. Twelve squares with dots to be counted. Practice. 1 minute.

Field.

Dearborn Group. Series I. Direction No.15. Purse lost in square field. Show how you would look for it.

Geometric Figures.

Otis. Advanced Test 6. Sample. 20 questions on numbers in figures. 6 minutes.

Northumberland Mental. Test A1. Put a X in each right angle. Finish a copy by hand. B1. Finish a copy by hand.

Haggerty Delta I. Exercise IV. Designs to copy. 10 figures. Practice page. 2 minutes.

Detroit/

Detroit Engel First Grade. Test VIII. "Designs." Sets of pairs of figures. Complete the second so that it will look just like the first. 5 sets. Separate directions.

Army Group Examination Beta. Test VII. "Geometrical Construction." Squares and sections of various shapes shown. Correct position of segments to be shown. Demonstration. 10 sets. 2½ minutes.

Burt. Mental and Scholastic Tests. Test 25. No.14. Put figures in the square, circle and triangle.

Trabue Mentimeter. No.5. 15 sets. "Make the small figures by drawing lines in the large ones." Demonstration. Group or Individual. 4 minutes.

Imitation of Pictures.

Ballard Picture Tests. 8 pictures to be copied. No time limit.

Kuhlmann-Anderson Test 5. 8 sets of pairs of pictures - one in each incomplete and to be completed in imitation of the other. Practice. 15 seconds each.

Test 6. 5 designs to be drawn in squares in imitation of ones shown. Practice. 10 seconds each.

Test 18. 10 pairs of designs; incomplete one to be finished in imitation of the other. practice. 3 minutes.

Information.

Pintner-Cunningham Primary Test.I. "Common Observation"

Sets of pictures. Mark all with certain attributes.
Practice. Two sets. 30 seconds each. Separate
directions to each.

Detroit Engel. First Grade. Test I. Sets of pictures.

Mark 1-5 things with certain attributes. 5 sets.
Separate directions to each.

Chapman Group Intelligence Examination. Test I. 25 questions

to be spoken with 10 seconds pause between each. One
word answers to be written on answer papers.

Chapman. Revised Form. Test I. 25 questions. 8 seconds

between each.

Kuhlmann-Anderson Test 4. Five sets of 5 pictures. Put
dots on two things according to directions. Practice.
30 seconds each.

Test 10. Seven sets of 3 pictures. Make a dot on
one according to directions. 15 seconds each.

Terman Group Test. Test 1. Draw a line under the one word

out of four which makes the sentence true. Example.
20 sentences. 2 minutes.

Pressey Intermediate Classification - every fourth question

"Practical Information". Draw a line under the one
of four words which answer a question. Practice +

sample. $\frac{96}{4}$ questions $\frac{14}{4}$ minutes.

Cole-Vincent Entrance. Test Va. 12 pictures. Mark those you know. 45 seconds. Test Vb. Same 12 pictures. Mark those you do not know. 45 seconds.

Pressey Intermediate Verifying - every fourth question.

Draw a line under one of four answers to a question.

Practice + sample. $\frac{96}{4}$ questions. $\frac{14}{4}$ minutes.

Terman Group. Test 6. Draw line under right answer "Yes" or "No". Examples. 24 questions. 2 minutes.

Roback Mentality. Test 8. "Acumen Test," (a) State what is logically wrong with each statement and why. 4 statements. (b) Point out any difference in exact meaning of each pair of expressions. 6 sets. 20 minutes.

Thurstone's Psychological Examination. Question B. Mark as true or false. 50 questions. 30 minutes.

Pintner Educational Survey. Test 4. "Reading - Thorndike". Three paragraphs with questions on each. $3\frac{1}{2}$ minutes.

Spearman's Measure. Test IV. "Questions." Question read aloud to class and four answers suggested. Pupils to write down the best one. Practice. 10 questions. 8 seconds between each.

Haggerty Delta II. Exercise I. "Sentence Reading." Underline "Yes" or "No" to show right answer to question. Samples. "When you are not sure, guess." 40 lines. 4 minutes.

Chapman/

Chapman Group Intelligence Examination. Test IV. "Sentence Understanding." 25 questions spoken at intervals of 5 seconds. Pupils to write "Yes" or "No" on answer papers. Practice.

Kuhlmann-Anderson Test 35. 20 sentences to be marked as "always true", "sometimes true", "not true", or "only an opinion". Practice. 2 minutes.

Logical Selection.

Kuhlmann-Anderson Test 24. 15 sets of nouns. Draw a line under two of the things the first always has. Practice 2 minutes.

Terman Group. Test 4. Draw a line under two words out of five that tell what the thing always has. Example. 20 sets. 3 minutes.

Simplex. Test 3A. Underline two words out of five which tell what the thing always has. Example. 6 lines.
Test 3B. Underline two words out of five which tell what the thing always has, or is always connected with. Example. 6 lines.

West Riding Test F. Decide which of the four words: "always", "occasionally", "usually", "never", best suits the meaning of the sentence. Write down the first letter of that word on the answer paper. Examples. 30 lines 4 minutes.

Northumberland Standardised Set III. Test 5. Two sets inserted in Completion test. Underline the right word - "usually", "occasionally", "always" and "sometimes", "usually", "always".

National Intelligence Tests. Form A. Test III. Draw a line under each of two (out of five) words that tell what the thing always has. Practice. Samples. 24 lines. 3 minutes.

Maze.

Otis Primary. Test 4. Sample. 10 squares. 2 minutes.

Haines. Form X. Test 3. Practice. 5 mazes. 4 minutes.

Haines. Form A. Test 3. 5 mazes. 2 minutes.

Cole-Vincent Entrance. Test IX. 6 sets of "fences and gates", arrow indicating entrance and exit. Sample. 2 minutes.

Army Group Examination Beta. Test I. Demonstration. 5 mazes. 2 minutes.

Burt. Mental and Scholastic Tests. No.30. Porteous Mazes. 11 mazes - plans of paths in a garden. "Find your way out of the garden by the quickest path." Individual Test. No time limit.

Trabue Mentimeter. Test 3. Demonstration. 20 mazes. Pass through without touching any line. 4 minutes.

Memory.

Otis Advanced. Test 10. Story read aloud by examiner.

Printed questions on it with answers "Yes", "No",
"didn't say". Underline the right answer. Samples.
Then 30 questions. 3 minutes.

Simplex. 10. Sets of numbers to be memorised and recognised
on next page written backward. 6 sets. (claimed as
partly new.)

Detroit Engel. First Grade. Test III. "Memory". Sets
of pictures. 1-5 things to be marked according to
directions. Separate wording for each.

Army Group Examination Beta. Test V. "Number Checking."
Sets of numbers, from three to eleven digits long,
arranged in pairs. Similarity to be checked by an X.
Demonstration. 50 sets. 3 minutes.

Dearborn Group. Series I. Direction No.20. A story read
to pupils. 20 pictures to be marked as correct or
wrong in relation to the story. "Stop when three-
fourths of class have finished."

Trabue Mentimeter. No.7. "Checking Identity of Numbers."

Pairs of numbers to be marked as the Same or Different.
Demonstration. 30 sets. 2 minutes.

No.11. "Memory for Numbers." Individual test. 16 sets
ranging from 2 to 9 digits.

No.12/

No.12. "Repeating Numbers Backward." Individual Test. 12 sets ranging from 2 to 7 digits.

No.13. "Memory for Sentences." Individual Test. 10 sentences of increasing length.

Mirror.

Thurstone's Psychological Examination. Question 8. Underline any of 5 words which would look the same in a mirror. 50 questions in 30 minutes.

Northumberland Mental. No.2. Test A3. Draw a capital E, B, O, C, H, each as they look when "you hold the paper it is printed on up to a looking glass and see it in the glass." Test B3. Print 5 words of 3 letters each as they would look if seen in a glass.

Ballard Picture Tests. "Look at the picture of the little girl looking into the looking-glass. If you can see anything wrong, cross it out and draw it as it ought to be." No time limit.

Mixed Letters.

Scott-- Series I. Test E. Names of animals with letters mixed. Sample. 20 lines. (not known.)

Kuhlmann-Anderson. Test 15. Ten words with letters mixed. Correct word to be written. Practice. 3 minutes.
Test 29. Fifteen words with letters mixed. Correct word to be written. Practice. 2 minutes.

Moral Judgment.

Kohs' Ethical Discrimination. Exercise 2. Draw a line under the worst of five. Examples. 25 lines. 3 minutes.

Pressey Cross Out. Test IV. Cross out the thing that is worst out of five. Example. Practice. 25 lines. 4 minutes.

Notation.

Northumberland Mental. No.2. Test A5. If moving a number one place to the left made it mean five times as many what would five given numbers mean. Samples. Test B5. Another sample. 5 numbers. Then 5 number names to be written in the "five system". Test C5. Three addition and two subtraction sums to be worked on the "five system". Samples.

Kuhlmann-Anderson. Test 25. 10 questions in connection with the order of the letters of the alphabet. Practice. 2 minutes.

Number Series.

Pressey Cross Out. Test II. "Arithmetical Ingenuity."

Cross out one number out of each set which breaks the rule according to which the others are arranged. Example. practice. 25 lines. 5 minutes.

Otis Classification. Part II. Form A. Questions 21, 33, 40, 71, 74. Write down the correct number in place of the one number in the series which is wrong. 75 questions. 30 minutes.

Illinois Examination. I and II. General Intelligence Scale. Test VI. "Arithmetical Ingenuity." (From Pressey "Cross-out Tests"). Draw a line through the number that doesn't fit in the row. Sample + practice. 25 lines. 2 minutes.

Army Group Examination Beta. Test III. Series of X and O arranged in various patterns - to be completed. Demonstration. 12 lines. $1\frac{5}{4}$ minutes.

Trabue Mentimeter. No.9. "Completion of Number Relation Series." Demonstration. 16 sets. 4 minutes.

Kuhlmann-Anderson Test 33. 15 sets of six numbers. Cross out the wrong number in each set. Practice. 2 minutes. Test 38. 10 sets of five numbers to be completed by writing the two next numbers. Practice. 3 minutes.

Northumberland Mental. No.1. Test A5, B3. Cross out the extra number in each line of six numbers. Sample and 4 lines in A5, 5 lines in B3.

Terman Group. Test 10. Write the two numbers that would come next. Examples. 12 rows. 4 minutes.

Simplex/

Simplex. Test 7A, 7B. Put in the brackets the two numbers that come next. Examples. 6 rows.

Test 7C. Cross out the letters at the top of the columns that are connected in some way. 5 rows.

(Claimed as new).

Haines. Form A. Test 8. Write the two numbers which come next. Samples. 20 lines. 3 minutes.

Columbian Test IV. Write on the answer paper the next two numbers in each row. Practice on blackboard. 16 lines. 5 minutes.

Thurstone's Psychological Examination. Question 10, 30 and 46. Write the two next numbers. 50 questions in 30 minutes. Questions 26 and 48. Cross out wrong number in series.

Army Group Examination Alpha. Test 6. Write the two next numbers. Samples. 20 lines. 3 minutes.

Northumberland Mental. No.1. Tests A2 and B2. Samples in A2. 4 rows in A2. 6 rows in B2.

Offense Evaluation.

Kohs'. Exercise 5. Put a cross in one of six columns to show what is done for certain actions. Samples. 50 lines. $3\frac{1}{2}$ minutes.

Opposites/

Opposites.

Chapman. Revised Form. Test IV. 25 words. Find and write down "the word that means the opposite and begins with the letter given." Words and letters read at intervals of 8 seconds. Practice.

Trabue Mentimeter. No.16. "Naming Opposites." "On the line after each word, write the word which means just the opposite of the printed word." Samples. 40 words. 4 minutes.

Dearborn Group. Series II. Test 4. "Opposite Completion." 24 sentences to be completed by writing in words the opposite of ones underlined. Practice. 7 minutes.

Kuhlmann-Anderson Test 23. 10 sets of six words. Underline two words which are opposites. Practice. 1½ minutes.

Otis Advanced. Test 2. Samples. Underline one word out of five. 1½ minutes.

Roback Mentality. Test 7. Write down the exact opposite of each word. Illustration. 25 lines. 10 minutes.

Bixler's. Part II. Underline one word out of four. Example. 4 sets of five lines each alternating with sets of classification test.

Scott. Series I. Test B. Underline one of four words. Samples. 25 lines. (not known).

Otis Classification/

Otis Classification. Part II. Form A. Questions 3, 8, 10, 12, 41. Write down the number of one out of five words which means the opposite of a given one. 75 questions. 30 minutes.

Burt. Mental and Scholastic Tests. No.21. 50 words. Write opposite each one the opposite. 5 minutes.

Chapman. Group Intelligence Examination. Test III. 25 words spoken at intervals of 5 seconds. Pupils to write opposites on answer paper. Practice.

Orientation.

Chelsea Mental Tests. No.IV. 7 tests. Time unlimited.

Draw F as if printed upside down etc. Answers on answer paper. Score = 2(right - wrong) in questions 4-7. Questions 1-3, one mark each.

Thurstone's Psychological Examination. Questions 14 and 50.

Turn this figure over and draw it showing the reverse side. 50 questions in 30 minutes.

Questions 34 and 45. Make a plus or a minus sign according as two figures represent the same or opposite faces of a piece of cardboard.

Thurstone's Hand Test. Pictures of hands. Below each put a check mark in the right hand square if the picture represents/

represents a right hand and in the left if it represents the left. 49 hands.

Thurstone's Spatial Relations Test. Lozen shaped figure with a hole in it to be turned over and moved to fit another card. "Draw a circle in the corner where the hole will be." Practice. 24 sets.

Pintner Non-Language. Test 5. "Reversed Drawings." Samples. 10 drawings. 4 minutes.

Otis Classification. Part II. Form A. Question 52. "If a man has walked west from his home 9 blocks and then walked east 4 blocks, how many blocks is he from his home?" 75 questions. 30 minutes.

Ballard Picture Tests. "The next picture shows you a key swinging on a nail. Draw it as it will look when it swings round so as to come on the dotted line." No time limit.

Paper Folding.

Thurstone's Psychological Examination. Questions 18, 38.
50 questions in 30 minutes.

Picture/

Picture Sequence.

Otis Primary. Test 5. Practice. 6 sets of pictures to be numbered in correct order. 2 minutes.

Thurstone's Psychological Examination. Questions 9, 28. Number 5 figures (one of which is numbered) as they would be in a logical order.

Dearborn Group. Series II. Test 1. Sample. Practice. 15 sets of pictures to be numbered in correct order. 6 minutes.

Picture Reconstruction.

Pintner Non-Language Test 6. Pictures shown cut up and segments numbered. Children to insert the corresponding numbers in squares to show correct order. Sample. 6 pictures. 5 minutes.

Pintner-Cunningham . Test V. "Picture Parts." Picture + set of small pictures. Mark the thing that is just like something in the picture. 5 sets. Separate directions. 30-60 minutes.each.

Poetic/

Poetic Discrimination.

Trabue Mentimeter. No.27. Choose the best version out of three. Mark each as "best", "middle" or "poorest".
6 sets. 15 minutes.

Proverbs.

Otis Advanced. Test 4. Two sets of 10 proverbs and 12 explanatory statements. Put number of statement before proverb. 6 minutes.

Kohs' Ethical Discrimination. Exercise 3. Put a cross before one statement out of three which best explains the proverb. Sample. 20 proverbs. 4 minutes.

Roback Supplementary. Four tests.

- A. Interpretation of meaning of 8 sayings. 10 minutes.
- B. Cite an application to human affairs of 10 sayings. 20 minutes.
- C. State the reason for the truth of 8 sayings. 10 minutes.
- D. Characterise the point of 15 proverbs by a word (out of 76 suggested) and by a sign indicate counsel, warning or description. 12 minutes.

Thurstone's Psychological Examination. Questions 5-7.

Write the number of the one out of six proverbs which means the same as a given one. 50 questions in 30 minutes.

Otis Classification. Part II. Form A. Questions 55, 60, 64, 75. Write down the number of one out of four explanations of a proverb. 75 questions. 30 minutes.

Reasoning.

Trabue Mentimeter. No.30. Decide which of 4 conclusions is truest and mark it. Sample. 12 sets. 5 minutes.

Thurstone's Reasoning Test. Arguments given. Mark with a plus sign if the conclusion is true, and with a minus sign if it is false. 20 sets. minutes.

Spearman's Measure. Test VII. "Inferences." Statements followed by a question and four possible answers. The children are to write down the correct answer. Practice 16 sets. 8 seconds between each.

Northumberland Mental. No.1. Tests A3 and B4. Genealogical Tree and questions. Samples and verbal description added in A3. 3 questions in A3. 7 in B4.

Otis Classification. Part II, Form A. Questions 27,35,47. Write the number of one out of four completions of the argument. 75 questions. 30 minutes.

Burt. Mental and Scholastic Tests. No.29. "Graded Reasoning Tests." For oral and individual use. 17 problems. No time limit.

Northumberland/

Northumberland Standardised. Set III. Test 7. Underline one answer out of three or four to show right answer. 20 sections. 10 minutes.

Northumberland Standardised. Set III. Test 8. "Following an Argument." Underline the one word of three inserted in brackets which makes the best sense. 10 minutes. (+ write a short summary of the whole passage.)

Roback Mentality. Test 4. "Relations Test." Answers to be written to 6 problems. 15 minutes.

Bristol Group Reasoning. Practice. 15 problems. Unlimited time. In seven the instructions are to underline two sentences out of five.

Columbian. Test VI. "Common Sense." 20 questions on 9 paragraphs. No time limit.

Ingenuity Test. 25 problems (12 illustrated by diagrams). 1 hour.

Thurstone's Psychological Examination. 50 problems. 30 minutes. (For various types see passim). Questions 21-23, 42-44 are on a given paragraph. Questions 33 and 47 - 4 conclusions from 4 statements to be completed.

Crichton Test. Question 25. "The first odd number is 1; the second odd number is 3; the third odd number is 5, and so on. What is the 200th odd number?" (3 marks). No time limit.

Northumberland Standardised. Set III. Test I. No.5. What number comes next but one after 19? Set III, Test VII. No.1. Underline the right answer. Tom is taller than Jim; Jim is taller than Jack, which is the tallest of the three?.....Tom, Jim, Jack.

No.2. Tom runs faster than Jim; Jack runs slower than Jim; which is the slowest?....Tom, Jim, Jack.

No.4. Suppose it were Sunday today. What day would it have been the day before yesterday?..Tuesday, Friday, Saturday.

Columbian. Test I. "Obeying Orders." No.12. "Write the number that comes before the number that comes before fourteen." 5 minutes to 16 instructions.

Test VI. "Common Sense." No.2. Mary is bigger than Mabel, and Margaret is bigger than Mary. Who is the smallest of the three?

No.15. Fred is as tall as William would be if William were twice as tall as he really is. Which is the taller, Fred or William?

Answers to be written on answer paper. No time limit.

Roback. Test IV. "Relations Test." No.1. "A is taller than B and shorter than C, who is not quite so tall as D. Is D taller than A?"

Otis Classification. Part II. Form A. Question 27. The pupil is instructed to put in brackets the number of the/

the statement which completes the sentence. e.g.
question 35. "If Paul is taller than Herbert and
Paul is shorter than Robert, then Robert is (?)
Herbert

(1) taller than, (2) shorter than, (3) just as tall
as, (4) cannot say which.

Similarly question 47. 75 questions. 35 minutes.
1 mark to each correct.

Similarly, Part II. Form B. Questions 37, 48, 51, 52.
Part II. Form A. Question 70. "Write the letter that
follows the letter that comes next after M in the alpha-
bet."

Similarly Form B. Question 68.

Burt. Mental and Scholastic Tests. Test 25. "Instructions."
No.9. "Suppose it were Sunday today. What day would
it have been the day before yesterday?,,,,,,"
No.10. "What number follows next but one after 19?...."
No.25. "In the picture below you are looking at the
reflection of a clock and some words in a mirror.
What do the words say?....." What would be the
actual time if you could turn round and look at the
clock itself?...."
No.22-23. "Write down four more words made up (like
the first two words) out of three or four of the
following/

following letters.

A, E, R, T. (1) ate, (2) tare, (3), (4),
(5), (6)

Test 29. "Graded Reasoning Tests."

No.1. "Tom runs faster than Jim.

Jack runs slower than Jim.

Which is the slowest of the three?"

No.2. "Kate is cleverer than May:

May is cleverer than Jane.

Who is the cleverest - Jane, Kate or May?"

No.6. "Three boys are sitting in a row:

Harry is to the left of Willie:

George is to the left of Harry.

Which boy is in the middle?"

No.12. "I started from the church and walked 100 yards:

I turned to the right and walked 50 yards:

I turned to the right again and walked 100 yards:

How far am I from the church?"

Sequence.

Northumberland Mental. No.2. Test A4. List of children
in two classes with Geography Marks. Pupils to be
numbered in order of merit. 10 pupils.

Test/

Test B4. Same pupils to be arranged in 4 sections.

Otis Classification. Part II. Form A. Question 31.

Write down the number of the one of five words which "would come first in the dictionary." Question 59
65. "last in the dictionary." 75 questions. 30 minutes.

Otis Classification. Part II. Form A. Questions 39, 48,

61. "If five given words "were arranged in order, with what letter would the middle word begin.?"

Dearborn Group. Series II. Test 2. Sample. Practice.

15 sets of words to be numbered "to show their proper order." 6 minutes.

Kuhlmann-Anderson. Test 32. 15 sets of 5 words to be arranged in order and a line to be drawn under the middle one. Practice. 3 minutes,

Northumberland Mental. No.1. Test A4, B5. "Arrange five words mentally in proper order and then underline the middle one. Samples in A4. 2 lines in A4. 4 lines in B5 + 2 sets mixed together.

Similarities.

(a) Pictures.

Detroit Kindergarten. Individual Test VIII. Three sets of four pictures each. "Point to two things which show that it is summer." (Or "winter" in no.3.).

Kuhlmann/

Kuhlmann-Anderson. Test 8. Seven sets of five diagrams.

Put a dot on the one just like a given one. Practice.

15 seconds each.

Test 17. Five sets of five pictures, one of which is to be marked as similar to three given ones.

Practice. 15 seconds each.

Otis Primary. Test 6. Put a cross at the one most like

the first three." Sample. Then 8 lines. 2 minutes.

Otis Advanced. Test 8. Last five lines following a

sample. Draw a line under the one most like the first three.

Detroit Kindergarten. Individual Test IV. Two pictures

then three alongside. "See these two things. Show me one here that is nearest like these two."

Detroit Kindergarten. Individual Test V. Three lines

each with two sets of pictures. "See these things, and these things. Are these all the same or not all the same as these?"

Test VI. Four sets of three pictures each. "Two

things in this picture are used in the same way.

Show me the thing that is not used in that way."

Cole-Vincent Entrance. Test IV. 6 sets of three letters.

"Draw lines through the two that are just alike."

Sample. Practice. 6 seconds each.

Haggerty/

Haggerty Delta I. Exercise VIII. Sets of two pictures to be marked S or D according as they are the same or different. Practice page. 10 sets. 20 seconds.

Detroit Engel. First Grade. Test II. Sets of diagrams. Mark the first one, and then mark the other one that looks just like it. 5 sets. Separate directions.

Ballard Picture Tests. 20 sets of pairs of pictures, diagrams, figures and words. Join with a line if quite the same. Put a cross between them if different in any way.

(b) Words.

Otis Advanced. Test 8. Underline the one most like the first three. Samples. 15 lines of words and 5 of pictures. 4 minutes.

Simplex Test 8A, 8B, 8C. Underline one word out of five which means the same as given one. Example. 6 lines. (Claimed as a new form of voc.test).

Kohs' Ethical Discrimination. "Definitions of Moral Terms." Exercise 4. Draw a line under one of four words. Samples. 45 lines. 4 minutes.

Northumberland Standardised. Set III. Test 3. Underline two of four things most like the first three. Examples. 25 lines. 5 minutes (+ no.26 - write down names of as many different living things as you can)

Pressey Intermediate Classification - every fourth

question from no. 3. "Similarities." Draw a line under the one of four words which means the same as a given one. Practice. $\frac{96}{4}$ sentences. $\frac{14}{4}$ minutes.

Otis Classification. Part II. Form A. Questions 7, 17,

22, 34, 45, 69. Write down the number of one of five things which is most like three given ones.

75 questions. 30 minutes.

Kuhlmann-Anderson Test 28. Fifteen sets of six words.

Underline three things which are alike in some way.

Practice. 2 minutes.

Subsumption.

Roback Mentality. Test 9. Construct a series to follow

each first word so that each successive term is more inclusive or general than the last. Illus-

tration. 12 words. 20 minutes.

Kuhlmann-Anderson Test 26. 15 sets of six words. Under-

line the word which tells what kind of a thing the

first one is. Practice. 2 minutes.

Synonym/

Synonym - Antonym.

(a) Verbal.

Otis Primary. Test 7. Ten pairs of words read. Draw line round S (= same) or O (= opposite).

(b) Printed.

Terman Group. Test 3. Draw a line under "same" or "opposite". Examples. Then 30 lines. 2 minutes.

Northumberland Standardised. Set III. Test 2. Draw a line under "same", "opposite", or "unknown". Examples. 50 lines. 5 minutes. (+ no. 51 - write down as many new pairs of opposites as you can).

Bixler's Part I. Draw line under "same" or "opposite". Examples. 50 lines.

Haines. Form A. Test 4. Draw line under "same" or "opposite". If cannot be sure, guess. Samples. 40 lines. 1½ minutes.

Army Group Examination Alpha. Test 4. Underline "same" or "opposite". "If you cannot be sure, guess." Samples. 40 lines.. 1½ minutes.

Spearman's Measure. Test I. "Same or Opposite". Pairs of words read aloud. Children write S or D on answer paper. Practice. 28 pairs. 8 seconds between each.

National/

National Intelligence Tests. Form A. Test 4. Write S or D on the dotted line between two words. Samples. Practice. 40 lines. 2 minutes.

Illinois Examination I and II. General Intelligence Scale. Test VII. Draw a line under "same" or "opposite". Sample + practice. 40 lines. 1 minute.

Haggerty Delta I. Exercise XII. "Word Comparison". Pairs of words. Write S or D according as they mean the same or different. Practice page. 25 lines. 2 minutes.

Haggerty Delta II. Exercise IV. Underline same or opposite for pairs of words. "If you cannot be sure, guess." Samples. 40 sets. 2 minutes.

Word Meaning.

West Riding Test B. 20 definitions + 20 words in mixed order. Write down the word corresponding to each definition. 5 minutes.

Roback Mentality. Test 6. "Reference Test." Indicate as many meanings as you can of each word in the list. Illustrations. 15 lines. 15 minutes.

Chelsea/

Chelsea Mental Tests. No.2. "Meanings of words".

Questions 1-8. Example. Write down on answer paper the one word out of four in brackets that makes the sentence true. For Questions 9-14 and 15-21 explanatory phrases are given for words. The child is to write down the letter which indicates which phrase he attaches to each word. Questions 22 and 23, ask missing words to complete sentences. Questions 24 and 25 ask which word means the largest number of things. Time unlimited.

Pintner Educational Survey. Test 1. 22 words. Write F. N. B. or G. under words according as they mean a flower, a boy's name, a book, good to be or do. 1½ minutes.

Spearman's Measure. Test II. "Synonyms." Pupils write on answer pages one definition out of four read to them. e.g. "To strike means most nearly the same as what? To fool? To hit? To hurt? To break?" Practice. 22 sets. 8 seconds between each.

Stanford Achievement. Reading Test III. "Word Meaning." Draw a line under one word out of five which makes the sentence true. Samples (words chosen from Thorndike Word Book). Primary: 40 lines in 5 minutes. Advanced: 85 lines in 10 minutes.

Otis Classification. Part II. Form A. Questions 2, 26, 56, 66, and 68. Write down the number of one of the five words (or phrases) below which best tells what a given thing is. 75 questions. 30 minutes. Question 6. "Which one of the five things below is the smallest?" Question 11 (ten numbers).

Pressey Intermediate Verifying - every fourth question from no.2. Draw a line under one of four words which "best describes" a given word. Practice. $\frac{96}{4}$ questions. $\frac{14}{4}$ minutes.

Burt Mental and Scholastic Tests. No.23. "Synonyms". Against each word write another word which expresses as nearly as possible the same meaning. 50 words. A time limit if desired. Mental and Scholastic Tests. No.24. "Definitions." "Write against the following words, as briefly and accurately as you can, what you think to be the meaning of each." 50 words. Time limit not recommended.

Trabue Mentimeter. No.14. "Speaking Vocabulary Test." Individual Test. "What does the word - mean?" 50 words. No.15. "Word Discrimination." What is the difference between - and - ? 24 pairs of words.

APPENDIX III.

Descriptive Chart for Reading Tests.

-oOo-

Reading Tests.

Fressy First Grade.

Grade: I.
Number of forms: Two.
Type of Test: Increasing difficulty.
I. Word Test.
Draw a line round one word
read aloud out of five.
II. Sentence Test.
Draw a line round a spoken
sentence - out of four.
Method of Giving: Group. Marks on paper.
Method of Scoring: One mark for each correct.
Type of score: Raw.
Norms: Grade.

Watkins.

Grade: I.
Number of forms: One.
Type of Test: Increasing difficulty.
Twenty-four tests containing
directions, sentences and
pictures relating to colour
form, number, parts of the body,
science, conduct, nature-study,
food, good manners.
(Mixed in form).
Method of Giving: Group. Marks on paper.
Method of Scoring: Apparently one mark for each
correct, + record of words not
known.
Time to Give. Work as fast as you can.

Gates Primary/

Gates Primary:

Grade: I and II.

Number of forms: Two.
Increasing difficulty.

Type of Test: 1. Word Recognition.
2. Word, Phrase and Sentence Reading.
3. Directions.

Method of Giving: Group. Marking on Test Paper.

Method of Scoring: 1. Number correct \rightarrow 1/3 (number incorrect)
2. " " " "
3. Number correct.

Time to Give: 50 minutes + preliminary practice.

Type of Score: 1. Weighted Score.
" " "
2. Raw score. "

Norms. 3. Age. Grade. Highest average for Grades.

Haggerty Sigma I.

Grade: I - III.

Number of Forms: One.

Type of Test: Increasing difficulty.
1. Pictures and paragraphs directing marks to be made.
2. Questions to be answered by underlining "Yes" or "No".

Method of Giving: Group. Marks on pictures or paper.

Method of Scoring: 1. One mark to each correct.
2. Rights - wrongs.

Time to Give: 22 minutes + practice.

Type of Score: Raw Score.

Norms: Grade. Age.

Williams.

Grade: I. - III.
Number of Forms: One.
Type of Test: Increasing difficulty.
Paragraphs with directions about pictures or questions to answer.
Method of Giving: Group. Marks on paper.
Method of Scoring: Key. One mark to each correct.
Time to Give: 20 minutes + practice.
Type of Score: Raw Score.
Norms: Grade. Mental age.

Detroit.

Grade: I. - III.
Number of Forms: Ten.
Type of Test: Increasing difficulty.
Words, phrases and pictures.
Draw a line connecting.
Method of Giving: Group. Lines on paper.
Method of Scoring: One mark to each correct.
Time to Give: 4 minutes + practice.
Type of Score: Raw Score.
Norms: Grade.

Courtis Standard No.2.

Grade: 1 to 6.
Number of Forms: Two.
Type of Test: Part I. Story to be read
silently for 3 mins. with mark
put each 30 secs.
Part II. Story reproduced in
paragraphs with 5 questions on
each to be answered by "yes" or
"no"/

"no". 5 mins. Mark at end of each min.

Method of Giving: Group. Answers on test paper.

Method of Scoring: I. Counting of words read per minute.
II. Questions answered.

Time to Give: Part I. 3 minutes.
Part II. 5 minutes.

Type of Score: Raw Score. Index of comprehension.

Norms: Median Grade scores at end of year.

Starch Silent Reading.

Grade: I. - VIII.

Number of Forms: One.

Type of Test: Increasing difficulty. Story to read.
1. Count words.
2. Reproduction.
(Stories chosen from typical reading bks.)

Method of Giving: Group. 1. Mark after last word read.
2. Reproduction in writing on answer paper.

Method of Scoring: 1. Count of words per second.
2. Count of words representing ideas.

Time to Give: 1. 30 seconds.
2. Time needed for reproduction.

Type of Score: 1. Number of words per second.
2. Number of words which represent correct ideas.

Norms. Median Scores.

Gray Oral Paragraphs.

Grade: I. - VIII.

Number of Forms: /

Number of Forms: One.
Type of Test: Increasing difficulty.
12 paragraphs to be read
aloud.
Method of Giving: Oral individual.
Method of Scoring: (a) Number of seconds.
(b) Number and nature of errors.
Type of Score: Weighted. B. Score.
Norms: Grade.

Gray Oral Check.

Grade: I. - VIII.
Number of Forms: Five.
Type of Test: Passages to read aloud.
Teacher notes difficulties.
Set I. Grades I.
Set II. " II. - III.
Set III. " IV. - V.
Set Iv. " VI. - VIII.
Method of Giving: Oral Individual.
Method of Scoring: (a) Number of seconds to
read.
(b) Number and nature of
errors.
Type of Score: Raw.
Norms: Mid-year Grades.

Pressey Second Grade:

Grade: II.
Number of Forms: Two.
Type of Test: Test I. Spelling.
II. "Speed of reading".
Cross out one word
too many in sentences.
III. Recognition of words.
Cross out what is not a
real/

	real word in each line.
	VI. Arithmetic.
Method of Giving:	Group. Marks on paper.
Method of Scoring:	Tests I - III. One mark for each correct. Test IV. Correct \div 2.
Time to Give:	Not over 25 minutes.
Type of Score:	I - III. Raw. IV. Weighted.
Norms:	Grade. Percentile.
<u>Gray Silent Reading:</u>	
Grade:	II - VIII.
Number of Forms:	One.
Type of Test:	Increasing difficulty. Three selections. 1. Time required to read 100 words noted. 2. Reproduction and questions. I. Grade II. & III. II. " IV. - VI. III. " VII - VIII.
Method of Giving:	Individual. Oral reproductions up to 3rd grade. Then written reproduction + questions.
Method of Scoring:	1. Count of words per second. 2. Words correct + answers correct.
Type of Score:	1. Rate. Words per second. 2. Average of number of correct words + 10 x correct answers.
Norms:	Grade.
<u>Detroit Reading.</u>	
Grade:	

Detroit Reading.

Grade: Test I → II.
" II → III.
" III → IV - VI.
" IV → VII - IX.

Number of forms: Two
Three
Four
Four

Type of Test: **I and II** Uniform difficulty.
Paragraph + 2 sentences
to be completed by under-
lining one of four answers.
III and IV Paragraphs + 2 questions to
be answered as above (one
factual, one interpretive.)
Narration. Description and
Social science in cycle.

Method of Giving: Groups. Marks on test
paper.

Method of Scoring: One mark to each correct.

Time to Give: Practice +
Test I. 8 minutes.
" II. 7 minutes.
" III. 6 minutes.
" IV. 5 minutes.

Type of Score: Raw.

Norms: Grade. Age.

Thorndike McCall.

Grade: II - VII.

Number of Forms: Ten.

Type of Test: Increasing difficulty.
Paragraphs + questions.

Method of Giving: Group. Write in answer
to the questions.

Method of Scoring: One mark for each right.
Key.

Time to Give: 30 mins + initial practice.

Type/

Type of Score:

Raw Score. Weighted
Score. Reading Quotient.

Norms:

Grade: Reading Age.

Stanford.

Grade:

II - VIII.

Number of forms:

Two.

Type of Test:

Increasing difficulty.
1. Paragraph Meaning.
2. Sentence Meaning.
3. Word Meaning.

Method of Giving:

Group.
1. Completion.
2. Underline "Yes" or
"No".
3. Underline one word out
of five.

Method of Scoring:

Key.
1. Score $\times 2$.
2. Right and Wrong.
3. Score.

Time to Give:

25 mins. + distribution
etc.

Type of Score:

Weighted Score.
Reading Age.

Norms:

Age. Grade.

Pressey Fundamental Habits:

Grade:

II - VI.

Number of Forms:

Two.

Type of Test:

(1) Four passages, for
Grade II, for Grades
III. IV, for Grades V.
VI, to be read silent-
ly.
(2) 10 words to be read
aloud, Teacher analyses
(1) Fixation.
(2) Regression.
(3) /

- (3) Accuracy of Return Sweeps.
- (4) Vocalisation.
- (5) Word analysis.

Method of Giving:

Individual. Observations, by teacher, with aid of a mirror.

Method of Scoring:

- (1) Counting of movements.
- (2) Counting of syllables correct.

Type of Score:

Raw.

Norms:

Grade.

Gates Silent Reading.

Grade:

III. to VIII..

Number of Forms:

Two.

Type of Test:

- Uniform.
- A. Paragraphs and questions.
 - B. " " "
 - C. Directions.
 - D. Paragraphs and questions.

Method of Giving:

Group. Underlining or marks on test paper.

Method of Scoring:

One mark for each correct underlining etc.

Time to Give:

30 minutes + preliminary practice.

Type of Score:

Raw Score. Percentage of accuracy.

Norms:

Age Average.
Grade Average.
Highest average for Grades.

Northumberland Standardised.

Type of Test:

- 1. Questions.
- 2/

	2. Synonyms.
	3. Completion.
	4. Paragraphs and questions.
Method of Giving:	Group. Underlining on test paper.
Method of Scoring:	One mark for each correct underlining.
Time to Give:	4 x 7. mins.
Type of Score:	Raw Score.
Norms:	Age average for 7 tests.

New Examiner. No.1.

Type of Test:	Paragraphs for completion.
Method of Giving:	Group. Numbered Answers on separate paper.
Method of Scoring:	Counting of words.
Time to Give:	15 minutes.

Kansas Silent Reading.

Grade:	III.— High School.
Number of Forms:	One.
Type of Test:	Increasing difficulty. Three tests: 16 paragraphs in each. 1 question or direction on each. I. Grades III - V. II. " VI - VIII. III. High School.
Method of Giving:	Group. Answers on test paper.
Method of Scoring:	Weighted value for each.
Time to Give:	5 minutes.
Type of Score:	Weighted.
Norms:	Median, Percentiles.

Monroe Standardised I.

Grade:	III - V.
Number of Forms:	Three.
Type of Test:	Paragraphs and questions to be answered by underlining one word out of four or five. Increasing difficulty.
Method of Giving:	Group. Underlining on test paper.
Method of Scoring:	Rate = words read per min. Comprehension = One mark for each correct.
Time to Give:	4 minutes + practice.
Type of Score:	Raw Score.
Norms:	Grade. Median.

Pressy Diagnostic.

Grade:	III - VI.
Number of Forms:	One.
Type of Test:	Increasing difficulty. 1. Vocabulary. Ring round a word out of five meaning the same as given one. 2. Speed. Ring round extra word. 3. Paragraph reading. Ring round right answer out of four.
Method of Giving:	Group. Marks of test paper.
Method of Scoring:	One mark to each correct.
Time to Give:	12 mins. + practice.
Type of Score:	Raw Score.
Norms/	

Norms: Grade.

Pressy Third Grade.

Grade: III.

Number of Forms: Two.

Type of Test: Uniform difficulty.
Paragraphs + 4 questions
to be answered by a ring
round one of four answers.

Method of Giving: Group. Marks on test
paper.

Method of Scoring: One mark to each correct.

Time to Give: 9 mins. + practice.

Type of Score: Raw.

Norms: Grade:

Burgess.

Grade: III - VIII.

Number of Forms: Four.

Type of Test: Uniform difficulty.
Paragraphs each giving
instructions to complete
a picture.

Method of Giving: Group. Make a mark to
supplement picture.

Method of Scoring: 1 mark for each. Grade
credits.

Time to Give: 5 minutes.

Type of Score: Raw Score. Grade
credits.

Norms: Grade.

Kennon.

Number of Forms: Two.

Type/

Type of Test: Word and 5 possible meanings.

Method of Giving: Write down number of words meaning same as given one.

Kelly (in Pintner)
(Shortened form of Kansas test.)

Grade: III - VIII.

Type of Test: Increasing difficulty. Paragraphs + one question to each with one word answers or directions to be followed by putting a mark.

Method of Giving: Group. "Answer the questions".

Method of Scoring: Two points for each answer. No partial credits stencil.

Time to Give: 2½ minutes.

Thorndike (in Pintner)

Grade: III - VIII.

Number of Forms: One.

Type of Test: Increasing difficulty. Paragraphs + several questions each. (May be in a word or two).

Method of Giving: Group. "Do what it tells you to do."

Method of Scoring: One point each. Stencil.

Time to Give: 3½ minutes.

Orleans Public School.

Grade: III - VIII.

Type of Test: Increasing difficulty. Comprehension/

comprehension of sentences, paragraphs, and poems - tested by marking words, answering questions, completing sentences.

Method of Giving: Group. Marks and words on test paper.

Method of Scoring: One mark for each correct.

Time to Give: 40 minutes.

Type of Score: Raw.

Norms: Grade.

Fordyce Test No.1.

Grade: III - V.

Number of Forms: One.

Type of Test: (a) Passage to read for speed in reading.
(b) 14 questions on same passage for quality in reading.

Method Of Giving: Group. Answers to questions.

Method of Scoring: (a) Count of words.
(b) Answers weighted.

Time to Give: Differs for various grades.

Type of Score: Percents.

Thorndike Visual Vocabulary Scale.

Grade: III - VIII.

Number of Forms: Three.

Type of Test: Lists of 10 words. Increasing difficulty. "Write the letter F under every word that/

Method of Giving:	that means a flower etc. (8 directions)
Method of Scoring:	Group. Marks on test paper.
Type of Score:	Weighted value.
Norms:	Weighted: Grade.

Holley Sentence Vocabulary.

Grade:	III - VIII.
Number of Forms:	Two.
Type of Test:	Increasing difficulty. Sentences to be com- pleted by underlining one of four words.
Method of Giving:	Group. Marks on paper.
Method of Scoring:	Correct minus 1/3 (wrong).
Time to Give:	No time limit.
Type of Score:	Weighted Score.
Norms:	B. Score. M.A.

Brown.

Grade:	III upward.
Number of Forms:	Three.
Type of Test:	Uniform difficulty. Story to read. 1. Count words. 2. Reproduction.
Method of Giving:	Group. 1. Ring round last word read. 2. Reproduction in writing on answer paper.

Method/

Method of Scoring: 1. Count of words.
2. Count of ideas, in reproduction. Checked by a key.

Time to Give: 1 minute to read. Unlimited reproduction.

Type of Score: 1. Number of words per second.
2. Percentage of comprehension.
3. Reading efficiency = 1×2 .

Norms: Highest average scores for grades.

Sangren-Woody.

Grade: IV - VIII.

Number of Forms: Two.

Type of Test: Increasing difficulty.
1. Word Meaning from Teacher's Word Book.
2. Rate.
3. Fact material.
4. Total Meaning.
5. Central Thought.
6. Following Directions.
7. Organisation.

Method of Giving: Group. Answers on test paper.

Method of Scoring: Weighted.

Time to Give: 35 - 40 minutes.

Type of Score: II. No. of words in first minute + 10.
I - VI. Raw.
VII. Weighted.

Norms: Grade. Age.

Thorndike.

Grade: IV - College.

Number of Forms: Four.

Type/

Type of Test: Word + 5 possible meanings.

Method of Giving: Write down number of word meaning same as given one.

Method of Scoring: Count lines correct. Key.
Form A. = No. - 3.
" B. = No.
" C. = No. + 3.
" D. = No. + 1.

Time to Give: 30 minutes.

Type of Score: Weighted Score.

Norms: Grade.

Stone Narrative.

Grade:

Type of Test:

VI - XI.
Narrative.
I. Time of reading recorded.
II. Questions with five possible answers.
Write number of correct one.
Questions measure grasp of development of plot.
development of steps in story, and details.

Method of Giving:

Group. Marks on answer paper.

Method of Scoring:

I. Number of five second intervals taken to reading.
II. One mark for each correct.

Time to Give:

No time limit; but about 20 minutes.

Type of Score:

I. Number of five second intervals/

intervals required to
read.
II. Raw Score.

Norms: Grade.

Holzinger-Chapman.

Grade: IV - XII.
Number of Forms: Two.
Type of Test: Sim. to Chapman Unspeeded.
Method of Giving: Sim. to Chapman Unspeeded.
Method of Scoring: One mark for each right.
Time to Give: 30 minutes.
Type of Score: Raw Score.
Norms: Percentiles. Reading Age.

Chapman-Cook Speed of
Reading.

Grade: IV - VIII.
Number of Forms: Two.
Type of Test: Sim. to Chapman Unspeeded.
Method of Giving: Sim. to Chapman Unspeeded.
Method of Scoring: Score = Number right.
Time to Give: $2\frac{1}{2}$ minutes.
Type of Score: Raw Score.
Norms: Percentile.

Chapman Unspeeded.

Grade: V - XII.
Type/

Type of Test: Paragraphs with one word wrong in latter part. This word to be crossed out.

Method of Giving: Group. Cancelling on test paper.

Method of Scoring: One mark for each right.

Time to Give: 30 minutes.

Type of Score: Raw Score.

Norms: Percentiles. Reading Age.

Starch English Vocabulary:

Grade: V - XII.

Number of Forms: Two.

Type of Test: Lists of 100 words. (selected at random from dictionary.)

Method of Giving: Group. Mark words known. Define those in doubt.

Method of Scoring: Words known.

Type of Score: Percentage of words known.

Cavins' Poetry.

Grade : V - IX.

Type of Test: 8 Poems. Test A. asks pupils to write out lines giving central thought of each. Test B. gives 4 to 10 qns. on each.

Method of Giving: Group. Words on test paper.

Method of Scoring: Weighted values.

Time to Give: Test A. 40 minutes.

Type/

Type of Score: Weighted.

Norms: Grade Medians.

Monroe Standardised II.

Grade: VI - VIII.

Number of Forms: Three.

Type of Test: Paragraphs + questions to be answered by underlining one word out of four or five. Increasing difficulty.

Method of Giving: Group. Marks on test paper.

Method of Scoring: Rate + 29. Comprehension + 5.

Norms: Age.

Fordyce Test No.2.

Grade: VI - IX.

Type of Test: (a) Passage to read for speed in reading.
(b) 10 questions on paragraph.

Method of Scoring: (a) Count of words.
(b) Answers weighted. m.

Time to Give: Differs for various grades.

Type of Score: Percentile value.

Haggerty Sigma III.

Grade: VI - XII.

Number of Forms: Two.

Type of Test: Increasing difficulty.
I. Vocabulary. Underlining one definition out of four.
II. Sentence Reading. Underline/

Underline "Yes" or "No".

III. Paragraph Reading.

Paragraph followed by words, sentences, or phrases to be marked.

Method of Giving:

Group. Marks on test paper.

Method of Scoring:

I. Rights.

II. Rights minus Wrongs.

III. Rights \times 2.

Time to Give:

28 minutes + practice.

Type of Score:

Weighted.

Norms:

Grade. Age.

Iowa Advanced.

Grade:

VII - XII.

Type of Test:

1. Paragraph Comprehension.

2. Word Meaning.

3. Sentence Comprehension.

4. Sentence Organisation.

5. Paragraph Organisation Papers.

6. Location of Information.

7. Silent Reading Rate.

Material chosen from fields of Social Science, Literature and Science.

Method of Giving:

Group. Marks on test paper.

Method of Scoring:

1. Score = 2 (number right)

2. " = Number correct.

3. Number of pairs correct.

4. 3 (number correct)

5. A. number correct.

B. number correct \div 2

C. 2 (number correct).

6. A. 2 (number correct)

B. Number correct.

C. Number correct \div 2.

7. Number per minute.

Time/

Time to Give: Two periods of 28 minutes.

Type of Score. 1. Weighted Score.
2. Raw Score.
3. " "
4. Weighted Score.
5. Weighted Score.
6. Weighted Score.
7. Words per min.

Norms: Grade. Percentiles.

Van Wagenen.

Grade: VIII upwards.

Number of Forms: Two. (Three of III).

Type of Test: I. History Scale. 15 paragraphs with 4 to 6 interpretations of each. Pupil is to check those which are correct.
II. General Science Scale. Similar to above.
III. English Literature Scales. A. B. C. Similar to above.
IV. English Literature Scales. Alpha and Beta. 16 paragraphs. 1 to 3 directions under each to underline words out of five describing a given detail.

Method of Giving: Group. Marks on test paper.

Method of Scoring: Number of errors noted and interpreted according to a key.

Time to Give: 45 mins.

Type of Score: Corrected Score.

Norms: Tentative Grade. Percentiles for/

for tests I - III.

Whipple High School:

Grade: IX upwards.

Number of Forms: Two.

Type of Test: Form A. Six pages
Form B. Seven pages.
Questions and directions to measure comprehension are inserted in the test to be read as the pupil proceeds.

Method of Giving: Group. Marks on test paper.

Method of Scoring: One mark for each correct.

Time to Give: 10 minutes.

Type of Score: Raw Score.

Norms: Grade Percentiles.

Markham Vocabulary.

Grade: IX - XII.

Number of Forms: Two.

Type of Test: Increasing difficulty.
Synonym for given word in a sentence to be chosen from five.

Method of Giving: Group. Numbers on paper.

Method of Scoring: One mark for each correct.

Time to Give: No time limit but usually within one hour.

Type of Score: Raw Score.

Norms: Grade Medians.

Pressey Technical Vocabulary.

Number of Forms:

One.

Type of Test:

19 lists giving the technical and difficult words frequently found in textbooks in different subjects.

Method of Giving:

To be used as guides to pupils.

APPENDIX IV.

Preliminary and Final Forms of New Tests.

-oOo-

I.

Here are some questions to answer. Their answers can be found by reading the story below. In each answer use not more than three words.

1. Which island did the swans live on?
2. What was the name of the child who went with Tom to the park?
3. How many little swans were there?
4. What did the swans like to eat?

Tom and Nan liked to go to the park on the south side of the city where there was a lake with three islands. On the biggest of these, two swans had their home. They sometimes came for bread which the children threw into the water. One morning they had two little swans with them. Tom and Nan ran home to tell what had seen.

II

Here are some questions to answer. Their answers can be found by reading the story below. In each answer use not more than three words.

1. What was the Nancy Jones?
2. What were the nets made of?
3. Who mended the big fishing nets?
4. At what time of year did Jack go to the seaside?

Last summer Jack Jones went for a holiday to the seaside. There he made friends with a kind old sailor who used to sit in the sunshine in front of the house mending the big fishing nets. The old sailor showed him how to make knots, and gave him string to make a little net. Then he got some wood and some white cloth and built a ship which they called the Nancy Jones. They carried it down to the water, and it sailed very prettily.

III

Here are some questions to answer. Their answers can be found by reading the story below. In each answer use not more than three words.

1. With what did the conjurer do his trick?
2. How many people were at the party?
3. What kind of fruit had Dora at her birthday party?
4. How many candles were on the cake?

When Dora reached her seventh birthday, her grandmother gave a party. She made a beautiful cake with icing on the top and ^{on} ~~at~~ it she put pretty coloured candles. - one for each year that Dora had lived. There were the same number of people at the party. They all sat round the table. Dora had to light the candles. They had sandwiches and strawberries and cream. When the candles were nearly burnt down, ^{Grandma} ~~Grandma~~ snuffed them out, and Dora cut the cake. After supper they played at hide-and-seek and musical chairs. One boy sang a song, and another did a conjuring trick with two handkerchiefs. The end of the party came only too soon.

IV.

Here are some questions to answer. Their answers can be found by reading the story below. In each answer use not more than three words.

1. To whom did the puppy belong?
2. In whose garden was it washed?
3. On what day of the week did they try that new game?
4. What did Peggy wash to help her mother?

Washing day was on Monday. Peggy used to watch her mother making the clothes snowy-white, and hanging them up to dry in the sunshine. Sometimes she helped her in a little tub of her own, and rubbed and rubbed till the handkerchiefs were as clean as they could be. One day ^{when} ~~after~~ they had finished, her cousin John came in with his new puppy-dog. It had been rolling in the mud and was very dirty. "May we wash it too?" asked Peggy. "Oh, yes!" said her mother, "You may, if it will let you." They took Peggy's little tub, set it up on a chair, filled it with warm water, and John lifted up the puppy. What fun they had! The dog thought this was a new game, and it tried to jump out. Each time it jumped, the water splashed up. When they lifted it to the ground, it shook itself well, and ran round and round the garden.

V

Here are some questions to answer. Their answers can be found by reading the story below. In each answer use not more than three words.

1. At which side of the house was the garden?
2. What kind of tree is spoken of?
3. What was fastened to its branch?
4. At what time of day did Betty use the swing?

Betty Gray's house was not a big one; but in front of it there was a large garden which had an oak tree near the gate. On the strongest branch of this oak tree Betty's father had fastened a swing, and every day when she came home from school, she climbed into it and swung far up into the air.

VI

Here are some questions to answer. Their answers can be found by reading the story below. When you have found them, write them on your paper. Do not use more than two words for any answer.

1. How many children are in the story?
2. What was the name of Jane's brother?
3. What did the cat like?
4. Which was Jane's pet?

Jane had a rabbit, Her brother Jim had a dog, and Baby Nell had a pussy-cat. They fed their pets every day. The rabbit liked leaves. The dog liked bones, and the cat was very fond of milk. What fun it was to watch them eating!

VII.

Here are some questions to answer. Their answers can be found by reading the story below. When you have found them, write them on your paper. Do not use more than two words for any answer.

1. In what direction would one need to sail from Appleby to reach Uton?
2. What kind of trees grew in the island's orchards?
3. At what season of the year must these people have visited Appleby?
4. In what country is Uton?

About twenty years ago a party of pleasure seekers put out in a yacht from the little seaport town of Uton in South Andica. They intended to cruise northwards along the coast, and then to spend three days at Latton. Just as they reached Latton, which is due north from Uton, a strong easterly gale blew them directly out to sea. Fog came on and the ship drifted in danger for several days. When the storm passed, they found themselves near a small island due west from Uton.

There they anchored to renew their stock of vegetables and fresh water. They discovered that the island was called Appleby and that it took its name from the chief product of its orchards. It seemed so fair a haven after their toil that they vowed to return each year to see its blossoms once more.

-----c0o-----

VIII .

Here are some questions to answer. Read the story below and write the answers on your paper when you find them. In each answer use not more than three words.

1. How far was Lapan from the Currian frontier?
2. What was the important industry in Pance?
3. What word did the aeroplanes trace on the sky?
4. What was the name of the capital of Pance?

In 1927 the king of Curryland paid a visit to the neighbouring country of Pance. The Currians were very well received. There was a special train from the frontier to Lapan the Pance capital. All the carriages were luxuriously upholstered in light blue velvet. The fittings were completely new, the comfort perfect. The journey of two hundred miles was performed with great enjoyment. When Lapan was reached, the city was found to be on holiday in honour of the visitors. In the evening a great reception was given. The next day an excursion was made to the aerodrome where two hundred aeroplanes executed manoeuvres and traced on the sky the name of the visitors' country. A visit was paid also to the famous sugar refineries thirty miles away. It is expected that the friendly intercourse so begun will prove of lasting benefit to both countries.

Here are some questions to answer. Their answers can be found by reading the story below. When you have found them, write them on your paper. Do not use more than three words for any answer.

A

1. How many children are in the story?
2. What was the name of Jane's brother?
3. What did the cat like?
4. Which was Jane's pet?

Jane had a rabbit, her brother Jim had a dog, and Nell had a pussy cat. They fed their pets every day. The rabbit liked leaves. The dog liked bones, and the cat was very fond of milk. What fun it was to watch them eating!

B

1. Which of the Islands did the swans live on?
2. What did Nan give the swans to eat?
3. How many little swans were there?
4. What was the name of the child who went with Tom to the park.

Tom and Nan liked to go to the park on the south side of the city where there was a lake with three islands. On the biggest of these, two swans had their home. They sometimes came for bread which the children threw into the water. One morning they had two little swans with them. Tom and Nan ran home to tell what they had seen.

C

1. How many people were at the party?
2. What kind of fruit had Dora at her birthday party?
3. With what things did the conjurer do his trick?
4. How many candles were on the cake?

When Dora reached her seventh birthday, her grandmother gave a party. She made a beautiful cake with icing on the top and on it she put pretty coloured candles—one for each year that Dora had lived. There were the same number of people at the party. They all sat round the table. Dora had to light the candles. They had sandwiches and strawberries and cream. When the candles were nearly burnt down, Grandma snuffed them out, and Dora cut the cake. After supper they played at hide-and-seek and musical chairs. One boy sang a song, and another did a conjuring trick with two handkerchiefs. The end of the party came only too soon.

Here are some questions to answer. Their answers can be found by reading the story below. When you have found them, write them on your paper. Do not use more than three words for any answer.

D

1. How far was Lapo from the Currian frontier?
2. What was the word that the aeroplanes traced on the sky?
3. What was an important industry in Pance?
4. What was the name of the capital of Pance?

In 1927 the king of Curryland and his suite paid a visit to the neighbouring country of Pance, and were very well received. From the frontier to Lapo, the Panci capital, they travelled by a special train the carriages of which were luxuriously upholstered in light blue velvet, comfortable, and had been specially built for the occasion. The journey of two hundred miles was interesting and very enjoyable. When Lapo was reached, the city was found to be on holiday in honour of the visitors. That evening a great reception was given. The next day excursions were made to the famous sugar refineries thirty miles away, and to an aerodrome where two hundred aeroplanes executed manoeuvres and traced on the sky the name of the visitors' country. It is expected that the friendly intercourse so begun will prove of lasting benefit to both countries.

E

1. In what direction would one need to sail from Appleby to reach Uton?
2. What kind of fruit trees grew in the island's orchards?
3. At what season of the year must these people have visited Appleby?
4. In what country is Uton?

About twenty years ago a party of pleasure seekers put out in a yacht from the little seaport town of Uton in South Andica. They intended to cruise northwards along the coast, and then to spend three days at Latton. Just as they reached Latton, which is due north from Uton, a strong easterly gale blew them directly out to sea. Fog came on and the ship drifted in danger for several days. When the storm had passed, they found themselves near a small island due west from Uton.

There they anchored to renew their stock of vegetables and fresh water. They discovered that the island was called Appleby and that it took its name from the chief product of its orchards. It seemed so fair a haven after their toil that they vowed to return each year to see its blossoms once more.

Scottish Council for Research in Education.

READING—COMPREHENSION.

*By the courtesy of MISS C. M. FLEMING, M.A., Ed.B.,
and the Department of Psychology, Glasgow Training Centre.*

Name.....

Age.....

Date of Birth.....

School.....

Class.....

To-day's Date.....

Do not open this Book until the Teacher tells you.

Here are some questions to answer. Their answers can be found by reading the story below. The first question has been answered for you. Look for the answers to the other questions. When you have found them, write them on your paper. Do not use more than three words for any answer.

ANSWERS.

1. What was the Nancy Jones? - - - A Ship.
2. What were the nets made of? - - -
3. Who mended the big fishing nets? - -
4. At what time of year did Jack go to the
seaside? - - - - -

Last summer Jack Jones went for a holiday to the seaside. There he made friends with a kind old sailor who used to sit in the sunshine in front of the house mending the big fishing nets. The old sailor showed him how to make knots, and gave him string to make a little net. Then he got some wood and some white cloth and built a ship which they called the Nancy Jones. They carried it down to the water, and it sailed very prettily.

E

1. In what direction would one need to sail from Appleby to reach Uton? - - - - -

2. What kind of fruit trees grew in the island's orchards? - - - - -

3. At what season of the year must these people have visited Appleby? - - - - -

4. In what country is Uton? - - - - -

About twenty years ago a party of pleasure seekers put out in a yacht from the little seaport town of Uton in South Andica. They intended to cruise northwards along the coast, and then to spend three days at Laton. Just as they reached Laton, which is due north from Uton, a strong easterly gale blew them directly out to sea. Fog came on and the ship drifted in danger for several days. When the storm had passed, they found themselves near a small island due west from Uton.

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(Five Minutes.)

Here are some questions to answer. Their answers can be found by reading the story below. When you have found them, write them on your paper. Do not use more than three words for any answer.

A

1. How many children are in the story? -
2. What was the name of Jane's brother?
3. What did the cat like? - - - -
4. Which was Jane's pet? - - - -

Jane had a rabbit, her brother Jim had a dog, and Nell had a pussy cat. They fed their pets every day. The rabbit liked leaves. The dog liked bones, and the cat was very fond of milk. What fun it was to watch them eating!

(Five Minutes.)

Here are some questions to answer. Their answers can be found by reading the story below. When you have found them, write them on your paper. Do not use more than three words for any answer.

D

1. How far was Lapo from the Currian frontier?

2. What was the word that the aeroplanes traced on the sky?

3. What was an important industry in Pance?

4. What was the name of the capital of Pance?

In 1927 the king of Curryland and his suite paid a visit to the neighbouring country of Pance, and were very well received. From the frontier to Lapo, the Panci capital, they travelled by a special train the carriages of which were luxuriously upholstered in light blue velvet, comfortable, and had been specially built for the occasion. The journey of two hundred miles was interesting and very enjoyable. When Lapo was reached, the city was found to be on holiday in honour of the visitors. That evening a great reception was given. The next day excursions were made to the famous sugar refineries thirty miles away, and to an aerodrome where two hundred aeroplanes executed manoeuvres and traced on the sky the name of the visitors' country. It is expected that the friendly intercourse so begun will prove of lasting benefit to both countries.

(Five Minutes.)

B

1. Which of the Islands did the swans live on?
2. What did Nan give the swans to eat? -
3. How many little swans were there? - -
4. What was the name of the child who went
with Tom to the park? - - - -

Tom and Nan liked to go to the park on the south side of the city where there was a lake with three islands. On the biggest of these, two swans had their home. They sometimes came for bread which the children threw into the water. One morning they had two little swans with them. Tom and Nan ran home to tell what they had seen.

When Dora reached her seventh birthday, her grandmother gave a party. She made a beautiful cake with icing on the top and on it she put pretty coloured candles—one for each year that Dora had lived. There were the same number of people at the party. They all sat round the table. Dora had to light the candles. They had sandwiches and strawberries and cream. When the candles were nearly burnt down, Grandma snuffed them out, and Dora cut the cake. After supper they played at hide-and-seek and musical chairs. One boy sang a song, and another did a conjuring trick with two handkerchiefs. The end of the party came only too soon.

1. How many people were at the party? -
2. What kind of fruit had Dora at her birthday party? - - - - -
3. With what things did the conjurer do his trick? - - - - -
4. How many candles were on the cake? -

Analogies.

Draw a line under the word which fits in best to finish these sentences.

- | | |
|---|--------------------------------|
| Tall is to Short as Giant is to | Man Big Dwarf Little. |
| Aunt is to Uncle as Sister to | Girl Brother Child Father. |
| Fish is to Swim as Bird is to | Fly Beak Cry Bark. |
| Minute is to Second as Hour is to | Day Week Minute Year. |
| Black is to Coal as White is to | Black Snow Hard Sky. |
| Pig is to Pork as Sheep is to | Beef Grass Mutton Calf. |
| Cat is to Kitten as Dog is to | Mouse cat Puppy Boy. |
| Today is to Tomorrow as Yesterday is
to | Today Morning Past Week. |
| Envelope is to Letter as Purse is to
..... | Pocket Money Key Coat. |
| Foot is to Boot as Hand is to | Arm Head Long Glove. |
| Third is to Three as Fourth is to | Fifth Five Four number. |
| Clothes is to Tailor as Bread is to
..... | Baker Butcher Corn White. |
| Blackboard is to Chalk as Notebook is
to | Slate Desk Pencil Write. |
| School is to Learning as Bedroom is
to | Singing Sleeping House
Bed. |
| Biting is to Teeth as Hearing is to
..... | Mouth Eyes Ears Good. |

This is to These as That is to	There Those Them
Tree is to Trunk as Flower is to ...	Grass Rose Stem Red.
Feather is to Bird as Fur is to	Coat Animal Brown Useful.
Down is to Up as Valley is to	Deep Hard Mountain Grass.
A is to B as F is to	A C Letter Alphabet.
Blue is Sky as Green is to	Grass Red Heavy Colour.
Cut is to Knife as Write is to	Book Writing Pen Read.
Turnip is to Vegetable as Violet is to	Tree Flower Blue small.
Station is To Train as Pier is to ...	Steamer, Free Safe Goal.
Margaret is to Maggie as Thomas is to	Boy Nance Tommy Short.

Completion.

Draw a line under the word which fits in best to the empty space in the same line of the story.

John White was a lucky
His father him a little
corner of garden and
..... pets to care for. He
kept safely underneath
a wire netting. There
eleven chickens and a
brown He had to feed
them twice a In the
morning he them meal
heated with water. In
the he scattered corn
and hung up lettuces that
they could just reach
if they up. They knew
him and came running
to him. He had a name
each. Six he after
his own friends, and
after people he had of
in story books.

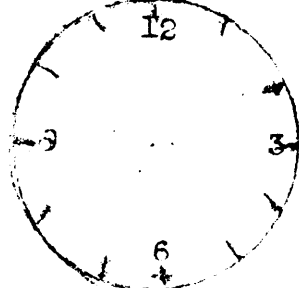
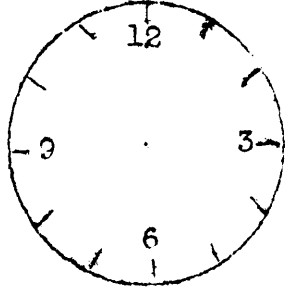
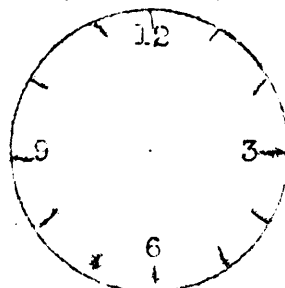
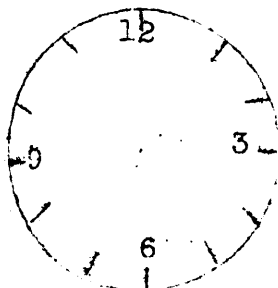
uncle boy box.
told for gave.
wood the girl.
twelve dogs except.
now sad them.
laughed were cow.
yellow and ran.
into rain hen.
month day asked.
a gave would.
cold green warm.
afternoon tomorrow yes.
two so fresh.
sorry them were.
thing but jumped.
well very such.
for gave duck.
that called book.
red six far.
read boy across.

Cross cut the words which have no connection with the others in the same line.

1. House Roof Walls Sea Windows.
2. Oil Motor Engine Spark Kitten.
3. Leaf Bud Bark Tree Sofa.
4. Moon Shop Counter Till Scales.
5. Minute Second Soup Hour Week.
6. Cinema Lantern Circus Film Screen.
7. Wet Mudd Rain Smcke Snow.
8. Desk Blackboard School Chalk Bedroom.
9. Dog Toffee Monkey Cat Cow.
10. Waterproof Train Motor Tramcar Carriage.
11. Sparrow Swallow Pig Dove Eagle.
12. Difficult Easy Young Polite Cows.
13. Town Streets Buildings Plough Tramcars.
14. Run Hurry Walk Happy Stand.
15. Field Flowers Earth Roots Wriggle.
16. One Five Shoes Six Three.
17. Perseverance Pride Peace Pigs Prudence.
18. This Jokes These That Those.
19. Monday, Wednesday Friday Sunday Monkey.
20. Coat Hat Piano Shoes Gloves.
21. Game Football Goal Score Jam.
22. Orange Bottle Apple Pear Plum.
23. Ears Mouth Giant Nose Throat.
24. Book Paper Print Strawberries Letters.
25. Cup Coat Jug Saucer Plate.

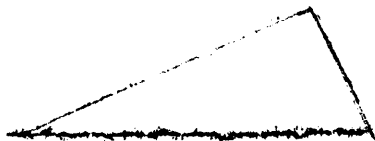
1. John was lighter than James, and James was as heavy as William. Who was the heaviest, John or William?

2. Draw in the hands to show the following times in the four clocks below: 8.30; 3.0; 12.30; 9.15.



3. Suppose it were Monday today, what day would it be the day after tomorrow?

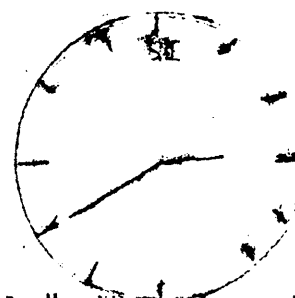
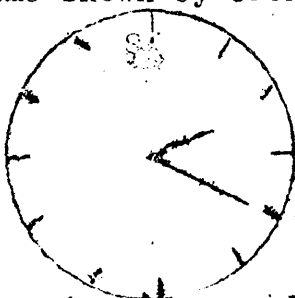
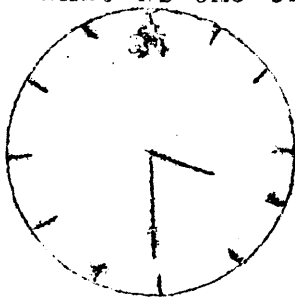
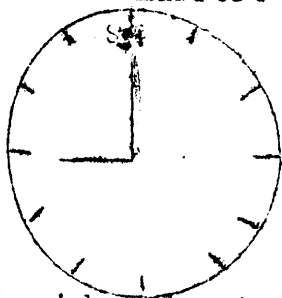
4. Imagine this turned over. Draw it as it would look then.



5. What number follows next but one after 14?

6. A man walked 3 miles south, 2 miles east, 3 miles north, and 4 miles west. How far is he from where he started, and in what direction?

7. Here are drawings of four clocks (a) (b) (c) (d) as seen in a mirror. What is the time shown by each?



8. j.bn ximn is a code message meaning "I am well." What does the following message mean? tp bsf uifz.

9. My birthday is on the 27th of December and I am 3 days younger than my cousin. Christmas day is on Sunday this year. On what day of the week does his birthday fall?

10. The first odd number is 1, the next is 3, the next is 5. What is the 100th number?

I. Cross out the words which have no connection with the others in the same line:

- 1. Red white frog blue green.
- 2. Blankets bed pillows hag sheets.
- 3. Book hen cock duck turkey.
- 4. Chair rose table stool desk.
- 5. March May June July Box.

II. Below is a story from which some of the words have been removed. These words have been placed on the right along with other words that have nothing to do with the story. Find the words which belong to the story and draw a line under them.

STORY.

A little boy going
 from school one
 found a silver
 on the pavement.
 He thought
 very

WORDS.

was home can
 day had yellow.
 green quickly sixpence
 box himself west
 cold some lucky.

III. Draw a line under the word which fits in best to finish these sentences.

Animal is to lion as Bird is to	Cat sparrow little mouse.
Jimmie is to James as Molly is to	Boy girl Mayy cow.
Brush is to Painting as Pencil is to	Drawing Listening
Dog is to Barking as Cat is to	Sight Yellow-
Honey is to sweet as Vingar is to	Scratching Mowing
	Kitten Puppy.
	Good Drink Water Sour.

IV. He took very good of
 them all. Whenever his
 came to see him. showed
 them pets and pointed
 out the ones had names
 that they knew.

looks care much
hens nicely friends
you he them
your her his
which then not.

Cross out the words which have no connection with the others in the same line.

1. House, Roof, Walls, Sea, Windows.
2. Monday, Wednesday, Friday, Sunday, August.
3. Desk, Blackboard, School, Chalk, Bedroom.
4. Game, Football, Jam, Goal, Score.
5. Orange, Bottle, Apple, Pear, Plum.
6. Leaf, Bud, Carpet, Bark, Tree.
7. Dog, Fish, Monkey, Cat, Cow.
8. Field, Flowers, Ship, Earth, Roots.
9. Waterproof, Train, Motor, Tramcar, Carriage.
10. One, Five, Third, Six, Three.
11. Minute, Second, Pound, Hour, Week.
12. Coat, Hat, Piano, Shoes, Gloves.
13. Moon, Shops, Counter, Till, Scales.
14. Cup, Coat, Jug, Saucer, Plate.
15. Ear, Mouth, Foot, Nose, Throat.
16. Cinema, Lantern, Crocus, Film, Screen.
17. Town, Streets, Buildings, Plough, Tramcar.
18. Run, Hurry, Walk, Band, Stand.
19. Book, Paper, Print, Straw, Letter.
20. This, Thing, These, That, Those.
21. Sparrow, Swallow, Rabbit, Dove, Eagle.

Name

Age : Years..... Months..... Birthday.....

School.....

Class..... Date.....

INSTRUCTIONS.

Cross out the words which have no connection with the others in the same line.

1. Red, White, Frog, Blue, Green.
2. Blankets, Bed, Pillows, Hat, Sheets.
3. Book, Hen, Rabbit, Duck, Turkey.
4. Chair, Rose, Table, Stool, Desk.
5. March, May, June, July, Box.

(5 minutes.)

22. Oil, Motor, Engine, Wheel, House.
 23. Wet, Mud, Rain, Smoke, Snow.
 24. Difficult, Easy, Young, Polite, Cow.
 25. Perseverance, Pride, Peace, Pioneer, Prudence.
-

The first sentence can be completed by one of the words to the right of it. Look for this word and draw a line under it. Do the same for each of the other sentences.

- | | |
|--|--|
| 1. FISH is to SWIM as BIRD is to - - | Fly, Beak, Cry, Bark. |
| 2. CLOTHES is to TAILOR as BREAD is to | Baker, Butcher, Corn, White. |
| 3. BITING is to TEETH as HEARING is to - | Mouth, Eyes, Ears, Sight. |
| 4. SCHOOL is to LEARNING as BEDROOM
is to - - - - - | Singing, Sleeping, House, Bed. |
| 5. AUNT is to UNCLE as SISTER is to - | Girl, Brother, Child, Father. |
| 6. MARGARET is to MAGGIE as THOMAS is
to - - - - - | Boy, Nance, Tommy, Short. |
| 7. FEATHER is to SPARROW as FUR is to - | Coat, Rabbit, Brown, Useful. |
| 8. A is to B as B is to - - - - - | A, C, Letter, Alphabet. |
| 9. BLACKBOARD is to CHALK as NOTE-
BOOK is to - - - - - | Slate, Desk, Pencil, Write. |
| 10. KITTEN is to CAT as CALF is to - | Child, Puppy, Cow, Chicken. |
| 11. THIRD is to THREE as FOURTH is to - | Fifth, Five, Four, Number. |
| 12. THIS is to THESE as THAT is to - - | There, Those, Them, Here. |
| 13. ENVELOPE is to LETTER as PURSE is to | Pocket, Money, Bag, Coat. |
| 14. CUT is to KNIFE as WRITE is to - - | Book, Writing, Pen, Read. |
| 15. PIG is to PORK as SHEEP is to - - | Beef, Lamb, Mutton, Calf. |
| 16. DOWN is to UP as VALLEY is to - - | Deep, Hard, Mountain, Grass. |
| 17. FOOT is to BOOT as HAND is to - - | Arm, Head, Long, Glove. |
| 18. TALL is to SHORT as GIANT is to - - | Man, Big, Dwarf, Little. |
| 19. MINUTE is to SECOND as HOUR is to - | Day, Week, Minute, Year. |
| 20. MINE is to COAL as WELL is to - - | Hole, Water, Good, Deep. |
| 21. SON is to FATHER as FATHER is to - | Mother, Uncle, Grandfather,
Daughter. |

Name

Age : Years.....Months..... Birthday.....

School.....

Class..... Date.....

INSTRUCTIONS.

The first sentence can be completed by one of the words to the right of it. Look for this word and draw a line under it. Do the same with each of the other sentences.

ANIMAL is to LION as BIRD is to	- -	Cat, Sparrow, Little, Mouse.
JIMMIE is to JAMES as MOLLY is to-	- -	Boy, Girl, Mary, Cow.
BRUSH is to PAINTING as PENCIL is to	- -	Drawing, Listening, Sight, Yellow.
DOG is to BARKING as CAT is to	- -	Scratching, Mewing, Kitten, Puppy.
HONEY is to SWEET as VINEGAR is to	- -	Good, Drink, Water, Sour.

(5 minutes.)

- | | |
|---|------------------------------------|
| 22. DECEMBER is to NOVEMBER as SATUR- | |
| DAY is to - - - - - | January, Friday, Sunday, Year. |
| 23. SQUARE is to CUBE as SURFACE is to - | Square, Solid, Figure, Geometry. |
| 24. DEATH is to DISEASE as EFFECT is to - | Consequence, Cause, Cure, Sadness. |
| 25. ART is to SCIENCE as BEAUTY is to - | Goodness, Brains, Truth, Right. |
-

Below is a story from which some of the words have been removed. These words have been placed on the right along with other words that have nothing to do with the story. Find the words which belong to the story and draw a line under each :—

John White was a lucky.....
His father.....him a little
corner of.....garden and
.....pets to care for. He
kept.....in a box covered
with wire netting. There.....
eleven.....chickens and a
brown..... He had to feed
them twice a..... In the
morning he.....them meal
heated with.....water. In
the.....he scattered corn
and hung up lettuces.....that
they could just reach.....
if they.....up. They knew
him.....and came running
to him. He had a name.....
each. Six he.....after
his own friends, and.....
after people he had.....of
in story books.

uncle, boy, girl.
told, for, gave.
wood, the, girl.
twelve, dogs, except.
now, sad them.
laughed, were, swam.
yellow, and, ran.
fish, rain, hen.
month, day, way.
gave, fed, saw.
cold, green, warm.
afternoon, to-morrow, kitchen.
two, so, fresh.
him, them, were.
wished, but, jumped.
well, very, name.
for, gave, John.
went, called, ran.
read, six, flew.
read, liked, seen.

Name

Age : Years..... Months..... Birthday.....

School.....

Class..... Date.....

INSTRUCTIONS.

Below is a story from which some of the words have been removed. These words have been placed on the right along with other words that have nothing to do with the story. Find the words which belong to the story and draw a line under each :—

A little boy going.....
 from school one.....found
 a silver.....on the pavement.
 He thought.....very

was, home, can.
 day, had, yellow.
 green, pavement, sixpence
 box, himself, west.
 cold, some, lucky.

(5 minutes.)

One.....he went
as.....to feed them,
and found that.....of
them were..... Alas !
a cat had.....them all.

night, day, year.
well, again, usual.
some, all, one.
well, ill, dead.
kittens, killed, purred.

ANSWER THESE QUESTIONS.

Question.

Answer.

1. Suppose it were Monday to-day, what day would it be the day after to-morrow?....

2. John was lighter than James, and James was as heavy as William. Who was the heavier, John or William? ...

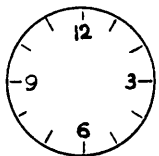
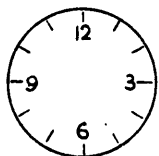
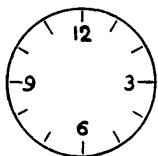
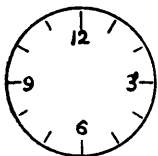
3. Draw in the hands to show the following times in the four clocks below:—8.30; 3.0; 12.20; 9.15

(a)

(b)

(c)

(d)



(a)

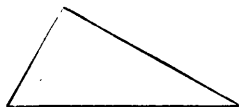
(b)

(c)

(d)

4. What number follows next but one after 14? ...

5. Imagine this turned over. Draw it as it would look then ...



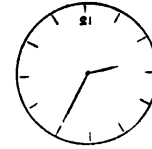
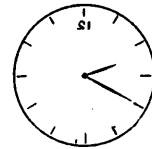
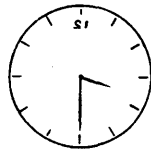
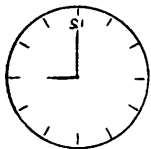
6. Here are drawings of four clocks (a), (b), (c), (d), as seen in a mirror. What is the time shown by each? ...

(a)

(b)

(c)

(d)



(a)

(b)

(c)

(d)

7. My birthday is on the 27th of December, and I am 3 days younger than my cousin. Christmas day is on Sunday this year. On what day of the week does his birthday fall? ...

8. A man walked 3 miles south, 2 miles east, 3 miles north, and 4 miles west. How far is he from where he started, and in what direction? ...

Name

Age : Years.....Months..... Birthday.....

School.....

Class..... Date.....

(15 minutes.)

9. j bn xfm is a code message meaning "I am well." What does the following message mean? tp bsf uifz

.....

10. The first odd number is 1, the next is 3, the next is 5. What is the 100th odd number?

.....

I. B.

Here are some questions to answer. Their answer can be found by reading the story below.. When you have found them, write them on your paper. Do not use more than three words for any answer.

A.

1. Where did the children sit?
2. What was the name of George's sister?
3. How many animals did she see?
4. In what did Geogge and his sister like to ride?

George and his sister liked to ride in a tram-car. One day they had a picnic right out of the town. They sat in a field, and Mary saw three cows and two horses. It was a very happy time.

II B.

Here are some questions to answer. Their answer can be found by reading the story below. When you have found them, write them on your paper. Do not use more than three words for any answer.

B.

1. What kind of tree is spoken of?
2. What was fastened to one of its branches?
3. At what time of day did Betty use the swing?
4. At which side of the house was the garden?

Betty Gray's house was not a big one; but in front of it there was a large garden which had an oak tree near the gate. On the strongest branch of this oak tree Betty's father had fastened a swing, and every day when she came home from school, she climbed into it and swung far up into the air. She could see right over the wall into the next garden and down the road to the shop beside the school.

III B.

Here are some questions to answer. Their answers can be found by reading the story below. When you have found them, write them on your paper. Do not use more than three words for any answer.

C.

1. How far was the village from the Deanwater?
2. How far was the school from the village?
3. How many children had skates besides Jack Chalmers?
4. In ~~what~~ district of England was the Deanwater?

One December in a little village in Yorkshire the word went round that the Deanwater was frozen over. The Deanwater was a pond two miles from the village and the way to it lay past the school. As soon as lessons were finished, the boys and girls hurried down the mile of road to the water. Seven of them had skates which they quickly put on. All went well until Jack Chalmers skated above a weak place in the ice and fell through. Someone threw him a coat, ^{to hold} while others ran to look for a rope. Luckily Jack was not afraid of water, and held on to the sleeve while he broke the ice and swam to shallow water. He was soon safe.

IV B.

Here are some questions to answer. Their answers can be found by reading the story

Here are some questions to answer. Their answers can be found by reading the story below. When you have found them, write them on your paper. Do not use more than three words for any answer.

D.

1. What mineral was found in Ragput?
2. How many men signed the treaty?
3. What was the word engraved on the fountain pens?
4. What was the name of the capital of Ragput?

The peace treaty between Ragput and Chabda was signed in 1927. Ragput, according to the

The peace treaty between Ragput and Chabda was signed in 1927, at Bstan, the capital of the former country. Ragput, according to the terms previously suggested agreed to give up one of its gold mines. The one chosen was that at Ragpada. This was the mine nearest the Chabdan frontier. Four representatives from each country signed the document, and at the conclusion of the ceremony each was presented with a golden fountain pen on which was engraved the name of the surrendered mine. Thereafter there was a great feast at which many speeches were made promising future friendliness between the two countries. Since that time many months have passed; but one is glad to notice that in spite of many possible sources of difficulty there have been signs of real co-operation between the two nations. There seems no reason why this should not continue.

V B.

Here are some questions to answer. Their answers can be found by reading the story below. When you have found them, write them on your paper. Do not use more than three words for any answer.

E.

1. How far from home did the boys go?
2. What was the name of the village near which they camped?
3. At what season of the year must they have gone from home?
4. In what direction would they need to travel from camp to reach the Wanda?

Four boys once went off to camp for a week-end. They travelled on bicycles with their luggage divided amongst them so as to share the weight. They journeyed from their home due north for twenty miles up the Wanda river, till they reached a little valley where a tributary flowed ^{into} the stream. This tributary they followed east for another ten miles until they reached an open meadow near Bemar. "This", they said, "will be our dormitory. We shall spend our days in the open. Fish we shall get in the river and bread from the village." So they camped there. Three of them set up the tent, while the fourth went on to see if he could buy bread and butter and tea. The shopkeeper told him where to find ripe nuts and brambles in the woods. He gathered as many as he could and added them to his store.

I B.

Cross out the words ~~which have no connection with the others~~ in the same line.

1. House, window, floor, river, doors.
2. Tuesday, Saturday, July, Thursday, Sunday
3. Blackboard, Duster, Ruler, School, Theatre.
4. Player, Cricket, Treacle, Bat, Ball.
5. Strawberry, Jug, Grape, Peach, Tomato.
6. Trunk, Branch, Hat, Tree, Twig.
7. Horse, Herring, Donkey, Lion, Mouse.
8. Garden, Flower, Boat, Seeds, Bud.
9. Cap, Bus, Carriage, Cart, Train.
10. Seven, Thirteen, Fourth, Ten, Eight.
11. Year, Day, Yard, Month, Minute.
12. Dress, Stockings, Organ, Boots, Hat.
13. Sun, Money, Shop, Counter, Goods.
14. Spoon, Waterproof, Knife, Fork, Ladle.
15. Finger, Hand, Eye, Nail, Thumb.
16. Theatre, Curtain, Buttercup, Stage, Lights.
17. Village, Road, Cottage, Subway, Cart.
18. Leap, Run, Walk, Chalk, Move.
19. Paper, Page, Type, Corn, Print.
20. Where, Whisky, Why, When, Whither.
21. Turkey, Duck, Hare, Hen, Goose.
22. Wheels, Train, Engine, Brake, Shed.
23. Sleet, Hail, Slippery, Smoke, Ice.
24. Rapid, Slow, Old, White, Bull.
25. Treachery, Tranquillity, Triumph, Trespasser, Truth.

II B.

The first sentence can be completed by one of the words to the right of it. Look for this word and draw a line under it. Do the same for each of the other sentences.

1. Station is to Train as Pier is to .. Steamer, Safe, Free, Goal.
2. Blue is to Sky as Green is to .. Grass, Red, Heavy, Colour.
3. Turnip is to Vegetable as Violet is to .. Tree, Flower, Blue, Small.
4. Black is to Coal as White is to .. Black, Snow, Hard, Sky.
5. Brother is to Sister as Uncle is to .. Boy, Aunt, Infant, Mother.
6. Bob is to Robert as Jenny is to .. Girl, Jim, Janet, Tall.
7. Coat is to Man as Fur is to .. Sparrow, Animal, Necessary, Black.
8. F is to G as G is to ... F, H, Alphabet, Letter.
9. Tree is to Trunk as Flower is to . Grass, Rose, Stem, Red,
10. Puppy is to Dog as Foal is to ... Child, Kitten, Horse, Calf.
11. Fifth is to Five as Seventh is to .. Third, Eight, Seven, Figure.
12. They is to Them as He is to .. That, Him, Her, There.
13. Today is to Tomorrow as Yesterday is to .. Today, Morning, Week, Past
14. Draw is to Pencil as Carve is to ... Lamb, Carving, Write, Knife
15. Cow is to Beef as Pig is to .. Mutton, Calf, Pork, Bull.
16. Hill is to Valley as High is to ... Mountain, Steep, Flower, Low.
17. Leg is to Stocking as Hand is to ... Foot, Finger, Short, Glove.
18. Little is to Big as Dwarf is to .. Woman, Long, Giant, Tiny.
19. Minute is to Hour as Second is to .. Day, Month, Minute, Twelve.
20. Peel is to Orange as Shell is to ... Gun, Egg, White, Sheep.
21. Hat is to Milliner as Cake is to ... Bakeshop, Icing, Baker, Sweet.
22. June is to May as Wednesday is to ... July, Tuesday, Month, Thursday.
23. Solid is to Surface as Cube is to ... Solid, Square, Shape, Trigonometrical.
24. Why is to How as Motive is to ... Result, Manner, Reason, Creek.
25. Virtue is to Courage as Vice is to .. Bravery, Stealing, Disease, Goddess.

II.B.

The first sentence can be completed by one of the words to the right of it. Look for this word and draw a line under it. Do the same with each of the other sentences.

- Animal is to Lion as Bird is to Cat, Sparrow, Mouse, Little.
Jimmie is to James as Molly is to .. Boy, Girl, Mary, Cow.
Brush is to Painting as Pencil is to .. Drawing, Listening, Sight, Yellow.
Dog is to Barking as Cat is to ... Scratching, Mewing, Kitten, Puppy.
Honey is to Sweet as Vinegar is to .. Good, Drink, Water, Soap.

(Five Minutes).

Below is a story from which some of the words have been removed. These words have been placed on the right along with other words that have nothing to do with the story. Find the words which belong to the story and draw a line under each:-

On washing days used to watch her making the clothes and hanging them up to in the sunshine. Sometimes she her in a little tub of her own and the handkerchiefs until they were as as they could be. One when they had finished, her John came in with his puppy-dog. It had been in the mud and was very "May we it too?" asked Peggy, "Oh, yes," her mother. "You may if it will you." They took little tub, set it up on a chair, filled it with water, and John up the puppy. What they had! The dog this was a new , and it tried to jump out. Each time it the splashed up. At last it escaped, itself well, and ran round and the garden.

Boy, Peggy, some.
 very, cat, mother.
 yellow, snow-white, out.
 dry, wash, ready
 took, now, helped
 tore, rubbed, were.
 clean, pink, soon.
 rain, book, day.
 sister, cousin, brown.
 new, purple, survived.
 flying, black, rolling.
 dirty, cook, clean.
 drown, wash, only.
 squealed, said, had.
 come down, let.
 Peggy's, George's, bright.
 snow, warm, soap,
 lifted, boiled, happy.
 alas, fun, grapes.
 barked, thought, and.
 game, master, dog.
 growled, moved, laughed.
 tears, well, water.
 danced, shook, bath.
 in, chased, round.

INSTRUCTIONS - III B.

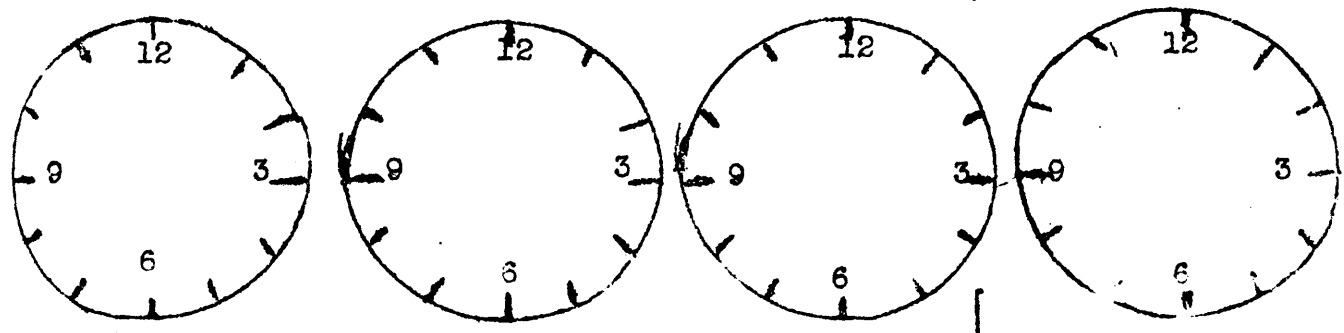
Below is a story from which some of the words have been removed. These words have been placed on the right along with other words that have nothing to do with the story. Find the words which belong to the story and draw a line under each:-

A little boy going
from school one found
a silver on the e . . :
pavement. He thought
very

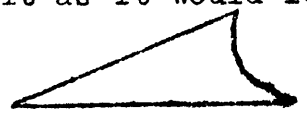
was, home, can.
day, had, yellow.
green, pavement, sixpence.
box, himself, west
cold, some lucky.

(Five minutes)

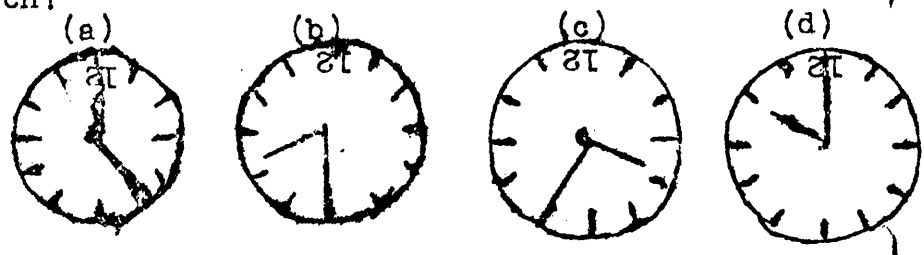
1. Suppose it were Saturday today, what day would it be the day after tomorrow?
2. Mary was older than Jean, and Jean was as old as Margaret. Who was the younger, Mary or Margaret?
3. What number follows next but one after 31?
4. Draw in the hands to show the following times in the clocks below:-
9.30.; 4.0; 7.15; 10.20.
9.30.



5. Imagine this turned over. Draw it as it would look then.



6. Here are drawings of four clocks, (a), (b), (c), (d), as seen in a mirror. What is the time shown by each?

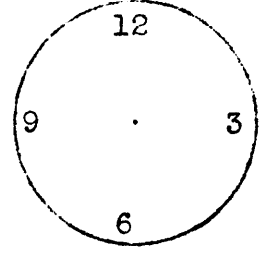
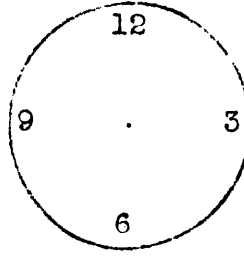
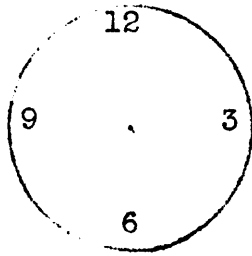
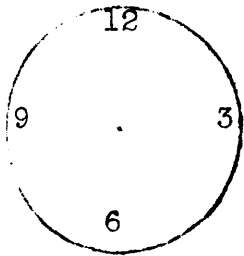


7. My birthday is on the 3rd of January, and I am three days older than my cousin. New Year's day is on Wednesday this year. On what day of the week does his birthday fall?
8. A man walked 3 miles east, 2 miles north, 3 miles west and 4 miles south. How far is he from where he started and in what direction?
9. aqhmf hs gdqd ~~is a~~ code message meaning "Bring-it here". What does the following message mean? vd ltrs mns.
10. The first odd number is 1, the next is 3, the next is 5. What is the 200th odd number?

Question.

Answer.

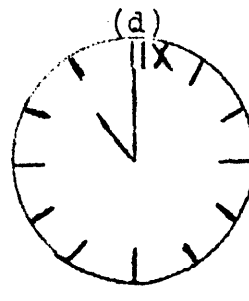
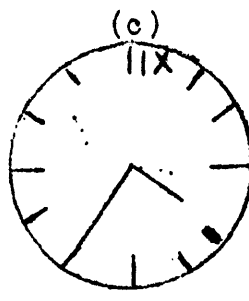
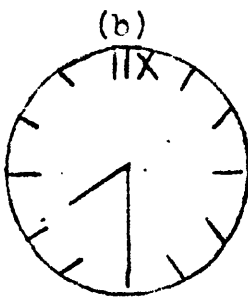
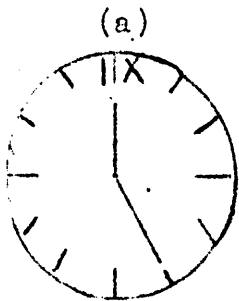
1. Suppose it were Saturday today, what day would it be the day after tomorrow?
2. Mary was younger than Jean, and Jean was as old as Margaret. Who was the older, Mary or Margaret?
3. What number comes next but one before 31?
4. Draw in the hands to show the following times in the clocks below: 9.30; 4.0; 7.15; 10.20.



5. Imagine this turned over. Draw it as it would look then.



6. Here are drawings of four clocks, (a), (b), (c), (d), as seen in a mirror. What is the time shown by each?



7. My birthday is on the 3rd of January, and I am three days older than my cousin. New Year's Day is on Wednesday this year. On what day of the week does his birthday fall?
8. A man walked 3 miles east, 2 miles north, 3 miles west and 4 miles south. How far is he from where he started and in what direction?
9. aqhmf h_g gdqd is a code message meaning "Bring it here". What does the following message mean? vd ltrs mns.
10. The first odd number is 1, the next is 3, the next is 5. What is the 200th odd number?

Cross out the words which have no connection with the others in the same line.

1. House, Window, Floor, River, Doors.
2. Tuesday, Saturday, July, Thursday, Sunday.
3. Blackboard, Duster, Ruler, School, Theatre.
4. Player, Cricket, Treacle, Bat, Ball.
5. Strawberry, Jug, Grape, Peach, Tomato.
6. Trunk, Branch, Hat, Tree, Twig.
7. Horse, Bird, Donkey, Lion, Mouse.
8. Garden, Flower, Boat, Seeds, Bud.
9. Cap, Bus, Carriages, Cart, Train.
10. Seven, Thirteen, Fourth, Ten, Eight.
11. Year, Day, Yard, Month, Minute.
12. Dress, Stockings, Violin, Boots, Hat.
13. Star, Money, Shop, Counter, Goods.
14. Spoon, Waterproof, Knife, Fork, Ladle.
15. Finger, Hand, Eye, Nail, Thumb.
16. Theatre, Curtain, Hyacinth, Stage, Lights.
17. Village, Road, Cottage, Subway, Cart.
18. Leap, Run, Walk, Love, Move.
19. Paper, Page, Type, Corn, Print.
20. Where, Which, Why, When, Whither.
21. Turkey, Duck, Hare, Hen, Goose.
22. Wheels, Train, Engine, Brake, Shed.
23. Sleet, Hail, Slippery, Smoke, Ice.
24. Quick, Slow, Old, White, Bull.
25. Treachery, Tranquillity, Triumph, Trespasser, Truth.

Name

Age : Years.....Months..... Birthday.....

School.....

Class..... Date.....

Address

INSTRUCTIONS.

The first sentence can be completed by one of the words to the right of it. Look for this word and draw a line under it. Do the same with each of the other sentences.

ANIMAL is to LION as BIRD is to	- -	Cat, Sparrow, Little, Mouse.
JIMMIE is to JAMES as MOLLY is to-	- -	Boy, Girl, Mary, Cow.
BRUSH is to PAINTING as PENCIL is to	- -	Drawing, Listening, Sight, Yellow.
DOG is to BARKING as CAT is to	- -	Scratching, Mewing, Kitten, Puppy.
HONEY is to SWEET as VINEGAR is to	- -	Good, Drink, Water, Sour.

(5 minutes.)

- | | | |
|--|---|--------------------------------------|
| 23. SOLID is to SURFACE as CUBE is to | - | Solid, Square, Shape, Trigonometry. |
| 24. WHY is to HOW as MOTIVE is to | - | Result, Manner, Reason, Greek. |
| 25. VIRTUE is to COURAGE as VICE is to | | Bravery, Stealing, Disease, Vicious. |
-

Below is a story from which some of the words have been removed. These words have been placed on the right along with other words that have nothing to do with the story. Find the words which belong to the story and draw a line under each :—

On washing days.....used to watch her.....making the clothes.....and hanging them up toin the sunshine. Sometimes she.....her in a little tub of her own and.....the handkerchiefs until they were as.....as they could be. One.....when they had finished herJohn came in with hispuppy-dog. It had beenin the mud and was very.....“ May weit too? ” asked Peggy, “ Oh, yes, ”.....her mother “ You may if it will.....you. ” They took.....little tub, set it up on a chair, filled it with.....water, and John.....up the puppy and put it in. What.....they had The dog.....this was a new , and it tried to jump out. Each time it.....

boy, Peggy, some.
busy, cat, mother.
black, snow-white, out.
dry, cool, wash.
washed, now, helped.
used, rubbed, were.
clean, pink, square.
rain, book, day.
sister, cousin, brown.
new, purple, survived.
flying, black, rolling.
dirty, cook, clean.
drown, wash, to-day.
and, said, had.
come, down, let.
Peggy's, George's, bright.
hotly, warm, soap.
lifted, gaily, jumped.
jolly, fun, time.
barked, thought, and.
game, master, dog.
cried, moved, laughed.

Name

Age : Years.....Months..... Birthday.....

School.....

Class..... Date.....

Address

INSTRUCTIONS.

Below is a story from which some of the words have been removed. These words have been placed on the right along with other words that have nothing to do with the story. Find the words which belong to the story and draw a line under each :—

A little boy going.....
 from school one.....found
 a silver.....on the pavement.
 He thought.....very

was, home, can.
 day, had, yellow.
 green, pavement, sixpence.
 box, himself, west.
 cold, some, lucky.

(5 minutes.,

the.....splashed up. At last
it escaped,.....itself well and
ran round and.....
the garden.

clothes, well, water.
danced, shook, bath.
in, chased, round.

ANSWER THESE QUESTIONS.

Question.

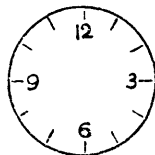
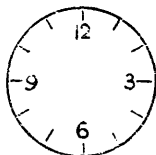
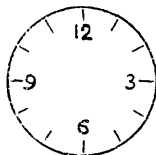
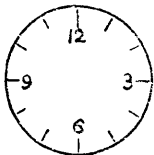
Answer.

1. Suppose it were Saturday to-day, what day would it be the day after to-morrow ?

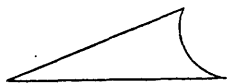
2. Mary was older than Jean, and Jean was as old as Margaret. Who was the younger, Mary or Margaret ?

3. What number follows next but one after 31 ?

4. Draw in the hands to show the following times in the clocks below :—9.30 ; 4.0 ; 7.15 ; 10.20.

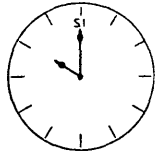
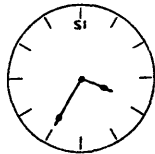
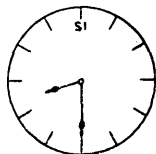
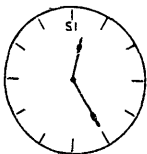


5. Imagine this turned over. Draw it as it would look then.



6. Here are drawings of four clocks, (a), (b), (c), (d), as seen in a mirror. What is the time shown by each ?

(a) (b) (c) (d)



(a)
(b)
(c)
(d)

7. My birthday is on the 3rd of January, and I am three days older than my cousin. New Year's day is on Wednesday this year. On what day of the week does his birthday fall ?

8. A man walked 3 miles east, 2 miles north, 3 miles west and 4 miles south. How far is he from where he started and in what direction ?

Name

Age : Years.....*Months*..... *Birthday*.....

School.....

Class..... *Date*.....

Address

(15 minutes.)

9. aqhmf hs gdqd is a code message meaning "Bring it here."
What does the following message mean? vd ltrs mns,....

.....

.....

10. The first odd number is 1, the next is 3, the next is 5. What is
the 200th odd number?

.....

APPENDIX V.

Directions for New Tests.

-oOo-

These Tests are devised to measure the child's ability to read silently a short passage of prose, and to answer questions upon it. Exactly five minutes are to be allowed to each of the five tests, counting from the moment the pupil begins to read to the moment he is told to stop writing.

Give each pupil a strip of paper two inches by eight inches for his answers. On this let him write his name, age, class and school.

Practice is provided in the form of a typed story with questions on it. Give this out to the class. Let them read it rapidly: then ask for the answer to the first question. Emphasise that this answer is to be written down: then let them write down the answer to the next one or two. Look over each child's paper rapidly, to be sure that the right method has been used: answers must be in a word or two, and there should be no transcription of questions or of story.

When each pupil knows what he is to do, give out the first sheet of the Test proper, laying it with the printed side down, and folded so that when it is turned over, only Test A is shown. Be sure that no pupil turns it over, or begins to read before the time. When all is ready, say: "When I tell you to turn over the printed paper, you will find another story and some questions." Do not unfold the printed paper but read the story, and write down on your strip of paper the answers to the questions you see. Work as steadily as you can, for you have only five minutes. Ready! Begin!"

Go through these preliminaries as quietly as possible - without excitement to the pupil.

Do not use the words 'test' or 'examination.'

Say nothing about handwriting.

After the real tests have begun, do not make any comment on the questions or give any other explanation.

Do not interfere with those who make mistakes of any kind, (except to fold back without ~~fixk~~ fuss any papers which are unfolded before the signal is given).

After five minutes set them similarly to answer Test B and later Test C. While the latter is being done, distribute the second sheet of Tests (D,E), laying them face down on the desk and folded so as to reveal only D when open. In the same manner allow five minutes for reading and writing answers to Test D and to Test E.

Directions for Scoring Reading Tests.

Enter the results on the Scoring Sheet. Take the date of birth from the Register, and state the age thus $8\frac{5}{12}$ (= 8 years and 5 months).

Correct answers are:-

TEST A.

1. Three or Jane, Jim, Nell.
2. Jim
3. Milk
4. Rabbit.

TEST B.

1. Biggest
2. Bread
3. Two
4. NAN

TEST C.

1. SEVEN
2. Strawberries
3. Handkerchiefs or 2 Handkerchiefs.
4. Seven.

TEST D.

1. 200 miles
2. Curryland
3. Sugar refineries or sugar refining.
4. Lapo

TEST E.

1. East
2. Apples or apples trees
3. Spring or Summer
4. South Andica.

No other answers are correct.

One mark is to be given for each correct answer.

Mark the right answers by I and wrong answers by O.

Write down the totals for each test separately.

Scottish Council for Research in Education.

Reading—Comprehension Measurement.

Directions for Use.

*By the courtesy of MISS C. M. FLEMING, M.A., Ed.B.,
and the Department of Psychology, Glasgow Training Centre.*

THESE Tests are devised to measure the child's ability to read silently a short passage of prose, and to answer questions upon it. *Exactly five minutes* are to be allowed to each of the *five tests*, counting from the moment the pupil begins to read to the moment he is told to stop writing.

Practice is provided on page 2 in the form of a story with questions on it. After all the pupils have filled in their names, etc., on the first page, tell them to look at page 2. Let them read it rapidly, then draw their attention to the answer to the first question. Tell them to write their answers to the other questions in the space provided, watching them to see that no pupil reverses the book to read the story on page 3. (Do not warn them against this unless you see it being done.) Look over each child's paper rapidly, to be sure that the *right method* has been used: answers should be in a word or two, and there should be no transcription of questions or of story.

Correct answers for the Practice Test are: (1) (A) Ship, (2) String, (3) (An) Old Sailor, (4) Summer.

When each pupil has answered these questions, and knows what to do, say to the class: "When I tell you to turn over the page, you will do so, and you will find another story marked A. and some questions. Read the story and write down on your paper the answers to the questions you see. Work as steadily as you can, for you have only five minutes. Ready! Begin!"

Go through these preliminaries as quietly as possible—without excitement to the pupil. Do not use the words "test" or "examination."

Say nothing about handwriting.

After the practice test has been finished and the real tests have begun, do not make any comment on the questions, or give any other explanation.

SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION.
READING—COMPREHENSION MEASUREMENT.

DIRECTIONS FOR SCORING.

Correct answers are:—

TEST A.

1. Three, or
Jane, Jim, Nell.
2. Jim.
3. Milk.
4. Rabbit.

TEST B.

1. Biggest, or Biggest
Island.
2. Bread.
3. Two, or Two Little
Swans.
4. Nan.

TEST C.

1. Seven, or Seven
People.
2. Strawberries.
3. Handkerchiefs, or
Two Handker-
chiefs.
4. Seven, or Seven
Candles.

TEST D.

1. 200 miles.
2. Curryland.
3. Sugar, Sugar refin-
eries, or Sugar
refining.
4. Lapo.

TEST E.

1. East.
2. Apples, or Apple-
trees.
3. Spring, or Summer.
4. South Andica, or
Andica.

No other answers are correct. Where complete sentences have been given, the paper is not to be included.

One mark is to be given for each correct answer. Write down the totals for each Test separately, on the scoring sheet prepared by the class teacher. Then make a summary of the results on the form shown overleaf.

These tests are to be given in the order 1,2,3,4.(see number on back of each).

Time to be allowed to each: 1. Five minutes
2. Five minutes
3. Five minutes
4. Fifteen minutes.

Let each pupil write his name, age etc., in the spaces provided on the back of the sheet. Explain what is to be done, using the practice material provided below these spaces. Work the first line with the pupils, then let them work the remaining two or three on their papers. Look over each child's paper, to be sure that the right method has been used: the words must be underlined or crossed out, not written in. When each pupil ^{knows} what he is to do, say to the class: "You will find the same kind of exercises on the inside pages. When I say "Begin!" open out your paper, and work as steadily as you can, for you will have only five minutes. Ready! Begin!"

Be sure that no pupil begins before the time or reads the Test proper before he is told to. After the real Test has begun do not make any comment on the questions or give any explanation. ^{exactly} Stop them after five minutes.

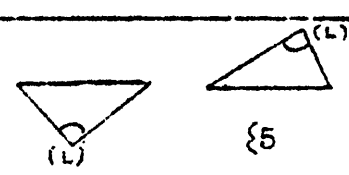
There is no practice material for Test 4. After each pupil has written his name on the outside, say, "Put crosses to show the right hand and the left ear of the little man drawn below." Allow 30 seconds, then say, "Inside are some printed questions. Do not look until I tell you. You have to write your answers in the space on the right. Do as many as you can. Try to answer each as you read it. Ready! Open out your papers and begin!" Make no other comment on the questions and give no explanations. Stop them after fifteen minutes.

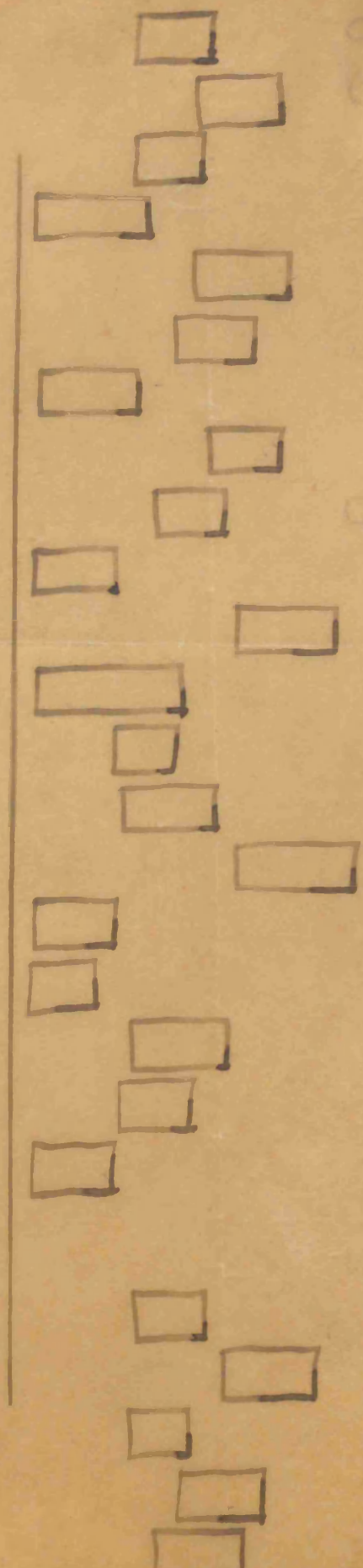
Note the time of the day at which the tests are given.

DIRECTIONS for SCORING TESTS of GENERAL ABILITY.

Enter the results on the Scoring sheet. Take the date of birth from the class register, and state the age thus - 8⁵/₁₂ (= 8 years and 5 months).

One mark is to be given for each correct answer in tests 1, 2 and 3; and 5 for each in test 4. Correct answers, and allotment of marks for test 4, are:-

<u>Test 1.</u>	<u>Test 2.</u>	<u>Test 3.</u>	<u>Test 4.</u>
1. Sea	1. Fly	1. Boy	<u>Answers.</u> <u>Marks.</u>
2. August	2. Baker	2. Gave	1. Wednesday { 5
3. Bedroom	3. Ears	3. The	2. William 5
4. Jam	4. Sleeping	4. Twelve	3. { 1 mark for each clock correct, but 5 marks for 4.
5. Bottle	5. Brother	5. Them.	4. 16 { 5
6. Carpet	6. Tommy	6. Were	5.  { 5
7. Fish	7. Rabbit	7. Yellow	(1) a right angle.
8. Ship	8. C.	8. Hen	6. 3. { 1 mark for each correct but 5 marks for 4.
9. Waterproof	9. Pencil	9. Day	8. 8.30
10. Day Third.	10. Cow	10. Gave	9. 40
11. Pound	11. Four	11. Warm	9. 25
12. Piano	12. Those	12. Afternoon	7. Saturday 5
13. Moon	13. Money	13. So	8. 2 miles west. { 2 marks for West 3 marks for 2.
14. Coat	14. Pen	14. Them.	9. So are they. { 3 marks for 1 " " are 1 " " they
15. Foot	15. Mutton	15. Jumped	10. 199 { 5
16. Crocus	16. Mountain	16. Well	
17. Plough	17. Glove	17. For	
18. Band	18. Dwarf	18. Called	
19. Straw	19. Minute	19. Six	
20. Thing	20. Water	20. Read	
21. Rabbit	21. Grandfather	21. Day	
22. House	22. Friday	22. Usual	
23. Smoke	23. Solid	23. All	
24. Cow	24. Cause	24. Dead	
25. Pioneer	25. Truth	25. Killed.	



Sample of Stencils.

APPENDIX VI.

Detailed lists showing Number of Pupils
and Percentage of Necessitous Children in
Glasgow Schools.

-oOo-

APPENDIX.

Detailed lists showing Number and Percentage of Necessitous Children in Glasgow Schools.

A. No. Pupils requiring Food or Clothing.

School.	Pupils. January 27th 1928	February 1st. 1929.	Numbers Tested.		
			Boys	Girls	Total.
Our Lady and St. Francis R.C.Elem.	265	280			
Our Lady and St. Francis R.C.H.G.	555	558			
Onslow Drive Adv. Central.	688	713			
St. Thomas' R.C.	186	208			
Whitehill Secondary.	1285	1322			
Allan Glen's Elem.	45	31			
Allan Glen's H.G.	610	579			
Garnethill Convent R.C.Elem.	235	234			
Garnethill Convent R.C.H.G.	362	335			
St. Mungo's Sec.R. C.Elem.	179	184			
St. Mungo's Sec.R. C.H.G.	513	462			
St. Mungo's Sec. Annexe.	444	456			
East Bank Sec.H. G.	376	443			
St./					

No Pupils requiring Food or Clothing.

School.	Number of Pupils.		Number Tested.		
	Jan. 27th 1928.	Feb. 1st 1929.	Boys	Girls	Total
St. Vincent for Blind and Deaf Mutes.	75	73			
Albert H.G.	341	400			
Hillhead High Elem.	769	812			
Hillhead High H.G.	604	623		32	32
Millerston.	229				
Hyndland Sec. Elem.	635	616			
Hyndland Sec. H.G.	783	778			
Notre Dame Elem.R.C.	322	316			
Notre Dame Sec.R.C.	432	449			
Springboig Holiday.	52	103			
High School Junior.	383	381			
High School Senior.	720	705			
Girls' High School Junior.	415	416			
Girls' High School Senior.	628	617			
Kent/					

No Pupils requiring Food or Clothing.

School.	Number of Pupils.		Number Tested.		
	Jan. 27th 1928.	Feb. 1st 1929.	Boys	Girls	Total
Kent Road H.G.	349	270			
Woodside Secondary.	847	890			
Hillfoot Holiday	66	50			
Victoria Drive H.G.	264	281			
Annette Street.	571	588	24 19 17	20 23 26	44 42 43
Battlefield.	1012	966			
Mt. Florida.	923	1069	26 13	20 27	46 40
Queen's Park Sec.	1142	1203			
Govan Sec.H.G.	720	818			
Cardonald.	370	380			
Cuthbertson.	1236	1150			
Langside Deaf.	75	68			
Mosspark.	568	654			
Pollockshields Sec.Elem.	716	761			
Pollockshields Sec.H.G.	491	529			
Shawlands Sec. Elem.	1023	1010			
Shawlands/					

No Pupils requiring Food or Clothing.

School.	Number of Pupils.		Number Tested		
	Jan. 27th 1928.	Feb. 1st 1929.	Boys	Girls	Total
Shawlands Sec. H.G.	563	542			
Bellahouston Sec,Elem.	625	655			
Bellahouston Sec.H.G.	612	609			
Renfrew Street Semi Deaf.	71	69			
Bankhead.	-	239			
Cloberhill.	-	234			
Riddrie Annexe.	-	491.			
Total Elem.	11046	12038	99	116	215
Total Sec.	13329	13582		32	32

B. Average of ~~0.1~~ Percent of Pupils Requiring Food or Clothing.

School.	Jan. 27th 1928.		Feb. 1st 1929.	Number Tested			
	Pupils	Percentage Necessitous		Pupils	Percentage Necessitous	Boys	Girls
Bernard St. Adv. Central.	815	.61	902	.22			
Dalmarnock.	1243	.88	1239	.56			
John St. Elem.	1179	.42	1111	0.0			
John St. H.G.	1137	.35	1113	.27			
Alexandra Parade.	1110	.36	1042	.38			
Golfhill.	1016	.98	969	.72			
Haghill.	1274	.08	809	.49			
Provanside H. G.	444	.45	461	0.0			
St. David's.	1697	.77	1637	.31		42	42
Springfield.	1646	.73	1625	.98			
Wellshot.	1383	.65	1386	.14			
Hydepark.	1024	.58	1006	.29			
Petershill.	1078	.18	1060	1.51	28	-	28
Springburn.	972	.51	898	.89			
Wellfield.	821	.61	1104	.36			
Dowanhill.	1042	.29	968	.21			
Hamilton Cres. Adv. Central.	701	.43	702	.14			
Kent/							

Average of ~~0.1~~ Percent of Pupils Requiring
Food and Clothing.

School.	Jan. 27th 1928.		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girl	Total
Kent Rd.H.G. Elem.	1357	.29	1308	0.0			
Overnewton.	746	.26	691	.29			
Willowbank.	840	.24	794	.25			
Dunard Street.	1232	.08	1205	.17			
Garrloch.	1083	.27	985	.51	8 20	26 20	34 40
North Kelvin- side Sec.	1414	.07	1416	.14			
Possilpark.	1341	.22	1541	1.23			
Shakespeare.	803	.74	801	.62			
Thornwood.	1037	.38	941	0.0			
Victoria Dr. H.G.Elem.	826	.24	853	0.0			
Yoker.	471	.42	550	0.0			
Kennedy St.	1046	.47	990	1.11			
Napiershall.	1235	.24	1193	.42			
St. George's Rd. Adv. Central.	711	.28	768	.26			
Calder Street.	1203	.24	1346	.07	17	14	31
Cathcart.	402	.75	379	0.0			
Holmlea/							

Average of .01-1 Percent of Pupils Requiring
Food and Clothing.

School.	Jan. 27th 1928		Feb. 1st 1929.		Number Tested.		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
Holmlea.	763	.13	733	0.0.			
Holy Cross R.C.	865	.58	928	.86			
Victoria.	1036	.28	1057	.38	268	272	540
Abbotsford.	1350	.74	1603	.99			
Wolseley St.	1300	.84	1215	.82			
Govan Secondary Advanced.	531	.37	721	.14			
Greenfield.	1101	.09	1085	.37			
Oatlands.	1133	.97	1118	.54			
Hill's Trust.	1129	.79	1071	.75	22 21	19 30	41 51
Ibrox.	860	.69	851	.70	17 20	15 23	32 43
Craigton.	521	.38	464	0.0			
Langside.	727	.27	699	0.0.			
Strathbungo H.G.	951	.10	1009	.10			
Kinning Park.	1345	.66	1330	.15	26	18	44
Lambhill St.	1629	.73	1591	.82			
Scotland St.	1032	.29	949	.21			
Balsnagray.	923	.11	872	.57			
Calton/							

Average of ~~0~~ 1 percent of Pupils Requiring
Food and Clothing.

School.	Jan. 27th 1929.		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
Calton R.C. Adv. Central.	584	.51	634	.31			
Eastbank Sec. Elem.	882	0.0	934	.86			
Albert H.G. Elem.	572	0.0	525	.19			
Garnetbank.	859	6.0	824	.24			
Hopehill Rd. Day Industrial	89	0.0	77	1.29			
Scotstoun.	782	0.0	788	.25			
Temple.	1230	0.0	580	.34			
Elderpark.	1524	0.0	1477	.07			
Sacred Heart R.C. Adv. Cen.	600	1.18	551	.73			
Thomson St.	941	1.06	1051	.66			
Finnieston.	1413	1.20	1369	.66			
St. Agnes' R.C.	636	1.41	578	.52			
Cleland St.	604	.82	-	-			
Adelphi Ter. Adv. Central.	592	1.01	630	.48			
Hayfield.	1284	1.31	1311	.61			
Mathieson St.	664	1.20	615	.16			
Copland Road.	1232	1.29	1226	.33			
Fairfield/							

Average of ~~01-1~~ Percent of Pupils Requiring
Food and Clothing.

School.	Jan. 27th 1928.		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
Fairfield.	1202	1.08	1112	.81			
Sir John Max- well.	987	1.01	1260	.40			
Lorne Street.	1255	1.43	1340	.52			
St. Francis' R.C. Annexe.	-	-	634	.79			
St. Roch's R. C. Adv. Central	-	-	553	.72			
Total Elem.	60977		59698		447	479	926
Total Adv.	8480		9460				

C. Average of 1.01-2 Percent of Pupils Requiring
Food or Clothing.

School.	Jan. 27th 1928.		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
St. Alphonsus' R.C.	1130	1.94	1177	1.36			
St. James's	1145	1.65	1110	1.35			
Annfield.	1403	1.71	1255	1.43			
Dennistoun.	713	1.10	685	1.46			
St. Andrew's R.C.	530	1.13	500	1.40			
St. Mungo's R.C.	1908	1.62	1687	1.30			
Townhead.	1228	1.05	1173	1.02			
London Road.	928	1.61	932	1.72	21	24	
Newlands.	1387	1.44	1252	1.60	17 25	27 21	
Quarry Brae.	1133	1.76	1110	.36	26 22	13 18	
St. Mark's R. C.	641	1.87	676	2.07			
Shettleston.	952	1.57	944	.63			
Colston.	640	1.40	640	1.87			
Elmvale.	1045	1.53	982	.71	23 19 20	20	
St. Aloysius R.C. (Springburn).	1345	1.56	1332	1.95			
St. Rollox/							

Average of 1.61-2 Percent of Pupils Requiring Food or Clothing.

School.	Jan. 27th 1928.		Feb. Pupils	1st 1929 Percentage Necessitous	Number Tested		
	Pupils	Percentage Necessitous			Boys	Girls	Total
St. Rollox.	1244	1.28	1183	1.61			
St. Patrick's R.C.	2516	1.62	2500	2.16			
Washington St.	1315	1.97	1272	1.88			
East Park.	651	1.99	612	1.96	18	19	
Gairbraid.	638	1.56	632	.47	24 22 13 27	19 15 23 16	
Keppochhill.	867	1.51	836	1.20	24	25	
Maryhill.	863	1.04	860	1.51			
St. Charles' R.C.	800	1.37	810	1.23			
Springbank.	1056	1.51	1052	1.14			
Whiteinch.	1163	1.89	1114	1.62			
Camden St.	1586	1.45	1600	1.56	17 18	16 24	
St. Anthony's R.C.	1406	1.56	1369	1.10			
St. Constantine's R.C.	891	1.45	914	1.10			
Levern.	220	1.36	220	.91			
St. Conval's R.C.	718	1.25	700	.86			
Rutland Cres.	654	1.98	621	1.13			
St. Francis' /							

Average of 1.01-2 Percent of Pupils Requiring
Food or Clothing.

School.	Jan. 27th 1928.		Feb. 1st 1929.		Number Tested.		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
St. Francis' R.C.	2986	2.00	2395	1.88			
Our Lady and St. Margaret 's R.C.	1896	2.00	1895	1.48			
Knightswood.	-	-	488	1.23			
St. Columbas' R.C. Annexe.	-	-	494	1.82			
Provanmill.	-	-	229	1.31			
Barrowfield.	639	2.03	647	.62			
Bluevale.	668	2.30	690	1.16			
Martyrs.	739	2.30	698	1.58			
Parknead.	596	2.85	622	1.11	27 16	17 28	
Tollcross.	518	2.70	506	.79			
St. Peter's R.C.	1967	2.13	1991	1.86			
Kelvinnaugh.	471	2.54	479	.63			
Rosevale St.	1244	2.17	1191	1.84			
St. Paul's R.C. (White-inch)	636	2.04	647	1.70			
Gorbals.	1043	2.58	1099	.82			
Crookston St./							

Average of 1.01-2 Percent of Pupils Requiring
Food and Clothing.

School.	Jan 27th 1928.		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous.	Boys	Girls	Total
Crookston St.	1298	2.31	1245	1.12	13 13 10 19	10 12	
St. Paul's (Shettleston R.C.)	582	3.43	626	.48			
Lochfauld.	79	0.0	72	2.78			
Stratnclyde.	1258	.89	1219	1.23			
St. Anne's R.C.	1320	.90	1304	1.30			
Church St.	612	.98	616	1.62			
Dundas Vale. R.C.	1002	1.0	963	1.66			
Rose Street Special R.C.	72	.97	83	1.20			
Shields Road.	408	.73	415	1.44			
Totals.	52750		52364		434	347	781

D. Average of 2.01-3 Percent of Pupils
Requiring Food or Clothing.

School.	Jan. 27th 1928.		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage. Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
Green Street Day Industrial.	116	2.58	97	3.09			
Tureen Street.	1015	2.85	993	2.52	19 14	13 17	
Wellpark.	442	2.26	426	1.88			
St. Michael's R.C.	1391	2.94	1392	2.59			
St. Roch's R.C.	1777	2.53	1725	2.55	25	19	
Grove Street.	775	2.06	804	2.61			
Milton.	718	2.64	663	2.56			
Oakbank.	1350	2.14	1288	2.72	18 27 24	21 23 21	
St. Columba's R.C.	1037	2.13	986	3.75			
St. John's R.C.	1794	2.78	1865	1.77			
Centre St.	778	2.69	840	2.02			
Queen Mary St.	1222	3.35	1193	1.84			
St. Mary's Calton R.C.	2256	3.10	2233	2.42			
St. Mary's Maryhill R.C.	1122	3.20	1149	1.74			
St. Joseph's R.C.	1972	3.29	1682	2.38			
Harmony/							

Average of 2.01-3 Percent of Pupils
Requiring Food or Clothing.

School.	Jan. 27th 1928		Feb. 1st 1930.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
Harmony Row.	735	3.94	728	1.92	25 17	23 29	
St. Saviour's R.C.	1358	3.46	1362	2.06			
St. Luke's R.C.	1398	3.21	1336	2.39			
Cranstonhill.	268	3.73	254	1.58			
Middlefield. Special.	237	4.22	237	1.26			
Summerton Special.	302	4.30	317	.94			
Possil.	438	.68	468	5.13			
Rumford St.	1025	1.76	1006	2.88			
Dovenill.	500	1.60	476	2.52			
Townnead Special.	85	1.18	118	3.37			
Stewartville.	705	1.70	676	2.37			
Polmadie.	496	1.41	483	3.10			
Total.	25312		24797		169	166	335

E. Average 3.01-4 Percent of Pupils Requiring Food or Clothing.

School.	Jan. 27th 1928		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
Sacred heart R.C.	2639	3.64	2558	3.52			
Campbellfield.	766	3.30	733	3.00			
Hollybrook Special Street.	475	3.57	448	3.79			
Percy Street Special.	325	4.00	345	2.02			
Sacred Heart R. C. Special Annexe.	112	4.46	114	3.51			
Camlachie.	681	4.84	641	1.86	24 20	17 17	
Broomloan Rd.	879	4.55	869	1.61			
Rosemount.	608	5.42	623	2.41			
Rottenrow Day Industrial.	120	6.66	105	0.0			
Hollybrook Annexe.	45	6.66	40	0.0			
Eastbank Annexe.	121	2.47	82	4.88			
Yorkhill Special.	119	2.52	125	4.00			
Total	6890		6683		44	34	

Average 4.01-5 Percent of Pupils Requiring
Food or Clothing.

School.	Jan. 27th 1928.		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
Kennyhill Special.	549	4.55	520	4.23			
St. Aloysius' R.C. Bishop St.	990	4.94	780	3.97			
Pollock.	288	4.51	-	-			
Burnside Special.	525	5.52	499	4.20			
Greenhead Special.	235	5.1	246	4.06			
Rockvilla.	716	6.7	733	1.77			
St. Mary's Episcopal.	311	2.89	309	6.15			
Total.	3614		3087				

Average 5.01-6 Percent of Pupils Requiring
Food or Clothing.

School.	Jan. 27th 1928		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
Henderson St. Special.	143	5.56	195	4.61			
Bobbie's Loan	576	7.11	494	3.44	13 15 15 11	15 11 19 11	
Total.	719		689		54	56	110

Average 7.01-8 Percent of Pupils Requiring
Food or Clothing.

School.	Jan. 27th 1928		Feb. 1st 1929.		Number Tested		
	Pupils	Percentage Necessitous	Pupils	Percentage Necessitous	Boys	Girls	Total
St. Bernard's R.C.	119	10.08	119	5.88			

List of Authors and Titles to which References
are made in the Text.

—oO—

1. Alderman, G.H. "Improving Comprehension Ability in Silent Reading." J.of Educ.Res. Jan.1926, pp.11-21.
2. Anderson, R.E. "A Preliminary Study of the Reading Tastes of High School Pupils." Pedag.Sem. Vol.XIX 1912. pp.438-460.
3. Arthur, G. "A Quantitative Study of the Results of Grouping First Grade Classes according to Mental Age." J.of Educ.Res. Oct.1925, pp.173-185.
4. Asker, Wm. "The Reliability of Tests Requiring Alternative Responses." J.of Educ.Res. March 1924, pp.234-240.
5. Averill, L.A. and Mueller, A.D. "Physical and Mental Measurements of Fraternal Twins." Pedag.Sem. Vol.XXXII, 1925, pp.612-627.
6. Averill, L.A. and Mueller, A.D. "The Effect of Practice on the Improvement of Silent Reading in Adults." J.of Educ.Res. Feb.1928, pp.125-129.
7. Baldwin, Bird T. "The Learning of Delinquent Adolescent Girls as shown by a Substitution Test." J.of Educ.Psychol. Vol.IV, 1913, pp.317-332.
8. Baldwin, B.T. "The Relation between Mental and Physical Growth." J.of Educ.Psychol. Vol.XIII, 1922, pp.193-203.
9. Baldwin, B.T. and Stecher, L.I. "Additional Data from Consecutive Stanford-Binet Tests." J.of Educ.Psychol. Vol.XIII, 1922, pp.556-560.
10. Baldwin/

10. Baldwin, B.T. "The Educational Growth of Elementary School Children."
J.of Educ.Psychol. Vol.XIX, 1928, pp.521-535.
11. Ballard, P.B. "Norms of Performance in Reading."
J.of Exper.Ped. Vol.III. 1915-16, pp.153-161.
12. Ballard, P.B. "Silent Reading."
J.of Exper.Ped. Vol.V. 1919-20, pp.174-178.
13. Ballard, P.B. "Group Tests of Intelligence."
(Hodder and Stoughton, 1922).
14. Ballard, P.B. "Mental Tests." (Hodder and Stoughton, 1920).
15. Ballou, F.W. and Hardy R.L. "Ways and Means of Putting an Improved Reading Program into Operation."
Twenty-fourth Yearbook of Nat.Soc.for Study of Educ., 1925, Part I, ch.XI, pp.291-304.
16. Barr, A.S. and Gifford, C.W. "The Vocabulary of American History." J.of Educ.Res. Sept.1929, pp.103-121.
17. Barry, C.S. "The Classification by Tests of Intelligence of Ten Thousand First Grade Pupils."
J.of Educ.Res. Oct.1922, pp.185-203.
18. Bateman, W.G. "The Language Status of Three Children at the Same Ages." Pedag.Sem. Vol.XXIII, 1916, pp.211-240.
19. Bateman, W.G. "Papers on Language Development."
Pedag.Sem. Vol.XXIV, 1917, pp.391-398.
20. Beik, A.K. "Physiological Age and School Entrance."
Pedag.Sem.Vol.XX, 1913, pp.277-321.
21. Bell/

21. Bell, J.C. and Sweet, I.B. "The Reading Interests of High School Pupils."
J. of Educ. Psychol. Vol. VII, 1916, pp. 39-45.
22. Bell, J.C. "Group Tests of Intelligence: an Annotated List." J. of Educ. Psychol. Vol. XII. 1921, pp. 103-108.
23. Bird, G.E. "The Devious Path of Slow Work."
J. of Educ. Psychol. Vol. XIII, 1922, pp. 50-53.
24. Bird, Grace E. "The Rhode Island Intelligence Test."
J. of Educ. Res. Dec. 1923. pp. 397-403.
25. Bishop, Omen. "What is Measured by Intelligence Tests?"
J. of Educ. Res. Jan. 1924, pp. 29-38.
26. Blanchard, A.A. "Story Telling as a Library Tool."
Pedag. Sem. Vol. XVI, 1909, pp. 351-356.
27. Board of Education. "Report of the Consultative Committee on Psychological Tests of Educable Capacity and their possible Use in the public System of Education."
H.M. Stationery Office, London, 1924.
28. Bolenius, E.M. "The Boys' and Girls' Readers."
(Houghton Mifflin Company, Boston, 1923).
29. Bolenius, E.M. "First Grade Manual," and "Second and Third Grade Manual." (Houghton Mifflin Company, Boston, 1923).
30. Book, W.F. "Analysis of the Task of Learning to Read."
J. of Educ. Res. Jan. 1930, pp. 1-6.
31. Book/

31. Book, W.F. "Various Methods of Mastering New Words while learning to Read."
J. of Educ. Res. Feb. 1930, pp. 81-94.
32. Bowie, S. and Laws, A.R. "A School Intelligence Test."
Forum of Educ. Vol. III, 1925, pp. 134-140.
33. Boyd, W. "The Development of a Child's Vocabulary."
Pedag. Sem. Vol. XXI, 1914, pp. 95-124.
34. Boyd, W. "An Exploration of the True-False Method of Examination." Forum of Educ. Vol. IV, 1926, pp. 34-38.
35. Brandenburg, G.C. "The Language of a Three-Year-Old Child." Pedag. Sem. Vol. XXII, 1915, pp. 89-120.
36. Brandenburg, G.C. and J. "Language Development during the Fourth Year." Pedag. Sem. Vol. XXIII, 1916, pp. 14-29.
37. Brandenburg, G.C. and J. "Language Development during the Fourth Year. The Conversation."
Pedag. Sem. Vol. XXVI, 1919, pp. 27-40.
38. The British Association for the Advancement of Science,
Report of the Eighty-Third Meeting, 1913.
39. Bronner, Augusta. "The Psychology of Special Abilities and Disabilities." (Little, Brown and Co., Boston, 1917).
40. Brooks, S.S. "Improving Schools by Standardized Tests."
George and G. Harrap and Co. Ltd. 1922.
41. Brooks, F.D. "The Applied Psychology of Reading."
(D. Appleton and Company, New York, 1925).
42. Brown/

42. Brown, H.A. "The Measurement of the Ability to Read."
Bulletin No.1. Bureau of Research, Concord, New
Hampshire.
43. Brown, H.A. "Formulation of Method in Reading."
J.of Educ.Res. June 1920, pp.436-451.
44. Brown, G.L. "Day Dreams: A Cause of Mind Wandering and
Inferior Scholarship." J.of Educ.Res. April 1927, pp.276-279.
45. Brueckner, L.J. and Cutright, Prudence. "A Technique for
Measuring the Efficiency of Supervision."
J.of Educ.Res. Dec. 1927, pp.323-331.
46. Buckingham B.R. and Monroe, W.S. "A Testing Program for
Elementary Schools." J.of Educ.Res. Sept.1920, pp.521-532.
47. Buckingham, B.R. "Suggestions for Procedure following a
Testing Program - I. Re-classification."
J.of Educ.Res. Dec. 1920, pp.787-801.
48. Buckingham, B.R. "An Experiment in Promotion".
J.of Educ.Res. May 1921, pp.326-335.
49. Buckingham, B.R. "What should Children Read in School?"
J.of Educ.Res. Jan.1924, pp.13-21 and Feb. 1924, pp.109-116.
50. Buckingham, B.R. "Standards in Education."
J.of Educ.Res. June 1924, pp.1-18.
51. Buckingham, B.R. "The Public School Teacher as a Research
Worker." J.of Educ.Res. April 1925, pp.235-243.
52. Buckingham, B.R. "A Brief Method of Evaluating Test Material."
J.of Educ.Res. March 1929, pp.159-168.
53. Burgess/

53. Burgess, M.A. "The Measurement of Silent Reading."
Department of Education, Russell Sage Foundation,
New York City. 1921.
54. Burgess, M.A. "Controlling Factors in the Measurement of
Silent Reading."
Twentieth Yearbook of Nat.Soc.for Study of Educ.
Part II. 1921, pp.25-38.
55. Burks, B.S. "On the Inadequacy of the Partial and Multiple
Correlation Technique."
J.of Educ.Psychol. Vol.XVII, 1926, pp.532-540 and
pp.625-630.
56. Burks, B.S. and Kelley, F.L. "Statistical Hazards in Nature -
Nurture Investigations." Twenty-seventh Yearbook of
Nat.Soc.for Study of Educ. 1928, Part I, ch.II, pp.9-38.
57. Burks, B.S. "The Relative Influence of Nature and Nurture
upon Mental Development; a Comparative Study of
Foster Parent - Foster Child. Resemblance and True
Parent - True Child Resemblance."
Twenty-seventh Yearbook of Nat.Soc.for Study of Educ.
1928, Part I. ch.X, pp.219-316.
58. Burks, B.S. "A Summary of Literature on the Determiners of
the Intelligence Quotient and the Educational Quotient."
Twenty-seventh Yearbook of Nat.Soc.for Study of Educ.
1928, Part II, ch.XVI, pp.248-353.
59. Burnham,

59. Burnham, W.H. "Astigmatism and Brain Work."
Pedag.Sem. Vol.XXV, 1918, pp.225-238.
60. Burnham, W.H. "Metabolism in Childhood." Pedag.Sem.
Vol.XXVII, 1920, pp.303-323.
61. Burt, C. "Experimental Tests of Higher Mental Processes
and their Relation to General Intelligence."
J.of Exper.Ped. Vol.I, 1911-1912. pp.93-112.
62. Burt, Cyril. "The Distribution and Relation of Educational
Abilities." (P.S.King and Son, London 1917).
63. Burt, C. "The Development of Reasoning in School Children."
J.of Exper.Ped. Vol.V. 1919-20, pp.68-77, 121-127.
64. Burt, C. "Mental and Scholastic Tests."
(P.S.King and Son, London 1921).
65. Burt, C. "The Young Delinquent." (University of London
Press Ltd., London, 1925).
66. Bush, A.D. "The Vocabulary of a Three-Year-Old Girl."
Pedag.Sem. Vol.XXI 1914, pp.125-142.
67. Buswell, G.F. "The Relationship between Eye-perception
and Voice-response in Reading."
J.of Educ.Psychol. Vol.XII 1921, pp.217-227.
68. Capps, A.G. "The Functions of Tests and Scales as found
in Recent Educational Literature."
J.of Educ.Res. Oct.1922, pp.204-208.
69. Chamberlain/

69. Chamberlain, A.F. and I.C. "Studies of a Child." IV. "Meanings" and "Definitions" in the Forty-seventh and Forty-eighth Months." Pedag.Sem. Vol.XVI 1909, pp.64-103.
70. Chapin, F.S. "A Quantitative Scale for Rating the Home and Social Environment of Middle Class Families in an Urban Community. A first Approximation to the Measurement of Socio-Economic Status." J.of Educ.Psychol. Vol.XIX, 1928, pp.99-111.
71. Chapman, J.C. "A group Intelligence Examination without prepared Blanks." J.of Educ.Res. Dec.1920, pp.777-786.
72. Chapman, J.C. and Dale, A.B. "A further Criterion for the Selection of Mental Test Elements." J.of Educ.Psychol. Vol.XIII 1922, pp.267-276.
73. Chapman, J.C. and Cook, S. "The Principle of the Single Variable in a Speed of Reading Cross-Out Test." J.of Educ.Res. Dec.1923, pp.389-396.
74. Chapman, A.E. "The Effect of School Training and Special Coaching on Intelligence Tests." Forum of Educ. Vol.II, 1924, pp.172-183.
75. Chapman, J.C. and Sims, V.M. "The Quantitative Measurement of Certain Aspects of Socio-Economic Status." J.of Educ.Psychol. Vol.XVI, 1925, pp.380-390.
76. Chapman, J.C. "A Group Intelligence Examination without Prepared Blanks." Revised Form for Grades VI to XII. J.of Educ.Res. April 1925, pp.269-279.

77. Chapman, J.C. and Wiggins, D.M. "Relation of Family Size to Intelligence of Offspring and Socio-Economic Status of Family."
Pedag.Sem. Vol.XXXII, 1925, pp.414-421.
78. Chauncey, M.R. "The Relation of the Home Factor to Achievement and Intelligence Test Scores."
J.of Educ.Res., Sept.1929, pp.88-90.
79. Christensen, A.M. "A Suggestion as to Correcting Guessing in Examinations." J.of Educ.Res. Dec.1926, pp.370-374.
80. Cobb, M.V. "The Limits Set to Educational Achievement by Limited Intelligence."
J.of Educ.Psychol. Vol.XIII, 1922, pp.449-464; 546-555.
81. Cobb, M.V. and Hollingworth, L.S. "The Regression of Siblings of Children who test at or above 135 I.Q. (Stanford-Binet)."
J.of Educ.Psychol. Vol.XVI, 1925, pp.1-7.
82. Collins, J.E. "The Intelligence of School Children and Paternal Occupation."
J.of Educ.Res. March 1928, pp.157-169.
83. Colvin, S.S. "Some Recent Results obtained from the Otis Group Intelligence Scale."
J.of Educ.Res., Jan.1921, pp.1-12.
84. Colvin, S.S. "Principles Underlying the Construction and Use of Intelligence Tests."
Twenty-first Yearbook of Nat.Soc.for Study of Educ. 1922, Part I, ch.II, pp.11-44.

85. Colvin, S.S. and Allen, R.D. "Mental Tests and Linguistic Ability." J.of Educ.Psychol. Vol.XIV 1923, pp.1-20.
86. Cordts, A.D. and McBroom, M.M. "Phonics" in "The Classroom Teacher." Vol.II, pp.389-432. 1927-28.
(The Classroom Teacher, Inc.).
87. Courtis, S.A. "Standards in Rates of Reading."
Fourteenth Yearbook of Nat.Soc.for Study of Educ. 1915.
Part I. Ch.IV. pp.44-58.
88. Courtis, S.A. "Analysis of Reading Ability."
J.of Educ.Res. Nov.1921, pp.287-293.
89. Courtis, S.A. "The Relation between Rate and Quality in Educational Measurement."
J.of Educ.Res. Sept.1924, pp.110-131.
90. Courtis, S.A. "Why Children Succeed." 1925. Courtis
Standard Tests, 1807, East Grand Boulevard, Detroit,
Michigan.
91. Courtis, S.A. "The Influence of Certain Social Factors upon Scores in the Stanford Achievement Tests."
J.of Educ.Res. May 1926. pp.311-324 and
J.of Educ.Res. June 1926 pp.33-42.
92. Cowan, E.A. "Results of Motor Reconditioning Methods used in Training a Backward Child."
Pedag.Sem. Vol.XXXV, 1928, pp.98-104.
93. Current, W.F. and Ruch, G.M. "Further Studies on the Reliability of Reading Tests."
J.of Educ.Psychol. Vol.XVII 1926, pp.476-481.

94. Curtis, F.D. and Woods, G.G. "A Study of a Modified Form of the Multiple Response Test."
J. of Educ. Res. Oct. 1928, pp. 211-219.
95. Dale, N. "On the Teaching of English Reading."
(J.M. Dent and Co., London, 1898).
96. Dana, J.C. "The Supreme Importance of Reading."
Pedag. Sem. Vol. XX, 1913, pp. 17-22.
97. Davis, H. "The Use of Intelligence Tests in the Classification of Pupils in the Public Schools of Jackson, Michigan."
Twenty-first Yearbook of Nat. Soc. for Study of Educ. 1922, Part II. ch. III. pp. 131-142.
98. Dawson, S. and Conn, J.C.M. "Effect of Encephalitis Lethargica on the Intelligence of Children."
Archives of Disease in Childhood. Dec. 1926.
99. Dearborn, W.F. "Experiments in Learning."
J. of Educ. Psychol. Vol. I. 1910. pp. 373-388.
100. Dearborn, G.V.N. "Notes on School Life Hygiene."
Pedag. Sem. Vol. XX, 1913, pp. 209-221.
101. Dearborn, W.F., Anderson, J.E. and Christiansen, A.O. "Form Board and Construction Tests of Mental Ability."
J. of Educ. Psychol. Vol. VII, 1916, pp. 445-458.
102. Dearborn, W.F. and Brewer, J.M. "Methods and Results of a Class Experiment in Learning."
J. of Educ. Psychol. Vol. IX, 1918, pp. 63-82.

103. Dearborn, W.F. and Lincoln, E.A. "How the Dearborn Intelligence Examination Standards were obtained." J.of Educ.Psychol. Vol.XIII, 1922, pp.295-297.
104. Dearborn, W.F. and Lincoln, E.A. "A Class Experiment in Learning." J.of Educ.Psychol. Vol.XIII 1922, pp.330-340.
105. Dearborn, W.F. and Lincoln, E.A. "Revising the Dearborn Intelligence Examinations." J.of Educ.Psychol. Vol.XIV, 1923, pp.39-46.
106. Denworth, K.M. "The Effect of Length of School Attendance upon Mental and Educational Ages." Twenty-seventh Yearbook of Nat.Soc.for Study of Eduo. 1928, Part II, ch.III, pp.67-91.
107. Deputy, E.C. "Knowledge of Success as a Motivating Influence in College Work." J.of Educ.Res. Dec.1929, pp.327-334.
108. Dickson, V.E. "What First Grade Children can do in School as related to what is shown by Mental Tests." J.of Educ.Res., June 1920, pp.475-480.
109. Dickson, V.E. and Norton J.K. "The Otis Group Intelligence Scale applied to the Elementary School Graduating Classes of Oakland, California." J.of Educ.Res., Feb.1921, pp.106-115.
110. Distad, H.W. "A Study of the Reading Performance of Pupils under different Conditions on different Types of Materials." J.of Educ.psychol. Vol.XVIII, 1927, pp.247-258.

111. Dockeray, F.C. "The Span of Vision in Reading and the Legibility of Letters."
J. of Educ. Psychol. Vol. I, 1910, pp. 123-131.
112. Dockerill, W.H.A. and Fennings, A.J. "A New Test of Reasoning."
J. of Exper. Ped. Vol. II, 1913-14, pp. 356-361.
113. Doherty, M. and MacLachy, J. "Bibliography of Educational and Psychological Tests and Measurements."
Bulletin No. 55, Bureau of Education. Ohio State University. Columbus, Ohio, 1923.
114. Dolch, E.W. "Reading and Word Meanings." (Ginn and Co., New York, 1927).
115. Dolch, E.W. "Grade Vocabularies."
J. of Educ. Res. June 1927, pp. 16-26.
116. Dolch, E.W. "Combined Word Studies."
J. of Educ. Res. Jan. 1928, pp. 11-19.
117. Dolch, E.W. "Vocabulary Burden."
J. of Educ. Res., March 1928, pp. 170-183.
118. Drever, J. "A Study of Children's Vocabularies."
J. of Exper. Ped. Vol. III, 1915-16, pp. 34-43, 96-103, 182-188.
119. Drever, J. "The Vocabulary of a Free Kindergarten Child."
J. of Exper. Ped. Vol. V. 1919-20, pp. 28-37.
120. Dunshee, T.E. and Manuel, H.T. "Reducing the Element of Chance in Intelligence Tests."
J. of Educ. Res., May 1925, pp. 392-393.

121. Elder, V. and Carpenter, H.S. "Reading Interests of High School Children."
J. of Educ. Res., April 1929, pp.276-282.
122. Ellis, M.B. "The Visiting Teacher in Rochester."
(Joint Committee on Methods of Preventing Delinquency. New York, 1925).
123. Fenton, N. "The Only Child."
Pedag. Sem. Vol. XXXV, 1928, pp.546-556.
124. Fernald, G.M. and Keller, H. "The Effect of Kinaesthetic Factors in the Development of Word-Recognition in the Case of Non-Readers."
J. of Educ. Res., Dec. 1921, pp.354-377.
125. Foster, R.R. and Ruch, G.M. "On Corrections for Chance in Multiple-Response Tests."
J. of Educ. Psychol. Vol. XVIII, 1927, pp.48-51.
126. Foster, J.C. "School Records of Illnesses at Various Ages."
J. of Educ. Res., Nov. 1929, pp.283-286.
127. Franzen, R. and Knight, F.B. "Criteria to employ in the Choice of Tests."
J. of Educ. Psychol. Vol. XII, 1921, pp.408-412.
128. Franzen, R. "Attempts at Test Validation."
J. of Educ. Res., Sept. 1922, pp.145-158.
129. Franzen, R. "The Geography of Intelligence."
J. of Educ. Psychol. Vol. XV, 1924, pp.499-512.
130. Freeland/

130. Freeland, G.E. "A Year's Study of the Daily Learning of Six Children."
Pedag.Sem. Vol.XXVIII, 1921, pp.97-115.
131. Freeman, F.N. "Experimental Education."
(Houghton Mifflin Company, Boston, 1916).
132. Freeman, F.N. "The Psychology of the Common Branches."
(George G.Harrap and Co.Ltd., 1916).
133. Freeman, F.N. "Mental Tests: Their History, Principles and Applications." (George C.Harrap and Co.London.).
134. Freeman, F.S. "Influence of Educational Attainment upon Tests of Intelligence."
J.of Educ.Psychol. Vol. XIX. 1928, pp.230-242.
135. Freeman, F.N., Holzinger, K.J., and Mitchell, B.C., "The Influence of Environment on the Intelligence, School Achievement and Conduct of Foster Children."
Twenty-seventh Yearbook of Nat.Soc.for Study of Educ. 1928, Part I, ch.IX, pp.103-217.
136. Fritz, M.F., "Guessing in a True-False Test."
J.of Educ.Psychol. Vol. XVIII, 1927, pp.558-561.
137. Garrison, S.C. "Additional Re-Tests by Means of the Stanford Revision of the Binet-Simon Tests."
J.of Educ.Psychol. Vol.XIII, 1922, pp.307-312.
138. Garrison, S.C. and Robinson, M.S. "A Study of Re-Tests."
J.of Educ.Res., March 1925, pp.190-196.
139. Gates/

139. Gates, A.I. "An Experimental and Statistical Study of Reading and Reading Tests."
J.of Educ.Psychol. Vol. XII, 1921, pp.303-314, 378-391,
and pp.445-464.
140. Gates, Arthur I. "A Study of Reading and Spelling with Special Reference to Disability."
J.of Educ.Res., June 1922, pp.12-24.
141. Gates, A.I. "The Correlations of Achievement in School Subjects with Intelligence Tests and Other Variables."
J.of Educ.Psychol. Vol.XIII, 1922, pp.129-139;
223-235; 277-285.
142. Gates, A.I. "Study of the Depth and Rate of Comprehension in Reading by Means of a Practice Experiment."
J.of Educ.Res., Jan.1923, pp.37-49.
143. Gates, A.I. "The Relative Predictive Values of Certain Intelligence and Educational Tests together with a Study of the Effect of Educational Achievement upon Intelligence Test Scores."
J.of Educ.Psychol. Vol.XIV 1923, pp.517-539.
144. Gates, A.I. "Psychology for Students of Education."
(The MacMillan Company, New York, 1923).
145. Gates, A.I. "The Nature and Educational Significance of Physical Status and of Mental, Physiological, Social and Emotional Maturity."
J.of Educ.Psychol. Vol.XV, 1924, pp.329-358.
146. Gates/

146. Gates, A.I. "Experimental Investigations of Learning in the Case of Young Children."
J.of Educ.Res. June 1925 pp.41-48.
147. Gates, A.I. "Methods and Theories of Teaching Reading Tested by Studies of Deaf Children."
J.of Educ.Res., June 1926, pp.21-32.
148. Gates, A.I. "A Study of the Role of Visual Perception, Intelligence and certain Associative Processes in Reading and Spelling."
J.of Educ.Psychol. Vol.XVII, 1926, pp.433-445.
149. Gates, A.I. "The Improvement of Reading: A Program of Diagnostic and Remedial Methods."
(The MacMillan Company, New York, 1927).
150. Gates, A.I. "A Reading Vocabulary for the Primary Grades."
(Bureau of Publications, Teachers College, Columbia University, New York, 1926).
151. Gates, A.I. "Studies of Phonetic Training in Beginning Reading."
J.of Educ.Psychol. Vol.XVIII 1927 pp.217-226.
152. Geiger, Ruth. "A Study in Reading Diagnosis."
J.of Educ.Res., Nov.1923, pp.283-300.
153. Germane, C.E. "Outlining and Summarizing Compared with Re-Reading as Methods of Studying."
Twentieth Yearbook of the Nat.Soc.for Study of Educ.
Part II, 1921, ch.VII pp.103-113.

154. Gesell, A. and Lord, E.E. "A Psychological Comparison of Nursery School Children from Homes of Low and High Economic Status."
Pedag.Sem. Vol.XXXIV, 1927, 339-356.
155. Gill, E.J. "Methods of Teaching, Reading. A Comparison of Results."
J.of Exper.Ped. Vol.I. 1911-12, pp.243-248.
156. Gill, E.J. "The Teaching of Spelling."
J.of Exper.Ped. Vol.I, 1911-12, pp.310-319.
157. Gill, E.J. "Methods of Teaching Reading."
J.of Exper.Ped. 1912, pp.243-248.
158. Gilliland, A.R. "The Effect of Rate of Silent Reading on Ability to Recall."
J.of Educ.Psychol. Vol.XI, 1920, pp.474-479.
159. Gilliland, A.R. "An Experiment in the Improvement of Rate and Comprehension in Silent Reading."
J.of Educ.Res., Feb.1925, pp.151-153.
160. Good, C.V. "The Relation of Extensive and Intensive Reading to Permanency of Retention."
Pedag.Sem. Vol.XXXIII, 1926, pp.43-49.
161. Good, C.V. "The Effect of Mental-Set or Attitude on the Reading Performance of High School Pupils."
J.of Educ.Res., Oct.1926, pp.178-186.
162. Good/

162. Good, C.V. "The Effect of Extensive and Intensive Reading on the Reproduction of Ideas or Thought Units."
J. of Educ. Psychol. XVIII, 1927, pp. 477-485.
163. Goodenough, F.L. "The Reading Tests of the Stanford Achievement Scale and other Variables."
J. of Educ. Psychol. Vol. XVI, 1925, pp. 523-531.
164. Goodenough, F.L. and Leaky, A.M. "The Effect of Certain Family Relationships upon the Development of Personality."
Pedag. Sem. Vol. XXXIV, 1927, pp. 45-71.
165. Goodenough, F.L. "A Preliminary Report on the Effect of Nursery School Training upon the Intelligence Test Scores of Young Children." Twenty-seventh Yearbook of Nat. Soc. for Study of Educ. 1928, Part I, ch. XVI, pp. 361-369.
166. Goodenough, F.L. and Shapiro, G. "The Performance of Pre-School Children of Different Social Groups on the Kuhlman-Binet Tests."
J. of Educ. Res. Dec. 1928, pp. 356-362.
167. Grace, A.G. "The Reading Interests of Adults."
J. of Educ. Res. April 1929, pp. 265-275.
168. Grant, J.R. "A Child's Vocabulary and its Growth."
Pedag. Sem. Vol. XXII, 1915, pp. 183-203.
169. Gray, C.T. "The Relation of Breathing to Oral Reading."
J. of Educ. Psychol. Vol. IV, 1913, pp. 39-41.
170. Gray/

170. Gray, C.T. "A New Form of the Substitution Test."
J.of Educ.Psychol. Vol.IV, 1913, pp.293-297.
171. Gray, C.T. "A Comparison of Two Types of Learning by
Means of a Substitution Test."
J.of Educ.Psychol. Vol.IX, 1918, pp.143-158.
172. Gray, C.T. "Deficiencies in Reading Ability: Their
Diagnosis and Remedies."
(D.C.Heath and Co., Boston, 1922).
173. Gray, P.L. and Marsden, R.E. "Intelligence Tests in
Rural Schools."
J.of Exper.Ped. Vol.VI, 1921-22, pp.224-231.
174. Gray, W.S. "The Relation of Silent Reading to Economy
in Education."
Sixteenth Yearbook of Nat.Soc.for Study of Educ.
1917, Part I, pp.17-32.
175. Gray, W.S. "Principles of Method in Teaching Reading, as
derived from Scientific Investigation."
The Eighteenth Yearbook of the Nat.Soc.for the Study
of Educ. Part II, 1920, ch.II, pp.26-51.
176. Gray, W.S. "Value of Informal Tests of Reading Accomplish-
ment." J.of Educ.Res., Feb.1920, pp.103-111.
177. Gray, W.S. "Diagnostic and Remedial Steps in Reading."
J.of Educ.Res., June, 1921, pp.1-15.
178. Gray, W.S. "Case Studies of Reading Deficiencies in
Junior High School." J.of Educ.Res. Sept.1924 pp.132-140.

179. Gray, W.S. "Individual Difficulties in Silent Reading in the Fourth, Fifth and Sixth Grades." Twentieth Yearbook of the Nat.Soc.for Study of Educ. Part II, 1921, ch.III, pp.39-53.
180. Gray, W.S. and Leonard, S.A. "Reading Activities in School and in Social Life." Twenty-fourth Yearbook of Nat.Soc.for Study of Educ. 1925, Part I ch.I pp.1-8.
181. Gray W.S. "Essential Objectives of Instruction in Reading." Twenty-fourth Yearbook of Nat.Soc. for Study of Educ. 1925, Part I, ch.II, pp.9-19.
182. Gray, W.S. "A Modern Program of Reading Instruction for the Grades and the High School." Twenty-fourth Yearbook of Nat.Soc.for Study of Educ. 1925, Part I, ch.III, pp.21-73.
183. Gray, W.S. "Summary of Investigations relating to Reading." (The University of Chicago, Chicago, Illinois, 1925).
184. Gray, W.S. "A Study of Ways and Means of Reorganizing and Improving Instruction in Reading." J.of Educ.Res., March 1927, pp.166-175.
185. Gray, W.S. and Zirbes, L. "Primary Reading". in "The Classroom Teacher." Vol.II, 1927-28: pp.39-386.
186. Greene, H.A. "Measuring Comprehension of Content Material." Twentieth Yearbook of Nat.Soc.for Study of Educ.1921. Part II, ch.VIII, pp.114-126.
187. Greene, H.A. "A New Correction for Chance in Examinations of Alternate-Response Type." J.of Educ.Res. Feb.1928, pp.102-107.

188. Greene, H.A. and Freden, G. "Failures and Double Promotions in the Elementary School."
J.of Educ.Res. April 1928 pp.262-272.
189. Gregory, C.A. "Fundamentals of Educational Measurement with the Elements of Statistical Methods."
(D.Appleton and Co.1922)
190. Gregory, C.A. "The Reading Vocabularies of Third-Grade Children." J.of Educ.Res., Feb.1923, pp.127-131.
191. Grupe, M.A. "Phonics in Relation to Early Reading."
Pedag.Sem. Vol.XXIII, 1916, pp.175-183.
192. Haggerty, M.E. "Intelligence Examination Delta II."
J.of Educ.Psychol. Vol.XIV, 1923, pp.257-277.
193. Haggerty, M.E. and Nash, H.B. "Mental Capacity of Children and Paternal Occupation."
J.of Educ.Psychol. Vol.XV, 1924, pp.559-572.
194. Haggerty, M.E. "The Incidence of Undesirable Behaviour in Public School Children."
J.of Educ.Res. Sept.1925, pp.102-122.
195. Haggerty, L.C.G. "What a Two-and -a-Half-Year-Old Child said in one Day."
Ped.Sem.and J.of Genetic Psychol. March 1930, pp.75-101.
196. Hahn, H.H. "A Criticism of Tests Requiring Alternative Responses."
J.of Educ.Res. Oct.1922, pp.236-240.

197. Hall, G.S. "Educational Problems."
(D.Appleton and Co., New York, 1911).
198. Hall, I and Crosby, A. "A Study of the Causes of Inferior Scholarship of Pupils in Low First Grade."
J.of Educ.Res., Dec.1926, pp.375-383.
199. Hardie, J.L. "Spearman's Measure of Intelligence: A Statistical Analysis."
B.J.of Psychol. Vol.XIX, Part II, pp.188-197.
200. Harlan, C.L. "Years in School and Achievements in Reading and Arithmetic."
J.of Educ.Res., Sept. 1923, pp.145-149.
201. Hassall, M. and Varley, L. "A Reading Test."
J.of Exper,Ped., Vol.II, 1913-14, pp.298-301.
202. Hawley, W.E. "The Effect of Clear Objectives on the Teaching of Reading."
J.of Educ.Res., April 1921, pp.254-260.
203. Head, H. "Aphasia and Kindred Disorders of Speech."
(University of Cambridge Press, 1926).
204. Heilig, M.R. "A Child's Vocabulary."
Pedag.Sem. Vol.XX, 1913, pp.1-16.
205. Heilman, J.D. "A Revision of the Chapman-Sims Socio-Economic Scale." J.of Educ.Res., Sept.1928, pp.117-126.
206. Heilman, J.D. "The Relative Influence upon Educational Achievement of some Hereditary and Environmental Factors." Twenty-seventh Yearbook of Nat.Soc.for Study of Educ. 1928, Part II, ch.II, pp.35-65.

207. Heller, R.R., and Courtis, S.A. "Exercises developed at Detroit for Making Reading Function." Twentieth Yearbook of Nat.Soc.for Study of Educ. 1921, Part II, pp.153-161.
208. Henmon, V.A.C. and Livingstone, W.F. "Comparative Variability at Different Ages." J.of Educ.Psychol., Vol.XIII, 1922, pp.17-29.
209. Henmon, V.A.C. "Some Limitations of Educational Tests." J.of Educ.Res., March 1923, pp.185-198.
210. Henry, F.S. "Classroom Problems in the Education of Gifted Children." Nineteenth Yearbook of Nat.Soc,for Study of Educ. Part II, 1920, pp.7-125.
211. Hewins, C.M. "Reading Clubs for Older Boys and Girls." Pedag.Sem. Vol.XVI, 1909, pp.325-330.
212. Herriott, M.E. "How to Make a Course of Study in Reading." Educational Research Circular No.42, Bureau of Educ. Res., College of Educ., University of Illinois, 1926.
213. Herriott, M.E. "Attitudes as Factors in Scholastic Success." Bulletin No.47, Bureau of Educ.Res., College of Educ., University of Illinois, 1929.
214. Hildreth, G. "The Effect of School Environment upon Stanford Binet Tests of Young Children." Twenty-seventh Yearbook of Nat.Soc.for Study of Educ. 1928, Part I, ch.XV, pp.355-359.
215. Hill/

215. Hill, D.S. "Minor Studies in Learning and Relearning."
J.of Educ.Psychol., Vol.V., 1914, pp.375-386.
216. Hincks, E.M. "Disability in reading and its Relation to
Personality." (Cambridge, Harvard University Press,
1926).
217. Hinshelwood, J. "Letter -, Word -, and Mind-Blindness."
(H.K.Lewis and Co.Ltd., London, 1899.).
218. Hinshelwood, J. "Congenital Word-Blindness."
(H.K.Lewis and Co.Ltd., London, 1917.).
219. Hoefer, G. and Hardy, M.C. "The Influence of Improvement
in Physical Conditions on Intelligence and Educational
Achievement." Twenty-seventh Yearbook of Nat.Soc.
for Study in Educ. 1928, Part I, ch.XVII, pp.371-387.
220. Hollingworth, Leta S. "Special Talents and Defects: Their
Significance for Education."
(The MacMillan Company, New York, 1923).
221. Hollingworth, L.S. "Tapping-Rate of Children who test
above 135 I.Q.(Stanford-Binet)".
J.of Educ.Psychol. Vol.XVII, 1926, pp.505-517.
222. Hollingworth, L.S. and Cobb, M.V., "Children Clustering at
165 I.Q. and Children Clustering at 146 I.Q. compared
for Three Years in Achievement."
Twenty-seventh Yearbook of Nat.Soc.for Study of Educ.
1928, Part II, ch.I. pp.3-33.
223. Holmes/

223. Holmes, H.W. "Intelligence Tests and Individual Progress in School Work."
Twenty-first Yearbook of Nat.Soc.for Study of Educ.
1922, Part II, ch.I, pp.117-122.
224. Holzinger, K.J."An Analysis of the Errors in Mental Measurement." J.of Educ.Psychol. Vol.XIV, 1923, pp.278-288.
225. Holzinger, K.J. "On Scoring Multiple-Response Tests."
J.of Educ.Psychol. Vol.XV, 1924 pp.445-447.
226. Holzinger, K.J., and Freeman, F.N. "The Interpretation of Burt's Regression Equation."
J.of Educ.Psychol. Vol.XVI, 1925, pp.577-582.
227. Holzinger, K.J. and Freeman, F.N. "Rejoinder on Burt's Regression Equation."
J.of Educ.Psychol. Vol.XVII, 1926, pp.384-386.
228. Hoover, J.H. "Motivated Drill Work in Third Grade Arithmetic and Silent Reading."
J.of Educ.Res., October 1921, pp.200-211.
229. Hoover, J.H. "Motivated Drill Work in Third Grade Reading."
Twentieth Yearbook of Nat.Soc.for Study of Educ. 1921,
Part II, ch.VI, pp.77-89.
230. Horn, E. "The Selection of Silent Reading Textbooks."
J.of Educ.Res., October 1920, pp.615-619.
231. Horn, E. "A Constructive Program in Silent Reading."
J.of Educ.Res., May 1921, pp.336-344.
232. Horn/

232. Horn, E. "Appropriate Materials for Instruction in Reading."
Twenty-fourth Yearbook of Nat.Soc.for Study of Educ.
1925, Part I, ch.VII, pp.161-226.
233. Housh, E.T. "An Analysis of the Vocabularies of Ten Second-Year Readers."
Seventeenth Yearbook of Nat.Soc.for Study of Educ.
Part I, 1918, ch.IV, pp.40-45.
234. Huey, E.B. "The Psychology and Pedagogy of Reading."
(The MacMillan Company, New York, 1908).
235. Hulten, C.E. "A Study of the Speed of Upper Grade Reading."
J.of Educ.Res., Sept.1924, pp.141-148.
236. Hume, J.F. "Work with Clubs in the Queens Borough Public Library." Ped. Sem. Vol.XVI, 1909, pp.548-549.
237. Humphrey, G. "The Psychology of the Gestalt. Some Educational Implications."
J.of Educ.Psychol. Vol.XV, 1924, pp.401-412.
238. Hurlock, E.B. "An Evaluation of Certain Incentives used in School Work."
J.of Educ.Psychol. Vol.XVI, 1925, pp.145-159.
239. Hurlock, E.B. "The Effect of Incentives upon the Constancy of the I.Q." Pedag.Sem. Vol.XXXII, 1925, pp.422-434.
240. Jagger, J.H. "The Sentence Method of Teaching Reading."
(Grant Educ.Co., 1929).
241. Jenkins/

241. Jenkins, J. "The Development of a Meaningful Vocabulary and of Independence in Word Recognition."
Twenty-fourth Yearbook of Nat.Soc.for Study of
Educ. 1925, Part I, ch.IV, pp.75-96.
242. Johnson, R.H. and Gregg, J.M. "Three New Psychometric Tests." *Pedag.Sem.* Vol.XIX, 1912, pp.201-203.
243. Jones, R.G. "Standard Vocabulary." Fourteenth Yearbook of Nat.Soc.for Study of Educ. 1915, Part I, ch.IV, pp.37-43.
244. Jones, V.A. "A Study of the Non-Verbal Nature and Validity of Myers Mental Measure."
J.of Educ.Res., October 1927, pp.203-209.
245. Jones, H.E. "A First Study of Parent-Child Resemblance in Intelligence." Twenty-seventh Yearbook of Nat,Soc,
for Study of Educ. 1928, Part I, ch.V. pp.61-72.
246. Jordan, A.M. "Children's Interests in Reading."
(Oxford University Press, 1926).
247. Judd, C.H. "Reading." Fifteenth Yearbook of Nat.Soc.for Study of Educ. 1916, Part I, ch.X, pp.111-119.
248. Judd, C.H. "Research in Elementary Education."
J.of Educ.Psychol. Vol.XVII, 1926, pp.217-225.
249. Kallom, A.W. "Reproduction as a Measure of Reading Ability." *J.of Educ.Res.*, May 1920, pp.359-368.
250. Kefauver, G.N. "The Relative Influence of Fatigue on Pupils with Different Levels of Mentality."
J.of Educ.Psychol. Vol.XIX 1928, pp.25-30.

251. Kefauver, G.N. "Need of Equating Intelligence Quotients obtained from Group Tests." J.of Educ.Res. Feb.1929, p.92-101.
252. Kelley, T.L. "The Reliability of Test Scores." J.of Educ.Res., May 1921, pp.370-379.
253. Kelly, F.J. "The Kansas Silent Reading Tests." J.of Educ.Psychol. Vol.VII, 1916, pp.63-80.
254. Kerr, J. "The Fundamentals of School Health." George Allen and Unwin Ltd., London, 1926.
255. Klapper, P. "The Experimental Study of Education with Special Reference to the Elementary School." J.of Educ.Res., Sept.1925, pp.123-135.
256. Kline, L.W. "Some Experimental Evidence in Regard to Formal Discipline." J.of Educ.Psychol, Vol.V, 1914, pp.259-266.
257. Kornhauser, A.W. "The Economic Standing of Parents and the Intelligence of their Children." J.of Educ.Psychol, Vol.IX, 1918, pp.159-164.
258. Kuhnes, E.L. "Experimental Study of Dynamic Periodicity as influenced by Diurnal, Weekly, Monthly, Seasonal and Yearly Efficiency." Pedag.Sem. Vol.XXII, 1915, pp.326-346.
259. Langenbeck, M. "A Study of a Five-Year-Old Child." Pedag.Sem. Vol.XXII, 1915, pp.65-88.
260. La Rue, D.W. "The Child's Mind and the Common Branches." (MacMillan Company, New York, 1924).
261. Lehman, H.C. and Anderson, T.H. "Social Participation versus Solitariness in Play." Pedag.Sem. Vol.XXXIV, 1927, pp.279-289.
262. Leland/

262. Leland, B. "Herbert: A Study of Difficulty in Spelling and Reading." J.of Educ.Res. June 1923, pp.49-58.
263. Leland B"Wilbur". J.of Educ.Res. Sept.1927, pp.132-135.
264. Leonard, S.A."The Relation between Reading and Literature." Twenty-fourth Yearbook of Nat.Soc.for Study of Educ., 1925, Part I, ch.VI, pp.141-160.
265. Leonard, S.A. "Reading and Literature" in "The Classroom Teacher", Vol.X, pp.257-366, 1927-28 (The Classroom Teacher, Inc.).
266. Lincoln, E.A. "The Constancy of Intelligence Quotients." (A Case Study).
J.of Educ.Psychol. Vol.XIII, 1922, pp.484-495.
267. Lincoln, E.A. "The Reliability of the Stanford-Binet Scale of Intelligence Quotients."
J.of Educ.Psychol, Vol.XVIII, 1927, pp.621-626.
268. McCall, Wm.A. and Crabbs, Lelah Mae. "Standard Test Lessons in Reading." Bureau of Publications, Teachers College, Columbia University, New York City, 1925.
269. Macaulay, E. "An Experiment in Method for Junior Standards."
Forum of Educ. Vol.VI, 1928, pp.217-240.
270. McClusky, H.Y. and Curtis, F.D. "A Modified Form of the True-False Test." J.of Educ.Res., Oct.1926, pp.213-224.
271. McFarland, R.A. "An Experimental Study of the Relationship between Speed and Mental Ability."
J.of General Psychol. Jan.1930, pp.67-97.

272. Maackinder, J.M. "Individual Work in Infants' Schools."
(Revised). (The Educational Publishing Co.Ltd.,
London, 1925).
273. MacPhail, A.H. "Tonsils and Adenoids: A Study showing how
the Removal of Enlarged or Diseased Tonsils and
Adenoids affects a Child's Work in School."
Pedag.Sem. Vol.XXVII, 1920, pp.188-194.
274. Martin, A.L. and Pechstein, L.A. "Educational Tests for
Retarded School Children."
J.of Educ.Res., May 1924, pp.403-410.
275. Mason, C.M. "An Essay towards a Philosophy of Education.
A Liberal Education for All."
(Kegan Paul, Trench, Trubner & Co.Ltd., London, 1925.)
276. Mateer, F. "The Diagnostic Fallibility of Intelligence
Ratios."
Pedag.Sem. Vol.XXV, 1918, pp.369-392.
277. Mead, C.D. "Silent versus Oral Reading with One Hundred
Sixth-Grade Children."
J.of Educ.Psychol. Vol.VI, 1915, pp.345-348.
278. Mead, C.D. "Results in Silent versus Oral Reading."
J.of Educ.Psychol, 1917, Vol.VIII, pp.367-368.
279. Melville, Norbert J. "Standard Method of Testing Juvenile
Mentality by the Binet-Simon Scale and the Porteous
Scale of Performance Tests. A Uniform Procedure
and Analysis." (J.B.Lippincott Co. 1917).

280. Merrill, M.A. "A Scale for the Individual Measurement of Reading Ability."
J.of Educ.Psychol. Vol.X, 1919, pp.389-400.
281. Merrill, M.A. "The Relation of Intelligence to Ability in the 'Three R's' in the Case of Retarded Children."
Pedag.Sem. Vol.XXVIII, 1921, pp.249-274.
282. Miles, W.R. and Butterworth, J.E. "A Tentative Standardization of a Completion Test."
J.of Educ.Psychol. Vol.VII, 1916, pp.329-336.
283. Miles, D.H. "Can the High School Pupil Improve his Reading Ability?"
J.of Educ.Res., Sept.1926, pp.88-98.
284. Miller, G.F. "Formulas for Scoring Tests in which the maximum Amount of Chance is Determined."
J.of Educ.Psychol. Vol.XVI, 1925, pp.304-315.
285. Monroe, W.S. "A Report on the Use of Kansas Silent Reading Tests with over One Hundred Thousand Children."
J.of Educ.Psychol. 1917, Vol.VIII, pp.600-608.
286. Monroe, W.S. and De Voss, J.C. and Kelly, F.J. "Educational Tests and Measurements."
(Houghton Mifflin Co., Boston, 1917).
287. Monroe, W.S. "Monroe's Standardized Silent Reading Tests."
J.of Educ.Psychol. Vol.IX, 1918, pp.303-312.
288. Monroe/

288. Monroe, W.S. "Existing Tests and Standards."
Seventeenth Yearbook of the Nat.Soc,for Study of
Eduo. 1918, Part II, ch.VII, pp.71-104.
289. Monroe, W.S. "Measuring the Results of Teaching."
(Houghton Mifflin Co., Boston, 1918).
290. Monroe, W.S. "The Value of Standardized Silent Reading
Tests." J.of Educ.Res., 1920, pp.136-137.
291. Monroe, W.S. "Report of Division of Educational Tests
for '19-20." Bulletin No.5. Bureau of Educ.Res.,
College of Educ., University of Illinois, 1921.
292. Monroe, W.S. "The Illinois Examination." Bulletin No.6.
Bureau of Educ.Res., College of Educ., University
of Illinois, 1921.
293. Monroe, W.S. "A Critical Study of Certain Silent Reading
Tests." Bulletin No.8. Bureau of Educ.Res.,
College of Educ., University of Illinois, 1922.
294. Monroe W.S. and Engelhart, M.D. "The Techniques of
Research." Bulletin No.38. Bureau of Educ.Res.,
College of Educ., University of Illinois, 1928.
295. Monroe, W.S. and others. "Ten Years of Educational
Research, 1918-1927." Bulletin No.42. Bureau
of Educ.Res., College of Educ., University of
Illinois, 1928.
296. Mosher/

296. Mosher, R.M. "Some Results of Teaching Beginners by the Look-and-Say Method."
J. of Educ. Psychol. Vol. XIX, 1928, pp. 185-193.
297. Mosher, R.M. "A Further Note on the Reliability of Reading Tests."
J. of Educ. Psychol. Vol. XIX, 1928, pp. 272-274.
298. Munson, O.F. and Hoskinson, J.H. "Library and Supplementary Reading Books recommended for Use in Elementary Schools."
Sixteenth Yearbook of Nat. Soc. for Study of Educ., 1917, Part I, pp. 33-59.
299. Murdock, K. and Sullivan, L.R. "Some Evidence of an Adolescent Increase in the Rate of Mental Growth."
J. of Educ. Psychol. Vol. XIII, 1922, pp. 350-356.
300. Myers, Garry C. "Measuring Minds." (Newson and Co. 1920).
301. Nice, M.M. "The Development of a Child's Vocabulary in Relation to Environment."
Pedag. Sem. Vol. XXII, 1915, pp. 35-64.
302. Nice, M.M. "The Speech Development of a Child from Eighteen Months to Six Years."
Pedag. Sem. Vol. XXIV 1917, pp. 204-243.
303. Nygaard, P.H. "The Advantages of the Probable Error of Measurement as a Criterion of the Reliability of a Test or Scale."
J. of Educ. Psychol. Vol. XIV, 1923, pp. 407-413.

304. Oates, D.W. "A Statistical and Psychological Investigation of Intelligence Tests."
Forum of Educ. Vol.VI, 1928, pp.38-62.
305. Oberholtzer, E.E. "The Effects of Efficiency Tests in Reading on a City School System."
Fifteenth Yearbook of Nat.Soc.for Study of Educ. 1916, Part I, ch.XII, pp.138-140.
306. O'Brien, J.A. "Training in Perception as a Means of Accelerating the Silent Reading Rate."
J.of Educ.Psychol. Vol.XI, 1920, pp.402-417.
307. O'Brien, J.A. "Silent Reading with special Reference to Methods for Developing Speed."
(The MacMillan Company, New York, 1921).
308. O'Brien, J.A. "The Development of Speed in Silent Reading."
Twentieth Yearbook of Nat.Soc.for Study of Educ. Part II, 1921, ch.IV, pp.54-76.
309. Odell, C.W. "Another Criticism of Tests Requiring Alternative Responses." J.of Educ.Res., April 1923, pp.326-330.
310. Odell, C.W. "The Effect of Attendance upon School Achievement. J.of Educ.Res., Dec.1923, pp.422-432.
311. Odell, C.W. "Some Data as to the Effect of Previous Testing upon Intelligence Test Scores."
J.of Educ.Psychol. Vol.XVI, 1925, pp.482-486.
312. Odell, C.W. "Educational Tests for Use in Elementary Schools.
Second/

Second Revision." Educational Research Circular No.49.
Bureau of Educ.Research, College of Educ., University
of Illinois, 1927.

313. Odell, C.W. "A Critical Study of Measures of Achievement
Relative to Capacity." Bulletin No.45. Bureau of Educ.
Research, College of Educ., University of Illinois, 1929.
314. Oglesby, E.F. "A First Grade Reading Test."
J.of Educ.Res., June 1924, pp.29-41.
315. O'Hern, Joseph P. "The Development of a Chart for Attain-
ments in Reading." J.of Educ.Res., March 1921 pp.180-194.
316. Oloott, F.J. "Story-Telling - A Public Library Method."
Pedag.Sem. Vol.XVI, 1909, pp.545-547.
317. Otis, A.S. "Considerations concerning the Making of a Scale
for the Measurement of Reading Ability."
Pedag.Sem. Vol.XXIII, 1916, pp.528-549.
318. Otis, A.S. "An Absolute Point Scale for the Group Measure-
ments of Intelligence."
J.of Educ.Psychol. Vol.IX, 1918, pp 239-261 and 333-348.
319. Otis, A.S. and Knollin, H.E. "The Reliability of the Binet
Scale and of Pedagogical Scales."
J.of Educ.Res., Sept.1921, pp.121-142.
320. Packer, J.R. "The Vocabularies of Ten First Readers."
Twentieth Yearbook of Nat.Soc.for Study of Educ. Part II,
1921, ch.IX, pp.127-144.
321. Patterson/

321. Patterson, T.L. "Pedagogical Suggestions from Memory Tests."
J. of Educ. Psychol., Vol. IX, 1918, pp. 497-510.
322. Pearson, Karl. "Tables for Statisticians and Biometricians."
(Cambridge University Press. 1914).
323. Pelsma, J.R. "A Child's Vocabulary and its Development."
Ped. Sem. Vol. XVII, 1910, pp. 328-369.
324. Pennell, M.E. and Cusack, A.M. "How to teach Reading."
(George G. Harrap & Co. Ltd., London 1923).
325. Perrin, H. Ambrose and Edna Keith. "Directive Reading
Program." (Public School Publishing Co., Bloomington,
Illinois, 1924).
326. Peters, Charles C. "The Influence of Speed Drills upon the
Rate and the Effectiveness of Silent Reading."
J. of Educ. Psychol. Vol. VIII 1917, pp. 350-366.
327. Peterson, J. "The Effects of Practice on Individual
Differences." Twenty-seventh Yearbook of Nat. Soc.
for Study of Educ. 1928, Part II, ch. XIV, pp. 211-230.
328. Peyton, E.M. and Porter, J.P. "Old and New Methods of
Teaching Primary Reading."
J. of Applied Psychol., June 1926, pp. 264-276.
329. Pintner, R. "Oral and Silent Reading of Fourth Grade Pupils."
J. of Educ. Psychol., Vol. IV, 1913, pp. 333-337.
330. Pintner, R. and Gilliland, A.R. "Oral and Silent Reading."
J. of Educ. Psychol. Vol. VII, 1916, pp. 201-212.
331. Pintner, R./

331. Pintner, R. and Paterson, D.G. "The Ability of Deaf and Hearing Children to follow printed Directions." Pedag.Sem. Vol.XXIII, 1916, pp.477-497.
332. Pintner, R. and Toops, H.A. "A Revised Directions Test." J.of Educ.Psychol. Vol.IX. 1918, pp.123-141.
333. Pintner, R. "The Mental Survey." (D.Appleton & Co., New York, 1918).
334. Pintner, R. and Fitzgerald, F. "An Educational Survey Test." J.of Educ.Psychol. Vol.XI, 1920, pp.207-223.
335. Pintner, R. and Noble, H. "The Classification of School Children according to Mental Age." J.of Educ.Res., Nov.1920, pp.713-728.
336. Pintner, R. and Marshall, H. "A Combined Mental-Educational Survey." J.of Educ.Psychol, Vol.XII, 1921, pp.32-43 and 82-91.
337. Pintner, R. and Cunningham, B.V. "The Problem of Group Intelligence Tests for Very Young Children." J.of Educ.Psychol. Vol.XIII, 1922, pp.465-472.
338. Pintner, R. "The Significance of Intelligence Testing in the Elementary School." Twenty-first Yearbook of Nat.Soc.for Study of Educ. 1922, Part II, ch.V. pp.153-167.
339. Pintner, R. "Results obtained with the Non-Language Group Test." J.of Educ.Psychol., Vol.XV, 1924, pp.473-483.

340. Pintner, R. "Intelligence Testing. Methods and Results."
(University of London Press, 1924).
341. Pintner, R. "The Pintner-Cunningham Primary Test."
J.of Educ.Psychol. Vol.XVIII, 1927, pp.52-58.
342. Popenoe, H. "A Report of Certain Significant Deficiencies
of the Accomplishment Quotient."
J.of Educ.Res., June 1927, pp.40-47.
343. Pressey, L.W. "A Group Scale of Intelligence for Use in
the First Three Grades."
J.of Educ.Psychol. Vol.X, 1919, pp.297-308.
344. Pressey, L.W. "A Group Scale of Intelligence for Use in
the First Three Grades: Its Validity and Reliability."
J.of Educ.Res., April 1920, pp.285-294.
345. Pressey, L.W. "Scale of Attainment No.I - An Examination
of Achievement in the Second Grade."
J.of Educ.Res., Sept.1920, pp.572-581.
346. Pressey, S.L. "A Brief Group Scale of Intelligence for
Use in School Surveys."
J.of Educ.Psychol. Vol.XI, 1920, pp.89-100.
347. Pressey, L.W. and Pressey S.L. "A Critical Study of
the Concept of Silent Reading Ability."
J.of Educ.Psychol. Vol.XII, 1921, pp.25-31.
348. Pressey, S.L. "Scale of Attainment No.2 - An Examination
for Measurement in History, Arithmetic, and English
in the Eighth Grade." J of Educ.Res., May 1921, pp.359-369.

349. Pressey, L.W. "Scale of Attainment No.3 - for Measuring Essential Achievement in Third Grade."
J.of Educ.Res., Dec.1921, pp.404-412.
350. Pressey, S.L. and Pressey L.C. "Introduction to the Use of Standard Tests."
(George G.Harrap and Co.Ltd.).
351. Pressey, L.W. "The Primary Classification Test."
J.of Educ.Res., April 1924, pp.305-314.
352. Pressey, L.C. "The Special Vocabularies of the Public School Subjects." 1924. Nineteen Lists, giving the Technical and Difficult Words frequently found in Textbooks in Grammar and Composition (English, French, Latin, German), Literature, Arithmetic, Algebra, Geometry, History, General Science, Biology, Chemistry, Geography, Physics, Physiology, Home Economics, Manual Training, Art, and Music."
(Public School Publishing Co., Bloomington, Illinois).
353. Remer, L. "A Comparative Study of a Borderline Defective and a Normal Child of the same Mental Age."
J.of Educ.Psychol. Vol.XIII, 1922, pp.160-169.
354. Remmers, H.H. and Remmers, E.M. "The Negative Suggestion Effect of True-False Examination Questions."
J.of Educ.Psychol. Vol.XVII, 1926, pp.52-56.
355. Reynshaw/

355. Renshaw, S. "The Intelligence of Teachers in Training with a Note on Practice Effects with Intelligence Tests." J.of Educ.Res., Jan.1923, pp.28-36.
356. Reymert, M.L. "The Psychology of the Teacher: an Introductory Study."
Pedag.Sem. Vol.XXIV, 1917, pp.521-558.
357. Richards, A. "School Adjustment and the Psychic Environments."
Pedag.Sem. Vol.XXVII, 1920, pp.178-187.
358. Richards, O.W. and Kohs, S.C. "High Test Scores attained by Sub-Average Minds."
J.of Educ.Psychol. Vol.XVI, 1925, pp.8-17.
359. Richards - Nash, A.A. "The Psychology of Superior Children."
Pedag.Sem. Vol.XXXI, 1924, pp.209-246.
360. Rock, R.T. "Reading Tests for the Primary Grades."
(Educational Research Bulletins. Vol.II, No.4. 1927.
The Catholic Education Press, Washington, D.C.).
361. Rogers, D.C. "A Study of Pupil Failures and Subject Failures in Chicago."
J.of Educ.Res., Nov.1926, pp.247-255.
362. Rogers, A.L. and Durling, D. and McBride, K. "The Effect on the Intelligence Quotient of Change from a Poor to a Good Environment."
Twenty-seventh Yearbook of Nat.Soc.for Study of Educ.
1928/

1928, Part I, ch.XII, pp.323-331.

363. Rowe, E.C. and H.N. "The Vocabulary of a Child at Four and Six Years of Age."
Pedag.Sem. Vol.XX, 1913, pp.187-208.
364. Ruch, G.M. and Koerth, W. "Power" vs."Speed" in Army Alpha."
J.of Educ.Psychol. Vol.XIV, 1923, pp.193-208.
365. Ruch, G.M. "The Achievement Quotient Technique."
J.of Educ.Psychol. Vol.XIV, 1923, pp.334-343.
366. Ruch, G.M. "The Speed Factor in Mental Measurement."
J.of Educ.Res., Jan.1924, pp.39-45.
367. Ruch, G.M. and Stoddard, G.D. "Comparative Reliabilities of Five Types of Objective Examinations."
J.of Educ.Psychol. Vol.XVI, 1925, pp. 89-103.
368. Ruch, G.M. "Minimum Essentials in Reporting Data on Standard Tests."
J.of Educ.Res., Dec.1925, pp.349-358.
369. Ruch, G.M. and Degraff, M.H. "Corrections for Chance and 'Guess' vs. 'Do not guess'. Instructions in Multiple-Response Tests."
J.of Educ.Psychol. Vol.XVII, 1926, pp.368-375.
370. Rugg, H. "Statistical Methods Applied to Educational Testing." Twenty-first Yearbook of Nat.Soc.for Study of Educ., 1922, Part I, ch.III, pp.45-91.
371. Rugg, L.S. "Retests and the Constancy of the I.Q."
J.of Educ.Psychol. Vol.XVI, 1925, pp.341-343.
372. Rusk/

372. Rusk, R.R. "Experimental Education."
(Longmans, Green and Co.1921).
373. Sandiford, Peter. "The Standardization of Tests and Scales."
J. of Educ. Res., Jan.1923, pp.14-27.
374. Sangren, P.V. "The Need for More Adequate Measures of
Achievement in Silent Reading."
J. of Educ. Res. May 1928, pp.365-371.
375. Sangren, P.V. "The Sangren-Woody Silent Reading Test."
J. of Educ. Res., March 1929, pp.233-234.
376. Sayles, M.B., and Nudd, H.W. "The Problem Child in
School." (The Commonwealth Fund, New York, 1924).
377. Sayles, M.B. "The Problem Child at Home: A Study in
Parent-Child Relationships"
(The Commonwealth Fund, New York, 1928).
378. Shambaugh, C.G. and Shambaugh O.L. "An Association Study
of the Vocabulary of Grade Children."
J. of Educ. Res., June 1928, pp.40-47.
379. Shambaugh, C.G. and Shambaugh O.L. "A Core Vocabulary
for Elementary School Pupils."
J. of Educ. Res., Jan.1929, pp.39-46.
380. Simpson, R.G. "The Effect of Specific Training on Ability
to read Historical Materials."
J. of Educ. Res., Dec.1929, pp.343-351.
381. Sims, V.M/

381. Sims, V.M. "The Reliability and Validity of Four Types of Vocabulary Tests."
J.of Educ.Res., Sept.1929, pp.91-96.
382. Slocombe, C.S. "The Influence of Practice in Mental Tests."
Forum of Educ. Vol.IV, 1926, pp.173-179.
383. Smith, N.B. "An Experiment to Determine the Effectiveness of Practice Tests in Teaching Beginning Reading."
J.of Educ.Res., March 1923, pp.213-228.
384. Smith, N.B., "The Construction of First-Grade Reading Material." J.of Educ.Res., Feb.1928, pp.79-89.
385. Smith, N.B. "Matching Ability as a Factor in First Grade Reading."
J.of Educ.Psychol. Vol.XIX, 1928, pp.560-571.
386. Smith, W.A. "The Reading Process."
(The MacMillan Company, New York, 1922).
387. Stalnaker, E.M. and Roller, R.D. "A Study of One Hundred Non-promoted Children."
J.of Educ.Res., Nov.1927, pp.265-270.
388. Starch, D. "The Measurement of Efficiency in Reading."
J.of Educ.Psychol. Vol.VI, 1915, pp.1-24.
389. Starch, D. "Educational Measurements."
(The MacMillan Company, New York, 1916).
390. Starch, D. "Educational Psychology."
(The MacMillan Company, New York, 1919).
391. Starch/

391. Starch, D. "The Contents of Readers." Twentieth Year-book of Nat.Soc.for Study of Educ. Part II, 1921, ch.X, pp.145-151.
392. Stebbins, R. and Pechstein, L.A. "Quotients, I, E, and A." J.of Educ.Psychol. Vol.XIII, 1922, pp.385-298.
393. Stenquist J.L. "Constancy of the Stanford Binet I.Q. as shown by Retests." J.of Educ.Psychol. Vol.XIII, 1922, pp.54-56.
394. Stephenson, O.W. "The Special Vocabulary of Civics." J.of Educ.Res., Nov.1928, pp.297-304.
395. Stone, G.R. "Recent Developments in Silent Reading Tests." J.of Educ.Res., Sept.1922, pp.102-115.
396. Stone, G.L. "Disparity between Intelligence and Scholarship" J.of Educ.Psychol. Vol.XIII, 1922, pp.241-244.
397. Streitz, R. "Educational Diagnosis." Research Circular No.27. Bureau of Educ.Research, College of Educ., University of Illinois, 1924.
398. Streitz, R. "Teachers' Difficulties in Reading and their Correctives." Bulletin Bo.23. Bureau of Educ. Research, College of Educ., University of Illinois, 1925.
399. Stroud, J.B."A Study of the Relation of Intelligence Test Scores of Public School Children to the Economic Status of their Parents." Pedag.Sem. Vol.XXXV, 1928 pp.105-111.
400. Symonds/

400. Symonds, P.M. "A Study of Extreme Cases of Unreliability."
J. of Educ. Psychol. Vol. XV, 1924, pp. 99-106.
401. Symonds, P.M. "The Accuracy of Certain Standard Tests for
School Classification." J. of Educ. Res. April 1924 pp. 315-330.
402. Symonds, P.M. "Factors Influencing Test Reliability."
J. of Educ. Psychol. Vol. XIX, 1928, pp. 73-87.
403. Taylor, H. "The Influence of the Teacher on Relative
Class Standing in Arithmetic Fundamentals and Reading
Comprehension.." Twenty-seventh Yearbook of Nat. Soc.
for Study of Educ. 1928, Part II, ch. V, pp. 97-110.
404. Teagarten, F.M. "The Constancy of the I.Q. Again."
J. of Educ. Psychol. Vol. XIII, 1922, pp. 366-372.
405. Terman, L.M. "The Measurement of Intelligence."
(Houghton Mifflin Co., 1916).
406. Terman, L.M. "The Use of Intelligence Tests in the Grading
of School Children."
J. of Educ. Res., Jan. 1920, pp. 20-32.
407. Terman, L.M. and Whitmire, E.D. "Age and Grade Norms for
the National Intelligence Tests, Scales A and B."
J. of Educ. Res., Feb. 1921, pp. 124-132.
408. Terman, L.M. "Mental Growth and the I.Q."
J. of Educ. Psychol. Vol. XII, 1921, pp. 325-341, 401-407.
409. Terman, L.M./

409. Terman, L.M. "The Intelligence of School Children: How Children differ in Ability, the Use of Mental Tests in School Grading, and the proper Education of Exceptional Children."
(George G.Harrap & Co.Ltd., London, 1921).
410. Terman, L.M. "The Possibilities and Limitations of Training."
J.of Educ.Res., Dec.1924, pp.335-343.
411. Terman, L.M. "Genetic Studies of Genius. Volume I. Mental and Physical Traits of a Thousand Gifted Children."
(Stanford University Press, California, 1925).
412. Terman, L.M. "The Ultimate Influence of Standard Tests."
J.of Educ.Res., Jan.1928, pp.57-59.
413. Theisen, W.W. "Provisions for Individual Differences in the Teaching of Reading."
J.of Educ.Res., Sept.1920, pp.560-571.
414. Theisen, W.W. "Factors affecting Results in Primary Reading." Twentieth Yearbook of Nat.Soc.for Study of Educ. Part II. 1921, pp.1-24.
415. Thomson, G.H. "The Interpretation of Burt's Regression Equation."
J.of Educ.Psychol. Vol.XVII, 1926, pp.301-308.
416. Thorndike, E.L. "Reading as Reasoning: A Study of Mistakes in Paragraph Reading."
J.of Educ.Psychol. Vol.VIII, 1917, pp.323-332.
417. Thorndike

417. Thorndike, E.L. "Intelligence Examinations for College Entrance." J.of Educ.Res., May 1920, pp.329-337.
418. Thorndike, E.L. "The Teacher's Word Book." Teachers College, Columbia University, New York City, 1921.
419. Thorndike, E.L. "Measurement in Education." Twenty-first Yearbook of Nat.Soc.for Study of Educ.1922, Part I, ch.I, pp.1-9.
420. Thorndike, E.L."The Resemblance of Siblings in Intelligence." Twenty-seventh Yearbook of Nat.Soc.for Study of Educ., 1928, Part I, ch.III, pp.41-53.
421. Thurstone, L.L. "A Cycle-Omnibus Intelligence Test for College Students." J.of Educ.Res. Nov.1921, pp.265-278.
422. Thurstone, L.L. "The Fundamentals of Statistics." (MacMillan Company, New York, 1925).
423. Toops, H.A. and Symonds, P.M. "What shall We Expect of the A.Q.?" J.of Educ.Psychol. Vol.XIII, 1922, pp.513-528, and Vol.XIV, 1923, pp.27-38.
424. Toops, H.A. "What We are Failing to Measure in Education." J.of Educ.Res., Feb.1926, pp.118-128.
425. Torgerson, T.L. and Shuman, I. "The Variability of the Accomplishment of Pupils of the Same Mental Level." J.of Educ.Res., Feb.1925, pp.132-136.
426. Torgerson, T.L. "Is Classification by Mental Ages and Intelligence Quotients worth while?" J.of Educ.Res., March 1926, pp.171-180.

427. Trabue, M.R. "Completion Tests for Public School Use."
Fifteenth Yearbook of Nat.Soc.for Study of Educ.1916,
Part I, ch.IV, pp.52-59.
428. Trabue, M.R. and Stockbridge, F.P. "Measure Your Mind."
(George G.Harrap & Co.Ltd., London 1920).
429. Trabue, M.R. "Some Pitfalls in the Administrative Use of
Intelligence Tests." J.of Educ.Res. June 1922 pp.1-11.
430. Valentine, C.W. "Experiments on the Methods of Teaching
Reading."
J.of Exper.Ped. Vol.II, 1913-14, pp.99-112.
431. Valentine, C.W. "Some Experiments on the Speed of Reading
and Its Improvement."
Forum of Educ. Vol.I, 1923, pp.222-231.
432. Valentine, P.F. "A Study in Intelligence and Educational
Correlations." J.of Educ.Res.1921, pp.207-217.
433. Van Wageningen, M.J. "Graded Opposites and Analogies Tests."
J.of Educ.Psychol. Vol.XI, 1920, pp.241-263.
434. Van Wageningen, M.J. "A Comparison of the Mental Ability and
School Achievement of the Bright and Dull Pupils in
the Sixth Grade of a large School System."
J.of Educ.Psychol. Vol.XVI, 1925, pp.186-192.
435. Van Wageningen, M.J. "Grade Placement versus Mental Age as a
Factor in School Achievement." Twenty-seventh
Yearbook of Nat.Soc.for Study of Educ.1928, Part II,
ch/

ch.VI, pp.113-119.

436. Vickers, W. and Wyatt, S. "Grading by Mental Tests."
J.of Exper.Ped. Vol.II, 1913-14, pp.187-197.
437. Vogel, M. and Washburne, C. "A Year of Winnetka Research."
J.of Educ.Res., Feb.1928, pp.90-101.
438. Wager, R.E. "Fixation-Accommodation Rates as Factors in
Reading."
J.of Educ.Psychol. Vol.XV, 1924, pp.579-587.
439. Wallin, J.E.W. "Age Norms of Psycho-Motor Capacity."
J.of Educ.Psychol. Vol.VII, 1916, pp.17-24.
440. Wallin, J.E.W. "Intelligence Irregularity as Measured by
Scattering in the Binet Scale."
J.of Educ.Psychol. Vol.XIII 1922, pp.140-151.
441. Wallin, J.E.W. "The Consistency shown by Intelligence
Ratings based on Standardized Tests and the Teacher's
Estimates."
J.of Educ.Psychol. Vol.XIV, 1923, pp.231-245.
442. Waples, W. "The Best Answer Exercise as a Teaching
Device." J.of Educ.Res., Jan.1927, pp.10-21.
443. Washburne, C.W. Prepared under the direction of "Adapting
the Schools to Individual Differences." Twenty-fourth
Yearbook of Nat.Soc.for Study of Educ. 1925, Part II,
pp.1-363.
444. Washburne, C. "The Commonest Syllables: A Statistical
Investigation"

Investigation in the Field of Reading by the
Winnetka Teachers' Seminar."

J.of Educ.Res., Oct.1926, pp.199-205.

445. Washburne, C. and Vogel, M. "What Children like to Read:
Winnetka Graded Book List." (Rand McNally & Co.1926).
446. Watkins, E. "Silent Reading for Beginners." (Teachers'
Edition). (J.B.Lippincott, Co., Philadelphia, 1925).
447. Wechsler, D. "On the Influence of Education on Intelli-
gence as Measured by the Binet-Simon Tests."
J.of Educ.Psychol. Vol.XVII, 1920, pp.248-257.
448. Weiss, A.P. "The Ebbinghaus Conjectural Method of
Examination."
J.of Exper.Ped. Vol.I, 1911-12, pp.320-334.
449. West, P.V. "A Critical Study of the Right Minus Wrong
Method." J.of Educ.Res., June 1923, pp.1-9.
450. West, P.V. "The Significance of Weighted Scores."
J.of Educ.Psychol. Vol.XV, 1924, pp.302-308.
451. Wheat, H.G. "The Teaching of Reading. A Textbook of
b Principles and Methods." (Ginn & Co., Boston, 1923).
452. Wheeler, T. "A Study of Certain Recreational Reading
and Vocational Phases in the Lives of Young Girls."
J.of Educ.Psychol. Vol.XI, 1920, pp.481-501.
453. Wheeler, L.R. "A Comparative Study of the Physical Growth
of Dull Children." J.of Educ.Res., Nov.1929,
pp.273-282.

454. Whipple, Prof. and Mrs. G.M. "The Vocabulary of a Three-year-old Boy with some Interpretive Comments."
Pedag. Sem. Vol. XVI, 1909, pp. 1-22.
455. Whipple, G.M. and Curtis, J.N. "A Preliminary Investigation of Skimming in Reading."
J. of Educ. Psychol. Vol. VIII, 1917, pp. 333-349.
456. Whipple, G.M. "Manual of Mental and Physical Tests."
(Warwick and York. Inc. Baltimore, 1919). Third Edition.
457. Whipple, G.M. Edited by, "New Materials of Instruction."
Nineteenth Yearbook of Nat. Soc. for Study of Educ.
1920, Part I, ch. I, "Reading Exercises based on Children's Experiences." pp. 20-30.
Ch. II, "Reading for Children in Non-English-Speaking Families." pp. 31-39.
Ch. III, "Reading for Non-English-Speaking Adults."
pp. 40-46.
Ch. IV, "Tests in Reading as Part of Classroom Routine."
pp. 47-51.
Ch. V, "Reading Instructions for College Students."
pp. 52-57.
458. Whipple, G.M. "The National Intelligence Tests."
J. of Educ. Res., June 1921, pp. 16-31.
459. Whipple, G.M. "An Annotated List of Group Intelligence Tests." Twenty-first Yearbook of Nat. Soc. for Study of Educ., 1922, Part I, ch. IV, pp. 93-113.

460. Whipple, G.M. "Sex Differences in Intelligence Test Scores in the Elementary School." J. of Educ. Res. Feb. 1927, pp. 111-117.
461. Whipple, G.M. "Sex Differences in Army Alpha Scores in the Secondary School." J. of Educ. Res. April 1927 pp. 269-275.
462. Wickman, E.K. "Children's Behavior and Teachers' Attitudes." (The Commonwealth Fund, New York, 1928).
463. Wiley, W.E. "Difficult Words and the Beginner." J. of Educ. Res., April 1928, pp. 278-289.
464. Willoughby, R.R. "Family Similarities in Mental-Test Abilities." Twenty-seventh Yearbook of Nat. Soc. for Study of Educ. 1928, Part I, ch. IV, pp. 55-59.
465. Wilson, E. "The Relation of Reading to Content Subjects and Other School Activities." Twenty-fourth Yearbook of Nat. Soc. for Study of Educ. 1925, Part I, ch. V. pp. 97-140.
466. Wilson, F.T. "Some Achievements of Pupils of the Same Mental Ages but Different Intelligence Quotients." J. of Educ. Res., June 1926, pp. 43-53.
467. Wilson, S.A. Kinnier, "Aphasia." (Psyche Miniatures 1926).
468. Wilson, W.R. "The Misleading Accomplishment Quotient." J. of Educ. Res., Jan. 1928, pp. 1-10.
469. Winch, W.H. "Social Class and Mental Proficiency in Elementary School Children." J. of Exper. Ped. Vol. I, 1911-12, pp. 9-18, 118-128.

470. Winch, W.H. "Children's Reasonings: Experimental Studies of Reasoning in School Children."
J. of Exper. Ped. Vol. VI, 1921-22, pp. 121-141, 199-212, 275-286.
471. Wood, Ben D. "Measurement in Higher Education."
(World Book Co., 1923).
472. Wood, B.D. "Studies of Achievement Tests."
J. of Educ. Psychol. Vol. XVII, 1926, pp. 1-22, 125-139, 263-269.
473. Woodrow, H. "Mental Unevenness and Brightness."
J. of Educ. Psychol. Vol. XIX, 1928, pp. 289-302.
474. Woody, C. "The Overlapping in the Content of Fifteen Second Readers." J. of Educ. Res., June 1920, pp. 465-474.
475. Woody, C. "Measurement of a New Phase of Reading."
J. of Educ. Res., Nov. 1923, pp. 315-326.
476. Woolley, H.T. "Agnes: A Dominant Personality in the Making."
Pedag. Sem. Vol. XXXII, 1925, pp. 569-598.
477. Woolley, H.T. "Peter: The Beginnings of the Juvenile Court Problem."
Pedag. Sem. Vol. XXXIII, 1926, pp. 9-29
478. Wyman, J. and Wendle, M. "What is Reading Ability?"
J. of Educ. Psychol., Vol. XII, 1921, pp. 518-531.
479. Yerkes, R.M. and Anderson, H.M. "The Importance of Social Status as indicated by the Results of the Point-Scale Method of Measuring Mental Capacity." J. of Educ. Psychol. Vol. VI, 1915, pp. 137-150.

480. Yoakam, G.A. "The Effect of a Single Reading."
Twentieth Yearbook of Nat.Soc.for Study of Educ.,
Part II, 1921, ch.VI, pp.90-102.
481. Yoakum, C.S. and Yerkes, R.M. "Mental Tests in the
American Army." (London, Sidgwick & Jackson Ltd 1920)
482. Yowell, S. "Are Children Reading?"
J.of Educ.Res., Jan.1927, pp.1-4.
483. Zigler, M.J. "The Child and School Entrance."
Pedag.Sem. Vol.XXV, 1918, pp.23-57.
484. Zirbes, L. "Provision for Individual Differences."
Twenty-fourth Yearbook of Nat.Soc.for Study of Educ.
1925, Part I, ch.VIII, pp.227-232.
"Reading Tests - Standardized and Informal."
Twenty-fourth Yearbook, Part I, ch.IX, pp.233-274.
"Diagnosis and Remedial Work." Twenty-fourth Yearbook
Part I, ch.X, pp.275-289.
-

Reading Tests.

485. Brown, Reading Tests. 1916. H.A. Brown, New Hampshire
Department of Public Instruction.
486. Burgess. "A Scale for Measuring Ability in Silent Reading."
1920. M.A. Burgess. Russell Sage Foundation,
130 East 22nd Street, New York City.
487. Burt, "Handbook of Tests for Use in Schools." 1923.
C. Burt., P.S. King, and Co. Ltd., London.
488. Cavins Poetry Tests. L.V. Cavins. Public School
Publishing Co., Bloomington, Illinois.
489. Chapman, Unspeeded Reading-Comprehension Test (Grades V to
XII) 1925. J.C. Chapman. J.B. Lippincott Co.
Philadelphia.
490. Chapman-Cook Speed of Reading Test. (Grades IV to VIII)
1923. J.C. Chapman. J.B. Lippincott Co, Philadelphia.
491. Courtis Standard Research Tests. Silent Reading Test No. 2.
S.A. Courtis, 1807 East Grand Boulevard, Detroit, Mich.
492. Detroit Word Recognition Test. 1925. E.F. Oglesby.
World Book Co., Yonkers on Hudson, New York.
493. Detroit Reading Test. 1927, C.M. Parker. E.A. Waterbury.
World Book Co., Yonkers on Hudson, New York.
494. Fordyce/

494. Fordyce. "A Scale for Measuring Achievements in Reading."
Test No.1. Grades III to V.
Test No.2. Grades VI to IX. 1916.
C.Fordyce, University Publishing Co., Chicago, and
Lincoln.
495. Gates. Graded Word Pronunciation Test. A.I.Gates.
Forms I to IV. Bureau of Public Teachers College,
Columbia University, New York.
496. Gates. Silent Reading Tests. Grades III to VIII, 1927.
A.I.Gates. Bureau of Public Teachers College,
Columbia University, New York,
497. Gates. Primary Reading Tests. 1928, A.I.Gates.
Bureau of Public Teachers College, Columbia
University, New York,
498. Gray. Tests of Silent Reading 1916. W.S.Gray in Cleve-
land Foundation Survey.
499. Gray. Standardized Oral Reading Check Tests. W.S.Gray.
Public School Publishing Co., Bloomington, Illinois.
500. Gray Standardized Oral Reading Paragraphs. W.S.Gray.
Public School Publishing Co., Bloomington, Illinois.
501. Haggerty. Reading Examination. Sigma I, 1920,
M.E.Haggerty and M.E.Noonan. World Book Company,
Yonkers on Hudson, New York.
502. Haggerty/

502. Haggerty Reading Examination. Sigma III. 1920.
M.E.Haggerty and L.C.Haggerty. World Book Co.,
Yonkers on Hudson, New York.
503. Holley Sentence Vocabulary Scale. C.E.Holley. Public
School Publishing Co., Bloomington, Illinois.
504. Holzinger-Chapman Unspeeded Reading-Comprehension Test.
(Grades IV to XII) 1928.
J.B.Lippincott Co., Philadelphia.
505. Iowa Silent Reading Tests. Advanced Examination for
Grades 7-12. 1927. A.N.Jorgensen and H.A.Greene.
Bureau of Educational Research and Service, University
of Iowa, Iowa City.
506. Kansas Silent Reading Tests. F.J.Kelly. Bureau of
Educational Measurements and Standards. Emporia.
Kansas.
507. Kennon Test of Literary Vocabulary. 1925. Bureau of
Publications. Teachers College, Columbia University,
New York City.
508. Markham English Vocabulary Tests for High School and
College Students. 1928. W.T.Markham. Public School
Publishing Co., Bloomington, Illinois.
509. Monroe Standardized Silent Reading Test. Revised. Test I,
Test/

Test II. Public School Publishing Co., Bloomington,
Illinois.

510. The New Examiner Tests No.I. Silent Reading Test. 1928.
Reprinted from "The New Examiner." P.B.Ballard.
Hodder and Stoughton Ltd., London.
511. Northumberland Standardised Tests. Set II.
English. 1925. C.Burt. University of London Press
Ltd.
512. Pressey First Grade Attainment Scale.Reading. L.W.Pressey
and V.Grant. Public School Publishing Co., Bloomington,
Illinois.
513. Pressey Second Grade Attainment Scale.Reading. 1922.
L.C.Pressey. Public School Publishing Co.,
Bloomington, Illinois.
514. Pressey Third Grade Attainment Scale. L.W.Pressey.
Public School Publishing Co., Bloomington, Illinois.
515. Pressey Technical Vocabularies of the Public School
Subjects. 1924. L.C.Pressey. Public School
Publishing Co., Bloomington, Illinois.
516. Pressey Diagnostic Reading Scales. 1925. L.C.Pressey,
S.H.Wang and H.S.Chen. Public School Publishing Co.,
Bloomington, Illinois.
517. Pressey Diagnostic Tests in the Fundamental Reading Habits.
1928. L.C.Pressey. Public School Publishing Co.,
Bloomington, Illinois.

518.Orleans "Public School Achievement Tests" 1928.

J.S.Orleans. Public School Publishing Co.,
Bloomington, Illinois.

519.Sangren-Woody Reading Test. 1927. P.V.Sangren and
C.Woody. World Book Company, Yonkers on Hudson,
New York.

520.Starch Silent Reading Tests. 1915. D.Starch.
University of Wisconsin, Madison, Wisconsin.

521.Starch English Vocabulary Tests. D.Starch.

522.Stanford Achievement Tests. Reading Examination. Primary
and Advanced. 1922. T.L.Kelley, G.M.Ruch, L.M.Terman.
World Book Company, Yonkers on Hudson, New York.

523.Stone Narrative Reading Tests. Grade IV. 1922. C.R.Stone
and A.Buehrmann. Grade V. C.R.Stone and L.C.Murphy,
1922. Grade VI. C.R.Stone, 1923. Grade VII. C.R.Stone
1923. Junior High School. C.R.Stone and L.C.Murphy,
1922. Public School Publishing Co., Bloomington,
Illinois.

524.Thorndike Visual Vocabulary Scale Alpha. 1914. Teachers
College, Columbia University, New York City.

525.Thorndike (included as No.4 in Pintner Educ.Survey).

Eleven questions on three paragraphs. $3\frac{1}{2}$ minutes.

526.Thorndike/

526. Thorndike Test of Word Knowledge. Teachers College,
Columbia University, New York City.
527. Thorndike-McCall Reading Scale for the Understanding
of Sentences. 1921.
Bureau of Publications, Teachers College, Columbia
University, New York City.
528. Van Wagenen Reading Scales. 1921, M.J.Van Wagenen.
Public School Publishing Co., Bloomington,
Illinois.
529. Watkins Silent Reading Tests. 1925. J.B.LippincottCo.,
Philadelphia.
530. Whipple High School and College Reading Test. 1925.
G.M.Whipple. Public School Publishing Co.,
Bloomington, Illinois.
531. Williams Primary Reading Test, 1926. A.J.Williams.
Public School Publishing Co., Bloomington,
Illinois.
-

Intelligence Tests.

532. Army Group Examination Alpha. 1920. C.H.Stoelting Co.
Chicago.
533. Army Group Examination Beta. 1920. C.H.Stoelting Co.
Chicago.
534. Ballard Picture Tests. 1922. Hodder and Stoughton Ltd.,
London.
535. Bixler Ten-Minute Intelligence Test. 1924. C.H.Stoelting
Co., Chicago.
536. Bristol Group Reasoning Test. A.Barbara Dale. University
of London Press Ltd.
537. Burt Mental and Scholastic Tests. 1921. P.S.King and Son.
538. Chapman Group Intelligence Examination. 1920.J.Crosby
Chapman. Yale University, New Haven, Connecticut.
539. Chapman Group Intelligence Examination. New Form. 1925.
J.Crosby Chapman. Yale University, New Haven,
Connecticut.
540. Chelsea Mental Tests. Reprinted from "Group Tests of
Intelligence." P.B.Ballard. 1928. Hodder and
Stoughton Ltd., London.
541. Cole-Vincent Group Intelligence Test for School Entrants.
1924. L.W.Cole and L.E.Vincent. Kansas State
Teachers College, Emporia, Kansas.
542. Columbia/

542. Columbian Mental Tests. Reprinted from "Group Tests of Intelligence." 1928. P.B. Ballard.
Hodder and Stoughton Lt&., London.
543. The Crichton Test. Reprinted from "Group Tests of Intelligence." 1926. P.B. Ballard.
Hodder and Stoughton Ltd., London.
544. Dearborn Group Tests of Intelligence. 1920. Series I and Series II. J.B. Lippincott Co., Philadelphia.
545. Detroit First Grade Intelligence Test. 1921. A.M. Engel.
World Book Co.
546. Detroit Kindergarten Test. Individual. 1922. H.J. Baker,
H.J. Kaufmann.
World Book Co., Yonkers on Hudson, New York.
547. Haggerty Intelligence Examination Delta I, Delta II. 1920.
M.E. Haggerty. World Book Co.
548. The Haines Group Alertness Tests. Forms X and A.
Thos. H. Haines. C.H. Stoefting Co. Chicago.
549. Herring. Revision of the Binet-Simon Tests. 1926.
J.P. Herring. World Book Co.
550. Illinois Examination I and II. 1920. W.S. Monroe.
B.R. Buckingham. Public School Publishing Co.,
Bloomington, Illinois.
551. Ingenuity/

551. Ingenuity Test. 1923. T.G. Winn and L.L. Thurstone.
C.H. Stoelting Co., Chicago.
552. Kohs Ethical Discrimination Test. S.C. Kohs.
C.H. Stoelting Co., Chicago.
553. Kuhlmann-Anderson Intelligence Tests. 1927. F. Kuhlmann
and R. Anderson.
The Educational Test Bureau. Minneapolis, Minn.
554. McCall Multi-Mental Scale. 1925. W.A. McCall and his
Students. Teachers College, Columbia University,
New York.
555. Myers Mental Measure. 1920. C.E. Myers and G.C. Myers.
Newson and Co., New York.
556. National Intelligence Tests. Scale A. 1920. M.E. Haggerty,
L.M. Terman, E.L. Thorndike, G.M. Whipple, R.M. Yerkes.
World Book Co., Yonkers on Hudson, New York.
557. The Northumberland Mental Tests. No. 1. 1922. G.H. Thomson.
George G. Harrap & Co. Ltd., London.
558. The Northumberland Mental Tests. No. 2. 1922. G.H. Thomson.
George G. Harrap & Co. Ltd., London.
559. Northumberland Standardised Tests. 1925, Series. Set. III
Intelligence. C. Burt. University of London Press Ltd.
560. Otis/

560. Otis Group Intelligence Scale. Primary Examination.
A.S.Otis. World Book Co., Yonkers on Hudson,
New York.
561. Otis Group Intelligence Scale. Advanced Examination.
A.S.Otis. World Book Co., Yonkers on Hudson,
New York.
562. Otis Classification Test, 1922, A.S.Otis. World Book Co.
Yonkers on Hudson, New York.
563. Otis Self-Administering Tests of Mental Ability.
Intermediate Examination. A.S.Otis. World Book Co.,
Yonkers on Hudson, New York.
(Also published as Part II of Otis Classifications
Test).
564. Pintner Educational Survey Tests. 1920. R.Pintner.
The College Book Store, Ohio.
565. Pintner Non-Language Mental Tests. 1927. R.Pintner.
The College Book Store, Ohio.
566. Pintner-Cunningham Primary Mental Test. 1923. R.Pintner
and B.V.Cunningham.
World Book Co., Yonkers on Hudson, New York.
567. Pressey Cross Out Test. 1920. S.L.Pressey.
568. Pressey Primary Classification Test. 1922. L.C.Pressey.
Public School Publishing Co., Bloomington, Illinois
569. Pressey/

569. Pressey Intermediate Classification Test. 1922. S.L. and L.W.Pressey.
Public School Publishing Co., Bloomington, Illinois.
570. Pressey Intermediate Verifying Test. 1923. S.L. and L.W. Pressey.
Public School Publishing Co., Bloomington, Illinois.
571. Roback Mentality Tests for Superior Adults. A.A.Roback.
C.H.Stoelting Co., Chicago.
572. Roback Comprehension Tests. Supplementary Mentality Tests for Superior Adults. 1923. A.A.Roback.
C.H.Stoelting Co., Chicago.
573. The Simplex Group Intelligence Scale. C.A.Richardson.
George G.Harrap and Co., London.
574. Scott's Tests. Series I and II. C.H.Stoelting Co., Chicago.
575. Spearman. "A Measure of 'Intelligence' for Use in Schools."
1925. C.Spearman. Methuen and Co.Ltd., London.
576. Terman Group Test of Mental Ability. Intermediate and Advanced. 1920. L.M.Terman. World Book Co.,
Yonkers on Hudson, New York.
577. Thurstone Psychological Examination for College Freshmen and High School Seniors. 1923-24. L.L.Thurstone,
C.H.Stoelting Co., Chicago.

578.Thurstone Hand Test. L.L.Thurstone.

C.H.Stoelting Co., Chicago.

579.Thurstone Reasoning Test. L.L.Thurstone.

C.H.Stoelting Co., Chicago.

580.Thurstone Spatial Relations Test. L.L.Thurstone.

C.H.Stoelting Co., Chicago.

581.Trabue Mentimeter. 1920. M.R.Trabue.

George G. Harrap and Co.Ltd., London.

582.The "West Riding" Tests of Mental Ability. T.P.Tomlinson.

Hodder and Stoughton Ltd., London.

Additional References.

583. Davey, C.M. "A Comparison of Group Verbal and Pictorial Tests of Intelligence." B.J.of Psychol. Vol.XVII, Part I, pp.27-48.
584. Jones, D.C. and Carr-Saunders, A.M. "The Relation Between Intelligence and Social Status among Orphan Children." B.J.of Psychol. Vol.XVII, Part IV, pp.343-364.
585. Dale, A.B. "Group Tests in Reasoning Ability." B.J.of Psychol. Vol.XVI, Part IV, pp.314-338.
586. Winch, W.H. "Christian and Jewish Children in East End Elementary Schools: Some Comparative Mental characteristics in Relation to Race and Social Class." B.J.of Psychol. Vol.XX, Part III, pp.261-273.
587. Davis, R.A. "The Influence of Heredity on the Mentality of Orphan Children." B.J.of Psychol. Vol.XIX, Part I, pp.44-59.
588. Stainer, W.J. "Rate of Work in Schools." B.J.of Psychol. Vol. XIX. Part IV, pp.439-451.
589. Stainer, W.J. "A Speed-Accuracy Competition." B.J.of Psychol. Vol.XX, Part I, pp.82-89.
590. Fassett, J.H. "The New Beacon Readers." (Ginn and Company Ltd., London.).