The purpose of this study was to determine if phrase reading training with fourth graders would significantly enhance the development of reading skills for the purposes of obtaining and using new information. Forty fourth grade classrooms were assigned at random to five groups: 5,000 phrase group, 10,000 phrase group, 15,000 phrase group, 20,000 phrase group, and a control group. The phrase reading program was presented using the Phrase Reading Film Series--Intermediate Grades. Alternate forms of the Stanford Achievement Test were administered at intervals of about seven and one-half months prior to and following the phrase reading program. The results indicated that children in school districts of limited social-cultural backgrounds, who ordinarily have difficulty in achieving at an expected annual rate, appeared to benefit substantially from the phrase reading programs. In a community setting with children of social-cultural opportunity who are achieving at an expected or above annual rate a supplemental need for phrase reading training was not indicated. An appendix is included which discusses phrase reading programs for intermediate grades. (WR)
PHRASE READING TRAINING WITH FOURTH GRADE STUDENTS:
AN EXPERIMENTAL STUDY

Bruce R. Amble, Ph.D. and Frances J. Kelly, Ph.D.
Central Midwestern Regional Educational Laboratory

The work reported herein was performed pursuant to Contract No. OEC 3-7-062875-3056 with the United States Department of Health, Education, and Welfare, Office of Education

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10646 St. Charles Rock Road
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Phrase reading training with fourth grade students: An experimental study

Bruce R. Amble, Ph.D. and Frances J. Kelly, Ph.D.
Central Midwestern Regional Educational Laboratory

Phrase reading programs have helped improve the reading efficiency of fifth and sixth grade students. (Amble and Muehl, 1966a; Amble and Muehl, 1966b; Amble, 1966). Experimental phrase reading research with remedial readers and slow learners at the junior high school level held promise as a procedure for disadvantaged students (Amble and Muehl, Experiment III, 1966a; Amble and Butler, 1967). The phrase reading programs appeared to be an effective supplement to the regular reading programs. The process of reading education was facilitated by the use of technologically presented phrase reading programs developed on 16mm film for use with standard projection equipment (See Appendix A).

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Dr.'s Amble and Kelly hold academic appointments in the Department of Educational Psychology, Southern Illinois University. Dr. Kelly was consultant on the project. The authors express their sincere gratitude to CEMREL for the excellent coordination of the Phrase Reading Project. Administration and teacher support and participation are gratefully acknowledged to the East St. Louis and Belleville, Illinois, City School Systems. Roger Olson and Lella Marvin assisted as graduate students in implementing the study.
The findings of the phrase reading studies may be summarized with reference to the research findings:

1. The perceptual span of phrase reading can be significantly increased by phrase reading training.
2. Reading comprehension can be significantly increased by phrase reading programs.
3. Reading rate can be significantly increased by phrase reading training.
4. The findings of 1, 2, and 3 were obtained among phrase reading trained subjects without significant advantage or change in reading vocabulary when compared to control subjects.
5. The findings of 1, 2, and 3 were obtained and effective with students of low, medium and high reading achievement.

These findings indicate that within the scope of the studies, reading by phrases is a unique, integrative reading skill; modifiable under conditions of training; necessary at all levels of training; independent of specific reading vocabulary; and durable once the skill has improved (Ambie, 1967).

Statement of Problem

Entering fourth grade students have emerged from a primary grade curriculum which emphasized the teaching of reading skills. They would now be expected to apply these skills for the acquisition of information and concepts, and for reading enjoyment. The question which the present study attempted to answer was: Would programs of phrase reading training with fourth grade students significantly enhance the development of reading skills for the purposes of obtaining and using new information? The CEMREL Phrase Reading Project was designed to extend and amplify the previous research results.
Objectives:

Among a fourth grade school population:

1) Determine if phrase reading training increased reading rate and reading comprehension.

2) Determine if phrase reading training resulted in significant increases in reading related areas such as language, social studies, science, arithmetic, spelling, and study skills.

3) Determine the feasibility of the phrase reading programs of 5,000, 10,000, 15,000, and 20,000 practice phrases while extending and distributing the training over a seven month period.

The previous studies with phrase reading programs had established the functional value of the reading-training procedure. However, they had not as yet established the phrase reading on a broader educational basis. A major objective was to view the new project as a validation study, where phrase reading training would be an integral part of the school program as reflected by both the extended practice procedures and the duration of training. Within this framework, information would be obtained on the process of reading development, classroom teaching, and learning.

Procedures

Design:

The investigation was designed to determine the usefulness of phrase reading training with fourth grade students. Ss were entering fourth graders. Forty fourth grade classrooms were assigned at random to five groups (or treat-
ment conditions) so that each condition included eight classrooms. The experimental groups were designated as follows: 5,000 Phrase Group, 10,000 Phrase Group, 15,000 Phrase Group, and 20,000 Phrase Group. Phrase reading programs were conducted over a 7 to 28 week period, respectively, based on the school calendar year. The training programs required about three half class periods per week. The remaining eight classrooms served as control Ss and were designated the Control Group. The control classrooms remained in the regular language arts - reading program. Since the five groups remained in the established school guidelines, they continued in the school learning situation the same amount of time. Subject, teacher, program, and school area differences were randomized in the design procedure. Within the design of the study, only the experimental reading program was a differential variable.

Materials:

The phrase reading program was presented using the Phrase Reading Film Series - Intermediate Grades (See Appendix B).

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3Two communities were selected to participate in the study of contrasting cultural milieu. Belleville would be described as a suburban, middle class, affluent community in the radius of metropolitan St. Louis, Missouri. East St. Louis would more aptly be described as an industrial, lower to lower middle class community with financial problems (loss of industry) in physical decline, adjacent to St. Louis. Twenty-two classes were from the East St. Louis school district and eighteen from the Belleville school district. A classroom assigned to the 20,000 phrase reading program was lost to the study because there was a three teacher turnover during the year. The school principal terminated the group because the reading program was not implemented. Of the 1,201 students pretested, 121 were absent for part or all of the post-tests. Twenty-three students were lost with the 20,000 phrase classroom indicated previously.

4The possibility of a Hawthorne effect has previously been controlled for as a source of variability. This did not prove to be a significant factor in Experiments I and III (Ambie and Muehl, 1966a). In the CEMREL Phrase Reading Project, possible effects for participation in a study were controlled in several ways. When the graduate assistants made weekly visits to the community schools, control teachers were visited proportionally the same number of times as the teachers in the phrase reading program. When the senior investigator corresponded with teachers or visited the schools, contact was made with all teachers on these occasions.
Criterion Tests:

Alternate forms of the Stanford Achievement Tests, 1964 Edition, Intermediate I Battery were used in the pre and post testing procedures. The Stanford Achievement Tests included ten separate tests: Word Meaning, Paragraph Meaning, Spelling, Word Study Skills, Language, Arithmetic Computation, Arithmetic Concepts, Arithmetic Applications, Social Studies, and Science. Standard procedures for test administration were followed and teachers conducted all aspects of the testing program as well as the phrase reading program itself. The tests were administered prior to the phrase training program and at the end of the academic year. In addition to a report of the study, test findings for each child were made available to all participating schools.

Duration:

East St. Louis Schools: SAT-Form V, October 17-21, 1966.

Results

Alternate forms of the Stanford Achievement Test were administered at intervals of about seven and one-half months prior to and following the phrase

5The Belleville schools administered the Stanford Achievement Test as part of the regular school testing program. Therefore, they completed the pre-tests two weeks prior to the East St. Louis schools.
reading program. To determine the influence of the several levels of phrase reading training (ranging from 5,000 to 20,000 practice phrases), the standard grade score data were analyzed for each of the ten SAT subtests. Base line procedures were established by the inclusion of control groups in the several analyses. To determine the nature of observed changes a multiple regression analysis was made, taking into account the mean pre-test differences between groups. Partial regression weights arrived at by multiple regression procedures minimized the error sums of squares of prediction (Bottenberg and Ward, 1963). The analysis of variance included between factors (experimental groups and achievement levels) and a within factor (pre-test and post-test).

Word Meaning:

The analysis of grade scores showed a significant interaction associated with training groups and test periods \( (p < .00001) \). Figure 1 shows the prediction line for each group. The figure indicates that if the student had a Word Meaning score of 5.3 at the beginning of the study and was a member of the 20,000 Phrase Group, the best predicted score (based on regression analysis) would be 6.6. This represents a gain of 1.3. If the student was a member of the Control Group in the same situation, the best predicted score would be 5.8, or a gain of 0.5. Analysis of the number of items attempted revealed a significant interaction \( (p < .006) \) in the same direction. Thus, the same student in the 20,000 group would have attempted about 3 per cent more items while correctly completing 10 per cent more of them. Only negligible differences were noted at the lower levels, where word meaning gains were at an expected level for all Ss.

\(^6\)Number of test questions attempted was operationally defined as an indication of rate of reading.
Fig. 1. Stanford Achievement Test

Word Meaning
Paragraph Meaning:

The analysis of grade scores showed a significant main effect for training groups at test periods ($p < .00001$). Figure 2 shows the prediction line for each group. The figure indicates that a student in the 20,000 Phrase Group gained about four tenths of a grade more than a comparable control student. The findings were consistent for low, medium, and high readers. There was also a significant main effect for number of items attempted ($p < .001$). The same student in the 20,000 Phrase Group attempted about five per cent more items while correctly completing about fifteen per cent more of them.

A definite learning curve is suggested in Figure 2. The 5,000 Phrase Group is about .17 of a grade score below the Control Group. The 10,000 Phrase Group is slightly above the Control Group baseline. With 15,000 phrases, a gain of another two tenths is noted. The maximum training condition was with 20,000 phrases. 7

Originally, it was intended to collect and analyze student social-economic data. Information was not made available in the Belleville Schools. In the East St. Louis Schools complete information was obtained on 177 students, including parent education level, source of income and occupation category. The relationship between the several vectors and pre and/or post reading tests ranged from $r = .15$ to $r = .15$. Analysis of the reading tests, including the social-economic data, resulted in the same ordering effect reported for the entire group. The social-economic data accounted for less than one per cent additional variance. The relationship between the social-economic data and reading grade scores was surprisingly low. The findings would suggest that with this sample of students neither the reading scores nor the influence of the phrase reading program were bound by social-economic considerations per se.

8.
Fig. 2  Stanford Achievement Test: Paragraph Meaning

Pre-test Grade Scores
Spelling:

The analysis of grade scores showed a significant main effect for training groups at test periods \( p < .00001 \). An examination of the predicted scores indicated the main treatment effects were favorable to the 20,000 Phrase Group when compared to the other conditions. The advantage was about 0.5 grade score. Analysis of the number of items attempted indicated the 20,000 Phrase Group attempted about one per cent more of the multiple-choice questions while correctly completing about ten per cent more of them when compared with the Control Group.

Word Study Skills:

The analysis of grade scores showed a significant main effect for training groups at test periods \( p < .003 \). An examination of the predicted scores indicated main effects for treatment favored the 10,000 and 15,000 Phrase Groups when compared to the other groups. The advantage was about two tenths of a grade score over the Control and 20,000 Phrase Group and about .35 of a grade score over the 5,000 Phrase Group.

Language:

The analysis of grade scores did not reveal significant findings for training groups at test periods.

Arithmetic Computation:

The analysis of grade scores indicated significant main effects for training groups at test periods \( p < .01 \). An examination of the predicted scores indicated a slight advantage for the 10,000, 15,000, and 20,000 Phrase Groups. They were about one tenth of a grade score higher than the Control Group and about two tenths of a grade score higher than the 5,000 Phrase Group.
Arithmetic Concepts:

The analysis of grade scores showed a significant interaction associated with training groups at test periods (p < .00001). An examination of the results indicated that the best predicted grade score for the above average students in the 10,000 and 15,000 Phrase Groups was about .25 higher than the Control Group. The slower students in the 10,000 Phrase Group had four tenths of a grade score advantage when compared to the other conditions.

Arithmetic Applications:

The analysis of grade scores indicated significant main effects for training groups at test periods (p < .00001). An examination of predicted scores indicated the 10,000 and 20,000 Phrase Groups were, respectively, about .25 and .40 of a grade score higher than the Control Group. The predicted scores for the 15,000 Phrase Group and the Control Group were about the same while the 5,000 Phrase Group remained about two tenths of a grade score lower than the latter two groups. There was a significant increase in number of items attempted (p < .002), although the differences between the Control Group, and the 10,000 and 20,000 Phrase Groups were negligible. The Control Group attempted about .5 per cent more test items while the two Phrase Groups, respectively, correctly completed 7 per cent and 11 per cent more of them.

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8 The findings on the Arithmetic Concepts Test and the Science Test indicated that the best predicted score for the 20,000 Phrase Group was lower than the Control Group. Inspection of the class means at this level revealed that one class in the 20,000 Phrase Group obtained unaccountably high scores on the pre-test, so that the final grade scores on these two tests were relatively depressed. Rescoring did not indicate errors and there appeared to be no problems on the other tests. The data was included without further question.
Social Studies:

The analysis of grade scores indicated a significant interaction associated with training groups and test periods ($p < .00001$). An examination of predicted scores indicated that brighter students in the 20,000 Phrase Group were achieving about .5 of a grade score above the other groups. Scores among the slower students were about the same for all groups. Number of items attempted was not statistically significant.

Science:

The analysis of grade scores indicated a significant interaction for training groups at test periods ($p < .00002$). An examination of predicted scores indicated that for better students the Control Group, and 10,000 and 15,000 Phrase Groups were two to three tenths of a grade score higher than the 5,000 Phrase Group. For poorer students, the differences were negligible.

Discussion

The phrase reading program was developed to provide extensive practice in the rapid reading of meaningful phrases. Previous research findings indicated the phrase training program increased accuracy, speed and span of recognition of reading materials among fifth and sixth grade students, and remedial readers and slow learners at the junior high level. The present study was designed to determine if phrase reading training with fourth grade students would significantly enhance the development of reading skills for the purposes of obtaining and using new information.

The statistical analysis and a review of the findings of the individual community schools indicated that interpretation of the results should be completed within the framework of each school district. The original intent of the study was not to review the findings by school system, based on the goal that
generalization over districts (and, hopefully, to all comparable districts) would be obtained. The authors felt it would be misleading to pursue this course, even though the Results section would allow for such an interpretation.9

Analysis of the findings by individual community revealed there were noticeable differences in the relative amount of grade score gain by the two Control Groups. In the East St. Louis district, if the Control Group (N=148) were used as the baseline of "normal" educational development in that district, and the relative grade score gains were totaled for all ten SAT subtests, the resulting percentages would be obtained:10

<table>
<thead>
<tr>
<th>Phrase Group</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,000 Phrase Group</td>
<td>144</td>
<td>100%</td>
</tr>
<tr>
<td>10,000 Phrase Group</td>
<td>114</td>
<td>135%</td>
</tr>
<tr>
<td>15,000 Phrase Group</td>
<td>100</td>
<td>117%</td>
</tr>
<tr>
<td>20,000 Phrase Group</td>
<td>84</td>
<td>153%</td>
</tr>
</tbody>
</table>

Comparable findings would not be obtained among the classes in Belleville, primarily because the Control Group made over a year average grade score gain on the SAT subtests. Similar results were established for the 10,000 and 15,000 Phrase Groups. By contrast, the 5,000 and 20,000 Phrase Groups were between .15 and .20 of a grade score lower on an overall basis.

An interpretation of the findings would seem to be indicated. Children in school districts of limited social-cultural backgrounds, who ordinarily have difficulty in achieving at an expected annual rate, appeared to benefit substantially from the phrase reading programs. The influence on educational

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9 Teachers in the study responded to questionnaires designed to assess their attitudes about the school reading programs. Both Control Group and Phrase Group teachers responded favorably (about 83 per cent of the time) to the various questions.

10 Phrase Group, average grade score gain on ten SAT subtests  
Control Group, average grade score gain on ten SAT subtests

Note the 5,000 Phrase Group made the same relative grade score gains as the Control Group.
achievement appeared to generalize over subject matter. In a community setting with children of social-cultural opportunity, who are achieving at an expected or above annual rate, the supplemental need for phrase reading training was not indicated. In this case, phrase reading programs appeared to be comparable in effect to the regular language art - reading program. The choice of a given method of instruction should be at the discretion of the school staff.

As is often the case in a research project, a need for further investigation is suggested. In the present investigation the usefulness of phrase reading training with educationally retarded children was strongly suggested. A review of the finding to date would indicate that phrase reading programs could be successfully extended among school handicapped children at the Intermediate grades and junior high school levels. The authors would be encouraged to see phrase reading programs help students improve reading skills at these levels.
References

Films

Amble, B., Muehl, S., and Stroud, J., Phrase Reading Film Series - Intermediate Grades (ten 9 minute films), Audiovisual Center, University of Iowa, 1964.

Amble, B., Phrase Reading Film Series - Primary Grades (ten 9 minute films), developed at Southern Illinois University, 1966. Distributed by the Audiovisual Center, University of Iowa, and Journal Films, Chicago, 1967.

Articles


Books

APPENDIX A

PHRASE READING PROGRAMS

for

Intermediate Grades

A Summary of Experimental Research
Learning to read is one of the most important skills that children are called upon to master. Children who are able to make progress in learning this skill find school more rewarding. Children who learn to read quickly and with comprehension acquire new knowledge more effectively as they proceed through high school and college. Reading development lends itself to vocational growth and personal satisfaction.

In beginning reading instruction, of necessity, considerable emphasis must be placed on the recognition of individual words. However, reading is more than the recognition and understanding of isolated words. Successful reading requires the rapid integration of words into large contextual units — phrases and sentences. The child's transition to this higher-level reading skill, if it does occur, has been essentially uncontrolled by the teaching process and left for each child to develop on his own.

The Phrase Reading Program provides extensive practice in rapid reading of meaningful phrases. The purpose of the Phrase Reading Film Series is to increase reading rate and comprehension.

The Phrase Reading Program was developed and tested with intermediate-grade school children. The results of this research show that this type of phrase reading practice does significantly enhance reading performance. These reading gains were maintained several months after the phrase training program was completed. In addition, the Phrase Reading Program has shown promise with remedial reading classes.
Training Program

The phrase training program was developed as a series of ten separate reading films. The films are each shown twice during the training program. Each of the ten films contains 260 practice phrases which are flashed on the screen long enough for the pupil to make a single reading fixation. The phrases are shown with enough time between presentations for the student to read the phrase to himself and to prepare for the next phrase.

The phrases are two, three and four words in length. Phrase length gradually increases during the training sequence on each film. Proportionately, there are more three and four word phrases in the films placed toward the end of the series. Vocabulary is controlled at the third grade level.

Students are required to read over five thousand phrases in the course of the program. They attempt to recognize each phrase as a complete meaning unit during a single reading fixation. This extensive practice is of paramount importance for the successful development of a rapid reading response.

In addition, the program is designed to provide a highly structured learning situation by reducing distracting stimuli during training, by providing immediate information on phrase reading progress, and by motivation resulting from the unique film series.

Phrase Tests

Phrase tests follow the practice phrases on each film, and are used to establish and maintain student motivation during the training program. There are ten different phrase tests. A test contains seven phrases varying in length from three to four words. Students have time to write out each test phrase after it appears on the screen. Upon completion of the test, students correct their own papers with the teacher providing the answer phrases.
A progress chart is used by students to keep track of their phrase reading development during the training program. The progress chart helps maintain motivation. Each student can compare his own progress from day to day.

SUMMARY OF RESEARCH

Four experimental studies have been completed which establish the usefulness of the Phrase Reading Film Series.

In the fall, 1962, sixty (60) fifth and sixth grade students in Sigourney, Iowa, were trained with the Film Series. These students received 5,200 practice phrases. A matched group of students were trained with 420 phrases over a comparable period of time. Students in this second group were required to write out their responses during training. The results of the study on a delayed post-test showed that the high practice group made approximately a one year greater gain on the Paragraph Comprehension Subtest, Iowa Silent Reading Test, when compared with the low practice students. The students who received more training also made significantly greater gain—amounting to one-half year—on the Reading Comprehension Subtest, Iowa Tests of Basic Skills, independently administered by the school system.

Following the Sigourney study, certain revisions were made in the training program to improve the Film Series.

A cross-validation study was conducted in the Des Moines, Iowa, Public Schools during the spring, 1964. Three groups of fifth grade children were established from a pool of fifteen classrooms. Each group contained 125 children. Assignment of the children to the groups controlled for teacher and school area influence.

One group received the Film Series training program of 5,200 practice phrases over a ten-day period. A second group received a training program of
only 2,600 practice phrases over a five-day period. In the remaining five
days, the second group received the regular classroom program. A third group
continued in the regular classroom program throughout the ten-day period.

The results of the Des Moines study showed that the high phrase practice
group made greater reading gains on a delayed post-test when compared to the
other two training groups. The superiority of the 5,200 phrase group on the
Iowa Silent Reading Test ranged from about one year on both the Paragraph
Comprehension and Directed Reading subtests to about two and one-half years on
the Rate subtest.

A third study was conducted with the Film Series in Des Moines, Iowa,
during the summer, 1964. One hundred twenty children enrolled in a remedial
reading program participated in this investigation. These students attended
public and parochial schools in grades five through eleven. Sixty children
received 6,500 practice phrases over a period of 20 days as part of their re-
medial program. A comparable group of sixty children continued in the usual
remedial program for the same period of time. Three teachers and twelve classes
were involved in the study. Each teacher had four classes; two received the
phrase reading; two did not.

The results of the remedial reading study indicated that students who re-
cieved phrase training made relatively greater reading gains following training
than students in the usual remedial reading program. The 6,500 phrase group
evidenced about a year's greater increase on the ISRT Directed Reading Test
when compared to the other group. The one-half year relative increase of the
phrase group over the other students on the ISRT Paragraph Comprehension Test
was in the same direction as the earlier investigations although the .05 level
of significance was not obtained.
The most recent study was conducted with the Film Series in Carbondale, Illinois, during the spring, 1966. Fifty-four ninth and tenth grade Slow Learners participated in this investigation. Twenty-eight students received a training program of 7,800 phrases over a period of 15 school days. A comparable group of 26 students spent the same amount of time participating in an active dramatic reading program with additional training in reading comprehension. The findings indicated that students of limited intellectual ability who received phrase training were reading over three quarters of a year faster on the ISRT Rate Test two months after training than those students remaining in the dramatic reading program. This relative gain in reading rate was established without loss of reading comprehension over the same materials.
APPENDIX B

PHRASE READING FILM SERIES
for
Intermediate Grades

Produced by
Audiovisual Center
Division of Extension and
University Services

University of Iowa
Iowa City, Iowa 52240
The Phrase Reading Film Series consists of ten separate reading films for use with a 16mm motion picture projector.

This Film Series provides extensive practice in rapid reading of meaningful phrases. The purpose of the series is to increase reading rate and comprehension. This series was developed and tested with intermediate grade school children. The results of this research show that this type of phrase reading practice does significantly enhance reading performance.

Each film in the series contains 260 practice phrases followed by a phrase test. The practice phrases are flashed on the screen long enough for the pupil to make a single reading fixation. The phrases are presented with enough time between presentations for the pupil to read the phrase to himself and to prepare for the next phrase. The phrases are two, three and four words in length. Phrase length gradually increases during the training sequence on each film. Proportionately, there are more three and four word phrases in the films placed toward the end of the series. Vocabulary is controlled at the third grade level. Pupils are required to read over 5,000 phrases in the course of the training program.

A phrase test which follows the practice sequence on each film is used to establish and maintain motivation during the training program. A phrase test contains seven phrases varying in length from three to four words. During the test pupils have time to write out each test phrase after it appears on the screen. Progress charts are used so that each pupil can keep a record of his own phrase reading development. A manual of instructions accompanies the Phrase Reading Film Series. About 25 minutes are needed to show each film, including the practice phrases and phrase test.
The films were produced by the College of Education and the Division of Extension and University Services, Audiovisual Center, University of Iowa, under the direction of BRUCE R. AMBLE, SIEGFRIED NUEHL, and JAMES B. STROUD.

PURCHASE: One set of ten (10) Phrase Reading Film Series, U-6178, and four copies of the Manual of Instructions—$275.00

NOTE: A sample 200 ft. preview film, U-6179, showing the methods used in the series, along with a Manual of Instructions, is available on loan—no charge.