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Comparison of individual and paired learning for the measurement of retention

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Thesis

COMPARISON OF INDIVIDUAL AND PAIRED LEARNING
FOR THE MEASUREMENT OF RETENTION

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In Partial Fulfillment of Requirements for
the Degree of Master of Education

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INTRODUCTION

The purpose of this study was to measure and compare retention between children working alone and with a partner using S.R.A. (Scientific Research Associates) reading materials. The S.R.A. laboratory is a series of graded reading experiences intended to be used by individual children working alone and at their own rate of speed. Its general purpose is to improve many reading skills but in this study the retention factor will be the only concern.

It is important to determine if retention can be improved through the use of paired learning practices. The need for greater learning efficiency has long been felt in the field of education.

Recent discussion about extending the school year indicates the concern for learning in our schools today. The authors feel that better instructional practices could result in greater retention and provide more efficient use of school time.

Reading is of necessity an individual project and often does not provide motivation for recall. Discussion of reading materials with a partner might provide greater motivation and call attention to specific information in a story. It should help to clarify concepts and correct erroneous impressions of the individual reader. Many students enjoy working together because they are able to express themselves freely. When they are working in pairs and discussing the materials read, it provides real motivation for the reading task.

CHAPTER I

STATEMENT OF PROBLEM AND REVIEW OF RESEARCH

The object of this study was to measure and evaluate gains in retention using S.R.A. reading materials. A comparison of gains was made between children working individually and with a partner in several heterogeneous classrooms in the Wellesley Public Schools.

The ability to remember or recall materials read is an essential reading skill and is vital for success in all subject areas. It is fundamentally a thinking skill unique in man with challenging possibilities for development. Yoakam¹ submits that recall can be improved when he states:

"It is now generally believed that the ability to remember what is read can be improved. While some people have naturally retentive memories and some are able practically to mirror the printed page, the average reader need not be discouraged. Remembering can be improved by even the ordinary reader if he learns to organize what he reads and if he takes the trouble to use memory aids which can be learned by practice. The reason why so many children fail to remember important ideas gained from reading is because they are not interested in remembering or because they have not learned the techniques which will help them to remember what they want to remember. The reader must read with intent to remember if he is to secure the values which lie in many important kinds of reading matter. Good memories are not wholly the result of original nature but often of the desire to remember and the use of techniques which aid remembrance."

¹Yoakam, Gerald A., Basal Reading Instruction, New York: McGraw-Hill Book Company, Inc., 1955, P. 71.

Greater recall will help to produce more efficient students and aid in the development of writing and speaking skills. Better retention will contribute to clear thinking and provide better tools for use in a problem-solving situation. Recall of information read is not only important in an academic situation but is necessary to every intelligent citizen in our democratic society. McKee¹ supports this point of view when he says:

"In and out of school, and for one purpose or another the child frequently needs to retain important and valid ideas which he finds in his reading. For example, he may need to remember such ideas in order to take part in a discussion in which he should talk without using notes, to give a report or a review extemporaneously, to tell a story that he has read, to recite a poem or a quotation, to follow direction in making something, or to take a test covering a given unit of subject matter, or to provide himself with a sound foundation for further study in a given subject. In such situations, the child sometimes needs to retain the gist or main points or an entire reading selection itself. At other times he needs to retain only scattered bits that appear here and there in the selection. Often it is sufficient for him to retain the required ideas cloaked in "his own" words. Occasionally, he must memorize a short selection verbatim."

Without understanding and retention reading has little value.

Burton² emphasizes this point when he says:

¹McKee, Paul, The Teaching of Reading, Boston: Houghton-Mifflin Company, 1951, Pp. 531-532.

²Burton, William H., et al., Reading in Child Development, Indianapolis: The Bobbs-Merrill Company, Inc., 1956, P. 329.

"Reading is of little consequence unless a person remembers something of what he reads. The retention of meanings is something entirely different from the retention of words, which may be a mere verbalism. The area of retention is of vital importance to the mastery of all content."

TEAM LEARNING

The purpose of this study was to measure, compare and evaluate the retention of materials by children working individually and in pairs. We are trying to evaluate the apparent advantages of paired practice as a method of increasing the retentive power of children in a reading assignment.

Positive research information on the value of paired practice is sketchy. Spencer¹ supports this statement when she remarks:

"Research as yet has supplied little evidence beyond subjective questioning to support the opinions of educators favoring pupils working independently in teams, as a profitable learning technique."

Despite the lack of conclusive research supporting team learning, many educators agree working independently does not always provide for the most efficient learning. This is the opinion of Gray² who states:

"Experience shows clearly that pupil development cannot always be achieved most effectively as the child works alone. Of great importance is the stimulus and

¹Spencer, Doris, "An Evaluation of Word Study Lessons in Grade Four", Unpublished Doctor's Dissertation, Boston University, 1958.

²Gray, William S., (Compiler and Editor), Classroom Techniques In Improving Reading, Chicago: The University of Chicago Press, 1949, P. 23.

added insight which result when he works cooperatively with others in achieving common goals."

Reagan¹ found that children enjoy working together and that pairs seems to be the most productive form of grouping.

Klugman² in an effort to discover whether children could solve arithmetic problems better alone or in pairs reported the following results:

".....when children worked in pairs they earned reliably higher scores than when they worked independently. However, while the scores were higher, it took them a reliably longer time....due to the presentation, discussion rejection, and acceptance of a greater number of possible answers which occurred when the children worked in pairs."

Durrell³ believes in flexible grouping to fit the instructional objectives. He maintains that this will prevent a child from being dependent on other members of the group. To quote Durrell:

"While the child must have practice in independent work, there are few objectives of learning in the elementary school which are not better attained through group and team work. Children may be grouped or paired by the teacher so that one child does not continually lean on others to get his work done. Choice of partner or of members of teams may be limited at times to children of the same reading level. At other times

¹ Reagan, John Francis, "Improving Recall Through Graded Study Lessons in Grade Four." Unpublished Master's Thesis, Boston University, Boston, 1957.

² Klugman, Samuel F., "Cooperative Versus Individual Sufficiency in Problem Solving", Journal of Educational Psychology, 35:91-100, February, 1944.

³ Durrell, Donald D., Improving Reading Instruction, New York: World Book Company, Yonkers-on-Hudson, 1956.

the teams may be chosen from the entire class. In certain situations children may be paired for reading level, for enterprise, for interests, or even for certain personal qualities. The success of paired practice depends in part upon the congeniality of the pairs."

In a study conducted by Campanaro¹ it was found that:

"The active role of a child participating in a group brought out a greater gain in learning than when the very same child had to concentrate, study and sit by himself."

Other intrinsic values of group work are offered by Strang² when she asserts:

"A group consists of two or more individuals, working together toward a goal....A group builds up integrity and personality, strengthens the individual's awareness of being a member interacting with others for positive purposes.....

Group work is planned shared experiences which foster desirable changes in individuals as a whole."

Group participation promotes growth in democratic ideals necessary in preparation for life in a free society. This is emphasized by Burr, Harding and Jacobs³ when they state:

"Modern schools are responsible for teaching children to assume shared responsibilities and to carry on cooperative activities, both of which contribute to the optimum development of the individual personality and to the common group life. Through group work children not only get important work done, they also

¹Campanaro, Lena E., "Graded Lessons for the Use of Study Teams, Grade Four", Unpublished Master's Thesis, Boston University, 1956, P. 33.

²Strang, Ruth, Group Work in Education, New York: Harper Brothers, 1958, P. 5.

³Burr, James B., Lowry W. Harding and Leland B. Jacobs, Student Teaching in the Elementary School, New York: Appleton-Century-Crofts, 1950, P. 253.

learn the meaning of shared roles of leadership, the responsibility inherent in freedom, the necessity of critical thinking in the solution of problems and the need for the continuous evaluation, both of the products of group action and of the processes employed."

This view is supported by Brueckner and Grossnickle¹ when they say:

"The experience of working together with others in the study and solutions of vital problems and of accepting responsibility for assignments by the group contributes to the development of social qualities and abilities which are fundamental to life in a democracy. Within these units there are such a wide variety of activities possible that all pupils can find ways in each of them to make worthwhile contributions to the group according to his interests, abilities and special talents."

To reach the social goals mentioned by Brueckner and Grossnickle successful group work is motivated by a team spirit.

Markovin² supports this view when he states:

"By entering into the team spirit, classmates should learn to divide their functions and duties as members of committees or clubs, and abide by the rules of the "game", to think together, and to cooperate. They learn to participate actively or vicariously in different situations in or out of school, to plan and evaluate, to discuss, report and dramatize-----The learning takes place more effectively when children do it not as consumers only but also as active participants in and out of school."

¹Brueckner, Leo J., and Foster E. Grossnickle, How to Make Arithmetic Meaningful, J. C. Winston Company, 1947, P. 153.

²Markovin, Bors V., "Growth Through Speaking and Listening", Elementary English Review, 26:129-131, March, 1949, P. 130.

In addition to the realization of social goals, grouping is invaluable as a means of providing for individual differences in learning. Durrell and Palos¹ emphasize this point when they say:

"Team study seems to offer many advantages to learning, especially in view of the wide differences in ability among pupils in a classroom. It permits adjustments to team differences in level and learning rates; rapid learners may advance faster or use more difficult materials; slow learners may use easier materials or more detailed study guides and progress at a suitable pace. It should give the opportunity for specific practice to overcome weaknesses common to the team....Certainly team study provides greater security in learning, especially when pupils check their knowledge with each other at frequent intervals in the study period."

Durrell² lends further support to the value of group work when he asserts:

"There are a great many situations when interest is heightened, comprehension is increased, and general achievement is improved through pupils working in pairs.....There is seldom any type of work which is not enhanced by children working in pairs....They may enjoy various types of contests when paired with a child of equal ability. Sometimes it is desirable to pair a rapid learner with a slow one, setting up a tutoring situation for various kinds of skills help."

Summary of Research

Although there is little research to support the advantages of grouping, most authorities agree that working together often provides

¹Durrell, Donald D. and Viola A. Palos. "Pupil Study Teams in Reading", Education, May, 1956.

²Durrell, Donald D. "Improving Reading Instruction", New York: World Book Company, Yonkers-on-Hudson, 1956, P. 129.

the most profitable learning situation. Some of the important advantages of group work can be summarized as follows:

1. Enhances pupil enjoyment.
2. Provides for individual differences.
3. Contributes to personality development.
4. Provides opportunity for leadership.
5. Teaches children to assume responsibility.
6. Develops a co-operative attitude.
7. Stimulates greater interest in learning.
8. Fosters the development of democratic ideals.
9. Improves instruction of skills.

Michaelis¹ summarizes the need for cooperation and team work when he states:

"The ability to cooperate, to work with others to be a member of a team, is of prime importance in our culture. The team work employed in industry, education, science, government and other significant activities is illustrative of this point. From early days when neighbors worked together to raise the walls of a log cabin, or to have a town meeting, to the present time when a crew of workers erects a skyscraper, or a group participates in a meeting of the city council, progress has been accelerated because of cooperation. And now cooperation among nations of the world looms large as a major problem of our times."

¹Michaelis, John U., Social Studies For Children in a Democracy, Prentice-Hall, Inc., New Jersey, 1957, PP. 22 & 23.

CHAPTER II

PLAN OF THE EXPERIMENT

The purpose of this study was to measure and compare the effect of paired practice on retention of reading materials. The population was separated into two groups, one worked individually, and the other worked with a partner. The experiment lasted for a two week period and the groups were interchanged at the end of the first week. This enabled every child in the population to work both individually and with a partner.

In preparation for the study it was necessary to:

1. Obtain permission from S.R.A. (Scientific Research Associates) to reproduce certain reading materials from their reading laboratory.
2. Secure the cooperation of a public school system to conduct the experiment.
3. Administer "Starting Level Guide" tests to determine (color) achievement levels of students in the several classrooms.
4. Develop an instrument to measure the retention of material by children involved in the experiment.

1. Materials of Instruction

Using the Starting Level Guide Test.

The S.R.A. Starting Level Guide Test is designed to aid the teacher in the selection of the correct reading level for the students using the S.R.A. kit. Each level is designated by color, with a different color for each level in the laboratory.

The Starting Level Guide Test was administered according to the instructions set forth in the S.R.A. manual to each of the six classrooms cooperating in the experiment. The results of this test showed that over 98 percent of the test population fell into the red and green color levels. The color level green was chosen because it was the proper level for a majority of the group and offered no reading difficulties to the remainder of the test population.

The first ten stories from the power builder section and green color level were selected for the experiment. Special permission was obtained from S.R.A. (Science Research Associates) to reproduce these stories. This was necessary to enable all the children to read each story at the same time. These stories were photostatically reproduced and equal to the original material except for the absence of color in the illustrations.

The reproductions were in black and white only. (See sample)

2. Final Measure

A final test was developed that contained one hundred questions designed to measure retention of the reading stories. All the questions were of the multiple choice type and the correct answer had to be selected from three possible answers. They were similar in form to

practice questions in the S.R.A. reading laboratory and were based on factual information. It is important to notice that the questions in the final measure were not the same as the ones used in the practice exercises. Because the final test was administered in the fourth week, it was decided a memory clue should be provided to orient the child to the particular story. The test was separated into ten sections with the title of each story appearing before the questions as a memory clue.

3. Description of Population

The study was conducted in an Eastern Massachusetts school system where six heterogeneous classrooms were selected for the experiment. Only classrooms that were not previously exposed to S.R.A. materials were chosen. The total population was one hundred fifty sixth graders from four different elementary schools. The classrooms ranged in size from eighteen to thirty pupils. There were (74) girls and (76) boys. The I.Q.'s ranged from 82 to 152 with a median of 118 for the total population.

4. Procedure

The population was separated into two groups of three classrooms each. Group One consisted of classrooms A, B, and C. Group Two consisted of classrooms D, E, and F. The study lasted for a period of ten consecutive school days and the final measure was administered a week later.

The following chart shows that during the first week group one worked individually and group two worked in pairs. The second week the procedure was reversed; group two worked individually and group one worked in pairs. All children worked alone and with a partner for an equal period of time.

Table 1. Organization of Grouping

Working	Week I (First 5 Days)	Week II (Second 5 Days)
Individually	Group I (Classrooms ABC)	Group II
Pairs	Group II (Classrooms DEF)	Group I

Ten stories were selected from the power builder section of the S.R.A. Reading Laboratory. Reproduction of the materials enabled all of the children to work simultaneously on each of the cards. The first week group two worked with a partner while group one worked individually. The second week this process was reversed so that each pupil worked on one half of the cards individually and on the other half in pairs.

Table 2.

STORY	WEEK I					WEEK II				
	1	2	3	4	5	6	7	8	9	10
Individuals	Group I					Group II				
Pairs	Group II					Group I				

The children were instructed to complete the exercises at the end of each story. The pupils working in pairs were directed to read the story individually but to discuss and compare their answers with their partner. Individual answer sheets were supplied for this purpose.

5. Directions for Working Individually

Teacher Directions:

1. Choose group leaders to hand out and collect the reading materials.
2. Hand out the stories and answer blanks.
3. Have students put their name on the answer blank.
4. Explain that they will read the story silently by themselves.
5. Have them answer the questions and complete the reading exercises at the end of the story.
6. When the exercises have been completed, tell them to raise their hand.
7. Give each pupil a correcting card so that they may check their work immediately.

Pupil Directions:

Please listen carefully:

You are going to read the story by yourselves. When you have finished, answer the questions and do the exercises at the end of the story. If you are not sure of an answer, you should go back to the story and check to be certain you are right. When you have finished, raise your hand and your teacher will give you an answer sheet so that you can correct your answers. There is no time limit so do the best you can.

6. Directions for Children Working in Pairs

Teacher Directions:

1. Choose group leaders to hand out and collect the reading materials.
2. Assign pupils into pairs.
3. Hand out the stories and answer blanks.
4. Have students put their name on the answer blanks.
5. Explain that they will read the story by themselves but will work with their partner to compare and discuss their answers when answering the questions and doing the other written exercises.
6. When the exercises have been completed, tell them to raise their hand.
7. Give each pair a correcting card so that they can check their work immediately.

Pupil Directions:

Please listen carefully:

You are going to read the story by yourselves. When you have finished, work with your partner to answer the questions and do the exercises at the end of the story. Be sure to discuss your answers; and if you are not sure or disagree, go back in the story and check. Work together on all of the questions.

When you have finished, raise your hand and your teacher will give you an answer sheet so that you can correct your answers. There is no time limit so do the best you can.

CHAPTER III

ANALYSIS OF DATA

The purpose of this study was to determine whether retention can be improved through the use of paired learning experiences. The task was to measure and compare retention between children working individually and in pairs using S.R.A. reading materials.

The main concern of this chapter is to analyze the data for the following purposes:

1. To indicate the range of intelligence quotients of the population in the study.
2. To show the achievement levels of the population on the S.R.A. starting level guide test.
3. To compare the major findings of the whole group working individually and in pairs.
4. To compare the results from classrooms with previous experience working in pairs.
5. To compare the results from classrooms without previous experience working in pairs.
6. To compare the gains or loses resulting from previous paired practice.
7. To evaluate teacher and pupil preference in paired work.

Table 3 shows the distribution of IQ's for the total population. They range from 82 to 152 and have a mean of 118.5. The standard deviation for the group is 8.65.

Table 3.

I.Q.	No. of people	%
140-152	10	6.66
130-139	22	14.66
120-129	34	22.66
110-119	42	28
90-109	40	26.66
80-89	2	1.33
	N=150	

To conduct the study it was necessary to find an ability level at which all students would perform best. The Starting Level Guide Test (S.R.A.) was administered to determine which level would be used. Material from the S.R.A. Reading Laboratory was chosen at a level which could be understood by those individuals involved in the study.

Table 4 shows the three achievement levels of the population. The color red represents the highest achievement level and brown the lowest. It shows that 39 pupils were in the highest; 94 pupils in the average group and 17 pupils in the lowest. For the purpose of measuring retention all students read the selections from the green color level.

Table 4.

COLOR LEVEL	NO. OF PEOPLE	%
Red	39	26
Green	94	66.66
Brown	17	11.33
	N = 150	

MAJOR FINDINGS OF WHOLE GROUPS

Table 5 shows the mean score of the pupils working individually to be 41.04 compared with 40.71 to those that worked in pairs. The mean difference in retention was .33 in favor of the pupils that worked individually. The critical ratio of .63 shows that the difference is not statistically significant. This suggests that there was little difference when working alone or with a partner comparing the groups as a whole.

Table 5.

WHOLE GROUP	N	Mean	S.D.	S.E.M.	Diff M	S.E. Diff	C.R.
Individuals	150	41.04	4.38	.36	.33	.53	.63
Pairs		40.71	4.81	.39			

Table 6 shows that pupils with experience in paired work had a mean score of 38.90 when working individually and 42.50 when working in pairs. The mean difference of 3.15 was in favor of those that worked in pairs. The critical ratio of 3.18 shows this difference to be statistically significant. It appears that pupils with experience working in pairs tend to have better retention than those working individually.

Table 6.

EXPERIENCED PAIRS	N	Mean	S.D.	S.E.M.	Diff. M	S.E. Diff.	C.R.
Individuals	55	38.90	4.06	.775	3.15	1.02	3.18
Pairs		42.50	3.34	.635			

Table 7 shows that pupils without experience in paired work had a mean score of 42.44 when working individually and 38.73 when working in pairs. The mean difference of 3.71 was in favor of those that worked individually. The critical ratio of 2.61 shows the difference to be statistically significant. Pupils without experience working in pairs had better retention when working by themselves.

Table 7.

INEXPERIENCED PAIRS	N	Mean	S.D.	S.E.M.	Diff. M	S.E. Diff.	C.R.
Individuals	95	42.44	3.62	.762	3.71	1.52	2.61
Pairs		38.73	5.25	1.09			

Table 8 shows the difference between the means of the groups having experience working in pairs and the other which was inexperienced working in pairs. The difference in the means was 3.77 in favor of the experienced group. The critical ratio was 2.98 and is statistically significant. This suggests that experienced pairs tend to have better retention than inexperienced pairs.

Table 8.

	N	MEAN	S.D.	SEm	Diff M	S.E. Diff.	C.R.
EXPERIENCED	150	42.50	3.35	.64	3.77	1.27	2.98
INEXPERIENCED		38.73	5.24	1.09			

RELATED DATA

Pupil Preference Questionnaire

The following questionnaire was presented to the pupils at the completion of the experiment. Students were asked if they enjoyed the reading selections and also if they preferred to work individually or with a partner.

Table 9. Sample Questionnaire

	Check One	
	Yes	No
1. Did you enjoy doing the lessons?	_____	_____
2. Which do you prefer:		
Working with a partner?	_____	_____
Working alone?	_____	_____

The result of the questionnaire showed that nearly all of the pupils enjoyed doing the lessons. One hundred two students preferred to work with a partner while forty eight preferred to work by themselves.

Teacher Preference Questionnaire

At the conclusion of the experiment the questionnaire which follows was given to the teachers. They were asked how they taught reading and if they used paired learning techniques in their daily work.

Table 10. Sample Questionnaire

1. How do you teach reading?		
Usually teach to the whole class	_____	
Usually group children for instruction	_____	
2. Do you use paired learning techniques in their daily lessons		
	Yes	No
	_____	_____

The results of the questionnaire showed that all teachers grouped their children for instruction in reading; however, only two out of six teachers utilized paired practice techniques.

Summary Statement of Findings

Table 5 indicates that the pupils as a whole group had better retention when working individually. Table 6 shows that experienced pairs did better than those that worked by themselves. Table 7 shows that inexperienced pairs have greater retention when they work alone.

Table 8 indicated that experience is a factor when working in pairs. The experienced pairs had greater recall than those without previous experience.

The results of the pupil preference questionnaire showed that 48 children preferred to work individually and 102 preferred to work in pairs. This means approximately 2 to 1 preferred working with a partner.

According to the teachers' preference questionnaire it was found that all teachers had used some form of grouping but only two teachers had given specific practice in paired work.

CHAPTER IV

SUMMARY AND CONCLUSIONS

SUMMARY

The purpose of this study was to measure reading retention and to make a comparison between children working alone and with a partner.

This study was conducted in the town of Wellesley, Massachusetts. Six heterogeneous classrooms from four elementary schools cooperated in the experiment. The population consisted of 150 children from grade six without previous experience using the S.R.A. reading laboratory. The I.Q.'s ranged from 82 to 152 with a median of 118 for the group as a whole.

Ten S.R.A. stories were selected from the green color level of the reading laboratory. This color was chosen as a result of the "Starting Level Guide Test", which was administered to determine their ability range. The stories were photostatically reproduced and were equal to the original material except for the absence of color in the illustrations.

The experiment lasted for a period of ten consecutive school days. The first week half of the population worked alone while the other half worked in pairs. The second week the groups were interchanged so that each child worked both individually and with a partner for an equal period of time. A final measure was administered one week

following the close of the experiment. It consisted of 100 multiple choice questions based on retention of the material read.

CONCLUSIONS

1. A comparison of the total population showed no significant difference between working alone or with a partner. The critical ratio of .63 favored individual work.
2. Experienced pairs had better retention when working with a partner. A critical ratio of 3.18 favored paired work.
3. Inexperienced pairs had better retention when working alone. A critical ratio of 2.61 favored working individually.
4. When working in pairs people with previous paired experience had better retention. The critical ratio of 2.98 favored the people with experience.
5. Pupils in this study preferred group work at a ratio of about 2 to 1.
6. Two out of six teachers used previous paired work.
7. Previous experience appears to be a significant factor as an aid to retention in paired work.

SUGGESTIONS FOR FURTHER RESEARCH

The results of this experiment give strong indications that previous experience working in pairs is a significant factor in the measurement of retention. It is suggested for further study that a larger population be used on pupils with previous paired experience.

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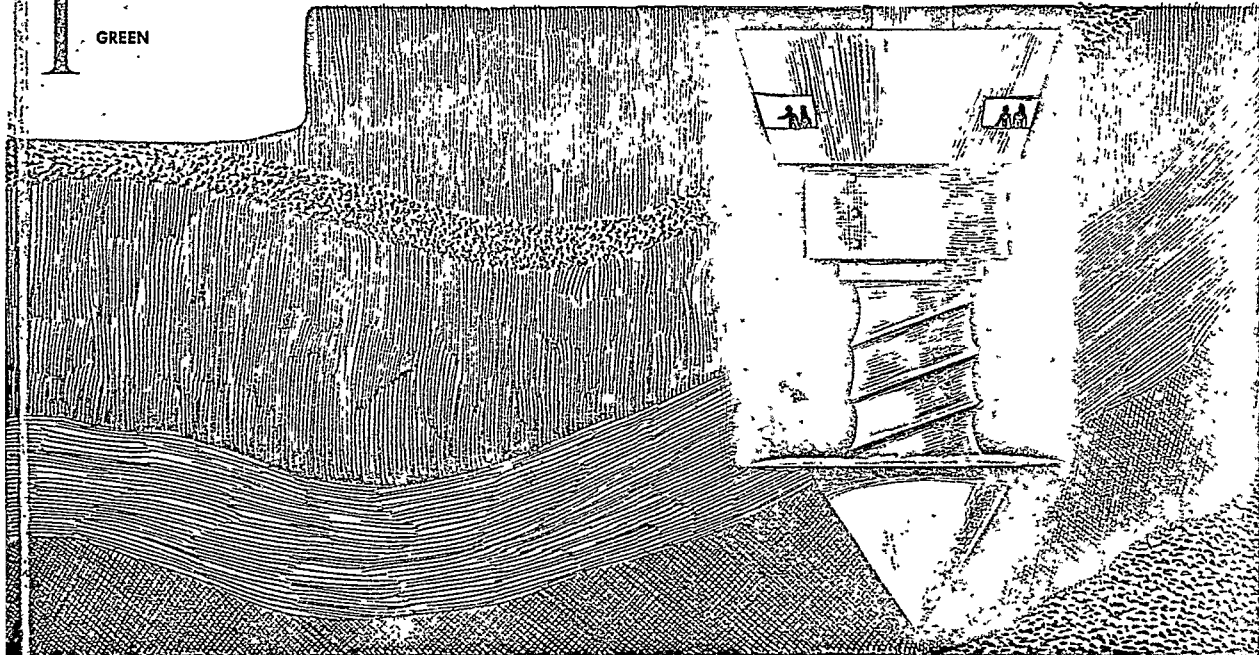
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I
GREEN



In Less Than Two Seconds

By JEROME S. MEYER

1 Let us pretend we could take a trip right down into the center of the earth. What would we see? How would you get along on a trip like that? Of course you know that a trip into the center of the earth is impossible. Such a trip will always be impossible. But just suppose that it were possible.

2 To take this imaginary journey we will have

to be imaginary people. We will have to be people who are not affected by terrible heat or terrific pressure. We will also need some super-speed drills to drill our way down through about one thousand eight hundred miles of solid rock. We will need to drill our way down as fast as an express train can move along the ground. If we could do all

this, what do scientists believe we would feel? What do scientists believe we would see?

3 After digging for a short while we hear a clanking sound. We find our shovels clanking against the hard surface of bed rock. Then we throw away our shovels, get into our huge speed drills and start down.

4 We drill and we drill. Down, down we go. After we are about a half mile below the surface of the earth we notice that it is much hotter than when we started. When we are about a mile down, it is still hotter. This is not strange because for every mile we go down the temperature goes up. It goes up eighty degrees Fahrenheit. So when we have traveled down three miles the temperature will be hotter than boiling water. By the time we have traveled to a depth of only fifty miles the temperature will be about four thousand degrees. This is as hot as fire. Just imagine!

5 Drill, drill, drill—down, down, down we go. Straight down, hour after hour. All we can see are rocky walls. Rocky walls of ever-changing colors are all around us. Sometimes we see thick ores rich in iron and platinum. Other times we see diamonds mixed in with a great many other minerals. But it is all solid rock-like stuff.

6 Some of the rock walls sliding past are quite pretty and we would like to touch them. But we would be foolish to try to touch them as we whiz by. We are now so far down that it is as hot as an electric furnace!

7 We keep falling for two more days and

two nights without stopping. We see changes taking place in the walls. Now they are becoming so hot that they have melted into a pasty mass. It is a kind of mud made of iron and nickel.

8 It won't be long now before we are dumped into a huge mass of iron and nickel. It will be in liquid stage and boiling like a kettle of molasses candy. But it will be a big ocean of boiling metal! It will be so hot that anyone coming within ten miles of it would be burned. Oh, yes, anyone coming within ten miles of it would be burned to a crisp in less than two seconds.

9 So we press the "UP" button for a quick get-away. This is no place for us. It is no place for anyone! So back we go to the surface of the earth where we belong. My, how good it is up there looking at the wonders of the earth and sky. And let's be happy that we can take a trip anywhere on the surface of the earth without burning to a crisp in less than two seconds.

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HOW WELL DID YOU READ?

Did you note the important facts?

- If anyone comes within ten miles of the big ocean of boiling metal, he will be
 - burned to a crisp
 - burned a little
 - warm
- For every mile we go down toward the center of the earth, the temperature goes up
 - fifty degrees Fahrenheit
 - eighty degrees Fahrenheit
 - four thousand degrees Fahrenheit

What do you think?

- This trip should be taken in
 - our imagination
 - the spring
 - the winter
- This story helps you understand
 - how to dig a hole
 - why the sun is hot
 - why volcanoes are hot
- Another good title for this story would be
 - "A Hot Trip"
 - "A Piece of Rock"
 - "Surface of the Earth"

Read between the lines

- This trip
 - really happened
 - will probably never be possible
 - may be possible in the near future

7. This story was written to

- amuse us
- help us plan our next trip
- show what it is like inside the earth

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word from other words around it. We call this "getting meaning from the **context**."

Directions: Find words in the story which mean:

- to begin (3)
- not real (2)
- opposite of days (7)
- middle (1)
- good-looking (6)

B. When you know the meaning of a word and know its first letter, you can often tell what the word is.

Directions: Read the meaning, then look at the first letter in each line of the puzzle. When you know what the word is, turn to the right paragraph in the story and find it. Then write the word.

6. a number

E		(2)
---	---	---	---	---	--	-----

7. on every side

A	(5)
---	---	---	---	---	---	-----

8. a large mass of stone

R	.	.	.			(3)
---	---	---	---	--	--	-----

9. a number

T	.	.	.			(7)
---	---	---	---	--	--	-----

10. one of two equal parts

H		(4)
---	---	---	---	---	--	-----

11. This trip was taken into the center of the _____. Look down the first row of the puzzle. Write the word.

C. Every vowel has both a long sound and a short sound. Long vowels say their names. Short vowels never say their names. They have a special sound. Study the table of vowel sounds at the bottom of this page.

Directions: Write each word. Say the word softly to yourself. Place the long mark (–) over the long vowels and the short mark (˘) over the short vowels. If a vowel has no sound, cross it out, like this ~~l~~.

EXAMPLES: māy cān mā~~g~~

- | | |
|-----------|----------|
| 12. while | 15. take |
| 13. drift | 16. so |
| 14. rock | 17. just |

- | | |
|-----------|-----------|
| 18. mile | 21. we |
| 19. whiz | 22. hot |
| 20. thick | 23. place |

D. out + side = outside

Outside is a compound word. It is made by putting two smaller words together.

Directions: Write the two smaller words that make up each compound word.

- | | |
|----------------|-----------------|
| 24. upstairs | 29. however |
| 25. woodwork | 30. candlestick |
| 26. airplane | 31. buttonhole |
| 27. playground | 32. without |
| 28. raincoat | 33. grandmother |

The Vowels

Long Vowel Sounds

Short Vowel Sounds

ā

ape

apple

ē

eagle

elephant

ī

ice

Indian

ō

open

ox

ū

uniform

umbrella

2 GREEN



FOUR-LEGGED DETECTIVE

By LAWRENCE THOMPSON

- 1 Rajah is a detective in his own right. He is a police dog, a big Alsatian with an alert, friendly face.
- 2 A short time ago he was on patrol in Hyde Park with his master, a uniformed policeman. A gang of nineteen young roughnecks were smashing park chairs. They ran away when they saw the policeman. But Rajah, who can run faster than any person, soon caught up with them. One of the gang tried to throw the
- 3 dog, and Rajah then gave a mild sample of how he can fight. It didn't take long for the rest of the gang to decide to wait quietly for the policeman.
- 4 Rajah will fight only if the chap he is after tries to fight with him first. He, and all other police dogs, are taught to grab a crook's right arm. Rajah will not bite it. He will not even tear the sleeve. He will just grasp the arm gently with his teeth. If the man stops and

stands still, Rajah is satisfied. He will not leave the man until his master arrives.

4 Criminals do not like the dogs. They can't get away from them as easily as men. Give Rajah a fair scent to follow, and he will not leave it until he finds the man the scent belongs to. He will follow it for an hour, for four hours, or even for eight hours.

5 A housebreaker was chased through dark streets at two o'clock in the morning by police on foot and by police in radio cars. Finally the man ran into the huge garden of a big house. To find him with no light but that of a flashlight would have taken the policemen many hours. The crook also had a fair chance to escape or get away while the search was going on. So the police didn't try to find him. They stood on guard outside the garden, and telephoned for a dog.

6 Rajah arrived within a short time. He was put on the trail and took the police straight to the housebreaker's hiding place.

7 Dogs are very useful for patrolling parks and other open spaces. They are the enemy of purse snatchers. A purse snatcher does not like being chased for a mile in the dark over bushes, ditches, and sandpits by a hound.

8 Of course, dogs have uses other than thieftaking. They will also track down lost children.

9 Dogs have been used by the police in certain kinds of cases since 1888. But in 1946, Scotland Yard, London's famous police headquarters, began training dogs to be real police

detectives. They began with six Labrador retrievers. The Labrador is a good tracker and a powerful, heavy dog. He is good for holding criminals. But, like some people, he does not like to work after dark. For this reason Scotland Yard began to get Alsations. They found that these dogs are as keen, alert, and intelligent at three o'clock on a cold wet morning as on the hottest summer day.

10 It takes three months for the training of a dog and his master. This training is done at the kennel at Imber Court. It is here the master learns to know his dog, and the dog learns to know and trust his master. Man and dog together learn the words of commands, whistles, and gestures with which the dog is controlled from long or short distances.

11 The dog will obey no signals except those of his master, whom he worships. Any man is foolish to try to beat up a master in sight of his dog. If anyone does, he will quickly have a hefty Alsatian with powerful jaws and sharp teeth on top of him.

12 When the training is finished, the dog goes to live with his master. A kennel and food are provided for the dog at the master's home. Every two weeks the master and dog go back to Imber Court for a day.

13 Today, the four-legged policemen are a very important part of the Scotland Yard Police Force.

Adapted from The Story of Scotland Yard by Lawrence Thompson published in the Landmark Series by Random House in the USA by arrangement with Burke Publishing Co. Ltd., London.

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HOW WELL DID YOU READ?

What did the writer say?

1. A police dog is trained to obey
 - A) only a few friends
 - B) everyone
 - C) only his master
2. To train a dog and his master it takes
 - A) a day
 - B) three months
 - C) three weeks
3. Rajah is a
 - A) uniformed policeman
 - B) police dog
 - C) criminal
4. When Rajah gets a scent to follow, he will
 - A) not stop searching until he finds the man he's looking for
 - B) follow it for only an hour
 - C) follow it for only four hours

Can you draw the right conclusion?

5. Every two weeks the master and his dog go back to Imber Court for a day
 - A) so the dog will stay alert
 - B) to have fun
 - C) to have a vacation
6. Criminals do not like police dogs because
 - A) they are easy to fool
 - B) they can jump easier than a man
 - C) it is impossible to get away from them

How well can you reason?

7. Police dogs are a very important part of Scotland Yard because
 - A) they like to follow the policemen
 - B) they do things policemen can't do
 - C) they bite the policemen

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word from other words around it. We call this "getting meaning from the **context**."

Directions: Find words in the story which mean:

1. watchful; wide awake (1)
2. rip (3)
3. part of a coat covering the arm (3)
4. persons who have committed a crime (4)
5. started (9)

B. Often a word has more than one meaning, depending on how it is used.

EXAMPLE: The word **place** may mean

- A) spot
- B) duty
- C) space; room

Look at paragraph 6. You will see that **place** has the A) meaning.

Directions: Now look at each **boldface** word. Read the three meanings (A, B, and C). Then look back to the right paragraph. Decide which meaning fits the way the word is used in the story. Write the letter that stands before the meaning you choose.

6. **master** (2)
 - A) person who has control over a dog
 - B) a male teacher
 - C) a skillful person
7. **rest** (2)
 - A) sleep
 - B) others; what is left
 - C) stop work
8. **fair** (4)
 - A) beautiful
 - B) light in color
 - C) average; pretty good

9. crook (5)
 A) thief
 B) curved part of anything
 C) bend
10. cases (9)
 A) special events
 B) coverings
 C) boxes
11. short (10)
 A) brief in time
 B) not equal to
 C) not great in distance
12. sharp (11)
 A) clever
 B) cold
 C) not blunt or dull
- C. buy—by
 four—for

Words that sound alike are called **homonyms**. Homonyms have different meanings and different spellings.

Directions: In each sentence there are two words which are homonyms. Read each sentence to yourself. Then choose and write the homonym that makes each sentence correct.

EXAMPLE: John (threw, through) the ball.

threw is the correct word.

13. The children have (their, there) books.
 14. Will you (be, bee) here early?
 15. Did you (see, sea) the picture?
 16. Paul has (four, for) marbles.
 17. The (son, sun) is shining.
 18. The (rose, rows) is beautiful.

19. The boat had a red (sale, sail).
 20. Who (one, won) the race?
 21. Four and four are (ate, eight).
 22. The cat has a long (tale, tail).

D. Sometimes, when two consonants come together, you do not sound each one. You join them to make a new sound.

EXAMPLE: wh, ph, gh, th, ch, sh

Directions: You will find one of these sounds in each word in Column I. Find another word in Column II that has the same sound. Write the word.

I	II
23. whale	rich
24. photo	both
25. tough	phone
26. thumb	white
27. porch	rough
28. fish	shirt

E. Most words that begin with the same consonants, begin with the same sound. Say these words softly to yourself.

this	when	cheat
that	where	chase

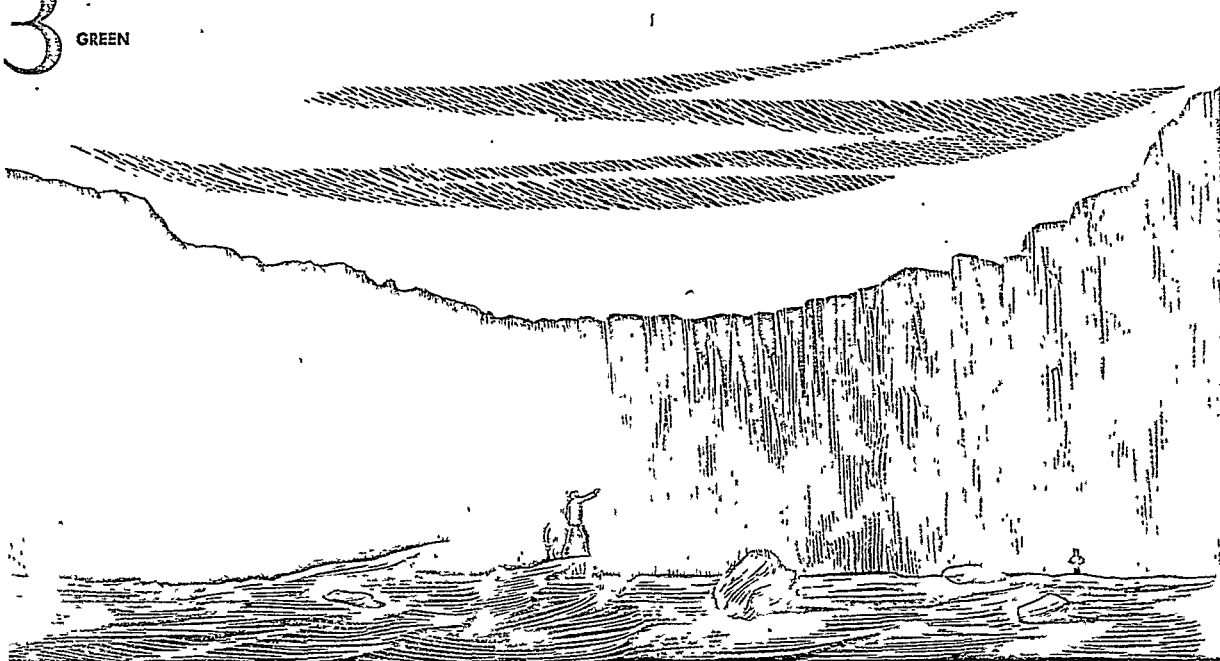
Directions: There are three words in each line. Two of the words begin with the same sound. Say the words to yourself. Write the two consonants that make the same sound at the beginning of the two words.

29. thumb, tumble, throne
 30. charge, change, range
 31. wild, while, why.
 32. chase, chain, case
 33. suit, shoot, shine

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3

GREEN



The Day Niagara Falls Stopped

By GORDON S. SMITH

1 Suddenly there was a stillness. The noise of the water had stopped. There was a hollowness about the place that sounded louder than the Falls ever did. People awoke from their night's sleep. They dressed and searched for the cause of the strangeness. It was unbelievable. Niagara Falls had stopped flowing. Was it the end of the world?

2 You can imagine how frightened the people were! People living within the area of Niagara Falls are used to the swirling noise of the Niagara River falling rapidly over the rocks of the Upper Rapids. The roaring sound as 1,500,000 gallons of water drop about 165 feet every second is deafening. But this sound is as common to the people as the ticking of

a clock. In the narrow passage below, the racing water gains speed until at one narrow spot the water rushes through at 50 miles an hour.

³ Niagara River is 36 miles long. It is the natural way out for the 260,000 square miles of water that flows from the four Great Lakes—Lake Superior, Lake Michigan, Lake Huron, and Lake Erie. The river drops 326 feet between Lake Erie and Lake Ontario. The drop at the Falls is about midway along the river.

⁴ This giant waterway has been flowing since man can first remember. It has been flowing since Father Hennepin first saw “the Falls” on the cold morning of December 6, 1678. But, of course, geologists tell us that it has been flowing for thousands of years.

⁵ During very cold winters, heavy ice covers the surface around the Falls. Water always flows, however, under the ice. It also has its deafening roar. The roar is such a part of the beauty of the Falls that one becomes used to it and forgets about the noise.

⁶ And so it was in 1848 that the impossible happened. As usual the Great Lakes had been frozen all winter and the thaw had started. Large pieces of ice had broken away and were floating down the river. These pieces broke up into smaller pieces on the way down, crashing over the cliff and milling around in the odd whirls of the Lower Gorge or passageway. This all happened before the pieces of ice departed on their race to Lake Ontario. It was the usual sight with the usual noise. March 29

was much like that of any other year. But, before the day ended, it had made history.

⁷ The stillness that came upon them that night drove the people almost crazy. The following day they went down into the gorge and up the other side to see what was wrong. Boulders or huge rocks that had never been seen before lay bare at the bottom. The now uncovered river bed gave up untold discoveries in the way of Indian relics. Men, women, and children hunted in the piles of loose rock. A regiment of soldiers even marched as well as they could among the rocks.

⁸ For nearly thirty hours Niagara Falls stopped flowing. Then once again the old familiar roar was heard as ice and water came pouring along the Upper Rapids. It again poured over the great Niagara and thundered down the Lower Rapids.

⁹ Why had the Falls stopped flowing? Experts believe the Falls stopped flowing because a strong wind stopped the flow of ice where Lake Erie bottlenecks into the river. The wind held back the ice and jammed it solid, forming a dam of ice. It wasn't until a change in the direction of the wind, which helped to push the ice in the other direction, that the Falls started flowing again.

HOW WELL DID YOU READ?

What did the writer say?

- Niagara Falls stopped flowing in the year of
 - 1678
 - 1848
 - 1952
- The impossible happened in the month of
 - December
 - August
 - March

What do you think?

- When the Falls stopped, the people were very frightened because
 - the Falls had never stopped before
 - each time the Falls stopped they had trouble
 - they knew they would have a flood
- Niagara Falls has probably been flowing
 - only since Father Hennepin first saw it
 - for thousands of years
 - now and then for hundreds of years

Can you draw the right conclusion?

If the statement agrees with the story, write the word "yes." If it disagrees with the story, write the word "no."

- The wind had nothing to do with the stopping of the Falls.
- People in the Niagara Falls area talked for years about what happened on March 29th, 1848.
- The Indian relics found in the uncovered river bed told many things about the history of the place.

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word from other words around it. We call this "getting meaning from the **context**."

Directions: Find words in the story which mean:

- not wide (2)
- in the middle; halfway (3)
- first or early part of the day (4)
- at all times (5)
- well-known (8)

B. When you know the meaning of a word and know its first letter, you can often tell what the word is.

Directions: Read the meaning, then look at the first letter in each line of the puzzle. When you think you know what the word is, turn to the right paragraph in the story and find it. Then write the word.

6. not ever; at no time (7)

7. frozen water (9)

8. in addition (5)

9. huge (4)

10. once more (9)

11. very fast; swiftly (2)

12. nearly (7)

N	.							
I								
A	.							
G								
A	.							
R	.	.	.	.	.	.	.	.
A	.	.	.	.	.	.	.	.

13. Looking down the first row of the puzzle, you will find the name of the falls that stopped flowing. Write the name.

C. Sometimes two consonant letters come together to make a new sound.

brave push hurt print thin

Directions: Write each word. Say it to yourself. Then circle the consonant letters that are joined to make a new sound.

- | | |
|-----------|-----------|
| 14. cash | 20. sent |
| 15. break | 21. shout |
| 16. cart | 22. front |
| 17. dream | 23. warm |
| 18. third | 24. shop |
| 19. crop | |

D. Most words that begin with the same consonants begin with the same sound. Say the words below softly to yourself.

place glass step
plant glue stamp

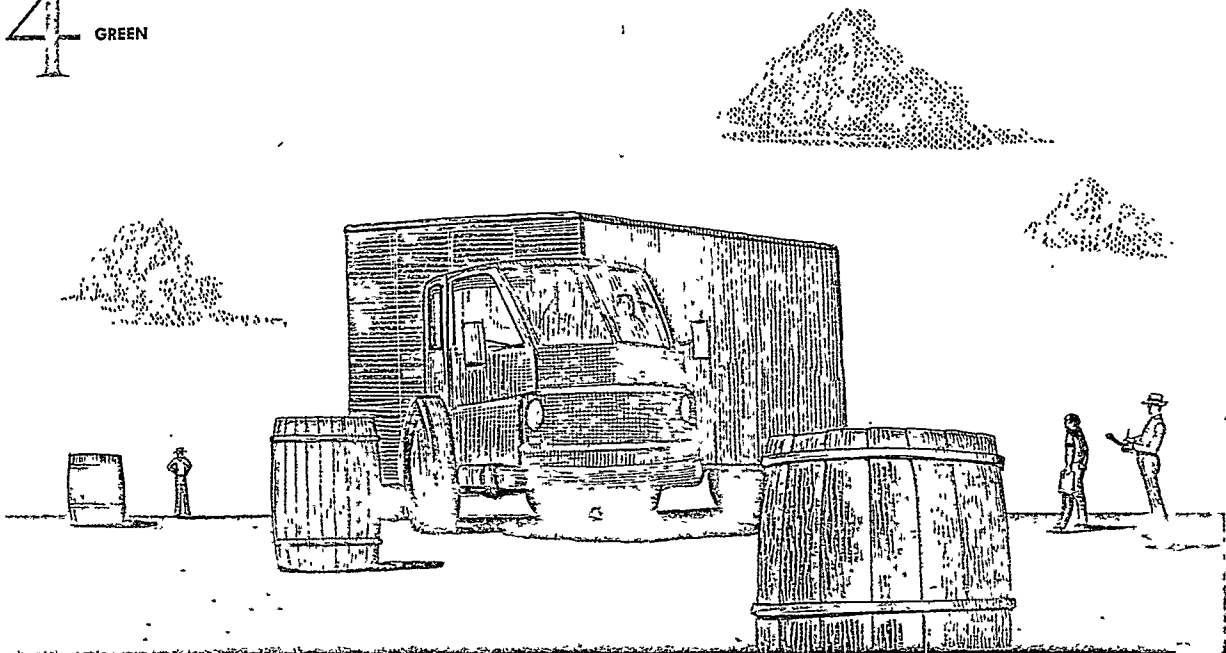
Directions: There are three words in each line.

Two of them begin with the same sound. Say the words to yourself. Write the two letters that make the same sound at the beginning of the two words.

25. guide, glide, globe
26. study, stove, shove
27. crown, cloud, clown
28. play, pay, plate
29. flat, flight, fight
30. gloomy, given, glacier
31. blue, boil, blew
32. plain, plan, pain
33. storm, stop, slope

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4 GREEN



NO COWBOYS ALLOWED

By CAMPBELL TATHAM

¹ Tony drives a big red truck with a long trailer. He zooms over the highways for hundreds of miles. He creeps through cities where there's lots of traffic. He backs up little narrow alleys and slides the long trailer into a parking space with no trouble at all. Truckdriving is Tony's everyday job, and he's good at it, too.

² But once a year Tony drives a huge trailer truck just for fun. He gets behind the wheel

and helps put on a show of the very best driving in the whole country.

³ The show is called the National Truck Rodeo. It's something like a cowboy rodeo, because the men enter contests to prove how skillful they are. They win championships and prizes. But there's one big difference between a rodeo and a truck-rodeo. No "cowboy" ever won a truck-driving contest.

4 A "cowboy" to a truck driver is a man who goes too fast and bumps into things and acts as if his truck were a bucking bronc. At the Truck Rodeo, a "cowboy" wouldn't have a chance!

5 The Rodeo rules say that Tony can't enter the contests if he's had an accident during the year before he enters. He can't even have an accident that wasn't his fault.

6 There are many things that a careful driver checks on his truck before he goes out on the road. Just to make sure that Tony is careful, the judges give him a tricky test before he takes part in the driving show. They ask him to inspect a truck to see if it is ready to go on the road. The truck looks all right, but there is really something wrong with it. One of the judges has made sure of that. If he can't find what's wrong, he's "out" before the contest begins!

7 Now Tony is ready to show his skill at driving. He goes to a place on the Rodeo field where a lot of different trucks are lined up. Some of them are straight trucks; some are semitrailers; and some are full trailers.

8 Tony chooses a semitrailer because that's the kind he is used to driving. He climbs into the cab, warms up the engine, and rolls over to the starting point in front of the grandstand. Ahead of him are three barrels standing in a row. Tony has to weave in and out among those barrels, without bumping them or knocking them down.

9 That's not all. First he has to do this stunt

backing up. Then he does it going forward. He must do it ever so smoothly because the judges subtract points from his score if his driving is jerky. But he can't take it slowly. The driver who finishes the Rodeo perfectly in the shortest time wins the most points.

10 In this part of the Rodeo the trucks wiggle around barrels in a snaky path. The way Tony goes, you'd think it was very simple and easy. But remember that he's swooping in and out with a truck that's fifty feet long!

11 In another place walls have been set up. Tony has to make believe that he is driving down an alley that is a little rough. He has to zip through this make-believe alley as fast as he can without scraping the walls.

12 Next he must prove that he can drive in a very, very straight line. For this test, two rows of tennis balls have been set up with just enough room for the right wheels of Tony's truck to go through. Touch one tennis ball and you're through.

13 At last he rolls on and pulls to a stop. Where? At the finish line! Yes, right at the finish line. The rules say he can't stop an inch beyond it, nor more than two feet behind it.

14 Then Tony hears a sound that is music to his ears—the finishing signal. He has won the contest. He is not a "cowboy"—he is a Rodeo champ!

HOW WELL DID YOU READ?

What did the writer say?

1. When a man enters the National Truck Rodeo, he tries to prove
 - A) his skill
 - B) how fast he can drive
 - C) how reckless he can be
2. If a truck driver has an accident during the year, he may
 - A) enter the contest
 - B) enter the contest if it wasn't his fault
 - C) not enter the contest

What do you think?

3. Winning a Rodeo is
 - A) very easy
 - B) very difficult
 - C) rather easy
4. At a Rodeo, a "cowboy" is
 - A) very welcome
 - B) not wanted
 - C) treated kindly

Read between the lines

5. To a truck driver, the Rodeo is
 - A) a very important event
 - B) just a funny show
 - C) an everyday event
6. To win a Rodeo, a truck driver must be
 - A) very good
 - B) just average
 - C) just brave
7. The title for this story could have been
 - A) The Rodeo
 - B) The Cowboy Race
 - C) The Rodeo

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word from other words around it. We call this "getting meaning from the **context**."

Directions: Find words in the story which mean:

1. speeds along (1)
2. main roads (1)
3. very large (2)
4. take away (9)
5. noise (14)

B. Often a word has more than one meaning, depending on how it is used.

EXAMPLE: The word **lot** may mean

- A) a number of
- B) a fortune; fate
- C) a piece of land

Look at paragraph 7. You will see that **lot** has the A) meaning.

Directions: Now look at each **boldface** word. Read the three meanings (A, B, and C). Then look back to the right paragraph. Decide which meaning fits the way the word is used in the story. Write the letter that stands before the meaning you choose.

6. **kind** (8)

- A) gentle
- B) sort; type
- C) a natural group; race

7. **feet** (10)

- A) measure of length
- B) parts into which lines of poetry are divided
- C) end parts of the leg

8. rolls (8)

- A) loud, deep sounds
- B) kind of bread
- C) moves; drives

9. rough (11)

- A) not gentle
- B) not smooth; uneven
- C) unpolished

10. truck (12)

- A) small things of little value
- B) heavy wagon or automobile
- C) carry

11. sure (6)

- A) certain
- B) dependable
- C) bound to happen

C. In many words, when two consonants come together, you do not sound each one. You join them to make a new sound. Say these beginning sounds to yourself.

br fr tr cr gr dr

Directions: Say each word softly to yourself. Write the word. Draw a circle around the consonants that are joined to make one sound.

EXAMPLE: (br)own (dr)um

- | | |
|-------------|-------------|
| 12. driving | 18. crayon |
| 13. grand | 19. trailer |
| 14. front | 20. brake |
| 15. broom | 21. drop |
| 16. trouble | 22. truck |
| 17. cream | 23. frog |

D. Most words that begin with the same consonants begin with the same sound. Say the words below softly to yourself.

swim	space	scare
swift	spin	scamp

Directions: There are three words in each line. Two of them begin with the same sound. Say the words to yourself. Write the two letters that make the same sound at the beginning of the two words.

- 24. twenty, tent, twelve
- 25. queen, quarter, such
- 26. spot, spoon, stumble
- 27. sweet, sweep, twin
- 28. dump, dwell, dwarf
- 29. school, safe, scold
- 30. snake, smile, smoke
- 31. quack, rust, quart
- 32. swing, song, swung
- 33. shell, smell, smart

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5
GREEN

THE RUN OF THE SPEAR

By DESSA M. FULTZ

¹ "Go! Go away!"

² Colter, a pioneer, knew that the chief wanted him away from the group of Indians and for that reason had ordered him to go. The chief wanted Colter where he would be a good target. It seemed that death was certain if he obeyed. Death also seemed certain if he angered the Indians by disobeying. So when the chief spoke a second time, the white man started to walk away.

³ "Faster, faster, faster!" shouted an old Indian.

⁴ But Colter did not move any faster. He just kept walking. In fact, he walked slowly for some distance. Nothing happened. He looked back. What he saw made his eyes pop. The young Indians were throwing off their blankets and handing their weapons to some of the older men to hold. Suddenly, Colter knew what it all meant. It was the run of the

spear! He was to be given a chance to run for his life. If he won, he would be free. Freedom would be his reward. If he lost . . . He wouldn't lose; he couldn't lose. Now the young braves started for him. Driven by hope, he started his race for life.

5 He was a very good runner, but never before had he run as he ran now. The fork of the river was five miles away. If he could reach it, he would be safe. The thought helped him. He started, his swift feet fairly skimming over the ground.

6 On and on he went while the yells and war whoops behind him grew fainter. By the time he was halfway to his goal, he had outrun all but one of the Indians. By this time his strength began to fail. Blood gushed from his nose. He knew he could not stand it much longer.

7 He looked back over his shoulder. The one Indian in sight was a husky young buck. He was running swiftly and easily, a spear in his right hand. Colter's heart sank. As soon as his enemy was close enough to throw the spear, the race would be ended.

8 Seeing that he could not outrun the young Indian, the white man thought fast. Suddenly, he stopped running and turned to face the still-running red man, calling to him in Indian language and begging for mercy.

9 If the Indian understood, he gave no sign of understanding. He came on until he was close to Colter. Grasping his spear firmly with both hands, he threw it. Luckily for Colter,

the Indian lost his balance when he made the sudden leap. He fell to the ground as Colter, dodging the spear, grabbed it near the iron head, which broke off in his hand.

10 Now it was the turn of the young Indian to beg for life. The pioneer was forced to do what he hated to do. Even though the young Indian could no longer follow, Colter found there was no time to waste. He could hear the cries of his enemies whom he had outrun. He stopped only for a second and was off again.

11 Again Colter was running for his life. The Indians were close. He could hear the sound of their cries in his ears. Again, he suddenly felt his strength fail. Just when it seemed to him he could not run a foot farther, he came to the river.

12 The river was fringed with willow trees. Colter dashed through them and slid down the bank. Then he laughed even though he was ready to fall. He was very weak, but his luck had not deserted him. For there before him was a beaver's house.

13 Colter dived into the river and swam through the opening into the lower part of the house. He then climbed into the upper part of the beaver house which rose ten feet above the water. It was dry, warm, and large enough so he could stretch out. He could hear the angry voices of the Indians, but they found no trace of him.

HOW WELL DID YOU READ?

What did the writer say?

1. Colter was
 - A) an Indian
 - B) a pioneer
 - C) an Indian Chief

2. Near the end, Colter was
 - A) very weak from running
 - B) still very strong
 - C) ready for another race

Read between the lines

3. When the Indians gave him a chance for his life, Colter
 - A) was disappointed
 - B) had expected them to do it
 - C) was surprised

4. Colter was
 - A) a fast runner
 - B) a slow runner
 - C) an average runner

Follow the time order

5. Which happened first in the story?
 - A) Colter hid in the beaver house.
 - B) The Indians gave Colter a chance.
 - C) Colter stopped and faced the Indian.

Can you draw the right conclusions?

6. Colter stopped running and faced the Indian because he knew
 - A) he had already outrun the Indian
 - B) he could not outrun the Indian
 - C) he was safe and free

7. When the Indians had tracked Colter to the edge of the river but could not find him, they probably thought he
 - A) was still running
 - B) had drowned
 - C) had turned into a beaver

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word from other words around it. We call this "getting meaning from the **context**."

Directions: Find words in the story which mean:

1. person at the head; leader (2)
2. an early settler (2)
3. weaker; dimmer (6)
4. strong; powerful (7)
5. not old (8)

B. When you know the meaning of a word and know its first letter, you can often tell what the word is.

Directions: Read the meaning, then look at the first letter in each line of the puzzle. When you think you know what the word is, turn to the right paragraph in the story and find it. Then write the word.

- | | | | | | | | |
|---------------------------|---|---|---|---|---|---|------|
| 6. sure; having no doubts | C | □ | □ | □ | □ | □ | (2) |
| 7. a number less than two | O | □ | □ | □ | □ | □ | (6) |
| 8. glanced | L | □ | □ | □ | □ | □ | (4) |
| 9. large woody plants | T | □ | □ | □ | □ | □ | (12) |
| 10. organs of hearing | E | □ | □ | □ | □ | □ | (11) |
| 11. stream of water | R | □ | □ | □ | □ | □ | (11) |

12. Looking down the first row of the puzzle, you will find the pioneer's name. Write his name.

C. A **syllable** is a part of a word that makes a sound all its own. Say these words the way they are divided. Do you hear the separate sound of each part?

bas ket sil ver a go lit tle

A syllable always has at least one vowel.

Directions: Write each word. Say the word to yourself. Draw a line between each syllable.

EXAMPLE: let/ter

- | | |
|---------------|------------|
| 13. uplift | 17. even |
| 14. runner | 18. happen |
| 15. telephone | 19. under |
| 16. excite | |

D. When a prefix is added at the beginning of a word, it is a separate syllable.

EXAMPLE: unlike = un + like
replace = re + place

Directions: Write each word. Say the word to yourself. Look at the prefix. Draw a line between the prefix and the word to which it has been added.

- | | |
|--------------|---------------|
| 20. reread | 22. unfit |
| 21. depart | 23. unkind |
| 24. distrust | 26. dislike |
| 25. return | 27. incorrect |

E. Most words that begin with the same consonants begin with the same sound. Say these words softly to yourself.

sprain	stream
spray	street

Directions: Choose the word in Column II that begins with the same consonants and the same sound as each word in Column I. Write the word.

- | | |
|-------------|----------|
| I | II |
| 28. screen | stress |
| 29. splash | throat |
| 30. strike | squash |
| 31. three | spread |
| 32. squeeze | screw |
| 33. spring | splinter |

6

GREEN



When Christmas Went Outdoors

By JOHN L. GRAYSON

- 1 It was Christmas time about forty years ago. In Denver, ten-year-old David Jonathan Sturgeon lay in bed sick. His father wanted to cheer him, so he put lights on a small Christmas tree in the boy's sickroom.
- 2 Young David loved the Christmas tree with lights. But every day he looked out of his bedroom window at an evergreen tree
- growing in the front yard. "Oh, Father, please put some lights on that tree, too," he begged. "It would look wonderful."
- 3 "Well, why not?" thought Mr. Sturgeon. So he went to his electrical shop and made a string of colored lights. The very next night, David had his outdoor Christmas tree! He lay there smiling as he watched the

lights shine against a white blanket of snow.

4 The tree was the talk of the town. In horse-pulled carriages and chugging automobiles, people came from miles around. They drove slowly past the Sturgeon home. They looked with bright eyes at the tree. The people of Denver believe this was the first lighted, living Christmas tree ever seen in the land!

5 The next Christmas little David was dead. Neighbors thought of the year before. They had seen and loved the boy's tree, so they put lights on the trees in their own yards and gardens. They turned their part of town into a glittering fairyland.

6 Eight years later, in San Francisco, another little boy was sick at Christmas time. The boy couldn't see the family tree. So a neighbor, Clarence F. "Sandy" Pratt, painted some full-sized light globes. He put them on a wire around an evergreen tree in his front yard across the street.

7 Many people came to see the tree. Before New Year's Eve, this sick boy was well again.

8 This made Sandy Pratt so happy he made up his mind to do one thing. He'd spend the rest of his life trying to get others not only to light living trees but to plant them. He started the Outdoor Christmas Tree Association of California. He began sending two-year-old redwood seedlings to anyone who would take care of them and light them at Christmas time.

9 For twenty-five years, Sandy Pratt spread the news of the living Christmas tree. He used the radio and the newspaper to tell people.

He dug and shipped, for the cost of mailing only, redwood seedlings. These seedlings, which grow along our western coast, were sent to people in nearly every city of our country. They also were sent to soldiers in all parts of the world.

10 Today, in city parks, along highways, and in front yards, you can see thousands of lighted living trees. They remind millions of people of that first Christmas under the stars.

11 There is no city or town in the country without its Christmas Tree Lane. One county lights 25 miles of giant redwoods. Another county has a contest every year in which "Forty Miles of Christmas Trees" are lighted.

12 Until his death at the age of 75, Sandy Pratt could be found most any day with his shovel, buckets, and wet sacks. He could be found digging, tagging, and numbering seedlings. He dug and shipped more than 14,000 seedlings. Every year he received hundreds of letters from people telling how their trees were growing. Some of the trees had grown 40 feet high. He was very, very happy.

13 Through the years, the idea of lighting living trees has spread, house by house, block by block, town by town. All over the country, the outdoors has become a glittering fairyland. The wish of one dying boy and the way a neighbor had of bringing cheer to another sick boy, have brought happiness and cheer to many at Christmas time.

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HOW WELL DID YOU READ?

Did you get the author's purpose?

1. This story is about
 - A) David's sickness
 - B) how the outdoor lighting of Christmas trees started
 - C) Sandy Pratt's sick friend

Did you get the details?

2. This story makes it clear that the outdoor lighting of Christmas trees was started because
 - A) people wanted to make money selling lights
 - B) people wanted to make money selling trees
 - C) two different people wanted to cheer someone
3. To help spread the idea, Sandy Pratt sent redwood seedlings to anyone who would plant them
 - A) for the cost of mailing only
 - B) in their back yards
 - C) for twenty-five cents each
4. For twenty-five years, the news of the living Christmas tree was spread by
 - A) David Jonathan Sturgeon
 - B) Sandy Pratt
 - C) Mr. Sturgeon

What do you think?

5. How do you think Sandy Pratt's sick friend felt about the lighted tree?
 - A) happy
 - B) sad
 - C) didn't care

Read between the lines

6. When Mr. Sturgeon's outdoor tree was lighted, people came to see it because they
 - A) had never seen a Christmas tree outdoors
 - B) had nothing else to do
 - C) had been coming to see the tree for years
7. From this story we learned that
 - A) people only do things when they know they are going to be paid for it
 - B) some people find great joy in cheering and helping someone else
 - C) people are very selfish

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word by other words around it. We call this "getting the meaning from the context."

Directions: Find words in the story which mean:

1. a person who lives near another (13)
2. main roads (10)
3. young trees (9)
4. bags (12)
5. showy and very bright (5)
6. up to the time (12)

B. Often a word has more than one meaning, depending on how it is used.

EXAMPLE: The word **lights** may mean

- A) starts something burning
- B) lamps; bulbs
- C) becomes bright or clear

Look at paragraph 1. You will see that **lights** has the B) meaning.

Directions: Now look at each word in **boldface** type. Read the three meanings (A, B, and C). Then look back to the right paragraph. Decide

which meaning fits the way the word is used in the story. Write the letter that stands before the meaning you choose.

7. tagging (12)

- A) putting tags on
- B) touching
- C) following closely

8. old (8)

- A) not young
- B) a certain age
- C) a time of long ago

9. block (13)

- A) a piece of wood
- B) a number of things
- C) a space between streets in a town or city

10. way (13)

- A) a road
- B) method
- C) distance

C. Every vowel has both a long sound and a short sound. Long vowels say their names. Short vowels never say their names. They have a special sound. Study the long and short vowel sounds at the bottom of this page.

Directions: Write each word. Say the word softly to yourself. Place the long mark (ˉ) over the long vowels and the short mark (˘) over the short vowels. If the vowel has no sound, cross it out, like this *ǳ*.

EXAMPLES: tak~~ǳ~~ cān

- | | |
|-----------|------------|
| 11. block | 17. which |
| 12. tell | 18. see |
| 13. high | 19. ten |
| 14. that | 20. drove |
| 15. tree | 21. lights |
| 16. sacks | 22. made |
| | 23. on |

D. any + one = anyone

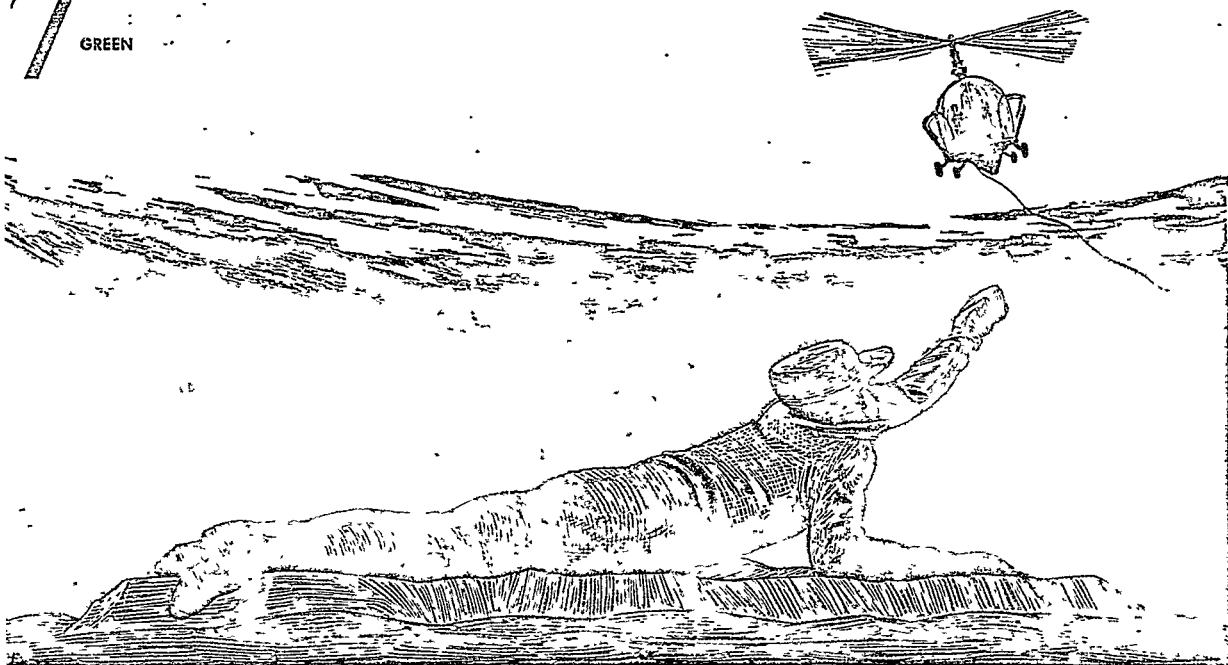
Anyone is a compound word. It is made by putting two smaller words together.

Directions: Write the two smaller words that make up each of the following compound words.

- | | |
|--------------|---------------|
| 24. sickroom | 29. evergreen |
| 25. redwood | 30. fairyland |
| 26. highways | 31. another |
| 27. without | 32. newspaper |
| 28. bedroom | 33. outdoor |

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The Vowels					
Long Vowel Sounds	ā	ē	ī	ō	ū
Short Vowel Sounds	ăpe	ĕagle	ĭce	ŏpen	ŭniform
	ăpple	ĕlephant	ĭndian	ŏx	ŭmbrella

7
GREEN

Whirly to the Rescue

By DOROTHY A. WHITCOMB

1 The helicopter, which cannot reach the forward-flight speed of the airplane, can do what the airplane cannot. It can take off and land almost anywhere. This makes it especially useful in rescue work.

2 Take, for example, the day Jimmy burst through the open barn door, his eyes wide with fear.

3 "It's Greg Taylor! Hurry, hurry!"

4 Jimmy, his breath coming fast, finally managed to swallow and tell his father what had happened. "Greg went out on the river ice. He called me 'chicken,' but I stayed on shore because the ice looked very thin. Just when Greg was going to start back, the ice broke between him and the shore. "We've got to help him. He's drifting downstream toward Canyon Falls on some floating ice!"

- 5 Mr. Carter went into action immediately. "You get that long rope from up in the loft, Jimmy," he directed. "I'll get blankets and get Whirly warmed up."
- 6 Whirly was Mr. Carter's helicopter which he used during the summer to dust the crops. If his father were planning to use it now, he must have something special in mind. Jimmy wondered what it was and what he was going to do with the rope.
- 7 By the time Jimmy arrived outside the barn with the rope, his father was already at Whirly's controls. Jimmy climbed into the plastic bubble, which was the cabin, and sat down next to his father.
- 8 Mr. Carter asked for the rope. Jimmy watched with interest as his father made a loop in one end of the rope and tied the other end fast to the side of the helicopter. Then Mr. Carter touched the controls, and Whirly suddenly lifted into the air and turned in the direction of Loon River.
- 9 "There he is!" Jimmy shouted as soon as they had cleared the tops of the trees. They could see below them a small dark blob on a jagged, white surface, which seemed to be moving slowly down Loon River.
- 10 Ahead of Greg at a short distance was Canyon Falls. Here the water rushed over jagged rocks in a deafening roar, crashing in a froth of white water twenty feet below.
- 11 Frightened, Jimmy shouted, "We've got to hurry! We've got to hurry!"
- 12 Now Whirly descended, and they could see Greg looking up at them. When Mr. Carter was as close as he dared to go, he hovered over Greg and opened the door of the plastic cabin.
- 13 "I'm going to drop you a rope, Greg," he shouted. "Grab the loop and hang on tightly. I'll lift you over to shore."
- 14 Jimmy frowned and asked, "What if he's too weak to hold on?"
- 15 Mr. Carter took a deep breath. "He just has to hang on, Jimmy. It would take too long to land Whirly and pull Greg into shore."
- 16 Jimmy could see what his father meant. The piece of ice that Greg lay on was dangerously close to Canyon Falls now. Jimmy could see the terror in Greg's face. He saw Greg reach out for the rope.
- 17 Jimmy closed his eyes. When he felt the helicopter rise, he opened one eye and peered out between his fingers. Greg was there, dangling at the end of the rope like a puppet on a string.
- 18 In a few seconds that seemed like hours to Jimmy, Mr. Carter had carefully set Greg down on shore and shouted to him to let go of the rope. Then Jimmy's father set the helicopter down lightly in a clearing a short distance away. Jimmy rushed over to where Greg lay on the ground.
- 19 "Are you OK, Greg?" Jimmy asked.
- 20 "I—I guess so, Jimmy. But I'm s-s-so cold." Greg's teeth were chattering.
- 21 Then Mr. Carter came up, bringing the blankets. He bundled Greg up and carried

him over to Whirly. With Greg safe between them, the helicopter took to the air.

22 "That was a wild ride you had, Greg," said Mr. Carter.

23 "Sure was, Mr. Carter, but I was never so

happy to go along with old Whirly—even if I did have to ride on the outside."

*Adapted from "Whirly" by Dorothy A. Whitcomb. By permission of the author and Highlights for Children, Columbus, Ohio.
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HOW WELL DID YOU READ?

What did the writer say?

1. A helicopter is very useful
 - A) for long flights
 - B) for rescue work
 - C) for ocean travel
2. The cabin of the helicopter was made of
 - A) rope
 - B) ice
 - C) plastic

Read between the lines

3. As Greg floated toward the Falls, he was probably sure
 - A) that his end was near
 - B) it would be fun jumping
 - C) he would be famous after the rescue
4. Jimmy was Greg's
 - A) brother
 - B) friend
 - C) enemy

Can you see why?

5. Mr. Carter bought Whirly
 - A) to dust his crops
 - B) to do rescue work
 - C) for pleasure

6. When Greg reached for the rope, Jimmy closed his eyes because
 - A) he was afraid Greg would miss the rope
 - B) he was so happy Greg was alive
 - C) he didn't trust his father

Can you draw the right conclusion?

7. Greg's rescue
 - A) could not have been done fast enough without Whirly
 - B) could have been done faster without Whirly
 - C) could have been done better with an airplane

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word from other words around it. We call this "getting meaning from the context."

Directions: Find words in the story which mean:

1. not shut (2)
2. not thick (4)
3. a season of the year (6)
4. afraid; scared (11)
5. near (12)

B. When you know the meaning of a word and its first letter, you can often tell what the word is.

Directions: Read the meaning, then look at the first letter in each line of the puzzle. When you think you know what the word is, turn to the right paragraph in the story and find it. Then write the word.

- | | | | | | |
|---|---|--|--|--|------|
| 6. liquid found in streams | W | | | | (10) |
| 7. move quickly | H | | | | (11) |
| 8. frozen water | I | | | | (4) |
| 9. loud, deep sound | R | | | | (10) |
| 10. raise up | L | | | | (13) |
| 11. a pronoun, both singular and plural | Y | | | | (5) |
12. Looking down the first row of the puzzle, you will find the name of the helicopter that was used to rescue Greg. Write its name.

- C. buy—by
four—for

Words that sound alike but have different spellings and meanings are called **homonyms**.

Directions: Some of the pairs of words are **homonyms**; some are not. If the words are homonyms write "yes"; if the words are not homonyms write "no."

13. blue—blew
14. there—here
15. eight—ate
16. too—two
17. paw—feet
18. by—buy
19. tail—head
20. won—lost
21. see—sea
22. rode—road

D. In many words, when two consonants come together you do not sound each one. You join the two consonants to make a new sound:

EXAMPLE: wh, ph, sh, ch, th, gh

Directions: Write each word. Say the word to yourself. Draw a circle around the consonants that are joined to make a new sound.

(wh)at (ch)op

- | | |
|---------------|-----------|
| 23. rough | 29. photo |
| 24. rich | 30. charm |
| 25. this | 31. while |
| 26. shoot | 32. cough |
| 27. telephone | 33. with |
| 28. where | |

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8

GREEN



A NATURAL RADAR SYSTEM

By MARION B. CARR

- 1 Take a cane or long stick. Close your eyes and walk ahead. Tap the cane in front of you as you move. Can you "read" your taps? Blind people can.
- 2 The blind have used this way of finding things in their path for hundreds of years. The sound-echoes bring "news" to them of the things nearby. Their canes are their "radar" instruments.
- 3 Today we use radar instruments in many ways. Because these instruments work as well in fog and bad weather as they do in good weather, they are a great help in air travel.
- 4 In the world of nature there is a mammal

that finds objects in the same way. It is the bat, the only mammal able to fly. It flies about in the darkness of the night, and its flight is fast. If it weren't for its radar, it would bump into things as it darts and swoops through black caves and dark forests.

5 A bat makes a number of sounds as it flies about. Its cries are so high in range that they cannot be heard by the human ear. When these sound waves hit an object, they bounce back to the bat's ears as warning signals. He uses these signals as guides in his flying.

6 For ages, bats have been able to fly through the inky blackness of winding caves. It has amazed everyone who has studied them. People wondered if the animals depended upon their sight. Could bats see that well in the dark? Everyone knows the old saying "blind as a bat," but it is not true. Bats have very excellent eye sight.

7 About one hundred and sixty years ago an Italian scientist tried an experiment with bats. He blinded a few and then freed them. Nothing unusual happened. The bats flew around just as surely and safely as always.

8 Several years later another man tried an experiment with their hearing. He plugged the ears of some bats and then let them go. He found they had trouble flying. Could his discovery mean anything?

9 As time passed scientists came to believe bats had special senses in the skin of their wings which helped them to fly in the darkness without bumping into things.

10 Of course, the mystery of a bat's flight was not easily solved. It continued to be an interesting study for many years.

11 Bats were found to have a very keen hearing, especially for high-pitched sounds. Very special instruments were used that picked up the many strange sounds bats made while flying.

12 Finally, an experiment that ended all guessing was made. A hanging screen of metal wires was set up in a soundproof room. The wires were placed about a foot apart. Some bats were blinded for the test. Some normal bats were also used for the test. They were all put in the room and forced to fly through the metal screen. All of the bats, blinded or normal, passed the test with flying colors.

13 More experiments were made. Bats were gagged so they could utter no sound. Others had their ears plugged so they could hear no sound. The result was the same; all were afraid to fly. When forced to fly they did so slowly. They seemed to be uncertain of themselves and bumped into the wires. They hit the walls again and again. They seemed unable to get about safely. Not until their hearing and their voices were given back to them did they fly as usual. Without their own radar system they proved themselves to be nearly helpless.

Adapted from "News from Signals—Bat 'Radar'" by Marlon B. Carr, Junior Natural History Magazine, February 1958. Reprinted by permission.

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HOW WELL DID YOU READ?

What did the writer say?

1. We cannot hear the sounds made by a bat because the sounds are pitched
 - A) too low
 - B) too high
 - C) too faint
2. Without its radar system, the bat would fly
 - A) very slowly
 - B) faster than it does now
 - C) higher than it does now

Can you draw the right conclusion?

3. If we had a radar system like the bat, we might
 - A) always be in trouble
 - B) have fewer accidents
 - C) be able to fly
4. The old saying "blind as a bat" makes you believe that people of long ago
 - A) knew a bat could see well
 - B) had never seen a bat
 - C) knew little about bats

Can you tell a fact from an opinion?

Facts are deeds, events, or things known to be actual truths.

Opinions are notions or beliefs that one supposes to be true.

Directions: Read the following statements. Write the word **Fact** for the statement if it is definitely known to be true. Write the letters **Opin** if the statement is an opinion rather than a fact.

5. Bats can fly in a dark cave.
6. Scientists would have developed a radar system even if they had not studied the flying habits of the bat.
7. The bat is the only mammal able to truly fly.

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word from other words around it. We call this "getting meaning from the **context**."

Directions: Find words in the story which mean:

1. shut (*I*)
2. unable to see (*I*)
3. not common; remarkable (*7*)
4. some (*7*)
5. every one (*13*)

B. Often a word has more than one meaning, depending on how it is used.

EXAMPLE: The word **wings** may mean

- A) part of a bird
- B) part of an airplane
- C) side room in a theater

Look at paragraph 9. You will see that **wings** has the A) meaning.

Directions: Now look at each **boldface** word. Read the three meanings (A, B, and C). Then look back to the right paragraph. Decide which meaning fits the way the word is used in the story. Write the letter that stands before the meaning you choose.

6. **stick** (*I*)
 - A) stab
 - B) narrow piece of wood
 - C) keep close

7. rap (1)

- A) knock or rap lightly
- B) break into
- C) a faucet

8. way (2)

- A) direction
- B) means; method
- C) road

9. bat (4)

- A) small furry animal
- B) a club
- C) a sharp blow or slap

10. fast (4)

- A) eat very little
- B) soundly; deeply
- C) swift; rapid

11. skin (9)

- A) hide of an animal
- B) peel of a fruit
- C) tissue that covers man's body

12. foot (12)

- A) run or walk
- B) twelve inches
- C) end part of a leg

C. In many words two consonants come together to make one sound. This is called a consonant blend. Say these blends softly to yourself.

dr nt sw pr rt

Directions: One word in each sentence needs one of the above consonant blends. Read the sentence first. Think what the word is. Write the word, putting in the right consonant blend.

EXAMPLE: Susan is loud of her new dress.

The word is **pr**oud.

- 13. He we_____ to the movie.
- 14. Please _____aw a picture for me.
- 15. The new _____ing is red.

16. The girl was se_____ to the store.

- 17. John won first _____ize.
- 18. Which pa_____ would you like?
- 19. The flower smelled _____et.

D. Most words that begin with the same consonants begin with the same sound. Say the words below softly to yourself.

climb	flow	black
clamp	flock	blue

Directions: There are three words in each line. Two of them begin with the same sound. Say the words to yourself. Write the one word that begins with a different sound.

- 20. bloom, blew, brown
- 21. flag, fright, flight
- 22. crab, clown, club
- 23. stage, stable, scare
- 24. plan, pride, plum
- 25. glider, glove, grove

E. Now you know that most words that begin with the same consonants begin with the same sound. Say the words below softly to yourself.

shot	clock	stop
sheet	cling	steep

Directions: Look at each word in Column I. Say it softly to yourself. Then look in Column II and find a word that begins with the same consonants and the same sound. Write the word.

I	II
26. should	glass
27. play	smart
28. trap	steam
29. state	plenty
30. closet	shape
31. small	travel
32. gloomy	blanket
33. blot	clay

9

GREEN



The Indian Whiz

By JACK C. DAWSON

¹ The mighty Indian was a whiz at more things than you can say in one breath. At one time or another he won trophies in running, jumping, football, swimming, shooting, skating, baseball, tennis, hockey, track, lacrosse, shot-putting, and pole vaulting.

² Most baseball and football players just take it easy or work at some job between seasons.

But not Jim Thorpe. The off-season was a time for him to play another sport.

³ Jim Thorpe was called "the greatest athlete in the world" by the King of Sweden. He was called this when he went to Stockholm to take part in the Olympic Games. At these games he surprised everyone by becoming first in history to win both a pentathlon and a decathlon, two

of the chief events. He was the hero of 1912.

4 Jim Thorpe did not keep his Olympic Titles. In 1913 it became known that he once had played baseball professionally. This disqualified him for the Olympics. He had played professional baseball at a summer resort for one summer. That was long enough to cost him the title and honor he had won. But he was not discouraged. He told his friends that he had tried the Olympics just for fun. He was interested in seeing how his skill rated with the world's best.

5 After the Olympic Games he went back to Carlisle University where he became the track team! Whenever his team entered a meet with Lafayette, Indian Jim was sent into the battle. At one track meet, he took eight of the eleven events.

6 Jim Thorpe is rated as one of the greatest football players of all times. He first played for Carlisle University. He was so outstanding as a football player that he became a hero of football fans throughout the country. Of course, he also put his University team on the map. Sports writers and reporters had much to report to their fans about the University and its star football player.

7 After finishing school at the University, Thorpe played baseball for the New York Giants, the Cincinnati Reds, and the Boston Braves. He did very well. As a fielder, he was one of the best. As a baserunner he was considered one of the fastest that baseball has ever had. But Jim was not satisfied. He felt

his hitting wasn't up to par, so he left the baseball diamond. He left in 1919 to return to football with the Canton Bulldogs.

8 When the National Football League was started in 1922, Thorpe put the Bulldogs on top. He kept them at the top the next season also. He was very important to the team. Some people came to the games just to see him perform. Between halves, he put on his own special show. His favorite stunt was to stand at the midfield stripe and kick a field goal over the north goal post, then turn around and slam one over the crossbar to the south. Through heavy winds and blinding snows Jim performed this trick and never missed.

9 In 1950 the Associated Press asked American sports writers to select the greatest athlete of the first half of the twentieth century. Thorpe was not only picked as best football player but he was also chosen as the mightiest all-around athlete.

10 Thorpe also had the honor of being one of the first members admitted to the Football Hall of Fame in 1951. The story of the life of this famous champion of thirteen sports was made into a motion picture, "Jim Thorpe, All-American."

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HOW WELL DID YOU READ?

Did you get the facts?

- In 1950 American sports writers picked Jim Thorpe as the
 - mightiest all-round athlete
 - best Indian athlete
 - best college athlete
- Jim Thorpe is rated as one of the greatest
 - football players of all times
 - baseball players of all times
 - hockey players of all times
- Jim Thorpe left baseball because he thought he was
 - disliked by the team
 - better than other players
 - not hitting the way he should
- When Jim Thorpe won the Olympic Titles, he proved to himself that
 - he needed more practice
 - his skill rated with the world's best
 - he would never be one of the world's best

Did you see why?

- Jim Thorpe could not keep his Olympic Titles because
 - he had taken pay for playing baseball one summer
 - he was not a professional player
 - he wanted to be paid for playing

Can you draw the right conclusion?

- Jim Thorpe was a great athlete because he
 - was an Indian
 - worked hard at it
 - was a good base runner
- After playing football at Carlisle University, Jim
 - began playing worse
 - also worked as a reporter
 - became an even greater player

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word from other words around it. We call this "getting meaning from the context."

Directions: Find words in the story which mean:

- powerful; very strong (1)
- main; biggest (3)
- go back (7)
- not ever; at no time (8)
- choose; pick (9)

B. When you know the meaning of a word and know its first letter, you can often tell what the word is.

Directions: Read the meaning, then look at the first letter in each line of the puzzle. When you think you know what the word is, turn to the right paragraph in the story and find it. Then write the word.

6. only

J			
---	--	--	--

 (4)

7. in the form of

I			
---	--	--	--

 (10)

8. moving

M				
---	--	--	--	--

 (10)

9. special name

T			
---	--	--	--

 (4)

10. glory; fame

H			
---	--	--	--

 (4)

11. above; across

O			
---	--	--	--

 (8)

12. vacation place

R				
---	--	--	--	--

 (4)

13. team member

P			
---	--	--	--

 (6)

14. five plus six

E				
---	--	--	--	--

 (5)

15. Looking down the first row of the puzzle, you will find the name of the Indian Whiz. Write his name.

C. In many words when two consonants come together, you do not sound each one. You join them to make a new sound.

EXAMPLE: br fr tr cr gr dr
Directions: Read each sentence. Under each sentence are two words. Write the word that will make the sentence correct.

16. Jim likes to eat _____
grapes, drapes
17. The policeman is very _____
crave, brave
18. The boy likes to play _____
tricks, bricks
19. Mary put the _____ on the table.
gray, tray
20. The baby _____ for an hour.
pried, cried
21. Jim's friend _____ a glass of milk.
drank, frank
22. The man wanted to _____ the meat.
fry, cry
23. The Indian Whiz _____ many sports.
cried, tried

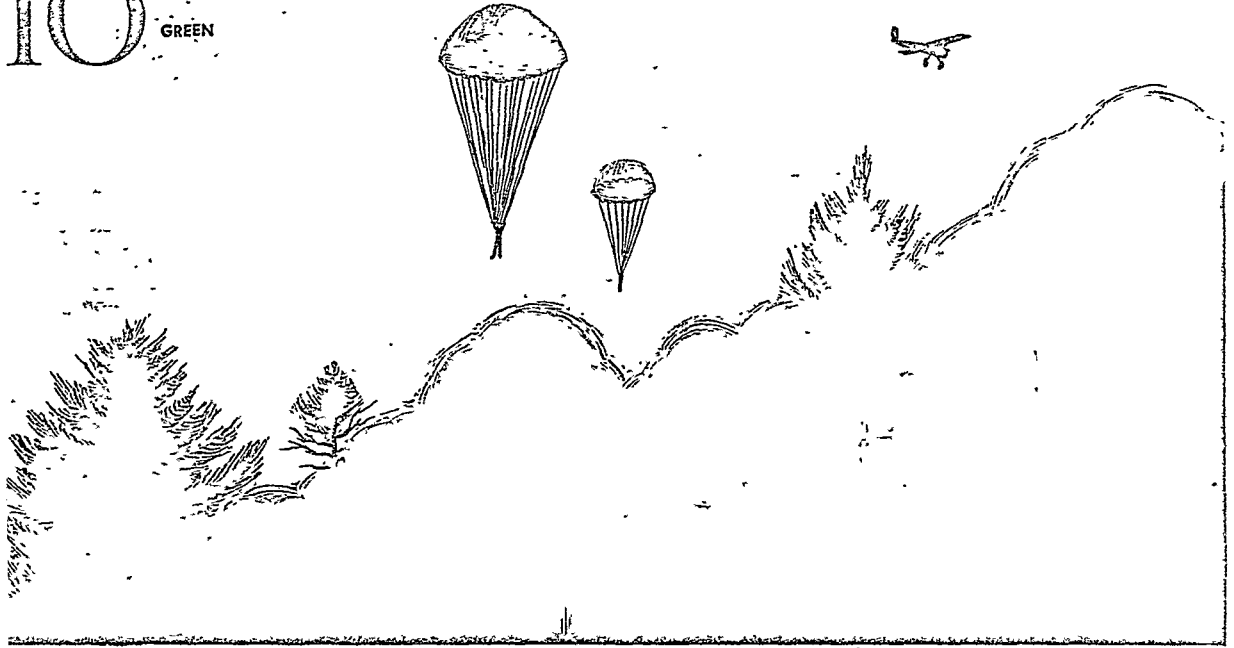
D. Most words that begin with the same consonants begin with the same sound. Say these words softly to yourself.

sm	tw	dw
small	twin	dwell
smell	twice	dwarf

Directions: There are three words in each line. Two of the words begin with the same sound. Say the words to yourself. Write the two consonants that make the same sound at the beginning of these two words.

24. twenty, twig, tumble
25. smile, snap, smoke
26. scale, scatter, shatter
27. dwelling, dump, dwindle
28. sport, spider, short
29. swim, sway, sun
30. shine, spike, spine
31. twinkle, twist, tumble
32. dwarf, dare, dwell
33. shell, sheet, swell

IO GREEN



UNCLE SAM'S SMOKE JUMPERS

By EVVA BRINKER

- 1 "Where there's smoke, there's fire." That's what the smoke jumper believes. It may be only a little smoke, but if it is in one of our big forests, it could start a fire that would roar on for days. So the smoke jumper acts at the first trace of smoke—and acts fast.
- 2 Mike Arnold is a smoke jumper. At the first trace of smoke he doesn't race down the road
- 3 in a big red engine. There's no road within many miles of this fire, for this fire is in a forest. So he goes in an airplane. Often he's fighting the fire in less than an hour.
- 3 Mike Arnold, like most smoke jumpers, works for Uncle Sam. He lives in one of our great forests. He always works with another smoke jumper. As soon as an alarm comes in,

Mike and his helper Bob Harding hurry to a waiting plane. They get into their fire-fighting clothes as the plane climbs into the sky.

4 Each man has a pair of heavy overalls to protect him against branches and flames. Each wears a stiff collar to save his neck when he lands. A football helmet and mask cover his head. Each carries a parachute on his back. He hangs a small parachute in front just in case the larger one on his back does not open.

5 When Mike and Bob have finished dressing, a third man, called the jump master, checks to see that they have made no mistakes in dressing.

6 As they near the fire, the jump master chooses the best place for the men to land. The plane glides over the spot. First, a trial parachute is sent down to see if they are over the right spot. When they are sure that they are over the right spot, Mike and Bob leap out.

7 As Mike and Bob leap, long white-silk streamers seem to follow them. These are their parachutes. As they go down, the parachutes open into great white mushrooms above them.

8 Mike and Bob are now floating high above the treetops. The slit in the parachutes that looks like a rip is there for a purpose. Mike and Bob can pull a cord that will close the slit and change the way they are falling. By pulling the cords, tipping the parachutes, and making the silk top fold, they can land where they want to. If they land in a tree, they will tie a rope to a branch and get down by that. Mike and Bob call that "Feather Landing."

9 When the jump master in the plane sees where Mike and Bob are, he drops some packages near them. One package has shovels in it and other fire-fighting tools. In another is a two-way radio in case they must call back for help. In a third package is food, water, and perhaps sleeping bags.

10 If the fire hasn't gained too much of a start, the men dig a ditch all around it. They fight the flames with all their might and all their tools. Sometimes Mike and Bob have to work for hours. Sometimes they work for days with the help of other smoke jumpers that have been called.

11 When the danger is past, the two men make the "no-glove" test. They must be able to handle soil, wood, everything—without gloves—so they are sure the fire will not start again after they have gone.

12 When the "no-glove" test is over, they are ready to go to their homes. They hike to the nearest landing field where a plane takes them home, or else a helicopter drops down to pick them up.

13 Mike and Bob like their jobs. In fact, every smoke jumper likes his job. It's out of doors, it's full of adventure, and it's important. Uncle Sam knows that whenever he calls, every smoke jumper will jump—not run—to the nearest fire.

HOW WELL DID YOU READ?

Did you get the important facts?

1. A smoke jumper lives
 - A) in the country
 - B) in the city
 - C) in a forest
2. A smoke jumper
 - A) goes at the first trace of smoke
 - B) waits for a telephone call
 - C) helps only when a fire is out of control
3. Mike and Bob could not get to their job without
 - A) a parachute
 - B) overalls
 - C) gloves

How well do you reason?

4. Two smoke jumpers work together because
 - A) it is safer
 - B) it is more fun
 - C) they like to jump holding hands

Did you get the meaning?

5. Most smoke jumpers work for
 - A) farmers
 - B) rich men
 - C) the United States Government

Did the author say it?

Directions: Read the following statements. If the author said it, write the word "yes." If the author did not say it, write the word "no."

6. The smoke jumper believes, "Where there's smoke, there's fire."
7. A smoke jumper goes home only after a "no-glove" test.

LEARN ABOUT WORDS

A. Often you can tell the meaning of a word from other words around it. We call this "getting meaning from the **context**."

Directions: Find words in the story which

1. moves (1)
2. thick growth of trees (2)
3. many times; frequently (2)
4. covering for protecting the head (4)
5. errors; blunders (5)

B. Often a word has more than one meaning, depending on how it is used.

EXAMPLE: The word **checks** may mean

- A) makes sure of the correctness
- B) stops
- C) slips of paper used in place of money

Look at paragraph 5. You will see that **checks** has the A) meaning.

Directions: Now look at each **boldface** word. Read the three meanings (A, B, and C). Then look back to the right paragraph. Decide which meaning fits the way the word is used in the story. Write the letter that stands before the meaning you choose.

6. **smoke** (1)

- A) act of smoking a cigar, pipe
- B) cure
- C) the gas of burning coal or wood

7. **only** (1)

- A) merely
- B) best
- C) most suitable

8. trace (2)

- A) write carefully
- B) sign; small amount
- C) outline; study

9. race (2)

- A) contest of speed
- B) run swiftly; rush
- C) group of people of the same kind

10. right (6)

- A) correct
- B) healthy; normal
- C) very

11. cord (8)

- A) certain quantity of wood cut for fuel
- B) ribbed cloth
- C) string or small rope

12. sure (11)

- A) dependable
- B) certain
- C) firm

13. over (12)

- A) ended
- B) again
- C) higher than

C. Most words that begin with the same consonants begin with the same sound. Say these words softly to yourself.

spring	scream	thread
spruce	screen	three

Directions: There are three words in each line. Two of them begin with the same sound. Say the words to yourself. Write the three letters that make the same sound at the beginning of the two words.

- 14. street, stream, steam
- 15. scrape, scope, screw
- 16. squash, stable, square
- 17. splash, split, spot
- 18. throne, them, throw
- 19. strain, straw, stain
- 20. that, thrift, throat
- 21. scratch, scrub, scuttle
- 22. spray, spoon, sprung
- 23. spine, splash, splatter

D. A syllable is a group of letters that are sounded together. When two consonants come together in the middle of a word, usually the first consonant goes with the first syllable. The second consonant goes with the second syllable.

EXAMPLE: mas / ter farm / er

Directions: Write each word. Say it to yourself. Draw a line between the syllables.

- | | |
|------------|-------------|
| 24. nearly | 29. bonnet |
| 25. corner | 30. butter |
| 26. ribbon | 31. compass |
| 27. summer | 32. winter |
| 28. sudden | 33. madly |

Questions about In Less Than Two Seconds

The story about traveling to the center of the earth.

1. A trip to the center of the earth
 - a. is possible
 - b. is not possible
 - c. will be possible in the future

2. What kind of people can travel to the earth's center?
 - a. real people
 - b. imaginary people
 - c. thin people

3. To reach the center of the earth how much rock would you have to travel through?
 - a. one thousand eight hundred miles
 - b. one hundred and eighty feet
 - c. ten thousand miles

4. As we go down farther into the earth the temperature is
 - a. much hotter
 - b. much colder
 - c. a little cooler

5. What kind of a machine would we travel in?
 - a. a bulldozer
 - b. a power shovel
 - c. a high speed drill

6. When we have traveled down for three miles the temperature will be
 - a. colder than ice cubes
 - b. hotter than boiling water
 - c. comfortable

7. When we have traveled down for fifty miles the temperature would be
 - a. about forty degrees
 - b. about four-thousand degrees
 - c. about four-hundred degrees

8. We should not touch the rock walls because
 - a. they are hot
 - b. they are cold
 - c. they are sharp

9. What did we do with our shovels?
 - a. threw them away
 - b. took them with us
 - c. buried them

10. When we get to the center of the earth we will find it is
 - a. solid
 - b. liquid
 - c. gas

Questions about the Four-Legged Detective

1. The four legged detective is a
 - a. black collie
 - b. Labrador retriever
 - c. police dog

2. His master is a
 - a. Duke
 - b. dectective
 - c. policeman

3. The dog's name is
 - a. Rajah
 - b. Jahar
 - c. Pal

4. The story tells us the dog can run faster
 - a. than any dog
 - b. than any person
 - c. than the wind

5. When catching a criminal the dogs are taught to hold a man's
 - a. right leg
 - b. left leg
 - c. right arm

6. Dogs are useful for patrolling
 - a. stores
 - b. banks
 - c. parks

7. In this story the dog caught the housebreaker in the
 - a. house
 - b. garden
 - c. water

8. Beside catching thieves dogs are useful to
 - a. track lost children
 - b. find missing policemen
 - c. track other animals

9. Dogs were first used by police in
 - a. 1946
 - b. 1888
 - c. 1492

10. Labrador retrievers do not make good dectectives because they do not like
 - a. to chase criminals
 - b. to work after dark
 - c. to follow a scent

11. To train a dog and his master it takes
 - a. 2 years
 - b. 10 months
 - c. 3 months

Questions about The Day Niagara Falls Stopped


1. When Niagara Falls stopped flowing the people were
 - a. happy
 - b. frightened
 - c. sad

2. They knew the water had stopped flowing because it was
 - a. quiet
 - b. noisy
 - c. roaring

3. How much water goes over the falls every second?
 - a. 250 gallons
 - b. 1,500,000 gallons
 - c. 1,500 gallons

4. How far does the water fall?
 - a. 16 feet
 - b. 165 feet
 - c. 2000 feet


5. How long is the Niagara River
 - a. 86 miles
 - b. 105 miles
 - c. 36 miles

- 
6. Geologists tell us the falls have been flowing for
 - a. thousands of years
 - b. hundreds of years
 - c. a few years

 7. The falls stopped flowing in the year
 - a. 1776
 - b. 1928
 - c. 1848

 8. When the people went down into the gorge they found
 - a. gold
 - b. Indian relics
 - c. dead fish

 9. Niagara Falls stopped flowing for
 - a. one week
 - b. thirty hours
 - c. two hours

 10. The falls stopped flowing because of the
 - a. ice dam
 - b. stillness
 - c. beaver dam
- 

Questions about No Cowboys Allowed


1. Tony, the truck driver drives a
 - a. pick up truck
 - b. trailer truck
 - c. sedan delivery truck

2. The National Truck Rodeo is only for the
 - a. very best drivers
 - b. very poor drivers
 - c. cowboys

3. Before he can take part in the driving show the judges ask him to
 - a. inspect a truck
 - b. write his name
 - c. show his drivers license


4. To test his driving skill he must drive between
 - a. posts
 - b. barrels
 - c. other trucks

5. The judges subtract points from his score if his driving is
 - a. too slow
 - b. jerky
 - c. too fast

- 
6. To win the driver must drive perfectly in
 - a. a trailer truck
 - b. a pick up truck
 - c. the shortest time

 7. They must drive between walls to test if they can drive
 - a. in an alley
 - b. across a bridge
 - c. in a garage

 8. He must drive between two rows of tennis balls to see if he can
 - a. drive in a straight line
 - b. back up
 - c. drive in a circle

 9. At the finish line he must stop no more than
 - a. two feet behind it
 - b. two feet beyond it
 - c. 10 feet behind it
- 

Questions about The Run of the Spear

1. Colter was
 - a. an Indian
 - b. a pioneer
 - c. a lawyer

2. He was ordered away from the Indians by
 - a. The chief
 - b. the medicine man
 - c. Running Deer

3. When Colter was told a second time to go he
 - a. walked away
 - b. ran away
 - c. stood still

4. Run of the spear meant he must run or be
 - a. killed
 - b. jailed
 - c. burned at the stake

5. The reward for winning the race would be
 - a. gold
 - b. freedom
 - c. new moccasins

6. When he was halfway to his goal he had a
 - a. sore foot
 - b. bloody nose
 - c. sprained ankle

7. He outran all the Indians but
 - a. one
 - b. two
 - c. three

8. When he saw he could not outrun the Indian he
 - a. begged for mercy
 - b. hid behind a tree
 - c. hid behind a bush

9. When the Indian was close to Colter he
 - a. Stopped running
 - b. threw his spear
 - c. turned back

10. Colter escaped the Indians by hiding in a
 - a. beaver house
 - b. tree
 - c. cave

Questions about When Christmas Went Outdoors

1. Mr. Sturgeon tried to cheer David by giving him
 - a. a christmas present
 - b. a christmas tree
 - c. a bicycle

2. Everyone came from miles around to
 - a. visit David
 - b. admire his tree
 - c. admire his home

3. Before the second Christmas David
 - a. was dead
 - b. was well
 - c. was getting better

4. The Outdoor Christmas Tree Association was started by
 - a. Sandy Pratt
 - b. Andy Sanbell
 - c. John Trotter

5. The Outdoor Christmas Tree Association was famous for
 - a. sending maple seedlings around the world
 - b. sending red wood seedlings around the world
 - c. sending spruce trees around the world

6. Today you can see thousands of lighted Christmas trees which remind people of
 - a. the stars
 - b. the first Christmas under the stars
 - c. Santa flying across the sky

7. Each Christmas every city and town in this country has it's own
 - a. twenty five miles of christmas lights
 - b. Christmas parade
 - c. Christmas Tree Lane

8. Sandy Pratt died at the age of
 - a. 50
 - b. 75
 - c. 30

9. Sandy dug and shipped more than
 - a. 14,000 seedlings
 - b. 1,500 seedlings
 - c. 100 seedlings

10. The lighted trees at Christmas remind us of a
 - a. ships at sea
 - b. hopeful future
 - c. glittering fairyland

Questions about Whirly to the Rescue

1. A helicopter is useful for rescue work because
 - a. it rides smooth
 - b. it can land and take off almost anywhere
 - c. it flies high

2. Who was drifting on the ice?
 - a. Jimmy Carter
 - b. Greg Taylor
 - c. Bill Stark

3. The name of Mr. Carter's helicopter was
 - a. whirly
 - b. fury
 - c. copty

4. The helicopter was used during the summer to
 - a. Transport animals
 - b. take pleasure rides
 - c. dust crops

5. Mr. Carter told Jimmy to bring
 - a. the first aid kit
 - b. blankets
 - c. a rope

6. When they found the boy he was dangerously close to
 - a. the canyon falls
 - b. an iceberg
 - c. the shore

7. When they reached the stranded boy they dropped him
 - a. a life preserver
 - b. a rope
 - c. supplies

8. After the rescue the boy said he was
 - a. hot
 - b. cold
 - c. wet

9. After the boy was safely on shore Mr. Carter set the helicopter down on
 - a. a clearing
 - b. the ice
 - c. the sand

10. After the rescue, Mr. Carter wrapped the boy in
 - a. canvas
 - b. blankets
 - c. an old overcoat

Questions about A Natural Radar System

1. Blind people can find out what is in their path by
 - a. tapping their canes
 - b. walking slowly
 - c. walking backwards

2. Blind people's canes are their
 - a. support
 - b. radar instruments
 - c. flashlights

3. Radar instruments are a great help in
 - a. driving a car
 - b. air travel
 - c. good weather

4. The only mammal that is able to fly is the
 - a. pigeon
 - b. monkey
 - c. bat

5. Sounds made by bats cannot be heard by
 - a. people
 - b. other bats
 - c. other animals

6. Bats have excellent.
 - a. wings
 - b. eye sight
 - c. voices

7. When the Italian scientist blinded some bats they were
 - a. still able to see
 - b. able to fly
 - c. able to cry

8. When they plugged a bats ears he had
 - a. trouble flying
 - b. trouble seeing
 - c. trouble crying

9. Bats were found to have
 - a. strong wings
 - b. big feet
 - c. keen hearing

10. When bats had their ears plugged and were gagged they
 - a. flew just as well
 - b. were afraid to fly
 - c. did not talk or fly

Questions about The Indian Whiz

1. The mighty Indian won trophies in
 - a. football
 - b. baseball
 - c. all sports

2. During Jim Thorpes off seasons he would
 - a. work for the railroad
 - b. play another sport
 - c. drive a lumber truck

3. Jim Thorpe was called "The greatest athlete in the World" by the
 - a. King Of England
 - b. King Of Finland
 - c. King Of Sweden

4. Jim Thorpe lost his olympic titles in 1913 because
 - a. he played baseball professionally
 - b. he played hockey professionally
 - c. he had a fight with his coach

5. When Jim Thorpe had finished with the Olympic games he went back to
 - a. Boston University
 - b. Carlisle University
 - c. High School

6. Jim Thorpe is rated as one of the world's best
 - a. midget racer drivers
 - b. sports writers
 - c. football players

7. After finishing school at the University Thorpe played baseball for the
 - a. New York Giants
 - b. Boston Braves
 - c. Washington Senators

8. Thorpe's favorite trick between halves during a football game was
 - a. wrestling bears
 - b. kicking field goals
 - c. weight lifting

9. In 1950 sports writers picked Jim Thorpe as
 - a. best football player
 - b. mightiest all-round athlete
 - c. greatest track star

10. In 1951 Thorpe had the honor of being admitted to the
 - a. United States senate
 - b. Baseball hall of fame
 - c. Football hall of fame

Questions about Smoke Jumpers

1. A smoke jumper is a person that
 - a. drives a fire truck
 - b. fights fires
 - c. tells the firemen what to do

2. At the first trace of fire a smoke jumper heads for his
 - a. firetruck
 - b. airplane
 - c. automobile

3. A smoke jumper always works with
 - a. four firemen
 - b. the local police
 - c. another person

4. A smoke jumper always carries
 - a. a football helmet
 - b. a stiff collar
 - c. a football helmet and a stiff collar

5. The person who helps the smoke jumpers prepare for fire fighting is called the
 - a. jump master
 - b. fire chief
 - c. officer in charge

6. Smoke jumpers may sometimes land in a tree and the method used to get down is called.
 - a. hitting the silk
 - b. smooth sailing
 - c. a feather landing

7. If a fire hasn't gained too much of a start the smoke jumpers
 - a. soak the area with water
 - b. dig a ditch around it
 - c. use chemicals to control it

8. After the fire the smoke jumpers make the "no-glove" test which means
 - a. the fire will not start again
 - b. the men will not burn their hands
 - c. everything is under control

9. When the fires are over the smoke jumpers are usually taken home by
 - a. car
 - b. bus
 - c. helicopter

10. Smoke jumpers like their jobs because
 - a. it's outdoor work
 - b. it's full of adventure
 - c. it is both A and B