

SUMMER EMPLOYMENT
FOR SCIENCE TEACHERS
IN THE SOUTHWEST

By

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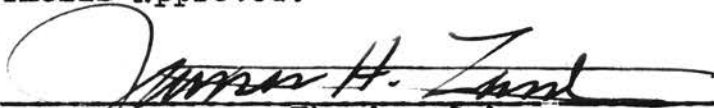
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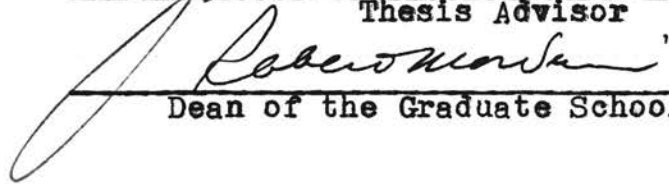
Submitted to the faculty of the Graduate School of
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SUMMER EMPLOYMENT
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CHAPTER I

Introduction

The purpose of this report has been to determine the present possibilities for summer employment of science teachers in the Southwest. The Southwest being defined as primarily Oklahoma, Kansas, Arkansas, New Mexico, and Texas. This does not mean that only companies in these states were involved, but most of the report is confined to this general area. It has been the intention of the author to give a general report with primary emphasis on the Southwest Plains States.

Research indicates very little literature is available on this subject, therefore, the main body of this report will consist of information taken from questionnaires sent to both the potential employer and the high school and college science teacher.

One hundred companies are involved in that they returned the questionnaires and answered at least part of the questions contained there-in. Ninety-one per cent of the companies contacted by letter returned the inquiry and many made additional comments about the problem. Respondents almost all appeared to be in sympathy with the problem and were most helpful in volunteering information about the

practices of their companies.

Answers to specific questions by the high school and college teachers will in many instances show a different point of view to the corresponding answers by the industrial representatives to similar questions.

The response of the science teachers was almost one hundred per cent. Answers to specific questions from science teachers were more homogenous than corresponding answers from representatives of participating industries. It should be pointed out that company policy was a restricting factor in the answers given by some of the larger industrial concerns. Although most companies expressed favorable response to the problem of summer employment for science teachers, and stated that they did hire or would hire such teachers, when specific inquiries about jobs for the 1958 summer were sent later to a large number of these companies all came back immediately with negative replies. This seems to indicate that although most companies are acceptable to the idea of summer employment, more needs to be done to insure specific jobs in various areas which are reserved for the science teachers and continued from summer to summer. It may be noted from the graph (Fig. 1) that the number of companies doing this is increasing. It is also evident from graph (Fig. 1) that the number of companies hiring science teachers has increased most rapidly during the past three or four years. this trend will probably continue since fifty-six per cent of the companies who have never employed teachers before are

planning to do so in the future. Another significant fact is that sixty-nine per cent of the companies reporting stated that they had hired science teachers in the past, (Fig. 1) while only sixty-six per cent of those responding indicated that summer employment was a general practice. (Fig. 3)

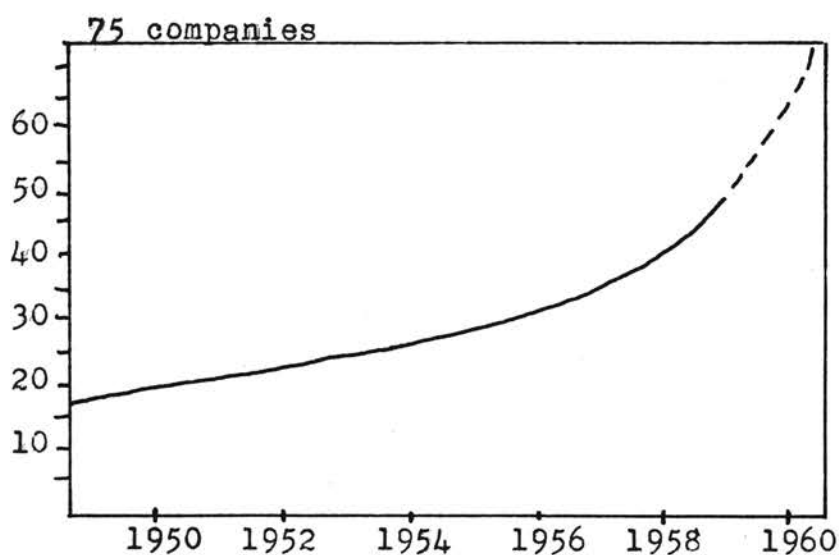


Fig. 1. Participating companies hiring science teachers during the past eight years.

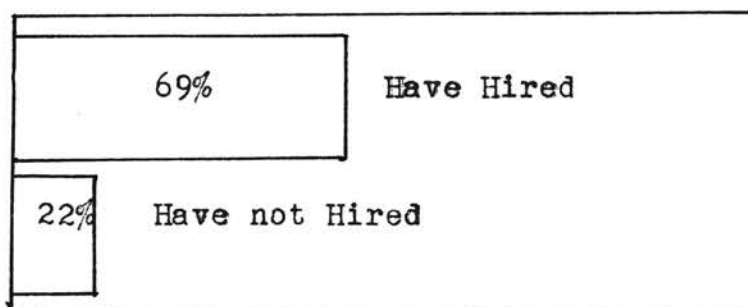


Fig. 2. Companies who have employed science teachers versus companies who have not.

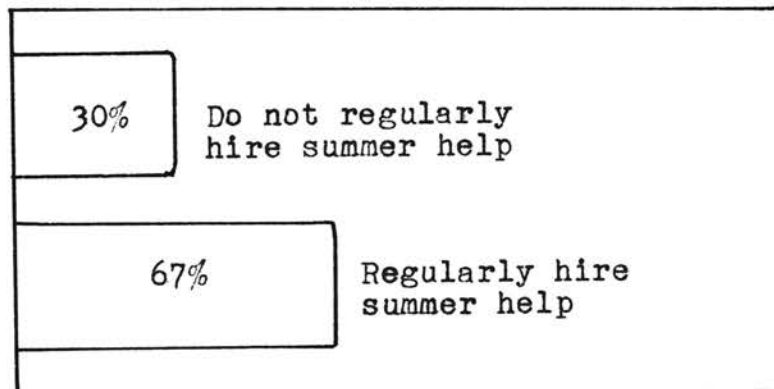


Fig. 3. Do companies regularly employ extra summer help?

Ninety-eight per cent of the science teachers indicated that they were interested in summer employment. Seventy-seven per cent of the teachers received some type of nonprofessional employment while only six per cent indicated that they found it difficult to secure any type of employment during the summer months (Fig. 4).

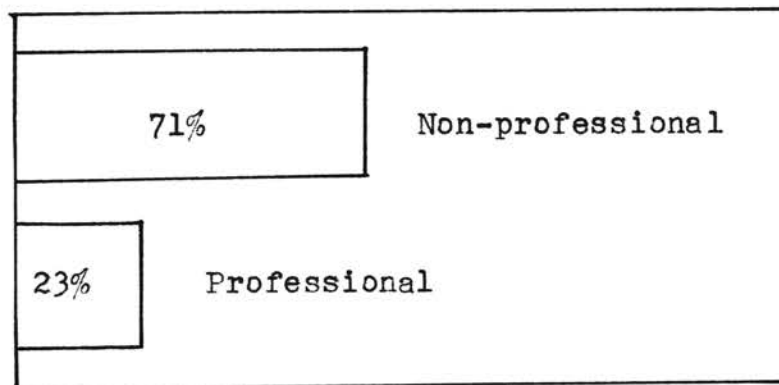


Fig. 4. Type of work obtained by teachers participating in survey.

Summer employment falls into four general categories; (1) nonprofessional, (2) summer fellowships, (3) research assistantships, (4) professional employment in industry. Although this report covers professional employment, references will be made to each of the other areas where ever they have specific bearing on the main subject.

Considerable use will be made of graphs in this report for easier interpretation of attitudes and practices followed by both the employer and the teacher.

CHAPTER II

THE PROBLEM AND SOME PROPOSED SOLUTIONS

Industry has long been familiar with shortages of material and the consequent slowdown or complete shutdown of production. More recently, industry has become aware of another type of shortage, the shortage of qualified personnel. William Benton¹, writing in the National Education Association Journal, has indicated that the United States needs at least 45,000 to 50,000 new engineers a year, but, in 1958 our colleges and universities produced only 37,000 engineering graduates. This shortage of engineers is symptomatic of the general shortage of technically trained personnel which already exists and shows evidence of becoming worse.

The push into space in 1957 has again brought forth a multitude of comments which indicates uneasiness among high ranking government personnel who are anxious over the decreasing number of high school and college students who are planning to enter the more highly technical fields of science.

One factor contributing to the shortage is the phenomenal increase in the technological requirements of industry. A large number of modern machines now require operators with

¹Benton, William. "Soviet Education", NEA Journal, May, 1956, Vol. XLV, No. 5, pp. 276-278.

college degrees, many times advanced degrees. This fact alone puts heavier demands upon the school systems, high schools and colleges, to turn out more technically trained personnel. To indicate how technical our industrial society is, a random check of one company folder², of the type sent to potential employees among college graduates, shows an unusually high percentage of highly trained personnel. Seventy-three per cent of the personnel in one department alone hold a Doctor's degree, all other departments show a correspondingly large number of advanced degrees.

Another major factor that contributes to the decreasing interest of high school students in science is the insufficient number of qualified science and mathematics teachers. Robert H. Carleton³ points out that 6,000 more science teachers are needed each year than enter science teaching from college. Other deterring factors are the obsolete facilities and equipment in the secondary schools and the relative unpopularity of mathematics as a subject.

Not only is the shortage of technical personnel an industrial problem, but the answer to this problem is vital to our national defense. Russia is taking the top third of her academic population and training them in mathematics and science. While we are graduating 25,000 engineers, Russia produces 65,000. As a consequence of the progress Russia has

²Carter Oil Company, Research, 1958, p. 7.

³Carleton, Robert H. "Science in the Spotlight", NEA Journal, May 1956, Vol. XLV, No. 5, pp. 298-299.

made in scientific and technical education, she can afford to export technicians and compete with the United States scientifically and technologically at a time when we are failing to even meet our own needs. Many are convinced that Russia's classrooms and libraries, her laboratories and teaching methods may threaten us more than her hydrogen bombs⁴.

If our schools are to produce the large numbers of technologist and scientist needed, then, certainly, high school and college science teaching must be made more desirable. Therefore, some method must be found to supplement science teachers salaries.

It has long been known that many excellent high school and college science teachers leave the profession each year because they are unable to obtain adequate employment during the summer months. The ease with which an adequately trained science teacher may find a higher paying position in industry seems to be a major contributing factor in the loss of teachers in this particular area. Many science teachers have stated that if they could have employment of a professional nature through the summer months it would not only give them a feeling of security, but would contribute to their being more competent in the classroom.

Several solutions to the problem have been proposed. First, The Indianapolis Plan, proposed by Paul E. Johnson⁵

⁴Benton, William. p.6.

⁵Johnson, Paul E. "The Indianapolis Plan", The Nations Schools, July 1957, pp. 38-41.

an Indianapolis principal. Common thought in Marion County, Indiana was that summer employment would prove an important means of keeping and improving science teachers. Industries in Marion County made available 78 jobs for science teachers for the following summer . The program was immediately accepted by the local science teachers and more jobs are being sought for next year.

Gen. David Sarnoff⁶, Board Chairman of R.C.A., proposes that a reasonable number of men and women be released by industry with full pay for at least a year each to accept teaching assignments in their local schools.

The Arthur D. Little Company has a plan whereby a graduate in science teaches in high school for one semester and is employed by the company for the rest of the year.

Hughes Aircraft Company recently organized a plan which lets local science teachers work for ten weeks during the summer as assistants to members of their staff. This is the best and most widely approved plan proposed by any of the industries participating in the survey.

⁶Sarnoff, D. "Lack of Scientists and Engineers a Threat to National Security", Commercial and Financial Chronicle, February 2, 1956, Vol CLXXXLLL, p. 620.

CHAPTER III

RESULTS OF INQUIRY

If industry is to become interested in the problem of summer employment for science teachers they must be convinced that such employment would be beneficial to industry. Most employers feel that teachers can be a distinct help in their manpower problems. Teachers may; augment the research staff, fill in for vacation help, care for increased summer business. Figure 5 indicates that the industries do feel that most teachers earn their pay.

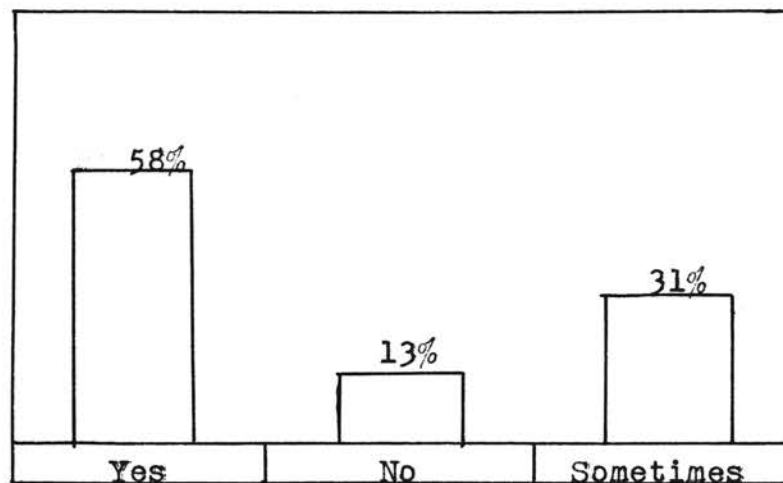


Fig. 5. Does a teacher hired for the summer only pay his way?

One thousand companies listed in the 1958 College Placement Annual were chosen at random and checked to see if summer employment was a general practice (Fig. 6).

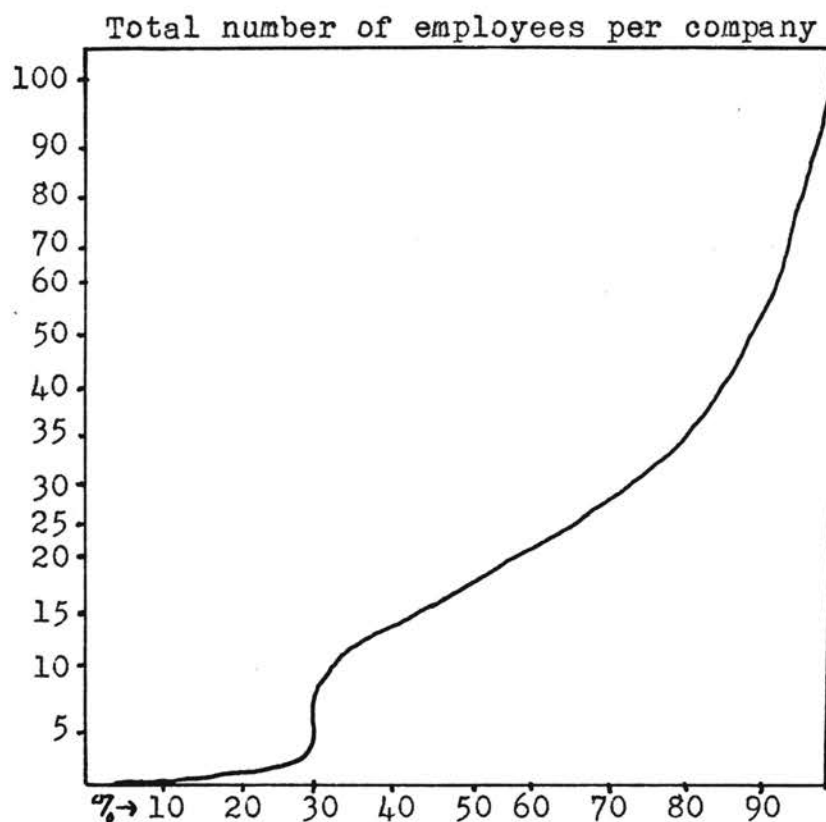


Fig. 6. Total number of employees in thousands versus the per cent of companies that regularly hire summer help.

Industry's response to the best time of the year to make application for summer employment (Fig. 7) shows that February to March is the best time for making application. Teachers indicated (Fig. 7) that they usually make application from

March to May. Companies report that most of their professional positions are filled early and the jobs that are available in the late spring and summer are semi-skilled or un-skilled.

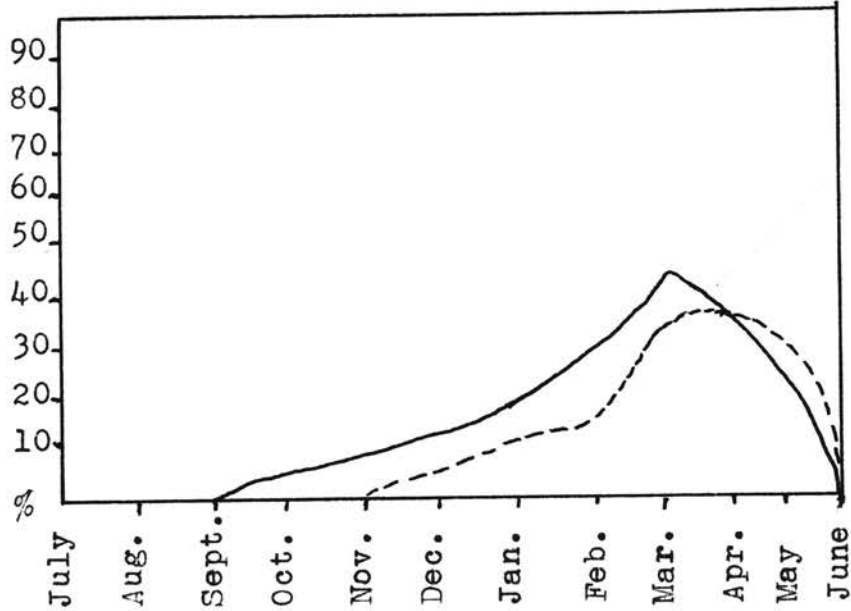


Fig. 7. Solid line graph: The time of year suggested by company representatives for making application. Broken line graph: time of year teachers indicated applications were made.

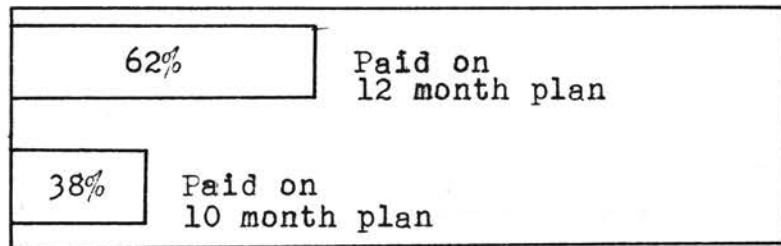


Fig. 8. Number of months during the year participating teachers received teaching salary. Teachers paid on the 10 month plan were most interested in summer employment.

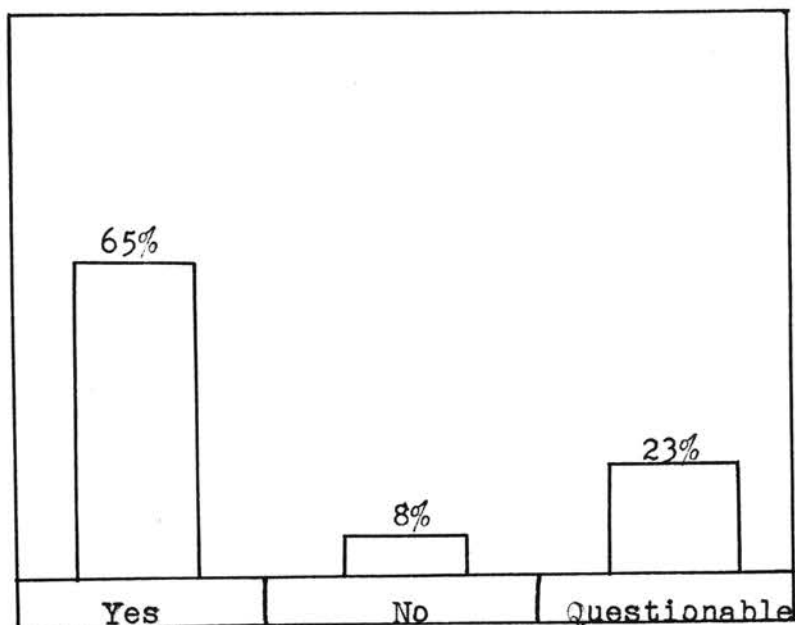


Fig. 9. Does industry consider it good public relations to hire science teachers?

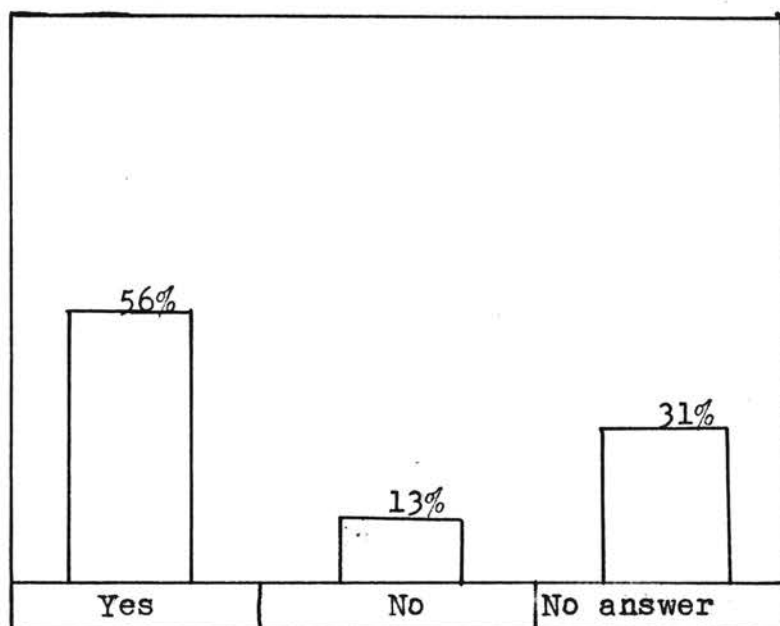


Fig. 10. Do teachers hired for the summer receive salaries commensurate with their professional training?

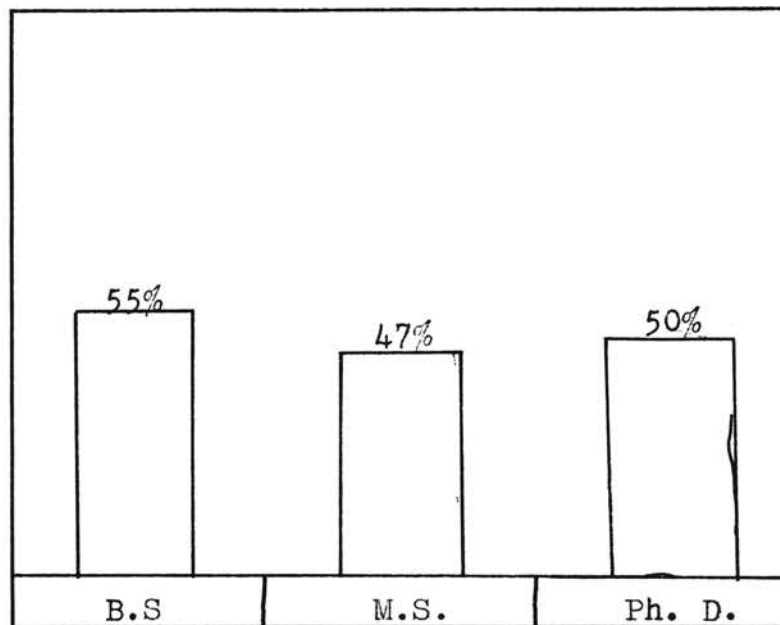


Fig. 11. Degree or degrees necessary for professional summer employment with the participating industries.

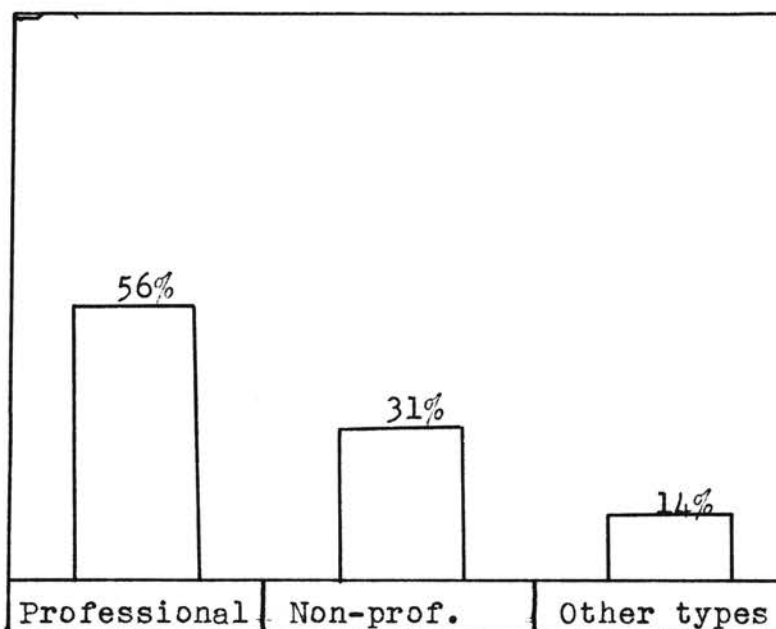


Fig. 12. Type of summer job offered science teachers.

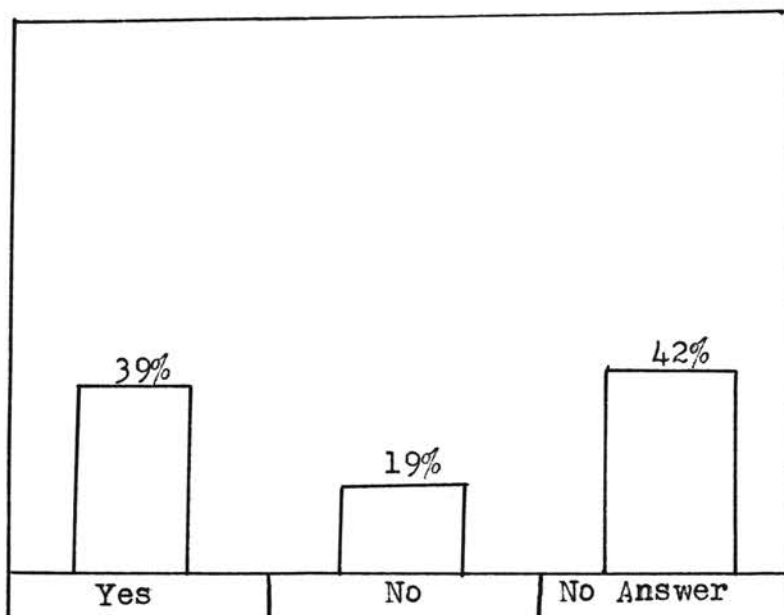


Fig. 13. Does each company prefer employees continue to work for them successive summers?

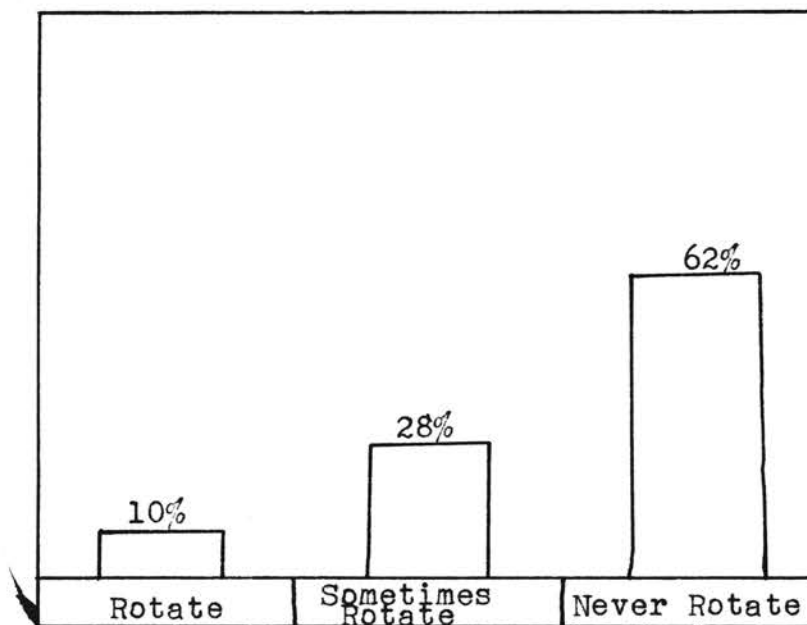


Fig. 14. What do companies do about job rotation?

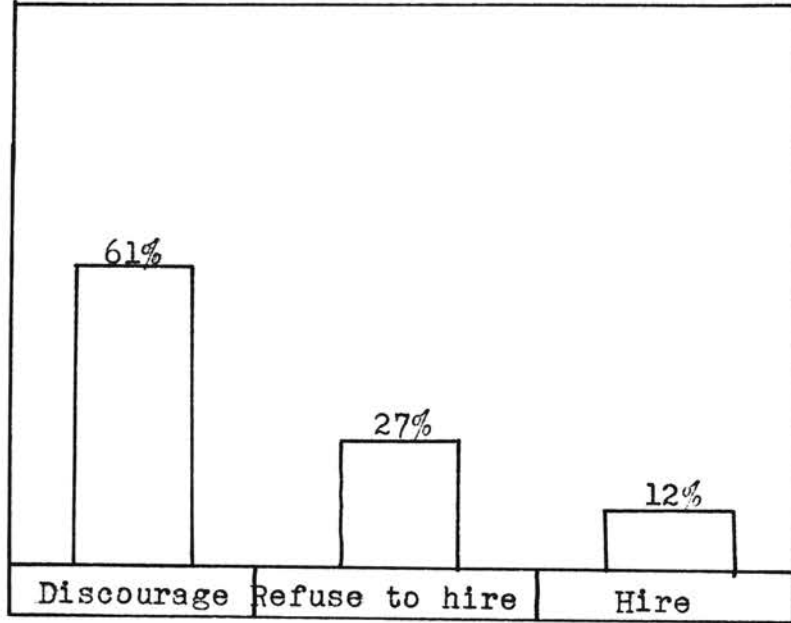


Fig. 15. What does a company do if summer employed teacher seeks permanent employment?

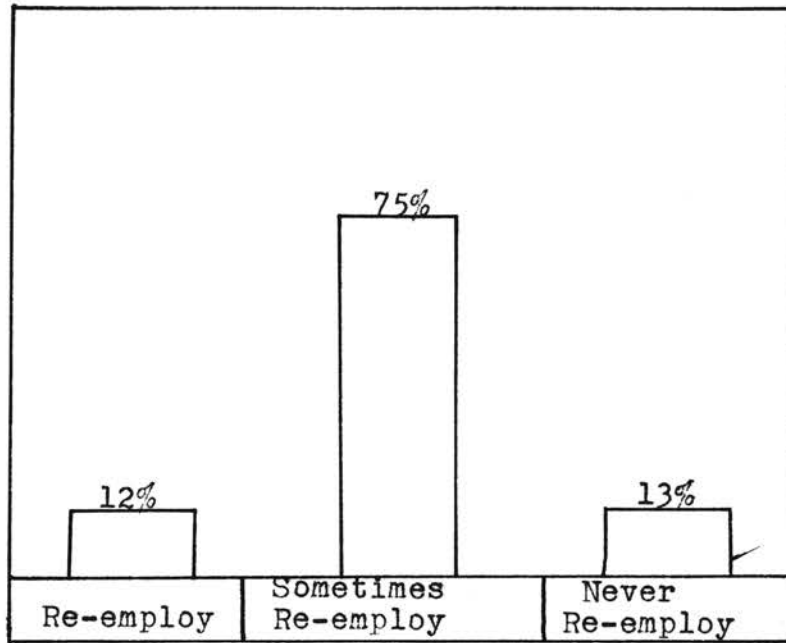


Fig. 16. What do companies do about re-employment?

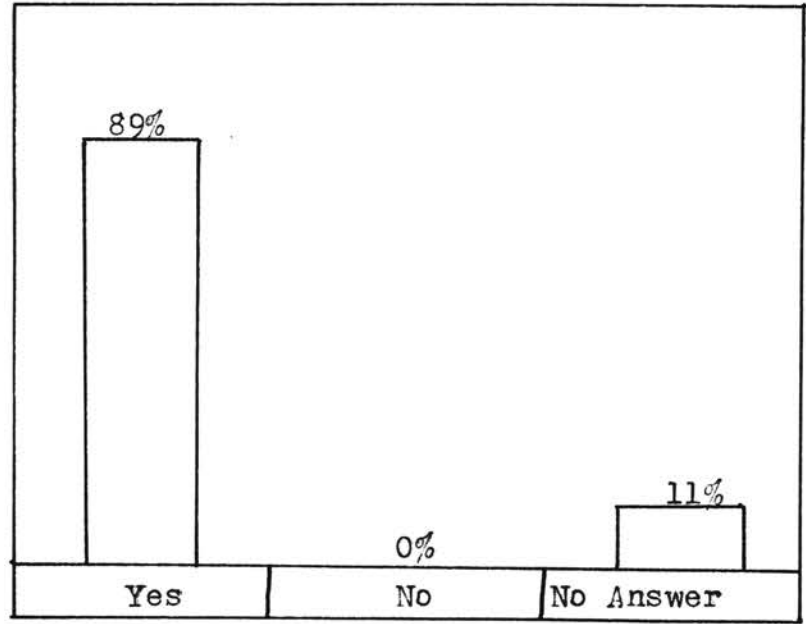


Fig. 17. Industries answer to : Does summer employment make a teacher more effective in the classroom?

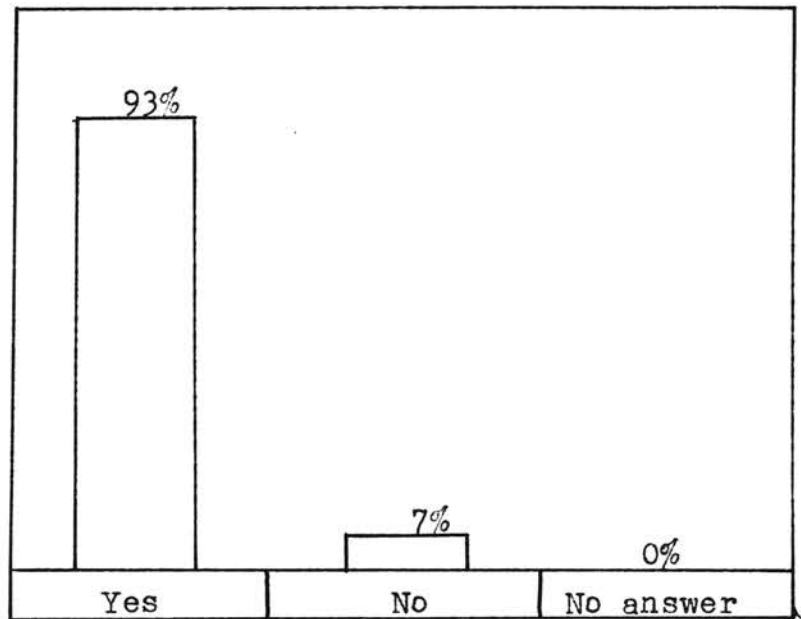


Fig. 18. Teachers answer to : Does summer employment in industry make a teacher more effective in the classroom?

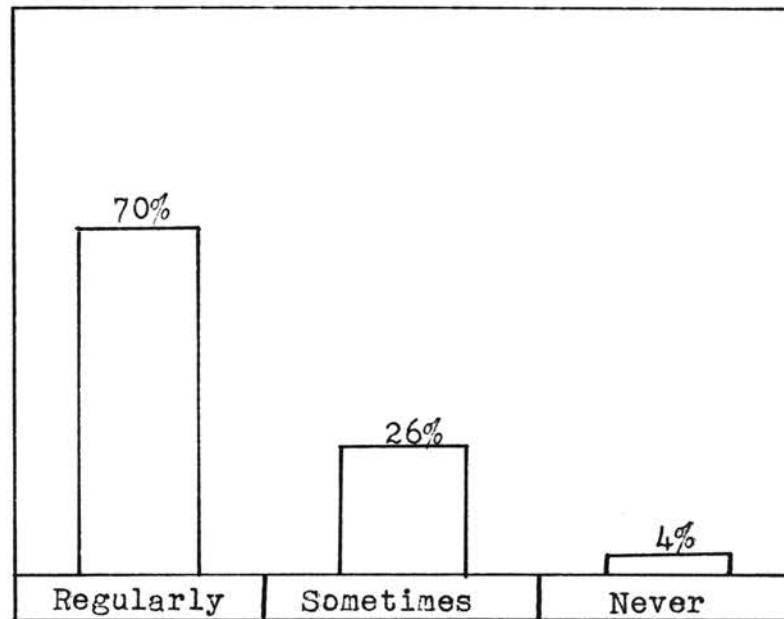


Fig. 19. Do companies give teachers opportunities to learn something about the company as a whole?

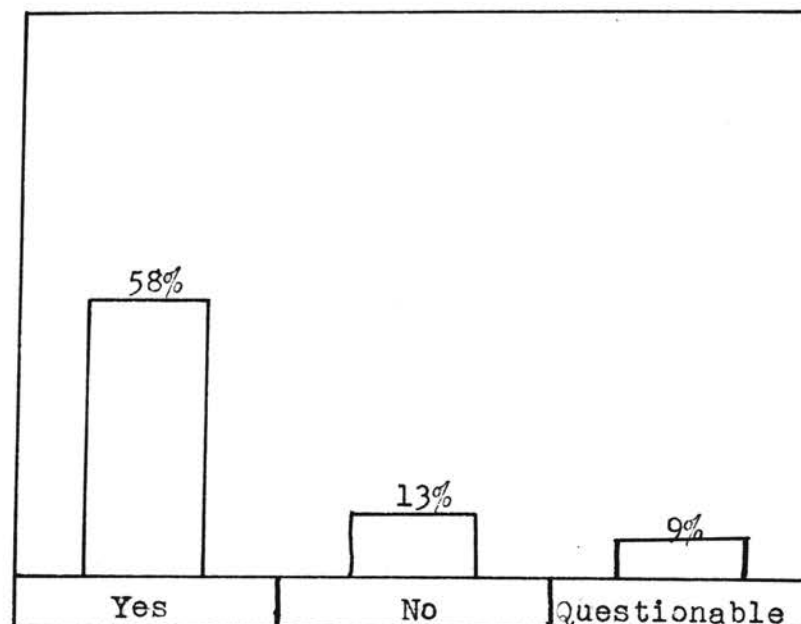


Fig. 20. Does your company hire colored to fill professional positions.

Teachers considered from \$300 to \$400 per month as a reasonable summer salary and most were acceptable to the continuation of their monthly school pay. Some of the participating industries indicated that they did pay teachers hired for summer the same monthly salary they received at their school. Industry reported salary as either professional or non-professional and left the amount to the imagination of the reader.

The physical sciences were unquestionably in greater demand. Company representatives reported a 70% to 9% preference for physical over biological science. Correspondingly teachers reported 60% to 24% biological over physical science as their major field.

Comments from teachers indicate that they have considerable trouble in finding summer work of any kind. Summer jobs they eventually find are of a very unskilled type.

CHAPTER IV

SUMMARY AND CONCLUSION

The science teacher shortage seems to revolve around, in part, two major factors; they are (1) not enough college graduates in science are choosing science teaching as a profession, (2) after a year or so of teaching they quit to take higher paying positions in industry.

Modern industry's increasing demand for scientists and technologists make the science teacher shortage a serious national problem. Low salaries offered to science teachers is the main cause of lack of interest in the profession and secondary, but not insignificant, is the inability of science teachers to find summer employment with which they may supplement their teaching salary.

Industry is slowly becoming aware that the lack of good science teachers has its effect on them. Many companies are beginning programs to provide a number of summer positions to be made available each summer for high school and college teachers. The number of companies initiating this type of a program is increasing, but they do not represent a large enough per cent of industry to appreciably alleviate the problem.

" The Indianapolis Plan", which thru the efforts of both

the heads of industries and the school administration provides local jobs for science teachers, and the, " Hughes Aircraft Company Plan", which provides a number of professional summer positions for local science teachers are two examples of workable plans for solving the science teacher summer employment problem.

In conclusion this report seems to show that with time the problem will become less pronounced since industry and the schools are beginning to work together and they will eventually reduce the seriousness of the summer employment problem.

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