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Alice Seeds
Iowa Wesleyan College

Rex Hancox
Iowa Wesleyan College

John W. Chittum
Iowa Wesleyan College

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A STUDY OF PHYSICS TEACHING IN IOWA HIGH SCHOOLS

ALICE SEEDS, REX HANCOX, JOHN W. CHITTUM

It is a matter of common knowledge that many Physics teachers in Iowa are not efficient because of their lack of training, and that many do not have what we would consider the minimum amount of training necessary to teach Physics in high school. It is taken for granted that teachers in small towns may be more poorly prepared than those in larger cities (though there are many exceptions to this). In this survey we have treated only of teachers in towns of 1000 or more population. All of the data is divided into three groups: group A includes towns of 4000 and more population; group B, 2500 to 4000, and group C, 1000 to 2500.

Our main purpose has been to learn how many Physics teachers have majored in Physics and how many hours of Physics the median teacher has had, although we have some other very interesting information.

Although the questionnaires included several other inquiries, our report has to do only with the following questions which were answered by the respective superintendents:—

1. What was his major subject when in college?
2. How many college semester hours has he received in Chemistry? Mathematics?
3. Please list below the courses in college Physics that he has taken, and the number of semester hours credit received in each.
4. What other subjects does the instructor teach?
5. How many years has he taught Physics?

We find that the following subjects are the ones most commonly taught with Physics. They are listed in order of their popularity. (a) General Science, (b) Mathematics, (c) Agriculture, (d) Manual Training in the smaller schools and Chemistry in the larger schools.

Table I shows the distribution of instructors according to their major work.

TABLE I

	A		B		C		ABC	
Questionnaires sent.....	59		35		149		243	
Answers	43	73%	21	60%	102	69%	166	68%
Percentage basis.....	43		21		102		166	
	No.	%	No.	%	No.	%	No.	%
Physics majors.....	8	18.6	5	23.8	8	7.9	21	12.8
Chem. or Math. Majors.....	18	41.8	5	23.8	39	38.2	62	37.4
Others min, Physics.....	6	14.0	1	4.8	8	7.9	15	9.0
Total trained in related fields.	32	74.4	11	52.4	55	54.0	98	58.4

Table II groups the teachers according to the number of hours of Physics they have had.

TABLE II

	A		B		C		ABC	
Percentage basis.....	43		21		102		166	
Have:	No.	%	No.	%	No.	%	No.	%
No college Physics.....	1	2.3	1	4.8	12	11.8	14	8.4
1-8 semester hours.....	5	11.6	5	23.8	16	15.7	26	15.7
9-15 semester hours.....	15	34.9	8	38.1	30	29.4	53	231.9
16-17 semester hours.....	4	9.3	2	9.5	2	2.0	8	4.8
18 or more semester hours...	16	37.2	5	23.8	15	14.7	36	21.6
Not stated.....	2	4.7	0	00.0	37	36.2	39	23.6
16 or more semester hours..	20	46.5	7	33.3	17	16.6	44	26.4

Since Table II must show a number of papers which did not list the Physics training of the teacher, the percentages were recalculated on the basis of the number reporting actual hours credit. Table III shows this modification for group C and the combined groups ABC.

TABLE III

	C		ABC	
Have:	No.	%	No.	%
No college Physics.....	12	18.5	14	11.2
1-8 semester hours.....	16	24.6	26	20.8
9-15 semester hours.....	30	46.2	53	42.4
16-17 semester hours.....	2	3.1	8	6.4
18 or more semester hours.....	15	23.1	36	28.8
16 or more semester hours.....	17	26.1	44	35.2

Table IV shows the comparison between our data and that collected by Prof. C. J. Lapp in 1924. Since the earlier data in-

TABLE IV

	1924 REPORT	1927 REPORT
Cities included in survey.....	all	1000 up
Per cent that teach Physics only.....	12.9	12.6
Per cent that majored in Physics.....	2.6	12.8
Per cent that minored in Physics.....	9.7	9.0
Average years experience.....	2.8	5.0
Median number of hours in college Physics...	9.0	10.0
Median number of hours in college Mathematics	12.5	16.0
Median number of hours in college Chemistry..	10.2	12.0

cluded all towns and the later data included only towns as large as 1000 population, the comparison cannot be said to show any definite change of conditions.

The material reported leads us to conclude that there are entirely too few Physics teachers who are even moderately well prepared for their work, and that the requisites of Physics training for high school teachers should be raised.

IOWA WESLEYAN COLLEGE,
MOUNT PLEASANT, IOWA.