

THE STATUS OF SCIENCE  
IN  
CATHOLIC HIGH SCHOOLS  
OF  
OKLAHOMA  
1939-40

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By

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Sister Mary Lawrence Franz, O. S. B.

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CHAPTER I  
INTRODUCTION

In making this study the writer has endeavored to investigate the situation existing in Oklahoma concerning the teaching of science in Catholic secondary schools in comparison with the situation existing in the small public high schools of Oklahoma.

The term "small public high schools" referred to in this study, includes only the white schools having an equivalent faculty of five full-time teachers or less. There are 424 such schools located within seventy-six counties in the state of Oklahoma, having a total of 424 science teachers, offering eight different courses in science.\*

The writer became interested in this problem when confronted with questions about the requirements for teachers of Catholic schools. Teacher-preparation in their teaching field is carried on just as extensively in all Catholic schools as it is in any public school. The writer found 25 Catholic high schools in Oklahoma and under investigation found all of them affiliated with the State Board of Education. It is from the files of the State Department of Public Instruction that the data for this study were secured. Every school to be accredited must send in to the State Department of Public Instruction before November 1st of each year, an application blank for high school accrediting. These reports are filed in the office of the State Department of Public Instruction. Since these reports are required by the State Board of Education before accrediting is possible, they are a very reliable source of information, having very few unfilled blanks.

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\* James W. Payne, The Status of Science Teachers In The Small Secondary Schools of Oklahoma, (Unpublished thesis), Oklahoma A. & M. College.

Each application for accrediting sent to the office of the high school inspection division of the State-Superintendent's office was examined and studied in detail. Tables have been compiled considering the following items: (1) Catholic high schools of Oklahoma, (2) Sciences offered in Oklahoma Catholic high schools, (3) Percentage of pupils taking subjects in curriculum, (4) The cost of available equipment, (5) Semester hours of college training in science by subjects, (6) Total number of semester hours in science, (7) Teaching load of science teachers for the three teacher school, (8) Teaching load of science teachers for the four teacher schools, (9) Teaching load of science teachers for the five teacher schools, (10) Teaching load of science teachers for the seven teacher schools, (11) Teaching load of science teachers in Catholic high schools of Oklahoma, (12) Science combinations by subjects, (13) Total enrollment for science teachers.



## CHAPTER II

## GENERAL ANALYSIS AND TABULATION OF THE REPORT

The Catholic high schools in Oklahoma number twenty-five, 24 white and 1 colored, employing during the year 1939-40 28 science teachers.

a. CATHOLIC HIGH SCHOOLS OF OKLAHOMA

Table I shows the names of the Catholic secondary schools and their location, with the number of students attending each high school and the number of students enrolled in the science classes of each school.

In the following tables reference to names of schools will be according to numbers from table I.

Schools No. 2, 6, 14, and 21 report enrollment in science classes to be less than 10 pupils. This is 20.8 per cent of the schools.

Schools No. 3, 5, 7, 11, 16, 17, 19, and 25 report enrollment in science classes to be between 10 and 20 pupils. This is 33 1/3 per cent of the schools.

Schools No. 1, 4, 8, 15, 18, and 22 report enrollment in science classes to be between 20 and 30 pupils. This is 25 per cent of the schools.

No school reports having enrollment in science classes between 30 and 40 pupils.

Schools No. 9 and 20 report enrollment in science classes to be between 40 and 50. This is 8 1/3 per cent of the schools.

TABLE I

## CATHOLIC HIGH SCHOOLS OF OKLAHOMA

Schools	Town	No. of Science Teachers	Attendance in H. S.	Enrollment in Science Courses
1. St. Mary's	:Okeene	1	43	23
2. Sacred Heart	:El Reno	1	60	9
3. St. Joseph's	:Norman	1	45	12
4. St. Mary's	:Lawton	1	62	26
5. Sacred Heart	:Vinita	1	50	12
6. St. Joseph's	:Enid	1	70	6
7. St. Joseph's	:Chickasha	1	41	13
8. St. Mary's	:Ponca City	1	51	28
9. Holy Trinity	:Okarche	1	58	49
10. St. Joseph's	:Guthrie	1	23	1
11. St. Joseph's	:Muskogee	1	51	16
12. Rosary	:Okla. City		13	
13. John Carroll	:Okla. City	2	111	55
14. Mt. St. Mary's	:Okla. City	1	52	7
15. St. Joseph's	:Oklahoma C.	1	142	25
16. Uganda Martyrs	:Okmulgee	1	34	19
17. St. Anthony's	:Okmulgee	1	66	10
18. St. Michael's	:Henryetta	1	51	23
19. St. John's	:McAlester	1	44	18
20. St. Gregory's	:Shawnee	2	71	48
21. St. Benedict's	:Shawnee	1	52	7
22. Casia Hall	:Tulsa	2	61	29
23. Holy Family	:Tulsa	1	184	51
24. Marquette	:Tulsa	1	170	94
25. Monte Cassino	:Tulsa	2	69	19
	Total	28	1674	600

Schools No. 13 and 23 report enrollment in science classes to be between 50 and 60 pupils. This is  $8\frac{1}{3}$  per cent of the schools.

One school reports enrollment in science classes to be in the nineties. This is 4.1 per cent of the schools.

It is noted that the Catholic high schools of Oklahoma had 28 science teachers, and 600 pupils or over 35 per cent enrolled in science classes out of a total enrollment of 1674, during the school year 1939-40.

b. SCIENCES OFFERED IN CATHOLIC HIGH SCHOOLS

Table II shows that 14 schools offer chemistry, 11 schools offer physics, 11 schools offer general science, 7 schools offer geography and 4 schools offer biology.

Chemistry ranks first or about 30 per cent. Physics and general science rank second and third or about 23 per cent each. Geography ranks fourth or about 15 per cent. Biology ranks last or about 8 per cent.

This table shows that every school offers at least one science course each year, except one school, No. 12, which during the year 1939-40 had only the first year of high school and science was the subject left out as the pupils would be able to get their science in their last three years of high school work.

Seven schools or 39.1 per cent of all the Catholic high schools report as offering only one science course in their curriculum. One science is all that is required for graduation from high school by the State Department of Public Instruction. These schools probably

TABLE II

## SCIENCES OFFERED IN OKLAHOMA CATHOLIC HIGH SCHOOLS

School	Science Taught in 1939-40	Sciences Taught in Two Years
1.	General Science	General Science
2.	Physics	Physics
3.	Chemistry	Chemistry
4.	Physics--Gen. Science	Physics--General Science
5.	Chemistry	Chemistry
6.	Physics	Physics--Geography
7.	General Science	Chemistry--General Science
8.	General Science	Physics--General Science
9.	Biology--Gen. Science	Geology--Gen. Science--Geog.
10.	Biology	Biology--General Science
11.	Chemistry	Chemistry--Physics
12.		
13.	Chemistry--Geography	Chemistry--Geography
14.	Chemistry	Chemistry
15.	Chemistry	Chemistry
16.	Geography--Gen. Science	Physics--Gen. Science--Geog.
17.	Physics	Physics--Chemistry
18.	General Science	Physics--General Science
19.	Physics--Gen. Science	Physics--General Science
20.	Physics--Chemistry--Geog.	Physics--Chemistry--Geog.
21.	Chemistry	Chemistry
22.	Physics--Biology	Physics--Chemistry--Biology
23.	Chemistry--Gen. Science	Chemistry--General Science
24.	Chemistry--Gen. Sci.--Geog.	Chemistry--Physics--Geog.--Gen. S.
25.	Biology--Chemistry	Chemistry--Biology--Geography

lack funds for equipment, or are unable to provide a teacher qualified or interested in more than one science, or lack a sufficient number of teachers in the school system.

Twelve schools or 50 per cent of the schools offering science, offer two courses in their curriculum. Seven schools alternating the two courses of science offered.

There are 4 schools or  $12\frac{1}{2}$  per cent of the schools offering three science courses in their curriculum.

One school, or 4.1 per cent of the schools, offers four science courses, which happens to be the school in which the writer is a science teacher. There are seven full-time teachers in this high school so the teacher of science can put in full time teaching science. Enrollment of pupils, requests for science courses and available equipment has brought about these conditions.

c. PERCENTAGE OF PUPILS TAKING SUBJECTS IN CURRICULUM

Table III shows the number enrolled in each school, and percentage of pupils enrolled in each course of the curriculum. The purpose of this table is to show how the percentage of enrollment in science classes compared with the percentage enrolled in other courses offered in the curriculum.

It will be noted that nearly all the schools ranked around 100 per cent in the enrollment for English classes. That is what it should be as the State requirement for graduation is four years of English, therefore every pupil should be enrolled in an English class.

If the reader will refer to table III, it will be noted that science enrollment has a fair percentage since only one year of science

TABLE III

## PERCENTAGE OF PUPILS TAKING SUBJECTS IN CURRICULUM

School	Eng.	Math.	Hist.	Latin	Fr.	Sp.	Phy.	Chem.	Bio.	Geog.	Gen. Sci.	Total Sci.	Typ.	Short.	Bk.	Others
1.	79%	65%	100%	11%	16%						53%	53%				44%
2.	100	68	100	68			15					15	15	15	16	
3.	100	97	49	71				26				26				55
4.	103	93	79	53			11				30	41	25	25		
5.	100	70	98	50				24				24	32		18	
6.	100	70	100	54		18	6					6	21	14		
7.	102	56	80	61		9					32	32	22	14	17	
8.	98	76	64	41							55	55	9			20
9.	100	60	50	36					26		58	84	20	12	20	
10.	104	82	82	56	21				4			4	43	13		35
11.	90	92	90	60				31				31				
12.	100	100	100	100												
13.	100	90	62	108	9	6		11		30		41				
14.	100	57	94	59		25		13				13	15	11		21
15.	101	70	94	71	10	5		17				17		7	5	
16.	100	64	100			64				35	20	55	20			32
17.	90	62	66	40		7	15					15	50	10	13	
18.	103	90	100	61	4						45	45	55	51		
19.	100	43	100	40			20				20	40	20		27	25
20.	98	105	95	60	24		11	45		11		67	20		12	17
21.	100	50	50	50				13				13	25	25	25	40
22.	100	93	64	44	20	34	30		18			48				28
23.	100	65	81	44		25		7			20	27		13		19
24.	100.5	80	77	62	9	16		14		9	32	55	20	10		11
25.	97	83	77	60	40	27		4	23	20		47	17			
Mean	98.6	75.2	78.4	54.4	6	9.4	4.4	8.2	3	4	14.6	34.2	17.5	8.8	6.1	13.8

is required for graduation.

Table III shows that in schools where science enrollment is somewhat small, then the commercial subjects have a greater enrollment. This happens in communities where pupils are financially unable to go on to college, consequently they pursue courses in high school which will enable them to obtain business positions following graduation.

d. THE COST OF AVAILABLE SCIENCE EQUIPMENT

Table IV shows the cost of the available science equipment in each school. Schools having blank spaces are schools that did not make a report of the cost of their science equipment.

e. COLLEGE TRAINING IN SCIENCE BY SUBJECTS

Table V shows 28 teachers of science with a total of 27 having work in chemistry. The mean number of hours in chemistry is 17.4 semester hours. Six have had no chemistry in college. This group may be holding a blanket certificate and are in schools where it is not necessary for them to teach chemistry.

There are 21 teaching physics with a mean of 13.52 semester hours. Twelve science teachers have no physics in college due to holding blanket certificates where they may teach chemistry or biology without any hours in physics. The average semester hours in physical science for Catholic high schools is 15.46 while it is 8.46 semester hours in the small high schools of Oklahoma.

The number of science teachers teaching biology is 21, while 12 teachers have no biology semester hours. The biology teachers have a

TABLE IV  
THE COST OF AVAILABLE SCIENCE EQUIPMENT

School	Biology	Physics	Chemistry	Gen. Sci.
1.	\$ 647.00			\$290.00
2.				
3.				
4.		\$ 660.88		394.65
5.		605.00	\$ 217.93	
6.		980.00	500.00	128.00
7.			714.00	130.00
8.		189.00		185.00
9.	122.00			312.50
10.	1396.64	2953.00	1371.12	
11.			767.28	
12.				
13.			900.00	
14.				
15.		200.00	1215.00	
16.				215.00
17.		559.60	721.65	
18.		230.00		20.00
19.		450.00		414.00
20.		500.00	600.00	
21.	275.00	225.00	375.20	35.00
22.	1540.00	2565.00	3268.00	
23.			695.00	325.00
24.	310.00	700.00	337.51	500.00
25.	335.00	945.23	2386.45	



TABLE V

## SEMESTER HOURS OF COLLEGE TRAINING IN SCIENCE BY SUBJECTS

Semester Hours	Chemistry	Physics	Biology	Geography
0	6	12	12	29
1-4	3	1	2	
5-8	2	4	9	
9-12	7	6	2	
13-16	4	4	2	2
17-20	4	3	1	1
21-24	2	1		
25-28	1	2	2	
29-32	2		1	
33-36			2	
37-40	1			
Over 65	<u>1</u> 27	<u>21</u>	<u>21</u>	<u>3</u>

Mean 17.40 semester hours

Mean 13.52 semester hours

Mean 13.62 semester hours

Mean 13 semester hours

mean of 13.6 semester hours while the mean of the small high schools of Oklahoma is 15.83 semester hours.

In 1939-40, 295 small high schools of Oklahoma offered physiology, while not one Catholic high school offered physiology. Physiology is not a high school requirement so that probably accounts for the fact that it is not taught in Catholic schools, when one or more of the

TABLE VI  
TOTAL NUMBER OF SEMESTER HOURS IN SCIENCE

Hours	Men	Percent	Women	Percent	Total	Percent
0-5	0	-	0	-	0	-
6-10	0	-	1	3.57	1	3.03
11-15	0	-	0	-	0	-
16-20	0	-	4	14.28	4	12.12
21-25	1	20.00	7	28.56	8	27.27
26-30	2	40.00	2	17.85	4	21.21
31-35	0	-	2	10.71	2	9.09
36-40	0	-	1	3.57	1	3.03
41-45	2	40.00	1	3.57	3	9.09
46-50	0	-	1	3.57	1	3.03
51-55	0	-	1	3.57	1	3.03
56-60	0	-	0	-	0	-
61-65	0	-	1	3.57	1	3.03
66-70	0	-	0	-	0	-
Over 70	0	-	2	7.14	2	6.06
Total	5	100.00	23	100.00	28	100.00

Mean for men-----33.8 semester hours.

Mean for women-----32.53 semester hours.

Mean for both-----33.16 semester hours.

major sciences are taught.

Figures in Table V show that chemistry is taught more than any of the other sciences. Chemistry is requested in a large majority of Catholic high schools located in the eastern and central part of

Oklahoma, where oil is the main industry, by pupils whose environment interests them in this science.

All in all these records show that all the science teachers of Catholic schools pass the requirements needed by the State Department of Public Instruction to teach in their respective field of teaching.

f. TOTAL SEMESTER HOURS IN SCIENCE

Table VI shows that of the 28 teachers in our Catholic high schools, five or 17.8 per cent were men, and twenty-three or 82.1 per cent were women. Comparing with the 416 science teachers in the small high schools 84.61 per cent were men and 15.39 per cent were women.

Data show the mean number of semester hours for women to be 32.53 while college training for men in science is 33.8 semester hours; a difference of 1.27 hours. In the small high schools, records show 33.04 hours for men, while 30.67 hours for women, a difference of 2.37 hours.

Three women, 9.09 per cent, have over 60 hours of science, while the men did not go over 45 hours. Out of the 416 science teachers in the small public schools 4.69 per cent of women have over 60 semester hours.

g. TEACHING LOAD

(1) Table VII shows teaching load for science teachers in a three-teacher high school.

TABLE VII

## TEACHING LOAD OF SCIENCE TEACHERS FOR THE THREE TEACHER SCHOOL

Periods per week	Com.	Ethics	Sci.	Latin	Demo.	Math.	Hist.
1-5	1	1	1	1	1	-	-
6-10	-	-	3	-	-	1	1
11-15	-	-	-	-	-	2	-
21-25	1	1	-	-	-	-	-
Total	2	1	4	1	1	3	1

Mean for those teaching science-----8.75 periods per week.

Mean for those teaching mathematics-----13.33 periods per week.

Mean for those teaching commercial-----15.00 periods per week.

There are only four three-teacher Catholic high schools in Oklahoma. There is a science teacher for each school where the four science teachers may teach one or more subjects from a choice of six other subjects with their science.

Two teach commercial, one teaching it five periods per week, the other teaching it twenty-five periods per week.

Three teach mathematics, one teaches it ten periods per week, two teach it fifteen per week.

One teaches Ethics five periods per week.

One teaches Latin five periods per week.

One teaches history ten periods per week.

One teaches democracy five periods per week.

All four teach science, one teaches it five periods per week, three teach it ten periods per week.

TABLE VIII

## TEACHING LOAD OF SCIENCE TEACHERS FOR THE FOUR TEACHER SCHOOLS

Periods per week	Hist.	Rel.	Sci.	Com.	Eng.	Math.
1-5	3	3	1	1	1	-
6-10	-	-	4	-	-	5
11-15	-	-	2	-	1	2
16-20	-	-	1	-	1	-
Total	3	3	8	1	3	7

Mean for those teaching science-----11.875 periods per wk.

Mean for those teaching mathematics-----11.42 periods per wk.

Mean for those teaching English-----13.33 periods per wk.

Mean for those teaching history-----5.00 periods per wk.

The mean load for science teachers teaching science, mathematics and commercial is 8.75, 13.13, and 15.00 periods per week respectively.

(2) Table VIII shows there are eight science teachers for the eight four-teacher high schools. This table shows combinations of five other subjects with science.

The eight science teachers teach with a median of 11.875 periods per week. One teaches five periods per week. Four teach ten periods per week. Two teach fifteen per week, and one teaches twenty per week.

Five teach mathematics ten periods per week. Two teach it fifteen periods per week.

TABLE IX

## TEACHING LOAD OF SCIENCE TEACHERS FOR THE FIVE TEACHER SCHOOLS

Periods per week	Math.	Spanish	English	Science	History
1-5	-	1	1	-	1
6-10	1	-	-	4	-
11-15	2	-	1	-	-
16-20	-	-	-	1	-

Mean for those teaching science-----12.00 periods per week.

Mean for those teaching mathematics-----13.33 periods per week.

The median for those teaching mathematics is 11.42 periods per week, three teaching history five periods per week, three teaching history five periods per week, three teaching English 13.33 periods per week, one teaching commercial five periods per week, and three teaching religion five periods per week.

(3) Table IX shows the five science teachers teaching in a five-teacher school, only five combinations occur.

Four science teachers teach ten periods per week and one teaches twenty periods per week. Mean is 12.00 periods per week.

Mathematics is next with one teaching ten periods per week and two teaching fifteen periods per week. Median is 13.33 periods per week.

One teaches history five periods per week.

(4) Table X shows science and mathematics the outstanding combination. No English is taught by science teachers in a seven-eight-nine teacher school.

TABLE X

## TEACHING LOAD OF SCIENCE TEACHERS FOR THE SEVEN TEACHER SCHOOL

Periods per week	Sci.	Math.	German	Rel.	Art	Com.	Hist.
1-5	-	-	1	1	1	-	-
6-10	4	3	-	-	-	1	-
11-15	2	-	-	-	-	-	-
16-20	2	-	-	-	-	-	1
21-25	-	1	-	-	-	-	-
26-30	1	-	-	-	-	-	-
Total	9	4	1	1	1	1	1

Mean for teaching science-----15.55 periods per wk.

Mean for those teaching mathematics-----13.75 periods per wk.

Nine teachers teaching science, four teaching ten periods per week, two teaching fifteen periods per week, two teaching twenty periods per week, and one teaching thirty periods per week.

Four teachers teaching mathematics, three teaching ten periods per week, and one twenty-five periods per week.

One teacher teaching German five periods per week.

One teacher teaching religion five periods per week.

One teacher teaching art five periods per week.

#### h. TOTAL TEACHING LOAD

Table XI shows the 26 science teachers have science combined with ten other subjects of which they may teach one or two.

TABLE XI

## TEACHING LOAD OF SCIENCE TEACHERS IN CATHOLIC HIGH SCHOOLS OF OKLAHOMA

	P.	Sci.	Math.	Ger.	Rel.	Art	Com.	His.	Sp.	Eng.	Lat.	Dem.	Total
1-5	2	-	1	5	1	2	4	1	2	1	1		20
6-10	15	10	-	-	-	1	1	-	2	-	-		27
11-15	4	8	-	-	-	-	-	-	2	-	-		14
16-20	4	-	-	-	-	-	1	-	1	-	-		6
21-25	-	1	-	-	-	1	-	-	-	-	-		2
26-30	1	-	-	-	-	-	-	-	-	-	-		1
Total	<u>26</u>	<u>19</u>	<u>1</u>	<u>5</u>	<u>1</u>	<u>4</u>	<u>6</u>	<u>1</u>	<u>5</u>	<u>1</u>	<u>1</u>		<u>70</u>

Mean for those teaching science-----12.7 periods per week.

Mean for those teaching mathematics-----12.8 periods per week.

Mean for those teaching history-----8.3 periods per week.

The mean is 12.7 periods per week. In the small public schools of Oklahoma this median for science teachers is 9.14 periods per week.

Mathematics is second with 19 teachers teaching it with a median load of 12.9 periods per week. In public schools it is 9.12 periods per week.

History is third with six teachers teaching with a median load of 8.3 periods per week, while in the public schools it is 7.57 periods per week.

This table corresponds with public schools that the most common combinations with science are mathematics and history.



TABLE XII  
SCIENCE COMBINATIONS BY SUBJECTS

Science combined with	Women	Men
Math.--History--Commercial	2	-
Mathematics	2	2
Mathematics--Religion	4	-
Mathematics--History	2	-
Commercial	1	-
Mathematics--Spanish	1	-
Science	2	-
Mathematics--Latin	-	1
Mathematics--English	3	-
History--English	1	-
English	2	-
History	1	-
German	-	1
Mathematics--Latin--Democracy	1	-
Religion	-	1
History--Art	$\frac{1}{23}$	$\frac{-}{5}$

1. TEACHING COMBINATIONS WITH SCIENCE

Table XII shows the 28 science teachers with their teaching combinations. In public schools, the big majority of science teachers are men and hold the positions of superintendent. In Catholic schools there are no superintendents teaching science.

The greatest combination with science is mathematics and then with mathematics and religion. In the first combination there are two women and two men; in the second combination there are four women. There are fifteen combinations. Two cases with history, mathematics and commerce combination. Two cases with mathematics and history combined with science. One case commerce combined with science. One case mathematics and Latin combined with science. Three cases mathematics and English combined with science. Two cases English alone combined with science. One case history alone combined with science. One case German alone combined with science. One case religion alone combined with science. One case history and art combined with science. One case mathematics, Latin, and democracy combined with science. Two cases where science alone is taught.

j. TOTAL ENROLLMENT FOR SCIENCE TEACHERS

Table XIII shows total enrollment for each science teacher. This includes the pupils of all the subjects taught by the science teacher.

Three teachers have between 30 and 40 pupils. Two teachers have between 40 and 50 pupils. Four teachers have between 50 and 60 pupils. One teacher has between 60 and 70 pupils. Three teachers have between 70 and 80 pupils. Four have between 80 and 90 pupils. Two teachers have between 90 and 100 pupils. One teacher has between 100 and 110 pupils. Two teachers have between 110 and 120 pupils. Two teachers have between 120 and 130 pupils. One teacher has between 130 and 140 pupils. One teacher has between 140 and 150 pupils. One

TABLE XIII

## TOTAL ENROLLMENT FOR SCIENCE TEACHERS

Number of Pupils enrolled per Teacher	Women-----Men Number of Teachers
30-39	1                      2
40-49	2                      -
50-59	4                      1
60-69	1                      -
70-79	2                      1
80-89	4                      -
90-99	1                      1
100-109	1                      -
110-119	2                      -
120-129	2                      -
130-139	1                      -
140-149	1                      -
150-159	-                      -
160-169	-                      -
170-179	-                      -
180-189	<u>1</u> <u>-</u>
	23                      5

teacher has between 180 and 190 pupils.

From the application blanks it was noted that the large number of enrollment was due to the combination of science with English or history classes. These classes are always larger because of State requirements of English and history units for graduation.

## CHAPTER III

## SUMMARY AND CONCLUSIONS

Manifestly the study of science in high school is intended to supply the pupil with an organized view of the subject, to clarify aims and objectives in the case of further investigation, to outline problems of research in specific fields according to individual pupil's interest and to teach an appreciation of the almost inestimable contributions made by science to every phase of our economic, industrial and cultural world. Hence the study of science is to be looked upon primarily as one of the means for general education. It should meet certain needs of our young people who are developing their own capacities and who are learning to participate in a democratic society.

Motivation and procedure are not paramount in importance in the study of science in high school, however the problem of pupil guidance assumes increasing proportions. Methods should be guided primarily and continuously by this aim. The methods of acquiring information, interpreting facts and the study of science principles should be looked upon as means for training of students.

All the Catholic high schools of Oklahoma are comparatively small. This is a distinct advantage, thereby affording an excellent opportunity for the very best pupil-teacher relationships and permitting a better personal understanding of one with the other. Frequently one teacher has the same pupils for at least two subjects and sometimes for three. This same teacher will probably carry on with these same pupils some extra-curricular activity. A teacher in

a Catholic school has to have training in several fields in order to meet the required conditions existing in these schools. Training in more than one field will make a teacher more interested and more enthusiastic in directing pupils under her charge.

The teaching load is usually understood to include all activities which take the time or energy of the teacher and which are related either directly or indirectly to his professional duties, responsibilities, and interests. Since it is not feasible to obtain time records for the various activities, except in intensive studies, simple measures have been used in surveys of teaching load, such as average class size, number of classes per day, total enrollment in classes taught, and total credit hours in courses taught, Such measures as these are unsatisfactory because they do not take into account the numerous factors which influence the time and energy that a teacher devotes to his work.

There were during the school year 1939-40, twenty-five Catholic high schools in Oklahoma staffed with twenty-eight teachers teaching science either alone or in most cases combined with two or three subjects. During this school year 1,674 pupils attended Catholic high schools and 600 or over 35 per cent of them enrolled for science. This per cent is most gratifying as it is far higher than for the smaller public high schools of Oklahoma.

Catholic high schools offered during this year under study five different science subjects. About 30 per cent enrolled in chemistry, 23 per cent enrolled in physics, 23 per cent enrolled in general science, 15 per cent enrolled in geography, and about 8 per cent enrolled in biology. This compares with United States

percentages of about 7 per cent in chemistry, less than 6 per cent in physics and 15 per cent in biology.

Every Catholic high school offers at least one year of science, some offer two years, some offer three years, and even some offer four years of science; not all in one year but in the course of two years, by alternating the courses, the pupils have the advantage of taking four years of science in their high school career.

More than 82 per cent of the science teachers in Catholic secondary schools during this period under investigation were women and 17.8 per cent were men. Comparing with the 416 science teachers in the small public high schools about 85 per cent were men and only 15.39 per cent were women. Only three of the twenty-five schools are taught by men.

The number of semester hours of college chemistry for the science teacher in Catholic schools was 17.4 hours. The mean for physics was 13.52 semester hours. The mean for biology was 13.62 semester hours. The mean for geography was 13 semester hours. Chemistry is taught more than any of the other sciences. More teachers are prepared to teach chemistry.

The mean of semester hours for women is 32.53 while college training for men in teaching science is 33.8. In the small public high schools records show 33.04 hours for men, while 30.67 hours for women.

This investigation shows that all the teachers in Catholic schools met the state requirements to teach in their respective fields in which they were found teaching during the year 1939-40.

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