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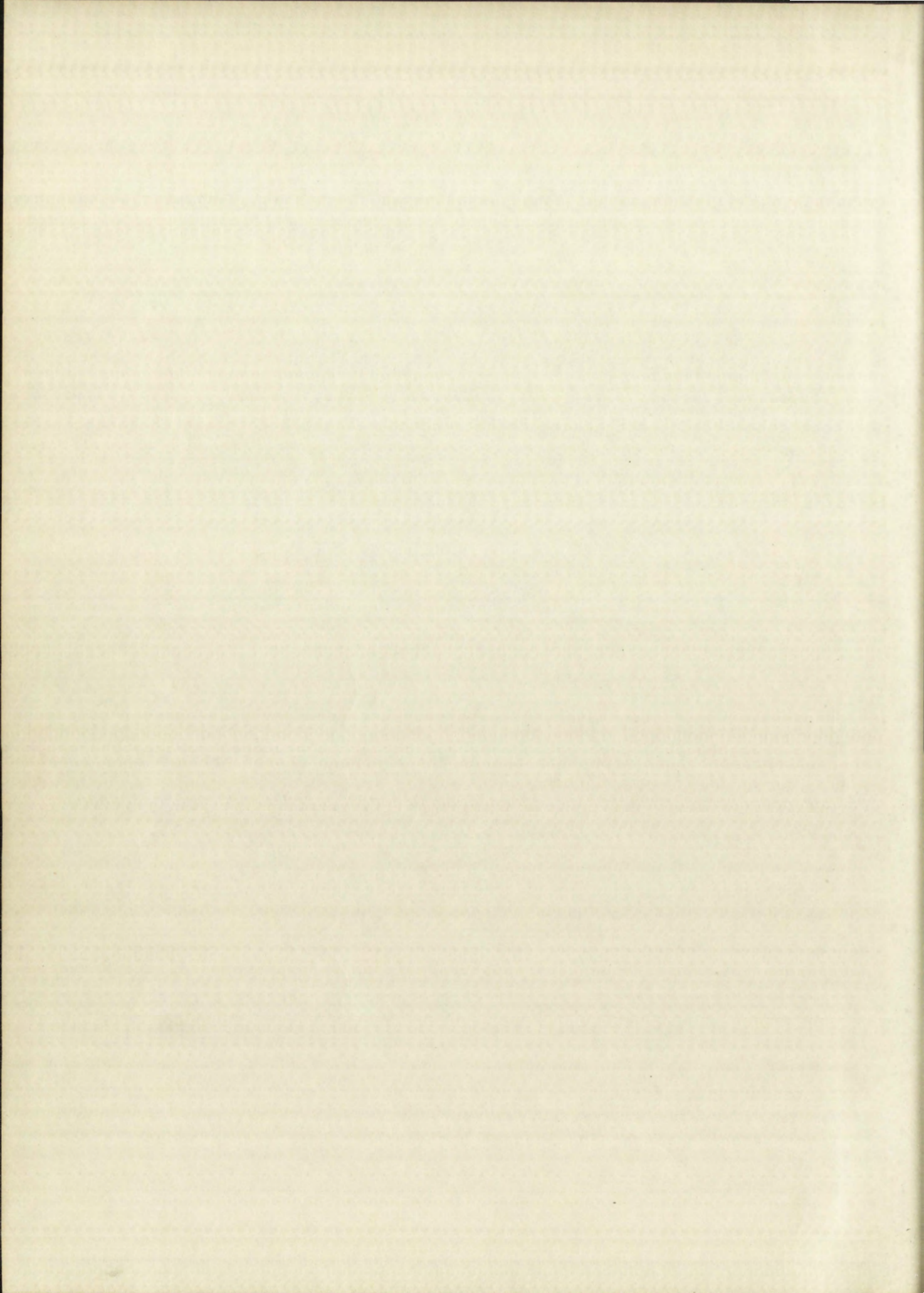
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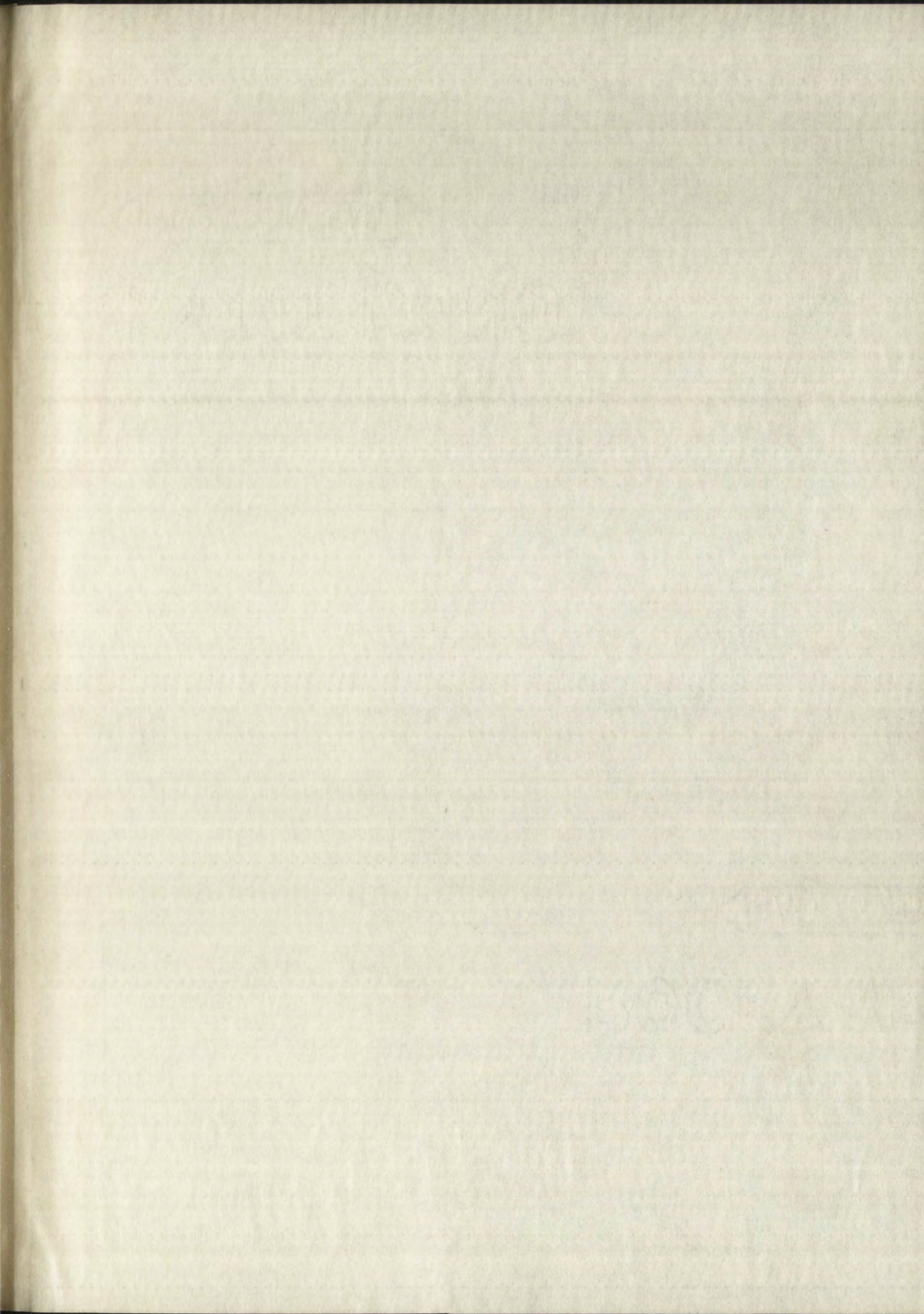
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UTILIZATION OF HIGH SCHOOL BUILDINGS
IN SOCORRO COUNTY, NEW MEXICO

By

Rufus M. Stinnett

A Thesis

Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts in Education

University of New Mexico

1939

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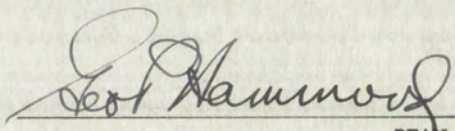
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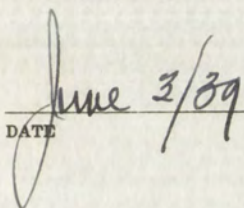
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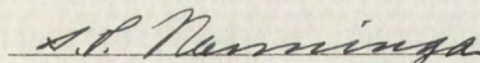


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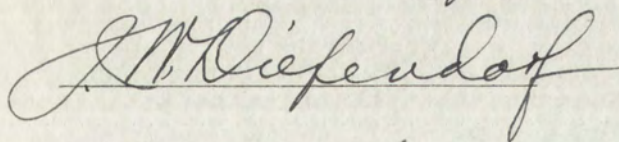


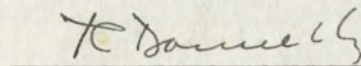
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XXI.

CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

There are two municipal high schools and one rural independent high school in Socorro County, New Mexico. The municipal high schools are located at Socorro and Magdalena. La Joya has a rural independent high school. The high school at Socorro is above average in size compared with the schools of the state of New Mexico. Magdalena High School is about average and La Joya High School is slightly below average in size. It is not assumed that the high school buildings used in this study are representative of buildings found in New Mexico. These are used because of the convenience offered to the writer to study them in detail.

The nature of this study does not require a large number of cases to prove its validity or reliability. The three schools are used as examples on which the technique of the study is illustrated. The method of measuring the utilization of high school buildings set forth in this study can be applied to any high school building large or small.

CHAPTER I

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nique of the study is illustrated. The method of measuring

the utilization of high school buildings set forth in this

study can be applied to any high school building large or

small.

I. THE PROBLEM

Statement of the problem. It was the purpose of this study (1) to measure the utilization of the high school buildings of Socorro County, New Mexico by the standards set up in the procedure of this study; (2) to show the relation between the capacity of the high school buildings and the actual utilization when measured by the standards set forth in this study; and (3) to show when an old building or poorly constructed building is no longer satisfying the need of housing the school children in that particular community.

Importance of the study. In recent years there has been a trend toward better and more usable high school buildings. The state legislature of New Mexico, in its last session, passed a law that made it compulsory for local districts that are building or remodeling school houses to submit the plans and specifications to the State Department of Education for approval before they can go on with the building. Even with the supervision of the architect from the State Department of Education it is necessary for the local officials to know the needs of their own community and how they can be cared for adequately by a housing program.

Each year there are millions of dollars wasted on unused school buildings. The reports of the United States Commissioner of Education show that at the present time there are more than five billion dollars invested in property in the United States used for school purposes. This constitutes an enormous outlay and is a challenge to school officials to use to the fullest extent the conveniences the outlay has purchased. Practically all studies of the use of school buildings have shown that it is the exceptional building which is used at 70 or 80 per cent of capacity. In fact, it is common to find school buildings which are used at only 30, 40, or 50 per cent of their capacity.¹ It is probably safe to say that on an average there is a loss of at least 30 per cent of the average school building. This means an actual loss to the taxpayer of one and one half billion dollars.

This study was suggested to the writer by an apparent need for convenient standards to measure high school building utilization in Socorro County in particular and New Mexico in general. The high school building at Magdalena, one of the three four year accredited high schools of Socorro County, was built in 1916 for a student body of

¹ Ward G. Reeder, The Fundamentals of Public School Administration. pp. 213.

Each year there are millions of dollars worth of school buildings used school buildings. The results of the study of the Commission of Education show that in the United States there are more than five billion dollars worth of school buildings in the United States used for school purposes. This constitutes an enormous outlay and is a considerable amount of money to use to the fullest extent and in the most efficient way. It is probably safe to say that in an average year there is a loss of at least 30 per cent of the value of school buildings. In fact, it is common to find school buildings which are used at only 30, 40, or 50 per cent of their value. This means an actual loss to the taxpayer of one-half billion dollars.

This study was suggested to the writer by the need for convenient standards for measuring the efficiency of the education in Socorro County in comparison with the situation in general. The highest of the three last years recorded in Socorro County, was better than the average of the three last years recorded in the State of New Mexico.

forty pupils. Today this same building, with no additions, houses over one hundred students. There are crowded class rooms and parts of the building cannot be used except a small percentage of the time. The Socorro high school is so crowded that it is necessary to have classes in the basement and even in the gymnasium. This condition has existed for several years. Similar conditions exist in the other schools of Socorro County and many places over the state.

There is a growing need for convenient standards to measure the utilization of school buildings. These standards will enable the local board of education to show the people of the district the actual needs of the school in a concrete way that they can understand. The old building may look good enough to the average tax payer of the district but if one can be shown where it fails to satisfy the need of the school children it will not be as attractive. There may be an apparent need of new school buildings but by surveying the actual use of the old one it may be shown that by carefully scheduling the periods, the number of students in each class, and arranging the small classes in proper rooms the crowded condition will be eliminated without any additional class rooms.

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that by carefully scheduling the use of the school
students in each class, and by surveying the actual
proper rooms the crowded conditions will be corrected
out any additional class rooms.

II. DEFINITIONS OF TERMS USED

Allocation of space. Allocation of space is defined as the percentage of the total floor space allocated to each of the functions of the school building; administration, instruction, stairs and corridors, storage, floors and radiators, and construction of the building. Construction of the building is defined as the floor space occupied by parts of the structure itself.

Pupil-station. Pupil-station is defined as the location in the building at which a pupil does school work.

Weekly-periods. Weekly-periods are defined as the number of periods a room is used in one week.

Weekly-pupil-periods. Weekly-pupil-periods are defined as the number of periods each week a room is used by groups of pupils, each pupil counted individually.

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II.

Allocation of space

as the percentage of the total space occupied by each of the functions of the building, including, but not limited to, instruction, library, and administrative functions, and the percentage of the building occupied by each of the various departments.

Family-attendance

action in the building, and the number of persons attending.

Weekly-attendance

number of persons attending in each of the various departments.

Weekly-attendance

defined as the number of persons attending in each of the various departments.

Groups of pupils, each group assigned to a particular class.

CHAPTER II

REVIEW OF RELATED STUDIES

E. L. Morphet,² in 1927, wrote a treatise on the desirability and methods of measuring the efficiency of floor space utilization. The National Education Association, through a committee with Frank Irving Cooper³ as chairman, in 1925, set up standards for percentages of space allocated to each major function of the school building. J. J. Pugh,⁴ in 1929, made a study of floor space utilization in which he set up a technique for measuring the efficiency of utilization. Other studies have been made, especially in school surveys, which deal with floor space utilization only indirectly so are not reviewed here.

PROCEDURE OF THE STUDY

The percentages of floor space allocated to each function of the high school building in Socorro County are compared with standard percentages of allocation of space

² E. L. Morphet, The Measurement and Interpretation of School Building Utilization. pp. 1-102.

³ F. I. Cooper, The Candle of Ratios. pp. 1-164.

⁴ J. J. Pugh. "Efficiency in the Use of School Building." Educational Research Bulletin. pp. 84-89.

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³ F. I. Cooper, The Guide of Values. No. 1-184.

⁴ J. J. Pugh, "Efficiency in the Use of School Building," National Research Bulletin. No. 4-85.

as set up in "The Candle of Ratios",⁵ administration not over 16%, instruction not under 50%, stairs and corridors not over 20%, storage not over 1%, floors and radiators not over 3%, and construction not over 10%. These comparisons are made to determine if the building meets certain minimum standards in space allocation for instructional purposes.

The number of weekly-periods each room is used are compared with the number of weekly-periods each room might be used and percentage of weekly^p-period utilization for each room is computed and averaged for the whole building.

Standards for the number of pupil-stations in each room will be adopted from Strayer and Englehardt⁶ to determine the number of pupil-stations which should be in each room. These standards are; for class rooms fifteen square feet of space for each pupil, in laboratories thirty-five square feet, gymnasium fifty square feet⁷ and auditoriums seven and one half square feet. These standard number of pupil-stations are compared with the actual number of pupil-stations in each room to determine the percentage of utilization of floor space by pupil-stations.

⁵ F. I. Cooper. The Candle of Ratios. p. 76. f. f.

⁶ G. D. Strayer and N. L. Englehardt. Standards for High School Buildings.

⁷ Computed from figures in Strayer and Englehardt. op. cit. pp. 1-95.

The number of pupil-stations used in each room are compared with the standard number of pupil-stations in each room, for each period. The number of pupil-stations used each period are also compared with the standard number of pupil-stations to determine the percentage of utilization of floor space. These percentages are considered analytically by periods and are also considered when averaged.

The number of weekly-pupil-periods actually used are compared with the standard number of weekly-pupil-periods to determine the percentage of utilization of the whole building for instructional purposes. The number of standard weekly-pupil-periods is secured by multiplying the maximum number of weekly-periods each room can be used by the standard number of pupil-stations.

Average percentages are considered but analytical studies of each room are made from individual percentages in drawing conclusions.

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CHAPTER III

MAGDALENA HIGH SCHOOL

The Building

The building is a two story structure above the basement. One-half of the basement is below the ground level. The building is sixty-four feet long and forty feet wide outside dimensions. The outside walls are one foot thick constructed of brick on tile plastered on the inside. The inside walls constructed of wooden studs with plaster on wooden lath. The basement consists of the gymnasium and stage, showers and toilets, and boiler room and coal storage. The main floor consists of two offices used as coach's office and locker room, the superintendent's office, a central hallway running lengthwise of the building, another hall running half-way from the front of the building and three class rooms. The second floor consists of two laboratories, two class rooms, and study-hall and library.⁸

Allocation of Space

In comparing the percentages of space allocated to

⁸ See Appendix A. p.

each function of the school building with standard percentages for space allocation the building meets these standards satisfactorily. The Magdalena building allocates fifty-four and four-tenths per cent of the total space to instructional purposes which is four and four-tenths per cent more than the minimum standard set up. Since this study is investigating only floor space utilization for instructional purpose other percentages are not considered but it is interesting to note that no one of these percentages exceeds the maximum standards set to any great degree excepting construction which is a little over double the standard percentage of space allocation. (See Table I)

each function of the system, which is a function of the
tags for space allocation. The system is designed to
handle satisfactorily. The system is designed to
fifty-four and forty-four per cent of the total
instructional purposes which is the same as the
count more than the minimum standard for the
study is investigated only if the system is designed
instructional purposes other purposes are not included
but it is interesting to note that the system is
tags exceed the maximum standard of the system
excepting consideration which is a function of the
standard percentage of the system.

BOOKEND

TABLE I
COMPARISON OF SPACE ALLOCATION

Function	Area	Percentage of Area	Standard *
Administration	552	7.1	16 (Max.)
Instruction	4168	54.4	50 (Min.)
Stairs & Corridors	1064	13.7	20 (Max.)
Storage	136	1.7	1 (Max.)
Construction	1497	20.5	10 (Max.)
Flues & Radiators	200	2.6	3 (Max.)
Totals	7617	100.0	100

- * Max. Maximum standards set up by Candle of Ratios.
- * Min. Minimum standards set up by Candle of Ratios.
- * Cooper Candle of Ratios. p. 76.

COMPANIES OF THE UNITED STATES

Company	Capital	Assets	Liabilities	Surplus
Administration	100,000	100,000	100,000	100,000
Construction	100,000	100,000	100,000	100,000
Electric & Mechanical	100,000	100,000	100,000	100,000
General	100,000	100,000	100,000	100,000
Highways & Bridges	100,000	100,000	100,000	100,000
Water	100,000	100,000	100,000	100,000
Total	600,000	600,000	600,000	600,000

* Max. Minimum Capital of \$100,000
 * Min. Minimum Capital of \$10,000
 * Cooper Capital of \$100,000

Weekly-Period Utilization

The percentage of actual weekly-periods used for each room in comparison to the maximum weekly-period capacity averaged only forty-nine per cent. This means that the whole building is used a little less than one-half the possible number of periods each week. Only three rooms are used to weekly-period capacity, one is not used at all, two are used seven per cent and the others range in between. (See Table II)

Weekly-Period Utilization

The percentage of actual weekly-period utilization for each room is compared to the actual weekly-period utilization averaged only twenty-one per cent. The whole building is used a little less than half the possible number of periods each year. Only three rooms are used to weekly-period capacity, one in the basement, two are used seven per cent and the others are between. (See Table II)

TABLE II
PERCENTAGE OF WEEKLY-PERIOD UTILIZATION

Room No.	Actual Use	Capacity Use	% of Use	Average
10	20	30	67	
11	30	30	100	
12	30	30	100	
20	13	30	43	49
21	2	30	7	
22	0	30	0	
23	2	30	7	
Gymnasium)	5	30	18	
Auditorium)	.5			
Study Hall				
& Library	30	30	100	

TABLE II

PERCENTAGE OF WEEKLY-PERIOD UTILIZATION

Room No.	Actual Use	Capacity Use	% of Use	Average
10	30	30	100	100
11	30	30	100	100
12	30	30	100	100
20	13	30	43	43
21	2	30	7	7
22	0	30	0	0
23	2	30	7	7
Gymnasium	2	30	7	7
Auditorium	2	30	7	7
Study Hall	30	30	100	100
Library	30	30	100	100

Use by Pupil-Stations

The standard number of pupil-stations when compared with the actual number of pupil-stations shows a utilization of one hundred sixty-six and eight-tenths per cent of floor space. The highest use of floor space by pupil-stations is in the study-hall and library with a utilization of two hundred and two per cent. Two rooms are used two hundred per cent of floor space by pupil-stations. The auditorium is used fifty-eight per cent. The lowest percentage of utilization of class rooms is one hundred and forty-one per cent. This shows the floor space highly utilized by pupil-stations even to the point of crowding pupils until standard working conditions would not prevail if all pupil-stations were used any one period. The average utilization shows that there are stations provided for over one and one-half pupils where only one should work. In some rooms twice as many pupil-stations are provided as should be. (See Table III)

TABLE III
PERCENTAGE OF USE BY PUPIL-STATIONS

Room No.	Area	Actual No. of Pupil-Stations	Standard No. of Pupil-Stations*	% of Use	Av. %
10 (I)	216	17	12	141	
11 (I)	216	25	12	200	
12 (I)	312	28	16	175	
20 (I)	210	20	12	166	
21 (L)	192	12	6	200	166.8
22 (I)	210	20	12	166	
23 (L)	192	12	6	200	
Gymnasium (G)	1456	50	29	180	
Auditorium (A)	1456	120	208	58	
Study Hall & Library (I)	672	79	39	202	

I Instructional standards used.

L Laboratory standards used.

G Gymnasium standards used.

A Auditorium standards used.

* Standards for space allowed for each child adopted from Strayer and Englehardt, Standards for High School.

TABLE III

PERCENTAGE OF USE BY PUPIL-STATIONS

Room No.	Area	Actual No. of Standard No. of Pupils	Percentage of Use
10 (I)	215	17	12
11 (I)	215	23	12
12 (I)	215	28	13
20 (I)	210	20	12
21 (I)	195	13	6
22 (I)	210	20	12
23 (I)	195	13	6
Gymnasium (G)	1455	50	32
Auditorium (A)	1455	180	208
Study Hall 2			
Library (L)	275	75	32

1 Instructional standards used.
 2 Laboratory standards used.
 3 Gymnasium standards used.
 4 Auditorium standards used.
 * Standards for space allowed for each child adopted from Steyer and Engelhardt, Standards for High School.

Use of Pupil-Stations

The average use of pupil-stations in each room varies from twenty-three per cent to ninety-one per cent. One room is not used at all. The average use of pupil-stations for the whole building is forty-five per cent. When one considers that during many periods none of the pupil-stations in some of the rooms are used at all, this percentage is fairly high. An analytical study of Table IV will show that during some of the periods the pupil-stations are used over one hundred per cent while during other periods the pupil-stations are not used at all. (See Table IV)

TABLE IV

PERCENTAGE OF USE OF PUPIL-STATIONS

Room No.	Period	Pupil- Stations Used	No. of Pupil- Stations	% of Use	Room Averages	Total Average
10	1	19	17	111	67	
	2	16		89		
	3	0		0		
	4	0		0		
	5	18		106		
	6	17		100		
11	1	25	25	100	91	45
	2	17		68		
	3	26		104		
	4	26		104		
	5	22		88		
	6	21		84		
12	1	9	28	32	68	
	2	14		50		
	3	23		82		
	4	21		75		
	5	23		82		
	6	24		85		
20	1	6	20	30	32	45
	2	16		80		
	3	17		85		
	4	0		0		
	5	0		0		
	6	0		0		
21	1	0	12	0	22	
	2	16		133		
	3	0		0		
	4	0		0		
	5	0		0		
	6	0		0		
22	1	0	20	0	0	
	2	0		0		
	3	0		0		
	4	0		0		
	5	0		0		
	6	0		0		
23	1	10	12	0	23	
	2	0		0		
	3	17		140		
	4	0		0		
	5	0		0		
	6	0		0		
Gymnasium Auditorium	1	0	50	0	48	
	2	0		0		
	3	50		100		
	4	101		89		
Gymnasium	5	0	50	0		
	6	50		100		
Study Hall & Library	1	42	79	52	52	(45)
	2	38		48		
	3	35		44		
	4	54		69		
	5	38		48		
	6	39		49		

Use of Standard Pupil-Stations

PERCENTAGE OF USE OF STANDARD NUMBER OF PUPIL-STATIONS

The average use of the number of pupil-stations that should be in the whole building is seventy-nine per cent. Most of the rooms are crowded with pupil-stations but are not used during many of the periods during the day. An analytical study by rooms of the percentages of use of the standard number of pupil-stations shows that most of the rooms, if used all periods of the day would not be over crowded. The average use of standard number of pupil-stations varies from forty-four per cent to one hundred and ninety-one per cent, one room not being used at all. By periods the use of standard number of pupil-stations varies from zero in many cases to two hundred and eighty-three per cent. Most of the periods during which classes are held in the various rooms the standard number of pupil-stations are used over one hundred per cent. (See Table V)

TABLE V

PERCENTAGE OF USE OF STANDARD NUMBER OF PUPIL-STATIONS

Room No.	Period	Pupil-Stations Used	Standard* No. of Pupil-Stations	Percentage of Use	Room Averages	Total Average
10	1	19	12	158	94	
	2	16		133		
	3	0		0		
	4	0		0		
	5	18		150		
	6	17		142		
11	1	25	12	208	191	
	2	17		142		
	3	26		216		
	4	26		216		
	5	22		188		
	6	21		175		
12	1	9	16	56	98	79
	2	14		89		
	3	23		144		
	4	21		13		
	5	23		144		
	6	24		150		
20	1	6	12	50	54	
	2	16		133		
	3	17		143		
	4	0		0		
	5	0		0		
	6	0		0		
21	1	0	6	0	44	
	2	16		266		
	3	0		0		
	4	0		0		
	5	0		0		
	6	0		0		
22	1	0	12	0	0	
	2	0		0		
	3	0		0		
	4	0		0		
	5	0		0		
	6	0		0		
23	1	0	6	0	47	
	2	0		0		
	3	17		280		
	4	0		0		
	5	0		0		
	6	0		0		
Gym. Aud.	1	0	29	0	68	
	2	0		0		
	3	50		180		
Gym.	4	101	29	51	(79)	
	5	0		0		
	6	50		180		
Study Hall & Library	1	42	39	168	115	
	2	38		98		
	3	35		90		
	4	54		138		
	5	38		98		
	6	39		100		

1* See Table III. P. 12

Use of Weekly-Pupil-Periods

The greatest number of weekly-periods any room can be used is thirty. The number of weekly-periods each room is used by pupils for instructional purposes when compared with the maximum number of weekly-periods that should be used by the standard number of pupils based on the number of standard pupil-stations shows an average utilization of eighty-one per cent. These percentages are computed to the nearest one per cent as are all others in this study. This average utilization is high in spite of the fact that one room is not used at all. The percentages vary from eighteen per cent to one hundred and ninety per cent. Only three rooms are used more than one hundred per cent of the standard amount. (See Table VI)

Use of Fuel - Fuel

The present average fuel consumption of a room is 100 lbs. per year. This amount of fuel is based on the fact that it is used by pupils for the same period of time as it is used by the maximum number of pupils during that period. It is used by the standard number of pupils based on the number of standard pupils-stations shown on every utilization of eighty-one per cent. These percentages are compared to the nearest one per cent of the total of the total. This average utilization is high in relation to the total of the room is not used at all. The percentage of fuel used in a room is one hundred and ninety per cent. Only three rooms are used more than one hundred per cent of the standard amount. (See Table 11)

TABLE VI

PERCENTAGE OF WEEKLY-PUPIL-PERIOD UTILIZATION

Room No.	Standard No. of Weekly- Pupil-Periods	Actual No. of Weekly-Pupil- Periods	Percentage of Use	Average Percentage
10	360	350	97	
11	360	685	190	
12	480	570	118	
20	360	129	36	
21	180	32	18	81
22	360	0	0	
23	180	34	19	
Gymnasium & Auditorium	870	500	57	
Library & Study Hall	1080	1230	114	

Table VII shows the number of periods that each room is used per week and on the day and periods that they are used. The periods that the rooms are used are shown by an X; the vacant periods are indicated by a zero. There is one room that is not used at all on account of the number of teachers employed in the high school faculty and the size of the room. There are two rooms, the chemistry and physics laboratories, that are used only two periods out of the thirty periods per week. These rooms are not suited to any other instruction that is offered in the high school curriculum at the present time. The auditorium is another room that cannot be used every period in the day in a small school. There are two class rooms, rooms 10, 11, and 12 that are used nearly every period in the day and every day in the school week.

Table VI shows the number of periods per week used in each room and on the subject of the room used. The periods used in the room are shown in Table VI; the vacant periods are indicated in the same table. The room that is not used at all is shown in the same table. Teachers employed in the school are shown in the same table. There are two rooms, the chemistry and physics laboratories, that are used only two periods per week. Thirty periods per week are used in the other laboratories. Other instruction may be given in the other laboratories at the present time. The laboratories are used in such a way that cannot be used every period in the day in a regular school. There are two other rooms, music and art, that are used nearly every period in the day and every day in the school week.

TABLE VII

TABLE OF PERIODS EACH ROOM IS USED

Room No.	Monday	Tuesday	Wednesday	Thursday	Friday
	123456	123456	123456	123456	123456
10	XX00XX	XX00XX	XX00XX	XX00XX	XX00XX
11	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
12	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
20	XX0000	X0X000	XX0000	X0X000	XXX000
21	000000	0X0000	000000	0X0000	000000
22	000000	000000	000000	000000	000000
23	00X000	000000	00X000	000000	000000
Audit.	00XX0X	00XX0X	00XX0X	00XX0X	00XX0X
Study	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
Hall					

CHAPTER IV

SOCORRO HIGH SCHOOL

The Building

The building is a one story building with a basement under the auditorium and gymnasium. The outside walls are twelve inches thick, constructed of brick on hollow tile and plastered on the inside. The inside walls are constructed of wooden studs with plaster on wooden laths. The building is built in the shape of an open patio with class rooms on the sides. In the back of the patio is the auditorium. There is a hall down the center of the right and left wing. The left wing has five rooms, consisting of the Home Economics department, which occupies two rooms, the girls toilets, which are in the front room off the hallway, and the two class rooms. The right wing has a similar floor plan to the left wing. There are four class rooms and the boys toilets, which are located in a similar position in this wing as the girls toilets in the other wing. There is a hallway that leads to the rooms in the back of the building. There are steps leading to the auditorium from the patio and steps descending to the basement of the auditorium. The basement is divided into a study hall in the left half and a science laboratory class room storage

and furnace room on the right half. There are two other buildings that are used to help house the high school. These are the agriculture and shop buildings. They are not a part of the original building but have been built to meet the needs of growth in enrollment and expansion of the curriculum.

Allocation of Space

The Socorro high school building allocates sixty-four and four-tenths per cent of the total space to instructional purposes, which is fourteen and four-tenths per cent more than the minimum standards set up in "The Candle of Ratios in School House Planning" by Frank Irving Cooper. Administration utilizes only one-fourth of the maximum standards while construction takes up over one-third more space than is allotted to this function of the building. There is considerable⁴ more storage space that is recommended by standards. This is partly due to the fact that part of the basement under the auditorium can not be utilized in any other way. The amount of space occupied by flues and radiators is just under the standard of space set aside for that purpose. Taking the building as a whole the percentage of space allocated to each function of the school building compare satisfactorily with standard percentages of space allocation.

(See Table VIII)

and furnace room on the right wall. There are two other buildings that are used to help house the high school. These are the gymnasium and shop building. They are not a part of the original building but have been built to meet the needs of growth in enrollment and expansion of the curriculum.

Allocation of Space

The Monroe high school building allocates approximately and four-fifths per cent of the total space to instructional purposes, which is fourteen and four-fifths per cent more than the minimum standards set up in "The Guide of Facilities in School House Planning" by Frank Irving Cooper. Allocation utilizes only one-fourth of the maximum standards while construction takes up over one-third more space than is allotted to this function of the building. There is considerable more storage space than is recommended by standards. This is partly due to the fact that part of the basement under the auditorium can not be utilized in any other way. The amount of space occupied by films and records is just under the standard of space set aside for that purpose. Taking the building as a whole the percentage of space allocated to each function of the school building compares favorably with standard percentages of space allocation.

(See Table VIII)

TABLE VIII
COMPARISON OF SPACE ALLOCATION

Function	Area	Percentage of Area	Standard Percentage *
Administration	448	4.1	16 (Max.)
Instruction	7,030	64.4	50 (Min.)
Corridors	480	4.4	20 (Max.)
Storage	918	8.4	1 (Max.)
Construction	1,751	16.0	10 (Max.)
Flues & Radiators	287	2.7	3 (Max.)
Totals	10,914	100	100

- * Max. Maximum standards set up by Candle of Ratios.
- * Min. Minimum standards set up by Candle of Ratios.
- * Cooper. Candle of Ratios. p. 76.

TABLE VIII
COMPARISON OF SPAC AND AIAA

Function	SPAC	AIAA
Administration	225	225
Instruction	7,050	7,050
Corridors	250	250
Storage	215	215
Construction	1,751	1,751
Fires & Radiators	257	257
Totals	10,512	10,512

* Max. Maximum standards set by
 * Min. Minimum standards set by
 * Cooper. Corridor of Section

Weekly-Period Utilization

The Socorro high school uses the forty period per week plan. The percentage of actual weekly-periods used for each room is compared to the number of periods in the school week. This comparison reveals that there is seventy-four per cent of the periods used. One-fourth of the building is not used. This unused space is in the laboratories and auditorium. The nature of these rooms make it impossible to have a high utilization of space in the average size high school. It is interesting to notice in Table IX there are four rooms that have one hundred per cent weekly-period utilization, there are two with eighty-eight per cent weekly-period utilization and three with seventy-five per cent utilization. (See Table IX)

The Society has received the following report from the

plan. The percentage of actual expenditures was 100.00.
 room is compared to the number of persons in the room.
 This comparison reveals that the average number of persons
 of the period was 1.10. This number is 1.10 times
 need. This number is 1.10 times the number of persons
 room. The number of persons in the room is 1.10 times
 a high utilization of space in the room. This is 1.10
 It is interesting to note in Table IX that the number of
 that have one member, and the number of members in the
 there are two members, and the number of members in the
 lization and some with members, and the number of members
 (See Table IX)

TABLE IX
PERCENTAGE OF WEEKLY-PERIOD UTILIZATION

Room No.	Actual Use	Capacity Use	% of Use	Average
1	40	40	100	75
2	40	40	100	
3	30	40	75	
6	35	40	88	
7	40	40	100	
8	15	40	38	
9	35	40	88	
Shop	30	40	75	
Agriculture	30	40	75	
Study Hall	40	40	100	
Auditorium	15	40	38	
Science Lab.	8	40	20	

PERCENTAGE OF LEADERSHIP

Room No.	Actual Use	Percentage
1	45	25
2	40	20
3	35	15
4	30	10
5	25	5
6	20	5
7	15	5
8	10	5
9	5	5
Shop	30	10
Agriculture	30	10
Study Hall	30	10
Auditorium	15	5
Science Lab.	15	5

Use by Pupil-Stations

The standard number of pupil-stations, when compared with the actual number of pupil-stations, shows a utilization of ninety-five per cent of floor space. The highest use of pupil-stations is found in the study hall where one hundred and fifty-three percentage of standard pupil-stations were used. In the shop the lowest percentage of standard pupil-stations are utilized. There are only forty-three per cent being used. The class rooms are all crowded with pupil-stations in comparison with the standard amount of floor space allotted to the standard pupil-station. Outside of the laboratories and auditorium there is an average of seven more pupil-stations than there should be. This indicates that the building is crowded beyond the capacity and standard working conditions cannot prevail if all the pupil-stations were used only one period. In the study hall there are one-third more pupil-stations than can be housed under standard conditions. (See Table X)

TABLE X
PERCENTAGE OF USE BY PUPIL-STATIONS

Room No.	Area	Actual No. of Pupil-Stations	Standard No. of Pupil-Stations*	% of Av. Use %	
1 (I)	693	26	38	68	
2 (I)	486	37	27	137	
3 (I)	630	37	35	106	
6 (I)	486	30	27	111	
7 (I)	432	18	24	75	
8 (I)	442	20	25	80	95
9 (I)	575	32	32	100	
Shop (L)	1344	18	42	43	
Agriculture	864	24	28	86	
Study Hall	816	69	45	153	
Auditorium (A)	2800	375	400	94	
Science Lab. (L)	816	25	26	92	

I Instructional Standards used.

L Laboratory standards used.

A Auditorium standards used.

* Standards for space allowed for each child adopted from Strayer and Englehardt, Standards for High School.

TABLE X
PERCENTAGE OF USE BY PUPIL-STATIONS

Room No.	Area	Actual No. of Pupils	Standard No. of Pupils	Percentage of Use
1 (I)	493	38	38	88
2 (I)	493	31	31	100
3 (I)	500	37	37	100
4 (I)	486	30	30	111
5 (I)	486	18	18	75
6 (I)	443	30	30	80
7 (I)	473	32	32	100
8 (I)	1344	18	18	13
Shop (I)	804	34	34	88
Art Room	818	38	38	100
Study Hall	800	37	37	95
Auditorium (A)	800	37	37	95
Science Lab. (I) 800	80	38	38	95

I Instructional standards used.
 I Laboratory standards used.
 A Auditorium standards used.
 Standards for space allowed for each child adopted from Strayer and Englehardt, Standards for High School.

Use of Pupil-Stations

The average use of pupil-stations in each room ranges from fourteen per cent to eighty-eight per cent. The average use of pupil-stations for the whole building is sixty-four per cent. In eight of the rooms the average use of pupil-stations are over seventy per cent. This is relatively high utilization when it is considered that some of the periods the rooms are not used at all because of the number of teachers and the nature of some of the work that requires special rooms, such as laboratory work. One room seems very much over-loaded with students. There are only eighteen pupil-stations that houses classes of twenty-five and twenty-six students. Some of these students cannot do their best work because of the lack of pupil-stations to supply their needs. (See Table XI)

Use of Pupil-Stations

The average use of pupil-stations in second-room ranges from fourteen per cent to eighty per cent. The average use of pupil-stations for the whole building is sixty-four per cent. In eight of the rooms the average use of pupil-stations is over seventy per cent. This is particularly high utilization when it is considered that many of the periods the rooms are not used at all because of the number of teachers and the nature of some of the work that requires special rooms, such as laboratory work. One room seems very much over-loaded with students. There are only eighteen pupil-stations and fifteen classes of twenty-five and twenty-six students. Some of these students cannot do their best work because of the lack of pupil-stations to supply their needs. (See Table XI.)

TABLE XI
PERCENTAGE OF USE OF PUPIL-STATIONS

Room No.	Period	Pupil- Stations Used	No. of Pupil- Stations	% of Use	Room Averages	Total Average
1	1	16	25	64	84	
	2	16		64		
	3	25		100		
	4	25		100		
	5	18		72		
	6	18		72		
	7	25		100		
	8	25		100		
2	1	31	37	84	83	64
	2	27		73		
	3	28		76		
	4	25		69		
	5	29		78		
	6	32		86		
	7	36		97		
	8	22		86		
3	1	24	37	65	55	
	2	21		57		
	3	0		0		
	4	23		62		
	5	23		62		
	6	23		62		
	7	25		68		
	8	25		68		
6	1	31	30	103	71	
	2	0		0		
	3	27		98		
	4	23		77		
	5	28		60		
	6	26		86		
	7	30		100		
	8	15		50		
7	1	26	18	139	118	
	2	26		139		
	3	0		0		
	4	25		133		
	5	25		133		
	6	25		133		
	7	25		133		
	8	25		133		

Home No.	Period	Station	Used
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
15	15	15	15
16	16	16	16
17	17	17	17
18	18	18	18
19	19	19	19
20	20	20	20
21	21	21	21
22	22	22	22
23	23	23	23
24	24	24	24
25	25	25	25
26	26	26	26
27	27	27	27
28	28	28	28
29	29	29	29
30	30	30	30
31	31	31	31
32	32	32	32
33	33	33	33
34	34	34	34
35	35	35	35
36	36	36	36
37	37	37	37
38	38	38	38
39	39	39	39
40	40	40	40
41	41	41	41
42	42	42	42
43	43	43	43
44	44	44	44
45	45	45	45
46	46	46	46
47	47	47	47
48	48	48	48
49	49	49	49
50	50	50	50
51	51	51	51
52	52	52	52
53	53	53	53
54	54	54	54
55	55	55	55
56	56	56	56
57	57	57	57
58	58	58	58
59	59	59	59
60	60	60	60
61	61	61	61
62	62	62	62
63	63	63	63
64	64	64	64
65	65	65	65
66	66	66	66
67	67	67	67
68	68	68	68
69	69	69	69
70	70	70	70
71	71	71	71
72	72	72	72
73	73	73	73
74	74	74	74
75	75	75	75
76	76	76	76
77	77	77	77
78	78	78	78
79	79	79	79
80	80	80	80
81	81	81	81
82	82	82	82
83	83	83	83
84	84	84	84
85	85	85	85
86	86	86	86
87	87	87	87
88	88	88	88
89	89	89	89
90	90	90	90
91	91	91	91
92	92	92	92
93	93	93	93
94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

8	1	25		125		
	2	21		105		
	3	25		125		
	4	0	20	0	43	64
	5	0		0		
	6	0		0		
	7	0		0		
	8	0		0		
9	1	18		56		
	2	32		100		
	3	25		76		
	4	0	32	0	72	
	5	23		72		
	6	24		75		
	7	24		75		
	8	38		119		
Shop	1	18		100		
	2	18		100		
	3	18		100		
	4	0	18	0	75	
	5	18		100		
	6	18		100		
	7	18		100		
	8	0		0		
Agriculture Building	1	24		100		
	2	24		100		
	3	24		100		
	4	0	24	100	75	
	5	24		100		
	6	24		100		
	7	24		100		
	8	0		0		
Study Hall	1	62		90		
	2	65		94		
	3	60		87		
	4	64	69	93	89	
	5	63		92		
	6	62		90		
	7	61		88		
	8	55		80		
Auditorium	1	0		0		
	2	26		6		
	3	31		8		
	4	0	400	0	14	64
	5	0		0		
	6	0		0		
	7	0		0		
	8	375		94		

6

7

Shop

Agriculture
Building

Study Hall

Auditorium

	1	0		0	
	2	25		96	
	3	0		0	
Science	4	25	26	96	24
Laboratory	5	0		0	
	6	0		0	
	7	0		0	
	8	0		0	

Science Laboratory

1	0
2	25
3	0
4	25
5	0
6	0
7	0
8	0

Use of Standard Pupil-Stations

The average use of pupil-stations in each room varies from seventeen per cent in the auditorium to one hundred thirty-seven per cent in the study hall. The average use of pupil-stations for the whole building is sixty-four per cent. There is one class room that uses an average of one hundred and seven per cent of the standard pupil-stations, another ninety-one per cent, another two seventy-two per cent, and another one sixty-five per cent. The total average of pupil-stations used for all the rooms is relatively high when it is considered that during some of the periods the rooms are not used and some rooms are for special purposes which cannot be used for general work. The over use of the standard pupil-stations indicates that the building is not serving the students because of its lack of capacity. (See Table XII)

Use of Standardized Tests

THE AVERAGE USE OF STANDARDIZED TESTS IN THE UNITED STATES IS AS FOLLOWS:

From seventeen percent in the lowest grade to thirty-seven percent in the highest grade. Of public schools for the whole country, the average is about thirty percent. There is one class in the country where the average is about one hundred and seven percent of the students are tested. Another ninety-one percent, another one hundred and one percent, and another one hundred and one percent. The average use of public schools is about the same in all the states. It is high when it is considered that the average is about the same in all the states. The tests are not used and some states are not using them. The tests cannot be used in some states. The average use of the standard public schools is about the same in all the states. It is not serving the students. (See Table XII)

TABLE XII
PERCENTAGE OF USE OF PUPIL-STATIONS

Room No.	Period	Pupil- Stations Used	No. of Pupil- Stations	% of Use	Room Averages	Total Average
1	1	16	38	42	56	
	2	16		42		
	3	25		66		
	4	25		66		
	5	18		48		
	6	18		48		
	7	25		66		
	8	25		66		
2	1	31	27	115	107	
	2	27		110		
	3	28		104		
	4	25		90		
	5	29		108		
	6	32		119		
	7	36		133		
	8	22		81		
3	1	24	35	69	59	
	2	21		60		
	3	0		0		
	4	23		66		
	5	23		66		
	6	23		66		
	7	25		71		
	8	25		71		
6	1	31	27	115	72	64
	2	0		0		
	3	27		100		
	4	23		90		
	5	18		67		
	6	26		96		
	7	30		111		
	8	15		56		
7	1	26	24	109	91	
	2	26		109		
	3	0		0		
	4	25		104		
	5	25		104		
	6	25		104		
	7	25		104		
	8	25		104		

INSTRUCTIONS TO THE USER

Room No. 101
 Section 101
 Date 10/10/10

1	101	101	101
2	102	102	102
3	103	103	103
4	104	104	104
5	105	105	105
6	106	106	106
7	107	107	107
8	108	108	108
9	109	109	109
10	110	110	110
11	111	111	111
12	112	112	112
13	113	113	113
14	114	114	114
15	115	115	115
16	116	116	116
17	117	117	117
18	118	118	118
19	119	119	119
20	120	120	120
21	121	121	121
22	122	122	122
23	123	123	123
24	124	124	124
25	125	125	125
26	126	126	126
27	127	127	127
28	128	128	128
29	129	129	129
30	130	130	130
31	131	131	131
32	132	132	132
33	133	133	133
34	134	134	134
35	135	135	135
36	136	136	136
37	137	137	137
38	138	138	138
39	139	139	139
40	140	140	140
41	141	141	141
42	142	142	142
43	143	143	143
44	144	144	144
45	145	145	145
46	146	146	146
47	147	147	147
48	148	148	148
49	149	149	149
50	150	150	150
51	151	151	151
52	152	152	152
53	153	153	153
54	154	154	154
55	155	155	155
56	156	156	156
57	157	157	157
58	158	158	158
59	159	159	159
60	160	160	160
61	161	161	161
62	162	162	162
63	163	163	163
64	164	164	164
65	165	165	165
66	166	166	166
67	167	167	167
68	168	168	168
69	169	169	169
70	170	170	170
71	171	171	171
72	172	172	172
73	173	173	173
74	174	174	174
75	175	175	175
76	176	176	176
77	177	177	177
78	178	178	178
79	179	179	179
80	180	180	180
81	181	181	181
82	182	182	182
83	183	183	183
84	184	184	184
85	185	185	185
86	186	186	186
87	187	187	187
88	188	188	188
89	189	189	189
90	190	190	190
91	191	191	191
92	192	192	192
93	193	193	193
94	194	194	194
95	195	195	195
96	196	196	196
97	197	197	197
98	198	198	198
99	199	199	199
100	200	200	200

BOOKING OFFICE

8	1	25		100		
	2	21		84		
	3	25		100		
	4	0	25	0	36	
	5	0		0		
	6	0		0		
	7	0		0		
	8	0		0		
9	1	18		56		
	2	32		100		
	3	25		78		
	4	0	32	0	72	
	5	23		72		
	6	24		76		
	7	24		76		
	8	38		119		
Shop	1	18		43		
	2	18		43		
	3	18		43		
	4	0	42	0	32	
	5	18		43		
	6	18		43		
	7	18		43		
	8	0		0		
Agriculture Building	1	24		86		
	2	24		86		
	3	24		86		
	4	0	28	0	65	
	5	24		86		
	6	24		86		
	7	24		86		
	8	0		0		
Study Hall	1	62		138		
	2	65		144		
	3	60		133		
	4	64	45	142	137	64
	5	63		140		
	6	62		138		
	7	61		136		
	8	55		122		
Auditorium	1	0		0		
	2	26		6		
	3	31		8		
	4	0	400	0	17	
	5	0		0		
	6	8		0		
	7	0		0		
	8	375		94		

	1	0		0	
	2	25		92	
	3	0		0	
Science	4	25	26	92	23
Laboratory	5	0		0	
	6	0		0	
	7	0		0	
	8	0		0	

Science
Laboratory

1
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BOND

BOOKA M.I.

Use of Weekly-Pupil-Periods

The greatest number of weekly-pupil-periods any room can be used is forty. The number of weekly-pupil-periods each room is used by pupils for instructional purposes when compared with the maximum number of weekly-pupil-periods that should be used by the standard number of pupils, based on the number of standard pupil-stations, shows an average utilization of sixty-four per cent. These percentages are computed to the nearest one per cent as are all the others in this study. This average utilization is fairly high when it is considered that the special rooms that cannot have a high utilization are averaged with other rooms having abnormally high utilization. Two rooms have an average pupil-station of over one hundred per cent. (See Table XIII)

Use of Workstation

The greatest number of workstations

can be used is forty. The number of workstations

each room is used by pupils for instruction, with a

computer with the maximum number of workstations.

that should be used by the pupils for instruction.

on the number of standard workstations, which are

utilization of sixty-four workstations. These workstations

computed to the nearest hundred and are the basis

in this study. This average utilization is 10-15%

when it is considered that the average room should

have a high utilization and should be able to

abnormally high utilization. The room has an average

utilization of over one hundred and fifty.

TABLE XIII

PERCENTAGE OF WEEKLY-PUPIL-PERIOD UTILIZATION

Room No.	Standard No. of Weekly- Pupil-periods	Actual No. of Weekly-Pupil- Periods	Percentage of Use	Average Percentage
1	1520	840	55	
2	1080	1050	107	
3	1400	820	59	
6	1080	850	72	
7	960	885	91	
8	1000	355	36	64
9	1280	920	72	
Shop	1680	540	32	
Agriculture	1120	720	65	
Study Hall	1800	2460	137	
Auditorium	16000	2160	17	
Science Lab.	1040	250	23	

STATEMENT OF RECEIPTS AND DISBURSMENTS

Item	Amount	Total
Balance Jan. 1, 1900	100.00	100.00
Admission 1900	100.00	200.00
Steady Hall 1900	100.00	300.00
Agriculture 1900	100.00	400.00
Shop 1900	100.00	500.00
Jan 1900	100.00	600.00
Feb 1900	100.00	700.00
Mar 1900	100.00	800.00
Apr 1900	100.00	900.00
May 1900	100.00	1000.00
Jun 1900	100.00	1100.00
Jul 1900	100.00	1200.00
Aug 1900	100.00	1300.00
Sep 1900	100.00	1400.00
Oct 1900	100.00	1500.00
Nov 1900	100.00	1600.00
Dec 1900	100.00	1700.00
Total	1700.00	1700.00

Table XIV gives a picture of the weekly-period utilization of all the rooms and the building as a whole.

The periods that the rooms are used are shown by an X.

The vacant periods are shown by a zero. It is interesting to notice that two rooms are used every period of the day and every day of the week. During the week there are only one hundred nineteen vacant periods in all the rooms in the building. The rooms are used three hundred sixty-one periods out of a possible four hundred eighty room periods in the building. This gives an average of seventy-five per cent of the weekly room periods utilized each week.

Table XIV gives a picture of the use of the building.

Utilization of all the rooms and the building as a whole. The periods that the rooms are used are shown in Table XIV. The vacant periods are shown by a dash. It is interesting to notice that two rooms are used on the same day and every day of the week. During the year 1941, one hundred nineteen vacant periods in all the rooms in the building. The rooms are used during the year in periods out of a possible four hundred eighty-four periods in the building. This gives an average of twenty-five per cent of the weekly room periods actually used.

TABLE XIV

USE OF BUILDING

TABLE XIV

TABLE OF PERIODS EACH ROOM IS USED

Room No.	Monday 12345678	Tuesday 12345678	Wednesday 12345678	Thursday 12345678	Friday 12345678
1	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX
2	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX
3	XXXXXXXX0X	XXXXXXXX0X	XXXXXXXX0X	XXXXXXXX0X	XXXXXXXX0X
6	X0XXXXXXXX	X0XXXXXXXX	X0XXXXXXXX	X0XXXXXXXX	X0XXXXXXXX
7	XX0XXXXX	XX0XXXXX	XX0XXXXX	XX0XXXXX	XX0XXXXX
8	XXX00000	XXX00000	XXX00000	XXX00000	XXX00000
9	XXX0XXXX	XXX0XXXX	XXX0XXXX	XXX0XXXX	XXX0XXXX
Shop	XXX0XXX0	XXX0XXX0	XXX0XXX0	XXX0XXX0	XXX0XXX0
Agri.	XXX0XXX0	XXX0XXX0	XXX0XXX0	XXX0XXX0	XXX0XXX0
Study H.	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX
Science	00XX0000	0000XX00	00XX0000	0000XX00	00000000
Lab.					
Audit.	0XX000X0	00XX000X	00XX000X	00XX000X	00XX000X

BOOKS IN ROOM

THIS IS THE LIST OF BOOKS IN THE ROOM

Room No.	Author	Title	Year
1
2
3
4
5
6
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18
19
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CHAPTER V

LA JOYA HIGH SCHOOL

The Building

The La Joya high school is housed in two buildings. One is used exclusively for the high school and the remainder of the high school is housed in connection with the grammar school.

The buildings are constructed of adobe walls stuccoed on the outside and plastered on the inside. They are one story structures with no basement. The outer walls are twelve inches thick and the inner partitions are eight inches in thickness. There are no hall ways in the high school building. In the grammar school building there are corridors that connect all the rooms.

Since this study deals only with high school buildings only the portion of the grammar school building that houses high school students and is used for high school purposes will be considered.

Allocation of Space

The percentages of space allocated to each function of the La Joya high school building compare favorably with

the standard percentages for space allocation of high school buildings. The percentage of space used for instruction is well above the minimum standards and percentages. The space used for administration is about two-thirds of the maximum standard. The space used for storage is four times the amount prescribed by Cooper in his Candle of Ratios. Due to the size and arrangement of the buildings only a small percentage of space is used for corridors and none for stairways. (See Table XV)

the standard percentages for space allocation of high school buildings. The percentage of space used for instruction is well above the minimum standards and percentages. The space used for administration is about two-thirds of the maximum standard. The space used for storage is four times the amount prescribed by Cooper in his Guide of School. Due to the size and arrangement of the building only a small percentage of space is used for corridors and halls for stairs.

ways. (See Table IV)

TABLE XV
COMPARISON OF SPACE ALLOCATION

Function	Area	Percentage of Area	Standard %*
Administration	600	10	16 (Max.)
Instruction	3838	64	50 (Min.)
Corridors	510	8	20 (Max.)
Storage	256	4	1 (Max.)
Construction	673	11	10 (Max.)
Flues & Radiators	169	3	3 (Max.)
Totals	6040	100	100

* Max. Maximum standards set up by Candle of Ratios.

* Min. Minimum standards set up by Candle of Ratios.

* Cooper. Candle of Ratios. p. 76.

TABLE XV
CONTINUED OF SPACE ALLOCATION

Function	Area	Percentage of Area	Standard
Administration	600	10	10 (Max.)
Instruction	3828	64	52 (Min.)
Construction	810	8	52 (Max.)
Storage	270	2	1 (Max.)
Construction	270	2	10 (Max.)
Plumbing & Radiators	120	3	2 (Max.)
Totals	5040	100	100

* Max. Maximum standards set up by Council of Nations.
 * Min. Minimum standards set up by Council of Nations.
 * Cooper. Council of Nations. a. v. 8.

Weekly-Period Utilization

The percentage of actual weekly-periods used for each room in comparison to the maximum weekly-period capacity averaged only forty-eight per cent. From this one can see the building is used a little less than one-half the possible number of periods each week. None of the rooms are used to weekly-period capacity. The number of teachers in high school and the nature of the work given makes it impossible to have a high percentage of utilization. All the rooms are used as well as can be expected at the present time. (See Table XVI)

TABLE XVI

PERCENTAGE OF WEEKLY-PERIOD UTILIZATION

Room No.	Actual Use	Capacity Use	% of Use	Average
3	15	30	50	48
4	25	30	83	
5	20	30	67	
15	20	30	67	
16	10	30	33	
17	20	30	67	
18	10	30	33	
Auditorium	5	30	17	

Use by Pupil-Stations

The standard number of pupil-stations, when compared with the actual number of pupil-stations, show a utilization of ninety-seven per cent of floor space. There are three rooms that have over one hundred per cent of the standard pupil-stations used. Even the auditorium has sixty per cent of the standard pupil-stations used. The laboratories are the most crowded of any of the rooms in the building. In considering the building as a whole there is a good balance between the actual number of pupil-stations and the standard number of pupil-stations. (See Table XVII)

The standard number of pupils is 25.

pared with the actual number of pupils. The building is
utilized in a most efficient manner and the building is
one of the best in the district. The building is
standard pupil-teacher ratio. The building is
sixty per cent of the average. The building is
laboratories and the most crowded of the building is
the building. In conclusion, the building is a
is a good balance between the actual number of pupils
and the standard number of pupils. The building is

(XVII)

2010

TABLE XVII
PERCENTAGE OF USE BY PUPIL-STATIONS

Room No.	Area	Actual No. of Pupil-Stations	Standard No. of Pupil-Stations*	% of Use	Av. %
3 (L)	360	15	11	137	
4 (I)	535	21	29	72	
5 (I)	535	21	29	72	
15 (I)	480	26	27	96	97
16 (L)	480	12	15	80	
17 (I)	480	28	27	104	
18 (L)	480	22	15	147	
Auditorium (A)	840	80	120	67	

I Instructional Standards used.

L Laboratory Standards used.

A Auditorium Standards used.

* Standards for space allowed for each child adopted from Strayer and Englehardt, Standards for High School.

EXHIBIT 117 - 118 OF 118

Room No.	Area	Volume	Weight	Value
3 (I)	400	10	10	10
4 (I)	400	10	10	10
5 (I)	400	10	10	10
10 (I)	400	10	10	10
11 (I)	400	10	10	10
12 (I)	400	10	10	10
13 (I)	400	10	10	10
14 (I)	400	10	10	10
15 (I)	400	10	10	10
16 (I)	400	10	10	10
17 (I)	400	10	10	10
18 (I)	400	10	10	10
19 (I)	400	10	10	10
20 (I)	400	10	10	10
21 (I)	400	10	10	10
22 (I)	400	10	10	10
23 (I)	400	10	10	10
24 (I)	400	10	10	10
25 (I)	400	10	10	10
26 (I)	400	10	10	10
27 (I)	400	10	10	10
28 (I)	400	10	10	10
29 (I)	400	10	10	10
30 (I)	400	10	10	10
31 (I)	400	10	10	10
32 (I)	400	10	10	10
33 (I)	400	10	10	10
34 (I)	400	10	10	10
35 (I)	400	10	10	10
36 (I)	400	10	10	10
37 (I)	400	10	10	10
38 (I)	400	10	10	10
39 (I)	400	10	10	10
40 (I)	400	10	10	10
41 (I)	400	10	10	10
42 (I)	400	10	10	10
43 (I)	400	10	10	10
44 (I)	400	10	10	10
45 (I)	400	10	10	10
46 (I)	400	10	10	10
47 (I)	400	10	10	10
48 (I)	400	10	10	10
49 (I)	400	10	10	10
50 (I)	400	10	10	10
51 (I)	400	10	10	10
52 (I)	400	10	10	10
53 (I)	400	10	10	10
54 (I)	400	10	10	10
55 (I)	400	10	10	10
56 (I)	400	10	10	10
57 (I)	400	10	10	10
58 (I)	400	10	10	10
59 (I)	400	10	10	10
60 (I)	400	10	10	10
61 (I)	400	10	10	10
62 (I)	400	10	10	10
63 (I)	400	10	10	10
64 (I)	400	10	10	10
65 (I)	400	10	10	10
66 (I)	400	10	10	10
67 (I)	400	10	10	10
68 (I)	400	10	10	10
69 (I)	400	10	10	10
70 (I)	400	10	10	10
71 (I)	400	10	10	10
72 (I)	400	10	10	10
73 (I)	400	10	10	10
74 (I)	400	10	10	10
75 (I)	400	10	10	10
76 (I)	400	10	10	10
77 (I)	400	10	10	10
78 (I)	400	10	10	10
79 (I)	400	10	10	10
80 (I)	400	10	10	10
81 (I)	400	10	10	10
82 (I)	400	10	10	10
83 (I)	400	10	10	10
84 (I)	400	10	10	10
85 (I)	400	10	10	10
86 (I)	400	10	10	10
87 (I)	400	10	10	10
88 (I)	400	10	10	10
89 (I)	400	10	10	10
90 (I)	400	10	10	10
91 (I)	400	10	10	10
92 (I)	400	10	10	10
93 (I)	400	10	10	10
94 (I)	400	10	10	10
95 (I)	400	10	10	10
96 (I)	400	10	10	10
97 (I)	400	10	10	10
98 (I)	400	10	10	10
99 (I)	400	10	10	10
100 (I)	400	10	10	10

I. Instructional Standards
 I. Laboratory Standards
 A. Laboratory Standards
 Standards for the Laboratory
 from the Laboratory Standards

Use of Pupil-Stations

The average use of pupil-stations in each room varies from sixteen per cent in the auditorium to forty-five per cent in two of the most used class rooms. The average use of pupil-stations for the whole building is thirty-three per cent. This is a fairly good percentage of utilization when one considers the school offers four years of high school work and there are only four full time and one part-time high school teachers. It is necessary to offer a variety of courses and the number of rooms that can be utilized is limited to the number of teachers. Most of the class rooms have a pupil-station utilization of nearly fifty per cent. It is only in the rooms that have a special use where the pupil-station utilization is comparatively low. (See Table XVIII)

TABLE XVIII
PERCENTAGE OF USE OF PUPIL-STATIONS

Room No.	Period	Pupil- Stations Used	No. of Pupil- Stations	% of Use	Room Averages	Total Average
3	1	7	15	47	24	
	2	0		0		
	3	7		47		
	4	0		0		
	5	0		0		
	6	7		47		
4	1	5	21	24	45	
	2	20		95		
	3	9		43		
	4	14		67		
	5	8		38		
	6	0		0		
5	1	11	21	52	44	
	2	22		105		
	3	18		86		
	4	3		19		
	5	0		0		
	6	0		0		
15	1	7	26	27	33	33
	2	0		0		
	3	0		0		
	4	19		73		
	5	18		69		
	6	7		27		
16	1	0	12	0	31	
	2	0		0		
	3	0		0		
	4	0		0		
	5	11		92		
	6	11		92		
17	1	24	28	86	45	
	2	0		0		
	3	18		64		
	4	24		86		
	5	9		32		
	6	0		0		
18	1	0	22	0	27	
	2	0		0		
	3	0		0		
	4	0		0		
	5	18		82		
	6	18		82		
Auditorium	1	0	80	0	16	
	2	75		94		
	3	0		0		
	4	0		0		
	5	0		0		
	6	0		0		

Use of Standard Pupil-Stations

The average use of the number of pupil-stations that should be in the whole building is thirty per cent. This building is comparatively new and ample provision was made for the growth of the school over a period of years. The fact that only thirty per cent of the standard pupil-stations being used does not mean that the building is three times as large as it should be to house the present student body. In the standards set up by Strayer and Englehardt in their book, "Standards for High School," a high school building that has fifty per cent of the standard pupil-stations utilized is considered well used. (See Table XIX)

Use of Standardized Tests

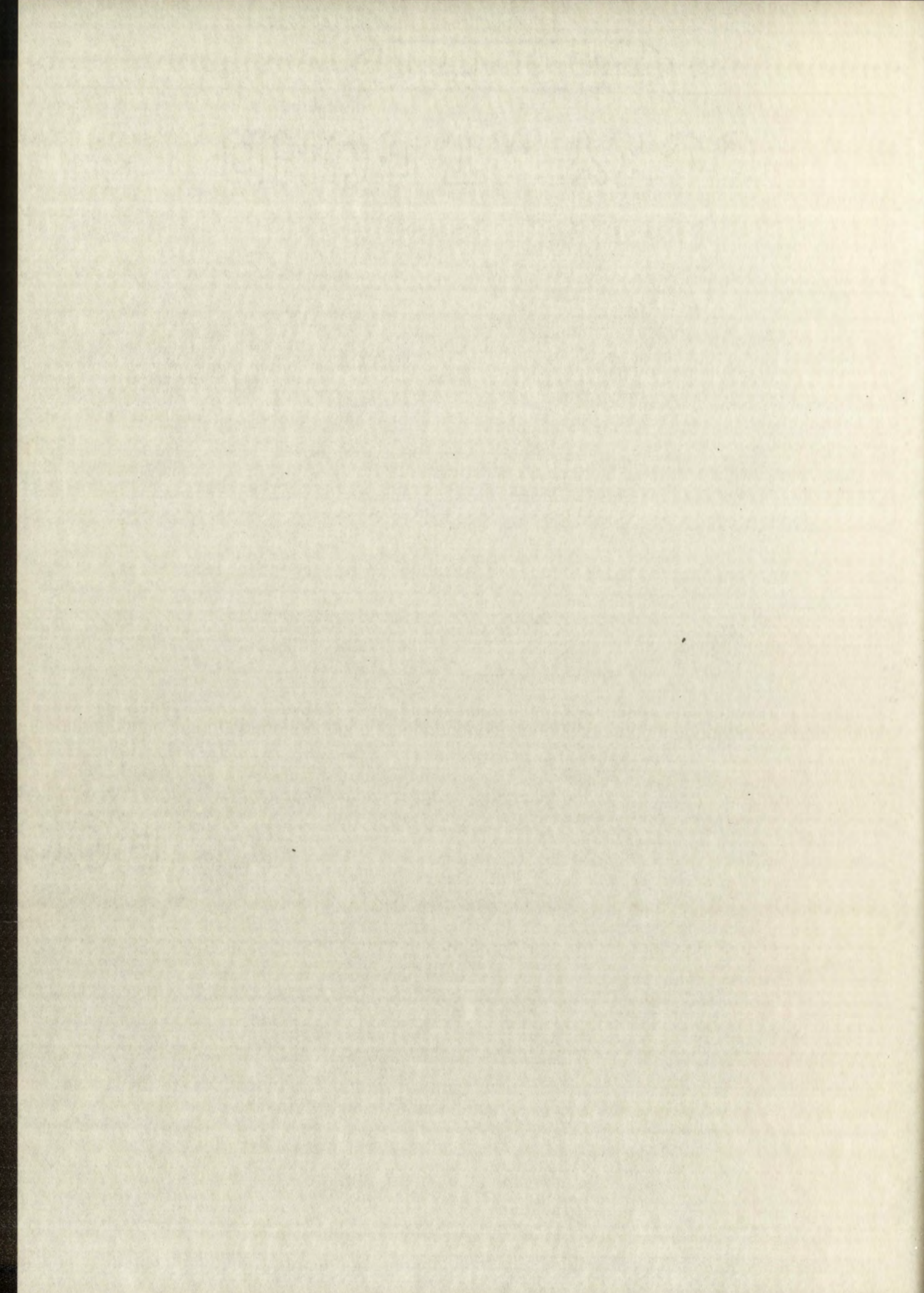
The average use of the number of tests should be in the whole building and not only in the building is comparatively low and only a few tests for the growth of the school system are given. The fact that only three per cent of the schools are stations being used is a very important fact. This time as large as it might be to make the present student body. In the examination of the student body in their work, it is necessary to have a high school building and the fact that the data on pupil-teacher ratios is not used.

Table XII

TABLE XIX
PERCENTAGE OF USE OF PUPIL-STATIONS

Room No.	Period	Pupil- Stations Used	No. of Pupil- Stations*	% of Use	Room Averages	Total Average
3	1	7	11	64	32	
	2	0		0		
	3	7		64		
	4	0		0		
	5	0		0		
	6	7		64		
4	1	5	29	17	32	
	2	20		69		
	3	9		31		
	4	14		50		
	5	8		28		
	6	0		0		
5	1	11	29	38	31	
	2	22		76		
	3	18		62		
	4	3		10		
	5	0		0		
	6	0		0		
15	1	7	27	26	32	
	2	0		0		
	3	0		0		
	4	19		70		
	5	18		67		
	6	7		26		
16	1	0	15	0	24	30
	2	0		0		
	3	0		0		
	4	0		0		
	5	11		73		
	6	11		73		
17	1	24	27	81	45	
	2	0		0		
	3	18		67		
	4	24		89		
	5	9		33		
	6	0		0		
18	1	0	15	0	34	
	2	0		0		
	3	0		0		
	4	0		0		
	5	16		101		
	6	16		101		
Auditorium	1	0	120	0	11	
	2	75		63		
	3	0		0		
	4	0		0		
	5	0		0		
	6	0		0		

* Standards for space allowed for each child adopted from Strayer and Englehardt, Standards for High Schools.



Use of Weekly-Pupil-Periods

The greatest number of weekly-periods any room can be used is thirty, since there are six periods per day and five days per week. The number of weekly-periods each room is used by pupils for instructional purposes when compared with the maximum number of weekly-periods that should be used by the standard number of pupils, based on the number of standard pupil-stations, shows an average utilization of ninety-seven per cent. The range of utilization varies from sixty-seven per cent in the auditorium to one hundred and forty-seven per cent in one of the laboratories. Three rooms have a percentage of weekly-period utilization of over one hundred per cent when one compares the standard number of weekly-pupil-periods with the actual number of weekly-pupil-periods. The average for all the rooms is very near the standard, being only three per cent off the standard. There are enough of the rooms below the standard number of weekly-pupil-period utilization to off-set those above.

Use of Weekly-Pupil-Periods

The greatest number of weekly-periods any room can be used is thirty, since there are six periods per day and five days per week. The number of weekly-periods each room is used by pupils for instructional purposes when compared with the maximum number of weekly-periods that should be used by the standard number of pupils, based on the number of standard pupil-stations, shows an average utilization of ninety-seven per cent. The range of utilization varies from sixty-seven per cent in the addition to one hundred and forty-seven per cent in one of the laboratories. Three rooms have a percentage of weekly-period utilization of over one hundred per cent when one compares the standard number of weekly-pupil-periods with the actual number of weekly-pupil-periods. The average for all the rooms is very near the standard, being only three per cent off the standard. There are enough of the rooms below the standard number of weekly-pupil-period utilization to offset those above.

TABLE XX

PERCENTAGE OF WEEKLY-PUPIL-PERIOD UTILIZATION

Room No.	Standard No. of Weekly- Pupil-Periods	Actual No. of Weekly-Pupil- Periods	Percentage of Use	Average Percentage
3	330	450	137	
4	870	630	72	
5	870	630	72	
15	810	780	96	97
16	450	360	80	
17	810	840	104	
18	450	660	147	
Auditorium	3600	2400	67	

TABLE XI

PERCENTAGE OF WEEKLY-PEAKED WATER

Room No.	Standard No.	Weekly-Peaked Water	Percentage
1	100	100	100
2	100	100	100
3	100	100	100
4	100	100	100
5	100	100	100
6	100	100	100
7	100	100	100
8	100	100	100
9	100	100	100
10	100	100	100
11	100	100	100
12	100	100	100
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90	100	100	100
91	100	100	100
92	100	100	100
93	100	100	100
94	100	100	100
95	100	100	100
96	100	100	100
97	100	100	100
98	100	100	100
99	100	100	100
100	100	100	100

The percentage of weekly-periods utilized in the entire building is fifty-six per cent. None of the room is used every period every day. One room is used eighty-three per cent of the periods and two others are used two-thirds or sixty-seven per cent of the weekly-periods. The auditorium is used only one-sixth of the time. That is a good percentage of utilization of auditoriums in small schools. Many small schools do not utilize the auditorium more than one or two periods per week or from four to ten per cent of the time. Table XXI gives a complete picture of the used and unused periods.

The percentage of school children who are
the children of the poor is about 10% of the total
used every year. The total is about 10% of the
per cent of the population and the total is about 10%
on sixty-seven per cent of the population. The total
figure is used only as a guide of the total. The
percentage of children of the poor is about 10% of the
total. Many small schools do not have the facilities for
one or two periods per week. The total is about 10%
of the time. The total is about 10% of the time.
used and unused periods.

ACKNOWLEDGMENT

TABLE XXI

TABLE OF PERIODS EACH ROOM IS USED

Room No.	Monday	Tuesday	Wednesday	Thursday	Friday
	123456	123456	123456	123456	123456
3	XOXOOX	XOXOOX	XOXOOX	XOXOOX	XOXOOX
4	XXXXX0	XXXXX0	XXXXX0	XXXXX0	XXXXX0
5	XXXX00	XXXX00	XXXX00	XXXX00	XXXX00
15	X00XXX	X00XXX	X00XXX	X00XXX	X00XXX
16	0000XX	0000XX	0000XX	0000XX	0000XX
17	X0XXX0	X0XXX0	X0XXX0	X0XXX0	X0XXX0
18	0000XX	0000XX	0000XX	0000XX	0000XX
Auditorium	0X0000	0X0000	0X0000	0X0000	0X0000

CHAPTER VI

SUMMARY AND CONCLUSIONS

Measurement of Utilization

This study has measured the utilization of the high school buildings of Socorro County by the use of comparison of floor space allocation, weekly-period utilization, use by pupil-stations, use of pupil-stations, use of standard pupil-stations, and by use of weekly-pupil-periods. Through these six steps question one in the problem of this thesis is answered. The several phases of the technique of measurement has been applied to each school. The data on each school have been presented and interpreted. The results have been converted to percentages so that they could be compared with standards already established by studies and experiments on large numbers of schools.

Relation Between Actual Use and Standard Use

The relation between the capacity of a high school building and the actual use was shown by comparing the allocation of space used in each function of the building to standards recognized as authoritative in the measurement of that function.

The percentage of actual use of each function was compared with standard percentage of use for the respective functions. This procedure shows to what adequate extent each building is functioning.

Analysis of Buildings Used in This Study

The percentage of utilization of the Magdalena high school building is near eighty per cent which is relatively high.⁹ By utilizing more periods each week and more rooms per day crowded classes could be eliminated to some extent. By reducing the size of classes or shifting smaller classes into the smaller rooms and larger classes into the larger rooms educational standards for utilization of floor space would be more closely adhered to. By a one hundred per cent utilization of floor space and weekly-periods the building could adequately care for twenty per cent more pupils. By a greater utilization of periods new courses could be introduced without diverting from educational standards as to use of floor space. Under the present conditions the building is near the border line of being obsolete since it cannot satisfy the needs of the high school pupils based on educational standards. No

⁹ E. L. Morphet. The Measurement and Interpretation of School Building Utilization. p. 83.

The percentage of actual use of each function was compared with assumed percentage of use for the respective functions. This procedure shows to what extent each building is functioning.

Analysis of Buildings Used in This Study

The percentage of utilization of the high school building is nearly fifty per cent which is relatively high. By utilizing more periods each week and more rooms per day crowded classes could be eliminated to some extent. By reducing the size of classes or splitting smaller classes into the smaller rooms and larger classes into the larger rooms educational standards for utilization of floor space would be more closely achieved. By a one hundred per cent utilization of floor space and weekly periods the building could adequately care for twenty per cent more pupils. By a greater utilization of periods new courses could be introduced without diverting from educational standards as to use of floor space. Under the present conditions the building is near the border line of being obsolete since it cannot satisfy the needs of the high school pupils based on educational standards. No

matter how classes and periods may be arranged some of the pupils are going to have to work where standard working conditions are not available.

The comparison of educational standards with existing educational conditions shows that the present high school building at Socorro is failing in several phases to house the high school pupils properly. The fact that the auditorium is used three periods per day as a class room is not desirable. There are rooms crowded with pupil-stations and in some cases pupil-stations crowded with pupils. There is a possibility that some rearrangement of periods and classes would help to some extent the crowded condition that exists. A new building or addition to the old one is probably the only solution to insure standard working conditions for all the high school pupils.

The floor space utilized in the La Joya high school satisfies the needs in nearly every phase of this study. There is also room for expansion of the curriculum and growth of the student body. There is little or no need of reorganization of classes or periods to expedite standard working conditions.

matter how classed and categorized, the pupils are going to have to be in some manner or other conditions and not otherwise.

The organization of work in the school building at Boston is typical of the school building at Boston. The school building at Boston is typical of the school building at Boston. The school building at Boston is typical of the school building at Boston.

auditorium is used for many purposes and is not desirable. The school building at Boston is typical of the school building at Boston. The school building at Boston is typical of the school building at Boston.

stations and in some cases, the school building at Boston is typical of the school building at Boston. The school building at Boston is typical of the school building at Boston. The school building at Boston is typical of the school building at Boston.

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old one is probably the only one of its kind. The school building at Boston is typical of the school building at Boston. The school building at Boston is typical of the school building at Boston. The school building at Boston is typical of the school building at Boston.

working conditions. The school building at Boston is typical of the school building at Boston. The school building at Boston is typical of the school building at Boston. The school building at Boston is typical of the school building at Boston.

WORKING CONDITIONS
BOSTON, MASS.

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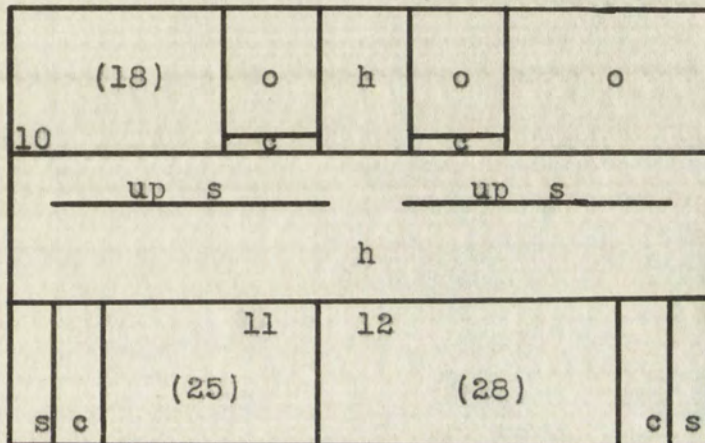
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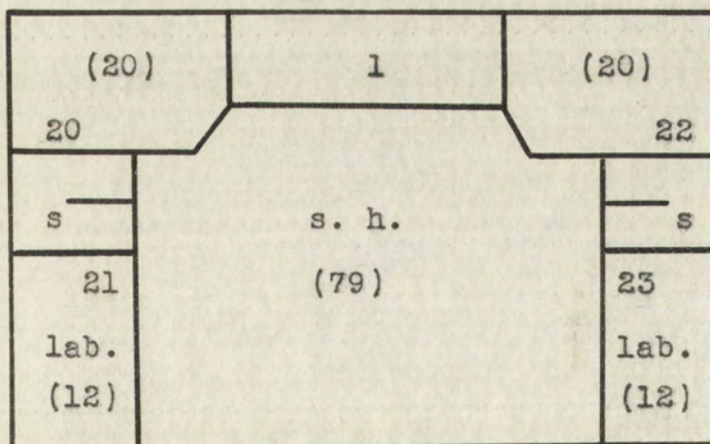
APPENDIX A

FLOOR PLAN OF MAGDALENA HIGH SCHOOL

First Floor



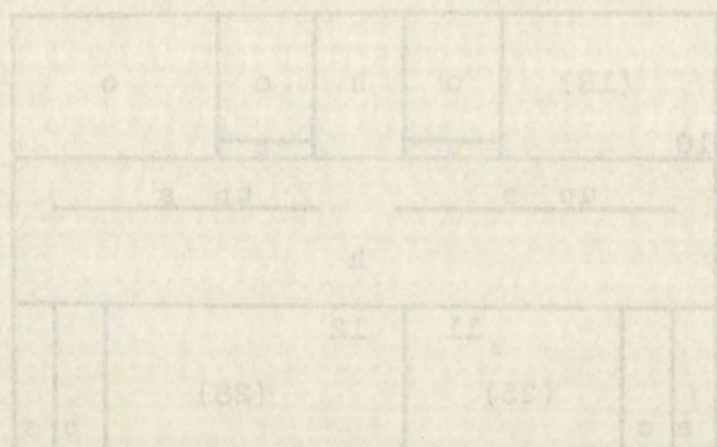
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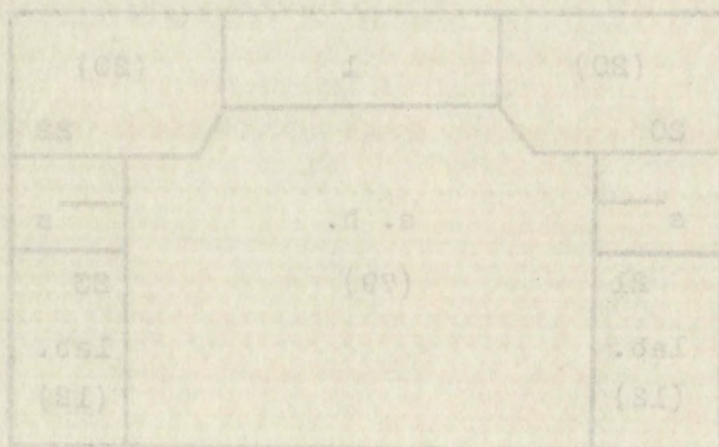
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FLOOR PLAN OF MADAMEA HIGH SCHOOL

First Floor

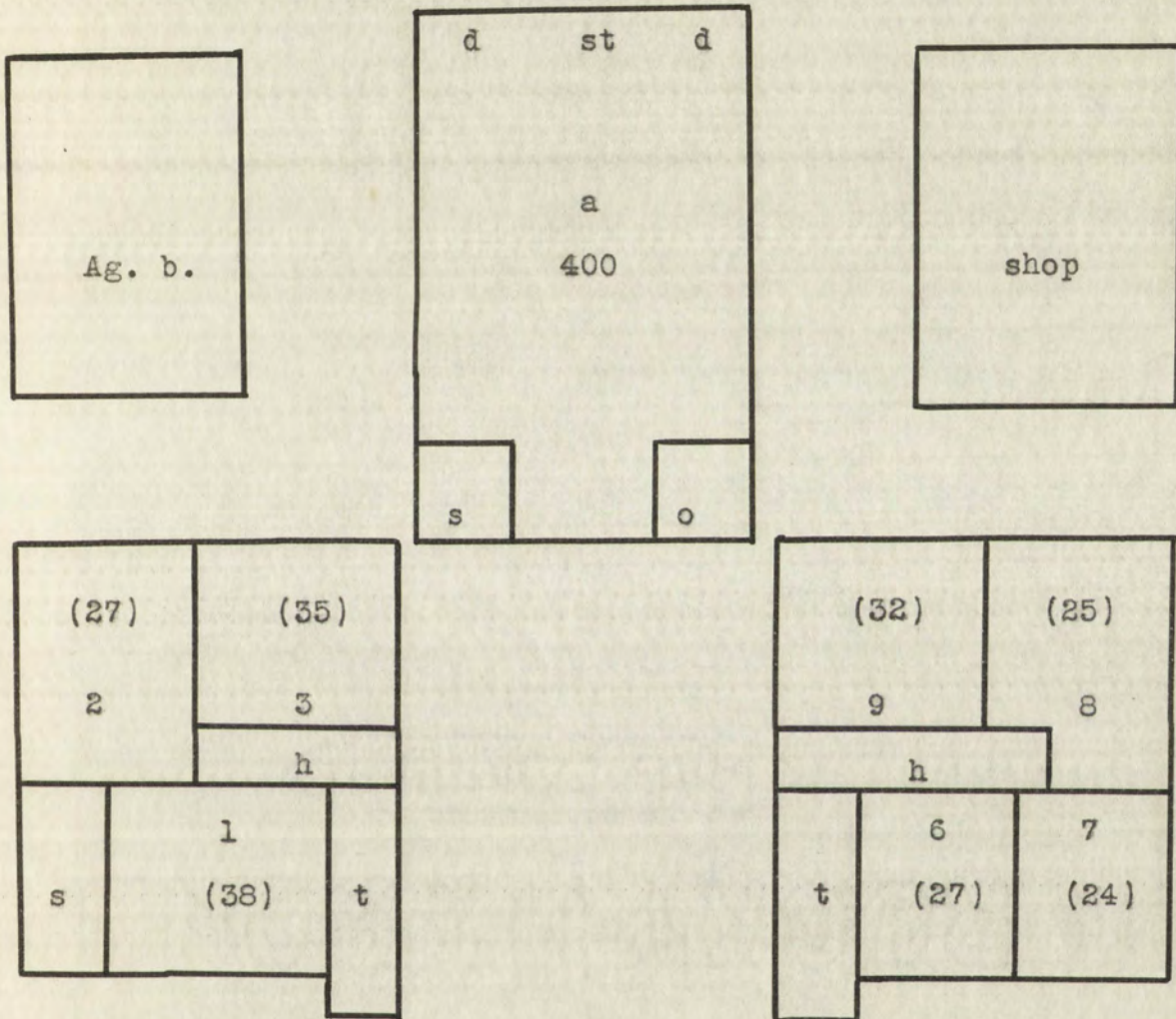


Second Floor



APPENDIX B

FLOOR PLAN OF SOCORRO HIGH SCHOOL



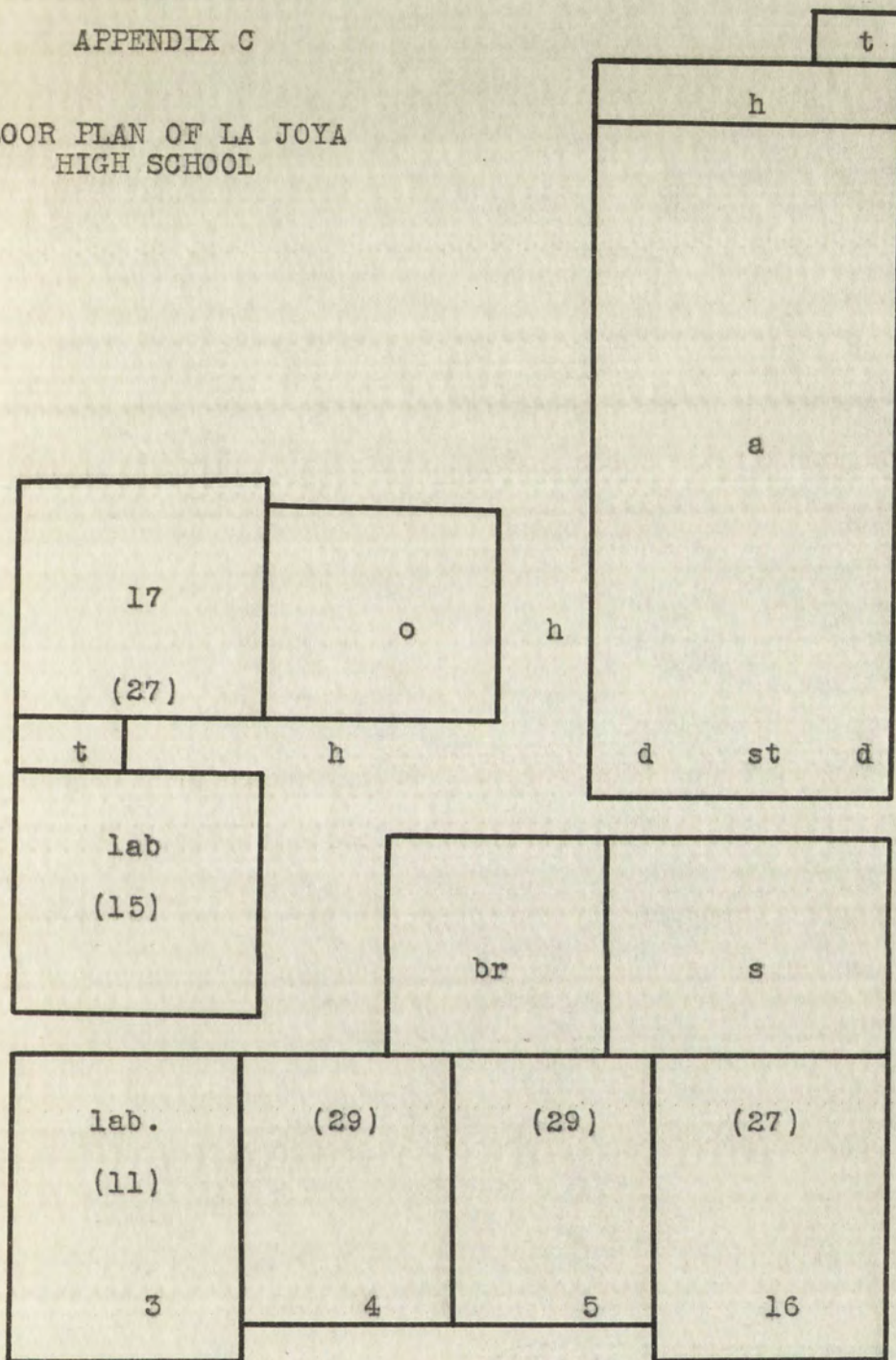
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No. Room Number
 (No.) No. of pupil-stations
 a Auditorium
 d Dressing Room

h Hall
 o Office
 t Toilet
 st. Stage

APPENDIX C

FLOOR PLAN OF LA JOYA HIGH SCHOOL

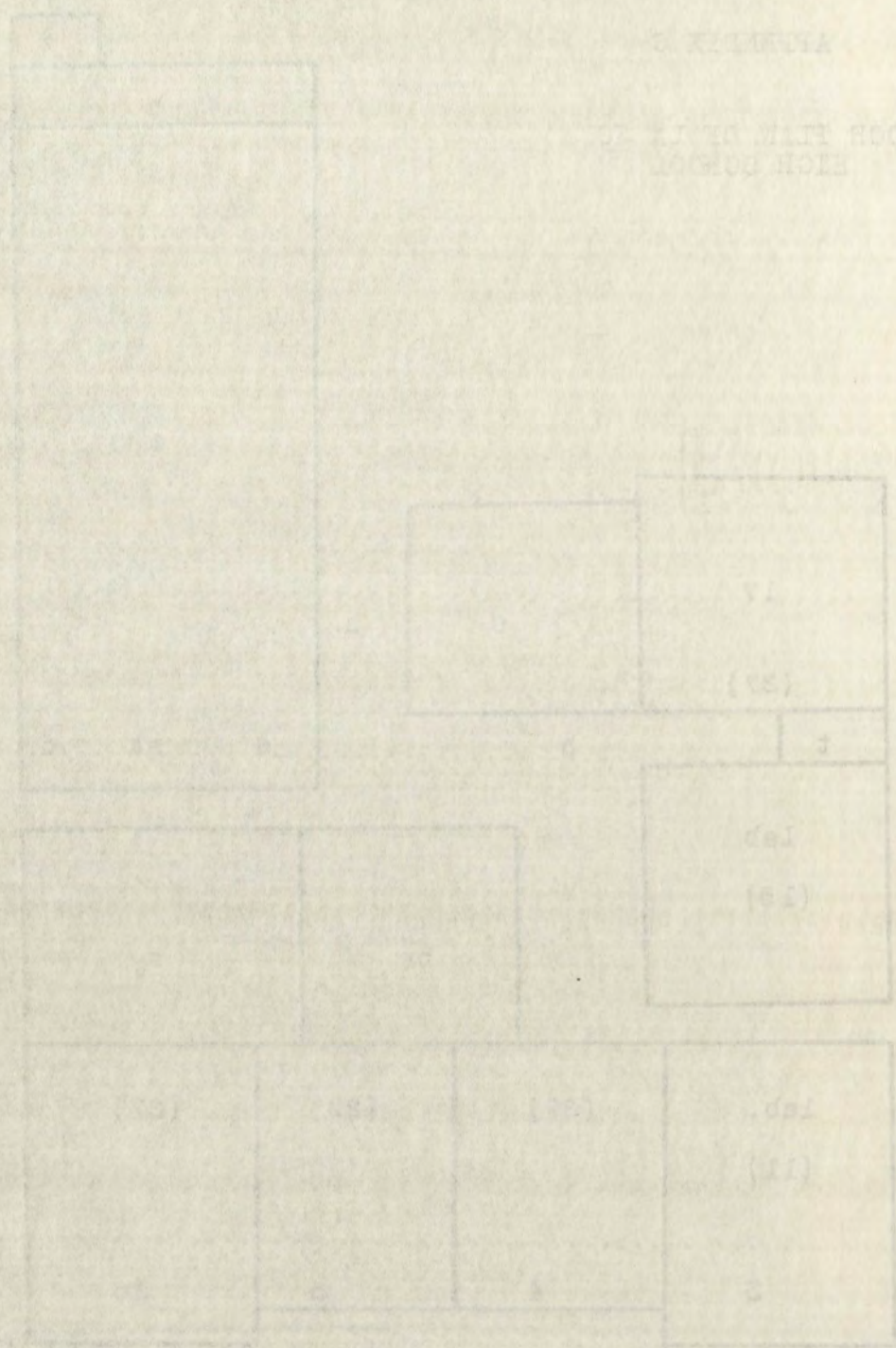


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No.	Room Number	h	Hall
(No.)	No. of pupil-stations	o	Office
a	Auditorium	t	Toilet
d	Dressing Room	st	Stage
lab.	Laboratory		

APPENDIX 2

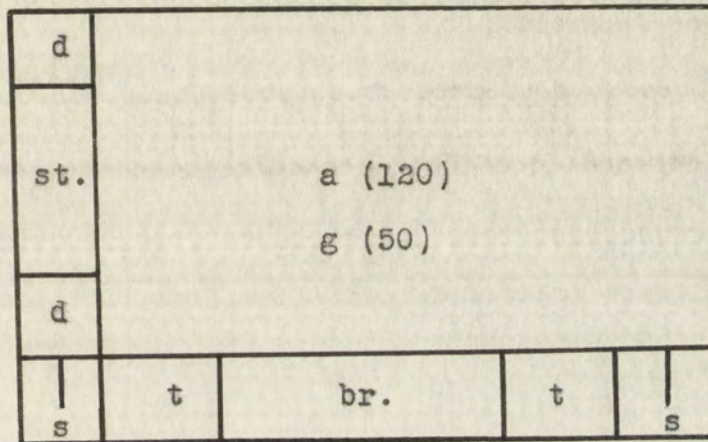
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- No. Room Number
- (No.) No. of rooms
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- d. and system
- lab. laboratory

Basement Floor



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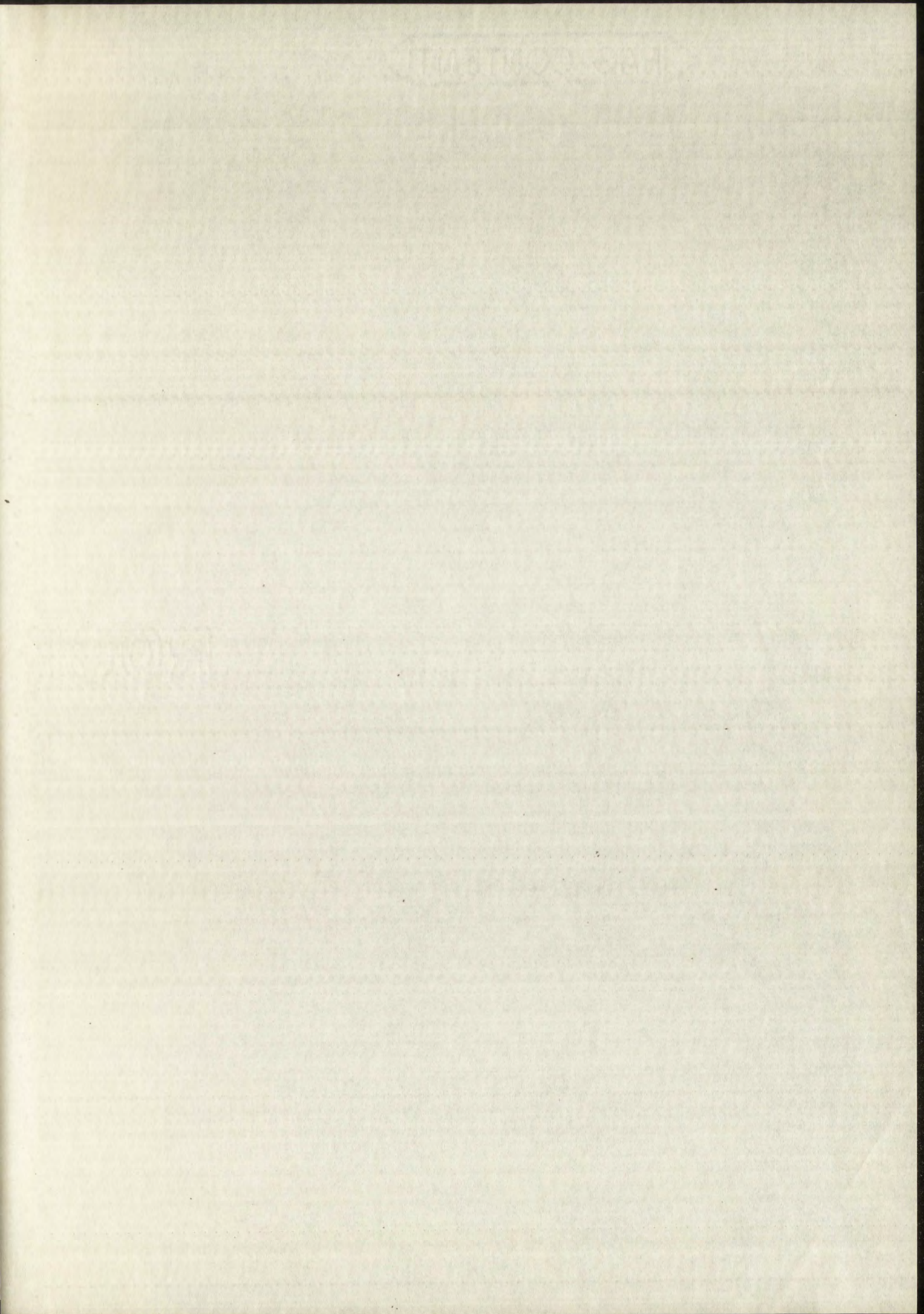
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- br. Boiler Room and Coal Storage
- d Dressing Room
- g Gymnasium
- h Hall
- l Library Shelves
- lab. Laboratory
- o Office
- s Stairs
- s. h. Study Hall
- st. Stage
- t Toilet and Showers

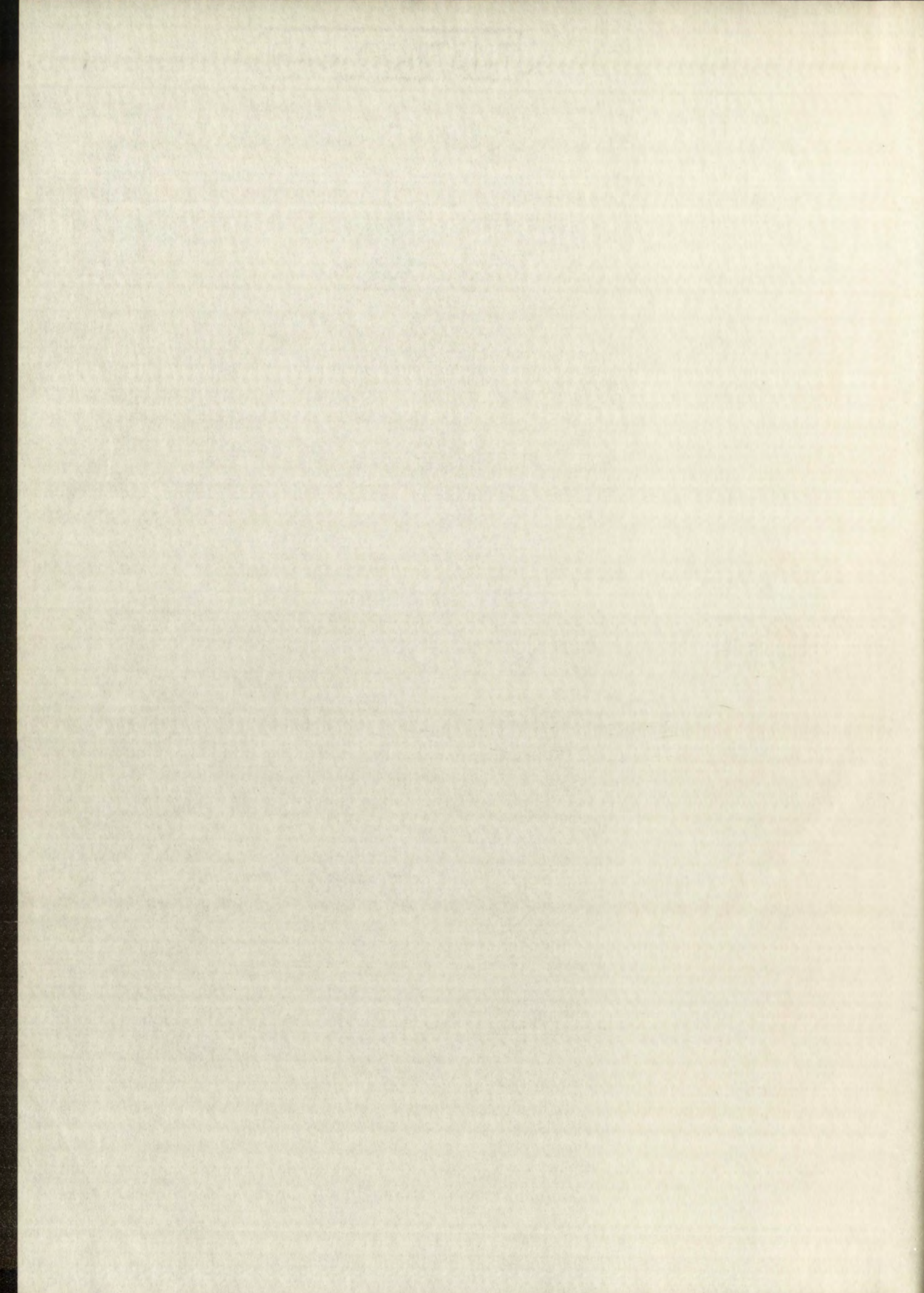
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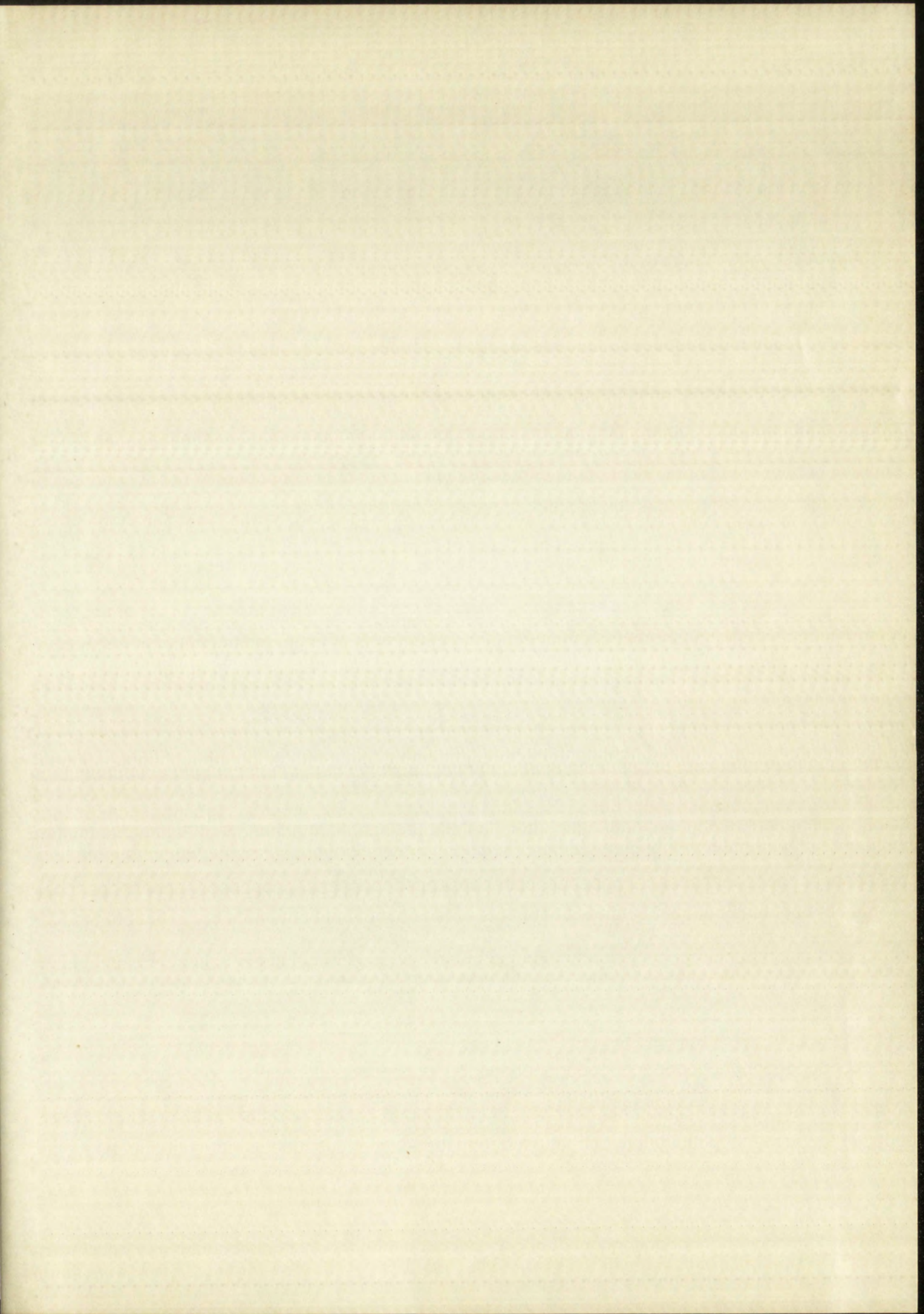
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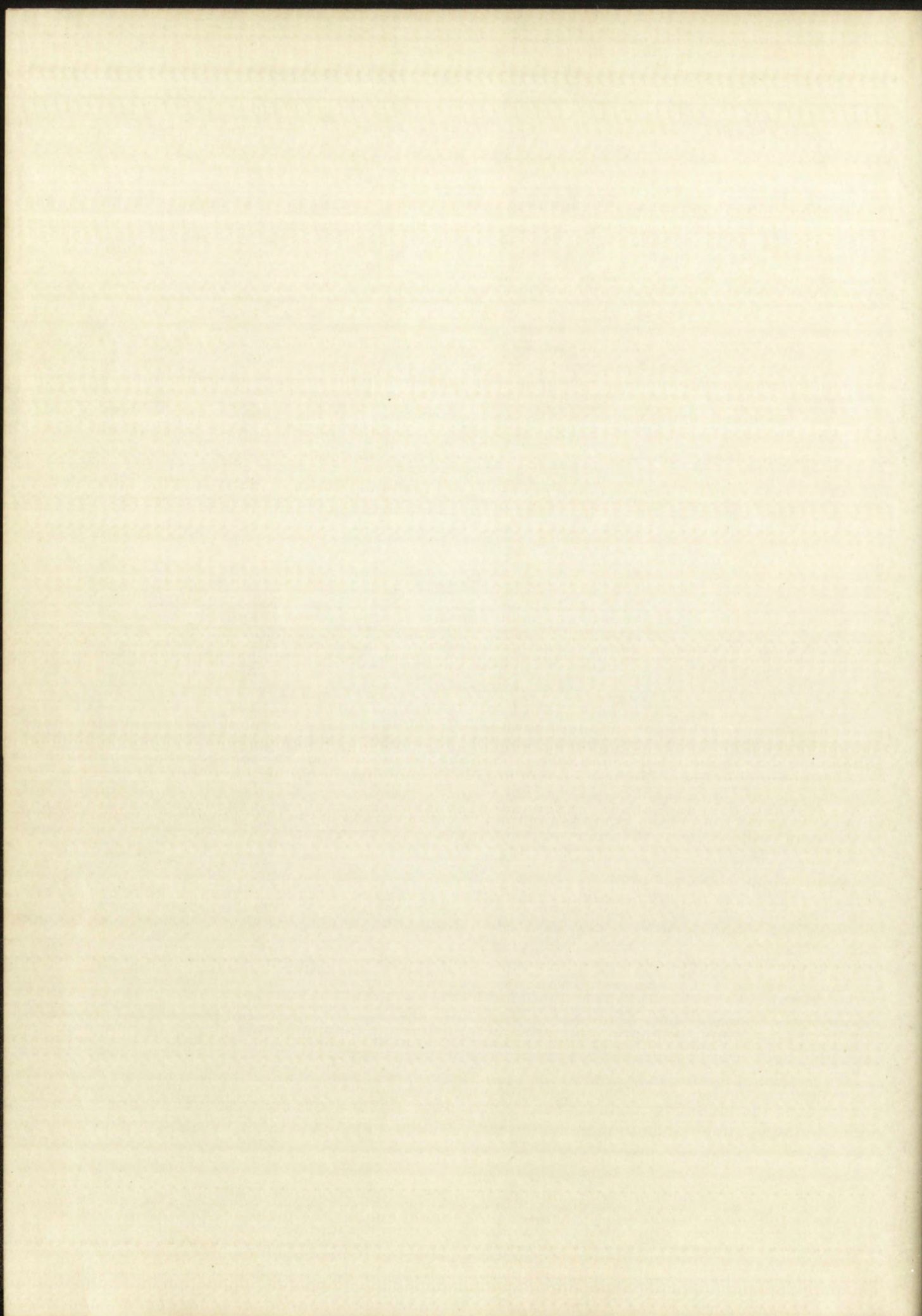
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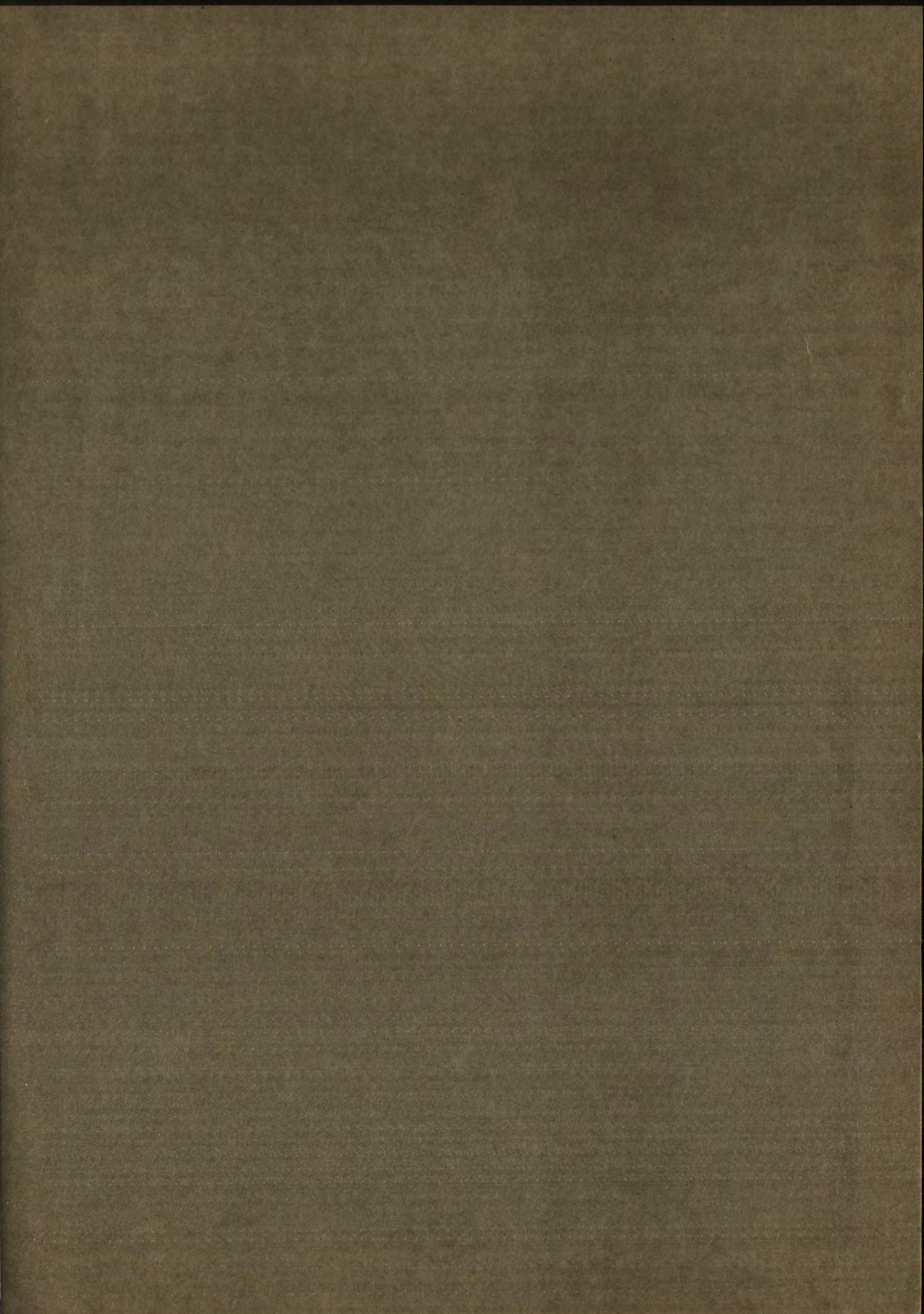
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- Dressing Room
- Gymnasium
- Hall
- Library Shelves
- Laboratory
- Office
- Shower
- S. H. Study Hall
- Stairs
- Toilet and Showers











IMPORTANT!

[illegible]

BOOK CARD
CANCELLED

