

*Office file*

CALIFORNIA POLYTECHNIC SCHOOL

BOARD OF TRUSTEES

Semi Annual Meeting at

San Luis Obispo, California,

April 29, 1911.

ORDER OF BUSINESS.

1. Roll Call
2. Minutes of Last Meeting
3. Communications
4. Report of Standing Committee
5. Report of Director

Sections containing suggestions and recommendations  
are entitled:

- a. Proposed Tuition Fees. p.4.
- b. Appointments 1911-'12. pp. 5,6,7,8.
- c. Poultryman. p.8.
- d. Contemplated Improvements. pp. 13,14.
6. Miscellaneous.

*Report of H.B. Waters on power house  
attached.*



San Luis Obispo, California,

April 29, 1911.

The Board of Trustees,

California Polytechnic School.

Gentlemen:

The eighth year of instruction is drawing to a close. While the class to be graduated is not the largest, the total enrollment of those receiving instruction for all or a part of the year is the largest in the history of the school. The eighth annual farmers' institute and basket picnic is scheduled for May 19th. We have been so fortunate as to secure Professor Charles Gilman Hyde of the University of California as speaker of the day. The institute topic is "Good Roads". The sixth graduation exercises are scheduled for Friday evening, June ninth. Dr. David Starr Jordan, President of Stanford University has provisionally accepted an invitation to deliver the annual commencement address. Plans are under way for a grand alumni reunion to celebrate the fifth anniversary of the graduation of the pioneer class. Sixteen students will be graduated in June, - four in agriculture, ten in mechanics, and two in household arts.

Including the class of 1911 the graduation record of the school is as follows:

Graduates in Agriculture .....	34
Graduates in Mechanics .....	41
Graduates in Household Arts .....	<u>32</u>
Total number of graduates .....	107

The enrollment for the current year is as follows:

	Agric.	Mech.	H.A.	
1st Year	26	40	23	
2d "	23	22	16	
3d "	<u>4</u>	<u>15</u>	<u>4</u>	
Totals	53	77	43	..... 173



Total .....	173
Special in Agriculture .....	1
Specails in Household Arts .....	<u>2</u>

Total enrollment 176

Students registering for the full or part of the school year  
1910-'11 come from counties and states as follows:

Alameda .....	4	San Mateo .....	2
Butte .....	1	Santa Barbara .....	10
Fresno .....	2	Santa Clara .....	8
Imperial .....	2	Santa Cruz .....	1
Inyo .....	1	Stanislaus .....	2
Kern .....	2	Tulare .....	8
Los Angeles .....	14	Ventura .....	3
Merced .....	2	- - - - -	
Monterey .....	9		
Napa .....	1		
Orange .....	9	Colorado .....	1
Riverside .....	3	Kansas .....	1
Sacramento .....	3	Ohio .....	1
San Bernardino .....	3	Oregon .....	1
San Diego .....	9		
San Joaquin .....	1	Japan .....	<u>1</u>
San Luis Obispo .....	71		
		TOTAL	176

GRADUATION RECORD.

1906 .....	8
1907 .....	16
1908 .....	16
1909 .....	30
1910 .....	21
1911 .....	<u>16</u>
TOTAL	107

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### THE CURRICULUM.

The only sound policy is to carry on only as many lines of work as can be creditably conducted. Much time and thought has been given to the organization and content of the three courses of study. We believe that the advantages to be offered the coming school year will be the best the school has ever offered, just as this closing year has provided pupils better instruction and better facilities than the earlier years have offered. We have endeavored to enrich the courses of study already prescribed, rather than to branch out on new lines of work. While we are ambitious to offer a fourth year of work to pupils from the grammar schools, our financial resources for the coming biennial period will not permit this extension.

The development of secondary education in agriculture and the industrial arts in the United States is going forward by leaps and bounds. It is a new development and there are no traditions to be followed. This institution, a pioneer in the field, receives inquiries and visitors from all parts of the Union. It is highly essential that we keep in touch with this now nation wide movement in secondary vocational education, and to that end I hope that it may be possible for members of our Board, the Director, and members of the faculty to inspect the work of other schools in this and other states during the coming year.

### ONE YEAR'S LEAVE OF ABSENCE IN SEVEN.

Although the time for action is probably not yet come, the writer believes the management of the institution should consider the matter of one year's leave of absence in seven for teachers. The plan is already in effect in our state university and in various other institutions throughout the country. A recent resolution in the an-



4

nual meeting of the Presidents of the six California Normal Schools and the Trustees of each of the Normal School of the state, declared that it would be wise to give members of normal school faculties one year's leave of absence every seven. The time is spent by the teacher in improvement by study and travel. It is certain that the school receives a full share of the benefit.

#### PROPOSED TUITION FEES.

The minutes of the meeting of May 14, 1910 show the following motion made and carried. "All persons non-citizens of the United States shall be charged a tuition fee of \$20.00 per term or \$60.00 per year, beginning with the first term of the school year 1910-'11". Subsequent informal discussion of this subject in the meeting ended in directing the Secretary and the attorney member of the Board to consider this matter further and to omit the statement from the catalog of June, 1910 if in their final opinion it should seem best to do so. It was decided to omit the ruling from the catalog, and the order has therefore not been enforced. Some further action should be taken at this meeting. Since the opening of the school in 1903 four Japanese and three Hindu students have attended. We have never had with us any Chinese, Koreans or Filipinos.



5

## WITHDRAWALS FROM THE FACULTY.

Mr. H. B. Waters, our Vice-Director and Head of the Mechanics Department, has announced to the Secretary his desire to withdraw from the school at the expiration of his appointment, June 30th next. Mr. Waters has given six years of highly efficient service, and it is with great regret that I report his decision. I beg to add at this point that Mr. Waters' services are greatly needed by the school for a month or six weeks after the first of July to superintend the installation of new machinery, plans for which have already been completely outlined by him. I would recommend that he be retained for a month or six weeks following July first at a salary of \$175.00 per month, which is, I think, the lowest figure for which he would care to consider the work in view of his plan to enter commercial lines of engineering as early as possible.

Mr. Leo. E. Pearson, instructor in drawing and forge work, has announced his intention of withdrawing at the expiration of his appointment June 30th next to enter Columbia University, New York, to pursue further courses of study and training. Mr. Pearson has given the institution five years of valuable service.

Miss Clara Palmer, who has served as substitute instructor in domestic science during the absence of Miss Secrest, will, in accordance with the terms of her engagement, withdraw June 30th. She has accepted a position as instructor in domestic science in the State Normal School at Los Angeles.

## APPOINTMENTS 1911-'12.

I would respectfully recommend the following re-appointments for the school year July 1, 1911 to June 30, 1912:

- ← F. E. Edwards, Vice-Director and instructor in agriculture and chemistry, at a salary of \$1800.00 per year, an increase of \$50.00.
- ← May Secrest, Head of the Household Arts Department, and instructor in domestic science, at \$1560.00, the same salary as paid Miss Secrest in 1909-'10 previous to her year's leave of absence.



6  
✓ Louie K. Willits, instructor in domestic art, at a salary of \$1300.00 per year, an increase of \$100.00.

✓ Margaret Chase, instructor in English and chaperon of the girls' dormitory (duties of the latter position to be arranged in conference with Miss Secrest), at a salary of \$1300.00, an increase of \$50.00.

✓ C. W. Rubel, Head of the Agricultural Department and instructor in animal and dairy husbandry, at a salary of \$1800.00, an increase of \$50.00.

✓ I. J. Condit, instructor in botany and agriculture, at a salary of \$1500.00, an increase of \$100.00.

✓ O. L. Heald, instructor in machine shop practice, forging, and mechanical drawing, at a salary of \$1500.00, which is the same rate at which he was paid for eleven months of 1910-'11.

✓ J. M. Johnston, instructor in carpentry and architectural drawing, at a salary of \$1400.00 per year, an increase of \$50.00.

In accordance with the action of the Board at the meeting of May 14, 1910, instructing the President and Director to fill remaining vacancies in the staff, E. B. Smith, of Pacific Grove, was secured as instructor in history, English and physical geography (succeeding E. J. Berringer), at a salary of \$1320 for the year July 1, 1910 to June 30, 1911, and A. D. King of Iowa, instructor in mathematics (succeeding W. F. Ewing), at a salary of \$1440 for the year July 1, 1910 to June 30, 1911.

✓ E. B. Smith, instructor in English and history, <sup>in addition</sup> to assume duties as proctor of the boys' dormitory, succeeding Mr. H. B. Waters as proctor, at a salary of \$1450.00 per year, and room and board as compensation for services as proctor. The recommended increase in salary is \$130.00. Board and room is the same compensation as allowed proctors for several years past.

✓ A. D. King, instructor in mathematics, at a salary of \$1500.00 per year, an increase of \$60.00.

✓ Alonzo R. Carranza, assistant instructor in the mechanics department, recommended salary \$1080.00 for the year. Further recommendation that \$8 00.00 of this amount be set aside from the salaries' fund and that the additional \$280.00 be paid from various improvement



4  
funds. Carranza's services will be greatly needed during the summer months while installing machinery. Arrangement for this part of the work will probably have to be made in conjunction with the State Department of Engineering.

Appointments now standing during the pleasure of the Board are:

LeRoy B. Smith, Director and Secretary of the Board of Trustees, at a salary of \$2400.00 per year.

Jane Vaughn Gillett, bookkeeper and cashier, at \$100.00 per month.

Carrie E. Castle, Director's secretary and librarian, at \$85.00 per month. (\$75.00 per month paid from the salaries' fund and \$10.00 per month from the library fund).

Edward Curl, buttermaker, at \$90.00 per month. (Salary paid from the creamery contingent fund).

S. C. Griffith, farm foreman, at \$70.00 per month.

Jas. M. Duffy, Dairyman, at \$70.00 per month.

A. D. Sinclair, head gardener, at \$75.00 per month.

To succeed Mr. H. B. Waters to assume position as instructor in physics, electricity and surveying, I would respectfully recommend Mr. Robert Weir Ryder, now of the College of Engineering, University of California, at a salary of \$1500.00 for the year July 1, 1911 to June 30, 1912. Ryder is twenty-six years of age; has had satisfactory secondary school training and excellent training in the mechanical department of the State University. Of especial importance in our work is his ~~extensive~~ experience in practical work - with the Sierra and San Francisco Power Co.; at Mare Island Navy Yard; as chief electrician for a large construction company; three years experience as machinist and electrician with a New York water, light and power company - He has also had one year's experience in teaching. I am satisfied with the statements commending him as a man of high ideals, no bad habits, industrious, and thoroughly trustworthy. In



8

accordance with my request Mr. H. B. Waters had a personal interview with Mr. Ryder during the formers recent trip to San Francisco.

To succeed Mr. L. E. Pearson, as instructor in free hand drawing I would respectfully recommend Miss Belle A. Williams, resident of Pasadena, now of Teachers College, Columbia University, at a salary of \$1200.00 for the year July 1, 1911 to June 30, 1912. Miss Williams is thirty-six years of age, is now studying in Columbia University, and has had twelve years of teaching experience in Southern California and the Oregon Agricultural College of Corvallis. Miss Williams' training in manual arts as well as drawing makes her especially desirable for this institution. While a personal interview with a candidate should always be sought, it is sometimes impossible. In addition to the excellent recommendations from Teachers College Professor A. Harvey Collins, now of Redlands, a man whose judgment can be trusted, says of Miss Williams, - "A strong teacher; made drawing popular; has good personality; wins boys and girls; she was with me three years; I recommend her".

I would recommend the engagement of an additional member to the staff to teach chemistry and physical geography, an addition made necessary by the annual increase of work in the first and second year classes. We cannot allow more than \$1200.00 or \$1300.00 at the outside for this position. I hoped to recommend Mr. D. T. Sharp, a resident of Santa Paula now of the College of Agriculture, Berkeley, for this position, but Mr. Sharp advises me that in view of other very attractive offers he cannot consider a position here. There is nothing left for us to do therefore but to continue the search for the right man. We should have a well trained man who is especially interested in agricultural subjects. They are difficult to find, especially at the salaries we are able to offer.

#### POULTRYMAN.

It will be noted that there is no recommendation for an instructor in poultry husbandry. Instruction in that department has not been given during the past year. We have, however, kept a sub-



9

stitute and some stock, hoping our resources would permit the continuation of this important branch the coming school year. Our resources, however, offer no opportunity for carrying on this work creditably. I therefore recommend, much to my regret, that the work in poultry husbandry be suspended for the coming year and that the stock be sold.

The amount of the salaries' fund is \$30,000.00 for the year. Assuming that the appointment of R. S. Middleton, at \$1200.00 is carried for the full year and that \$750.00 of the fund be allowed toward payment of an engineer, the total amount required to meet the pay-roll as outlined above is \$28,940.00, leaving an unapportioned balance of \$1060.00, all of which will probably be required before the needs for the coming year are fully met.



BOARD OF CONTROL LAW.

*third* The Board of Control Law becomes effective ~~on or about~~ June first. The Board is composed of three salaried members, secretaries and clerks. Sections of the Law affecting this institution are as follows:

Section 660. Board to examine and expert the books at least once each year.

Sec. 661. One or more members of the Board to visit the institution from time to time to ascertain condition of same.

Sec. 668. Board to supply a set of rules governing presentation and audit of demands against state funds.

Sec. 681. Board must authorize sale or exchange of property.

Sec. 683. All contracts entered into by any state officer, board, commission, department, or bureau, for the purchase of supplies and materials, or either, shall before the same becomes effective be transmitted with all papers, estimates and recommendations concerning the same, to the state board of control for consideration. If a majority of such board approve the same, it shall from the date of such approval be in force and effect.

No state officer, board, commission, department, or bureau, shall purchase supplies and materials, or either, in open market unless permission has been given, upon a presentation of the necessity therefor, by the state board of control; provided, that to meet an emergency, supplies and materials of a perishable nature, in an amount not exceeding one hundred dollars in value, may be purchased by such state officer, board, commission, department, or bureau without the permission of the said board of control.

Sec. 685. Every state office, board, commission or department to whom is given by law the authority to make purchases of material or supplies, must upon the request of the board of control, designate



8 Y

some certain officer or employe in such office, board, commission or department whose duty it shall be to make such reports at such times and in such manner to the board of control as said board shall from time to time require.

Sec. 687. Board of control, through its department of public accounting, to install uniform system of bookkeeping in all state institutions.

Sec. 688. Board requires financial and statistical reports each fiscal year and special reports when necessary.

Sec. 689. Department of public accounting given the right to examine books, papers, and documents of the institution at any time.

Sec. 690. Failure to make reports as required by board of control is a misdemeanor.

11



12

## THE GENERAL APPROPRIATION BILL.

The general appropriation bill passed by the last legislature carried Polytechnic School items for the coming biennial period as follows:

Support and general maintenance .....	\$25,000.00
Salaries of officers, teachers and employees .....	60,000.00
Care and improvement of grounds .....	6,000.00
Library .....	1,500.00
Expenses of Trustees .....	800.00
Printing, binding and ruling, State Printing Office .....	900.00

The unexpected cut in this bill was the salaries' fund, which was reduced from \$66,000.00 to \$60,000.00. The official estimate of the Controller allowed the \$66,000.00, was apparently agreeable to the Ways and Means Committee, but when the bill was introduced the reduction had been made. The total amount provided herewith is \$94,200.00 as against \$88,550.00 for the biennial period closing June 30, 1911.

### CONDENSED LIST OF SPECIAL APPROPRIATIONS.

*Dining Hall and kitchen .....	\$ 5,000.00
*Water and sewer systems .....	3,000.00
*Equipment for shops and laboratories .	7,000.00
*Power, heat and lighting plant .....	6,500.00
*Heating system .....	3,000.00
*Purchase of live stock .....	3,500.00
*Purchase of farm implements .....	2,000.00
Repairs, improvements, equipment .....	5,000.00
Animal husbandry and farm buildings ..	20,000.00
Dormitory and school furniture .....	8,000.00
*Creamery revolving fund .....	4,000.00

Bills marked with star were signed sometime ago by the Governor. At this writing I have not been advised concerning the Governor's action on the other three.



### CONTEMPLATED IMPROVEMENTS.

At the last meeting of the Board the Finance Committee and the Director were instructed to complete plans for new work authorized and provided for by the last legislature.

A. POWER PLANT. In accordance with instructions given by the Board Mr. E. B. Waters has prepared a detailed plan for the improvement of the power plant, which plan has already been submitted to the Finance Committee. As the visit of State Engineer Ellery to the institution was delayed Mr. Waters was, on April 21st, sent to San Francisco to confer with Mr. Ellery. We have tried to hasten this matter in order that the power plant may be complete by September first next. Manufacturers require eight to ten weeks or longer after the placing of the order to make delivery of a direct connected engine and generator. While Mr. Ellery admitted the desirability of early action, he was unwilling to permit us to place an order for an engine generator, fearing that the Board of Control soon to go into office, might not approve of the action taken. The power house act goes into effect May 23d and the money becomes available July first. It is unfortunate that we are thus hampered. Congestion of construction work at the opening of the school year, when faculty members should have their time clear for the organization of class work, creates a very undesirable situation. There are available for the Board today quotations on machinery secured by Mr. Waters from all the leading dealers on the Pacific Coast.

B. DINING HALL AND KITCHEN. We have made some progress in formulating plans, but desire more time to complete them. The State Engineer advises us that he expects to visit the institution the first week in May.



126

C. WATER SYSTEM. A complete report prepared by Mr. H. B. Waters was submitted to the Board at the meeting of May 10, 1910, approved by the Board, and also approved by State Engineer Ellery. As outlined in the report and recommendation, a tank should be mounted on a tower east of the main school buildings. The details of the plan need further study and I would ask that more time be granted for this piece of work.

D. HEATING SYSTEM. Practically nothing can be accomplished until the State Engineer's office sends a representative to go over the grounds and recommend a system after investigation of the requirements.

E. EQUIPMENT FOR SHOPS AND LABORATORIES. \$7,000.00 has been appropriated. Preliminary estimates indicate that the funds should be apportioned about as follows:

Mechanical and electrical laboratory ...	\$1100.00
Surveying .....	550.00
Physics .....	150.00
Chemistry, soils, and physical geography	500.00
Drafting rooms .....	100.00
Machine Shop .....	1200.00
Gas machine and piping .....	700.00
Carpenter shop .....	200.00
Forge and foundry .....	500.00
Botanical laboratories .....	200.00
Creamery .....	400.00
	<u>\$5600.00</u>
Reserved for 1912-'13 .....	1400.00
	<u>\$7000.00</u>

FINANCIAL STATEMENT APPENDED.

Financial statements are appended to this report. Copies of all bills are on file in the office.

There is so much which might be said on the numerous lines of instruction carried on by the school, the work of the various officers, and detailed reports of business transactions, that the temptation is to write too voluminously. Suffice it to say that your Secretary will be greatly pleased to answer questions at any time or to prepare a special report on any particular feature of the schools's business that the Board may require.



SPECIAL APPROPRIATIONS.

Equipment for Shops and Laboratories  
Chapter 509-'09  
July 1, 1909 to April 1, 1911.

Appropriation .....	\$6,000.00
Disbursements-	
Carpenter Shop .....	\$ 499.32
Electrical Laboratory ...	1,699.95
Forge Shop .....	735.52
Machine Shop .....	2,757.45
Soils Laboratory .....	100.00
Total Expenditure .....	<u>5,792.24</u>
Balance .....	\$207.76

THE FOLLOWING FUNDS WERE HANDLED BY

THE STATE DEPARTMENT OF ENGINEERING.

BARN- (Chapter 511-'09)

Appropriation .....	\$ 6,000.00
Balance reported by Controller March 22, 1911 .....	1,169.45
(Bills payable \$39.56)	

DINING HALL- (Chapter 512-'09)

Appropriation .....	10,000.00
Balance reported by Controller March 22, 1911 .....	3.15

WATER SYSTEM- (Chapter 514-'09)

Appropriation .....	6,000.00
Balance March 22, 1911 .....	1.98

POWER PLANT- (Chapter 510-'09)

Appropriation .....	10,000.00
Balance reported by Department of Engineering 4/13/11 ...	6.68

COTTAGE- (Chapter 513-'09)

Appropriation .....	2,300.00
Balance reported by Controller 3/22/11 .....	\$13.19
Add error made in Dept. of Engineering	
and reported 2/21/11 .....	<u>55.25</u>
Present balance .....	68.44
(Bill payable \$140.00)	



# FINANCIAL STATEMENT.

July 1, 1910 to April 1, 1911.

## GROUNDS-

Balance July 1 .....	\$	3.32	
Appropriation for year ...		<u>3,000.00</u>	\$3,003.32
Disbursements .....			<u>2,613.42</u>
Balance .....	\$		389.90

## LIBRARY-

Balance July 1 .....		54.60	
Appropriation for year ...		<u>500.00</u>	554.60
Disbursements .....			<u>511.73</u>
Balance .....			42.87

## PRINTING-

Appropriation for year .....		375.00	375.00
Disbursements .....			<u>354.00</u>
Balance .....			21.00

## SALARIES-

Balance July 1 .....		14.34	
Appropriation for year ...		<u>27,500.00</u>	27,514.34
Disbursements .....			<u>20,527.47</u>
Balance .....			6,986.87

## SUPPORT-

Balance July 1 .....		.35	
Appropriation for year ...		<u>12,500.00</u>	12,500.35
Disbursements .....			<u>10,391.04</u>
Balance .....			2,109.31

## TRUSTEES' EXPENSES-

Balance July 1 .....		215.99	
Appropriation for year ...		<u>400.00</u>	615.99
Disbursements .....			<u>267.49</u>
Balance .....			348.50



CONTINGENT FUND.

April 1, 1911.

	Balance.	Deficit.	Balance.	Deficit.
		Bills receivable.	Bills payable.	
Cash bal. in Sacramento	\$159.12			\$159.12
Dining Hall-				
Deficit, Cash Book	\$237.98	\$237.98		
Add bills payable	669.11		\$669.11	
	907.09			
Bills receivable	79.70	\$79.70		
	827.39			\$827.39
Dormitory-				
Deficit, Cash Book	93.46	93.46		
Add bills payable	44.00		44.00	
	137.46			137.46
Dairy-				
Balance, Cash Book	204.23	204.23		
Less bills payable	76.36		76.36	
	127.87			127.87
Creamery-				
Deficit, Cash Book	334.55	334.55		
Add bills payable	11.48		11.48	
	346.03			
Bills receivable	64.42	64.42		
	281.61			281.61
Farm-				
Balance, Cash Book	93.67			93.67
Garden-				
Balance, Cash Book	25.44			25.44
Laboratory-				
Balance, Cash Book	498.77	498.77		
Less bills payable	78.63		78.63	
	420.14			420.14
Poultry-				
Balance, Cash Book	2.99	2.99		
Less bills payable	53.88		53.88	
	50.89			50.89
			826.24	1297.35
Contingent Fund true deficit			471.00	
			\$1,297.35	



Prepared by C. W. Rubel.  
App. 29, 1911.

## REPORT ON CREAMERY SITUATION.

Compared with one year ago, the creamery situation is not nearly so bright from a financial point of view. The present low butter market combined with keen competition for cream has rendered the percentage of profit extremely low, and profits are possible only with a large volume of business. However, the demand for Polytechnic creamery products has increased and this has enabled the creamery to a little more than hold its own. We have solicited no patronage whatever this season and the supply of cream we have received, while hardly as large as last season, is very gratifying.

We feel that the creamery is really making much progress, as the courses of instruction have been strengthened, the number of students increased, and the general interest taken in the work is greater. The present buttermaker, Mr. E. D. Curl, is not only an artist at his work, but has shown much tact in working with students.



San Luis Obispo, California,

April 12, 1911.

Mr. LeRoy B. Smith, Director,

California Polytechnic School,

San Luis Obispo, California.

Dear Sir:

Regarding the changes to be made in the school power and lighting system, for which \$6,500.00 has been provided by the last Legislature, I beg to say:

CHANGES ADVISABLE FOR POWER PLANT.

The principal changes to be provided for in the power system are: First, the enlargement of the capacity of the power plant; second, changing from the direct current to the alternating current system. As to the first item, the power plant must have an additional engine and generator to carry the present power load. For the past few months the creamery has been motor driven which has often caused a severe overload on the 50 H. P. engine and the 30 K. W. generator we now have in the power house. A second unit of at least 75 H. P. should be installed. The present boiler is of 100 H. P. capacity, has been in use but one year, and is ample to handle any load in sight for the next two years. Aside from the risk of being dependent on one unit the present boiler capacity is ample.

CHANGE TO A. C. SYSTEM.

The present electrical system is 220 volts, direct current, which has answered for the past four years, during which time the power has been delivered in small amounts only and over short distances. This system is not adapted to the transmission of large amounts of power to even the short distances we now have between our outlying shops and power plant. However, the A. C. system will



permit of economical delivery of any amount of power to any part of the school grounds, and has such other advantages as make it the only advisable system for permanent use. Such a change of system would necessitate installing a new generator at the power house in place of the one we now have and complete equipment of alternating current motors to replace those now driving the shops, ventilating fans, sewage pump, etc. This expense will be independent of any increase in the capacity of the school power plant. The cost of the additional engine and generator and of changing to the alternating current system is such as to preclude for the present the installing of an additional boiler.

#### GENERAL SYSTEM.

##### FREQUENCY AND PHASE.

As the school plant handles both lights and power frequency of 60 cycles per second is advisable as being best suited to a mixed load. A 3 phase system is most economical for the motor load and answers well for lighting purposes.

##### VOLTAGE.

The best pressure for lighting is 110 volts. The new high efficiency Tungsten lamps are best adapted to this voltage. This pressure, however, will not answer for power transmission. If a generator pressure of 550 volts is adopted 550 volt motors may be operated direct from the line, making a simple system requiring no transformers for power distribution. The power load is much greater than the lighting load, and as one voltage will not answer both purposes there will be less expense in providing transformers for the lights than for the motors.

#### CHANGES AND ADDITIONS AT THE POWER HOUSE.

A 30 K. W. belted generator would be required to go with the 50 H. P. Skinner engine that has been in use for the past four years. A new 75 H. P. engine and the 50 K. W. generator will be of



more than sufficient capacity to carry the largest load in sight at present and will allow considerable room for growth. A unit larger than this is not advisable as the average load we now have is not sufficient to load it economically. With two engines and generators either may be operated in case the other should be laid up for repairs. This will add greatly to the safety of our service. As the load grows both units may be operated together, giving 80 K. W., which is sufficient for 80 H. P. of motor service. The total capacity of the motors now on the grounds is about 50 H. P.

The new engine and generator may be either belted or direct connected. The first is somewhat lower in cost, but requires a large amount of floor space. The direct connected unit is more compact and will give a saving in floor space at the power house, which is valuable, and it is also more up to date and an example of better practice. It will be well to have examples of both types of drives for experimental work in the laboratory.

#### OIL PUMPING SET.

The present oil system has furnished sufficient pressure at the burner of the boiler to supply all the fuel necessary during the past; however, the oil has been very light and the load on the boiler small. If the heating system is extended this summer to connect the boys' dormitory and the dining hall to the power plant the load on the boiler will be increased until satisfactory firing cannot be secured with the slight gravity pressure caused by the location of the tanks in the school quarry. An oil pumping set should be installed which will enable the boiler to be forced.

#### CHANGES IN POWER LINES.

Most of the power and lighting lines will have to be re-strung and a considerable amount of new copper purchased. Transformers will be required at the various main buildings. All the 220 volt incandescent lamps must be replaced with 110 volt bulbs.



As most of the 220 volt lamps have served their useful period this expense should not be charged entirely to change of voltage. The creamery will require a new wiring system as both lights and power are used there, which heretofore have been supplies at the same voltage. A third wire must be run to all the motors in the shops. An arc light should be installed in front of the power house, near the center of the grounds. Some of the wiring in the older buildings is antiquated and the fixtures in the cutout cabinets out of date. For the sake of safety these should be remodeled and brought up to date.

Locking lamp sockets should be used in the boys' dormitory to prevent the useless waste and breaking of lamp bulbs. With these sockets old lamps cannot be removed nor new ones inserted without securing a key. A new 2 H. P. motor should be installed in the creamery for operating the churns. At present the 15 H. P. motor drives both the ice machine and the churns. When only the churn load is on it will be better economy to drive with a motor more adapted in size to the load.

In view of the above I would recommend: First, that a 60 cycle, 550 volt, 3 phase, power system be installed with provision for transforming the necessary current for lights down to 110 volts; that all the motors in the shops be replaced with alternating current equipment; that a new 30 K. W. generator be installed at the power house to be driven by the 50 H. P. Skinner engine; and that a new 2 H. P. motor be set at the creamery for driving the churns. Second, that a 75 H. P. engine, direct connected to a 50 K. W. generator with necessary exciter, wiring, etc., be installed at the power house. Third, that minor changes be made in the lighting system, including an arc light between the buildings; bringing the wiring and cabinet boxes of the old buildings up to date; changing to key sockets in the boys' dormitory, etc.



75 H.P. engine .....	\$1,775.00
50 K.W. direct connected generator for above engine .....	1,120.00
30 K.W. generator, belted for the 50 H.P. Skinner engine .....	900.00
Oil pumping set .....	200.00
Motors .....	1,225.00
Altering power lines, transformers, arc light, changing wiring in the old buildings, etc. ....	925.00

Total \$6,14 5.00

The above are liberal estimates for all the equipment, erected complete and ready for operation. The time required to make delivery on the direct connected engine and generator will be from eight to ten weeks. The order for that item should be placed at the earliest possible date.

Respectfully submitted,

H. B. Waters.

1219. 9. 2. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844



Meeting  
 April 29, 1911  
 No quorum.  
 Meeting resolved  
 into session of  
 Finance Comm.

H. B. Waters.

Respectfully submitted,

at the earliest possible date.

from eight to ten weeks. The order for that item should be placed  
 make delivery on the direct connected engine and generator will be  
 erected complete and ready for operation. The time required to

The above are liberal estimates for all the equipment.

|   |       |            |
|---|-------|------------|
|   | Total | \$6,142.00 |
| Wiring in the old buildings, etc. ....                    |       | 352.00     |
| Altering power lines, transformers, and light changing    |       |            |
| Motors .....  |       | 1,352.00   |
| Old building ref .....                                    |       | 500.00     |
| 30 K.W. Generator, belted for the 50 H.P. Skinner engine  |       | 900.00     |
| 50 K.W. direct connected generator for above engine ..... |       | 1,150.00   |
| 25 H.P. engine .....                                      |       | \$1,232.00 |

The prices of the above items will be about as follows: