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# Iowa State agricultural college creamery

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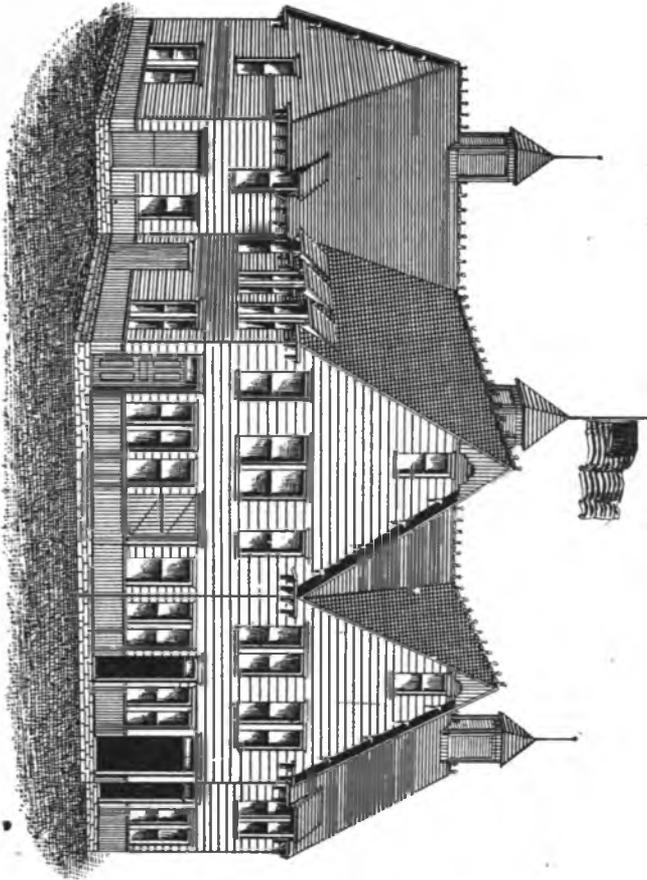
# IOWA STATE AGRICULTURAL COLLEGE CREAMERY.

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D. A. KENT.

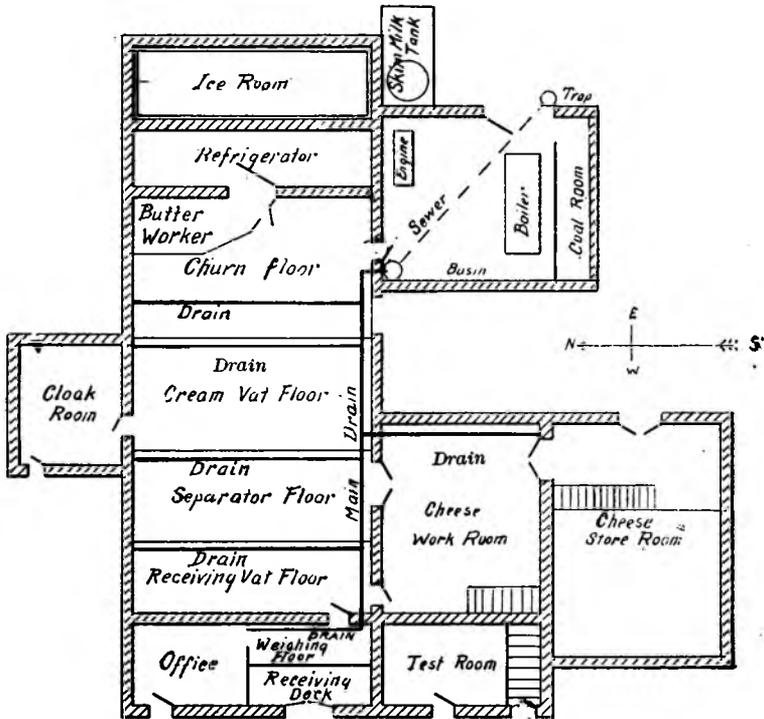
We give below the floor plans and a sketch of our state butter and cheese factory. The building and all its appurtenances including apparatus and machinery has cost seventeen thousand dollars. It has capacity to manufacture forty thousand pounds of milk per day, affords facilities for the instruction of one hundred students in all the practical details of making butter and cheese, and for a thorough study of the principles which govern these operations. The commercial success of the plant is well illustrated by the fact that we are already receiving daily from 16000 to 17000 pounds of milk. We teach how to make butter and cheese by making them. The dormitories accommodate 50 students.

The building is arranged on the gravity plan; the receiving deck being fifteen feet above the churn floor. The offsets of the various floors are as follows: The receiving deck is elevated on the weighing floor to the height of a common farm wagon, the wagon standing on the ground outside of the building. The offset to the weighing floor is three feet; to receiving vat floor, four feet six inches; to separator floor, three feet; to cream vat floor, one foot six inches; to churn floor, three feet two inches. This arrangement obviates all lifting except setting the milk can onto the receiving deck. The declivity is such as to insure the rapid flow of milk and cream through all the stages of manufacture. The incline of the various floors is as follows: Receiving deck, level; weighing floor, receiving vat floor, separator floor, cream vat floor, boiler room floor two inches fall in ten feet; churn floor partly four inches and partly three inches in ten feet. The floors are level at right angles to the incline, that is the incline leads but one way on the floor. The drainage is effected at the top of each offset by moulding a half round ditch when the cement was laid. This ditch is seven inches



deep at one end and one inch deep at the other, thus giving six inches fall in thirty-three feet. There is a main drain adjacent to the south wall of the building which flows to a point opposite the corner of the boiler room whence it flows through the wall and discharges into a catch basin, which is the beginning of the sewer. This basin catches all substances likely to clog the sewer. This sewer is laid with common eight inch tile, and without cement, the grade being one-tenth foot in twenty feet. Sewer gas has been entirely obviated by placing a box pipe, twelve inches square, just outside the boiler room and over the sewer allowing the pipe to extend about ten feet up in the air. All the by products are pumped out into delivery tanks with jet pumps.

The floors of all the work rooms are made of cement, after the following manner: They were reduced to grade, then covered with fine sand so as to gain as even surface as possible. On this surface was spread a slushing of domestic cement to a depth of four inches. The cement being mixed in the proportion of one to four with coarse, unsifted sand. The spreading was done in sections, with a common hoe, each section being leveled with a straight edge. After this coat was thoroughly dry, one of German cement, one-half inch thick, was thoroughly spread with a trowel. Immediately following this another half inch coat was applied and dressed repeatedly as the cement set. The first half inch coat was mixed one to one with medium fine, sharp sand. The second was also mixed one to one with sand and about a sixteenth part of yellow ochre added to the mixture. The ochre increases the plastic condition and improves the color. The color may be further improved by mixing a little red ochre and cement together, wetting it to the consistency of paint, then sprinkle over the fresh laid cement, and trowel sufficient to give cloud like appearance. The finish coats should be laid wet enough so that water will rise to the surface of the cement while being dressed. Then the repeated troweling works out all the air, gives a polished finish and insures against cracks by reason of uneven shrinkage or settling. This finished coat must be laid in alternate sections of two feet in width.



*Experimental Creamery.  
Iowa Agricultural College.  
Scale 2' per inch*

The cost of laying cement in the above manner is about 10 cents per square foot. A barrel of cement when mixed one to one with sand will lay nine square yards one inch thick.

The lower walls of the building are of stone 18 inch thick, for the first 12 feet, at lowest point of floors, and plastered on the inside with cement.

On the twelve foot stone wall is an eight foot wooden wall, sheeted outside and inside of studding, but no sawdust is used for filling. The sheeting is lined with building paper, then ceiled on inside and sided with drop siding on outside. The ceiling over churn floor is twenty feet high, which gives ample opportunity for ventilation and light.

The refrigerator and ice room are built side by side in the east end of the butter compartment. The ice room is a cell 20 feet high, 33 feet long and 10 feet wide, and has a capacity of one hundred and seventy-five tons. The stone walls are furrowed out by nailing, 2x4 flat wise, and ceiling with ship-lap. The wooden portion of the walls is built with three dead air spaces; each inside wall being lined with paper and ceiled or made with ship-lap siding without paper. The ice is stored by ramming about three inches of sawdust next to the walls and chinking the spaces between the blocks with broken ice; and then covering the top with about six inches of sawdust.

The refrigerator has an ice room of fifty tons capacity, over head; also a frost proof tank room. The room for working butter is a sort of glass case made of green house sash and extending beyond the door of the refrigerator, so as to be able to handle the butter without contact with the warm air of the creamery. An ice pan is hung over the butter to cool it while being dressed.

The cheese compartment is so annexed to the butter compartment that the same facilities for receiving milk may be used for both. Also the main drain is used in common for both compartments. The curing room is a little above the floor of the curd room and the store room a little below it.

# RAINFALL\* AT THE STATION.

FROM MARCH 1, 1892.

E N. EATON, OBSERVER.

## MARCH.

Dates.....	1 to 7	8 to 14	15 to 21	22 to 31	Total.
Inches .....	.22	.32	.30	1.56	2.40

## APRIL.

Dates.....	1 to 7	8 to 14	15 to 21	22 to 30	Total.
Inches .....	1.73	1.38	.64	.18	3.93

## MAY.

Dates.....	1 to 7	8 to 14	15 to 21	22 to 31	Total.
Inches .....	2.95	2.02	1.89	1.28	8.14

## JUNE.

Dates.....	1 to 7	8 to 14	15 to 21	22 to 30	Total.
Inches .....	.42	2.70	.33	.20	3.65

## JULY.

Dates.....	1 to 7	8 to 14	15 to 21	22 to 31	Total.
Inches .....	1.88	.94	2.21	2.10	7.13

\*A part fell as snow in March and April.

