could talk to you all through the convention, but I won't; but I do want to urge upon the Grant county farmer the better construction of his stables, more attention to the ventilation, their cleanliness, the saving of the elements of fertility, and all these things that will give you finally a better reward for your labor.

DISCUSSION.

Mr. Everett: How are those stables ventilated?

Ex-Gov. Hoard: The King system of ventilation was constructed on this principle. All previous systems of ventilation have proved inefficient when they introduce the fresh air. They open the windows and open the doors and the heat simply departed from the stable. Now, the King system takes the cold air in from the outside down near the sill and up between the studding and it enters the barn even with the ceiling. The barn must be constructed—sealed very tight, and sealed on the sides. Mine is constructed with three or four dead air chambers. The cold air enters at the outside with an open register raised up even with the studding and comes into the barn. The warm air is up against the ceiling, being light it rises. Now, then, the foul air is taken out by a great central shaft. My barn is in the form of an "L" and this shaft sets about in the center at the joining of the two "Ls" and on the outside. Even with the floor is a twenty-one by twenty-four-inch register on that side, and that is kept open; and up, even with the ceiling, are two more large registers for the purpose of taking off the warm air if it is too warm, but those are kept shut most of the time. This shaft rises clear above the ridge of the barn, is lined with galvanized iron and kept perfectly tight. It is three feet square for fifty head of cattle. The cold air is constantly running out.

A Member: Why would not the fresh cold air that you bring in go out through those foul air registers, being heavier?

Ex-Gov. Hoard: Because it comes up close to the ceiling

where the warm air is. All hay chutes, all silo chutes are shut off, the barn is kept closed, but the air changes in that barn every hour. You see that provision here is to introduce the fresh air and not let the heat off. Foul air is about fifteen per cent heavier than fresh air and needs a powerful draft to pull it out of the shafts, so there must be considerable suction to take this foul air out. This is of simple construction. All it needs is that the barn shall be constructed with a view to that end; it must be sealed and constructed with these ducts and the outgo here in the central shaft and you have the whole question in a nutshell. If every farmer in this state would purchase Professor King's *Physics of Agriculture,* where he handles almost every physical proposition on the farm in the way of trench building, ventilation and all those things, and study that book, it would be to him a gold mine of judgment.

Mr. Cleary: Such a barn as you have described yours to be was recently built in this vicinity. on the farm of Albert E. Russell, about ten miles north of here.

Secretary Burchard: One of the best ways to warm a stable is to put in this ventilating system. The Governor talks about his stable standing at 55 and 60, and one reason is that this system draws off the cold air which is at the bottom and lets the warm air come down. When you build a house, if you put in a fireplace or any other arrangement which will draw the cold air off from the floor and let it go out, the warm air being just up above will come down, otherwise it will stay there.

Prof. Henry: One other thing. When you have a hay chute coming down to the ceiling of your barn and you think you are going to ventilate your barn by opening the hay chute, you simply let out all the hot air in your barn and it is as cold as ever.

Mr. Everett: It should be explained that this ventilating shaft must come down close to the floor and take the cold air out. This flue is a chimney that draws the air from the floor. The air comes in between the studs near the ground outside and passes up above. He has his chimney starting near the floor and that carries the foul air out.

Mr. Fox: Isn't it quite probable that the difficulty in that butter arises from the condition of the milk after it leaves the barn? Many of the barns have too much ventilation and in many places the milk is taken to the creamery about once a week. I think almost any manager of a creamery knows something of the condition of milk in the winter time. It is kept in cans, and at each milking poured in and mixed. It seems to me that what we need is more intelligence in these things and there should be a farmer's school for our boys. We send our boys to school and the teachers want to make lawyers or teachers, professional men out of them, and they are educated away from the farm and into the crowded professions. It is all right for them to get an education, but they don't get it in the right direction.

Prof. Henry: The state of Wisconsin makes an offer that it will pay $4,000 a year for a county agricultural school if the county will put up the school and pay $2,000.

Mr. Fox: Let us centralize the schools. It makes a party dead sick to see the show schools in the cities.

The Chairman: I have been specially interested in this presentation of the subject of ventilation for our cow barns. For a good many years I have been a teacher in Wisconsin, and we have been pleading for ventilation in the school buildings of the state for the boys and girls, and I think when we get interested in having our stables ventilated, we will get better ventilation for our boys and girls. The system that has been proposed for the cow barn has been in use in our schools for many years. It is very simple, based on simple principles.

Last summer when the German Agricultural Commission was inspecting the Dairy School, as they passed through the buildings with the Governor, they expressed great surprise and gratification at what was being accomplished there. It will do us all good to spend a day or a term in the Dairy School of Wisconsin—I believe, the best in the world.

But the next best thing is to spending a day there ourselves is to hear from an intelligent young man who, although he was already running a creamery, realized that he needed more

knowledge, and skill, that he needed to get into the current of progress to fit himself for what was to come. He has been there, and he will tell us how it struck him from the standpoint of the student.

A DAY AT THE DAIRY SCHOOL.

Clarence T. Bragg, Bloomer, Wis.

Before we commence to discuss the Dairy School, I would like to say a few words about the students who attend the school. They come, not only from all parts of Wisconsin, but from all over the United States and even from other countries. The class I was in had men from all over—Canada, Washington, Oregon, California, Maine, Pennsylvania, Minnesota, Nebraska and a number of other states. They represent nearly all nationalities and ages, varying from twenty to sixty years. Their experience varies from a few months to several years. Some have worked in creameries, some in cheese factories, some in both, others have worked in sanitary milk plants and some had been making butter on the large western ranches.

The instruction given at the Dairy School is divided into two courses, a winter term and a summer term. Before being admitted to the winter course, the student should have at least six months' practical experience in a creamery or cheese factory, but no previous experience is necessary to gain admission to the summer course.

The expenses of the average student are about one hundred dollars for the term. Board, room and washing will vary from four to five dollars per week. Eight dollars will buy all the necessary books. Some students will get through and not spend over seventy-five dollars. Others will spend about two hundred dollars. My expenses, including car fare, Christmas vacation, clothes, and in fact everything I spent in the three months amounted to one hundred twenty dollars.