not favor covering the manure heap. In conclusion he summed up his remarks as follows : Save the liquid manure, mix the horse and cow munures well, let the farmer use his common sonse in the application of the manure, which should not be buried so that it

## EXPECTED IT TO FEED HIM.

Professor Shutt, of the Central Ex perimental Farm, proceeded to deal with the "Chemistry of farm yard manure" The necessity of manuring, he considered, need not be discussed It was too generally admitted. Every crop took a portion of its foom the soil and to restore what was thus taken away fertilizers had to be used. Every farmer ought to know what was meant by nitrogen, potssh and that he had covered the manure in phosphoric acid, which were the est his pit, with good results, and he re-sential elements of fertility. It was commended the practice. of these three elements that the growth of crop exhausted the land most particularly. These the manuro restored of the ingredients of manuro were to the soil, and thus it paid the farmer, soluble and would be washed away by to use his own crops upon the farm as to use his own crops upon the farm as water. In a rainy climate or locality much as possible, as they represented therefore it would undoubtedly pay actually part of his capital. The pro- to cover the manure. But in some actually part of his capital. The pro- the cover the manure. But in some fessor then described the offices per- places they did not have enough mois-formed by what is called "humus" in ture, and under such circumstances a fertilizing the soil. "Humas" is the covering was no longer necessary, decayed vegetable matter which is left except to protect against drying out in the soil, and, as it decomposes, winds, thus manuring the land, it also sets Mr. thus manuring the land, it also sets. Mr. R. W. Snepneru wienes to free certain gases which exercise a know if it was a better plan to cart beneficial effect as plant food. A soil the manure out into the fields in large rich in "humus" was favorable to the growth of vegetable bacteria. As The professor said it depended upon farm-yard manure was valuable in so far as it contained varying quantities of

### THE CONDITION OF THE ANIMAL,

the cow manure and the manner in which the liquid manure was pro- the liquid manure and carried it off. served.

By means of tables, the professor nure should be thrown into a pit on showed the proportions of pots h, ni top of the liquid. trogen and phosphoric acid in liquid. The professor replied that he would

litter. The first of course was to keep the animal clean and comfortable; the second, to absorb and preserve the liquid manure. The absorbing capacities of different kinds of litter varied. cities of different kinds of litter varied. Professor Craig expressed himself But that was not the only considera- in favor of the application of green trogon in the food given to an animal, in saving of labor. (3) the richer the manure. If an animal, in saving of labor. (3) we retain the manufer. If an animal i Mr. Brodie said he found the best were kept down to minimum rations, way to keep manure from fire-fanging the quantity of manure is small. If was to make a wide low pile by get-the minimum refers to the quality of ting teams to go over it, pressing it the food alone, the manure will be down as they went. still inferior in quality and quantity. Mr. Fisher said he used two-thirds The richest manure was produced by 'of his horse manure to bed his hogs adult animals at rest and not giv-! He regretted that he could not get ing milk. It was very unwise to put more manure from his hogs than he the manure hesp under the caves of did, and he thought that the regret the barn. Whenever a storm occurred, was shared by a good many farmera, the rain swept off the roof on the pile! In reply to a question Prof. Shutt the rain swept off the roof on the pile! In reply to a question Prof. Shutt and washed away gradually all the said that in Germany it was the prac-liquid manure. For one thing the tice not to remove the old litter each poliating our steams and our drinking 'solid compact matter ander it, which water, there were a great many va-'cut just like cheese. Strange to say, luable fertilizing agents which could be utilized if the sewage was directed i be dufined if the fewage was directed i (1) Orer-fermented, Mr. Brodie means in the proper way. The bad smell [frefanged - Eo and smarting sonsation which some-] [2] Quite right: but where roots are grown, times assailed our noses and eyes in [arge mixeas, treated as below by Mr. Brodie, badly-kept stables indicated that the] [3] We hope Mr. Craig means fresh or ammonia in the manure was ferment-ing and escaping with the nitrogon in [hat might be eaten by stock - Eo.

it. This resulted from the drying of the animals never suffered. the manure. As long as the manure was moist it

## WOULD RETAIN THE AMMONIA.

It was therefore desirable, in the would not be seen again, and let the farmer feed the land well, if he light soil the manure should be supplied in a partially rotted condition. Frequent and light applications were preferable to other methods.

Mr. Brodio asked what fortilizing qualities were retained in manure that had fermented, (1) and was informed that the nitrogen had disappeared, but the other elements remained. Cow manuro did not ferment so readily as horse manure on account of the presonce of water in larger quantities. Mr. A. E. Garth, Ste. Therese, stated

that he had covered the manure in

Prof. Shutt said that it deporded upon circumstances. A large amount

Mr. R. W. Shepherd wished to circumstances; but the consensus of opinion, he thought, was against the the essential elements mentioned, the practice of carrying out large heaps quality of the manure depended upon to the fields. The distribution was uneven. Spreading manure over the snow retarded ploughing. (2) Besides. the proportion of the horse manure to curred often before the frost had come ont of the land, frequently washed out

Mr. Robert Reford asked if the ma

The professor replied that he would and solid horse and cow manure its particular with a layer of sum uncon-respectively. He showed that sheep then cover with a layer of sum unco-manure was the richest in all the clay. The liquid and solid manure could then be kept together. This

#### A CLIMATE LIKE OURS

for reasons already explained.

Mr. Fisher said he used two-thirds

plant food in it was more readily so-'day; but to add fresh, all through the luble than in the solid. In the fluid winter, so that in spring the animal luble than in the solid. In the fluid winter, so that in spring the animal agriculture as well as any other which ran through the sewer pipes. had sometimes as much as four feet of calling. Trae progress included the polluting our steams and our drinking solid compact matter under it which elevation of the standards of true citi-

(11 Over-fermented, Mr. Brodie means

That would not do in Canada

Mr. MoBean also discussed the ques-

of having the animals trample the manure during the winter. M. Perrault described the English system of box feeding. The animal is put into a large box, and fed there during the winter. In time the box is filled with perfect manure and the animal has not suffored, the place being kept perfectly dry by means of draining Mr. Fisher related a case where ani-

mals which had been given freedom during the winter had given better results than those which had been tied up

The session adjourned until the evening.

# Evening Session.

Several ladies were present at the evening session, attracted no doubt by the interesting programme which had been prepared and the hall was crowded when the proceedings opened. First of all Mr. C. D. Tylee, the energetic secretary of the Association, put in a few words upon behalf of that body. He mentioned the advantages which membership offered, and explained the desire of the Association that as many life members as possible should be enrolled, so that the exchequer might receive a needed benefit. The life member-hip fee was ten dollars. The society offered prizes to the amount of \$25 for competition among members in essay-writting upon agri cultural subjects.

Sir Donald Smith, who was warmly applauded, was then called to the chair, and delivered a brief opening addres. He expressed his gratification at seeing so many ladies present and hailed it as an encouraging sign. He thought that the value of such associations as the Central Canada Agricultural Association could not be too highly estimated. Sir Donald could look back upon fifty years or so of Canada's agricultural history and could recall the erroneous ideas which had prevailed then among farmers, ideas which such societies as the present had done so much to eradicate. He remembered when the farmers of Manitoba were so much addicted to the practice of throwing their manure into the Red River, that the Legislature had had to

## PASS & LAW TO STOP IT.

The farmers knew better now, and no law was necessary to keep them from wasting their manure. Sir Donald alluded particularly to the progress the Province of Quebec was making, especially in the dairy industry. HA had no doubt that the Association's call for additional life subscriptions would be warmly responded to, and that they would soon be able to increase the modest amount which they offered this year among members. for competition

Professor Shutt then spoke upon the necessity of special education in agricalture. All trao progress depend upon the acquisition and the application of knowledge. It was true of every pro fession and occupation, and of the zenship, mental culture and individuality. He would consider knowledge, that evening, under two heads, theoretical and practical. It was on a combination of the two branches that success in agriculture depended. Caneda was essentially an agricultural

subject of his address, as one of common interest, Canada was a fertile country, and had a fertile virgin soil, favored by climate and other essential elements. The population was sparse. The people were sparing and indus-trions. With all these advantages, education was necessary to enable them to avail themselves thereof. Hitherto the theoretical side of the agricultural art had been too much contoinned. Practical farmers were inclined to sneer at any knowledge that was not practical. Now if Canadian farmers were to take their proper place among the agriculturists of the world, a more diligent study of the

## THEORY OF FARMING

was domanded. Tempora mutantur, nos et mutamur in illis; and Canadians should recognize that the methods which had succeeded in the past would have, in some instances, to be modified to meet altered conditions. The farmer was an agent who used the forces of nature with skill-and without skill, and it was in proportion to his skill in directing the forces at his command that he would succeed at his calling. Agriculture was the oldest of all the arts; but, as a science, it was only about fifty years old. The " science of agriculture was made up of chemistry and botany, and others of the "exact" sciences. The science of agriculture taught oconomical farming. Economy did not mean persimony ; it meant getting the most out of the things placed in our hands. The professor then showed how science had made discoveries which could be applied to the utilizing of many substances hitherto neglected, esnecially in direc-tion of improved, and more economical methods of fertilization. He referred also to what had been achieved in connection with the dairy industry. He next pointed out that we were far behind European agricultarists in the theory of farming. We did not under-stand how to apply scientific knowledge to the improvement of our farms. How different was it in European countries where the universities had in many cases placed agricultural courses upon the same footing as classical and scientific courses, a clear proof that there the pursuit of agriculture was not looked upon as derogatory, but as ennobling as any of the other callings of life. In order to reach that happy position here, we should commence by endesvoring to have courses on agri-culturo established in our schools. Elementary text books in chemistry, biology, physiology and botany should be placed in the hands of our youth, and thus a prosperous fature might be arrived at.

Mr. Saunders took occasion to draw the attention of those present to the fact that the sugar-beet is a comparatively exhausting crop. Fifteen tons of sugar beet take from the soil 71.85 pounds of nitrogen, 28.80 pounds of phosphorio acid, 135 90 pounds of potash of fertilizing constituents valued at \$21.02 as compared with from \$9.17 to \$10.16 worth of constituents extrated from the soil of an acre of

ground by the grain crops. The lecturer drew attention to the fact that the farmer cannot afford to sell any of the fertilizing constituents of his farm. There is much for Canadian farmers to learn in connection with this question of manuring. Canada could learn from Britain in this resnect. There land has been under cultivation for 1200 years and can yet produce double the quantity of wheat and oats as can be produced on Can-adian soil. This is simply because our country, and his hearers, city residents adian soil. This is simply because our many of them, were interested in the farming has not been as careful as it