can refer to years later for the price of a given article. In short, it makes a man brighter and keener and less likely to be bitten by the sharks of humanity.

SOCIAL AND PUBLIC MATTERS.—I am persuaded that there has been in the past a great leakage or rather lack of influence in social and public lines. The problem is how can we best develop the social status and public power of our farmers? I would reply by educating our boys better than we have done in the past. Farming, like every other calling, has the two sides, the practical or daily routine, and the scientific, or the natural laws or principles that underlie our daily work. By a wise combination of the two we should expect the highest results, I would like to see the principles of agriculture taught in every rural public school of the province as well as in the science departments of our High schools and Collegiate Institutes. With the powerful assistance of the Agricultural College at Guelph to complete the education of our boys, it seems to me that the farmers should take that standing which by virtue of their wealth and numbers they should have in the social and public dynamics of this country.

CORRESPONDENCE

One Hundred Dollars in Prizes

What Professor Robertson Offers the Farmers' Boys and Girls

To the Editor of FARMING:

"Like produces like." Can my own enthusiasm—tempered but not turned by age—produce a like quickening power in the farm boys and girls of Canada? I think it can. Many of us have had them "up before the Lord" in the most sacred sense of those words, for years; and now the time has come to act in new ways. This is only one of the little first steps in one direction in a great movement.

Since the publication of my statements on the importance of selecting as foundation stock for seed grain only heads which carry a large number of seeds each, I learn that many farmers and their sons and daughters have gathered large heads from the growing crops. Others have arranged to pick large heads from the sheaves in the barn.

I desire to obtain a small quantity of seed from different localities; and also to learn how great numbers of seeds per head of oats and wheat have been secured in different parts of Canada. To gain the co-operation of the boys and girls, and also of teachers, I offer the following prizes for open competition:

For the 100 heads bearing the largest number of seeds,

OATS.		WHEAT.	
First prize	$20.	First prize	$20.
Second prize	10.	Second prize	10.
Third prize	5.	Third prize	5.
Fourth prize	4.	Fourth prize	4.
Fifth prize	3.	Fifth prize	3.
Sixth prize	2.	Sixth prize	2.
Seventh prize	1.	Seventh prize	1.
Eighth prize	1.	Eighth prize	1.
Ninth prize	1.	Ninth prize	1.
Tenth prize	1.	Tenth prize	1.
Eleventh prize	1.	Eleventh prize	1.
Twelfth prize	1.	Twelfth prize	1.
Total	$50.	Total	$50.

The whole of each lot of 100 heads should be picked from one variety grown in one field; and only from a crop which has given a large yield per acre.

I shall want every competitor to furnish from the same crop 10 (ten) heads with the smallest number of seeds per head which he or she can find. But the number of seeds in the small heads will not be considered in making the awards.

I hope the boys and girls will not trouble to write for any further information; but select the 100 largest heads of grain, and save them carefully with the grain on.

Full particulars, regarding the report to accompany the heads, and some other matters, will be given in an early issue of this paper.

I shall watch with keen interest the part the boys and girls and teachers take in this movement for the improvement of the crops of the country.

JAMES W. ROBERTSON.

Ottawa, September 30th, 1899.

Phosphoric Acid and Nitrogen in Grain Growing

To the Editor of FARMING:

The importance of phosphoric acid and nitrogen to grain is very nicely exemplified in the published results of Dr. Hubber's 1899 (German) experiments. The oat plant was taken to exemplify the work, and examination made at four stages of its growth.

PHOSPHORIC ACID.

14.25 grs. of phosphoric acid in all were taken from the ground by the plant during growth and ripening. It was found that when 3.267 grs. phosphoric acid had been taken up by the young plant, the three lower leaves contained 1.048 grs., the stem 0.471 grs., and the two upper leaves (one furled) 1.748 grs. A little more than half the phosphoric acid was then in the two upper leaves. The next stage was when the head was forming, and the plant had fed from the soil nearly 6 grs. phosphoric acid. Of this 0 698 grs. was found in the three lower leaves, 1.675 grs. in the two upper leaves, 0.202 in the three lower sections of the stalk, 0.393 grs. in middle section and 0.660 grs. in the upper section of the stalk. The head contained 2.362 grs., or nearly 40 per cent. of the total, and the two upper leaves and upper section of the plant, including the head, contained 78 per cent. of the total phosphoric acid.

The third stage of growth is when the head had opened out and the grain was in the milk stage, and 10.30 grs. of phosphoric acid had been absorbed. The three lower leaves then contained 0.680 grs., and the lower sections of the stalk 0.213 grs. The middle section of the stem, however, showed 1.137 grs. and the upper section 1.741 grs., a rapid upward movement of the phosphoric element. The two upper leaves now show that they are feeding the grain, as only 1.171 grs. remain. The head contained 5.362 grs., or about 52½ per cent. of the total, and with the upper section of the plant about 80 per cent.

The last stage was the ripened grain, the whole plant then having taken from the soil 14.25 grs. phosphoric acid. The three lower leaves now have only 0.351 grs., the lower section of the stem 0.193 grs., the middle section 0.185 grs, the upper section of the stem 0.394 grs., and the two upper leaves 0.589 grs. The ripened head showed 12.538 grs., or nearly 90 per cent. of the total phosphoric acid utilized by the plant. The same action occurs in all grain plants, and teaches with great clearness the feeding value of such material used as fodder at various stages as well as the necessity for phosphate feeding of grain. Also we can more readily understand that 76 per cent. of the mineral element of the grain is phosphates.

NITROGEN.

The oat plant used from the soil 55.5 grs. of nitrogen. The first examination of the young plants showed 15.1 grs. nitrogen, 6.727 grs. being contained in the three lower leaves, 1.755 grs. in the stalk and 6.593 grs. in the two upper leaves. A pretty even distribution, with the preponderance in the lower portion.

In the second stage the plant had taken 25.1 grs. from the soil. The three lower leaves had 5.257 grs., the lower portion of the stem 0.981 grs., and the middle portion 2.676 grs. The two upper leaves contained 6.752 grs., and the upper portion of stalk 1.154 grs. The sheaf, 8.291 grs.,