and the number of seeds was then care-fully counted. Exactly the same number of seeds were then taken from the selection of shrunken grain. the selection of surfamen gram. At the proper time the two lots of each variety were sown on plots of uniform size. The averages of several years' results show that in weight of grain per meas-ured bushel and in yield of both straw and grain per acre, the large, plump seed surpassed the shrunken seed in seed surpassed the shrunken seed in every instance, for each of the grains, barley, spring wheat and winter wheat. In averaging all the results, it was found that the plump seed gave a yield of 20.2% more than the abrunken seed. Size of Seed—We have conducted ex-

Size of Second We have conducted to the periments for at least six years in succession in comparing large plump and small plump seed of each of twe classes of grain crops. In all the tests, equal numbers of seeds of the two selections were used. The following gives the average yield of grain per acre for the several years during which each experi-

ment was conducted: Oats, large seed, 63 bus; small seed, 466 hus. Barley, large plump seed, 53.5 bus; small plump seed, 90.4 bus. Spring wheat, large plump seed, 40.4 bus. Spring wheat, large plump seed, 91.4 bus. Spring wheat, large plump seed, 93.5 bus. In averaging all the tests made with the five kinds of grain, it is found that the large plumn seed gave a yield of

the large plump seed gave a yield of 19.1% more than the small plump seed, as the direct result of the first selection. (This result is different from that ob-tained at Woburn, as given by our Engcorrespondent in June 15th issue.

For twelve years in succession an ex-periment has been conducted at the College in breeding oats by means of the selection of the seed. The variety the selection of the seed. The variety of oats used was the Joanette Black. In the spring of 1993 several thousand large black oats were selected and an equal number of oats which were lighter equal number of oats which were ignite-in weight and lighter in color were also selected, and these oats were sown on plots uniform in quality and in size. The selections made in each of the fol-lowing years have been from the previous duct of the selected seed of the previous year. In 1904, which was the twelfth year of this experiment, the large plump seed gave a yield of 26.1 bushels per acre and produced grain which weighed 10.5 pounds per measured bushel more than that produced from the light seed. It is also interesting to note that the crop produced from the large plump seed required only 1,390 grains to weigh one ounce, while the crop produced from the light seed required 2,095 grains to make the same weight. Soundness of Seed-According to the

results of experiments conducted in each of twelve years, it has been ascertained that oats from which the hulls had been removed in the process of threshing and which are still fresh, will germinate almost perfectly and will give nearly as good results as seed from which the hulls had not been removed. Unless care is exercised, a consider-

able amount of grain is frequently broken in the process of threshing. In order to ascertain the amount of injury done to the germination of the grain by means of its being broken at the time of thresh ing, experiments have been conducted for at least six years, by sowing both sound seed and broken seed of barley, sound seed and broken seed of barley, winter wheat and peas, and the results carefully recorded. The following gives the average yields of grains per acre of each selection of each class of crop: Barley, sound seed, 5.38 bus; broken seed, 46 bus; Winter wheat, sound seed, 4.69 bus; ibroken seed, 9.3 bus; Peas, sound seed, 29.2 bus; ibroken seed, 10.3 here

As the barley nearly always breaks crosswise of the grain the germ is usually left uninjured. In the case of winter wheat and peas, however, the grain usually breaks along the crease and in very many cases the germ is either totally or partially destroyed.

As we sometimes have wet weather As we sometimes have wet weather at the time of harvesting our crops, a considerable amount of the grain be-comes more or less sprouted before it can be properly cured. As the winter wheat crop was hadly sprouted in 1897 wheat crop was badly sprouted in 1897 and again in 1902, it gave us an oppor-tunity in each of these years to compare the value of sprouted and unsprouted seed. As the results of tests made in those years we found that the wheat which was in the field during the rainy weather and which showed no signs of being sprouted gave a germination or 94%, while that which was slightly sprouted gave 76%, that which was con-siderably sprouted 30% and that which was very badly sprouted only 18% of germination.

WITHOUT CHANGE OF SEED

WITHOUT CLANGE OF SEED Fight varieties of barkey and eight varieties of earls have been grown on the College farm for 15 years without change of seed. Care has been exercised each year to select the best grain for seed purposes. It is interesting to note that in every one of the sixteen vari-ties grown for fifteen years, the aver-age yield per are for the last five years has been considerably greater than that for the first five years of this period. The following table presents the aver-age yield per grain per arer for the first The following table presents the aver-age yield of grain per acre for the first five and the last five years of the period here referred to for each of four varie-ties of barley and of four varieties of

VARIETIES.	Av. five years, 1890-4, Bushels,	Av. five years 1900-4. Bushels,
Mandscheuri Mensury French Chevali Black Hulless .	65.2 52.1 er 56.9 39.8	73.5 63.1 64.2 51.5
Dats. Siberian Egyptian Joanette Black Black Tartarian	73·3 70·7 83.2	102.6 86.1 98.2 84.6

These figures here presented show us that it is quite possible to grow the same varieties of grain on the same farm over a considerable number of years without change of seed, providing great care is exercised each year in the selection of the seed and in the handling of the crop. .18

Vitality of Large and Small Seeds Editor THE FARMING WORLD:

I have noted the article by your English correspondent in your June 15th issue, relative to results of ex-periments conducted at Woburn in the matter of comparative value of "head" or "large plump seed" versus "tail or small seed grain." I have to say that we have no results from

definitely planned experiments along this line. My observations from work in germinating various kinds of seeds have led me to believe that the seeds have led me to believe that the value for seed purposes of seeds that are larger than the average in size for the kind and variety, would be in favor of seeds that are relatively in favor of seeds that are relatively heavy for their size—in favor of seeds possessing the highest specific gra-vity—as against those which are ab-normally large, but relatively lighter in weight.

normally large, but relatively lighter in weight. Under artificial conditions, where weeds are supplied with the most favorable environment for germina-tion and growth of plant, the appar-end may be approximately be approximately ease and the supplication of the second second and the second second second between the second second second between the second second second and growth of the young plant are unfavorable to rapid development. Under such unfavorable conditions, the store of food in the large, plump kernel does much to foster the young plant where, without such liberal supply of food, it would become seri-supply of food in the plant for several the store of the plant for several second second second second second second second the second second

G. H. CLARK, Seed Commissioner.

.12 The Witless Cow

Ottawa, Ont.

I have known a cow to put her head between two trees in the woods head between two trees in the woods —a kind of natural stanchion—and not have wit enough to get it out again, though she could have done so at once by lifting her head to a horizontal position. But the best inso at once by lifting her head to a horizontal position. But the best in-stance I know of the ignorance of a cow is as follows:-The cow would not "give down" her milk unless she had her call before her. But her call had died, so the herdsman took the skin of the calf, stuffed it with hay and stood it up before the incon-solable mother. Instantly she pro-ceeded to lick it and to yield her milk. One day in licking it she rip-ped open the scams, and out rolled the hay. This at once the mother proceeded to cat, without any look the hay. This at once the mother proceeded to eat, without any look of surprise or alarm. She liked hay herself, her acquaintance with it was of long standing, and what more matural to her than her calf should turn out to be made of hay! Yet this very cow that did not know her calf from a bale of hay would de-fend her calf against the attack of any other animal in the most skilful and heroie manner.

Every Farmer Should Have it I have received two copies of your paper, and I think no farmer should be without it. I enclose \$t.oo which pays for two years' subscription. David Hut.

Perth Co., Ont.

