



Special Thresher for Gas Tractors

Any man who has a tractor will not be slow to see the advantages of owning his own Threshing machine. The White Challenge No. 1 is designed specially for that purpose, and it is well worth a place in "The First Quality Line" of Threshing Machinery on which the reputation of this house has been built.

Making Threshers and Tractors has been our special study and practically our only business for two generations. We have learned from long experience that threshing machinery must be built much stronger

than ordinary machinery, that every vital part must be greatly over-strength. We have learned where the greatest wear comes, and have found the proper grade of material to meet it. We have studied every feature, every new idea, every improvement, and embodied those of proven merit in White machinery.

Not only do we aim to produce the best machines, but we look after our machines after they are sold. Every man who deals with us gets the best service our big organization is capable of giving.

Write for information and descriptive catalogue, showing our Special Thresher for gas Tractors—the White Challenge No. 1.

The Geo. White & Sons Co., Limited
Moose Jaw, Sask. LONDON, ONT. Brandon, Man.

"THE FIRST QUALITY LINE"

Makers of Steam, Gas and Kerosene Tractors and Threshers

Fill Your Silo Quicker With Less Power

All the latest improvements are embodied in the various sizes of feed cutters we make. Dangers of breakage at high speed are eliminated, and our feed cutters can handle the largest quantities of corn in quick time and with the least power.

Peter Hamilton Feed Cutters and Silo Fillers

have convinced many farmers that they positively stand the test of hard usage. The frame is well built of thoroughly seasoned timber which is always tight and rigid.

Our Ensilage Cutter and Blower (as illustrated) will easily handle 8 to 10 tons of corn per hour.

A splendid feature of our Ensilage Cutter and Blower is the solid steel knife and blower wheel, which cannot break or blow to pieces from excessive speed or by the entrance of a stone or other foreign substance. The wheel weighs 150 pounds and gives great momentum for heavy cutting.



The Peter Hamilton Co., Limited, Peterborough, Ont.
Exclusive Territory Open to Good Dealers

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When writing advertisers kindly mention "Advocate"

Our School Department.

The Story of A Grain of Wheat.

BY DR. C. A. ZAVITZ, PROFESSOR OF FIELD HUSBANDRY, O.A.C.

A grain of wheat is very small. It is much smaller than the smallest clay marble that I ever made, or that I ever saw. In fact, it is so small that a little ant is able to carry it from one place to another. Boys and girls greatly enjoy making clay marbles. They can become very much interested also, in trying to make grains of wheat out of clay and water. Even with the greatest of care and the best of success, however, only artificial grains of wheat can be made in this way. No person, either young or old, can make a real grain of wheat; yet a real wheat grain is of much greater value and is of far greater interest to the boys and the girls to examine and to study than even the prettiest artificial grain of wheat which was ever made.

Allow me to tell you a few of the many interesting things about a genuine living grain of wheat.

An average grain of wheat is about one-quarter of an inch in length, and one-half as wide as it is long. The hairy end is known as the brush, and the opposite end is usually called the base. Along the front side is a well-defined crease or furrow extending the entire length of the grain. This crease should be narrow and not very deep. The portion on either side of the crease is called the bosom, which should be large, plump and rather smooth. The backs of some grains are curved, and those of others are actually humped. Most grains have a slightly wavy appearance along the central part of the back, but some are so plump that the wavy appearance is scarcely noticeable. There is still another part to be mentioned, and that is the rough portion near the base and at the back of the grain. This is the covering to the embryo, or germ seed proper. The embryo itself can be readily examined if you first soak the grain of wheat in water for about a day, and then carefully remove this covering. The grain of wheat is made up of three principal parts—the bran, or skin; the endosperm, or flour; and the embryo, or germ. The grain should be plump, the skin thin and nearly smooth, and the germ fairly prominent.

The great difference between a grain of wheat and a marble of clay lies in the fact that the former has life, and the latter has no life. Nothing can be done to induce a marble to grow. This is not so with a grain of wheat. As long as it is kept in a dry condition, it is simply sleeping. When it is placed in the ground at the right season of the year, and surrounded with a proper amount of moisture, heat and air, it soon awakens. A great change takes place in a very short time. The grain absorbs water, and the embryo swells and begins to grow, and in a few days a young plant is produced.

The little plant at first obtains its food from the starchy part of the grain. As soon, however, as it sends its roots into the soil and its leaves into the air, it obtains its food from outside sources. The little fibrous roots get food from the soil in the form of liquids, and the green leaves get food from the air in the form of gases. With the proper conditions the plant makes a wonderful growth; and, as time passes, we observe the formation of several long, slender, upright stems, with a very interesting and peculiarly arranged head on the top of each.

An average head of wheat is about three and a half inches in length. It is made up of a large number of spikelets, which are arranged alternately along the stalk. Each spikelet usually contains three flowers. The flower is small and is enclosed by two glumes, which afterwards form the chaff. The glumes are sometimes blunt and sometimes elongated into awns or beards. The very interesting little flower, therefore, cannot be seen except by opening up the glumes, which can be readily done by means of a

sharp knife or a pin. A small magnifying glass will greatly help in examining the various parts of the flower. The flower produces the seed, which at first is very small, but which grows rapidly and ripens in three or four weeks after the formation of the flower.

As the grain ripens the leaves turn brown and wither, the stems or straws change to a green or lightish yellow color, and the glumes become dry and harsh. From one seed which was planted we have obtained a well-ripened plant, which is ready to be cut, harvested and threshed, and will furnish us with straw, chaff and grain, all of which are useful.

I have touched on only a few of the points in connection with the life-history of the wheat. The germination of the seed; the feeding of the plant; the growth of the leaf, the stem, and the head; the arrangement of the flower; the production of the grain—are all subjects which are very interesting and worthy of a person's close attention and study.

In view of the importance of the wheat crop, a large amount of experimental work has been done at the Ontario Agricultural College in order to glean information which may be of value in increasing both the yield and the quality of the wheat in Ontario. The results of these experiments have been published in bulletins, which have been distributed among the farmers from time to time. Upwards of 300 varieties of wheat have been grown side by side on the College plots. These varieties possess many variations, and may be classified according to the time of sowing, as fall and spring; according to the structure of the chaff, as bearded and bald; according to the composition of the grain, as hard and soft; and according to the color of the grain, as red and white. There are other classifications also, but the ones here mentioned are the most common. Certain varieties of wheat are particularly well adapted for special purposes; some for the production of bread, others for macaroni, and still others for pastry, biscuits, breakfast foods, etc. For making flour, both the red wheats and the white wheats are used; but for the other three purposes the white wheats are used almost entirely.

For the very best results in crop production, a selection of the most desirable plants from a field of the best variety of wheat should be made. From the grain obtained from these plants, none but the fully-developed, well-matured, plump, sound grains should be used for sowing, with the object of producing grain of high quality to be used for seed in the following year.

As we grasp the meaning of the little verse:

"Little drops of water,
Little grains of sand
Make the mighty ocean
And the pleasant land."

we can better realize how it is that little grains of wheat make up the world's production of about two and a half billion bushels, or of Ontario's production of about twenty-five million bushels annually.

Let no one despise the little grain of wheat, but rather let every one give honor where honor is due, and gladly acknowledge its high position in the vegetable world.

The superintendent was talking with a disconcerted father whose young son had been expelled from school for truancy. "You know," he said, "that in most cases results like this are the fault of the parents themselves." "Sure," admitted the father, "but not in my case. Why, not so very long ago, after I found that to whip him did no good, and noticing that the child seemed to have a certain trait of thrift about him, I made him a proposition. 'Son,' I said, 'I'll make a bargain with you. Every day that you are good, learn your lessons, and help your mother, I'll give you a nickel, and every day you are bad you must pay me a nickel,' and what do you suppose he said: 'I can't, papa; all I've got in the bank is a dollar and fifty cents.'"