

packed together, called the *aleurone* cells. These outer layers and the row of cells taken together form the greater part of the bran. The little egg-shaped part at the bottom of the first picture is the germ from which the sprout starts when the grain commences to grow. The remainder of the grain, known as the *Endosperm*, is made up largely of starch and gluten. From a miller's standpoint, this part of the grain is by far the

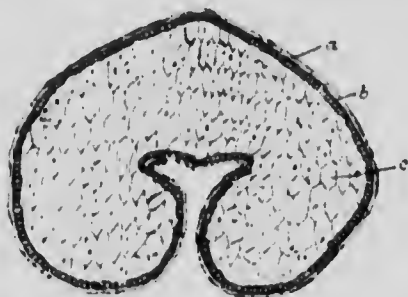
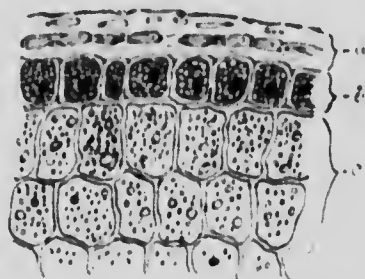


Fig. 25. Cross section of a grain of wheat : (a) outer coverings ; (b) Aleurone cells ; (c) Endosperm, the part of the wheat from which the flour is made.



A part of the section more highly magnified

most important ; for the object of milling is to separate the endosperm from the rest of the grain and grind it to flour.

In the roller-process mills of to-day, the wheat usually passes through six pairs of rollers before the grinding is completed. In the first, the miller seeks just to break the grain into pieces. After sifting, the coarse parts, called the "tailings", are passed on to the next pair of rollers, where they are flattened, and some of the floury substance ground off of them. This is also sifted, and the tailings passed on to the next rollers where the flour is removed. After the wheat has passed through all the rollers in this way, the flattened pieces are almost entirely free from flour, and are classed as bran.

Figure 26 is a picture of a piece or "scale" of bran. In all such methods of grinding wheat, the centre part is rubbed off first ; and, being free from bran particles, it makes very white flour. This forms the grade of flour known as "patent." That got by grinding closer to the bran is known as the "baker's" grades. Still closer grinding forms



Fig. 26. A cross section of a piece of bran : (a) outer covering of the wheat ; (b) aleurone cells ; (c) endosperm. Notice that the endosperm has not been all ground off from the bran.

the low grades of flour. Generally speaking, the more bran particles there are in the flour, the lower it is graded. The outer part of the wheat, nearly all of which goes into the bran, contains much more bone making material than the flour. Because of this, some say that the "patent" and "baker's" grades of flour are not so good as the flour made by the old stone process. The Graham flour is supposed to be all of the