weight by the scrub, as compared with that by the pure-bred steer, consisted more largely of protein with its accompanying water and to a smaller extent of fat, and therefore representing a materially smaller storage of feed energy. A similar conclusion was indicated by the results of the block test. From the data obtained for the available energy of the rations, it is estimated that a gain of 2.2 pounds in live weight by the pure-bred steer was equivalent, on the average, to the storage of 40 per cent. more energy in the case of the scrub. The energy requirement of the scrub steer for maintenance, computed to the same live weight, averaged 18.7 per cent. higher than that of the pure-bred steer.

Accordingly, the latter was able to use a relatively larger proportion of the total energy of his ration for the production of gain. A distinct influence of age upon the maintenance required was observed between the ages of 14 and 39 months, the requirement decreasing relatively as the animals matured. In those of the respiration calorimeter experiments in which a heavy grain ration was fed, it was found that the pure-bred steer had a notably greater feeding capacity than the scrub steer; that is, he could be fed larger rations of grain, which he utilized to the same degree as did the scrub.

While, then, the results of these experiments failed to show any material differences between the physiological processes of food utilization in the two animals, they also show clearly an economic superiority of the pure-bred over the scrub steer, due, first, to his relatively smaller maintenance requirements, and, second, to his ability to consume a larger surplus of feed above that requirement. Both these factors tend to make the actual production of human food in the form of meat and fat, per unit of the total feed consumed by the animal, notably greater for the pure-bred animal. In these experiments this difference was masked by the inferior quality of the increase made by the scrub steer, so that, on the basis of live weight alone, the latter appears superior to the pure-bred animal.

Contrary to the conclusions drawn by the writers from earlier experiments, it was found that the availability of the energy of the grains used was substantially the same above and below the point of maintenance, and that in both cases the energy values, as determined by the respiration calorimeter, agreed well with those computed from the chemical composition by the use of Kellner's factors. In the case of the hay, on the contrary, the availability below the point of maintenance was considerably greater than the result computed by means of Kellner's factors for the percentage utilization above maintenance. In the case of the pure-bred animal, especially, and to a less degree in that of the scrub, rations containing less available energy, and notably less digestible protein than the amounts called for by the current feeding standards for growing cattle, produced entirely satisfactory gains in live weight. The tendency of recent investigations, however, is to show that in all branches of feeding the minimum protein requirement has been considerably exaggerated. This has been shown to be true of the maintenance requirement and of the requirement for milk production. These results suggest that it is also true for growth, but, at any rate, this branch of the subject seems worthy of further investigation.

Judges Should Be Breeders.

It is scarcely fair for a Shropshire breeder or a Southdown breeder to judge a Hampshire breeder's exhibit, or vice versa. Unfortunately, in a measure, our leading breeders are likewise exhibitors, and that fact reduces our available and most eligible judges to a very limited ratio. It is not altogether a question of honesty on the judges' part, but largely one of capability. Can a Shire breeder see a Thoroughbred through a Thoroughbred breeder's spectacles? It could scarcely be expected. The one looks for weight and bone, and the other almost entirely for speed and stamina. We have many really clever judges among those who undertake to judge several different breeds of sheep, judges whose honesty is above reproach, and who give more or less satisfaction, but would not the verdict of breeders of long standing and national repute be more acceptable to the breeders and exhibitors generally? Of course it would. The universal judge, the man who can judge all breeds satisfactorily, is yet unborn, and not too many real good judges of the breed they are championing have yet made their appearance on earth. At such shows as the International, we should have judges who are breeders of the breed they pass upon, even if we have to import them.—[The Shepherd's Journal.

THE FARM.

Pipe for Distributing Corn in Silo

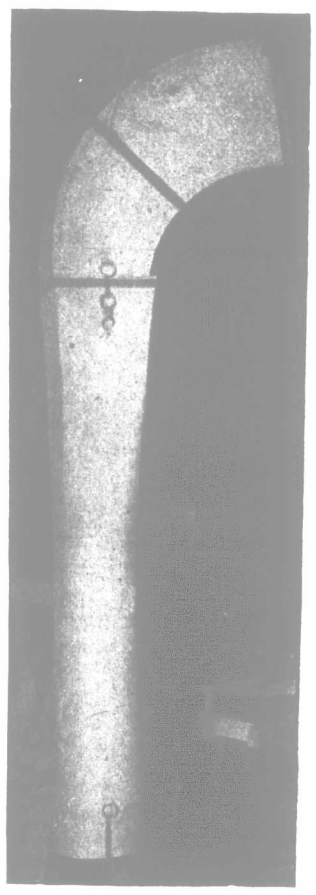
If the makers of silage cutters would invent and perfect a good practical, working, revolving hood that could be attached to the delivery end of the blower pipe, whereby a man sitting upon a plank could easily distribute the corn in any part of the silo at will, they would gain the gratitude of the farmers, and have something that they could sell without any trouble.

As all up-to-date implement manufacturers advertise in "The Farmer's Advocate," and read its pages, I thought I would call their attention to this want through your very valuable paper.

LABOR-SAVER.

While this suggestion to the manufacturers is quite appropriate, it may be in order to describe an unpatented contrivance which serves the purpose much better than a revolving hood. From time to time, such an apparatus as we have in mind has been briefly described through our columns, and highly commended as an ideal method of distributing corn in the silo. We wanted to try it at Weldwood, but neither of the silo-fillers working in our immediate neighborhood had one. We finally persuaded one of them to get such a pipe made to order, and he used it the rest of the season, with much satisfaction to his customers, charging them an extra dollar per silo for the use of the pipe. The contractor we finally engaged ourselves could not be induced to incur the expenditure, mainly because he objected to carrying it around and putting it up. So we got one made ourselves, at a cost of fourteen dollars. Its construction is apparent from the accompanying cut, reproduced from a photograph recently taken in the implement shed. The hood, which fits over the mouth of blower-pipe, has an opening fourteen inches square, and is reinforced with two bands of iron, each provided with a pair of ears placed near the upper corners. Through these pass the ropes by which the pipe is suspended. The second length tapers from square to a round shape eight inches in diameter, and is five feet long, as is every length below that. The regular lengths of pipe are about nine inches in diameter at the upper end, and eight inches at the lower end, thus giving free play. The various lengths of pipe are coupled with rings, chains and snaps, as indicated. After the two upper turns, they are placed on the quarter turn, so as to make it more easy to bend the pipe in any direction desired. Of course, the bottom end of each length fits loosely into the top of length below it. The hood is constructed with an extra heavy thickness of galvanized iron, most of it being No. 24, while the back was still stronger (No. 22). The round sections of the pipe were constructed of No. 26.

To erect this pipe, attach ropes to the top



Pipe for Distributing Corn in Silo.

and draw up to top of silo, hooking on length after length. The bottom one may hang about ten feet clear of the floor, and may be pulled around for a time by means of a rope, until the silo has been filled a few feet, after which it may be conveniently led around by a man holding it with the mouth shoulder-high, or lower.

Perhaps the greatest advantage of such a pipe is that it distributes the corn with a minimum of labor, helping to pack it by the force with which the corn falls, and keeping all parts of the corn-stalk uniformly mixed throughout the silo. By any other means it is impossible, no matter how much work is done, to prevent the light portions fluttering to one part of the silo, while an excessive proportion of cobs and butts accumulate in other parts. All who have seen it working agree that, with two men in the silo with such a pipe, one holding the pipe and the other tramping, the corn will be better mixed and better packed than by three men without the pipe. It is a mistake, however, to do without the second man, as some silo-owners have found to their cost. It pays to mix and pack the corn thoroughly. The cost of this pipe, made to order, was fourteen dollars.

By way of suggesting improvements, based upon experience, we would propose having the mouth only 12 inches square. Be sure to use extra-heavy metal for the hood, particularly the back of it, and do not forget to have the chains of successive lengths placed on the quarter turn.

Gasoline Engine Experience.

In response to inquiries from "The Farmer's Advocate," in regard to experience with gasoline engines, Joseph Edwards, of Huron Co., Ont., reports that, during several months' work, he had no trouble whatever with his engine, finding it very simple to operate. His is a two-horse-power, air-cooled engine, with which he was able to cut 4½ cords of stove-wood in four hours, and at the same time pump enough water for thirteen head of stock for three days, during which one gallon of gasoline was used. His engine cost him $135.

Robert Kydd, another Huron County farmer, has had in use a two-horse-power engine, costing $145. He uses it for pumping water, pulping roots, cutting corn, cleaning grain, sawing wood, separating, and running grindstone and emery wheel. The heaviest test given it was cutting wood, and it did its work all right, without any trouble. When running a large cutting box about fifteen or twenty minutes every day, pumping water for over thirty head of stock, and pulping about eight bushels of roots every day, besides running the fanning mill and grindstone occasionally, the cost was about 10 cents a week, or 5 cents per horse-power per week. It is not difficult for a boy to operate. A girl of sixteen can operate it when no men are about to do so. No difficulty was experienced with it whatever, unless the gasoline tank ran dry. There is no reason why the engine should not be durable. In writing us, Mr. Kydd stated that he would not exchange this for any other power he had seen. It is an air-cooled engine.

Alfred Hicks, also of Huron County, Ont., bought a four-horse-power, air-cooled engine on October 12th, 1910, paying therefor $200, cash. He ran a cream separator, emery wheel, cutting box, circular saw, a grain crusher, and an 8-inch grinder. The grinding was the heaviest work done, because it is a steady pull. With 35 head of cattle, including fattening cattle and six milking cows, and six horses, he ground all the grain used, and rolled the oats for the horses, at a cost of one cent a bushel. A boy 12 years old can start the engine without any trouble. He had a little trouble at first to know the quantity of gasoline to use. There is no reason why it should not last for years. It is a very simple machine, with few wearing parts. Though out of doors over night in the coldest of winter weather, it was started without any trouble.

A Gravel Hoist.

Editor "The Farmer's Advocate":

Thinking it might be interesting to some of your readers, we are mailing you, under separate cover, a photo of a device we have used for several seasons, lifting gravel from pit by horse-power. In operation, the device is quite simple. The bucket is lowered to the bottom of pit and filled by hand shovelling. The team is then started, and as bucket raises it swings by gravity over sleigh or wagon, the standard of crane being set to lean slightly in that direction. The bucket being provided with a trip bottom, it can be instantly emptied of its load. Capacity of bucket about 700 pounds at each lift.

Oxford Co., Ont. DOUGLAS BROS.