revolving disks, which cut them into long, slender strips. An endless belt conveys the sliced beets to the diffusion batteries, where the saccharine matter is extracted, and the juice passing into tanks, undergoes a series of processes, both chemical and mechanical, until it is ready for the vacuum pans.

The juice after being clarified and evaporated and filtered, is boiled at a low temperature in the vacuum pans. They are three in number, with a capacity of five hundred and fifty barrels of sugar each. After boiling, the crystallizers and then the mixers prepare the syrup for the centrifugals. The Steffins process is used for extracting the sugar, which, after passing through the granulators and dried, is packed into one-hundred-pound sacks, and is ready for the market.

The testing process of this immense factory is of great interest. One may follow it step by step through every stage, commencing with the unloading of the wagons in which the beets are hauled to the dumps. They are provided with heavy rope nets, which hold the load. Each wagon is driven in turn upon scales, where the gross weight is recorded, then to the beet sheds, where an apparatus with a series of hooks descends, and, catching the sides of the net, empties the whole load into the bins below, where a flume conveys them into the factory. The empty wagon then being weighed, gives the net weight of the beets. As the beets tumble into the bin a sample is caught in a great bushel basket, which is taken to the tare room and weighed. Later, being washed, this sample is again weighed, and the difference in weights gives the percentage of tare to be taken from the load. The average weight being found, an equal portion of each beet is ground, the pulp pressed, and the juice taken to the laboratory for analysis.

The method of analysis is known as the pipette test, the one adopted by the Experimental Bureau at Washington. The metric system is used in working the determinations, and the process is elaborate. The final reading gives the percentage of sugar in the juice, which, divided by the correct density, gives the purity.

The pulp is used for food for stock. In one season thirteen thousand tons of beet pulp were stored by the American Beet-sugar Company in siloes at the factory grounds. The value of this pulp for stock feed, in connection with straw or something to give it coarseness, is appreciated by stockmen, and many are shipping it to their ranges and siloing it themselves.

Two hundred and fifty thousand tons of beets handled in one year means a million and a quarter dollars to the farmer, and more than half a million to the employees.

Canadian Humming Birds.

Mr. W. E. Saunders, in a paper published in the Ottawa Naturalist, says: "Humming birds belong to the order Machrochires, which includes, so far as Canada is concerned, only the Goatsuckers, Swifts and Hummers. The entire family embraces about four hundred species, of which only about eighteen species appear in North America, and only five come as far north as Canada. Of these five, four are confined to the neighborhood of the Pacific coast. To the whole family, however, a few characteristics are common. In all the breast bone is very large, with an enormous keel, to accommodate the immensely developed muscles which are required to move the wings at the great speed usual with these birds. The reason for this quick wingbeat is that the upper armbone is very short, and it is a fact that birds that have this bone very short must use quick wingbeats. It is characteristic of the whole family, also, that they build beautiful nests, diminutive certainly, but put together with the greatest skill and unsurpassed neatness.

Turning, however, to Canadian species only, we notice, first, Allen's Hummer, which is found in the south-west of British Columbia, a small chestnut-bodied bird with a greenish back. This bird is noted for its courage. Mr. Allen, after whom it was named, states that once he saw a pair of these birds attack and drive away a Western Red-tailed Hawk. . .The Black-chinned Hummer has a very extensive range from the Pacific Ocean as far eastward as the Alberta foothills, and from Northern Mexico as far as Banff in the Canadian Rockies. The throat of this species has the lower part dull iridescent purple and the upper part black. The Rufous Hummer has the widest range of any, breeding over a distance of 2,500 miles north and south, from Mt. St. Elias in Alaska, down to the table lands of Mexico. . . . The Calliope is the smallest and most beautiful of all Canadian Hummers. The throat, instead of being covered with a solid block of iridescent color, has elongated feathers of ruby-purple in narrow streaks on the upper part, then forming a band across the middle, and extending nearly half an inch further down on each side. This appears to be a mountain-loving species. It is reported to breed at from 4,000 to 8,000 ft. elevation. It places the nest on a twig of pine, usually on or beside a bunch of cones, and the nest so closely simulates the appearance of a cone that it would readily be taken for one of the bunch.

With all these species living in B. C., it seems strange that only one ever visits the eastern part of the continent. This species is the Ruby-throat, a well-known favorite throughout Ontario, where it visits every flower garden. These little birds have very dainty habits. I was once favored by being allowed to view the morning toilet of a Hummer in my garden. There had been a heavy dew, and the little fellow bathed in the moisture-laden leaves of the grape, fluttering his wings, and shaking his body and feathers, just as larger birds do in larger vessels.

I once saw two males go through a curious performance. They were feeding at a trumpet-creeper growing on a fence, one on each side, and when they rose to where they could see each other, they flew together, and, without touching, rose perpendicularly about twelve feet, facing each other all the time, then separating, came down; but if they were in mutual view when they reached their feeding flower, up they went again, and sometimes for three or four flights in succession. This performance was repeated several times, but without apparent object. I guessed that it was a game of bluff on each side, but the other fellow wouldn't be scared.

The feeding habits of the young birds are peculiar, resembling, to a certain extent, those of the pigeons, the bill of the old bird being inserted deep into the throat of the young. But while this would lead us to infer that the young are fed with a semi-digested food, we have the testimony of one observer that he took a number of small spiders from the throat of a young bird whose contents he investigated.

The more one studies birds, the more certain he becomes that the best way to learn their habits is to be still and keep quiet. Particularly is this true with the Hummers, whom we can scarcely ever follow, even if we tried, while when one is quiet they are likely to feed around, preen themselves, and occasionally favor us with an insight into some previously unknown phase of their life.

Sugar Beets Profitable.

I wish to call the attention of the farmers of Western Ontario to the growing of the sugar beet. Many of us have lost our winter wheat crop, and wish to have something to take its place. I have been growing sugar beets for a few years, and find it very profitable.

I have grown sixty-six acres these last two years, and I have found that five acres of sugar beets well cared for was as profitable as twenty-five acres of fall wheat or thirty acres of oats. Now, we want no better-prepared soil than our fields on which fall wheat has failed. Prepare the land as follows: Plow a fair depth, roll the ground solid if dry, harrow it fine, roll before you sow the seed. This is a good time to put in beet seed, as the spring is late and the ground has been cold.

Many of us sugar-beet growers claim it is no more work to take care of a beet crop than a corn crop, when we have the proper outfit of tools. The full outfit for working the sugar-beet crop can be got for less than one hundred dollars, and they will last for many years with care, and most of them can be used for other crops as well.

There were five farmers in all that grew sugar beets on the fourth line of Adelaide Township last year, and we can truthfully say we have cleared fifty per cent. profit. I know no other farming industry equal to this new industry of sugar-beet growing for making money. Try it to satisfy yourself. GEORGE SHEPHARD.

Middlesex Co., Ont.

Green-curing Clover.

A correspondent writes: "Last year I saw an article by someone in the "Advocate," recommending the practice of cutting clover hay in the morning after the dew is off, and drawing it in the same day. Has that method been proven a success? Will such hay keep in the ordinary mow? If clover will keep that way it would be worth ten times as much as if made in the old way."

With some this method has been followed with unqualified success, while others who have tried the scheme have had the most discouraging results, an example of which is recorded in this issue. It is difficult to tell why such should be the case, as those who had the failures were particularly careful to give attention to all the details of handling for the best results. Those who have successfully made their hay this way believe that failures are due to the hay being damp with external moisture, although this danger was carefully guarded against. It seems that there will have to be more experimentation with this method of curing before it will be generally practiced. The ordinary mow has proved more satisfactory for the purpose of storing than the tightly-battened bays. As this problem has not been solved to the entire satisfaction of all, we should welcome any new suggestions that will help to a final solution.

A Cure for Weariness.

I am well pleased with the improvements you have made on the "Farmer's Advocate," and I really think there was never a paper printed that was so interesting. When a fellow sits down to rest, and picks up the "Advocate," he forgets that he was ever tired. I wish the "Advocate" success. HENRY WATTERS.

Northumberland, Ont.

POULTRY.

Raising Ducks.

Duck-raising is not just like other branches of poultry farming. Turkeys, geese and chickens require to be hatched in early spring, in order that they may be matured for the Thanksgiving and Christmas trade. Not so with ducks, for these fowl can be brought to maturity in about ten or twelve weeks. To keep them longer than this means a greater cost in production, and that always means less profit.

Fortunately, there is a market for ducks extending over a considerable time, so that early-hatched fowl can be disposed of as soon as ready. The holiday season, however, demands ducks, and the producer should study to supply the demand at least cost to himself, for it is obvious that to feed them from early summer to Christmas would be a very expensive operation. In this connection a leaf from the books of the Old Country poultrymen is interesting reading, and good teaching. In describing the English method, the Agricultural Gazette says:

"A modification of the methods pursued in the Vale of Aylesbury is the best adapted to the ordinary raising of ducklings, and the Aylesbury, or a cross of this breed, is the best duck to keep for the purpose. [The Pekin is generally considered the most profitable breed in Canada.—Ed.] There is a market for ducklings at all times, and in some districts a special demand at Christmas, and when such is the case hatching may be continued till August or September with good results. The ducklings, when hatched, should be fed at first on toast soaked in cold water and then squeezed dry, and with hard-boiled egg, which may be discontinued at the end of three or four days, and boiled rice mixed with shorts substituted. Ducklings require to be kept dry, but they do not need to be kept so warm as chickens; the house should be littered with soft straw, which should be renewed frequently. Ducklings should not be allowed out on the grass till they are ten days old, when they may be kept in small runs in groups of thirty or forty, being housed in sheds at night till they are six or seven weeks old, when, if the weather be favorable, and there be no danger from vermin, they may be left out at night. Water should be given then in shallow troughs, in which grit is placed. When about a month old a little barley-meal may be mixed with the shorts, which should be increased weekly until they are eight or nine weeks old, when barley meal should be their sole feed till they are fat, at from ten to twelve weeks of age, when they should be starved for twenty-four hours and killed."

Changes in the Poultry Division.

Mr. F. C. Hare, who has been chief of the Poultry Division here since 1901, has resigned his position to accept a much more lucrative one with a large incubator firm in Buffalo. Mr. Hare has been identified with all progressive movements in the poultry industry since he has been in Ottawa, and he will be greatly missed by the poultrymen in all parts of the Dominion, and particularly in Ottawa, where he was very popular. No successor to Mr. Hare has yet been appointed, but Mr. F. C. Elford, of Holmesville, who has had charge of one of the Dominion Poultry-fattening Stations for several years, is acting chief at present, and expects to for at least six months. Mr. Elford is leaving to visit the illustration stations in the Maritime Provinces.

Poultry at the World's Fair.

The committee of the American Poultry Association appointed to look after the receiving, cooping, feeding, exhibiting and return of the ten thousand birds expected at the Universal Exposition at St. Louis next fall, report satisfactory progress. Canadian poultrymen are making arrangements for a large exhibit, and it is expected the venture will result with the usual success attendant upon former efforts of this nature.

After the Night is Noon.

The gloom of night is dense and deep;
Rough is the path as we grope along;
Courage, heart, as the shadows creep—
This is the matin-song:
After the night is noon;
After the journey, rest;
The world will waken in gladness soon,
And the heart that sings is blest!

The glare of the sun is hard and hot;
The road is dusty, the way is long,
Shift your burden, and heed it not—
This is the even song:
After the noon is night;
After the journey, rest;
For the wind will wake and the stars be bright,
And the heart that sings is blest!

—[The Ladies' Home Journal