

ments of agriculture, and every girl the practice of Household science.

Oh! for twenty good men in every section in Ontario, meeting every two weeks and working together. They could control the Political, Religious, Economic and Educational affairs and under such conditions, weeds and insects would be fought intelligently and to a standstill; only pure-bred live stock or stock of outstanding merit would be tolerated. "A fair square deal for every man" should be the watchword, and a social awakening would bring farmers to a sense of their power and influence, that would shake our whole social fabric.

My prayer is, therefore, that through the suffering and tribulations of these most anxious days we may all be brought to see the folly of each farmer trying to stand alone, and the many many benefits that may arise from standing back to back forgetting local jealousies and former differences and looking forward to the grander Province in that greater Canada that is to be.

Nature's Diary.

A. B. Klugh, M.A.

It is now moulting time for a great many of our birds. Some species moult in July, and some in September, but the great majority renew their plumage in August.

The process of moulting is a very interesting one, and one which varies much among the different families of birds. All birds undergo one complete moult in the late summer or early autumn each year, but a large number of species also have partial moults at other times.

In the great majority of our birds the feather loss at the time of the moult is so compensated for by feather gain that they do not lose either the power of flight or the protection of their plumage. The plan on which a moult proceeds is a perfectly definite one. Old feathers or rows of feathers tend to remain until the new feathers adjacent have matured sufficiently to assume their function, when the old ones fall out and their places are taken by the new ones which develop from the same papillae. This systematic replacement of feathers shows most plainly in the wings where not only do the flight-feathers fall out one after another in definite sequence and almost synchronously from each wing, but the greater coverts are regularly replaced before the fall of the secondaries beneath them, and the under wing coverts are usually replaced after the moult of the upper surface of the wings is completed. On the body the protective sequence is less obvious, but the moult regularly begins at fairly definite points in the feather tracts and radiates from them in such a manner that the outer rows of feathers where the tracts are widest are the last to be replaced. To understand the moult as it occurs on the body one must study the way in which feathers grow on a bird. Though a bird appears to be feathered all over, we find on careful examination that the feathers really grow only on definite tracts, and that between these tracts are bare spaces which are covered by the feathers which overlap from the feather tracts. There is for instance a feather tract down the middle of the back and the feathers of this tract overhang the sides of the back, there is another tract on each side of the breast, and the feathers which grow on it overlap the centre of the breast. This is the reason why a bird appears to be moulting at irregular spots all over, because moult starts at the same time at the centre of each of the tracts.

In most of our small birds, such as the Sparrows, Finches, Buntings, Vireos, Warblers, etc., the longest quill-feathers of the wings, (known as the primaries) are nine in number. At the beginning of the moult the ninth primary is the first to fall out, and this feather falls from each wing at the same time. As soon as this primary falls the follicle or envelope containing the new-forming feather pushes into view, often reaching one-quarter the length of the old feather before the feather itself breaks from the apex of the sheath. Before this has happened the next primary (the eighth) falls out, by the time that the next adjacent primary (the seventh) falls the ninth is about half grown. Thus the moult of the main flight-feathers proceeds, so that at no time is a gap left of more than one or two whole feathers and one or two partially grown, and consequently the bird is but little hampered in its flight. The moult of the primaries proceeding thus slowly occupies from a month to six weeks. At about the time that the fifth primary is lost the moult of the main tail-feathers begins. They are moulted in pairs, beginning with the inner pair, and followed by the feathers next adjacent on each side. The moult of the tail-feathers is, unlike that of the main wing-feathers, very rapid, so that when the outer pair falls the middle pair are only about half grown.

With the ducks the moult is entirely different from what it is among the land birds. All the flight-feathers are moulted at the same time, so that for a time they can swim and dive, but are

incapable of flight as a turtle. They pass their critical period in some secluded pond with margins of high reeds.

In connection with the moulting of birds a point of much interest which comes up is the way in which some species, in fact most species, change the color of some parts of their plumage without a moult. It has been frequently asserted that the feathers themselves become re-pigmented. But we know that a fully-developed feather is a dead structure, and that the only change which can take place in its color is in the nature of loss of color or fading, so that such brightening as takes place cannot be due to re-pigmentation. What really occurs is that the feathers when they develop have edgings of a different color from that of the main portion of the feather, and that as these edges only show the portion of the plumage on which such feathers are found appears to be the color of the edgings. In course of time these edges wear off, due to abrasion against other objects and against other feathers, and reveal the main body of the feather. Thus many birds which appear dull-colored in the fall become much brighter by spring entirely because of the loss of the dull-colored edges of the feathers.



At the Fair.

Saved to the Farm.

One of the greatest works that a District Representative of the Department of Agriculture can do is to educate and encourage boys raised on the farm to stay on the land and make farming their life work. There recently came to our notice the case of a particularly bright farm boy who had become, as most boys do at a certain age, rather unsettled as to his future. He was raised on a good farm, knew farm work well because he had grown up with it, but no particular interest being displayed and efforts put forth to keep him on the farm, he decided to try banking for a while. He spent one year as a clerk in a bank when a District Representative came to his home county and began his work in interesting the boys in farming and live stock. A Short Course was put on one winter in his home town and the boy attended. He became interested in live stock, and for a young man, a fairly good judge of the different classes and breeds of stock kept in this country. From advice given at the Short Course he became interested in seed selection work, and at the present time he is back on the farm with all the old inclinations toward city employment dispelled and thoroughly convinced that farming is the best life work for him. Besides this, he learned to do a little public speaking through the Short Course work, and has since accomplished very good literary society work in his neighborhood. He has developed into a debater of some force and was invited, dur-

ing the past winter, to no less than three outside points to take part in debates.

Among the young men he is now one of the best live-stock judges in his section of the country. He is producing more and better seed through the inspiration received at the Short Course; but, best of all, he is a farmer and not a bank clerk. It is work like this that will make the District Representative solid in his community and indispensable in his county. His efforts are not so much in the direction of a return to the land as in saving the boys to the farm. Canada cannot afford to allow her rural-raised young men all to drift cityward when they would be of far more use to themselves and to their country on the farm. We mention this one case simply to prove to any doubters that the District Representative can do and is doing a profitable work in this particular, and that, with the young men alone, the work is invaluable. Every such boy saved to the farm means increased production, more satisfied farmers, a bigger, better and richer Canada. What are you doing to encourage the farm boy? Has he a call, a pig, a lamb or a colt of his own? Has he a few bred-to-lay chickens? Has he a little experimental grain or potato plot upon which he is improving the seed? If not, why not? If the boy is only a chore boy, he will never make a satisfied farmer. Fathers and mothers can help. School teachers can help and District Representatives do help. Which would you rather your boy would be, a good farmer or a bank clerk?

THE HORSE.

How to Show Horses.

By "Whip"

The exhibition of high-class horses at "high-class" horse shows is practically a business in itself, and is conducted, in most cases, by those who thoroughly understand the game, hence to exhibitors of this class we do not presume to dictate, as they are better posted on "the tricks of the trade" than we are, but a few hints to the ordinary horse owner, farmer or farmer's boy who exhibits only at small fairs may be seasonable.

It would probably have been more correct to have entitled this article "How to Prepare Horses for Show Purposes." The showing of a horse is comparatively an easy matter if he has been properly prepared. Horses of all classes should receive sufficient education before being taken into the showing to enable them to perform the functions demanded from animals of their class in such a manner as to reflect credit upon themselves and their attendants. The exhibitor should always remember that the show-ring is not the place to train or educate his exhibit whether he is to be shown in hand, in harness or in saddle. Good manners on the part of both the animal and the exhibitor are necessary for success. The judge knows (or is supposed to know) how a horse of any class should act on the halter, in harness or under saddle, and other things being equal, the animal that most nearly comes up to his ideal in this respect is the one that will win the best place.

Unfortunately there is often seen an evident want of training or education of any kind, and this is especially noticed in the classes of young horses shown on the halter. Many exhibitors evidently think that so long as their colts can get into the ring in any way it is all right and nothing further should be asked for. They are not even taught to stand to allow the judge to look them over carefully, and when the attendant is asked to walk or trot his entry, the colt often refuses to move without urging (often rather forcibly) from behind, or will commence to rear and plunge in all directions, or in some cases will run around in a circle, the extent of which depends upon the length of the lead rein, but positively refuses to go in a straight line either from or toward the judge at either a walk or a trot. Others go sideways or backwards, while some can with difficulty be induced to move at all. This is provoking to the judge, aggravating to the audience, and disappointing to the exhibitor, especially in a case where his entry is really a better animal than the better-fitted and better-trained colt that wins. The judge in such cases is often very severely criticised and credited with either incompetency or dishonesty. He knows that the awards have not gone to the animals that under more favorable conditions would probably have won, but he is also aware of the fact that a little trouble is necessary to fit and train a colt for exhibition and that each animal must show his action and gaits to enable any person to judge correctly of his relative qualities. He also should thoroughly recognize the fact that his judgment of the animals before him must be influenced by what they are at the time, not what they probably would be under different conditions. The general appearance of the unfitted and untrained colt may indicate that if fitted and trained he would be a better animal