

Notes of Lessons on Natural History. (1)

NOTES OF A LESSON ON THE COW.

Ages from 9 to 11.

I want to see this afternoon if we cannot talk a little about the Cow. We have not much time, so we cannot do much, and I can do nothing without your help. Now who is willing to help me?

How can you help me? "By thinking." Yes, but thinking of what?

"Of what we are saying." Yes, by thinking of what we are saying. What are we going to do? "Talk about the Cow." How much about it? "A little." Who is going to talk about it? "We are." Now, then, we will begin. Tell me some of the principal parts of the Cow? "The head, body, neck, legs, and tail, etc." How many parts have we named? "Five." Say them altogether for me. Now let us speak about its head first. What sort of a head has it? "A long head." Yes, it has a long head. "Why has it a long head? Think a moment. Where is its food?" "On the ground." Yes. What sort of a neck has it? "A short neck." Yes, and what sort of legs? "Long legs." And its food is on—"the ground." Now if it had a short neck and small head, lifted up by long legs, it could not—"reach its food." Then why has it a long head? "That it may be able to reach its food." Now, then, for something about its mouth. What sort of a mouth has it? "A large mouth." Who has seen inside it, and noticed something strange about its teeth? (Some, perhaps, may have seen, but none noticed them.) Tell me what the Cow eats? "Grass, turnips, mangel wurzel, hay, etc." Yes, but its principal food is "grass." Now we want to find the best sort of teeth for the cow to eat grass with. You have all seen your mother going to make a pudding, and, perhaps, some of you have helped her. Tell me some of the things she does. "Mixes the flowers," "chops the suet." Ah, that is the one I want most. She chops the "suet." Now what does she chop it with? "A knife on a board." Yes, she does it with a knife and a board. Now why does she not do it with two knives, so (show them). "Because she could not cut it so well." Yes, that is the real reason: she could not do it so well without the board; she must have a knife to "cut it with," and a board to "cut it on." Now you must tell me one other thing. How many have seen their mother mashing potatoes? What does she mash them with? "A spoon." Why does she not use a knife? "Because it would not make them so smooth and soft." Then when she wants to chop things small she uses a "knife and board;" and when she wants to make them smooth and soft she uses a "large spoon." Now the cow wants teeth to do just these two kinds of things to its food. What two things? "Chop it small and mash it smooth." Now look at me while I try and make something like some teeth on the black board. Now look at these, and see if you can find what each of them are suited for. I have numbered them. Let us look at No. 1 first. See they are sharp and pointed. What do you think they are fitted for? "For cutting." Think, does your mother cut with anything pointed—say a fork? What do you do with your fork at dinner? "Hold the meat still while we cut it." That is right; and these pointed teeth are just for the same thing you have used your fork for. What is that? "For holding tight." Now the cow does not want to hold anything tight while it eats. Who does? "Those who think it will get away." Tell me one? "A lion." Yes, a lion wants a good many "holding teeth," but the cow "does not." Well, I will rub these off now; we have two sorts left. Look at No. 2; what are these for? "To cut with." To be sure—to cut with. And we said the cow wanted teeth just for the same purpose your mother wanted a knife—to "chop up with." Now look at No. 3. What are these for? "For crushing things smooth." And the cow wants them because it needs "to mash or grind its food with." Now tell me what sort of teeth the cow wants? "Teeth to cut and teeth to grind." Once again, once more. And just such teeth the cow has. What sort of teeth? What for? Now you told me that your mother could cut suet better with "a knife and a board" than she could with "two knives." Now if the cow wants to cut her food well, it ought to have not only teeth to "cut," but something like a board to cut it on. Does any one know if it has? Well, I must tell you. On the bottom jaw of the cow it has eight cutting teeth. Where? How many? What has it on its bottom jaw? And at the top it has no teeth at all, but in their place it has a tough hard pad, without feeling, which serves instead of "a board." What has it on the top? What sort of a pad? And when it goes to eat it chops it with its "cutting teeth" against the pad, and is able to "make it very small." Well, but the cow has other teeth too. What are they? "Teeth to grind." Where will it want these? "Both at the top and bottom." Yes, and there it has got them. Now let me see what you can tell me about the cow's teeth—RECAPITULATION.

There is something else in the cow's mouth beside its teeth. What is that? "Its tongue." What sort of a tongue? "A long tongue." Yes, and something else? "A rough tongue." What does it use it for? What did you say it eat? "Grass." And how does grass grow? In little turfs, or each blade by itself? "In blades." Yes, it grows in blades.

When you are hungry, and you have a piece of bread given you, what do you want to do? "Get a good bite." Yes, and so does the cow. If your bread was in crumbs would you like to eat only a crumb at the time? What would you do with the crumbs? "Put a great many in at once." What would you put them in with? "Our hands." Well the cow has no hand. What can it do to get a good mouthful of grass? "Twist them in with its long tongue." Yes, that is right. It twists the grass into its mouth with "its long tongue." What does it twist them in with? What else besides long did we say it was?

When the cow is biting off the grass what is it doing besides? "Walking about" from "place to place." Yes, all the time it is biting off the grass it is "Walking about from place to place." Yes, it walks and keeps biting the grass, sometimes from morning till dinner time. For how long? "From morning till dinner time." Well its mouth cannot hold all it bites off; what does it do with it? "Swallows it." Yes, it swallows it as soon as it has "bitten it off." But what did you tell me the cow wanted to do to its food? "Chop it up and mash it smooth." Well, but how can the cow do this when it swallows it directly without biting it all? We are quite right in saying both these things, that it "swallows it directly," and also that it takes a good time to "chew and mash its food." Now how can it do both?

What sort of a body has the cow? "A large body." And inside this large body the cow has a very large stomach. What sort of a stomach? "A large stomach." And in this large stomach there are four divisions, which we will call cupboards. How many cupboards? "Four." Perhaps I can make something like it on the board. Now when the cow first bites off its food we said it "swallowed it directly," and it passes it at once into the largest of these divisions or "cupboards," which I have marked 1. And it goes on eating for "two or three hours" until this cupboard is "full," and then the cow being quite "tired," it lays down under "a tree." Who has seen it lying down? What was it doing? "Moving its mouth." Why do you think it was moving its mouth? "It was chewing its food," yes it was chewing the very food it had bitten off and swallowed "in the morning." The cow has just the same power of returning its food to its mouth out of its cupboard as you would have of taking anything from your cupboard and putting it in your mouth with your hands, so when it lays down in the shade it just "brings its food into its mouth," and "chews it over again." This is called chewing the cud. "What is it called? Chewing the cud." Tell me again, how does the cow look when chewing the cud? "Very comfortable." Yes any one can see she enjoys it.

Nor after the cow has swallowed this a second time it passes into the second division or cupboard. This inside is something like a honey comb, see I have crossed it over to look something like it. What is it like inside? "A honey comb." The food when it passes into this cupboard is soft and gets pressed into these cells. Now what shape do you think it is when it comes out? "Round," yes it is made into little balls. What is it made into? "Balls." Now when the cow has emptied its first cupboard and it is all packed nicely into this second one, it just begins all its work over again, the balls are returned to the mouth the second time and chewed over again—and then it is swallowed into the third cupboard—and all this is called "chewing the cud." How many times does it chew its food? How many times is the food in its mouth? What is the food when put into the first cupboard? "Grass." What in the second? "Little soft balls." How many cupboards are there? &c.

Now, dears, can you tell me why the cow has had these four cupboard given to it, and why does it take all this trouble about its food?

Does it want much or little? "Much." And if it wants much it "takes a long time to cut it." And what is the cow doing all the time it is eating? "Standing." And if it stood for a very long time it would get "tired." Well that is one reason why it does not chew the grass at once, but there is another better one still: can you think of it?

Supposing you lived by a wood where some beautiful chesnuts grew and you wanted to fill your little basket with them, very badly indeed, and supposing you knew there were some very savage bulls there who would run at you if they saw you, and supposing one day you knew they were gone a little way off, you would run in and pick up "the chesnuts," and put them into "the basket" as "quickly as we could;" and you would not stay to "eat them there." You would fill the basket "quickly" and get out of the wood, home again as fast as you could. In some countries the cow has enemies, so when it goes to get its food it just takes enough to "fill its first cupboard," and then it goes off to some safe place to eat it in peace or to "chew the cud."

Recapitulation—If time permitted I should next take the legs as suited for locomotion—the eyes as looking all ways—the ears as inclined backwards—the tail as a brush for the flies—and the horns and hoofs as means of defence.

Then draw from them the exceeding usefulness of the animal in all its parts and finish by asking them to give me the reason why they learned so many wonderful things about animals and lead them to see it was to teach them the wisdom and goodness of God, and as children easily remember rhyme, give them a verse something like this to repeat.

As we learn about animals, useful and strong
Their clothing, their structure, their food,
Let us think of this text, it is not very long
"God saw—and beheld it was good."

—Papers for the Schoolmaster.

(1) Words in italics in all the Notes of Lessons are those that are supposed to be said by the children when the teacher pauses to allow them to complete by themselves his own sentence.