

well advised to consult someone who has. That would save them the humiliation of being laughed at and keep them from irritating a lot of people who are just as earnest as they are.

Nature's Diary.

A. B. KLUGH, M. A.

We now pass, in our consideration of the animal mind, from the invertebrates to the vertebrates, and we find that there is not any sudden jump in the mental capacity such as one might perhaps expect. In fact among the fishes, the lowest of the vertebrates, we find nothing which we have not already seen exhibited by the higher invertebrates—we find memory for form, for position, for color, and we find that they can learn, but all this we have already come across among the insects. From experiments made on fishes we learn one or two things of interest—that they hold a certain definite position in the water by the sense of sight and that sounds made in the air have no effect upon them. They are very sensitive to vibrations set up in the water, and it is these vibrations communicated from the ground to the water which warn fish of one's approach and not the sound of foot-steps.

Experiments on the frog prove that it avoids enemies by the sense of sight, but that sounds serve to put it on the watch. Frogs can hear sounds varying in pitch from fifty to ten thousand vibrations per second. They can be taught, but learn slowly. In an experiment it took from fifty to one hundred trials for a frog to learn to take the right passage to the water, when two openings were presented. They learn to avoid disagreeable objects offered as food far more rapidly, learning to avoid hairy caterpillars in from four to seven trials. Their memory is fairly retentive, as they remember the correct turnings in a simple maze for thirty days.

Turtles are capable of learning, rather slowly but steadily. This steady gain is well shown in the following experiment. A turtle found its way out of a simple maze with four openings the first time in 35 minutes, in the second trial in 15 minutes, third trial in 5 minutes, fourth trial in 3 minutes, 30 seconds, 10th trial in 3 minutes 5 seconds, with only two mistakes in turnings, 20th trial in 45 seconds, 30th trial in 40 seconds, and 50th trial in 35 seconds its course being direct. They learn to discriminate between lines of different widths.

Next in the scale we come to the birds. Their main sense is that of sight, which is very acute and which guides them in their migrations. Hearing is very well developed, and they can hear sounds at from three to four times the distance at which the human ear can perceive them. Their senses of taste and touch are not well developed and the sense of smell is entirely absent. It is popularly supposed that the vultures have a sense of smell and that they find their food in this way, and in view of this the following experiments are of interest.

An entire deer skin, provided with artificial eyes, was stuffed with dry grass and allowed to become perfectly dry. The stuffed skin was then exposed in a field. In a few minutes a vulture, soaring about, saw the deer and sailed down to it. It tore open the hide and pulled out much of the grass.

A large dead hog was hauled to a ravine and concealed by a covering of cane. As the weather was warm the body soon became extremely fetid. Dogs found the carcass and fed upon it, but vultures sailing over it from time to time did not find it.

Two young vultures were kept for some weeks in a cage where they became accustomed to receiving food. The birds were in the habit of hissing and gesticulating when they saw food approaching. However, when food, either fresh or putrid, was brought up to the immediate rear of the cage where the vultures could not see it, no excitement was shown.

A dead hare, two dead birds and a wheelbarrow full of offal were deposited on the ground. A frame was raised above the pile at a distance of twelve inches from the ground and this was covered with brush, allowing air to pass under freely. Though hundreds of vultures passed over it in the next twenty-five days none noticed the food.

A painting of a sheep skinned and cut open was placed on the ground. It was noticed by vultures which walked over it and tugged at the canvas with their beaks. The painting was then placed within fifteen feet of the offal mentioned above, but the offal was not touched.

From these experiments it can be seen that vultures find their food by sight and not by smell.

In this particular, that sight is the dominant sense, birds are far nearer to human beings than any other group of animals, and it has further been shown that their color sensations are exactly similar to our own. A complete discussion of color sensations would lead us too far into the field of optics, but we can state that many, probably most, animals respond to a difference in intensity rather than to a difference in wave length of light, and that birds show a wave length discrimination similar to that of the human being.

(To be Continued.)

He Keeps Them All.

EDITOR "THE FARMER'S ADVOCATE":

"It is many years since 'The Farmer's Advocate' first came to our home, and I have every issue, since the first received, in perfect condition. To tell of all the benefits we have derived from its pages during all these years would fill a volume.

Simcoe Co., Ont.

GEO. CRAWFORD.

THE HORSE.

Wintering Horses.

EDITOR "THE FARMER'S ADVOCATE":

Prejudices are opinions so strongly held as to prevent us seeing all-round facts. We are not to blame for them. They arise from earnestness of conviction coupled with limited knowledge or narrow range of experience.

I used to have prejudices on the subject of the winter care of horses. My prejudices were prompted by inexperience in certain directions and motives of mistaken kindness. I remember once remonstrating with an Eastern friend who was adopting Western methods in the wintering of some colts. He was running them in a block of open meadow with barbed wire fences for shelter and snow to lick in place of water. They seemed to be doing well enough, but when the weather turned extra rough and cold I could not get it out of my head that they must be suffering; hence a well-meant protest, which was accepted, I think, in the spirit in which it was intended, and acted upon.

Day before yesterday I turned one of my mares out along with a weaned foal for their usual run at straw stack and open prairie. It was an extra-cold day—about thirty below, with a northwest breeze. But they shook their heads in the teeth of the storm and stayed out till evening, when, after calling them in vain, I sent the dog after them. They went off in another direction, and all my efforts to get them in that night were unavailing. They were out in that weather by preference for over thirty hours, eating from the stack, pawing grass from under a foot or

Against dampness and rain in particular we like to guard but against dry cold and snow—well, what about taking the testimony of the horses themselves?

I have two mares and a foal and their daily regimen when not working is to be fed about two big oat sheaves amongst them in the morning after watering, then when this is eaten, to be turned out as described above and let into the stable about night fall, when they are watered and fed two more sheaves divided into the three portions. They take most of their drink at the evening watering. In the day they eat straw and prairie grass cured on the stem. They are healthy and hearty as bears and gaining flesh steadily, doing fully as well as earlier when stabled all day and much better fed. Limbs and feet are kept in good condition, temper is far better than when continuously stabled in idleness and I believe the chances of successful foaling will be greatly increased. The system I am following is the one practiced for years by their former owner with the very best of results. For economy of feed and labor, commend me to this plan.

We have not had a storm since New Year's that they would not buoyantly face.

Let the reader draw his own conclusions.

Grande Prairie District, Alta.

W. D. ALBRIGHT.

LIVE STOCK.

"Bulls."

"The sturdy bull, with stately tread,
Submissive, silent, bows his head
And feels the yoke."

From "The Bull Team," by Cy. Warman.

By way of atonement for many an impatient prod and jerk and welt I am moved to-day to indite a simple tribute to the ox. I owe much to oxen. Had I been obliged to pack on my back the freight they have moved for me so many hundred miles, to turn with the spade the scores of acres of tough sod and scrub land they have broken and tilled and seeded and reaped for me, I would not have time to write this or any other article for some years to come. Many a noon hour have I sat in the bush warmly clad, munching my own lunch by a fire and watching the unblanketed "bull" team faring sumptuously a few rods away on three or four sheaves of oats which supplied the energy to pull home by nightfall eight or ten big logs or a corresponding load of poles or posts. I have sat and marvelled at the superior physical efficiency of bovine over human—marvelled and felt grateful, even if my temper had been tested to the breaking point by the flagging stride of the nigh ox on the way out to the swamp in the late winter dawn.

We teamsters forget that oxen are oxen. We want them to exhibit the nerve and action of horses. The gait of the ox is slow and seems slower by contrast. He stands punishment, too, better than horses. Wherefore it comes that he is called upon to endure much of it. If superannuated bulls make tough eating it is not because their steaks haven't been well pounded. The punishment many of them take is frightful to contemplate. "Mule skimmers" and "bull punchers" have much to answer for.

And they do say—though I hesitate to say it here—that the whip or goad alone is inadequate without strong language. Anyway, nearly all bull punchers acquire the habit. On the Peace River trail I heard a story, since repeated in variant version, about a priest who hired a bull puncher to take him over the bush trail from Grouard to the Crossing. In deference to his passenger the driver refrained from oaths. The team got slower and slower until the priest, fearing to miss his engagements, asked whether the cattle could not make a little better time.

"Not unless I swear at them," was the reply.

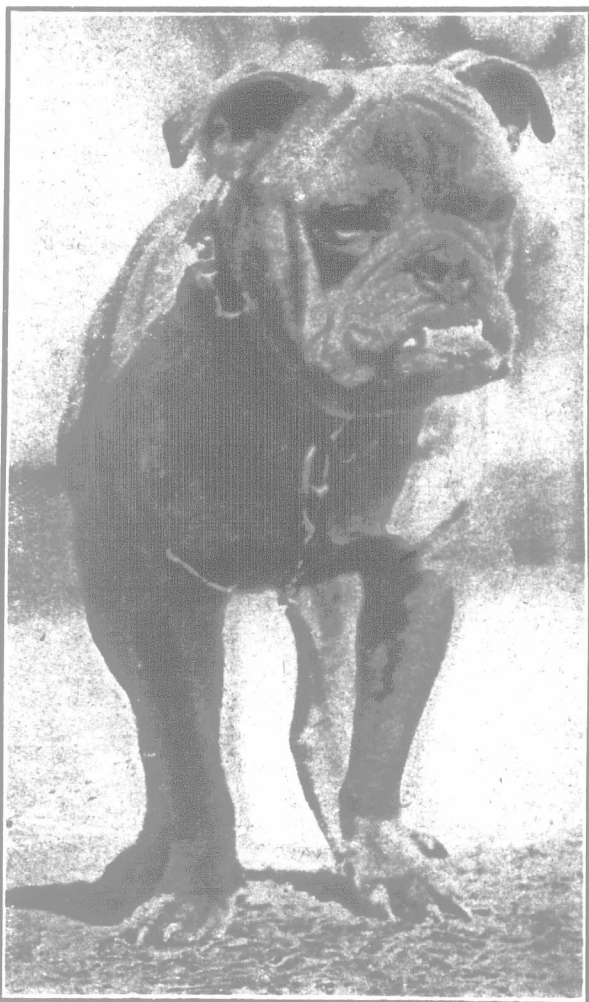
"Perhaps you had better drive them in your own way."

Recognizing that the old dispensation had returned the bulls quickened their pace and reached Peace River on time.

The strength of the ox is perhaps exaggerated in popular imagination. As a rule, I believe horses are stronger than oxen, weight for weight. To be sure, horses are usually better fed, which counts for much. Nevertheless, ox power is the more effectual for certain kinds of work. At stumping, grubbing, stoning, logging and breaking tough sod or rooty, rocky ground, the ox is far superior to the average horse because he will set himself into the collar and hang there with a sustained pull that quietly lifts many a strain on which the ordinary horse would fly back. For the same reason he is much easier on harness, whiffletrees, plow points and rigging in general. The stumps that a good trio of bulls will split or pull out bodily with the breaking plow and the rocks they will root out with the point of the share are surprising. They are about the next thing to dynamite—only different.

To be sure, they "take it out of" the teamster to keep them at it and must be accommodated by working as much as possible in the cool of the day so that the plowman should be up and at it by about sunrise, which with us is around 3.30 a.m. in the longest days. Given this advantage a trio can break from an acre and a half to two acres a day, feeding on the grass grazed between shifts. Indeed when the pasture is good they will often refuse chop. Four good horses would hardly do better on grain and hay.

I would not be understood as recommending oxen for old-settled communities. They are too slow and cumbersome. For drilling, harrowing and general



Doing His Duty as He Sees It.