

couple of shillings, and would not take a pound for them now."

It is a good plan, even for daily use, to have a washable dinner *menu* on the table; china is the best, and one is enough at home. The master of the house likes to know what he is going to eat, if no one else does; and when friends are dining there should always be *menus*. If any member of the family is artistic, painted cards with the list arranged to slip in and out daily, will form a very small item as far as cost is concerned. One other little matter: if you wish your table to look well, be sure and have baize under the table-cloth, or it will have a mean appearance, and on no account have table-napkins starched.

A great deal of sociable society may be kept together by the tea-pot. If people are pretty sure to find you in, glad to see them, and with plenty to say, some new light to throw on some one thing, or a general knowledge and appreciation of current topics, not forgetting a warm quick sympathy in what interests them, you will find your tea-table rarely a solitary one. A good cup of tea is a desideratum, and I think this can only be insured by having the kettle or urn and making it yourself. Nice well-cut bread and butter, or a reputation for some one special cake, is not a bad

thing. If you care for good coffee, be careful in the making; roast the berries and grind them at home from day to day, and it will be twice as palatable.

It is so great a desideratum that young people should love their homes, that anything which tends to promote enjoyment and cheerfulness in the domestic circle should be encouraged. On this score charades, tableaux, round games, &c., though they may turn a house upside down, are not to be tabooed. Many holidays have been made red-letter periods of delight by the preparations they entail on young people home from the monotony of school.

Charitable cooking is a duty. There is scarcely a household in which many pints of strengthening soup cannot be given away to the poor weekly, with hardly the outlay of a shilling a month. The best plan is to throw all bones from plates, broken bread, broken meat, scraps of vegetables, indeed any odds and ends of food, into a large pot by the fire and to simmer them with a sufficiency of water. Here, however, the mistress' supervision is necessary. She must see that bones available for gravies and stock do not find their way thither too soon, and that the charity pot is not made an excuse for waste. Soup-meat thrown in, however, will be of service after it has served its purpose.

HOW MANY SENSES HAVE ANIMALS?



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HUMAN beings have five senses: * in other words, external objects affect a man's consciousness, and furnish elements of knowledge, in five different ways—by sight, hearing, taste, touch, and smell. There are, of course,

exceptions to the rule, but the exceptions are all on one side. No one has *more* than these five senses; but there are, unhappily, instances of defect, persons of whom, whether dating from birth or later, Milton's pathetic description of his own case is true—"Knowledge at one entrance quite shut out."

Again, men, and races of men, are not all upon the same level in regard to the degree of perfection in which they possess these faculties. Nor, indeed, is that degree constant throughout the life of an individual. Perhaps no two persons see precisely alike, and every one knows what changes the faculty of vision undergoes as life advances. The cultivation, too, of any faculty makes a vast difference. What education of touch, for instance, is required in the accomplished

pianist! The faculty of hearing is capable of remarkable rapidity of operation. It is stated on good authority that the ear, in a high state of cultivation, can distinguish sixteen sounds in one second.

When we turn from man to the rest of the animal world, we find not only individual variation as to the degree of perfection of the faculties, but differences also between species as to the attainable degrees of perfection. We find, too, in regard to each sense considered by itself the human faculty is often far inferior to the corresponding faculty in other orders of creation, though these may be in the scale of being very far below man. We find, moreover, species in which one or more of the senses are totally absent. Do we, on the other hand, find any indications of another sense, or other senses, over and above those which we ourselves enjoy?

Let us notice some illustrations of the statements just made before proceeding to answer this question.

We find, then, that the endowments of each species are adapted to its mode of existence. Those faculties are bestowed upon the living being which are necessary and useful to it. No others are given. This is a very important remark, for we see the evidence of creative purpose not only in the bestowal of faculties, but also in the withholding of them. A useless faculty, that is one which could not be used, would not only be an encumbrance, it would be a source of positive misery. Suppose, for example (and if chance ruled the world, such cases might well exist), that a creature

* We leave out of view the so-called "muscular sense."

like the brown fresh-water polype (or *Hydra fusca*), which passes its life attached to a piece of stick or other object, were possessed of eyes. Since it does not possess the power of moving from the spot, they would be of no service to it in the search for food, while they would render its want of locomotion a source of distress, whether it desired to draw near to an observed *bon morceau*, or to escape from a supposed danger.

A conspicuous example of the combination of far-reaching vision with the power of rapid locomotion is furnished by birds. The vulture is said in poetry to "scent the battle from afar;" and "wheresoever the carcass is, there," we read, "will the eagles be gathered together." But it is not by the sense of smell that the flight of birds of prey is directed. It is by a piercing sight which, if we did not see proofs of its existence, would appear incredible.

It is this power of far-reaching vision that explains the sudden appearance of gulls in the track of the fisherman's boat after he has thrown overboard the portions of captured fish which cannot serve to bait his lobster-pots.

A more agreeable picture and pleasanter thoughts are suggested in connection with the same subject, the distant vision of many birds, when we hear the lark's song high in the heavens, so high that we strain our eyes in vain to find his whereabouts, and he is, so far as our powers are concerned, only an "unbodied joy."

That little invisible songster, while he is flooding the heaven and the earth with his joyous strain, is probably watching the home of his affections below, and his heart is brimming over with grateful exultation so long as the foot of no spoiler or destroyer wanders near it.

The extraordinary power of smell possessed by dogs is so well known that little needs to be said about it here. Perhaps the most remarkable exercise of it is seen when a dog comes suddenly *across* a line of scent, and after a little investigation backwards and forwards, is able to determine in which direction the unseen animal has gone. This judgment can only be based upon the fact that in one direction he finds the scent grow weaker the farther he proceeds, while in the other direction it grows stronger. But that there should be any appreciable difference is almost inconceivable, when we consider how short the interval of time must have been in which the scent was laid along the whole line investigated by the dog, in proportion to the length of time, perhaps several hours, which may have since elapsed.

The dog is not the only animal that excels us in regard to this faculty. Even the horse satisfies himself by means of it as to the wholesomeness or toothsome-ness of the food placed before him. This is his motive for that preliminary movement which he makes before beginning to feed, burying his nose in the hay or grain, and stirring it up from the bottom. And if he has more than will satisfy his immediate wants, he will show a certain daintiness of appetite. Guided by the scent, he will choose one kind of herb

and reject another. Houzeau* tells us that he left a rick of hay for the use of his horses during a short absence, and on his return found great holes in it, where the horses had thrust in their heads to get at their favourite herbage.

Nor is it only among creatures that walk the ground that we find remarkable power of scent. The lobster is guided by it under water for a distance of a hundred yards, while the scent-laden zephyr breathing from a group of newly-opened flowers will draw the bee for a distance considerably exceeding a mile.

Certainly the sense of touch neither in the human hand, nor in the more finely endowed human tongue, which, as we all know, immediately detects a minute foreign body in our food, is comparable to that of the insect's proboscis, or of the antennæ, whether of insects or of the lobster tribe. The antenna is indeed a magnificent instrument of touch. The miller's thumb is famous for its power of examining the fineness of the products of his mill, but where is the human member that can enable its owner to distinguish between one leaf or petal and others that nearly resemble them? The insect uses its antennæ to acquire the same sort of information about objects that we acquire by *feeling* them with our fingers.

While, however, in regard to the senses of touch, of smell, and of the minute vision of near objects, the insect tribe presents instances of marked superiority, it is to be noted that some of these tribes, as well as many tenants of the water, are devoid of hearing. In higher orders of life, amongst birds and quadrupeds, to say nothing of fishes, a faculty of hearing is often found surpassing our own in regard both to range or distance, and to compass, or the capacity to receive impressions from sounds too shrill for human perception. Here, however, we are on ground so familiar that we may pass on without further comment.

Many feats of so extraordinary a nature have been and are continually performed by animals, that the question has been seriously debated whether the performers had not some faculty totally different in kind from any that we possess. On this question, and the most probable answer to it, we can here make but a few brief remarks.

The Oxford and Cambridge Boat-race attracts many thousands to the banks of the Thames, and that contest of strength, skill, and endurance is deservedly interesting. Almost immediately after it is known whether the dark or the light blue has won, there is a flight of carrier-pigeons like rockets up into the air, which, after tracing one or two circles at a great elevation, dash right away to their respective destinations, sometimes many miles distant. Many of us remember the services rendered by the pigeon-post in the last sad siege of Paris—how these trusty messengers formed the regular means of communication from Tours, from Bordeaux, from Lyons, to the beleaguered city. How could they find their way? They could not know the ground. They did not return to Paris on the same line as they had travelled from it, in a balloon it might

* The present writer desires to express his acknowledgment of the help derived from this French *savant's* work.

be, without any opportunity of taking notes of the country traversed.

More extraordinary instances are on record. Thus it is matter of history that a falcon belonging to Henry IV. of France, having made its escape from Fontainebleau, arrived the following day in Malta at the very spot where it had been reared.

Perhaps the half-yearly flight of the migrant birds is even more wonderful. How do they find their way from Africa, say, to the particular spot in England where their home has been in the year preceding?

Now there used to be a short and simple answer to these and many similar questions, which is no longer satisfactory. Instinct was supposed to account for everything that every animal did. But after all instinct is not irrational, however destitute of reason in the general sense an animal may be. Consequently attempts have been made to give a less vague and more rational answer to the questions. A particular use of faculties may be instinctive, but we want to know *what* faculties are exercised.

Two answers have been proposed. One is that there is some mysterious faculty of which we have not even the rudiments, and by means of which birds, dogs, and other beings find their way over unknown ground, by means of which some animals seem prescient of earthquakes, or of changes in the weather. If this

supposition were accepted as true, we should be really no further forward than when everything was referred to instinct. It would be merely a confession that no explanation of the facts is possible at all.

But we are not reduced to this alternative. It is quite conceivable, and it seems most probable, that these wonderful performances are achieved by the mere use of the known five senses singly or in combination, these being of such acuteness as to take cognisance of indications which would be unperceived by us. We cannot now state all the reasons for this conclusion. It must suffice to recall to mind the fact that for men living a free open-air life, as the American Indians do, the contrast between the human and the animal faculties is not nearly so great as for us whose senses, in regard to the matters under consideration, have been dulled by our in-door life, who find our way about along well-defined directions—*i.e.*, by roads, lanes, or streets—and who in consequence have no occasion to employ and develop extraordinary sensitiveness as to the very faint atmospheric and other indications which guide the bird over the pathless deep, and through the trackless sky, and by means of which the savage passes with unerring directness from one camp to another, many miles away, through vast forests or over bare mountains, where no sign-posts are provided.

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WAS IT WISE TO CHANGE?

By the Author of "A Hard Case," &c.

CHAPTER THE EIGHTEENTH.



HE winter passed slowly away, and the first spring days came, and found Agnes still at her father's house. It was three months now since she had left Stanwick, and during that time she had not seen George or received more than two or three unsatisfactory letters from him.

Their engagement was not broken off; his diamond ring was still on her finger; but she doubted now if they would ever be married, and often thought it would be better to write to him, and put an end to it at once.

When he had received her letter telling him that her father was dangerously ill, and that she had gone to him, he had felt selfish and unreasonable anger.

What a nuisance it all was! Ten to one they had

made by half too much of the old man's illness, and there was no real reason for sending for Agnes; and, at any rate, she might have shown some regret at going exactly contrary to his wishes, and breaking her promise to him, instead of being absorbed in sorrow for her father, who had seemed willing enough to leave her to herself while it suited his convenience.

Influenced by these thoughts, he had written her a letter which vexed and grieved her. He had never for a moment let her feel that he was conscious of a difference in their positions; he had left it to her to choose between him and her own family, and as she had chosen him, he had believed that for the future he should be all the world to her, and he felt now as if she had deceived him. He was not hard-hearted, he would not willingly have given pain to those who had a natural claim upon her, but that claim he felt they had forfeited by their neglect, and henceforward he ought to have been of the first importance to her.

Agnes thought he was unreasonable, and wrote back an answer which offended him, but he loved her too much to have any thought of letting this difficulty come permanently between them; and when he heard that Mr. Baring's immediate danger was past, and that though he could never recover, he might live for some time, he wrote again, and asked Agnes to return