



*The rhinoceros and his companion.*

## ANIMAL MESSMATES AND CONFEDERATES.

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[WITH ILLUSTRATIONS MADE AFTER SKETCHES BY THE AUTHOR.]

THE vice of laziness is deeply ingrained in animal nature. Selfishness is the mainspring of conduct. To get through life in safety and comfort, and carry on its business with as little trouble and inconvenience, as little risk as possible, is the lesson that is earliest inculcated and the object that is kept steadily in view. Any advantage that can be taken of the brains or physical gifts of another is eagerly seized and turned to account, no matter what the cost to the feelings or welfare of the victim. Look after yourself and your family and rob your neighbour if you can, is Nature's first and great commandment. And the lesson has been taught to all with the strictest regard to fairness. In self-interestedness there is little or no disparity between animals. In that particular at least one is as good, or bad, as another. So in the strife for existence success depends upon strength and cleverness; weakness is destroyed, helplessness and stupidity imposed upon. But sometimes, in cases where the competitors are fairly well matched and the equipments of the one supplement those of the other, have arisen

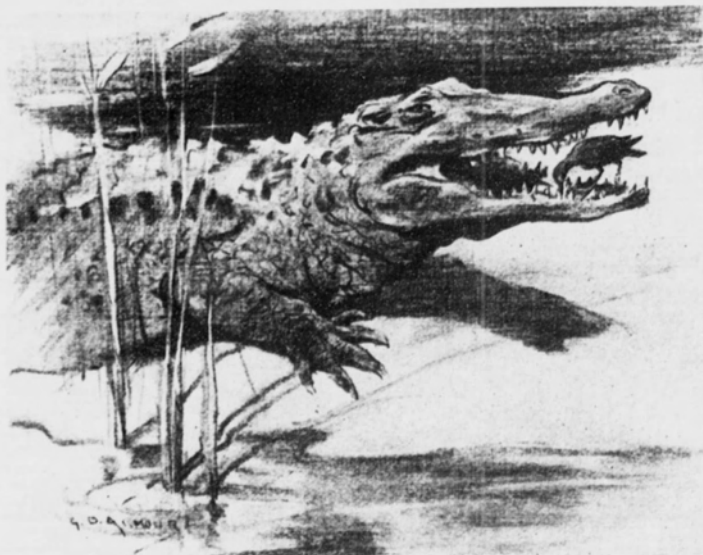
the practice of concerted action and a knowledge of the value of co-operation.

To this state of things, this instinct to balance inborn defects by means of the talents of others, are to be traced the inception and continuance of those instances of apparently incongruous companionship between two or more kinds of animals, which have no obvious interests in common, no sort of blood-relationship to one another, no similarity in temperament or mode of life to suggest a likely reason for confederacy.

These curious examples of communism have long been known, and have been cited by writers of an optimistic bias, confident of the beneficence of Nature's methods, as proof of the existence of a spirit of altruism pervading, if often latent, in sentient beings. Modern knowledge, however, gives no sanction to such a belief, but claims that self-interest on the part of at least one of the species concerned is the prime agent in the matter, and insists that where there is obviously no advantage to the other, its acquiescence in the bond is attributable either to indifference or helplessness.

The crocodile that lies with mouth agape while the bird catches the flies that alight therein, or pecks the pieces of food from his teeth, restrains the natural temptation to snap his jaws either from supreme contempt for the little scavenger or from full appreciation of the services

Again, the belief that lions and tigers, in virtue of their regal authority, enlist the services of jackals as scouts to warn them of danger and as guides to the haunt of deer or antelope, has long prevailed in the countries these animals frequent, and has earned for the jackal the nickname



*The crocodile and his friend.*

it renders; and the bird performs the work, not from any motives of kindness to the saurian, but for the sake of the food he secures and the safety from attack he enjoys while feeding in a place no enemy dare approach.

So, too, with the birds that associate with cattle to dig out the ticks and grubs imbedded in the skin. The mutual advantages of the companionship are here quite clear; and, if credence be placed in sportsmen's tales, the alliance has been fostered in the case of the rhinoceros and his attendant to the extent of developing in the latter the instinct to rouse his slumbering companion on the approach of danger, by uttering a shrill note of warning, or pecking the inside of his ears or other tender spots. Surely the bird's action is dictated by pure kindness of heart for the beast he waits upon? One would like to think so. But how is it possible, in view of the fact that the death of the rhinoceros will rob the bird of the chief source of his food-supply? This, no doubt, is the consideration that weighs and that prompts the anxiety for the quadruped's safety.

"lion-provider." No doubt the little skulker is 'cute enough to give the lion the benefit of his powers and of his knowledge of jungle-lore, if a share of the spoil be guaranteed in return. But to steal a share without the service is much more in keeping with jackal-nature. These animals, 'tis true, follow lions and tigers when prowling about for prey—not in the capacity of guides, however, but of uninvited hangers-on, greedily expecting a gorge off the remains of the carcass, when the lordly cat, with appetite sated, retires to sleep off the effects of his meal. Then comes the jackals' opportunity; and the lion, on seeking again the scene of the slaughter, anticipating a second feed from the quarry, finds nothing left but bones picked clean and a few stray fragments of skin and hair.

A similar and equally one-sided bond exists between sharks and pilot-fish; and similar and equally fictitious are the beliefs that have grown up around it. Just as the jackals follow the lion, the pilot-fish follow the shark, and not only lead their large companion to his food, but, when necessary, warn him of the danger

of touching a baited hook. This at least is the unshakable conviction of sailors; for even when the shark, as repeatedly happens, takes the bait, a ready explanation is found on the plea that the monster's disregard for the warnings of his little friends is due to stupidity or insatiable greed. And when the shark has been hauled on board and the pilot-fish shadow the ship, what better proof can be needed of the sincerity and unselfishness of their affection? To say sooth, however, when sharks are not in evidence these fishes commonly attach themselves to ships, and follow them, even as sharks do, for the morsels that fall overboard. They follow the shark for a like purpose; and being beneath the notice of this tiger of the sea, partake with impunity of any scrap of his food that floats away unnoticed in the water.

To this extent there is an exact parallel between the companionship of shark and pilot, of lion and jackal. But here the parallel ends. In the case of the fishes the partnership is permanent; in the case of the beasts it is periodic. The reason for the difference is this. The jackal is able to take care of himself, and needs no protector. The pilot, on the contrary, is weak and defenceless, and liable to be hunted by seals, dolphins, or fishes larger and stronger than himself. But sharks are the masters of the ocean. No fish-eater that would deem the pilot worth the taking dare make the attempt when the shark is near, lest the tables in a moment be turned and the hunter become the hunted. Hence the shark plays the rôle of protector and food-provider to the pilot, though in both these respects his services are enlisted unasked and rendered unconsciously on his part.

Beyond establishing the fatuity of the conception that altruism and disinterested affection have anything to do with the matter, the cases of companionship just cited afford convincing proof that the behaviour of the active promoter of the bond, be it jackal, bird, or pilot, is prompted purely

by considerations of feeding. A glimpse of another but equally practical incentive—namely, the necessity for escaping from enemies—is given by the association between the shark and the pilot. Most of the instances of partnership known are attributable either to one of these motives or to both combined. Rarely a third factor, connected with the rearing of offspring, comes into play instead. Food, self-protection, and family interests are the three considerations which foster the instincts and underlie the actions of all animals.

The simplest types of partnership resemble in essence that which obtains between the tiger and jackal, the shark and pilot, where the members of only one of the parties concerned reap the profit. They play the part of uninvited guests, and differ only from parasites in that they do not actually feed upon the tissues of their associate. They merely take shelter under his wing, and pick up the crumbs he lets fall from his table. They are on the high road to parasitism nevertheless; so much so, indeed, that it is not always easy to draw a hard-and-fast line between the connection of host and guest, of host and parasite.

A case in point is furnished by a fish which lives in an animal of the star-fish kind, known from its shape as the sea-cucumber. The breathing organs of this creature are situated near its tail; and respiration is effected by the rhythmical contraction and relaxation of the muscles



*A harbour of refuge: the sea-cucumber.*

of this region of the body, whereby currents of sea-water are alternately expelled and inhaled through the aperture at its posterior end. The fishes in question are delicate, defenceless individuals, incapable to all appearance of maintaining an independent existence. They have found out that a safe asylum is afforded by the sea-cucumber. Some swim into his lungs head first and twist round afterwards; others, owing to the difficulty of turning in the confined space, take advantage of the indraughts of water to insinuate themselves gradually

backwards by a series of spasmodic wriggles in a retrograde direction. Once safely lodged, they never willingly leave their abode. Only when hunger presses and the coast is clear dare they venture forth in search of food, holding themselves ready all the while to dart back again on the hint of approaching danger.

Protection from enemies lies at the bottom of this strange habit. Still the fishes, 'tis said, are guilty sometimes of nibbling the internals of their host, thus stooping to the level of parasites. Fortunately the sea-cucumber, like others of its class, has enviable recuperative powers, and speedily repairs the injuries inflicted by his ungrateful guests.

Other small fishes as well quarter themselves in the sea-cucumber; also little mussels and soft-shelled crabs. This long-suffering animal, indeed, is the home of a varied assortment of boarders, none of which volunteer a return for the hospitable shelter they receive. Sponges, too, with glassy or horny skeletons, and large oysters, mussels and clams are commonly victimised in this way by prawns, shrimps, and by fishes and crabs related to those that plant themselves on the sea-cucumber. The association of the crab and the clam is historically the earliest instance of animal communism. It was known to the early Egyptians, and writers from Aristotle and Pliny downwards have proposed various theories to explain it. Some supposed that the crab fed upon the clam; others that a mutually beneficial understanding had been established between the two. In payment for shelter, the crab, it was surmised, would give his

sightless friend a warning nip as a signal to close the shell when danger threatened, or when a small fish suitable for their joint repast ventured between the valves. There are no reasons for thinking these explanations true, and none for considering the case other than a simple instance of association due to a sheltering instinct on the part of the crab, and to helpless acquiescence on that of the clam. No damage is done to the latter by his companions, either living or dead; and the presence in shells of pearly deposits, showing dimly the outline of fish or crab, bears witness to the means adopted by

the mollusc to dispose of the dead bodies of his associates.

To whatever temptations they may afterwards yield, the fishes and the crabs are guiltless of parasitical intentions at the outset of their career as dependants. Otherwise the mussels and oysters would surely have devised some means for their eviction or some way of resisting their inroads. Between host



*The Carpenter-bee.*

and parasite there is seldom any peace or truce. Sometimes the contest ends with the victory of the one, sometimes with that of the other; sometimes the battle is left drawn. Rarely, as in the case that follows, is a compromise effected to the mutual satisfaction of both.

All external parasites, mites included, are constantly exposed to the risk of being scraped from their hold by the intentional efforts of their victim or by accidental contact with outside objects. This is the fate they strive to avoid; this is the end all their victims try to compass. No, not all. There is a great black Indian bee, called the Carpenter, which is a notable exception to this rule. She

is infested with large parasites of the mite kind; but instead of leaving no stone unturned to rid herself of them, she has supplied them with a special little pocket in which to pack themselves snugly away. This pocket has a horny untearable lining, and is inserted just above the waist, so that the bee can open or close it at pleasure by separating or pressing together the two halves of her body.

That the pocket was made in the first instance for the mites' exclusive behoof is a view that cannot for a moment be held. Nature, like all agents, has her limitations, and the development of a structure or an instinct in one animal primarily for the good of another is quite beyond her powers. Though others may subse- quently and incidentally be gainers, the owner or the family must be the first to profit. In the case of the bee, the disposal of the parasites where they can neither cause her discomfort nor interfere with her freedom of movement is in a minor degree advantageous, no doubt. But more than that: the presence of the pocket in the female and its absence in the male attest its subservience to the duties involved in the rearing of offspring. Unlike the queen of the Hive-bee, the Carpenter-bee is not a social insect, with legions of nurses to dance attendance upon her and relieve her of all cares and responsibilities of motherhood. The welfare of the family depends upon her own unaided industry. For a nest she bores a long gallery in a tree trunk or wooden fence, and divides it into a series of compartments, separated by vertical partitions made of the sawdust yielded in the boring. In each compartment an egg is deposited, with a store of honey for the food of the young. Now the accidental detachment of the mites by the mother-bee's operations in the confined space, and their inadvertent inclosure with the eggs, might lead to the destruction of the entire brood of baby-bees, for with the loss of their proper food the hungry mites would turn to the supply at hand, and suck the eggs and defenceless grubs. So, to safeguard her family against this danger, the wily Carpenter, acquiescing in her inability to cope with the parasites, and wisely making the best of the situation, stows them away in her pocket until the great event of her life is safely accomplished. As for the mites, consideration for their own safety, not

regard for the bee and her family, is the inducement that prompts their spontaneous withdrawal to this retreat; and their anxiety to avail themselves of its shelter will be specially keen when the bee's maternal instincts are aroused. This is the period when her activity is greatest, when the pressure on her energies is heaviest; and this is the time when exposure is fullest of danger to the mites. Imprisonment with the young bees is the end they most have to fear. Unlike the latter, they are provided with no tools wherewith to cut a way out of the gallery. Once immured, they have no hope of escape. For a time, no doubt, life might be pleasantly supported upon the eggs and the stock of honey; but death from starvation in the sealed-up tomb must ultimately follow the exhaustion of this food-supply. So when the growing restlessness of the Carpenter shows the fever of procreation to be on her, the mites discreetly retire to her pocket to avoid the danger of premature burial. It should be stated that, although the presence of the pocket in the bee and the shelter it affords to the mites have been known for some years as puzzling and unexplained facts, the explanation I here offer of their significance and of the mutual advantage of the pocket to the insect and her parasites is, so far as I am aware, new.

From the standpoint of communism ants take the foremost place amongst insects, and rival even man himself in that particular. Their nests are veritable cities of refuge. Many strangers shelter therein, some as welcome guests, some as intrusive parasites, some as domesticated pets, some for no one knows what purpose. Plant-lice and beetles are kept for the sweetness they give forth; ants of other kinds are retained as slaves; but who can say why wood-lice and spiders are admitted? Beyond a momentary halt to give greeting or demand the countersign, no notice is taken of these aliens. They come and go as they please, and share with the other inmates the protection from outside hostility that is afforded by the courage and pugnacity of the ants. Admission to the nest once gained, and the countenance of the citizens secured, insure for the immigrants immunity from the attacks of many enemies of the insect world. The toleration shown to some strangers is a curious feature of

ant-economy—curious because it attests at times an unexpected limitation in their power of detecting the presence of intruders harmful to the interests of the colony. The ants themselves and their grubs as well are parasitised by certain little flies, which make use of the nest as a nursery. One insect of this kind disposes of her eggs by laying them on the nape of the ants' necks. The maggot, when hatched, bores into the skull, and after devouring the contents, beheads his victim, and uses the severed and empty cranium to shelter in during pupation. This grub in the brain, like a 'bee in the bonnet,' upsets the mental balance of the sufferers, which betray their affliction by an uncertainty of gait and rolling of the head not exactly suggestive of sobriety and sanity. Still the plucky little creatures perseveringly stick to their work; and even when the last fibre holding the head to the body is cut, the decapitated carcasses mechanically struggle on, till their movements, becoming gradually feebler and feebler, finally cease altogether. The damage thus done to the colony is considerable. Why the sufferers receive no aid from their fellow-workers to remove the eggs before the mischief begins is a mystery that remains as yet unsolved.

More puzzling still is the apathy of the ants in their dealings with another of these flies, parasitical in habit like the last, but with different maternal instincts and a different infant-history. Here the victims chosen are not the ants themselves, but their grubs. Here too the nape of the neck is the spot to which the egg is fastened; but, as the sequel shows, for quite another reason. Soon after hatching, the maggot curls round the throat of the ant-grub, like a great Elizabethan collar, with his head tucked under his bearer's chin. At meal-time the workers of the community, detailed for nursery duties, roll the grubs over on their backs and place the food on their trough-like stomachs, which are shaped in this way to receive it. Directly the feeding begins the movements of the grub or the scent of the food stimulates the activity of the maggot, which imitates forthwith the example of his companion and helps himself off the same dish. Quite the most curious feature of this phenomenon is the nurses' entire disregard for their charges' affliction. So far from evincing

any concern at the unusual swelling on the neck, they wash it and tend it as an integral part of the offspring, regarding it perhaps as a pathological tumour beyond their understanding, that had better be left to Nature to heal. So the young insects live and grow up, like inseparable twins, getting an equal share of the food and dividing the attention of the nurses. When the time for cocooning comes round, the ant-grub, taking the lead, spins a case round himself and his companion, and side by side the two pass this period of quiescence together. The ant is the first to awake from the long sleep. Considerately leaving the fly to repose, he bites a hole in the case and escapes into the nest to join in the business of the community. The supposedly empty cradle is then seized by a scavenger-ant, carried to the surface of the ground and thrown away as useless on the rubbish-heap. The fly, in turn, awakes soon after, and creeping through the hole his late bedfellow has made, seeks a mate amongst others of his kind that have been similarly treated by the ants. When the nuptial flight is over, the females re-enter the nest, stealthily creep to the nursery, and laying their eggs on the grubs, start the wonderful cycle of development all over again. This feature in insect-bionomics is a new discovery due to Professor Wheeler, who published an account of it in a recent number of the *American Naturalist*.

In perfection of instincts, crabs take the place in the sea that insects and spiders hold on the land. The extent to which they use for their own ends creatures less intelligent than themselves bears witness to their unscrupulous cleverness. Pre-eminent in this respect is the hermit-crab, that degenerate descendant of the lobster-tribe which in the interests of safety has abandoned a free-swimming life, with its attendant risks, and taken to secreting himself in the empty shells of whelks, periwinkles or other sea-snails. But the adoption of this new mode of life has not insured escape from all dangers incidental to existence. Crabs, larger and stronger than the hermits, tear them from their adopted homes, and fishes with jaws and teeth adapted for the purpose crush them, shell and all. Fully alive to these perils, the hermits have hit upon a clever device to circumvent their foes. The species that is common in our

tidal pools, and mostly frequents shallow water where enemies are fewer, has less need than others of protection. Individuals, however, that venture into deeper water often carry a big bright-coloured sea-anemone on the shell; and another sort, that never advances

shorewards as far as low-water mark, is invariably accompanied by one of these creatures, which envelopes the shell like a mantle, with its mouth lying just under that of the crab. The inseparability of the two points to the persistence of the companionship for many generations, and speaks for the importance of the part it plays in the life-history of either one or both of the partners concerned.

But why does the crab go to all the trouble of burdening himself with an animal of this description, adding superfluous ounces to the already heavy shell he drags along? And why does the anemone so patiently acquiesce in the loss of independence? The answer is not far to seek. After a short spell of roving during early youth, anemones settle down to a fixed residence, and remain permanently rooted for the rest of their time, dependent for a livelihood upon such nutriment as currents or other causes bring their way. Crabs, on the contrary, scour the sea-bottom for food, searching by scent and sight for the dead fish or other offal they require. As with pincers and jaws they shred the food, the water teems with floating particles,



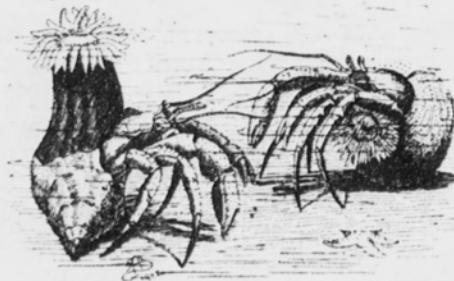
*The maggot and the ant-grub.*

which the anemone awaits with open mouth and tentacles outspread. So far, then, as the anemone is concerned, the advantage of the bond is purely a question of commissariat, and depends upon the superior locomotive powers and the sharper senses of his associate.

The crab benefits even more. Soft to the touch, attractive to the eye, palatable and defenceless as anemones appear, few animals more belie their looks. Many are repulsive to smell, and most of them distasteful to eat. Excepting cod, few fishes will take them as a bait. Imbedded in the skin are multitudes of darts, poisonous though microscopical in size, which like the stings of a nettle shoot out under the stimulus of contact. This is the reason for the beauty of these flowers of the sea. Strange as it may seem, it is none the less true, brightness of colouring is often but the outward and visible sign of nasty or venomous qualities. Whether exposed on the face of a rock or nestling amidst the weeds, anemones in virtue of their brilliant tints stand boldly out, plain for all eyes to see.

Thanks to the armament of darts, no need for concealment is theirs. Nay, more: they are bright for the purpose of recognition. Animals are quick to learn to associate particular tints with particular tastes.

A young or inexperienced fish that has once snapped an anemone will not repeat the experiment. The mere sight of the



*Hermit-crabs and their confederate.*

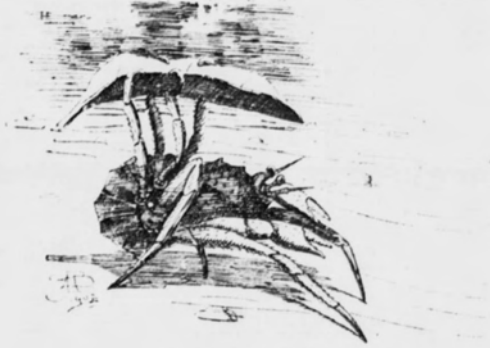
animal will thereafter recall the connection between its gaudiness and an unpleasant smarting of lips and throat. Well does the crab know the value of his companion. By reason of his superior intelligence and greater manipulative power, the chief share in promoting and maintaining the alliance falls to his lot. When exigencies of growth demand a change to a larger abode, he ruthlessly prises his partner off the old shell, grabs him in his nippers and presses him close against the underside of the new one. To stick firmly in the place required is all that is asked of the passive anemone, and in payment for the protection his acquiescence affords he receives such scraps of food as the crab lets fall from his mouth.

Sometimes this interesting couple are joined by a third associate, in the person of a long sea-worm, which lives in the shell with the crab, sheltering in its inmost recesses, and showing himself only at meal-times. When the crab is peacefully feeding, the worm thrusts his head from the shell and surreptitiously intercepts the choicest morsels on their way to his companion's mouth. Cunning and intelligent though the crab may be, he is completely outwitted by the worm, which makes no return to either of his partners for the safe quarters and food they supply—not even to the extent of keeping the shell clean of refuse matter, which was formerly supposed to be his duty.

A knowledge of the attributes of anemones is not a monopoly of the hermits. Their protective value has been independently discovered and turned to account by a crab from the Indian Ocean, which fearlessly roams the sea-floor with an anemone grasped in each hand. The advantage of this method of carrying lies in the control the crab has over his companions. Clenched fast 'twixt finger and thumb, with no possibility of escape, they are available as weapons of defence to thrust in the face of a hungry enemy, or as implements to sting and paralyse any small creatures

the crab may require for food. A share in the prey thus procured is the reward for the use of their powers. Experience of the profit to be gained by the successful performance of their duty has taught the anemones patient toleration of the pinching of the crustacean's claws; and active participation in the work is evinced by their eagerness in stretching forward, with mouth and tentacles expanded, instead of curling up in sulky displeasure at such unceremonious usage.

Equally adept at enlisting the services of aliens for their own ends are the feeble and sluggish Spider-crabs. What they lack in courage and strength they make good by cunning and skill. It is not by chance, but by deliberate intention, that these animals are decked with tufts of seaweed and bits of sponge in imitation of stones covered with a natural growth of these organisms. Each piece is carefully grafted in place by the crab himself, and held in position by spines and numbers of little hooked hairs scattered over the limbs and shell. Painfully conscious of his own defencelessness, the crab has learnt to dress in this way



*The crab's sunshade.*

even while quite young and tiny, and every time the old shell is cast off during growth he starts hurriedly re-dressing the new one. Turning to the nearest weed-bed or sponge-patch, he begins plucking off branches or snicking out pieces with his flexible pincers, and after chewing and moistening the torn end in his mouth, presses it firmly on his back or head. Then a piece to match it is planted on the opposite side, and so the operation goes on until the shell is entirely re-covered. If a piece refuses to stick the first time, it is bitten again, and again moistened, the attempt, if necessary, being repeated till its obduracy is overcome by persistence. Anchored at first by the hairs and spines, the weeds and sponges soon take root of themselves, and form a living colony on the surface of the shell, thus perfecting the disguise that is aimed at. Profiting by the experience of their



fathers, the crabs have learnt what materials make the best clothing, what best stand wear and tear, and instinctively now they choose for a covering such constituents as are strong enough to bear the plucking and transplanting with impunity.

In the interests of concealment a change of site often demands a change of dress. If a crab overgrown with weeds wanders into an environment of sponges, he promptly begins to undress and to attire himself afresh in a suit gathered from the new surroundings. Yet, oddly enough, the sense of sight plays quite a subordinate part in the choice of the articles of apparel. If a coating of red weeds has been adopted, the wearer contentedly shelters in weeds of any other tint, unconscious of the discrepancy in colour and of the danger of detection that it involves. So, too, is the process of dressing and undressing carried on by night as well as by day, and with equal precision and despatch. Nay, more, the whole complicated operation is performed with as much ease and exactness by a blind crab as by one with its eyes uninjured. Sightless crabs have no difficulty in finding food by scent and touch. Hence, when a costume of weeds is substituted for one of sponges, or *vice versa*, a knowledge of the necessity for the change is gained, not through the medium of sight, but through a refined delicacy of perception in the tactile or olfactory organs.

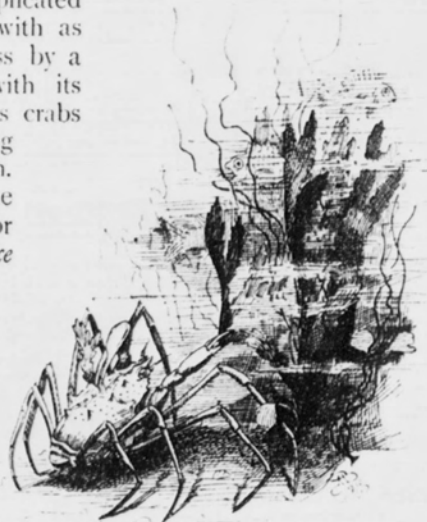


*The crab with the gloves on.*

Delicate hairs afford a secure anchorage only where the elements of the covering are light and the water that surrounds them still. Except as accessories, they are of no sort of use when heavy articles are worn or rough water prevails. Exposure to tidal influences and the use of larger objects have enforced, therefore, in some cases a different solution

to the dressing-problem. Under the influence of the need for concealment, certain crabs have learnt to run as swiftly and surefootedly on two pairs of legs as their ancestors could upon four; and the two hindmost pairs on each side, superfluous as organs of locomotion, have been converted into claspers for holding the covering in place. Tilted up over the back and permanently displaced from their normal position, so as to be no longer capable of reaching the ground, these legs make highly efficient instruments for prehension, with their forcipate or sickle-shaped ends. Oyster-shells, bath-sponges, and other hard or indigestible objects, are commonly used as cloaks for protection and concealment; and often may crabs of this kind be seen scuttling over the open mud-flats, with large leaves held overhead to ward off the heat of the tropical sun.

The cleverness displayed by this invention of the sunshade is largely



*The crab beginning to dress.*

discounted by the strength of the crab's inherited instinct to carry foreign bodies, and by his possession of organs especially adapted to that end. Genuine intelligence is tested by exposure to the unforeseen. Animals subjected to dangers lying beyond the purview of daily experience and requiring prompt measures to surmount, act in accordance with the grade of their mental development. Some fall victims to panic, and waste their energies in frantic attempts to escape; some resign themselves to despair, and doggedly await eventualities; some do exactly the right thing, as if fired by a sudden flash of genius. So may it have been with a scorpion that was seen at Aden carrying a flower in his claw. Scorpions are absurdly intolerant of heat. When exposed to a hot sun they first

show signs of discomfort, then of fear, then of anger, grabbing the empty air with their nippers and lashing in all directions with their tails in vain efforts to destroy the intangible foe. To this state of impotent fury succeeds a condition of collapse, which is speedily followed by death. Repeated observation of this order of events, and the erroneous interpretation of the sequel, are together answerable for the prevalent but none the less fallacious belief in the suicidal tendencies of these animals. Fully awake to the dangers of

heat, scorpions hide in sheltered places by day, and roam abroad at night in search of mates and food. At times, when tempted by the cool night air or the engrossment of the business in hand to prolong the night's adventure and wander farther than is prudent from home, they have to hurry back in the small hours of the morning lest the advancing day overtake them. What then is more likely than that the individual in question, after

recklessly running into this danger, seized hold of the most suitable thing he could find to keep off the sun on his homeward way? For what other purpose could the flower be wanted? Not for food, nor for the moisture its petals or stem might yield. Where drink is concerned scorpions are total abstainers; and, consistent to the last in their liking for animal food,

they prefer starvation to a vegetarian diet. This exhaustion of possible motives leaves room for but one explanation. Realising the danger of his position, the animal in his straits was struck with the brilliant idea of using the flower as a parasol to avert the possibility of sunstroke. The suggestion of utility about this view of the matter makes it more scientific, if less romantic, than the notion put forward by a bystander—needless to particularise the gender—that the creature thus early astray was hastening along to a wedding!



*The scorpion's sunshade.*

