XXXVII. On the presensation which animals have of changes in the weather

Dr. F.A.A. Meyer

To cite this article: Dr. F.A.A. Meyer (1801) XXXVII. On the presensation which animals have of changes in the weather , Philosophical Magazine Series 1, 11:43, 211-216, DOI: [10.1080/14786440108675985](https://doi.org/10.1080/14786440108675985)

To link to this article: <http://dx.doi.org/10.1080/14786440108675985>

Published online: 18 May 2009.

Submit your article to this journal [↗](#)

Article views: 2

View related articles [↗](#)

This similarity in the means by which both electricity and galvanism appear to be excited, in addition to the resemblance that has been traced between their effects, shows that they are both essentially the same, and confirms an opinion that has already been advanced by others, that all the differences discoverable in the effects of the latter, may be owing to its being less intense, but produced in much larger quantity.

XXXVII. *On the Presentation which Animals have of Changes in the Weather.* By Dr. F. A. A. MEYER, at Göttingen*.

I SHOULD only repeat what has been already long known, if I should attempt to prove that, by the great enlargement of our knowledge respecting the natural history of foreign animals, by means of various learned travellers, we are now enabled to explain, to the satisfaction of the judicious naturalist, many phenomena which occur among indigenous animals. The sensations which take place in animal bodies before a change of weather, which animals express by various external appearances, and which, without taking part in the dispute whether animals are endowed or not with souls, may be called a *presentation*, seem however to require considerable explanation. I am well aware that it will be impossible for me to explain things which have not as yet been perfectly explained by men of the greatest knowledge; but I am convinced that every thing which can contribute to the illustration of an obscure subject deserves to be submitted to a proof, and that it is of use to communicate even single observations on points concerning which systems cannot be formed till after the expiration of centuries. Considering the subject in this point of view, I present the following.

Presentation may be admitted under three heads:—I. The presentation which animals have of dry fair weather. II. The presentation which animals have of rainy weather. III. The presentation which animals have of stormy weather.

What regards the two first classes of the presentation of animals is taken from the Göttingen Pocket Almanac for the year 1779, the editor of which, as is well known, was at that period counsellor Lichtenberg. In that work I found the most authentic observations of the latest writers collected

* From *Magazin für das Neueste aus der Physik*, vol. vii.

together. The obſervations reſpecting the third claſs I collected myſelf.

Fiſt, then, reſpecting the preſenſation which animals have of fair dry weather.

Clear, dry weather generally follows after wet weather, when the atmoſphere has been freed from the vapours collected in it by their falling to the earth in rain. Clouds as well as rain are the means by which the air frees itſelf from the electric vapours that are continually ariſing; and if theſe again fall down, it appears very natural that animals, which live chiefly in the open air, ſhould expreſs, by various external movements, the eaſe with which they breathe, and perform all the vital functions. From this principle it ſeems not difficult to explain the following obſervations:

The fluttering of bats in the evening, beetles flying about on the highways, and the ſporting of gnats towards ſunſet, require no explanation. I ſhall only remark, what is already well known to every obſerver, that this preſenſation is highly uſeful to bats as well as to inſects. Every ſhower of rain would render it impoſſible for them to fly, as their wings are not ſecured by any oily matter againſt moiſture: they would therefore be rendered much heavier by rain, and unſit for flying, and they could not be ſo eaſily placed again in folds, which, conſidering the ſtructure of theſe animals, is abſolutely neceſſary, as when they have remained dry.

The ſame principle ſeems to be applicable to the high flight of larks and ſwallows, which perhaps haſten to the upper regions of the atmoſphere becauſe they are freer from vapours and more ſuited to them, and becauſe the lower regions, being more loaded with vapours, afford them leſs pleaſure than thoſe above. The inſects alſo which they purſue for food take then, perhaps, a higher flight.

The croaking of the green water-frog in ponds I cannot ſufficiently explain; but it ſeems to expreſs the pleaſure ariſing from the greater quantity of inſects then flying about, and which they can catch with more eaſe and convenience. But clear dry weather is not ſo agreeable to frogs as the return of warm weather. If they make a noiſe in the time of cold rain, warm dry weather will follow. But if the dry weather proceeds from raw winds, and if warmth and rain ſucceed, their noiſe may foretel rain; and therefore Linnaeus's rule *praedicat pluviam* will loſe nothing of its truth. He ſeems ſo much the more to be right, as more raw than warm dry days take place in the climate of Sweden. I have, to my great inconvenience, experienced the truth of his aſſer-

tion,

tion, on journeys which I was under the necessity of continuing for several days.

That the weather-fish * (*cobitis fossilis*) leaves the water quite pure during dry weather, and the green frog † sits at the top of the glais, may proceed from the lighter or heavier state of the atmosphere, particularly as the latter is remarkably fond of cleanliness and moderately pure air.

The assembling of ravens in the fields, and the singing of the wood-pigeon, may be easily accounted for from the above principles.

I have never seen birds in good weather dress their feathers with oil from their fat glands, in order to secure them from rain; but I have observed many do so when the atmosphere was overcast, and when there was an appearance of rain. I should therefore include this circumstance in the following class, did not experience admit also of another explanation, viz. that the birds, from the atmosphere becoming lighter, hope for the speedy arrival of dry weather, and therefore anoint themselves, and secure their feathers from moisture, that they may be able to fly higher than usual with the less impediment. If the last explanation ought not to be altogether rejected, as I do not think it can, we may admit of this observation; especially as all the experience of men worthy of belief allows of no reasoning to be brought against it.

The expression of animals which show a presentation of rainy weather may be explained partly from the increasing weight of the atmosphere, partly from their manner of living, and partly from the want of moisture which is necessary to their existence.

The restlessness of domestic cattle may proceed from many causes. It is known that the atmosphere in summer, before rain falls, is generally heavier, on account of the electric vapour that arises. The insects which infest cattle, and which mark this heaviness, become then more numerous, and, getting into the stalls where the cattle are kept, torment them and make them restless. The ascending vapour has also perhaps some influence on the skins of these animals, which ceases when the earth does not suffer so much vapour to escape as before; or the air, too strongly charged with electricity, excites in them an unpleasant sensation. It in-

* So called because kept in Germany to foretel changes of the weather. When the weather is fine they continue quiet, but before a storm or rain are very restless.—EDIT.

† This animal, though very common in many parts of Europe, is not found in England.—EDIT.

deed appears strange to explain the same phenomenon from two perfectly opposite causes, a want and an excess of electricity; but we know cases of the like kind in medicine, such, for example, as that where the cramp and sleep produces atonia. People who have wounds or old ulcers feel, on a change of weather, a contraction and burning in those parts; and why should not such affections take place in animals?

All these grounds taken together will be sufficient, in my opinion, to explain why horses and asses rub themselves, shake their heads, and snuff the air by turning up their noses; why asses bray much, and jump about; why cattle scrape up the earth, and stamp with their feet; and why swine, though not hungry, eat greedily and dig up the earth a great deal with their snouts. The restlessness, running about, scraping with the feet, and eating grass, among dogs; and moles continually throwing up the earth, can all be deduced from the same; as well as the cats dressing themselves.

I have remarked that cocks crow on every change of weather, besides at the usual time. They as well as pigeons hasten to their places of shelter in order to be secured against the rain, the approach of which they must be sensible of, by the continually increasing weight of the atmosphere.

The cause of fowls, pigeons, quails, and other birds, washing themselves, appears to me to be a certain heat or itching, which they wish by these means to remove.

Swallows, in all probability, take a low flight on the approach of rainy weather, because the electric atmosphere is too heavy for them, and because they have not sufficient strength to mount above it. But cranes, as being stronger birds, employ all their strength to rise above it, and therefore fly so high.

I have remarked in ravens, that their croaking, unless when they smell carrion, proceeds from fear. They observe perhaps, by the atmosphere still becoming heavier, that a storm highly disagreeable to them will soon take place, and therefore they croak, and attach themselves to trees; and when they are startled by any thing uncommon, they take a high flight, making a loud cry. They easily discover their persecutors among men, and always cry with a loud noise as long as they think they are pursued by them.

That jackdaws, on the approach of rainy weather, flap their wings, and pick their feathers with their bills, may be explained partly by an unpleasant sensation before rain, and partly from the state of the atmosphere.

To the before-mentioned itching or burning sensation I refer also the bathing and plunging of water-fowl. That the birds

birds of the forest should hasten to their nests is very natural, as from the state of the atmosphere they must apprehend rain.

The crying of peacocks, except at pairing time, appears to be a phenomenon analogous to the crowing of cocks. I have often remarked it on a change of weather, and often even on a change of wind.

That storks and cranes place their bills under their wings, is a phenomenon remarked also among domestic fowls when they fly to their roosts to secure themselves against rain. Their pecking their breasts seems to signify an itching sensation in that part of their bodies.

The croaking of the male green or tree frog seems to denote an unpleasant sensation, for in fine weather I never heard them send forth the smallest cry. But the appearance of toads implies a pleasant sensation, as these animals are so fond of living in dirt.

Ants labour with great diligence, and bees hasten home, and do not fly far from their hives, because they follow their instinct. The former endeavour to complete their habitations and to secure themselves better against rain, and perhaps to lay up provision for the rainy season. The latter hasten home to their hives, and fly no more abroad, because the wet would impede them in their flight and labour.

Gnats (*comps*) come into houses to secure themselves from rain, which would impede their flight, and there they attach themselves to the legs to procure that nourishment which is denied them without.

The increased biting of fleas I cannot explain, as the natural history of these insects is as yet too obscure.

Earth-worms creep from their holes through instinct, as they can move themselves forward only upon earth that is slippery.

A presentation of storms I have observed only among the perfect of the *mammalia*, and as yet but among two, viz. man and the dog. Both these seem to have a sense of the increased electricity of the atmosphere. It appears in general, that the more imperfect animals remark only the approach of dry weather; the more perfect, the approach of rain; and the most perfect, the approach of storms. All animals, perhaps, with their external senses, and all plants by their organs, are sensible of the variations of the weather: but plants are not here my object, and it is not necessary to prove the influence of the weather on them, as it is sufficiently apparent to every observer. Here I allude only to the external expression of internal sensations, as may be seen by the ad-

duced instances; else one might consider the shutting and expanding of many plants as foreboding variations of the weather.

The dog, on the approach of rainy weather, expresses signs of uneasiness; scratches himself, because the fleas then bite him with more violence; digs up the earth with his feet, runs round, and eats grass: he is accustomed, however, to do the latter when he is very hot, perhaps to cool himself, and in general a storm follows soon after. Before a storm he evaporates more strongly, so that his smell becomes intolerable; he creeps in a dejected manner to his master, and lies quiet. The cat also seems to have this in common with the dog, that she creeps to her master also on the approach of a storm. But all these phenomena require a further explanation.

The most perfect of all animals, man, is on the approach of storms only subject to certain unpleasant sensations; but these must teach him, in the most striking manner, that his spiritual part, even though it disengages itself so much from oppressive cares, is irremediably connected here below with a sluggish body, which frequently exercises tyrannic sway over the soul. Men in a sound state of health are subjected, on the approach of stormy weather, to a heaviness of body and mind, a want of capacity to perform their usual occupations, a yawning and relaxation, which are highly disagreeable. These are often accompanied also with a sensation of heat. All these phenomena appear in some more and in others less, and in some do not take place at all: but the last case happens very rarely. Sick persons, or those whose juices are corrupted, experience, besides the above, an itching heat in those parts of their bodies which are covered; and many who have old wounds, ulcers, and the like, have in these uncommon sensations. Many of these may be ascribed to perspiration checked by the great heat; though, as Weikard, a philosophic physician, asserts, the want of electric matter in the body may have some share in them also.

When stormy weather happens in winter, these sensations, as well as the before-mentioned presentation of animals, do not take place; at least no one has ever observed them. This, in all probability, arises from the influence of the season.

I must conclude this essay with requesting, that what I have here said may be considered, as it really is, an hypothetical explanation of well known facts.