THE WORLD'S COLUMBIAN EXPOSITION—A VIEW ON THE GRAND SOUTH CANAL.

We illustrate a view taken from the head of the Grand South Canal, looking north. It is a remarkable scene. Both the North and South Canals abound in picturesque architectural effects, but the view here given transcends them all. In front, at the right, rises a reproduction of the noble Egyptian monolith, Cleopatra's Needle, in Central Park, New York. Even the hieroglyphics are included, while the base of the obelisk is guarded by four spirited lions, the work of Mr. M. A. Waagen. Between the obelisk and the splendid Palace of Manufactures, on the right, will be seen one of the Roman rostral columns, decorated with the prows or beaks of galleys and surmounted by a statue of Neptune. The Palace of Manufactures, owing to its great size, could not be made so ornate as some of the smaller buildings; but the problem of erecting an immense exhibition structure without sacrificing all beauty of form and proportion has been successfully solved by the architect, Mr. George B. Post. The roof of this gigantic building affords the best coign of vantage from which to view the manifold beauties of the great White City. Access to the roof is had by means of the electric elevators. On *fête* days, when the building is decorated with flags and pennants, the contrast of the warm color of the bunting with the pure white of the exterior is superb. Beyond the bridges, which are beautifully proportioned, is the Wooded Island, above which rises the dome of the Illinois State building.

The Palace of Electricity will be noticed at the left, just beyond the second bridge. Messrs. Van Brunt & Howe, of Kansas City, were the architects. The effect of the Corinthian pilasters and the campaniles is very fine, repetitions of the electro-magnet and lamp are freely used, as well as conventional ornament. The south front, facing the Court of Honor, is broken by a great hemicycle, in which stands Carl Rohl-Smith's statue of Franklin. At the extreme left is seen the central and cornerpavilion of the Palace of Machinery—a very successful composition in the best style of the Spanish Renaissance. Messrs. Peabody & Stearns, of Boston, were the architects. The North and South Canals are embellished by many fine pieces of sculpture.

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Increase of the French Navy.

The French naval estimates for the year 1894 contemplate, says *Engineering*, the laying down of no fewer than thirty-two new vessels of various types, viz.: Three first class battleships, five second class cruisers, one third class cruiser, one sea-going torpedo boat, five first class torpedo boats, four second class torpedo boats, nine torpedo launches, one second class dispatch boat, and three gunboats. The battleships, which will be built two in the dockyards and one by contract, will have a displacement of 11,000 tons and engines of 14,500 horse power, giving a speed of 18 knots. The armament of each will be four 11·8 inch, ten 5·5 inch, six 3·9 inch, sixteen 1·85 inch, ten 1·45 inch, and eight revolving guns. The second class cruisers, one of which will be built in a government yard and four by contract, are of two types. The first type, which is to include the vessels provisionally known as E4, E5, and E6, will be of 3,990 tons displacement, 9,000 horse power, and 19 knots speed, carrying four 6·2 inch, ten 3·9 inch, fourteen 1·85 inch, and four 1·45 inch quick-firing guns. The second type, which is to include the vessels provisionally known as G3 and G4, will be of 3,800 tons displacement, 9,100 horse power, and 19·25 knots speed, carrying six 6·2 inch, four 3·9 inch, eight 1·85 inch, and twelve 1·45 inch quick-firing guns. These five vessels are improved Chasseloup-Laubats. The third class cruiser, which is to be built in a government yard, will be a modified Galilee, of 2,300 tons displacement, 6,600 horse power, and 20 knots speed, carrying four 5·5 inch, two 3·9 inch, eight 1·85 inch, four 1·45 inch quick-firing guns, and four revolving cannon.

The sea-going torpedo boat, which will probably be built by M. Normand, of Havre, will be a repetition of the Forban, which is now under construction, and will be of 3,260 horse power and 30 knots speed. She will measure 144 feet long. The first class torpedo boats will be of 80 tons displacement, 1,350 horse power, and 23·5 knots speed. The second class torpedo boats will be of 53 tons displacement, 700 horse power, and 20·5 knots speed. The torpedo launches, which are intended to be carried on the deck of the new torpedo depot ship Foudre, will be 62 feet 4 inches long, displacement 14 tons, having engines of 210 horse power, and being capable of a speed of 16·3 knots. It is expected that they will be built at Creusot, where the plans have been prepared. The gunboats, of which particulars are not made public, are believed to be river gunboats for colonial service.

A Costly Fair Exhibit of Platinum, etc.

The exhibit at the World's Columbian Exposition of Messrs. Johnson, Matthey & Co., of London, is valued at over $100,000, and besides iridium, ruthenium, rhodium, osmium, palladium, pure and in various combinations, includes a remarkable and very valuable display of platinum, of exceptional purity. The international standard meter and kilo, as adopted after long experiment by the Paris International Commission, is from an alloy made by this firm of platinum 90 per cent, iridium 10 per cent, and eminent experts reported the platinum of a degree of purity heretofore considered commercially impossible, being 999·98773 per 1,000. In making the standards, 8,000 ounces, troy, were employed. Various forms of platinum apparatus are also shown, that for the concentration of sulphuric acid being especially interesting.

Metric Equivalents.

The metric nomenclature is coming into such common use, especially in scientific articles, that the following formulas will be found valuable:

WEIGHT EQUIVALENTS.

To convert grains into grammes multiply by	0·065
To convert grammes into grains multiply by	15·5
To convert drachms into grammes multiply by	3·9
To convert ounces (avoir.) into grammes multiply by	28·4
To convert pounds (avoir.) into grammes multiply by	453·6

MEASURE EQUIVALENTS.

To convert cubic centimeters into grains multiply by	15·5
To convert cubic centimeters into drachms multiply by	0·26
To convert cubic centimeters into ounces (avoir.) multiply by	0·036
To convert pints into cubic centimeters multiply by	473
To convert liters into ounces (avoir.) multiply by	35·3
To convert gallons into liters multiply by	3·8

Intelligence of Birds and Animals, Especially those that are Susceptible to the Cholera and Contagious Diseases.

BY NICOLAS PIKE.

The intelligence of animals now claims, more than ever, the attention of the naturalist. Many believe that most of them possess, to a certain degree, the faculties of man, and there is no doubt that there exists an intimate connection between the organization and the intellectual faculty. Dr. Lindsay, in an essay which he published, and which has excited some attention, takes the ground that the mind of the lower animals does not differ in kind from that of man, and that they possess the same affections, virtues, moral sense, and capacity for education, and are liable to the same kinds of mental disorders. If we should study them more closely than we do, the conclusion which many scientists like Lindsay have arrived at would enable us to fix in our minds these facts without a doubt. It is said that birds are very susceptible to the cholera, and oftentimes fly from this much dreaded disease. As the cholera has been much dreaded the past season, it would be well for the ornithologist and scientist to watch these birds and some of the lower orders of animals, and confirm what is accredited to them in relation to this disease.

In the year 1854, the cholera appeared at Mauritius, an island in the Indian Ocean. It was in a violent form, and the inhabitants became much alarmed, as the deaths ran up to the frightful figures of two hundred and fifty a day in the city of Port Louis, with a population of eighty thousand persons. During this pestilence there were many reports about the disease being conveyed to fish, flesh, and fowl, which was doubted by many persons, and it was considered merely a whim of the large population of Indians, who are very superstitious. But when accounts began to accumulate from men of veracity it became a fixed fact, and generally believed, that birds were leaving the city and suburbs, particularly one called the "mina," *Paradiseus tristes* (Cuvier). This bird was formerly introduced into the island from Pondicherry for the purpose of destroying an insect which was troublesome. It became numerous, more so than any other species. They assemble in vast numbers in undisturbed woods and thickets, but show a decided fondness for the proximity of human habitation. They may be seen going out in the morning and returning in the evening, like rooks, but do not fly in large numbers together.

Mr. George Clark, a government schoolmaster, residing at Mauritius, informed the writer of the result of his investigation, which can be relied upon, as he was an excellent naturalist, close observer, and a reliable man. In speaking of the "mina bird," he thought it a most remarkable fact that they should leave the city of Port Louis while the cholera was raging, both in 1854 and and 1856. Such was a fact, and he knew it to be true, and his statements were confirmed by many persons from different parts of the island. The keeper of the large cemetery near the city of Port Louis stated that the birds used to be very numerous before the outbreak of the cholera. Scon after the disease appeared in the city the birds commenced to leave, till not one could be found in the large grove of trees which surrounds the grounds. When the violence of the disease had much abated they began to return, but were not so numerous as usual, till it had entirely disappeared. Captain Rupel and a number of prominent gentlemen of veracity confirmed the statements. During my residence at Mauritius I conversed with many persons in relation to the above, and all testified to the fact that the statement was true, and that some of the fresh water fish were affected and died. This I do not state as having come under my own observation. We have well authenticated accounts that during the terrible epidemic of cholera which almost entirely destroyed the inhabitants of the town of Basse Terra, Gaudaloupe, some years ago, the cats and many birds left the place, for parts unknown, and did not return for some weeks, till the disease abated. Some of them remained away permanently. A similar case happened at Malme, in Sweden, on the approach of cholera in 1834.

The Boston *Herald* published a short account of a statement of Major C. C. Creagh, of H. B. M. Regiment "The Royal County Downs." He states that he was present during the unusually severe visitation of the cholera in the town of Kurrachee, in Sinde, in 1846. His regiment lost, in the space of ten days, about two hundred and forty men, and it was particularly remarked that the vultures and other birds of prey entirely disappeared almost simultaneously with the outbreak of the cholera, returning generally after the first few days, when the virulence of the disease began to abate. Major Creagh also mentioned a singular circumstance, from which it would seem that the inhabitants of the sea are by no means exempt from the mysterious disease. On the second or third day after the appearance of the cholera, the bay to the south of Kurrachee was strewed with myriads of dead fish, which were left on the beach by the receding tide. At high water the shores of the bay presented a most singular appearance. The waves for several yards from the shore seemed to be composed of an almost solid mass of dead fish, chiefly of the sardine species, among which, however, there were not wanting others of considerably larger size. This belief in the prescience of birds is almost universal in India, and it is imputed to their power of diving into the secrets of futurity. It is common to the kites and the lizards, and has been acknowledged by some in all ages.

We are aware that there are thousands of persons who watch the migration of birds and note their departure from our northern clime to that of the more genial south; also the hibernation of animals, the time of their entering the hibernaculem, as this denotes an early or late winter. The early flight of wild geese denotes a storm or an early spell of cold weather. The people of Africa, India, Japan, and China watch with interest the movement of birds. The natives of Ceylon, when about to make a journey of two or three days, are governed by a certain bird. They proceed to the woods and seek this bird. If there is to be a change in the course of twenty-four hours, the bird will be found perched on the topmost branch of the tree, pouring forth his melodious notes, which indicates rain, and, it is said, never fails to come. The natives of Ceylon have the most implicit confidence in this sign.

In the warm days of July the cat bird may be seen perched on the low branches of the dogwood tree, uttering peculiar low notes, which are always sure indications of a thunderstorm in the afternoon or evening. These notes are never heard except at this time. We were acquainted with a celebrated statesman who informed us he had never known this to fail, and had the most implicit confidence in this sign. Dr. Meyer says he has never seen birds oil their feathers from their oil glands in order to secure them from rain; but he has seen many do so when the weather was overcast, and when there were indications of rain. It is said that the English robin is termed the naturalist's barometer; for on a summer's day, though the weather may be rainy and unsettled, he sometimes takes his stand on the topmost twig that looks up to the sky, or on a housetop, singing cheerfully and sweetly. When this is observed it is an unerring promise of succeeding fine days. Sometimes, though the atmosphere be dry and warm, he may be seen, melancholy, chirping, and brooding, in a bush or low hedge.

Bears, wolves, and other animals scent the coming rain. The wolves set up a terrible howling, and, raising their heads, point their noses in the direction in which it is coming, oftentimes twelve hours or more before it falls.

The large Gallapagos tortoise always searches for a place under cover, into which he may go twenty-four hours or more before the rain falls. At one of the islands of the African coast which I visited there was a large tortoise farm, where they were breeding these animals for food. On a bright, clear morning not a cloud could be seen, everything indicated a bright, warm, clear day. Nearly all the tortoises in the inclosure were heading in one direction, toward some overhanging rocks, where there was a pen. The proprietor informed me that rain would certainly fall during the day, and, sure enough, it came down in torrents in the afternoon. These animals, and I believe all the family, have a great antipathy to rain drops falling upon their carapaces. The expression of animals which show a pre-sensation 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.

Man, in a sound state of health, is subjected, on the approach of stormy weather, to heaviness of body and mind, a want of capacity to perform his usual occupations, a yawning and relaxation, which are highly disagreeable. These are accompanied also with a sensation of heat. The high flight of birds, which hasten to the upper regions of the atmosphere, is because they are freer from vapors and more suited to them, and because the lower regions, being more loaded with vapors, afford them less pleasure than those above, also the insects which they pursue for food take then, perhaps, a higher flight.

At a meeting of the members of the French Academy, held at Paris in July, 1850, evidence was shown that during the prevalence of the cholera in France, in the district of the city of Paris where the disease was most prevalent, it was noticed that the horses became uneasy and were affected with the disease in a like manner with man, and that often, in the case of other epidemics, a common liability of men and horses had been noticed. Horses surely have a reasoning power. They become attached to each other, especially to their keepers, if kindly treated and petted.

Here is a remarkable instance which occurred but a few months ago, showing the intelligence of the horse. Lieut. Robertson, of the Royal Engineers, was attacked by the Ghazi of Gullston, India. It appears that the former was riding and was joined by the Ghazi, who was on horseback. Both entered into friendly conversation and shortly afterward put their horses to a trial of speed, in which Lieut. Robertson outstripped his rival, when the Ghazi, being a short distance behind, suddenly drew his tulwar and inflicted a severe gash on Lieut. Robertson's neck, and otherwise wounded his hand, which he had raised to ward off the Ghazi's attack. Lieut. Robertson was brought into Quetta, and taken to the station hospital, where he is at present being treated. The young Ghazi was arrested and identified by Robertson, and his guilt proved, was tried, and sentenced to be hanged and his body afterward burned. The sentence was carried into effect at once.

It is stated that when Lieut. Robertson fell from his horse and was lying on the ground bleeding profusely, the faithful animal protected his master from further injury by kicking at the Ghazi and attempting to bite him. But for this remarkable behavior on the part of Lieut. Robertson's horse, it is supposed that the Ghazi would have probably hacked Lieut. Robertson to death.

There are many instances of cats, that had been made pets of, deserting the house at the time of sickness and death. One case came under our own observation, that of a full-blooded Maltese cat, who was a great favorite of the lady of the house, and was fond of lying on a cushioned chair when she was reading or sewing. The lady was taken suddenly ill, and was removed to her room. On the day this took place, the cat left the house, and remained away for ten days. No one knew where she was hiding. During this time the lady died, and was buried. It was some days before the cat became reconciled to the absence of its mistress.

The great intelligence of the archer fish, *Chelmo rostratus*, is really wonderful! It swims near the banks of streams in search of prey. As soon as an insect is seen on the overhanging branch, he at once fills his mouth with water, and throws it out in a small stream with such great precision that he seldom misses the object, and it falls into the water and is instantly devoured. The Chinese keep these fish in confinement and amuse their friends by placing live insects on a bough over the water so that they may see the great intelligence of the fish.

The gouramie builds a nest for its young and will defend them with its life; is a remarkably intelligent fish. I have had them in confinement, and would frequently call them from their hiding places among the rocks in a large basin, and they would come and feed from my hands.

The stickleback of our own country is an intelligent and wonderful fish in many respects. They build a nest for their ova, and will not allow any other fish to come near it.

There is a species of the belone or garfish called aiguille that deposits its spawn in a way, so far as I know, that is very singular and unique. It selects some floating body, to which it attaches the end of the long membrane in which the ova are enveloped, and then it winds off just as a person winds cotton thread round a spool or any other substance. I have seen several bodies thus coated, some of which had a length of fifteen or sixteen feet, in which the eggs, many thousands in number, about the sixteenth of an inch in diameter, were interspersed. This depositing the ova is effected by the fish leaping over and diving under the body on which it deposits its spawn. I have seen a common wine bottle completely covered with spawn floating on the ocean.

From what is here shown of birds and animals evincing a fear of the terrible disease the cholera, may it not be caused by something in the atmosphere that affects them the same as it affects man, and may not the great intelligence given them by their Creator who governs everything cause them to flee from malarial districts, and other places, which are injurious to them. Intelligence in animals I think one of the most wonderful gifts of the Creator.

There are many instances which we could record of higher degrees of intelligence that would be impossible to deny, that animals arrive at a knowledge of cause and effect.

THE great steamships plying between Australia and England are provided with freezing machinery, by which mutton, frozen, is preserved and delivered in London in fine condition. Australian flowers preserved in ice are also carried to London. Recently at a special meeting of the committees of the National Chrysanthemum Society held in London, some frozen blooms of chrysanthemums sent from Sydney, New South Wales, were exhibited. Four large incurved and other Japanese blooms, inclosed in great blocks of ice, 18 inches square and 8 inches deep, had been sent by Mr. R. Forsyth, of Sydney, a well known grower, and were a portion of the group with which he gained the silver cup of the Sydney Horticultural Society in April last. These fine examples of the perfection to which the British gardeners in Australia have brought the Chinese and Japanese flora were shipped to England on the P. and O. steamer Ballarat, and, after being stored at Messrs. Sweeting's and the Cold Storage Depot at Blackfriars, were sent to the Aquarium and there unpacked.