

## ANIMAL LIFE.

Who has not put to himself the question, What is life? Who would not receive a clear and just solution of the inquiry, with a feeling of interest far beyond that afforded by the successful result of ordinary scientific investigation? We know the mechanism by which life acts: we feel its result. We see that that mechanism is so delicate, so complicated, so fragile, so easily set wrong, while our own interest is so deep that it should go well, and permanently well, that the exquisiteness of adjustment, the skill of contrivance, the completeness with which the intended result is secured, all subjects of distinct and interesting investigation, only increase the earnestness of our wish, that we could see beyond the mechanism, and understand that which it is permitted us to know only by consciousness. In this inquiry, we cannot forget that we ourselves are the subjects of the investigation, and that all we have, and are, and hope, are involved in the mystery; and the more we pursue the inquiry the deeper we feel that there are few subjects which the human mind can study which have a greater tendency to fill it with admiration, to penetrate it with gratitude. We do not commonly consider how much is given us in life: the daily enjoyment of the boon, renders us insensible of the variety and plenitude of its richness: we become more sensible of it when we contemplate the number of tissues that have been formed; the number of properties that are attached to each, the number of organs that are constituted by their aggregation and arrangement; the number of functions that are exercised by those organs; and the number of adjustments by which all are combined and harmonized, and made effectual to the production of one grand result: it is then we perceive how many things must exist, how many relations must be established: how many actions must be performed, how many combinations of actions must be secured, before there can be sensation and motion, and thought, and happiness.

When the signs of life are carefully considered, it will be found that they are reducible to five, or that there are five properties which are peculiar to living beings, and by which therefore they are distinguished. Of these, the first is the property they possess of resisting, within certain limits, the operation of the ordinary laws of matter. Physical agents exert over inorganic bodies a constant and irresistible influence. Air, moisture, heat, produce in all such bodies, incessant changes, subverting the closest union between their integrant particles, and forming them into combinations entirely new. If a living being be brought under the influence of those agents, it is found capable of resisting such changes within a very considerable range, and it retains this power as long as it continues to be a living being. Thus the living body is not decomposed under degrees of temperature and moisture, which begin to resolve it into its primitive elements the moment it is dead. There is a certain temperature, different in cases, at which the functions of the economy are performed in the best manner, and all living beings have the power of preserving that temperature, within a very considerable range, whatever may be the degree of heat or cold of the medium that surrounds them. The heat of a tree examined by Mr. Hunter was found to be always several degrees above that of the atmosphere when the atmospheric temperature was below 56° Fahrenheit; but it was always several degrees below it when the weather was warmer. The sap taken from the tree was found to freeze at 32°; while in the tree it would not freeze below 47°. But animals exhibit the most surprising power of resisting the different degrees of heat or cold of the surrounding medium. The power of the superior animals, and especially of man, to

resist high degrees of temperature, at first discovered by accident, and afterwards made the subject of direct experiment, is very extraordinary. In the year 1760, at Rochefort, Messieurs du Hamel and Tillet, having occasion to use a large public oven on the same day in which bread had been baked in it, wished to ascertain with precision its degree of temperature. This they endeavoured to accomplish by introducing a thermometer into the oven at the end of a shovel. On being withdrawn, the thermometer indicated a degree of heat considerably above that of boiling water; but M. Tillet, convinced that the thermometer had fallen several degrees on approaching the mouth of the oven, and appearing to be at a loss how to rectify this error, a girl, one of the attendants on the oven, offered to enter, and mark with a pencil the height at which the thermometer stood within the oven. The girl smiled at M. Tillet's appearing to hesitate at this strange proposition, and, entering the oven, marked with a pencil the thermometer as standing at 266° of Fahrenheit's scale. M. Tillet began to express his anxiety for the welfare of his female assistant, and to press her return. This female salamander, however, assuring him that she felt no inconvenience from her situation, remained there ten minutes longer, when at length, the thermometer at that time standing at 238°, or 76° above that of boiling water, she came out of the oven, her complexion indeed considerably heightened, but her respiration by no means quick or laborious. The publication of this transaction exciting a great degree of attention, several philosophers repeated similar experiments, among which the most accurate and decisive were those performed by Drs. Fordyce and Blagden. The rooms in which these celebrated experimentalists conducted their researches were heated by flues in the floor. There was neither any chimney in them, nor any vent for the air, excepting through the crevice at the door. Having taken off his coat, waistcoat, and shirt, and being clothed with wooden shoes tied on with lint, Dr. Blagden went into one of the rooms as soon as the thermometer indicated a degree of heat above that of boiling water. The first impression of this heated air upon his body was exceedingly disagreeable; but in a few minutes all his uneasiness was removed by the breaking out of a sweat. At the end of twelve minutes he left the room very much fatigued, but not otherwise disordered. The thermometer had risen to 220°.

But animals are capable of living in temperatures of extraordinary elevation even in the dense medium of water. Dr. Clark states, that in one of the tepid springs of Bonarbashy, situated near the Mender, in which the thermometer rose to 62° Fahrenheit, fishes were seen sporting in the reservoir. In the thermal springs of Bahia, in Brazil, small fishes were seen swimming in a rivulet that raises the thermometer to 88°. Sonnerat states, that he found fishes existing in a hot spring at the Manillas at 158°. M. Humboldt and M. Bonpland, in travelling through the Province of Quito in South America, perceived fishes thrown up alive, and apparently in good health, from the bottom of a volcano, along with water and heated vapour that raised the thermometer to 210°, being only 2° short of the boiling point. This power of resisting temperature belongs, in an almost equal degree, even to the vegetable world. This the living body owes to the performance of certain vital processes which are excited to extraordinary action under extraordinary circumstances. By the same power it is capable of bearing with impunity intense degrees of cold. In climates and seasons when the thermometer indicates a degree of cold much below zero, the temperature of the animal body continues almost un-

changed, and all the functions of life go on without impediment or injury. Some of the lower animals may even be frozen and rendered quite torpid without the loss of life. The common eel may be reduced to this condition and conveyed thousands of miles in a state of complete torpor, while it may be again restored to the full possession of activity and health, by the cautious application of warmth. And in whatever climate man has been able to live, or into which curiosity has led him to penetrate, there, wherever he has been able to trace a vestige of animal being, plants have equally been found flourishing in vigour and adorned with beauty.—*Animal Physiology.*

## FOREIGN.

FALMOUTH, April 30.

Our advices from Lisbon inform us that Prince Ferdinand arrived in the Tagus on the morning of the 8th, and that as soon as the steamer conveying his royal highness appeared in sight, the Queen repaired to the Chambers and dissolved them, in consequence of their continued refusal to appoint the Prince Commander in Chief of the Army. Prince Ferdinand was received with all the honors due to his rank. He dined with the Queen on the day of his arrival, and on the following morning his Royal Highness was married to the Queen at the Cathedral, in the presence of the Court, the Foreign Ambassadors, &c. The ceremony was most imposing, and the city was illuminated in the evening. The ministry had resigned, and no one seemed disposed to undertake the formation of a new cabinet. The treasury was bankrupt, and great doubts were entertained as to the payment of the dividends to the English bondholders. It is to be hoped, that, under the advice of the Prince, young though he be, stability will be given to the government. The Duchess of Braganza frigate arrived in the Tagus on the 10th.

Intelligence from Constantinople to the 9th ult. by way of Smyrna, represent the greatest activity to be still observed in the arsenal. The number of men forming the crews of the Ottoman fleet was calculated at 15,900, and recruits were daily arriving. The Captain Pasha, it was said, would be ready immediately to put to sea, after the marriage of the Sultan's daughter, should circumstances require it. The festivities would commence about the 16th of April, and would last about 15 days.

EGYPT.—Mehemet Ali has expressed his perfect approbation of the prospect of a regular steam communication between England and India.

The Pacha of Egypt's navy consists of eight vessels of 110 guns, three others on the stocks, four line-of-battle ships of 102, 90, and 84 guns, five frigates of from 60 to 50 guns each, one frigate on the stocks, five corvettes of from 20 to 24 guns each, nine brigs of from 22 to 10 guns, and one cutter of ten guns, making in whole thirty-six vessels of war.

AFRICA.—The French corps of 5,000 foot, 1,200 horse, and two field batteries, marched from the vicinity of Algiers on the 30th March. After sundry actions with the Kabayles, in which the loss of the French is not specified, one of their columns entered Medeah on the 5th. The expedition re-entered cantonments on the 9th, the result having been the chastisement of a hostile Arab tribe (the Moazayas), the opening of a road 10,000 metres long, and the establishment of a Bey in the French interest at Medeah.

EUPHRATES EXPEDITION.—Letters from Aleppo of the 14th Feb. furnish some intelligence relative to the the Euphrates expedition. Lt. Ross, with the materials, had nearly reached