II. Experiments and Observations of the Effects of several sorts of Poisons upon Animals, &c. Made at Montpellier in the Years 1678 and 1679, by the late William Courten Esq; Communicated by Dr. Hans Sloane, R. S. Secr. Translated from the Latin MS.

In the Month of July, Anno 1678. we gave a Dog a piece of Bread steep'd in two Ounces of the Juice of Dutch Night-shade [Solanum Batavicum] express'd from the green Plant, and mixt with Cheese. As far as we could perceive, he did not seem to receive any manifest Damage from it.

The same Dose of the Juice of the Leaves of Hemlock [Cienta] had no more effect. We gave also the same Dog a pretty large Root of Wolfs-Bane [Aconitum Pardahanches] together with the Leaves and Flowers of the same Plant bruised and mixt with Flesh; which did him

no hurt.

Two Drachms of White Hellebore [Helleborus albus] very much disorder'd him, and caused Reachings, Suffocations, Vomiting, and Voiding of Excrements. This Dog (as afterwards we often observed in others that had taken the like Corrosive Medicines) whether because he was not able to endure the Pain, or by reason of any other Uneasiness, often scratched the Ground with his Feet: However he recover'd, and was well again.

He swallowed also five Roots of Meadow-Saffron [Colchicum Ephemerum] dug fresh out of the Earth: With which he was violently tormented, but did not dye.

At

At last he took two Drachms of Opium, which cast him into a deep sleep; but after Vomiting and voiding setid Excrements, he recover'd by degrees his former briskness. So many, and those so notorious Poisons, could not kill this Dog.

Some Weeks after, when the same Dog had recover'd his former Vigour, we try'd on him the force of a much stronger Poison. We caused him to be bit 3 or 4 times on the Belly, a little below the Navel, by an inraged Viper. There arose immediately little black Bladders. containing a liquid blackish fort of Corruption; they were flaccid and tremulous, like the Gall Bladder when it is about half full; and a livid colour by degrees spread over all the neighbouring Parts. The Venome propagated itself with wonderful quickness, and weakened all, but more especially the Animal Functions: For notwithstanding the Diaphragme did still perform its Office pretty strongly, tho' with some disorder, and the Heart continued beating, tho' faintly and irregular; yet they feemed to fare much better than the Brain, whose Strength was so weakened, that it could not perform the Functions of Sense and Motion but very faintly; infomuch, that the Dog lay without any Strength or Sensation, as if he had been seized with a Lethargy or Apoplexy: Which kind of Stupidity we also observ'd, sometimes in a greater, and sometimes in a less Degree, in all other Dogs bit by a Viper. Being willing to fave this Dog (tho' we had found by many Experiments, that much flighter Wounds made by a Viper had occasioned Death) we thought fit to have recourse to several Remedies; and therefore cupped and scarified the part that was wounded, and applied Treacle [Theriaca.] After this we let him alone for about two Hours: But his Sleepiness encreasing more and more, and his Vital and Animal Functions finking, we were forced to have recourse to another Method of Cure. Wherefore to dis-

pel his Sleepiness, we forced into his Throat half a Drachm of Volatile Salt of Hartshorn mixt in Broth: which we easily did, by reason of his weakness. In a little time after, his Eyes, which before looked dead, began to revive, and he was able to stand on his Feet and walk. Whereupon we repeated the same Dose of the Volatile Salt, by which he was freed from his Sleepiness. and the Strength of his Heart recover'd; and notwithstanding he remained weak for three Days, yet he senfibly recover'd Strength, tho' he would eat nothing all that time: But he drank Water very plentifully and greedily; and on the second Day did not refuse cold After the third Day he began to eat solid Meats. and seemed now out of Danger; only some large foul Ulcers remain'd on that part of his Belly that was bit. of which he would scarce have died, had he not been killed by another Dog; which prevented us from feeing the Event of this Experiment.

But to try more fully the force of the above-mentioned Poison, it is necessary to make several Experiments of it: For tho' the Bite of a Viper, if it be but flight. may kill some Dogs; yet in the Month following, a large strong Dog, that was bit in the Tongue, which is a very dangerous part, recover'd without any Medicines. His Tongue indeed turned black, and swelled so much, that it could scarce be contained in his Mouth: He was stupid, as is usual from the Venome of a Viper, but not so much but that he could stand on his Feet. A few Hours after, his Sleepiness decreased; and the next Day he endeavour'd to lap Water, but the bigness of his Tongue prevented him. On the third Day he threatned to bite any body that disturb'd him, and had recover'd so much Strength, as to be able to escape out of the place where he was kept: And two after, was seen in the Streets; but what became of him afterwards we could not learn.

On the 17th of October we gave a Dog 15 Grains of the dryed Root of Monks-Hood [Napellus] powder'd. and mixt mith Flesh and Broth. He had no sooner taken it, but he was seized with a difficulty of swallowing, or rather seemed as if he was like to be strangled. He immediately grew faint and restless, and dug the Ground with his Feet; but soon desisted, by reason of a fainting-Rit, as we imagined from the dull colour of his Eyes, and a weakness of all his Body. This Fainting was presently succeeded by a violent Vomiting, in which he threw up the Flesh that he had Eaten, which was very little alter'd. His Fainting foon returning again, he laid himself on the Ground; but being seized with terrib'e Convulsions of the Abdomen, Diaphragme, and of almost the whole Body, he run from place to place, and vomited so great a quantity of frothy Matter, that he was like to have been strangled. His Vomiting increased, with a kind of crying and sobbing, like broken Sighs, as if he had endeavour'd to bark at those that flood by. In this manner he was miserably tormented for the space of an Hour; at which time all his Symptoms remitted, and by degrees he recover'd.

In the Summer before, we gave a little Dog a Drachm of the Root of Monks-Hood [Napellus:] He was foon after seized with the same Symptoms, but they were longer and more violent; and he in like manner reco-

ver'd.

In both these Dogs we particularly took notice of these broken and interrupted Sighs, or kind of sobbing; because we did not observe the like to be occasioned by any other Poison that we had made Trial of.

An Ounce of the Leaves, Flowers, and Seed of the Napellus when green, being bruifed and given to a Dog, scarce disorder'd him any more than if he had eaten so

much Grass.

About the same time we made tryal of the Nux Vomica on another Dog; not that we doubted of its being a Poison, but that we might see the effect of it on his body when dead. The Dog accordingly dying in a short time, we found his Stomach and small Guts very red; and judged this Redness and Inslammation to be caused by the Corrosiveness of the Medicine.

On the 20th of October, we injected warm into the Jugular Vein of a strong Justy Dog an Ounce of Emetic Wine Vinum Emeticum: For a quarter of an Hour, after the Operation was over and he was let loofe, he contimued pretty well, unless that he seemed somewhat dejected; but afterwards he began to grow ill, and an unusual Agitation was manifest about the Diaphragme; this was followed by a continual Vomiting, and a little after by an Evacuation of some hard Excrements. these Evacuations he seemed to be somewhat relieved. but foon grew uneasy, moved from place to place, and vomited again. After this he laid himself down on the Ground pretty quietly; but his Vomiting returning again, disturbed his Rest, and abated his Strength, which grew weaker and weaker; for in the space of an Hour he vomited 12 times or more, and sometimes voided some liquid Excrements, but in small quantity; having frequent Inclinations to go to Stool, but in vain, as in a Tenesmus. An Hour and half after the Oparation. he being so weak that he could not stand, his Eyes dull, and looking as if he were half dead, we gave him some warm Broth thro' a Funnel. With this he was wonderfully refresh'd immediately, and soon after could look about, stand on his Legs and walk; but by reason of his weakness, reel'd as if he had been drunk. by himself in a warm Room, where he remained cold, and lay as if he had been dying; and in an Hour after, we forced him to take some more Broth, which revived him again: But in a little time, after some agitation of Xxx his

his Body, he vomited, made Urine very plentifully, hew led miferably, and dyed convulsed. Next Day in viewing his Viscera, we found two things very observable (but neither of them occasioned by the Liquor that was injected;) one of them was in the Heart, the other in the Alsophagus. In the Heart there were two Polypus's: That which posses'd the right Ventricle, stretched itself into the Vena cava and Pulmonary Artery; and that which was in the left Ventricle, fent Branches into the adjoyning Veffels, and was less than that in the Right Ventricle. The Substance of the Polypus was pretty firm, of a Flesh colour, somewhat pellucid, and being cut thro' the middle was altogether of the same colour and confistence as on the Surface. To the Æ-Cophagus there grew a remarkable Gland, which was hard, callous and foul, and opened with a small, round, fleshy Orifice into the Inside of the Stomach, where, upon pressing it, a little Corruption came forth. Upon opening this Gland or Tubercle, we found in it a great many little Worms, wrapt and entangled together, and moisten'd with a corrupted Matter. Some of these Worms were above 4 Inches long, others less. wards we found the like Glands, full of Worms, in other Dogs, and in most we opened, but not so much corrupted as in this. We observed also the like soul Glands in the Aorta descendens, but in one only sound a Worm like thefe, which was almost got out of it, thro' an Orifice, into the Cavity of the Thorax. After this we likewise observ'd more Polypus's in Dogs.

On the 27th of October we injected warm into the Jugular Vein of a Dog a Drachm and half of Sal Armoniae diffolved in an Ounce and half of Water. The Liquor had scarce arrived at the Heart, but the Dog presently sell into deadly Convulsions over his whole Body: Wherefore we let him loose, but he dy'd imme-

diesely.

On the 18th of November, we cau'ed a Whelp to be bit in the lower Lip by a Blind-Worm [Cacilia] so that the Blood appear'd in the Wound. The Whelp dy'd indeed the same Day; but because we had committed him to the care of another Person, we could not be certain whether he dy'd of the Wound or not; and what increased our Suspicion, was, that there did not appear on the part that was bit any livid Colour.

On the 12th of December we injected into the Jugular Vein of a Dog a Drachm of Salt of Tartar dissolved in an Ounce of warm Water: He dy'd crying, and in Con-

vullions, almost immediately.

On the 15th of December we found a Polypus in both the Ventricles of the Heart of a Dog, each Polypus stretching itself with a double Root into the Vessels of the Ventricle it possessed. Afterwards we often observed the like Polypus's in other Dogs.

On the 20th of December we injected warm into the Jugular Vein of a Dog an Ounce of Urine made by a Man fasting. The Dog was uneasy during the Injection, and while the Liquor passed to the Heart; but was not seized with any Convulsions or other ill Symptoms;

and being let loose, eat Breed very greedily.

The same Day we made a gentle Decoction of two Drachms of White Hellebore, well powder'd, in Spring Water, and evaporated it away to Nine Drachms and a half; and the next Day injected all the Decoction, strongly pressed out and turbid, into the Jugular Vein of a Dog. At first some sew Drops only passed to the Heart, some concreted Blood obstructing the Passage; but those Drops very much affected the Dog, for he was seized immediately with convulsive Motions: But soon after, when the Liquor had removed what lay in its way, and had enter'd the Heart, it killed the Dog as suddenly as if he had been shot thro' the Heart with a Bullet; for having losen'd him presently, to see if any Life X x x 2

remain'd, he was quite dead and flaccid, and hung like a Fleece in the hand of the Person that held him.

On the 2d of January 1679. Vinegar was injected warm into the Jugular Vein of a Dog, without doing

him any manifest harm.

The same Day we caused a Whelp to be stung in the Tongue by several ocorpians; but the Wounds made by the Scorpions, by reason of their weakness, being but slight, and not penetrating deep, we made a small Incision on the Abdomen, and drawing aside the Skin, let the Scorpions make several Wounds on it; but without any effect, tho we often forced the Sting into the Wounds, and pressed the Bladder that is supposed to contain the Venome.

In like manner a Pidgeon, being feveral times stung

by a Scorpion, remained unhurt.

January the 3d, two Drachms of Sugar dissolved in an Ounce of Water, was injected into the Jugular Voin of a Dog: He received no harm from the Injection, but continued well for the three Days after, that we kept him.

On the 4th of January, a Drachm and half of Spiris of Salt, diluted in an Ounce and half of Water, and injected into the Jugular Vein of a Dog, killed him immediately. In the Right Ventricle of his Heart, we found the Blood partly grumous and concreted into harder Clots than ordinary, and partly frothy. In the same Dog that Gland that contains Worms, and is frequently, found in the Esophagus, opened with two Orifices into the Cavity of that Part, and in the Sinus's of it there lay several small Worms.

January the 5th, we gave a Dog 12 small Caterpillars of the Pine-tree [Pitjocampa, vel Ernea Pini] weighing 2 a Drachm, which we bruifed alive, and mixed with Flesh. The Dog, the he was but young, received no other hurt, than that now and then he seemed as if he

endeavour'd to swallow something, or was troubled with an inclination to Vomit; from whence we judged the Stomach and Assophagus to be only lightly affected: But these Symptoms vanished in a few Hours, and the Dog continued Brisk, and greedy of Meat, all the rest of the Day.

The same Day we included a Rat in a large Glass with a Scorpion; but the Scorpion, being dull and benumn'd with the extream coldness of the Weather, was able to wound the Rat but very weakly; with which however the Rat being provok'd, set upon the Scorpion, and knawed off and devour'd part of him, keeping his Eyes shut all the while, that he might not be hurt by his Claws or Sting. The same Fate happened to another Scorpion, which we added to the former; but the Rat notwithstanding remained unhurt.

January the 6th, we killed a Dog almost in a Moment, by injecting into his Jugular Vein an Ounce of Spirit of Wine, in which there was dissolved a Drachm of

Campbire.

The same Day we injected warm into the Crural Vein of a Cat, 50 Grains of Opium, dissolved in an Ounce of Water. The Cat presently after the Injection seemed very much dejected, but did not cry; only made a low. interrupted, complaining Noise. After this followed Tremblings of her Limbs, Convulive Motions of her Eves, Ears, Lips, and almost of all parts of her Body, with violent Convultions of her Break: Sometimes the would raise up her Head, and seem to look about her, but her Eves were very dull and deadifus and tho' she was let loose, and had nothing tied about her Head or Neck, vet her Mouth was so filled with Foam or Froth, that the was like to be strangled. At last, her Convulsive Motions continuing, and, being seized with a stretching of her Limbs, the dy'd within a quarter of an Hone. Upon

Upon opening her Body, we did not find the Blood much altered frem its Natural State.

February the 7th, we injected into the Crural Vein of a lusty strong Dog a Drachm and half of Opium, disfolved in an Ounce and half of Water. The Dog immediately shewed the great Pain he endured, by a violent strugling of his whole Body, a loud Noise that he made, notwithstanding his Jaws were tied, a great difficulty of Breathing and Palpitation of the Heart, with Convultive Motions of almost all Parts of his Body: In a little time all these remitted, and he was seized with a profound Sleep, as if he had been in a Lethargy or Apoplexy. Having let him loofe, he lay upon the Ground without moving or making any Noise, in so deep a Sleep, that he would not move with beating. About half an Hour after, if we beat him, he would move a little, but presently lay down again. Hour, if we beat him, he would move a little more: and by degrees his Sleepiness a little decreasing, in an Hour and half or two Hours time, when he was beat he would make a Noise and walk a little, but seemed very heavy and stupisted, and reeled as he went; but as foon as we left off beating him, as if he had forgot every thing that had past, he presently laid himself down again and fell assep. Next Day when we viewed the Place where he lay, we found a great quantity of fetid Excrements, like corrupted Blood, or the diluted Opium that he had taken: But still his Drowsiness continued, and tho' we beat him with Whips, that he ran crying about the Room, yet he presently forgot it, and immediately fell afleep again. In this fleepy Condition he continued a Days, refusing whatsoever was offer'd him to eat, or rather not minding that or any thing else. On the 4th Day we found him dead: But perhaps he would not have dy'd of the stupifying Quality of the Opium, if (considering the extream coldness of the Weather)

ther) we had put him in a warmer place and had forced him to have taken some Broth.

February the 8th, we found in the Bladder of a Tortoise, adhering to its Coat, a flat porous Stone, about

twice as big as a Lentil.

February the 9th, a Drachm and half of Common Salt, dissolved in an Ounce and half of Water, was injected into the Jugular Vcin of a Dog. After the Injection, he was thirsty, and drank Water greedily; but in other Respects he seemed to be pretty well, and the next Day

was quite recover'o.

February the 20th 1679, we injected into the Crural Vein of a little Dog, half an Ounce of warm Oil of Olives, which we did with a great deal of difficulty, and very flowly, by reason of the smallness of the Vein and thickness of the Liquor. For half a quarter of an Hour that we were injecting the Liquor, the Dog did not feem to be uneasy or out of order; but after that, he barked, cryed, looked dejected, and fell presently into a deep Apoplexy; so that his Limbs were deprived of Sense and Motion, and were flexible any way at pleafure; his Respiration still continuing very strong, with a snorting and wheezing, and a thick watery Humour flowing in great quantity out of his Mouth, which was fometimes mixt with Blood. He loft all External Sense: His Eyes, tho' they continued open, were not fensible of any Objects that were put to them; and we touched and rubbed the Cornea (as fensible a part as it is) without any more fign of his being sensible of it than if he had been dead. His Eye-lids notwithstanding had a Convulfive Motion: His Hearing was quite loft; and his Feeling, tho' at first he seem'd to have some small Sense of it when we touched his Wound, yet afterwards it was so dull, that we pinced his Claws and Flesh with Pincers, and bored Holes thro' his Ears, without his moving or feeming to be the least sensible of it. It is worth oblerobserving, that in the midst of his Sleep, being sometimes seized with a Convulsive Motion of his Diaphragme and other Muscles that help Respiration, he would bark strongly as if he were awake, and in a little time would be quiet again: So that in less than a quarter of an Hour his Rest would be disturbed 3 or 4 times with this violent Barking. But confidering this more attentively, we found that at the very time he barked. he was as void of Sense as before; for we could neither make him Bark, nor leave off Barking, by either beating or pricking him; but in a little time he would leave off of himself, and return to it again some time after. Thus in three Hours after the Injection, spent in Sleep. ing and Barking, he dyed; and having opened his Body after he was dead, we found the Bronchia of the Lungs filled with a thick Froth.

A few Days after we injected a larger quantity, viz. an Ounce of Oil of Olives into the Jugular Vein of a

Dog, which suffocated him the same Moment.

Afterwards the same quantity of Oil of Olives, being injected into the Jugular Vein of a Dog, killed him in an Hours time. He was seized with a great Sleepiness, Snorting and Wheezing, and a bloody Water run plentifully out of his Mouth. In this Dog, the he did not dye immediately, we did not observe the Barking as in the former: But in all that were suffocated by Oil, we found their Lungs silled with a very thick Froth.

February the 27th, we injected 10 Drachms of highly rectified Spirit of Wine into the Crural Vein of a Dog. The Dog died in a very little time, very quietly, and as it were with pleasure, licking his Jaws with his Tongue, and breathing quick, but easily, without barking, crying, or any Convulsive Motion. In the Vena cava and right Ventricle of the Heart, the Blood was concreted into a great many little hard Clots; which appeared yet more conspicuous and harder in some Blood that flowed back

from the Vein into the Syringe. In this Dog we found the Emulgent Artery of the Left Side to be double.

March the 2d, we injected three Drachms of rectified Spirit of Wine into the Crural Vein of a small Dog; which made him Apoplectick, and as he were half dead. In a little time he recover'd from his Apoplexy, but grew giddy; and when he endeavour'd to go, reeled and fell down. Tho' his Strength increased by degrees, yet his Drunkenness still continued: His Eyes were red and fiery, and his Sight so dull, that he did not seem to take notice of any thing, and when he was beat would scarce move. However, in four Hours time he grew better, and would eat Bread when we gave it him. The next Day he was brisker, and seemed past all Danger.

In diffecting the same Dog some time after, we found in the small Guts two Flat-Worms; one of them about 6 Spans long, and the other about 5. They had perforated the Gut; and one of them was got half out of

it into the Cavity of the Abdomen.

About the same time we found in two Dogs a Worm, of near a Foot in length, out of the Intestines, in the Cavity of the Abdomen, the Intestines being no ways perforated, but remaining sound and whole. That we might be more certain of this, we separated them from the Mesentery, and viewed them very carefully. But in both these Dogs the Omentum was of an ill colour and putrissed; from whence we conjectured, that these Worms were bred from the Putrisaction of the Omentum.

We injected into the Crural Vein of a Dog 5 Ounces of a strong White Wine; which made him very drunk, and little different from what a less quantity of Spirit of Wine would have done: But in a few Hours his Drunkenness abated, and he recovered.

In the same Month of March we injected into the Crural Vein of a Dog, an Ounce of a strong Decoction of Tobacco. He was seized immediately with strange Convulsions of his whole Body. At first his Eyes looked wild and distorted, his Jaws trembled; and in a little time he died terribly convulsed. This Experiment we repeated several times after, and always with the same success.

Ten Drops of distilled Oil of Sage, mixt with half a Drachm of Sugar, and dissolved in an Ounce of Water, being injected into the Crural Vein of a Dog, did him no harm.

In a Castrated Dog we observed the Processes of the Peritaneum and Spermatic Vessels to be cover'd with Fat, and scarce to be seen; and that he did not smell so rank and strong, as other Dogs that had not been Castrated.

A yellow-streak'd Lizard [Lacerta Chalcidica] which had been kept all the Winter in a Glass with Bran, being exposed to the Sun to refresh it, on the contrary died in a few Hours. We have also often found, that Scorpions exposed to the hot Sun, especially in the Summer, died in a short time.

A Drachm of purified White Vitriol, injected into the

Crural Vein of a Dog, killed him immediately.

Fifteen Grains of Salt of Urine, dissolved in an Ounce of Water, and injected into the Crural Vein of a Dog, east him into such violent Convulsions, that we were afraid he would dye under them. When he had recovered himself a little, we repeated the Injection with the same quantity; but the Dog got the better of it, tho' with a great deal of dissipulty, and perfectly recovered.

April the 27th, we made a Decoction of 2 Drachms of Sena in Water, and injected warm three Ounces of it into the Crural Vein of a very fat, large, and strong

Dog.

Dog. He continued pretty quiet, without any sign of pain or uneasiness, during the Operation; and when it was over we let him loose, expecting the Event of it. He was melancholy and dejected, but easy and without any sensible commotion, for the space of an Hour. After that, his Respiration grew quicker, he had a murmuring Noise in his Belly, with violent Commotions of the Muscles of his Abdomen, Diaphragme, Stomach and Intestines, and vomited plentifully a Biliose Matter. After his Vomiting he grew faint, and in a little time his Vomiting returned again; so that in an Hour and half he vomited four times. His Strength and Appetite were very weak, and he would eat nothing for three Days. But on the third Day his Appetite, Strength, and former Briskness returned, and he recover'd.

Two Dogs, which had their Recurrent Nerves cut, lost their Barking and Voice. But doubting whether the Wound or Scar might not affect and hurt the Motion of the Muscles, we performed the same Operation on another Dog, but without cutting the Nerves; and when the Wound was healed, he barked as freely as before.

A Dog that had the Nerves of the Par vagum cut assunder, presently grew dejected and faint. He breathed very slowly and with Sighs; for when he had drawn in his Breath leisurely and insensibly, it came forth again immediately very forcibly and with a Sigh, as if it had been retained a long time in the Lungs. The Muscles of the Abdomen and the Diaphragme laboured hard, as if they were to supply the Defect of the Lungs, which were grown almost useless by being denied an Inslux of Spirits by the Pneumonic Nerves. The Dog resuled all kind of Meat; sometimes he vomited, or had an Inclination to Vomit; and at last, in two Days time, he dyed.

An other Dog, that had the Nerves of the Par vagume only tyed, lived 10 Days: He vomited frequently, and would not eat unless clandestinely: He breathed with

Sighs, and was very faint.

A Dog, that had the Trunk of the Aorta descendens tyed hard a little above the Diaphragme, immediately lost the use of his hind Legs; for when he stood on his fore Legs, he would draw after him his hinder Legs, as if they had been dead: He grew weaker by degrees, and dyed in five Hours.

July the 12th, a Mole being stung in the Side by a Scorpion, dyed immediately convulsed. In this we observed, that the Intestinum cacum is wanting in Moles.

HI. A Letter from the late Mr. Edward Lhwyd, Keeper of the Ashmolean Museum in Oxford, to Dr. Tancred Robinson, F. R. S. Giving a farther Account of what he met with remarkable in Natural History and Antiquities, in his Travels thro' Wales.

Lhan Dyvodog, Glamorganshire, Sept. 22. 1697.

 $S \cdot I R$,

Had no sooner received your last, but was forced to retire in a hurry to the Mountainous Parts of this County, in order to copy out a large Welsh MS. which the Owner was not willing to spare above two or three Days, and that in his Neighbourhood. It was writ on Vellom, about 300 Years since; and contained a Collection of most of the oldest Writers mensioned by Dr. Davies.