

II. *Memoirs communicated by Mons. Garcin to Mons. St. Hyacinthe, F. R. S. containing a Description of a new Family of Plants called Oxyoides; some Remarks on the Family of Plants called Musa; and a Description of the Hirudinella Marina, or Sea-Leach. Translated from the French, by Mr. John Martyn, F. R. S.*

A Description of a new Family of Plants, which I name Oxyoides.

THE *Oxyoides* is a Family of Plants, whose Flower and Fruit are altogether like those of the *Oxys*; that is, the Flower is compleat, regular, polypetalous and hermaphrodite; containing the *Ovary*, which afterwards becomes, as in the *Oxys*, a five-cornered Fruit, divided into five Cells, filled with small Seeds; each of which is covered by a Membrane, like a Hood, which opens, when ripe; and by an elastic Motion, makes the Seed leap out.

The true Characters therefore which ought to distinguish this Family from the *Oxys*, are, that the Leaves are disposed by Pairs along a Rib, without being terminated by an odd one, which makes them entirely resemble those of the *Tamarind*. That these Leaves are all gathered together, in an Umbel, on the Top of a naked Stalk: That they are not in the least Degree acid, and that they shew as great

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a Sensibility, on being touched, as the Species of *Mimosa*.

The Species of this Genus are,

I. *Oxyoides Favanica, sensitiva, caule rubefcente, hirsuto villoso, flore majore.* Tab. II. Fig. I.

II. *Oxyoides Malabarica, sensitiva, caule viridi, glabro, flore majore.* Tab. II. Fig. 2.

Description of the first Species.

It is a Plant which grows usually to the Height of half a Foot. It is composed of a naked Stalk, of Ribs of Leaves, and of Pedicles of Flowers. Each of these Parts is of equal Length, and usually three Inches, when they are at their full Growth; and the whole is disposed in an Umbel.

The Root, which is almost as long as the Stalk, runs streight down, and sometimes obliquely into the Ground. It grows taper from its Neck, which is of the same Thickness with the Stalk. It is set with small Fibres, a little waved and white, and giving Rise to other pretty short Filaments. The whole Root is whitish.

The Stalk, which (as I said before) is usually three Inches high, arises sometimes streight, and sometimes crooked; sometimes wrinkled, and sometimes plain throughout its whole Length, pretty downy, or rather hairy, and always reddish in some Places. It is from a Line and a half to two Lines thick towards the Top, and usually something less towards the Bottom. This Stalk, which forms a kind of Button, or little Head at the Top, gives Rise at that Place to all the other Parts
of

of the Plant ; that is, to the Ribs of the Leaves, and the Pedicles of the Flowers ; which makes the whole Tuft resemble an Umbel.

The Ribs of the Leaves, which grow from the Top of this Stalk, go on encreasing till they equal the Length of the Stalk. They are about the Thickness of the treble String of a Violin, and equal throughout their whole Length. They are a little downy, after the same manner with the Stalk.

The Leaves, which grow by Pairs, occupy two thirds of the Rib ; that Part which is next the Stalk being naked. The first Pair of Leaves is the least, and the last Pair always the largest. These are commonly half an Inch long, and the smallest are not above half the Size of the largest. These Leaves grow so near the Rib, that they seem to have no Tail. Their Base is always the broadest Part of the whole Rib, and always parallel to the Rib : The rest of the Leaf bends itself a little forwards. The Middle of their Length is usually their narrowest Part, and from thence they are gradually enlarged, and rounded at their Extremities. The Bases of all the Pairs are almost of the same Bigness, except the last, which has the Breadth on one Side only of the little Nerve, which traverses the Leaf, to avoid incommoding itself with its Neighbour ; but to make Amends, the Leaves of this Pair are broader than the others, a little below their Extremities, especially outwards. They are all traversed lengthwise by a fine Nerve, or Thread, always bent like the Leaf on the Side of the last Pair. They are of a lively Green on the Inside, and a little whitish on the Outside. Their Plain is garnished with a great Number of very slender
Threads,

Threads, almost imperceptible, but parallel, which grow also by Pairs, and are placed at acute Angles with their little common Nerve, and grow smaller at the Edge of their Leaf. In short, their Position and Figure come pretty near to those of the *Tamarind*. The Number is usually from eight to ten Pairs, and they are as sensible on being touched, as those of the Species of *Mimosa*. They shut themselves up at Sun-set, as it were to sleep, after the same manner with the Leaves of the *Tamarind*. The Ribs are in Number from two to three Dozen; and the Pedicles of the Flowers are about a fourth Part fewer in Number: Both the one and the other appear of different Lengths, because the shortest are the youngest, but at last they usually grow to almost the same Length with the first. The opening of the Leaves is performed almost after the same manner with that of the Top of the Spikes of the Species of *Heliotropium*, unrolling like the Tail of a *Scorpion*. The Ribs and the Pedicles are a little hairy, as well as the Stalk. The Pedicles are of the same Thickness with the Ribs.

The Flower, though it seems to be monopetalous, is not so, any more than the Species of *Oxys*, which seem to be so too: Otherwise the Principles of Mons. *Vaillant* would be false, who has laid it down as a Rule, that in all monopetalous Flowers the Chives grow from the Sides of the Flower, and that those which grow from the Base of the Embryon, or rather from the Ovary, are always polypetalous. In short, if we examine them nicely, which no one has done till now, we may observe, that these Flowers have no *Anus* at the Base, but that the Petals, which are always five in
Number,

Number, have their Bases separated very distinctly one from another; and though they are reunited about the Middle, which makes them look as if they were of one Piece, yet they may be separated without tearing. *Tab. II. Fig. 3.*

The Petals of our *Oxyoides* are equal, they are from three Lines to three and a half long, and towards the Extremity about a third Part as broad as they are long. They are lightly cut in like a Heart at their Extremities. They are of a Lemon Colour, paler or deeper, according to the Moisture or Heat of the Season. Each of them has a small Streak running through their Middle Lengthwise. They are covered by their Empalement about two Thirds of their Height, and from thence they open in Form of a Bell. They are very tender, and last but the Space of one Morning.

The Empalement is one leaved: It is two Lines high, and the half of this Height makes the Thickness of its Base. It divides a little below the Top into five Lobes, very sharp at their Extremities. It is pale-green; it is regular, and a little hairy.

The Chives grow from the Base of the Embryon, being twice the Number of the Petals, five of them being higher than the other five. The highest reach up to about the Middle of the Petals. Their Summits are of the same Colour with the Petals, and the Chives of the same with the Empalement, or a little brighter.

The Ovary is very small and round, but a little furrowed into five Ribs, the Diameter of which is about one Third, or almost half a Line. It is crowned by five Teeth, which form the Body of the Stile.

This Ovary afterwards becomes a dry Fruit, of an oval Form, starred with five Furrows, of which the least Diameter is about one and a half or two Lines. This Fruit is divided into five Cells, and opens at the Top when ripe, and then expands itself by little and little to its very Base, and discloses small, round Seeds, lodged four together in each Cell. They are each of them covered with a little Hood, or very fine Membrane, which on the Encrease of the Bulk of the Seed, opens itself with Violence, and throws it on the Ground. The Colour of the Seed pretty nearly resembles that of the Seed of *Psyllium*.

Each Pedicle, during the Time of its Encrease, continually puts forth new Buds, and new Flowers, in the same manner as the Stalk continually puts forth at the Top new Leaves and new Pedicles. The Number of these Buds is usually five or six at the Top of each Pedicle, enlarged into a Head. These Buds grow, encrease and expand themselves one after another, which is the Cause that this Plant, when once it begins to flower, puts forth new Flowers every Morning, which are quite vanished in the Afternoon. The little Bunches of Buds, each of which adorns a large Pedicle, are encompassed with little Points, which compose a kind of common Empalement. In short, the little Pedicle, which is proper to each Flower, is slender, and a full Line long, so that its Length is equal to the Diameter of the Empalement.

The Diameter of the Flower, when it is most expanded, is four Lines.

The Petals make the Empalement expand itself a little : but when the Flower is faded, the Lobes of the
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the Empalement draw together, and form a pyramidal Body ; but when the Ovary grows bigger, and becomes the Fruit, the Lobes of the Empalement expand again, without changing their Shape ; because the Body of this Empalement encreases its Diameter by the Effort which the Fruit makes within it.

R E M A R K S.

This Plant is very sensible of the least Cold : It loves warm and moist Places. It is found in the Island of *Fava*, and probably in the other Islands of the *Sonde* and the *Moluccas*. When one touches its Leaves, they close immediately, and open again by little and little. The more they are warmed by the Sun, whilst their Soil is moist, the more impetuously they close against one another. The *Portuguese Indians* call it *Dormidera*, because, on being touched, it seems to sleep, by shutting up its Leaves ; or else, because some among them think it procures Sleep by being put under the Ear, as I have seen practised ; but I cannot ascribe this soporifick Quality to it, any more than I can recommend the hanging of *Mistletoe of the Oak* about the Neck for the Epilepsy. The Leaves of this Species of *Oxyoides* have no Acidity in their Taste, and give but a faint Tincture of Red to the blue Paper.

I thought this Plant curious and rare enough to be communicated to the curious *English* Botanists. I had the Pleasure to see a little while ago, in Dr. *Blair*, that the Flower of the *Oxys* was pentapetalous.

The Remark of Mr. John Martyn, F. R.S.

We are obliged to M. Garcin for his curious Description of this Plant, by which its Genus is determined. It is however by no means a new Species, having been described long ago by Acofta, and other Authors, under the Name of Herba viva. I have seen a fair Specimen of it in Sir Hans Sloane's Hortus Siccus, with which M. Garcin's Figure agrees very exactly. It was the first sensitive Plant known in Europe, and very different from those which are now brought from America, and cultivated in our Gardens under that Name.

The Flower of the Oxyoides, Tab. II. Fig. 3.

1. The Empalement.
2. The Flower, the Petals of which are joined together.
3. A Petal apart.

Remarks on the Family of Plants named Mufa.

Almost all the Writers of Botany have looked on this Family as a Tree, on account of its Bigness, though it is tender, spongy, membranous and succulent, not at all hard or woody. Its Stalk is slender and supple, not able to keep itself upright, without a great Number of thick, membranous Sheaths, which cloath its whole Bulk, and defend it from the Injuries of the Weather. Besides, this Plant being annual bears Fruit but once, and then by Degrees perishes.

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The Trees on the other Side, which are ligneous, hard and perennial, bear Fruit several times. The Bigness then of a Plant does not seem to be a Character sufficient to distinguish a real Tree from a Plant that is not one.

Again, the same Botanists have placed the *Musa* in the *Palmaceous* Class, which are all Trees, perhaps on account of this Plant's having but one Stalk, without any Branches; and because the great Leaves at the Top of it divide, when they grow old, in such a manner as to resemble in some Degree a Sort of *Palm*.

Having had an Opportunity in the *Indies* to consider this Plant better, I soon found that it justly belonged to the *Liliaceous* Tribe. It is known that the *Liliaceous* Plants have several Characters, which distinguish them very well. Their Roots are either bulbous, tuberous, or consisting of thick, fleshy Fibres: Their Leaves involve the Stalk, more or less at their Bases. The Substance of their Flowers is filled with silver Spangles; and lastly, their Fruits are always divided into three Cells. The *Musa* has all these Characters. Father *Labat* says in his Travels, that the Root of this Plant is a thick Bulb, round and massy, emitting Fibres. *Marcgrave*, who has given a full Description of this Plant under the Name of *Pacoeira*, has observed, that, at its first appearance, it sends forth two or three Leaves, rolled up like a Horn, which unroll themselves, and grow after the Manner of the *Cannacorus*. And, according to my Observation, the Fruit in all its Species, is constantly divided into three Cells, which is sufficient to shew, that it is a true *Liliaceous* Plant.

As *Marcgrave*, and the Authors of the *Hortus Malabaricus* have largely described this Plant, I shall content myself with only giving a Definition of this *Genus*, to make it better known.

The *Musa* is a *Liliaceous* Plant, with a monopetalous, irregular Flower, incompleat and hermaphrodite, composed of a Tube, which is filled with the Ovary, and a Pavilion divided into several Lobes, and forming a kind of Mouth. The Ovary, which adheres strongly to the Tube, is triangular, and crowned with five Chives, which grow from the Sides of the Flower; it has also a Stile, which is terminated by a little Head. It afterwards becomes a soft, angular, long, crooked Fruit, something like a *Cucumber*. This Fruit, when ripe, is fleshy, and divided into three Cells, filled with a mucilaginous Pulp; under which the Seed is placed along a *Placenta*, which serves as an *Axis* to the Fruit.

This Seed is small, round, edged with an almost imperceptible Leaf. The Flowers grow at the End of the Stalk, in Knots disposed in a Spike. Each Knot is loaded with two Rows of Flowers, covered with a membranous, hollow, thick, oval Covering, which serves them for a common Empalement. In the *Hortus Malabaricus* there are three Plates, which give a good Representation of the Plant, its Flower, and its Fruit; but I have observed three Defects in them: 1. That the Flower is not represented in its most perfect State, but almost withered, and so its Pavilion too much cleft, which makes the Flower seem tetrapetalous; for the Flowers of these Plants divide when they are old, as well as the Leaves. 2. That the three
Cells

Cells are not shewn distinctly, in the transverse Section of the Fruit. 3. That the Seed is not represented at all.

This *Genus*, or Family, comprehends twenty or twenty-five Species, known to the *Indians*, the Differences of which are usually taken from their Fruits. This Plant does not perish before it has ripened its Fruit, whence it might last longer in a temperate Climate, cool enough to retard its Fruit.

The Bark of the Fruit is formed of the Tube of the Flower; and the Lobes dry away during the growth of the Fruit.

The Fruit of the Musa represented entire,
Tab. II. Fig. 4.

1. The same half stripped of its Bark.
2. Cut through the Middle.
3. Cut transversly, distinguishing the three Cells and the Seeds.
4. Another Species of *Musa* cut transversly, represented in the *Hortus Malabaricus*, but having the Cells better distinguished here. The six black Points are the Seed.

Hirudinella Marina, or Sea-Leach.

Having observed on the Sea a little Insect shaped like a small Worm, which I found in the Stomach of a *Bonite*, where it was strongly fastened, I was desirous to examine it with regard to three Things, which excited my Admiration. 1. Its Shape. 2. The Place
of

of its Abode. 3, and lastly, The Mechanism of its Rest and Motion.

Its Shape, which was a Novelty to me, and which I suspected no one had yet observed, came very near that of a *Leach*; it had all the Motions of that Animal, together with some of its own. The *Figure A. Tab. 1.* *Fig. 2.* represents this Insect in its natural Bigness, and according to its most constant Dimensions; wherefore I shall not stay to make so particular a Detail of them. I shall content my self with observing in general, that its Body is round throughout its whole Length almost, but a little flatted towards its Belly B; so that its Circumference, taken according to its Thickness, is almost elliptick. It is adorned all along with little circular Furrows parallel to each other, and very close together, but so fine, that one can scarce perceive them without a Microscope. It is of a greyish Colour, and its Body is a little transparent. One sees on its Back, as well as underneath, two black Lines, which begin by an acute Angle towards the Neck, and running through the whole Length of the Body, seem to be terminated towards the *Anus*. These Lines are not upon the Skin, as one might imagine at first Sight, without sufficient Attention; they are Tubes, or Bowels, which serve for Nutrition or Chylification, which appear through the Integuments. I shall divide the Length of this little *Leach* into two Parts, distinguished by the Center of a little Protuberance C, which is under its Belly, and is a muscular Body, in Form of a spherical Bladder. These two Parts of the Body are in the Proportion of Four to Three. I shall call them the fore Part and the hind Part. This Distinction is necessary

cessary, as well with regard to the different Motions of these two Parts, as to this Protuberance, which separates them at their Beginning. This little Protuberance, when it is in its greatest Extension that the Animal can give it, is of the same Form with a little spherical Air-Pump, and has all the same Properties, as I shall explain by and by. Its Situation is under the Body, and its Diameter is such as appears in the Figure. I know not to what I can compare this Part better than to the Cup of an Acorn, with the Mouth a little contracted. The Head E, which makes the smallest End of this Worm, represents no Part worthy of Observation, except a hollow Body underneath, of a conical, or almost hemispherical Figure, which seems to serve it for a Mouth to suck, as well as to fasten itself on the various Bodies which come in its Way, after the manner of the other *Leaches*.

The Belly B is of a dark Colour, because several Bowels, which are contained in it, are filled with a thick, black Liquor, which makes it look as if the Skin was of that Colour. The fore Part C E is variously shaped, according to its different Motions; sometimes it prolongs itself, and then it becomes slender, the Diminution being made by Degrees up to the Head; and sometimes it contracts itself, and then the Thickness encreasing, it becomes all of an equal Bigness. The hinder Part CB does not change its Figure, because it moves but slowly, and very seldom. The Motion of the fore Part is of three Sorts; Prolongation, Contraction, and the making itself round on all Sides. The Protuberance also is endued with two Motions, Extension and Undulation, which is made

from the Center to the Circumference. When this Insect stops itself any where, it holds strongly by means of this Protuberance. Before it applies it, it shortens it, by withdrawing the Edges, or the Circumference towards its Centre; and after it has applied the Orifice of its Protuberance upon the Surface of any Body, it lifts up a little the Center, or Bottom, towards its own Body; afterwards it swells it, and stretches it on all Sides, according to all its Dimensions. This Protuberance thus applied, stretched and void of Air, makes that which endeavours to enter, press it externally on all Sides, and hold it so fast, that it is above the Strength of the Animal to separate it from it's Place where it is applied. This Animal being thus fastened, and detained by it's Protuberance, it's fore Part is always in Motion, whilst its hinder Part remains almost immoveable. It stretches it's Head sometimes to the Right Hand, sometimes to the Left, by lengthening and shortening its fore Part, which bends and streightens itself very frequently. I have marked the Extent of all these Motions by prick'd Circles of different Bignesses, all which touch one another at one Point of their Circumference, at the Center of the Protuberance, which is as it were the Beginning and fixed Point of all these Motions. These Circles thus disposed are excentric, contained one within the other. It is by these different Motions that this Insect performs the two Functions which are necessary to it.

1. To find the most convenient Way when it has a Mind to change its Place.
2. To discover the most proper Place, either upon or within the Body of the *Fish*, where it finds itself fastened, to suck the Blood,

or

or any other Juice proper for its Nourishment. In fine, when this little Animal desires to change its Place, it makes use of its Protuberance and its Pump, which is the little Hollow under its Head, and seems to serve it for a Mouth: It applies this Part to the Place D, whither it would remove its Body, and after being prolonged by it's fore Part to reach the Place, where this Application should be made, it draws its Protuberance and Pump together, by bending its fore Part circularly, after the Manner of some *Caterpillars*. Its Protuberance being applied, it loosens its Pump, and prolonging itself, applies it to another Place more forward: The Pump being fastened, it bends itself circularly again to bring the Protuberance up to it, and apply it as before. By this we see that the Worm prolongs itself to apply its Pump, and contracts itself to do the same with it's Protuberance. Thus these Motions and Applications are made successively, and as often as there is Occasion. The hinder Part fastens itself to nothing, but is always drawn by the Part which goes before it.

I found this Worm in the empty Stomach of a Fish, called by the *Portuguese*, *Bonite*: It was fastened by its Protuberance upon one of the Folds of the inner Membrane of this *Viscus*. This little *Leach* made a pretty deal of Resistance when one endeavoured to pluck it away.

I shall add to this Description some Reflexions and Conjectures, formed on the *Phænomena* which I have observed in this Insect. I have observed, 1. That this little Animal did not live above two Hours after it was taken out of the Place where I found it. 2. That it

grew languid as soon as it was exposed to the Air, and recovered some Vivacity as soon as it was put into a little Sea-water. 3. That, as soon as it was put in the Water, it sent out from its Mouth a little green, almost imperceptible Thread, which kept itself suspended in the Water, and was about as long as its Body, and was as fine as the finest Thread of a Spider's Web: After this Thread was put forth, it emitted also from the same Place some little Bubbles of Air. 4. That the Body of this Worm decreased in Bulk by little and little as long as it was alive, and that, after its Death, this Diminution either ceased, or became less sensible. 5. That having cut its Belly through with a Pair of Scissars, as soon as it was dead, and squeezed it, there came out a black, thick Liquor.

From these Facts we can draw but very slender Consequences. It is certain that this Insect cannot live out of the Water; so that one cannot imagine it could live in the Stomach of any Land-Animals, unless they came near the Nature of the Amphibious; for the Worms which grow upon, or within the Bodies of Animals, ought to be of the same Nature with them, with Regard to the Elements in which they live. Our Worm seems to be incapable of living any where but in the Bodies of Fish, seeing it kept alive but a very little Time in the Sea-water, in which I put it, having been exposed to the Air but one Moment at two different Times; which was not sufficient to alter its Parts, and cause its sudden Death. The almost immediate Diminution of its Bulk in the Water is another Mark that it cannot live in the Sea out of the Body of the same Fish; for if the Water, which

which was more natural to it than the Air, was injurious to it, much more would the Air, to which I exposed it, have been prejudicial. The fine Fibre which it put forth, and the Decrease of its Bigness, were Signs that it suffered some Uneasiness. Lastly, The black and thickish Juice, which came out of its Entrails, could be nothing but some half coagulated Blood, which it had sucked in the Stomach of the Fish. Its Pump, which it uses after the same Manner with *Leaches*, is a strong Proof that this Insect cannot take its Nourishment by any other Power than that of Suction. Its residing in the Stomach, or some other Part of the Body, can be for no other Reason but to nourish itself with the Blood, or some other Juice of the Animal.

As the *Bonite* is a Fish of Prey, living on other smaller Fishes, it is probable that this little *Leach* usually fastens itself on those which come into the Stomach, and that it lives on their Blood.

The Stomach, in which I found it, was quite empty, so that it was probably as hungry as the *Bonite* could be; for this Fish is not easy to be caught but when hungry. However, it was the first Time I found it so very empty, though I have seen a great Number opened.

One may conjecture, when the Stomach of the *Bonite* is empty, and this *Leach* is in it, that it being almost starved, fastens its Pump to the Membrane of the Stomach, to suck Nourishment from it; and if so, it must cause a painful Sensation of Hunger in the Fish.

Laſtly, It might have happened that this little *Leach* came out of the Body of ſome ſmall Fiſh into that of the *Bonite*, which had ſwallowed it. I made this Obſervation the 28th of *July*, 1724, in a Voyage from *Batavia* to *Bengal*.

Explanation of the Figure Tab. I. Fig. 2.

- A, The Body, in its natural Bigneſs.
 B, The Belly, through which appear ſome black Lines, which are its Entrails.
 C, The Protuberance, with which it faſtens itſelf.
 D, The Places where it places the Pump and Protuberance, when it moves along.
 E, The Head, under which is the Pump.
 The pricked Circles are to mark the Extent of the Motions of its Head and Belly.

III. Typus Eclipſeos Solaris obſervatæ Julii 15, S. N. 4, S. V. Anno 1730. Witebergæ Saxonum, à Joh. Frider. Weidler, J. U. D. Mathem. Prof. Ordin. Reg. Soc. Scientiar. Pruff. Sodali.

*Tempus Ver.
 antem.*

H. ! "
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Phaſes Eclipticæ.

Digit. Min.
 Sol oritur poſt Nubes.
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 poſt Nubes.

Tab. I.

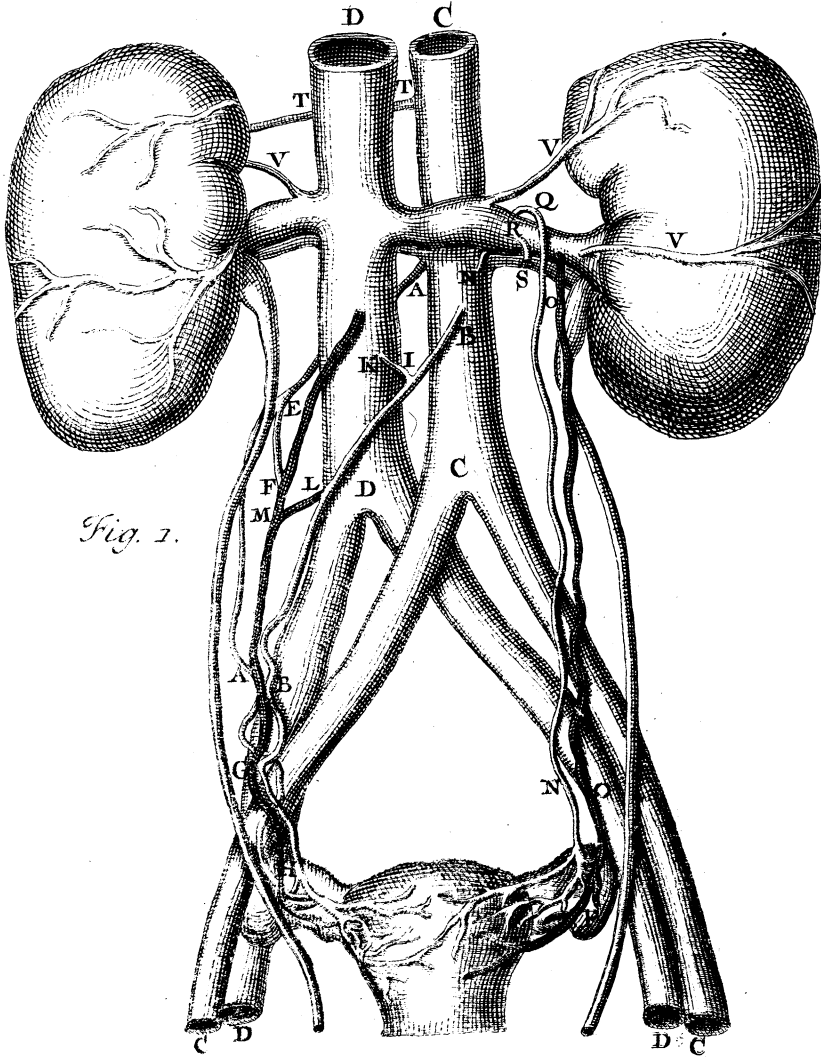


Fig. 1.

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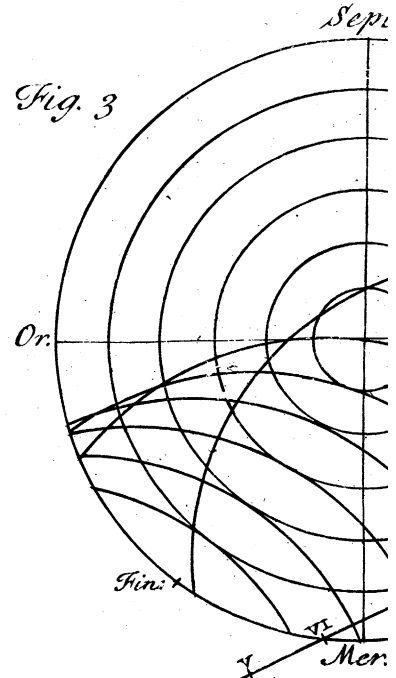


Fig. 3.

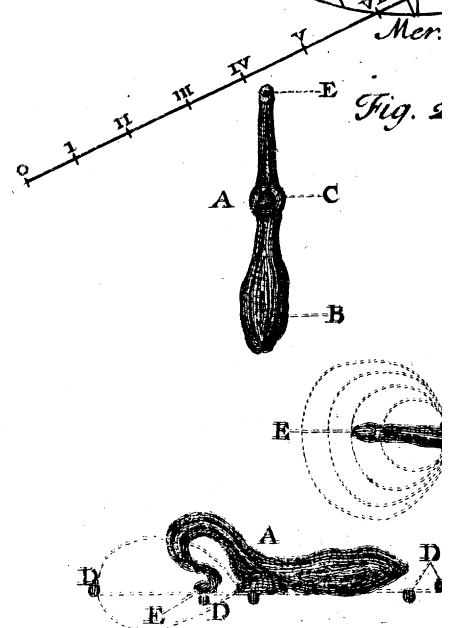


Fig. 2.

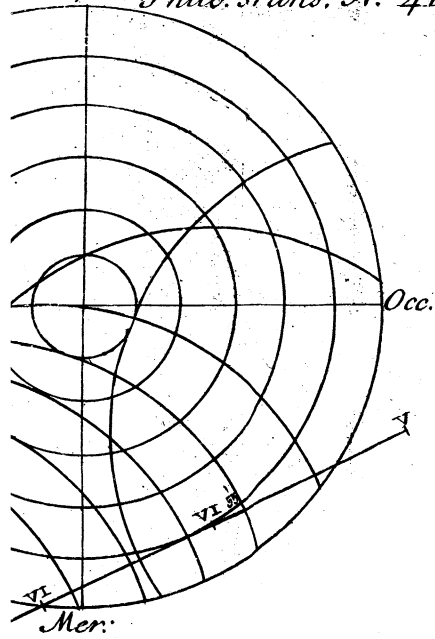
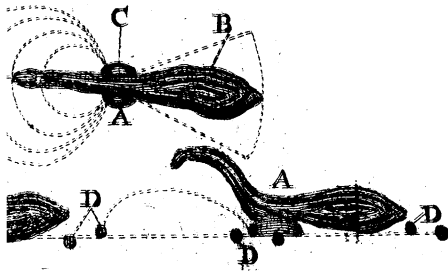
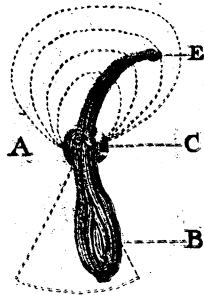


Fig. 2



Oxyoides Malabarica sensitiva,
Caule viridi glabro altiore flore majore.

Oxyoides Javanica sensitiva, Caule
rubescente hirsuto, flore luteo minore.



Fig. 2.

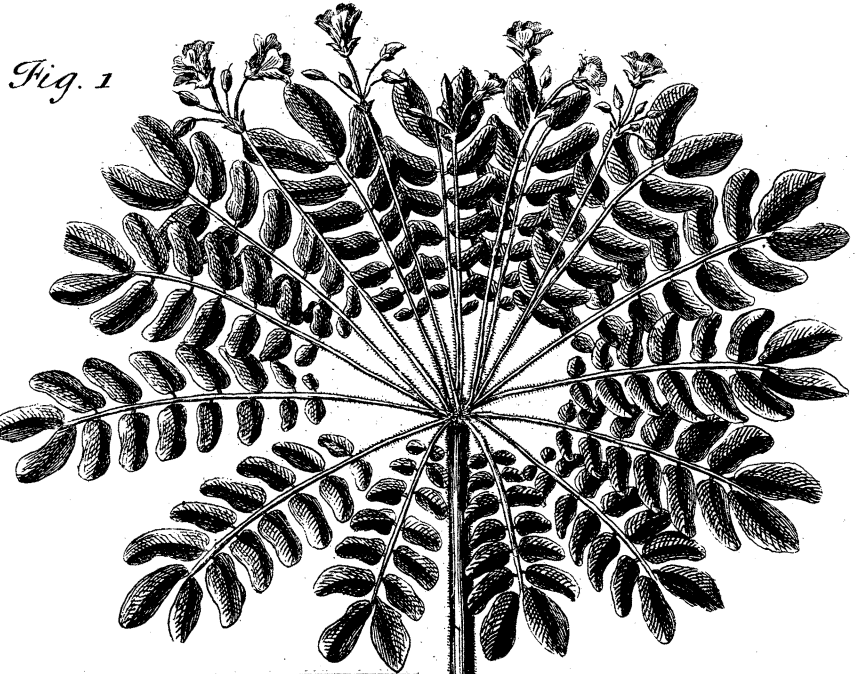
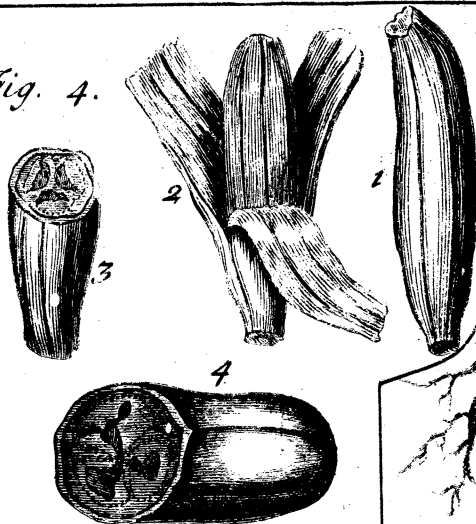


Fig. 1.

Fig. 3.



Fig. 4.



The Fruit of the Musa

Tab. I.

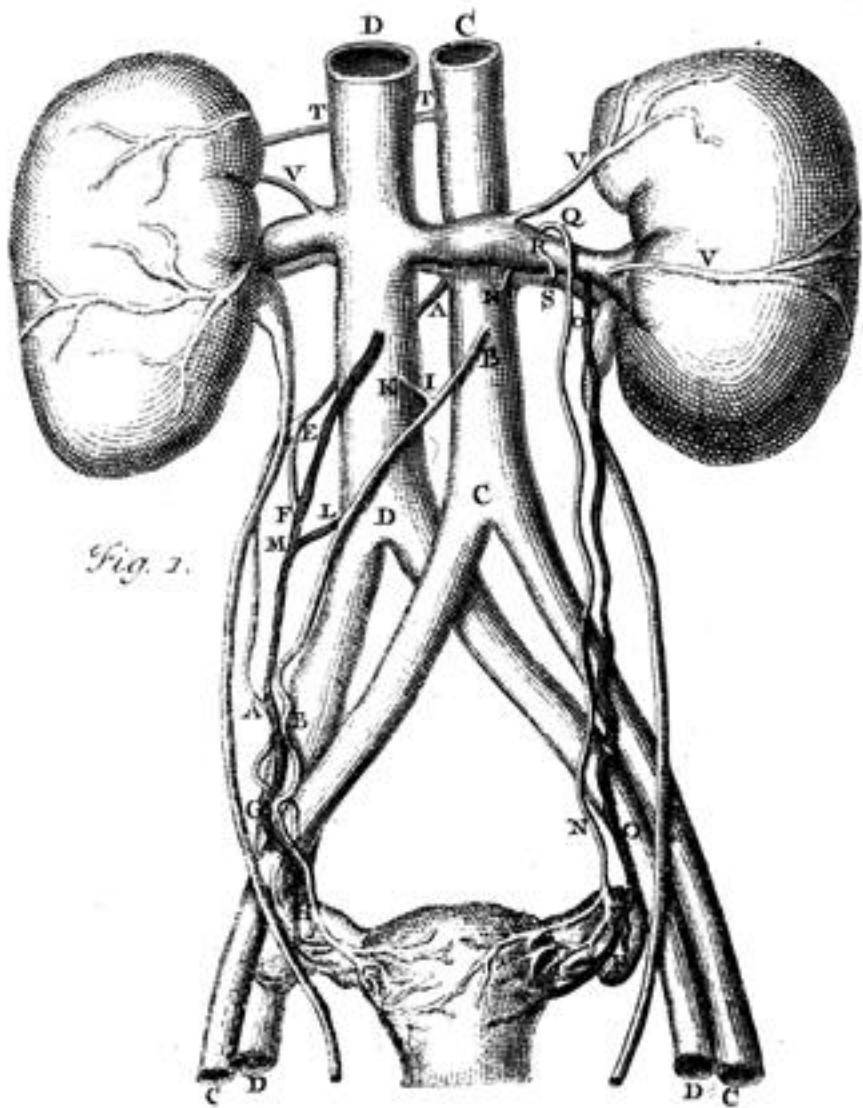


Fig. 1.

C. M. Jolin.

Fig. 3

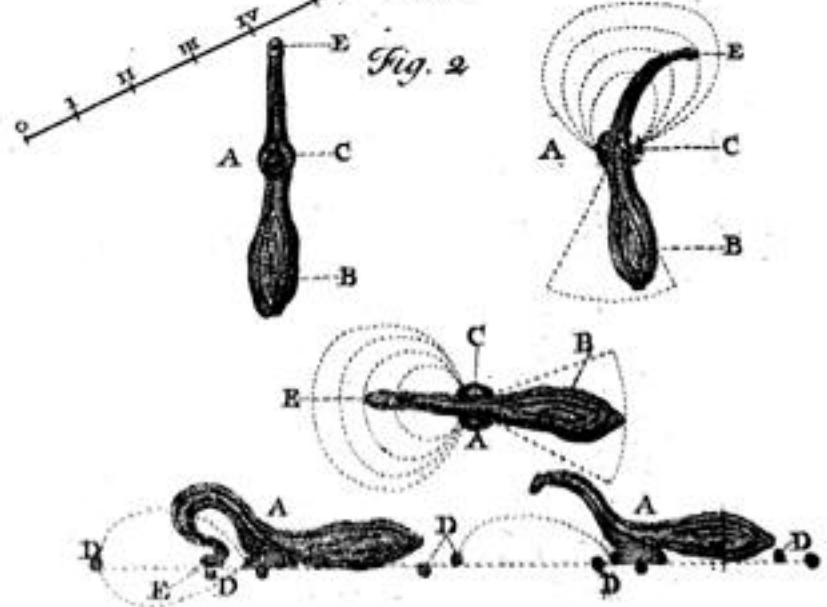
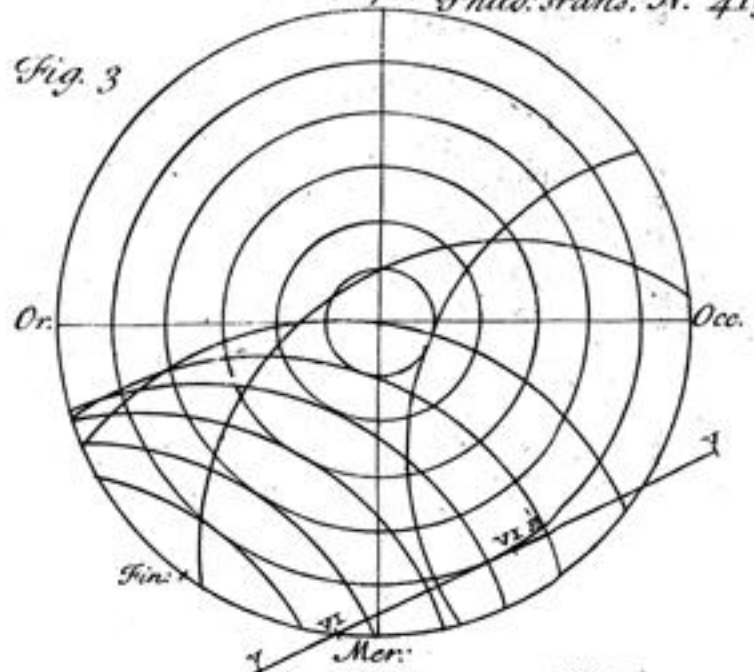


Fig. 2