

*An Extract of a Letter from Mr. Anthony Leewenhoeck F. of the R. S. to a S. of the R. Society, Dated from Delf, January 5th. 1685.*  
*Concerning the Salts of Wine and Vinegar, &c.*

**T**Hough I have often excused my self, from examining the various figures of *Salts*, partly supposing it would be too much labour to me, and more especially because in some *Attempts* of that nature, I formerly had no *Success*; The Warmness, or Coldness of the Air, causing great differences in the shapes of the *Salts*; nevertheless, by lighting on a new *Method*, I have been encouraged to make the following *Observations*.

Having found my yearly provision of *Vinegar* (which had layn about 3 Months in my *Cellar*;) to be more four then ordinary, I left it open to the *Air*, during some hours, at which time I observ'd a very great many particles (which I call the *Salt* of the *Vinegar*;) as *Numb. 1* *Fig. A.* tapering towards each end, and having in the middle a long brownish *Figure*: other of the same extent as *Fig. B.* being as clear as *Chrystal*; and these were the most numerous: others being long and brownish, which had in the middle of them, a bright clear substance, as *Fig. C.* In another place, were some few oval figures, within which were contained some lesser ovals, as *Fig. D.* Under the aforesaid *Figures. ABC*, I thought I saw many that had a *Hollowness* within them, like that of a *Boat*; sometimes one of the aforesaid figures, has appeared to me, with the one half brown, and the other part clear; sometimes one of the *figures* hath layn a thwart another, as at *E.* Sometimes there were *figures*, which seem'd to have been cut in two, each of them representing but one half of *AB*, or *C*, as *F.* Many of these aforesaid *figures* were so small, as scarce to be seen, but

withall they were so numerous, that I judgd them, to be many thousands, in one small drop of *Vinegar*: besides an innumerable quantity of small *Globules*, six whereof would not equall a *Blood Globule*; and a much greater number of lesser *Globules*, 36 whereof would not rise to the bigness of a *Blood Globule*. In a word it seemed incomprehensible, that there should be so many particles contained, in so small a quantity of Moisture, and that transparent too. These aforesaid particles I take to be the *Sharp Pungent Matter*, which causes the sense in the Tongue, that we term *Sour*.

Altho' by a common Magnifying Glass I have seen the *figures* of this bigness, yet I suppose, these may be made out of a great many lesser ones, which may have the same *figure*: just as in *Sea-Water*, many Millions of *Cubical figures*, go to the making up one large corn of *Salt*, of the same shape.

I put into a Glass about two Inches wide a little *Vinegar*, which I let stand upon my Table for 8 Weeks. In this time, I found swimming upon the surface of the *Vinegar*, many particles, within which I perfectly discerned a hollowness like to that of the inside of a *Boat*; for the *figures* were now increased in thickness. Those that had the Cavity turned to the Ey, were as *Fig. G.* those whose sides were turned to the Ey, which had only part of the Cavity to be seen, were as *Fig. H.*

I have also described, a full grown live *Eel* (as *Fig. L.M.*) such a one, whereof there were many more in the *Vinegar*. As also a full grown *Eel*, which I killed, that the designer might see it more distinctly, as *Fig. N.O.* This also may serve to shew, the bigness of the *Salt* particles, compared with that of the *Eels*.

It is also to be noted, that the foregoing *figures* and *Eels*, are drawn by a common *Microscope*, and that there were many other smaller *Salt* particles, to have been discovered by my better Glasses.

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Also, I cannot but take notice, how some Men are deceived, that think the Sourness of *Vinegar*, proceeds from *Eels* pricking their Tongues, with their Tails; for if this were true, then would some *Vinegar* be flat, because there are no *Eels* in it, or that the *Eels* are dead in it, as is usuall in cold or frosty weather.

I considered some *Vinegar*, that had *Crabs-Eys* put in it; because they are said, to take away its sourness. If this be true, I concluded, that the above described *Salt* particles must be changed, either by increasing the bulk, or becoming more plyable and limber, so as not to pierce the Tongue.

I took severall new Glasses, and put in them some *Crabs-Eys*, split into small pieces, least the grit that comes from them, after they are pounded, should hinder my sight: I found that the long sharp *figures*, which might be lik'd to a Weavers Shuttle, were now changed into *figures*, whose *Basis* was oblong, rising up *Pyramidally*, like a pointed *Diamond*; as *Num 2 Fig. P.* Others had their *Basis* square as *Fig. Q.* Others an irregular *Quadrilateral*, as *Fig. R.* But these two last *figures*, I supposed were accidental, for want of sufficient matter to compleat, and perfect them on all sides. Note that the greatness of these *Salt* particles, and those in simple *Vinegar*, must not be compared together; because these are drawn by a *Glass*, that Magnified more, then that wherewith the others were drawn; for otherwise, these would not so clearly have been discerned.

The number of particles was so great, that (in a gross computation,) I judged them, to be six Thousand in a *Drop*, about the bigness of two *Barly-Corns*. But that which I most wondred at, was, that these *Salt* particles here, were almost all of the same bigness: (a thing I never observed, in any other *Salt* before.)

I took some *Vinegar* out of a *Glass*, that had *Crabs-Eys* in it, at a time, before all the *Air-Bubbles* were ascended:

cended : But even then the *Basis* of the *Salt* particles was four-square, and not as in common *Vinegar*.

When the *Air-Bubbles* were most of them ascended, I drank about a third part, of a thimble full of the *Vinegar*; and found it had no sourness at all in it, but rather a bitterness, and was so loathsome, that it made me ready to vomit.

I took also White Chalk, beaten to pieces, and put it in *Vinegar*, where it caused as great a commotion, and rising of *Air-Bubbles*, as the *Crabs-Eys* had done : It produced also, the same *figures* of the *Salt*, and the same insipidness.

From these observations, I am confirmed in an opinion, which I have been of a great while ; that when the sharp subtile particles of *Salt*, which are in severall liquors, come to be in the Stomack, they are there so coagulated, and compounded, that very few, or none of them, are communicated to the blood, or other parts of the body. For if the *Salts* of Wine, and *Vinegar*, did not change their *figure*, in the Stomack, I believe they would cause in the blood, and other Vessels, an intolerable pricking, if not endanger the life of the party. Besides, if it were not so, I should have met with them, some time or other, either in the Sweat, Blood, or Urine. Also the *Salt* particles, which are in Wine, or *Vinegar*, when the weather is moist, are curdled, or go together ; but afterwards, let the weather be what it will, I have never found them dissolved, or turned into water. And thus they are more durable then common *Salt*, which in moist, and cold weather, runs into a liquid form. Again, if the *Salts* in the Wine, or *Vinegar*, were not coagulated in the Stomack, the Urine, or Excrement of those that drink them, would smell of them : however, I will not say, that in all Stomacks, there is the like coagulation ; but if in some, the *Salts* are not altered, the drinking of Wine, to such men is very prejudicial. But  
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it is otherwise with common *Salt*, for, if a small quantity of that be put in water, it will presently dissolve, and every Corn be divided into Millions of parts, being all of them four square; and if a great deal of *Salt*, be dissolved in water, and some of the water be evaporated, the *Salt* runs into great Corns. Now that it is true, that a grain of common *Salt*, is divided into square particles, a Thousand Millions of times less than a sand, and that each of these particles, is again divided into an incomprehensible number of other particles, before they will pass from the Bowells into the blood, and other parts of the Body, the assertion will not seem strange, if we consider, that in Insects found in common water, and our Excrements, which are not the bigness of  $\frac{1}{1000000000}$  of a great sand, there is a Coat, or Skin, and perhaps Scales on it; that there are Feet, or Fins, wherewith it swims; a Mouth, Bowells, Veins, Muscles, Sinews; and all the inwards, as compleatly, as in the greatest Animal: and if the body of so small a Creature, may be imagined so divisible, much more may a particle of *Salt*.

When the blood has been some times out of the Veins, the small *Salts* then begin to go together, and appear, as I have often seen, and particularly, while I was lately busied about the CrySTALLIN humour of the Eye of a Man, I observed a number of small *Salt* particles, having the figures of common *Salt*; and I am perswaded, there is not a drop of blood in the body, which has not its share of them.

Having thus declared my opinion, upon the parts of *Salt*, I shall do the same, upon those of water. For as much as that a late Author, hath spoken of them, with such assurance, that ordinary Men coming to read him, imagine, the *Snakes* of which the water is made, to be very big: but if I should tell them, that those water *Snakes* are so little, that if a great sand were divided into a Thousand Million of parts, the *Snakes*

would be less than they, I believe this language would sound very harsh. For my own part, I cannot conceive the parts of water to be like *Snakes*; for I suppose, how little soever they are, they are always flexible; and by consequence put themselves into all *figures*, according as they are prest by the Air, or other bodies; and that when many water parts are together, each takes a different form, that it may apply it self to its neighbours, and keep, as much as possible, a round figure, as I have formerly said of the parts of fat. For example, let us imagine, that we have a great number of sheeps, or hogs bladders filld with water; these, as they are hung up in Air, will be all round, but as they are heapt up in a tun, and press one on another with their weight, yield, and accommodate themselves so, as to leave no empty space in the tun: thus every bladder hath its particular *figure*, tho' it most incline to be round; moreover, if the tun be rolld, every bladder upon the least motion, will alter its *figure*, as it is more or less prest. In the same manner I believe it is, with the Globules of Fat in our Bodys, and also with the particles of water; tho' these latter, I conceive to be so small, that if a sand were divided, into a Thousand Millions of parts, and if  $\frac{1}{1000000000}$  of a sand particle, was again divided into a Thousand Millions, the water particle, would still maintain the roundish, and pliyable *figure*.

I know this above mentioned opinion, that water is made, as it were of *Snakes*, is not new, but borrowed from the famous *Des. Cartes*. But (with respect to that Great Man,) every one is free to declare his Judgment, in things which have not been fully discovered,

I examined lately my Wine, which is very fine, and well tasted, such as in *France* is called *Vin de Damoisselle*, tho' it is but an *Orleans* Wine, brought down the *Loyre*; in it I saw many extraordinary pretty *figures*, of different sizes, and some very small, which I shall call,  
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the *Salt* of the *Wine* : many of these *figures*, were of the same make, with those, of the *Salt* of *Vinegar* above-mentioned. I have in some of these *figures*, not only seen a Cavity, but found them encrease to so great a bigness, (by that time the *Wine* had stood 24 hours, uncovered upon my Table,) that they equalled the thick particles of *Salt*, which I had seen in *Vinegar*, as is here shewed *Numb. 3 Fig. A.* I saw also some *figures*, which had no sharp points, but were roundish at the ends, as *Fig. B.* There were also severall *figures*, which grew tapering at one end, and at the other were round, as *Fig. C.* Also some *figures*, which differed from *Fig. C.* In that one of their ends, was not round, but flat, as *Fig. D.* Also some few *figures*, were longish, representing a thin Right Angled Parallelogram, as *Fig. E.* Also there were many *figures*, whose two longest sides were roundish, and whose shortest sides were streight, resembling something a Barrell, as *Fig. F.* Some few *figures* made a perfect square ; others again, were twice as long, as they were broad , being largest in the middle, and inclining towards the shortest sides ; not much unlike a flat bottom'd Boat, whose fore, and after parts are flat, as *Fig. G.* While all these *figures* in great numbers, were driving together, in the quantity of a drop of *Wine*, twas a pleasure to me, to see so great Variety. These foresaid *Salts*, I conceive, would be sour upon the Tongue, if there were not a great many sweet particles, in this (as well as other,) *Wine*, mixt with them, which are not otherwise to be separated , then by setting the *Wine* to ferment ; for thereby it presently looses of its Sweetness, and in time, is changed from a gratefull *Wine*, to a sour *Vinegar*. From hence I gather, that the pleasant Relish of *Wine*, consists, in its having not too many sweet, nor too many sharp parts, but one sort tempering the other, so as to make a Harmony upon the Tongue, and Palat. The same thing we experience dayly, by mixing severall things, which, if they were used simple,

would be either too sweet, or too flat, or too four, whereof, I shall give but one Instance. Let us mix, or melt together Butter, and *Vinegar*; and it will prove a very gratefull sauce. As to *Sugar* (which is a *Salt*;) I have formerly said of it, the Sweetness herein consists, that the Angles, or sharp points, of which, the Powder *Sugar* is made, are easily separated from one another, and dissolved, when they are put in water, chiefly if it be hot; which happens to *Sugar* in the Mouth; for then it is not only Melted, and mixed with the Spittle, but becomes soft, and plyable, embracing any other body it finds on the Tongue, and communicating to it, its pleasantness. From these Positions, we may well comprehend, the severall Tasts that Wines are lyable to, tho' they grow in the same Vineyard; for not only, will the Bunches that grow, on the Southside of the Hill, be Sweeter, because the heat of the Sun, draws from them the superfluous moisture; but the sharp, or Salt parts in the Wine, by taking away the more waterish substance, become more rigid, and stiff. Also, we may imagine the reason, why Wine having stood some time in the open Air, looses its Savour: namely, that many small Salt particles are joined together, to make a few great ones; whereby, as the number of the Salts are lessened, the Sense is not so agreeably excited, as if it were toucht in more places, tho' the bodys that do it, are never so small.

I Observed some *Sherry Sack* (which proved to be as good this year, as ever was known,) and therein, discovered the *figures* of *Salts*, such as I have above mentioned in French Wine, Numb. 3. *Fig. A.* As also some longish *figures*, as *G.* But all these were but few, in comparison of the *figures* of *Vinegar*, and French Wine. Perhaps, if the *Sherry* had been thinner, the *Salts* would have appeared more, for there were many small particles, which I could not describe, because they were obscured by a thick matter, wherein they lay; but when I set some  
*Sack*



*Sack* uncovered upon my Table, for three days and nights, I perceived in it, a great number of small particles, some whereof hung by one another, and lookt like the dry Branches, of a Tree: others moved confusedly in the Wine, so as I could not at first determine their shapes; but afterwards they seemd, to be like the *Salt* particles above described, having among them, many flat *figures*, with their sides turned up; their size was so small, that I judg'd a Thousand Millions, would not make up the quantity of a Sand. In contemplating some Gross flat particles, as also some sharp ones, which were imperfect, I was confirm'd in the make of those bodys, namely, that all the sharp *Salt* particles in the Wine, and *Vinegar*, how little soever they are, had at first flat thin bodys, which by being roll'd up at the four Corners, make the *Salts*, I have above described. As for example I see in the *Sack*, Numb. 4. *Fig. ABCD*, and *EFGH*. The sides of the one *figure* roundish and irregular, and of the other strait, (which I here draw greater than they appear, that their make may the better be seen,) the Corners *A* & *B* are bent or roll'd up as *Fig. IKL*, whereby the Corners *A* and *B* become a sharp Angle, as is to be seen at *I*. If the other two Corners *C* and *D* were also roll'd up in the same manner, we should see the perfect *figure* of a *Salt*. When the flat *figures* are but short, and only two Corners are rolled up, they appear as *Q*, or *R*, which are like the *figures C* and *D* in *Orleans Wine*. The appearance of *IKL* and *MNOP*, was as distinct, as if I had taken half a sheet of Paper, and roll'd it up at the four Corners, to make two sharp Angles, and leave the full breadth in the middle; I could also perfectly see a Hollowness within the figures, as much as can be represented in the Paper.

I set some *Mosel Wine*, for a few hours uncovered upon my Table, and then saw swimming in it, divers *figures* of *Salt*, such as I had formerly seen in Wine, *Vinegar*,

and *Sherry*; onely, there was this difference, that in many of them, I could not only perceive a thickness, and a Hollowness, but also distinguish, that each of them consisted of 7, 8, 9, or 10, plates, lying upon one another. These I at first drew roughly, and afterwards got a good Artift to draw them again, from the Objects themselves, with a good Microscope, as here *Numb. 5. Fig. A.* I saw also, severall *figures*, out of the top of which, other half *figures* appeared, as *Fig. B.* There was something like this, in the *Orleans Wine*, but nothing near so much as here. I saw also severall *Salts*, which had other particles thrust thro' them, as *Fig. C.* There were also some flat *figures*, whose sides were rolld up, as *Fig. D.* And some whose shortest sides were indented, as *Fig. E.* Some appeared like half of *A.* as *Fig. F.* A few others had their ends blunt, as *G.* But it was very strange, that I could see no small *figures* in the *Wine*, when it had been exposed to the Air 24 hours upon my Table; yet when it had stood a day longer, there were *figures* discernable, tho' so small, that I could not discover their fashion, because that the matter that encompassed them, was very thick.

I observed in *Hockamore Wine*, of a year old, (which was well tasted and generous,) after it had stood 3 hours uncovered, that there were *Salt* particles in it, which were sharp at both ends, having a height, or Ridge upon them, like the sharp bottom of a Boat, turned upside down, though they were otherwise Diaphanous, as *Numb. 6 Fig. A.* Such a kind of *figure*, has appeared to me in *French Wine*; But when I let this *Wine* stand for two days, and nights, some of the *Salt* figures were greater, having severall circumferences, some 2, 3, 4, and others so many, that they could not be counted, as they lay close together; some were so beautifull that no *Sea Production*, whether *Corall*, or shells, might be compared to them, As in *Fig. B.* Among these *figures*, some were so transparent,

rent that their Circumferences were not to be seen, but some few seem'd to be compounded, of small *figures* of the same shape. I saw some that were blunt at both ends, yet one would be blunter, then another, and some times one end, more then another : as *Fig. C.* In another place, I saw, swimming in the Wine, *Salts*, which had not only severall circumferences, but steps, or wrinkles across, as at *D.* Moreover, I saw some little particles of different sizes, which had the aforesaid circumferences, but many of them exactly represented a Wine Vessel, as some of a *Foeder*, or *Rhenish* Wine Vessel; others a long Tun; in observing some places, where the thinner part of the Wine, was evaporated away, I found severall *figures* like Branches, or Boughs, seem'g to proceed from one *Salt* particle; in viewing them exactly, I saw that the Branches consisted of nothing but very small *Salts*, joined together, some whereof were very regular, and the greatest were placed at the end of the Branches, as at *FGHI.*

In the beginning of December last, I observ'd the *Hockamor* Wine, which grew in the year 1678, and found at first, very few *Salt* particles; But when I had let the Wine stand 3 or 4 days, there were many more, tho' in much lesser numbers, then in the same Wine, that was but of a year old. But I am perswaded, that the largest of these, consisted each, of above a hundred small ones, compacted together, as *N. 7. Fig. A.* When the greatest *Salts*, were got together, the smaller particles swimming in the Wine, cleaved to them, for there were none of them, to be seen about the great ones, though I sought for them, twelve severall times. Now and then, there was a *figure*, that seem'd the half of the aforementioned, as *B.* and thereby, some small *figures* which were Diaphanous, and whose points, were not proportionably sharp, as the great ones, as *Fig. C.* There were also some Diaphanous particles, greater then the last mentioned  
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having a small *figure* in the Middle, as *D*. There were also, a few that were blunt at the ends, as *E*. There were also some resembling dryed Branches of a Tree, (as was mentioned in Wine of a year old,) which branch like *figures* consisted of small *Salts*, hanging together.

From these Observations, I guess what may be the cause, that *Rhenish* Wine, not only keeps good a great many years, in a well stopt Vessel, but also looses its fourish tast, and takes one that is sweeter, and milder; namely, for that the *Salt* particles in the *Rhenish* Wine, cleave together, and then stick to the bottom, and sides of the Fat, (being called by us Tartar,) and by how much older the *Rhenish* Wine is, by so much are the *Salts* fewer. But the nature of French Wines is contrary, (as I have Observed,) for the *Salts* in a well stopt Vessel, do not run together (Chiefly in *Burdeaux*) Wines, and therefore they never get a Milder, or Sweeter tast: But in Wines that come from *Nants*, tho' the *Salts* run more together, nevertheless the Sweetness is presently lost.

I bought some Wine for *Rinco*, very pleasant, and of the growth of 1683. But it proved to be of the Palatinate. At first I observed few *Salts* in it, but when it had stood open 24 hours, I discovered many, that were sharp at each end, as *N. 8. Fig. A.* having a division running along them, but being otherwise Diaphanous, and appearing by the Microscope, of the same bigness here drawn; but there were an innumerable quantity of a lesser sort, which were of the same *figure*. I also perceiv'd some, that resembled a Wine Vessel, but they proved to have two sides rolled up, (as *Fig. B.* (and perhaps, others of the same *figure*, which I have before mentioned, may be rolld up like them, in regard I then might have seen them onely, by the plain side.) Likewise may the *Salt figures*, which I have described as blunt, at one or both ends, be like *C.* and *D.* I saw also *figures* as *A.* which had both their sharp points rolled up together, as at *C.* Also *figures*

*figures* whose one end, was not rolld, as at *D*. Some few *figures* there were, whose Basis was square, having the sides rising up Pyramidal like a pointed Diamond, as *E*. But of these, there were not above one, or two, in a Drop of Wine. Sometimes one of these *figures*, would be plac'd in the middle of another, as at *E*. (which remarks in some other Wines, I have thought scarce deserv'd to be mentioned.) Some *Salt figures*, had their sides rolld up, so as the ends did not touch one another; but left an opening in the middle, as at *F*. Whereas others, that were more shut, seem'd only to have a line upon the back of them. Sometimes there appeared *figures* long, and slender, as *G*. as to these last, I am in doubt whether they are compleat, or only a beginning of a *figure*, there being some stuff wanting, to perfect them: for there were few swimming in the Wine, but most of them lay in places that were almost dry. But above all, the number of a sort of small soft particles, was the greatest, to which, I can allot no other *figure*, then Globular, the whole body of the Wine (except the *Salt* particles,) seeming to consist of them, and the Sweetness to take thence its rise.

I took a little *Rinco* Wine, which had workt in the Fat, all the foregoing Summer, and had been pierced some weeks since, when it was fine, and had a good tast; this Wine, when it had stood upon my Table, about an hours time, had many *Salt* particles in it; but after it had stood sixteen hours, the *Salts* were thick, and had such a deep Boat-like *figure*, as I have formerly mention'd in *Vinegar*; and may be here seen *N. 9. Fig. A*. There were also severall *Salts*, that had other brown longish *figures* in the middle of them; and some that had two, three, and four circumferences, as *Fig. B*. Some particles had a line, or joynt running thro' them. Others were altogether Diaphanous, as *Fig. C*. Others had one sharp end, and the other blunt, by reason that they were

not yet perfect; as I have above mentioned. And some again were very Diaphanous as may be seen under the Letter *D*. Some *figures* appeared as *E*. and when I look upon the places, where the Wine lay thin, and was almost evaporated, I saw a great number of particles, the most of which, had two sharp ends, and were a Thousand Millions of times smaller, then a great Sand. I saw also particles of *Salt*, swimming about, which had the true shape of a Wine Vessel, but they were very thin and clear; and I could not perceive any line or joynt, going through them. There were also severall Oblong particles, very thin and clear, and therewithall very small; tho' they be drawn great, as at *Fig. H*. Because I was forced to use to *F* and *H*, a lesser Microscope then to the other six Letters *ABCDE* and *G*. Also when the Wine had layn thin, there were severall Branch-like *figures*, consisting of irregular *Salts*, the shape of many whereof, could not well be exprest.

I examined *Ceronce* Wine, and found the *Salts* to be mostly, as *N. 10. Fig. A*. Some of which were, as it were, rolld up; others were thin and pellucid; and others when the Wine had stood long, were so thick, that they had a brown circumference about them, as *Fig. B*. Severall were like the half of *A* and *B*, as *Fig. C*.

I examined also *Coteau* Wine, and found severall particles, as *ABC, N. 10*. And moreover, severall whose sides were rolled up, as *Fig. D*. Also flat *figures*, whose longest sides were strait, and both the ends Circular, as *Fig. E*. Also *Salts* having a sharp point, as *Fig. F*. Also particles representing a flat bottom'd Boat, turnd up side down, as *Fig. G*. Other of the same make I could look into, as into a Cavity. There were also, severall very small and long particles, as *Fig. H*. which I imagine, if they had more stuff, would have been as *E*. There were likewise some *Salts*, as *Fig. I*.

I also observed *Tonsain* Wine, which was very thick and

and Sweet; (tho' many in this place do think, that the Sweetness, which this Wine has had, for 4 years past, is not naturall, but procured by Brim-Stone, high Country Wine, or Syrups,) I found the *Salts* to be the same, as those in *Coteau Wine*, but not so many in number as they; this only difference there was between them, that in the *Tonsain Wine*, severall *figures* had as it were stairs or partitions in them, as *Fig. 10. Letter K*,

I took *Tonsain Wine*, which was said to be pure, and unmixt; and discovered in it, all the *Salts* mentioned in *Coteau* and *Tonsain Wine*, but I judged that the number of the *Salts*, in this fermenting *Tonsain Wine* was 25 times more, then in the Sweet *Tonsain Wine*, but not so big as they. Also the *Salts* in this last Wine, after a few hours swam about, but in the Sweet Wines, the *Salts* were a great while before they appeared.

I found likewise in *Citeruse Wine*, all the severall *Salts* which were in *Tonsain*, and *Coteau Wine*, in great Quantity.

I took *High Country Wine*, of the deepest sort, and found swimming in it, very few *Salt figures*, tho' I let it stand 3 days and nights; but the *Salts* were much bigger, then in the *Coteau* and fine *Tonsain Wine*; and had the shape of *ABD*, and *G*, in *N. 10.*

I took *Rhenish Wine Tartar*, beaten very small, and put it in fair Rain-Water, and when the water was settled, I saw in it, many such *figures*, as I have mentioned to be in the Wine, *viz.* some which were very clear, and had two sharp ends, as *N. 10. Fig. L.* But the most of them, were very irregular, the cause whereof may be, that there was no sweet, or Oily stuff mixed with them.

I took the *Tartar* of *French Wine*, and examining it in the same manner, as the former, I found some *Salts*, which agreed perfectly with those in the Wine; but the rest of them were more irregular, then in the *Tartar* of *Rhenish Wine*.

I took *Orleance Wine*, pure as it came out of the Vessel, and put into every drop, (as neer as I could guess,) a piece of *Crabs-Ey*, as broad as the knife, and when it had stood 3 hours, I could find no such *Salt* in it, as I had seen in the Wine, that had no *Crabs-Eys*. But there were very many *Salts*, whose basis were an oblong square, and the sides rose up Pyramidall. Other *Salts* were flat, as *N. 11. Fig. A*. Others were six sided, as *Fig. B*. Others had two slanting sides, as *Fig. C*. Some few Quadrilateralls had four sided *figures* within them, as *D*. Others of them, had the shortest sides something irregular. Some *Salts* were as *Fig. E*. In these last I could perceive no rising, perhaps because they were very little. As I viewed a piece of *Crabs-Eys*, I saw rising as it were from a point, in about fifty places, severall thin Pipes, as clear as Chrifall, one whereof was longer then another, but they were all generally of the same thickness.

I likewise took Wine, and put white Chalk into it, in the same quantity as before, letting it stand about a quarter of an hour, before I observed it, and then I found a great number of the afore mentioned *Salts*; but they were not so big, as those in the Wine mixed with *Crabs-Eys*; but when this Wine and Chalk, had stood about 12, or 14 houres, I saw the *Salts* above mentioned, not only greater, but the Pipes likewise in severall places, rose from a point of Chalk, in great quantities, as above in *N. 11. Fig. F*. These Pipes also, were bigger then the others, tho' they differed sometimes in bigness, among themselves. The Wine that had *Crabs-Eys* in it, had a kind of a Skin upon it, (which I judgd to proceed from its sweet particles,) but the Wine that had Chalk in it, had none, and remained very thin.

I put into *Rinco Wine*, some pieces of *Crabs-Eys* and after 12, or 15. Minutes, discovered a few *Salts* in it; but when the Wine had rested some hours, I found in it a very great number of *figures*, as *N. 11. A B C D E* and  
*F.*



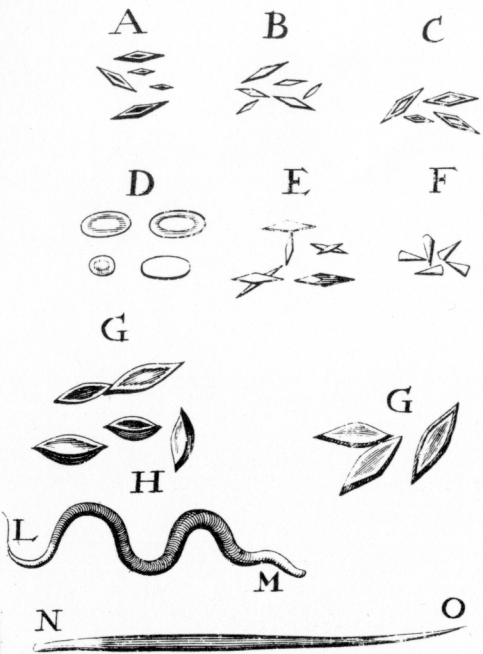
*F.* the *Salt figures* first discovered, were now grown big, tho' none of them were like the *Salts* in *Rinco* Wine, which had no *Crabs-Eys* in it.

Since we now see, by all the foregoing Observations, that *Rhenish*, and *French* Wine, contain no *Salts*, which agree in *figure*, with the *Salts* in the Chalk, which is taken from Men that have the Gout; we may now confidently say, that the *Salt* of Wine does not cause the Gout; and hereof we have a dayly experience, for some persons, that drink great quantities of *Rhenish*, and *French* Wine, have never had any touch of the Gout; and others that drink no wine at all, are very much troubled with it.

From this Cleaving together of the *Salts* in Wine, and the alteration of their *figures*, we may ascertain our selves, that in a well constituted body, the *Salts* of Wine do not pass into the blood; chiefly, if we take it for granted, that the use of the Stomack, and Bowells, is 1. to break in pieces the Meat, 2, to make the grosser particles come together. 3, to send the thinnest stuff, and smallest particles of the Meat into the body, for its nourishment.

P.S. Since the writing this Letter, I have opened a *Bitch*, and found in the Womb, or rather in both the Tubes, a great quantity of the Male Seed of a Dog: concerning which I shall enlarge in my next.

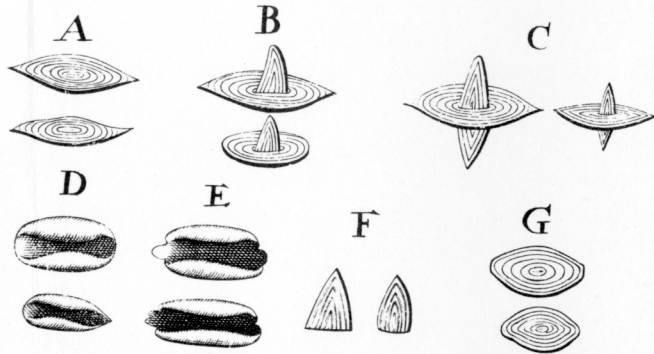
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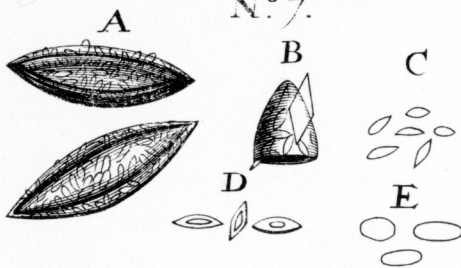
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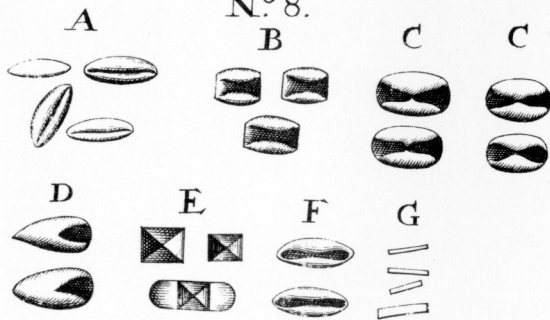
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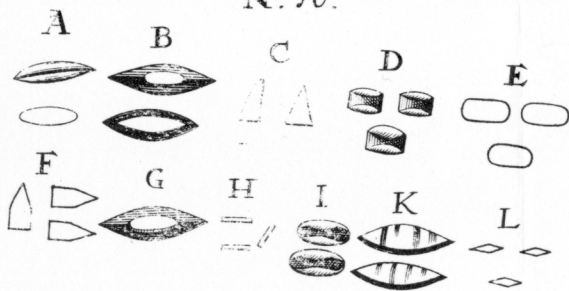
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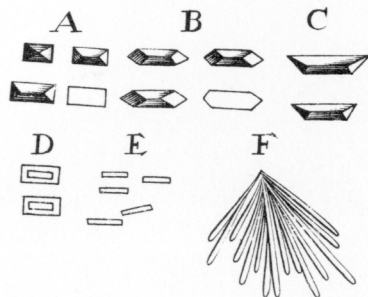
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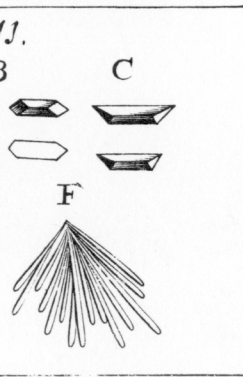
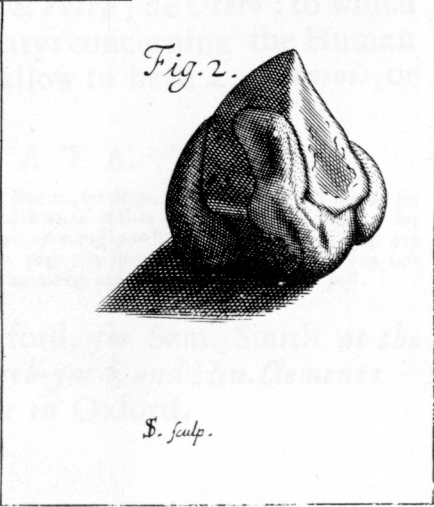
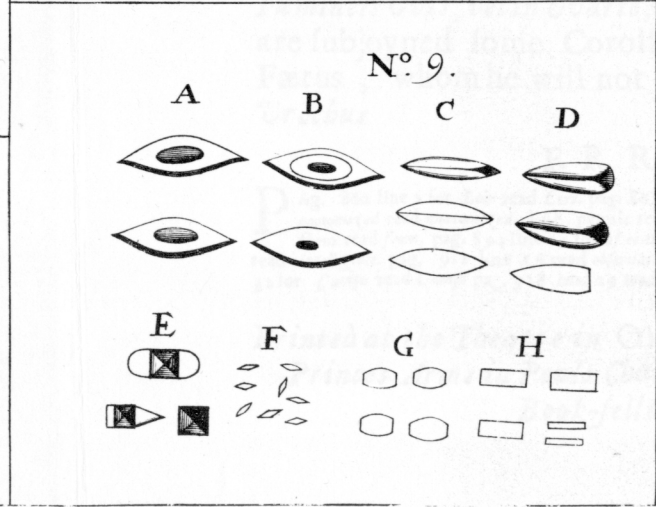
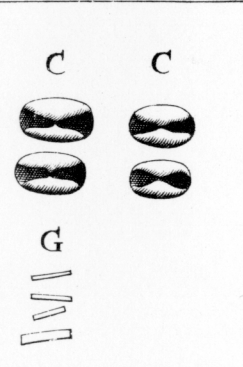
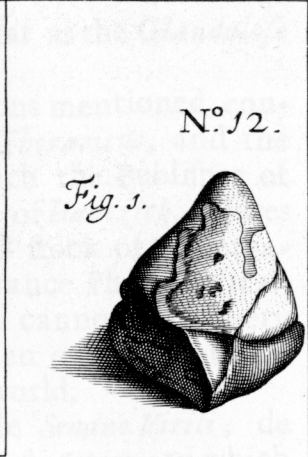
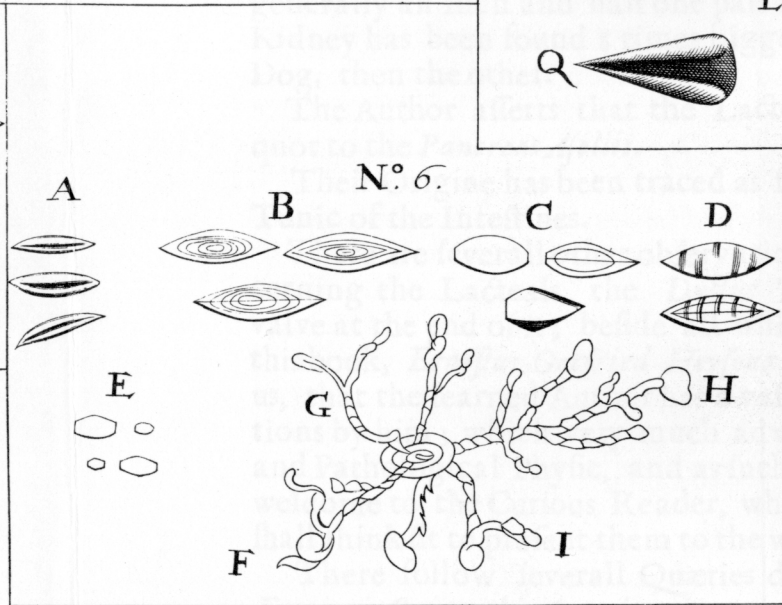
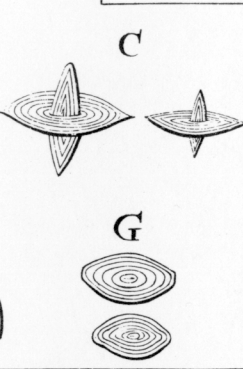
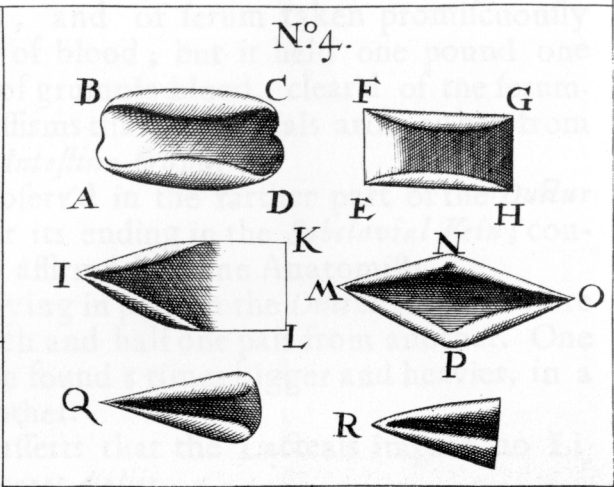
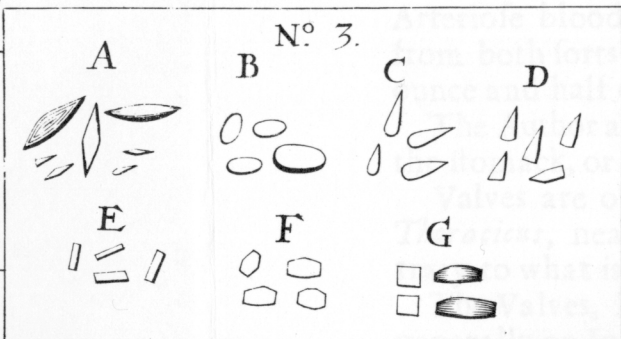


N° 10.



N° 11.





N° J.

