

JOEL LANGELOTTUS m.d.

*Physician and Privey Councillor of
his Serine Highness the Reigning
Duke of Holstein Gottorp.*

His letter to the curious of Natural Things concerning things omitted or taken little notice of in Chymistry; candidly discovering Secrets of great moment and things hitherto thought not to exist.



TRANSLATED FROM LATIN in 1798 BY:

BY: **S. BACSTROM, M.D.**

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Translated from the Latin Msc.

by S. B.

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Honoured Sirs and Protectors!

We intend to treat here practically of DIGESTION, FERMENTATION and TRITURATION. We do this not alone for the sake of such as are Beginners, but also to teach such as profess Chymistry, warning the latter not to leave off too soon, where they ought to continue their operations, as by perseverance great Things are accomplished!

We mean first to show the excellent use of a continued Digestion, for obtaining THE VOLATILE \ominus of \square_{\dagger} . How this has been valued hitherto, and what Care and Labour has been employed to obtain it, we will not mention here.

I have often had in my mind that I could never better or quicker obtain this valuable volatile \ominus , than by combining THE FIXT \ominus OF \square_{\dagger} with its volatile Companion, THE COMMON \square_{\dagger} , but I obtained but a small quantity of volatile \ominus this way, the greatest part of the remaining \square_{\dagger} behind.

Then it occurred to me that A LONG CONTINUED DIGESTION might greatly assist the operation, and I succeeded so well by that method, that I obtained THE VOLATILISED \ominus OF \square_{\dagger} the first time of a snow-white Colour; leaving only a few faeces behind of an ∇ ly Colour and insipid Taste.

I have experienced the utility of a long continued Digestion in many other operations, particularly in rightly preparing the Sulphurs and Essences of Minerals. Permit me to mention here an experiment on red Corals, whose success in my opinion also depended on Digestion.

Some years ago I poured an Oil of distilled Vegetables upon some

Fragments of fair red Coral, which Oil was perfectly clear like ∇ , ($\bigcirc\bigcirc$ of Cinamen would do admirably well) to try whether I could obtain a Tincture thereof; But it was in Vain, and during a long time neither the Oil nor the Corals were changed in the least; therefore dispairing of Success, I looked no more after my glass; but the following Winter, whilst I occupied myself with various Labours in the Digesting Furnace, I had a mind to try once more or to repeat the Experiment with my Corals; and I now placed that same Cucurbit with the Corals and Oil in the digesting Furnace, and not without a happy Success. After a months Time had elapsed, I agitated the glass-Cucurbit, and I saw that the Fragments of my Coral were become more intensely red and softened, without any alteration of the Oil. I have therefore continued that same gentle degree of heat, which was about a 100 Degree's by Fahr; and a few days more, (Ali Puli says that fresh butter dissolves red Coral into a mucilage, by digesting it.) I saw what astonished me much; the Corals were totally dissolved into a most beautiful red mucilaginous substance, whilst the Oil continued swimming above it unaltered in its first Colour. I have frequently shook the glass, in Expectation that the Oil would unite with the dissolved Corals, but all in Vain, as the Oil always re-ascended and left the dissolved massa subsiding in the bottom.

I tried if a longer digestion would not unite them, but I could not Succeed; Therefore finding it could not be done, I separated the clear Oil from the beautiful mucilage, and poured a highly rectified and tartarised spirit of Wine upon it, and during a short digestion the red mucilage dissolved totally in my rectified alcohol, and I obtained a glorious red Tincture of egregious Virtues.

This Experiment is a strong proof what a long continued gentle Digestion (hitherto very much neglected) is capable to effect.

I come now to Fermentation. How useful this is in Chemical operations I can also prove by a number of Facts. (without doubt as Fermentation and putrefaction is the Key to Regeneration and a new Life) (see Golden Chain of Homer msc.)

I have seen a wonderful Fermentation in \odot , pearls, Corals and many other Things, of which I have foremerly given an account IN THE GOLLORP TRANSACTIONS, as I shall do now of the true Resolution and Volatilisation of \square_{\dagger} by Fermentation, for the sake of Lovers of Chymistry, and true Physicians.

Process

For the Volatilisation of \square_{\dagger} .

(Sal Tartar)

Let 2 or 3 ℥ of crude \square_{\dagger} be calcined, more or less according to the quantity you wish to render volatile.

It must be calcined but gently until it is black within and without; this is done to get a Ferment, wherewith to ferment more \square_{\dagger} .

Place your black calcined \square_{\dagger} into a roomy pot of baked ∇ , well glazed; pour only as much Cold ∇ upon it, that the ∇ may stand one Inch above the poudered \square_{\dagger} ; place the Vessel on an exceeding gentle heat, so gentle that the ∇ grows only comfortably warm, but not hot; as soon as you perceive it so, then sprinkle half a handful of good

Crude \square_{\perp} finely powdered into the pot, and let it stand quietly unmoved, and in a short space of time you will see small air-Bladders rise above the ∇ , which will increase more and more. When you see this, and the air-Vesicles increase no more, continue as you began, and throw into the pan half a handful more of the same finely powdered crude \square_{\perp} , continuing the same gentle warmth under or round the containing Vessel, and by so doing a greater Fermentation will be excited, and the air-bladders will rise as before in exact order, and look LIKE NATURAL GRAPES, all but the Colour, which I have many times with great pleasure observed, and I have drawn from thence the sure argument, that Crude \square_{\perp} , as well as other Salts prepared by art, is capable to represent the original Shape from whence it proceeds (i.e. The Grape).

But a very accurate and Equil Degree of gentle Warmth is absolutely necessary, that is a moderate Warmth, such a one as every Fermentation requires. (see Boerhaave and Stahl on this subject, who have said every thing useful and curious).

You must also be cautious, that by a too copious Inspersion, you may not excite too great an Ebullition, which would cause the fermented Substance to run over and out of the pan all at once; therefore take a roomy Vessel.

After having projected crude \square_{\perp} at different times, every day, you will find at last that this Fermentation gradually ceases, as soon as you observe this, it is time to begin immediately the Distillation.

Pour the whole quantity of your fermented \square_{\perp} into a Cast-iron Cucur-bite or body; if you take a glass one, you will hardly avoid breaking it,

because it is necessary to apply frequently a Linnen dipped in Cold ∇ to it, in order to prevent too great an Ebullition of the fermented Substance within the body; as by a little too much heat, the matter becomes impatient and flies over all at once into the Receiver, and your operation is at an End, or fruitless. For that very reason and danger, the Δ must be governed with the utmost Care and attention, beginning with a very gentle degree of heat in \dots , and giving never no more heat, than what is just necessary for the VOLATILE \ominus to ascend.

Nevertheless the Δ must be gradually although gently increased, and at the End of the operation it must be pretty strong, in order to expel all the volatile \ominus .

You apply a glass alembic and lute it carefully to the body and adapt a roomy Receiver, which lute nicely to the alembic.

If you have proceeded rightly and cautiously, you will find that your thick and feculent \square , by the said previous Fermentation, is become totally volatile, so that not even the smallest quantity of fixt \ominus remains in the \odot , which I have experienced more than once. On account of the phlegma which must come over, (as much ∇ has been added for the sake of Fermentation,) the subject in the Receiver must be dephegmated and rectified several times, until it is white, but still remains a Liquid \curvearrowright , which whiteness is a sign that your volatile \curvearrowright of \square is sufficiently impregnated with the volatile \ominus of \square .

How inestimable this volatilised \ominus of \square is, the Testamony of JOHNES BAPTISTA VAN HELMONT alone is sufficient! yet for the sake of true Philosophical minds, we will add, that we have found this Wonderful

volatile ω of \square of uncommon Efficacy IN MOST INTERNAL OBSTRUCTIONS as well as EXTERNAL DISEASES, nay in MORTIFICATIONS and CANCERS;

We have also therewith as a most glorious menstruum, prepared THE TRUE ELIXIR PROPRIETALIS PARACELSUS, of Aloes, myrrh and Saffron; which in virtue and safety surpassed the common Elixir Proprietalis of the Dispensaries as much as the Sun's Light surpasses that of the Moon. (The process of the Dispensary is good for nothing.)

Nay if you once have this menstruum, you HAVE ALSO THE \triangle s OR ESSENTIAL PRINCIPLES OF THE 3 DEPARTMENTS OF NATURE IN YOUR POSSESSION! (Concerning this valuable Menstruum called by Theo. Paracelsus CIRCULATUM MINUS, see URBIGERUS HIS APHORISM'S at the End of the Treatise).

We must not pass over in silence the wonderful use of a well directed Fermentation in separateing the Crude impure \triangle s, so destructive and inimical to human nature, by a most simple and commodious way: (from opium and hellebore, etc.) The Truth of which will appear by the following.

Central separation of Opium, the separation of its pernicious narcotick external \triangle , and Exaltation of its Internal Essence, so as to become a truly safe and admirable Medicine.

Take of the best Thebaic opium 1 lb., cut it into small slices and put them into a Wide low glass Body, pour upon it fresh juice of ripe quince-apples, or new fresh Cider 10 lb. Weight, and add 1 $\frac{3}{4}$ of pure

dry \ominus of calcined \square ; then expose your vessel to a gentle warmth, and in a day or two air-bladders will rise, which is a sign that Fermentation has taken place; in order to promote it still further sprinkle 4 $\frac{3}{4}$ of finely powdered Loaf Sugar into it, and continue that gentle degree of warmth, that Fermentation requires (from 90 to 100) and if things go on properly, you will see the opium lifted up and dissolved in its minutest atoms.

Be cautious that you do not breathe the Effluvia OF THE EXTERNAL NARCOTICK \triangle , which is by this natural operation separated and smells very strong, and is extremely pernicious to health!

You will see the impure volatile part ascend to the Top, whilst the terrestrial parts sinks down and remains on the bottom of the glass body:

At last the pure part will remain in the middle in the form of a beautiful Ruby-red Liquid and finely transparent. This transparent Ruby-red Essence you must separate, after the Fermentation has subsided, with great caution, and you must filter it; then distill the phlegma from it in balneo vaporoso, until it remains like honey.

This honey like thick substance dissolves in a genuine highly rectified Spirit of Wine, and digest it in a most gentle heat during one month, and during this Digestion, if there remains still any crudity or ∇ , it will be thoroughly separated.

Then distil about half the S.V. from it, after having filtered the Extract first through blotting paper.

You have now in your possession an Essence of Opium infinitely superior to the LAUDANUM LIQUIDUM SYDENHAMII or to any other preparation

of opium, whatsoever; as in every other preparation of the shops, but this, the narcotic poisonous \triangle of the opium is dissolved and remains in the medicine, for which Reason so many sad effects follow even after the most prudent use of it, whilst this our truly philosophical Essence and sweet internal \triangle of the opium is perfectly safe and innocent, and of such Virtue and power, that the $\frac{1}{4}$ part of a grain or $\frac{1}{2}$ a grain at most, given in an appropriate Vehicle, is sufficient for a dose and has truly astonishing Effects in quieting the Disturbed operations of Nature in the human Body, and in procuring a most comfortable refreshing and reviving Rest. Such as take the Trouble of preparing this incomparable Essence of opium faithfully, as we have here indicated, will thank us, and wonder at our generosity.

I now go to speak of Trituration, an operation dayly used by the apothecaries, but such an operation is not what we intend here; By our Trituration we have seen the most wonderful Effects, which was performed in our Laboratory at HOLSTEIN GOTTORP, in the presence of His Serene Highness Prince Frederic of glorious memory, a Prince of universal knowledge and particularly versed in Chemical operations.

We have seen by our, long continued Trituration the so highly fixt \odot , a body invincible in the fire and in the strongest menstruums, relent and yield to this motion. We have ordered a Machine to be made for this purpose, after my own Invention, which we have named a philosophical mill, caused an accurate draught thereof, to be inserted in this Letter.

Process.

Take fine \odot in Leaves, cut small with Scissors, 1 $\frac{3}{4}$ or more, and place it in your mortar; This mortar may be made either of glass, or of steel, turned smooth and polished, or of fine \odot , such a one as our august PRINCE FREDERIC OF HOLSTEIN GOTTORP, of blessed memory had made, before his Decease, by persuasion of DR. BURRHUS; although I am firmly persuaded that a steel mortar is the best, as \odot is the best attractor and Conductor of the Electrical Δ , which acts in this Trituration as the most universal of all Dissolvents. Cover your mortar with a Circular paper or pasteboard cap, to prevent any dust from getting into the mortar and mixing with the \odot , during the Trituration.

The pestle must be turned round night and day in this Engine, by a regular and uniform motion, and the \odot will become a dark brown almost blackish Calx. This is effected in 14 $\frac{1}{2}$. But if you would only operate in day time, you will not do it in a month. In the beginning, we were satisfied and pleased with this operation, and I put my \odot Ψ into a small glass ρ , and applied a Receiver unluted. I buried the ρ deep in \therefore , and increases my Δ gradually, giving the strongest Δ at the latter End of the operation, and the \odot fairly ascended, partly in beautiful Red Flowers, partly in Ruby-red drops, which came over into the Receiver.

We digested both with \square ised S.V. and obtained a most glorious Ruby red Solar Essence, the Flowers dissolving in the S.V. as well as the Ruby drops. If ever a genuine AURUM POTABILE was prepared by any

Chemical artist, this certainly was one.

There remained a ☉ in the ☉, which was white, we extracted this with a ☉ of ☉, during a long Digestion, and obtained again, unexpectedly, a fine red Tincture.

An exceedingly small quantity, which remained after this Extraction, we reduced with borax in the ▽, and obtained a small Bead of ☉ again. I found by this that the Trituration had not been continued long enough, in order to volatilise the whole ☉ of ☉ and to render it totally irreducible. Rude and simple as this operation might appear at first sight, yet it is truly wonderful in its Effects, as by this continual motion, the universal △ of nature is constantly attracted out of the △, which dissolves the ☉, and all other metals, and renders the ☉ volatile and for the most part irreducible.

We made afterwards many more experiments, which have been inserted in the Gottorp philosoph: Transactions, and we continued the Trituration as long again as before, and our brown ☉ of ☉ became at last A RUBY-RED ☉ in the steel mortar, without any distillation at all.

We have used the GLASS and GOLD MORTER but found the Effect slower, as I suspected.

For the last Experiment, I shall mention

The Genuine preparation of the ☉ of ☉.

This ☉ has been deemed by many Chemical Writers A NON-ENS and impossible; But no Authority shall ever hinder me to communicate what I have done myself, and that more than once.

The principal operation consists in the Trituration. Reduce a $\text{M} \odot$ either a M per se, or a $\text{M} \odot \text{♂}$ into an impalpable \odot . Take of such a M in \odot 1 ℥ , add of the purest \ominus of Calcined \square very dry 2 ℥ , $\text{Ox} \text{♂}$, and mix these things in a Stone or glass mortar, a large porphyr mortar is best, but not easily obtained. Let it be mixed to a very fine \odot . Humect or imbibe this \odot with \square of a healthy man, and then let the moist mixture be rubbed in a large Stone mortar by two industrious men, who will take pains, during a whole day without Intermission, sprinkling the mass now and then with more \square , as soon as it grows dry by rubbing, as it must be kept moist constantly.

When this is done, put the mixture into a large green glass body, and pour as much \square , of a healthy man, upon it so as to go a hands breadeth over it, then shut your body, not perfectly tight, and place it in a gentle fermenting warmth for a whole month, shaking it once a day. If during this time the Liquor should evaporate partly; pour more \square upon it, and after this digestion is accomplished, take the mass out and mix it with an equil quantity of powdered glass and Ψ vive, (of each $\bar{a}\bar{a}$, and then of the digested mass and this new addition $\bar{a}\bar{a}$) this mixture you must form into small bullets, like marbles or pistol balls, and let them dry on boards in the shade in a warm room.

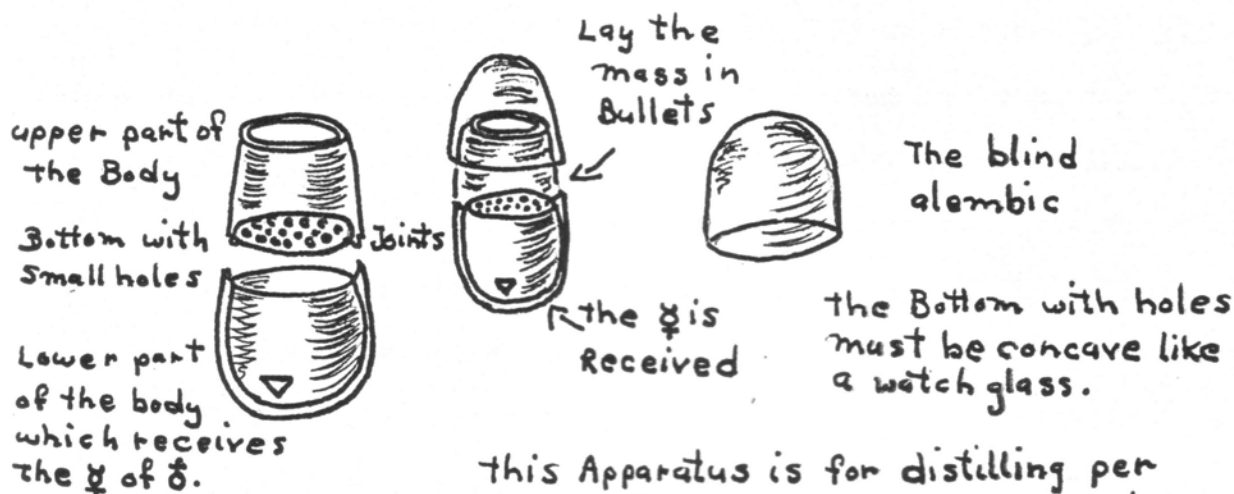
From these Bullets you shall extract the antimonial \odot in the following manner:

You must now have an ∇ en or cast Iron Cucurbit made which must be double; the upper part must fit nicely into the lowest.

The upper part, which takes off, must have a concave bottom full

of small holes; further you must have a blind ∇ en or iron alembic fitting nicely over the upper Brim of the body.

in this manner.



This Apparatus is for distilling per descension as the most convenient here.

Process of Distillation.

Fill now the upper part of your body with your dried Balls up to the brim, place the alembic over it, without luting, or lute it but slightly. Join the upper body to the lower and lute these joints all round with good tough Loam.

When this luting is thoroughly dry, make a hole in the ground and place the body therein, so that the lower part may be kept cool in the ∇ as far as the joints, press the ∇ all round, so as to lay close to the body, now lay the ∇ all round the upper part, pressing it down, and keep about half of the upper part above ground and press the ∇ smooth all round.

Place now 4 bricks round it, and 4 on the Top of them, so as to form a little furnace, round the upper part and Cover of the body, as you do when you cement on a Hearth.

Let the upper part of the Bricks be level or a little above the upper part of the alembic. Thus arranged, lay dead coals all round the upper part of the body, until you get almost to the Top of the Furnace, then lay lighted Coals on the Top, and the Coals below will take Δ gradually; thus keep a moderate Δ the first 4 hours, after that when the body and alembic get of a red heat, you must keep up a lively Δ for 4 hours more, exciting the Δ the last hour with a small pair of double bellows. Then let the Δ die away gradually, and do not remove the vessel until the next day when you are sure that they are cold.

Open then your Vessels and you will find the running ♀ of ♂ collected in the lower part of the body; I forgot to mention, that you must pour about half a pint of Cold ∇ into the lower part of the Vessel, before you lute them together. Dry your antimonial ♀ and force it through Chamoi Leather.

Finis - J. Langelottus.