

Soaps and Oils

Elements of a Practical Craft Curriculum

A workbook for teachers

by

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RMET



Throughout this booklet, references and dedicated passages accompanying descriptions of the basic practical activities will give pictures and insight into the relevance of those activities to developmental or therapeutic educational elements of the craft. While not essential for many soap makers, the insights included in these passages lie at the heart of a craft process that strives to be therapeutic and pedagogic in the deepest sense of the word. However, for ease of reference three different icons are used to identify the core nature of the different aspects of soap making described in this booklet:

P denotes sections devoted to the PRACTICAL aspects of the craft

C denotes sections devoted to providing CONTEXT for the practical activity - often historical or giving context for a particular aspect of the craft process

I denotes sections devoted to providing INSIGHT into the processes, substances and elements of the craft process in relation to pedagogy or therapeutic considerations.

These icons appear both in the index and in the top left hand corner of the first page of each section.

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C

THE DEVELOPMENT OF PRACTICAL SCIENCE FROM THE LANDSCAPE ° SOAPS AND OILS °

This booklet documents research and experiences derived through teaching and the delivery of workshops in soap making over the last nine years. In this time the craft of soap making has proved to be very engaging and fruitful as a practical educational curriculum element to a wide variety of learners.

From the young child to the professional seeking a new creative outlet, soap making has time and again brought inspiration and rekindled an interest in the products and processes inherent in craft activity. Soap making can lie at the heart of a pedagogy that seeks to work practically and with an interdisciplinary approach to learning. It can also serve to enliven the creative and frivolous part of all of us.

Soap making involves a wide scope in both substances and processes that engage the soap maker intellectually, practically and artistically. Direct contact with the mineral, plant and animal kingdoms is cultivated through this craft.



This booklet gives a basic account of soap making from a variety of aspects. To begin with an historical background is given. In order to engage in the practical task of soap making, traditional methods are described followed by indications of how to make soaps using more modern methods and ingredients.

Lastly, from an educational standpoint, this booklet discusses how the topics of soap making fit into the Steiner Waldorf curriculum. The emphasis throughout this booklet will be to bring the practice of soap making to the teacher in such a way that it can be an activity rooted in a living contact with both the natural environment and the dynamic processes used by the soap maker in the production of a quality soap.

P

SOAP MAKING - A HISTORY

Who Made the First Soap?

Activity: Ask this question as a stimulus for learners to begin to imagine for themselves the context of how soap came to be. When was the first soap made? By whom? Where? Was it a purposeful creation? An accident? What was used as ingredients? How were they found, prepared, discovered....? Either singly or in small groups develop these stories and then tell them to the rest of the group.

Imagination is a key to learning. The tendency for judgements of right and wrong to be at the outset of a learning process is very prevalent and can hinder the learning process from the outset. The essence of the craft process will include the potential for the creative process to produce less-than wonderful results of early attempts and research. These are the compost and rich soil of later understandings and skills that will develop in time.

If the stories are told outside by the open fire it is even more engaging, not the least because we are going to encounter...

combustion as an essential component of our story of how the first soap was made. The fire warms us as does the activity of imagining and sharing stories. Over the years a myriad of interesting tales have developed from this exercise.

The magic of the stories that are told, indeed the magic of stories, is that elements of the processes and the substances that form the basis for soap emerge naturally, woven in amongst the fantastical, absurd or outrageous tales that are sure to be created.



Tall (or Tallow?) Tales !!

Now it is time for you to tell your tale and to take the opportunity to craft a story that weaves both fact and fiction together. It is an opportunity to explore something of the wonder that is there at the beginning of any craft process. It is, of course, an open question - for the three basic ingredients that make up a soap would never combine naturally. They need some careful preparation and coaxing to come together at all.

C

~ History ~

There is an interesting legend surrounding the discovery of soap making. This legend accords the discovery of soap to the Romans. The legend tells how soap was first discovered by women washing clothes along the Tiber River at the bottom of Sapo Hill. The women noticed the clothes became cleaner with far less effort at that particular location. What was happening? The ashes and the grease of animals from the sacrificial fires of the temples situated on the top of Sapo Hill mixed with the rain, making soap, which ran down the slope in the streams of rain water giving the women a wash day bonus. You can see at a glance that saponification, the chemical name for the soap making reaction, bears the name of that hill in Rome. Though it is clear that there are many unlikely aspects of the above, many a rich and colourful story has been spun from the threads provided from the legend.

Along with the imaginative possibilities of the above legend, it is possible to conceive for ourselves that the first soap was discovered through the conditions created by a scenario often enacted in many parts of the world. It is a scenario that is in fact easily repeated with a group of young people who are exploring for themselves the question of the origins of soap making. How many small groups of people would have regularly gathered around an outdoor fire pit, placed some meat on the spit and, their appetites satisfied, left the remains of the feast still dripping fat into the cooling ashes of the fire? We are left wondering how this mix of fat and ash (the primary ingredients of soap) may have revealed its transformed state and usefulness in cleaning, but the scenario itself leads us into the realm of our own experience.



wood ash



fat

Whatever the actual origin of the creation of soap, it is evident that soap making has a long history. A soap-like material found in clay cylinders during the excavation of ancient Babylon is evidence that soap making was known as early as 2800 B.C. Inscriptions on the cylinders say that fats were boiled with ashes, which is a method of making soap. These early references to soap and soap making were for the use of soap in the cleaning of textile fibers such as wool and cotton in preparation for weaving into cloth. Soap for personal washing became popular during the later centuries of the Roman era.

Pliny, the Roman historian, described soap being made from goat's tallow and causticized wood ashes. He also wrote of common salt being added to make the soap hard. The ruins at Pompeii revealed a soap factory complete with finished bars. The Celtic peoples are also thought by some historians to have discovered soap making and were using it for bathing and washing.

After the fall of the Roman Empire in Western Europe, there was little soap making done nor was there much use of it in the European Dark Ages. Around the 8th century soap making was revived in Italy and Spain. By the 13th century, France also became a producer of soap for the European market. During the 14th century, soap making was started in England.

Soaps produced in the south of Europe, Italy, Spain, and the southern ports of France (Marseilles and Castille soaps) were made from olive oils. These olive oil soaps were of a higher quality than those made by the soap producers of England and northern France. These northern soap makers, not being able to obtain the olive oil, made their soaps with only animal fats.

Tallow, the fat from cattle, was the chief fat used. Northern European soap makers even resorted to making soap from fish oils. Soaps made from the poor quality animals fats and oils, while adequate for laundry and textile usage, were not desirable for bathing and washing. The soap from southern Europe made with olive oils were superior. This resulted in a lively trade of exporting fine soaps from southern Europe.

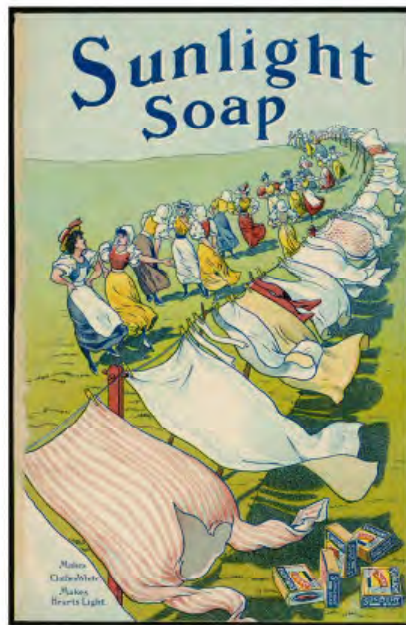


Soap making, particularly using tallow and other animal fats, was undertaken on both large and small scales. It was an important activity for those people who lived on the land, and it was performed as a yearly or semi-annual event. As the butchering of animals often took place in the autumn, soap was made at that time to utilize the large supply of tallow and lard that resulted. On the homes or farms where butchering was not done, soap was generally made in the spring using the ashes from the winter fires and the waste cooking grease that had accumulated throughout the year.

The Industrial production of Soap The 18th century brought new discoveries in the process of soap making. During this period, the living standards in Europe were increasing, causing bathing to become ever more popular and thus an increase in the demand for soap. This came at a time when previous soap production had caused a shortage of trees to obtain potash. Thus, numerous attempts were being made. The first new method was won by the Frenchman Nicholas Leblanc in 1790 with his process of converting common salt (NaCl) to the alkali. The Leblanc process involved the use of salt, sulfuric acid, limestone, and coal to produce soda (Na_2CO_3). Sodium alkalis make hard soap without having to add common salt to effect the change. The other big advantage was the alkali needed for soap making no longer required the arduous task of cutting acres of trees, burning the wood, leaching the ashes, evaporating the water from the wood ash lye, and finally burning off all the impurities in a kiln.



The whole business of soap making became much easier and thus soap became available to more people. The natural result being more and more people took to using soap, particularly the toilet soaps. The consumption of soap increased tremendously in the 19th century. Soap became of age in the Victorian times and the soap making industry turned from part craft and mystery to a fully developed industry.



Today, soap making continues as a thriving industry, with raw materials produced and refined on an industrial scale. It is, however, still possible for small scale soap production to be undertaken, and this enterprise is now facilitated through the greater availability of vegetable oils and readily available alkalies. Furthermore, making soap oneself can lead to a superior product, for it allows the soap maker's individual and personal discretion to be exercised in all aspects of the process - from the ingredients chosen to the final shape of the finished bar.

~

P

SOAP MAKING Traditional Tallow Soap

An experiential approach to soap making is initiated in an ideal way through the element of fire. For student and teacher alike, there is a deep rooted fascination and enjoyment in building a fire in an outdoor fire pit, feeding a fire and watching as the rough, substantial logs of wood turn into a powdery, insubstantial ash. The soap maker needs a large quantity of wood ash in order to obtain potash for the soap pan. Combustion, at this initial stage, is an immediate experience, and an outdoor fire can initiate not only the soap making process in terms of obtaining raw materials but also the contemplation of heat itself, which will be an important phenomena to observe in soap making at all levels.



At this first level, the heat given off through the transformation of the substantial woody fuel dissipates and the wood gives way to ash, which is collected once it has cooled. The ash is then placed in a potash still.

The potash still can be fabricated by/with students. A potash still can be made from a large barrel or drum with a tap inserted just above the base of the container. A filter should be placed on the inside of the tap, a rag or cloth doubled over and fixed tightly is sufficient. The still should be filled, with ash that has been sifted to remove any un-burnt or partially burnt fuel. The still is then filled with rainwater (the drain tap being left closed) to the point where the ash is saturated and covered with an inch (at most) of water. This ash soup is stirred for a quarter of an hour and then left to sit. The drain tap can be opened after the ash has been able to sit in the ash for 3 - 4 hours, longer if possible. A container (2-3 litre capacity; glass, plastic, enamel) should be placed under the tap to collect the liquid that will begin to drip out of the still. The still is then covered, the tap left open to allow a regular drip of amber coloured fluid to be collected in the receptacle.



While the potash is being collected, the second raw material can be prepared. This too involves fire, and if at all possible this step should also be done around an outdoor fire pit. This phase of the work is significant in terms of the process of combustion for the very fact that the heat produced by this process is now utilized at its source, immediately prior to its dissipation into the environment. Heat is beginning to be a factor in its own right in the soap works.



An animal fat; beef, pork..., is obtained. The local butcher is the most ready source, and most butchers will put aside a few pounds of fat on request. This fat is placed on a table or bench near the fire pit, which has been altered to support a large pan above the fire itself - e.g. using fire bricks to make a support for a grill.

The fat is cut up into small pieces, any non-fatty material is removed and the cleaned fat is placed in the pan above the fire. Care must be taken with the melting fat, as the liquid fat is flammable. After a time the fat will melt and separate - much of it becoming liquid. The fat is left too cook until any non-fatty material begins to brown and is clearly not going to give up any more liquid fat. Once all the fat that will melt has done so, the pan is removed from the fire, cooled for five minutes (not so long that it begins to harden) and boiling water added to the fat pan. The pan is placed to one side to continue cooling. The contents of the pan have cooled sufficiently once a hard layer of white tallow (if beef fat was used, lard if pig fat was used) can be seen on the top of the pan which, when cut, is easily lifted off the water in the bottom of the pan into which most of the meat scraps have fallen. The above process allows for a direct experience of the relationship between oil and water and illustrates a possible functional benefit of this relationship - the separation of fatty from non-fatty material. This relationship will be significant in the further development of the soap work.

Once the tallow (rendered fat) has been obtained, and while the potash is still being collected, an introduction to the plant kingdom is appropriate. Rendering an animal fat is often met by the students with some rather sceptical comments about the use of this substance for soap (i.e. as a cleaning agent), for animal fats have strong and, to many people unpleasant, odours.



It is at this stage, therefore, that students can be presented with the challenge of counter-acting the strong smell of an animal fat based soap. Students can be led into the garden and the search for scented plants can begin.

Rosemary and lavender are obvious choices at this point (but by no means the only ones) and it is a nice contrast to the work thus far to harvest plants and to gather the leaves (rosemary) or flowers (lavender) and set them aside ready for the soap pan. These plant substances should be used in this first soap in their 'crude' form i.e. as chopped leaves or flower heads added directly to the mix.



The last step in the process of preparing the raw materials for a traditional soap remains. The potash has been collected, but is it the right concentration to make soap? How can we make the potash 'stronger'?

Students can be led to the properties of heat once again, the potash itself now being added to a pan placed over the fire pit and evaporation explored. This process will also reappear at a more 'advanced' level of soap making, but with different applications. How do we know what the right concentration is?

Using traditional methods we can make a saturated solution of salt (sodium chloride) and discover that a chicken egg (not hard-boiled!), which will sink to the bottom of a container filled with tap water, will float in this same water once it has been saturated with salt. This is one indicator. This experiment can be followed with the creation of a simple float.



A small stick weighted on one end will float in water in such a way that part of the stick will remain above the surface of the water. This level can be marked. The same stick floated in a saturated salt solution will be seen to float significantly higher. This level is also marked, and this second mark can then be used in the process of concentration to indicate when the potash has reached saturation and is suitable for soap making.

Once all the ingredients have been gathered and readied through the above methods, they are ready to be mixed together. Proportions of fat to potash can be based on a basic ratio of 2lbs of fat to 1 pint of potash.

The tallow is melted once again, the lye added once all the fat is liquid and the plant material added to the pan as the soap mix is being stirred. The soap can be kept over a low heat and stirred for up to an hour. The long stirring time is to ensure that the lye (potash) and the fat have sufficient time to mix thoroughly and react with one another. After an hour the mix will have thickened and can be poured into simple moulds (e.g. plastic cups, used milk cartons, shallow tubs....).

This traditional tallow soap is a soft soap and should not be expected to go as hard as the soaps we buy in bar form.

~

I

TRADITIONAL SOAP - THERAPEUTIC/PEDAGOGIC CONSIDERATIONS Seven Life Processes

Reflecting upon the practical tasks involved in making a traditional soap we can highlight the following activities.

PROCESS	ACTIVITY	PRODUCT
Combustion	fire lighting, tending	wood burnt to create ash
Dissolution	mixing ash and water	potash
Rendering	fat rendered in pan over fire	tallow
Evaporating	evaporating water from potash	concentrated lye
Refining	measuring saturated solution	concentrated lye
Cooking	mixing tallow and potash	soap

It is the experience of the author that in this, as in subsequent processes, a wealth of pedagogical and therapeutic potential lies. The skill and sensitivities involved even at this level of soap making should not be underestimated. Young people who have not tended a fire and cannot be 'sensitive' to the needs of a fire in order to burn thoroughly (for ash), in a controlled manner (in order to render tallow) and in the right intensity (coals for cooking, flames for combustion) are comprised already in their relationship to the natural world.



BREATHING

A fire is a direct experience of the crucial role that the AIR element plays in the transformative processes. Too little and the fire chokes, dies, the combustion is not thorough. Too much air and not enough fuel exhausts the process prematurely. There is a dialogue, a breathing, between the fire and the one who tends it, a sensitivity that develops in developing the skills of gathering the fuel, laying the fire, and tending it throughout its activity that is lacking in many young people today and is crucial to nurture.

WARMING

When we 'light a fire' under someone (or ourselves!) we awaken interest, enthusiasm and a willingness to get involved in life. Fire as a transformative element brings about change. Wood - a cold, material, 'dark' substance is suddenly quickened. Warmth appears, light is given off and elements rise away from the pull of the earth. This is remarkable! We are left with ash.



Fat sizzles and melts, strong odours are produced. There is a danger in introducing the exact, but abstract, concepts of modern chemistry too early. Here in fire, fat and ash we have the foundations of a modern chemistry - but still at the level of direct sense experience. Transformative processes which require our attention and tending 'warm' the learning process, the students engagement with life.

NOURISHING

In order for us to gain nourishment from the food that we consume, we must break it down. We must transform it. Nourishing is thus a physical process, on the one hand, but it is not restricted to this realm. Rudolf Steiner's research highlighted the role that the sense life plays in a healthy developmental process. Along with nourishment derived from the transformation of raw materials (wood, fat, etc.) taking place in the outer world, a more subtle nourishing arises through the active sense life.

In the initial processes of making a traditional soap we find several interesting pictures of this nourishing activity. We burn the wood in order to release the potassium based salts from the dense woody mass. An analogous process happens in our digestion. An incomplete combustion results in charcoal, not the 'nourishment' sought by the soap maker.

Our sense life, often in our modern world subdued or subverted by a plethora of artificial sense impressions, is struck by the raw smells of wood smoke, rendering fat, and freshly harvested herbs. This is an oft neglected realm of sensation that becomes a vital element in the life processes of the craft work.

SECRETING

Outwardly we see this life process imaged in the potash still. From the grey, rather unglamorous soup of the potash, a slow drip of amber liquid emerges from the spout. Many a young person has stifled a gaffaw at the appearance of this substance, even more so when one of their peers is offered a taste. After all, it does look like urine - the secretion product of the kidney. The potential here is to step off with students more directly into the amazing fact that many processes engaged with in the craft of soap making have analogous processes in the human being, and indeed in other natural processes. As with others, we will elaborate on these relationships further in the course of our development of the soap making craft.



MAINTAINING

Once the potash has been concentrated - excess water 'secreted' through evaporation - and the tallow rendered the process begins of bringing the two together. Maintaining is, according to Dr. Lotte Sahlmann, a Mercurial process. Mercury mediates between the two polar substances - the fat and the salt. Its material form is water, in which the potash was dissolved in order to extract it from the undifferentiated ash. As a

process, and ultimately a life process, Mercury is the rhythmical activity by which the fat and the salt are brought together in the soap pan and transformed from their original states into the completely new substance called soap. But we are not there yet!! That process is brought about when the student 'maintains' a constant stirring of the combined liquid fat and lye. And make no mistake...throughout the traditional soap making process, and the cold-process to follow, this can be a very challenging step in the procedure. It is a constant activity carried on despite the (seemingly) apparent fact that 'nothing is happening'. How often do we find that the process of learning is compromised because, for a number of reasons, the student is not able to maintain their inner activity in order to 'allow' a process to unfold in due time?

GROWING

Earlier stages that are maintained to the point where the mixture in the soap pan begins to reveal the fact that it has thoroughly transformed signal a new stage. Previously there were three separate substances - fat, lye and water. These have now been incorporated (literally "consolidating two or more things, union into one body") into a new uniform substance.

For the student this is analogous to the 'incorporation' of the process this far into their own experience and understanding. It will also become apparent, in this as in other soaps to follow, that the 'body' of the soap reveals the nature of the process thus far. It is often very interesting to see how a group of students, all working from exactly the same recipe, will end up with different results. Some are too dry and crumbly (too 'earthy'), others are too oily - i.e. these soaps have not been well 'incorporated'!

REPRODUCING

Reproduction, creation is now possible. What this means in the context of the craft process is that the student is now often able to take steps on their own in order to develop the process further. In later stages of the craft, this is the aim of the teaching/learning process as the teacher is able to 'get out of the way' and let the student forge their own path of research and further learning. The stage is marked by the arising of questions such as 'what if we....' or 'what if I...'

I

THE SEVEN LIFE PROCESSES

The seven processes described in the preceding section derive from the research of Rudolf Steiner. The indications that he gave have been followed up by several individuals who have recognized their value as insight into both healthy developmental processes and pathological processes in the living organism. Dr. Lotte Sahlmann writes, in *The Higher Senses and The Seven Life Processes*, a clear account of how these seven archetypal life processes lie at the foundation of human physiological development. He gives a clear account of these processes as they are evident in the development of the human organism.

I have chosen, however, to explore the way in which these life processes can help make visible analogous processes in a learning experience.

BREATHING : Cultivating 'inspiration'. Inviting AWE, WONDER and REVERENCE. Nurturing activities that open us to the 'other' and allow something of the other to enter us, to fill us and awaken our interest. A walk in nature, a story....

WARMING: Stimulating and tending the warmth in our lessons. What 'sparks' the learning process? For whom? Whose interest has not yet been 'kindled'? Who is still cold to the subject or activity?. At some point, the student will need to learn how to light this fire and tend it for themselves, but it is only when this inner fire of interest and enthusiasm is lit that deep learning takes place.

NOURISHING: Curiosity becomes engagement. The question 'What if....?' arises. A desire to experiment and to follow hunches arises in the learner and a desire to stamp oneself in a more individual way on the subject or project.

SECRETING: Externalization of the initial engagement - both fruits and 'dross'. This allows for reflection, problem solving, planning - a distillation that identifies essence, and provides the foundation for later stages.

MAINTAINING: Often a challenging stage. Developing patience, persistence and sustained attention in a craft or subject is essential in order for it to become *capacity*. Repetitive working through a problem or process. Sustaining attention when 'nothing is happening'.

GROWING: Something is happening! Where there was effort, struggle even, there is now a sense of new forces, capabilities and potential. **ANTICIPATION**

REPRODUCING: Generative stage. New ideas arise out of a newly found autonomy within the subject, craft or discipline. This stage also moves the learning and skill developed into the wider social realm.

C

Victorian Washballs

"The true Chymical Wash-Balls, for beautifying the Hands and Face, as made by the first Author, without the least grain of Mercury, or anything prejudicial; largely experience'd and highly recommended by all that use them; and that for making the skin so delicately soft and smooth, as not to be parallell'd by either Wash, Powder, Cosmetic etc. being indeed the real Beautifier of the Skin, by taking off all Deformities, as Tetters, Ring-Worms, Morpew, Sun-burn, Scurf, Pimples, Pits or Redness of the Small-pox, keeping it of a lasting and extreme Whiteness; they soon alter red or rough Hands, and are Admiral in shaving the Head: which not only gives a more exquisite sharpness to the Razor, but so comforts the Brain and Nerves, as to prevent catching cold, and are of a grateful and pleasing scent. They have been sold above these eight years."

An advertisement from an 18th century newspaper.

Recipes.

1. A delicate washing ball.

Take three ounces of Orace, halfe an ounce of Cypres, two ounces of Calamus Aromaticus, one ounce of Rose leaves, two ounces of lavender flowers, beat these all together in a mortar, searcing them through a fine searce, then scrape some castill sope and dissolve it with some Rosewater, then incorporate all your powders therewith by labouring of them well in a mortar.



2. To make Barbers' Washballs

Take purified Venetian Soap six ounces, Macaleb four ounces, Ireos, Amylum of each seven ounces, Cloves two ounces, Labdanum, Anniseeds of each one ounce; Nutmegs, Marjoram, Cypress pouder, Geranium Moschatum, Camphire, of each half an ounce, Storax liquids half a dram, Musk ten grains, all being in fine pouder, with a little fine sugar, beat all in a mortar and make them up into wash-balls.



P

Making Washballs

Making washballs is a fantastic process, and there is no better way to step into the plant world and the substances obtained from the plant world for enhancing our soap base. The recipes on the previous page appear in a publication by the Herbal Society, and they inspired the following process as a classroom/workshop activity. It is unsurpassed as a starting point for work with the plant world and soap making.

THE INDOOR - OUTDOOR CLASSROOM

Soap making is perfectly situated in both the workshop and the garden, hedgerow or meadow. Of course our craft of actually producing a cold-process soap (as opposed to a tallow soap described in previous sections) will take us into the workshop. However, we must start with the crucial links to the natural world. It is no good to just take ready prepared ingredients out of the jar or box. This leaves out vital elements of the craft process, and indeed of the pedagogical process as well.

A SENSE OF WONDER

Take a walk outside, bringing bowls or baskets with you. What do you see? What is growing?

What colours catch your attention? Look, smell, feel...this is an opportunity to be surprised and 'taken in' by plants that perhaps are even familiar to you. I call this stage cultivating the 'what if...' mood.

Harvest some petals, leaves...and bring them back in to dry.

'I wonder what will happen if I add this to my soap???' Wonder and awe are the first steps of a living learning process.



Calendula officinalis, a superb plant for soap making

STEPWISE

~ Prepare harvested plants for drying. Separate petals from flower heads, cut open fleshy fruits (i.e. rosehips)...drying can be undertaken in a variety of ways.

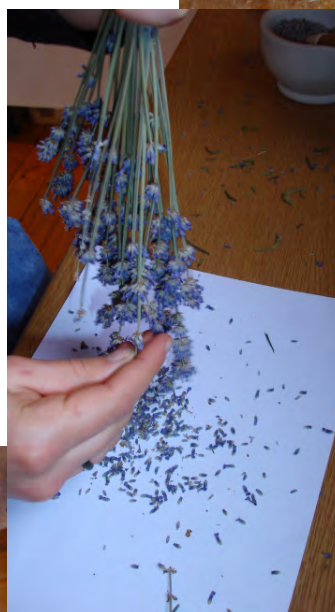
- trays in a fan oven for quick drying
- custom made drying racks with a source of warmth below
- plant matter in paper bags hung over an aga, rayburn or wood stove

~ While these plants (petals, leaves, stalks, fruits) are drying, take a block of plain white soap and grate it up using a fine cheese grater.

~ This 'opens' the soap and makes it workable. The plain white soap is our base, made previously or purchased beforehand. It should be a handmade soap, as commercially produced soaps are too 'fixed' and won't allow re-working in this manner.



~ Prepare dried plants to add to soap - petals may be chopped or ground, leaves crushed, ground or added whole etc. It is up to the soap maker now as to how they want to add the plants to the soap.



~ A floral water is added to moisten the soap, and add a hint of scent - use rose, lavender or any floral water of choice.

~ The inevitable question arises at this point...."HOW MUCH ?". In this soap making process it is the development of just this sense that is important. Too wet, too dry, too little, too much. Rather than hard and fast rules these relationships are to be discovered through the DOING!!!

~ It is possible at this stage to add more than one plant ingredient. However, remember the rule that it is always possible to add more, very difficult to take away - particularly once we start to work the mix of shredded soap and plant matter by hand.

~ Begin squeezing the mix together to the point where it can be picked up as one mass and worked by hand.

~ The mass should be moist enough to take vigorous squeezing, kneading and manipulating without crumbling. Add water if too dry - if too wet add more grated soap or some orris root powder.

~ This is a fantastic process for stimulating WARMTH in the hands and upper body. It is a vigorous process that requires thorough reworking of the whole soap mass.



~ Once the soap is satisfactorily colored, is a soft maleable mass that is neither too dry (cracking) or too moist (gushy), make a flat pancake out of the soap and drop essential oil onto the surface. Carefully mix this in by hand, avoiding spillage of the precious oils.

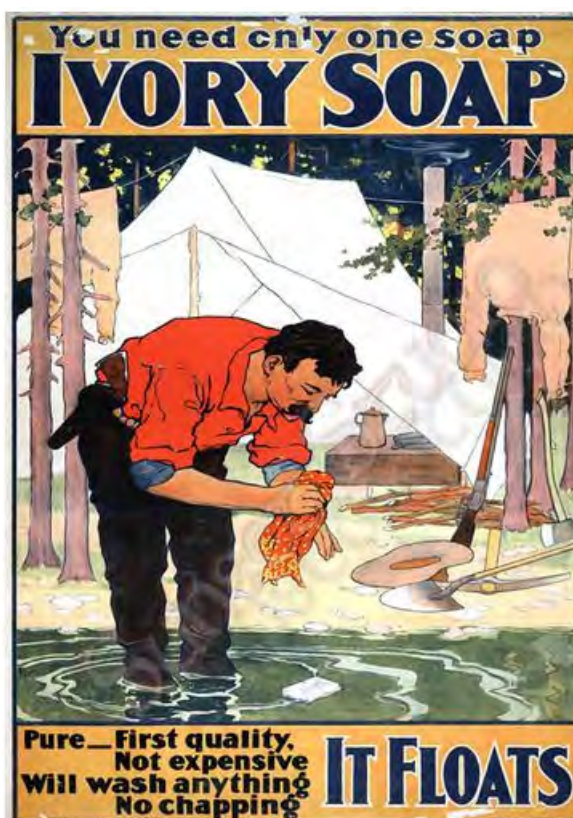


~ Shape the soap ball as desired.

In terms of the practical task of soap making, we have covered the production of tallow soaps and washballs, the former sourced from ingredients readily available in our locale, the latter process using a plain white vegetable oil soap and locally harvested plant matter.

In the tallow soap we encounter the basic soap making ingredients in their most immediate form - fat (fatty acid), water, and an alkali (potassium carbonate in the case of potash). The tallow soap is a slightly acrid smelling product, and is a soft soap - kept in a jar or ceramic pot. From a historical point of view, soaps of this nature were the most readily available until the advent of both an industrially produced alkali stronger than potash, and vegetable oils which replaced animal fats to a large degree.

Caustic soda (sodium hydroxide - NaOH) was first produced in the 1890's and it came to replace potash in soap making. Soaps made from caustic soda could be cut or molded into hard bars of soap.



Vegetable oil soaps made using sodium hydroxide would soon dominate the market place. The list of vegetable oils that can come in to the soap pan continues to grow to this day, the most common of course being coconut, olive and palm oils. These ingredients gave rise to completely new types of soap.

P

COLD PROCESS SOAP MAKING INGREDIENTS

We are now ready to move on to the making cold process soap. The term cold process refers to the fact that there is no cooking or high temperatures involved in making this type of soap.

Let us review our basic ingredients and their sources.

FATS AND OILS



Tallow : this ingredient can still be prepared and used in the soap if desired.
Coconut, palm, olive.....: there is a huge list of vegetable oils for the soap maker to explore. Most, if not all, of these will be imported and also processed in a variety of ways before use.

ACTIVITY: Try pressing some oil out of a readily sourced seed or nut. Small-scale oil presses are expensive, but alternatives can be explored!

Infused oils: Herbal oils (Marigold, St. John's Wort...) are fantastic additions to soap. These are made by infusing a herb in oil (such as sweet almond oil) in order to extract the properties of the herb. The oil then brings these qualities into the finished bar.



CAUSTIC SODA

Available from chemical suppliers, soapmakers will develop a preference between pearl or bead forms of NaOH. In the classroom it is important to become aware of the properties of this substance. We can demonstrate the caustic nature of sodium hydroxide by first making a small, concentrated lye solution using this alkali (3oz of NaOH stirred into 8oz of water). We can then place a cooked egg, or a small piece of leather, into this solution and observe the result. The highly caustic, or corrosive nature, of the lye is clearly observed as the egg or leather is 'digested' over time.

COLD PROCESS SOAP MAKING INGREDIENTS Cont'd

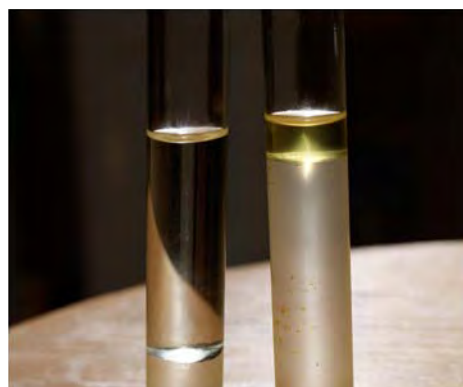
HERBS ETC. for color and texture

This is a vast array of possible plants for color, texture, decoration etc. Some of these will contribute herbal elements, others will be purely aesthetic - or even whimsical. Whereas a list could be generated of plants to use, or even sourced on-line or from soap making books, for the teacher working with soap making in the classroom EXPLORATION and EXPERIMENTATION is the best resource.



ESSENTIAL OILS

Again, a wide variety is available for the enthusiast. Essential oils are distilled or extracted from aromatic plant material (flowers, leaves, bark etc). Fragrance essences are likely synthetic, and not produced by a plant. It is a very valuable process to educate the nose and sense of smell to the different qualities of scent available to the soap maker.



OTHER: Milk
Honey, Beeswax
Oats
Seeds - poppy, mustard, flax

...experiment and explore!!

In order to make soap we need to work out a recipe. This is a good exercise as it brings the practical necessity of calculative skills to the fore. The process of creating a recipe can be a very individual affair, and individual methods will arise.

The example below can serve as a starting point.

RECIPE BUILDER

We begin by creating a table as follows:

OIL NAME	SAP	OIL WEIGHT	LYE WEIGHT	WATER WEIGHT
1				
2				
3				
s.f.				
TOTALS		-----		

SAMPLE RECIPE

1 - In the table entitled OIL NAME, enter 'Olive' in the row '1'.

2 - In the adjacent column, under the heading SAP, enter the saponification value for olive oil. SAP values for oils that will saponify are found on page opposite. From this chart it will be seen that olive oil has an SAP value of 0.1340.

3 - In the next column (OIL WEIGHT), in row 1, enter 32 oz.

5 - Under the column Lye Weight enter the product of 32 oz. multiplied by 0.1340.

This gives a Lye Weight of 4.3 oz.

6 - Under the column Water Weight enter the product of 32 oz multiplied by 0.38. This gives a water weight of 12.2oz.

For a pure olive oil soap, the recipe builder process has enabled us to determine that 32 oz of olive oil will require 4.3 oz of lye dissolved in 12.2 oz of water in order to make a well saponified bar of soap. We will elaborate on this example recipe further.

Oil	Sodium Hydroxide (NaOH)	Potassium Hydroxide (KOH)	Oil	Sodium Hydroxide (NaOH)	Potassium Hydroxide (KOH)
Almond, Sweet	.1360	.1904			
Apricot Kernel	.1350	.1890	Maize	.1360	.1904
Arachis	.1360	.1904	Mink	.1400	.1960
Avocado	.1330	.1862	Mustard	.1241	.1737
Babassu, brazil nut	.1750	.2450	Neat's foot	.1359	.1902
Beef Hoof	.1410	.1974	Neem	.1387	.1941
Beeswax, White	.0690	.0966	Niger-seed	.1355	.1897
Brazil Nut	.1750	.2450	Nutmeg Butter	.1160	.1624
Butterfat, Cow	.1619	.2266	Olium Olivata	.1340	.1876
Butterfat, Goat	.1672	.2340	Olive	.1340	.1876
Canola	.1240	.1736	Palm Butter	.1560	.2184
Castor	.1286	.1800	Palm Kernel	.1560	.2184
Chicken Fat	.1389	.1944	Palm	.1410	.1974
Chinese Bean	.1350	.1890	Peanut	.1360	.1904
Cocoa Butter	.1370	.1918	Perilla	.1369	.1916
Coconut	.1900	.2660	Poppyseed	.1383	.1936
Cod-liver	.1326	.1856	Pumpkinseed	.1331	.1863
Coffee-seed	.1300	.1820	Ramic	.1240	.1736
Colza	.1240	.1736	Rape	.1240	.1736
Corn	.1360	.1904	Rapeseed	.1240	.1736
Cottonseed	.1386	.1940	Rice Bran	.1280	.1792
Earthnut	.1360	.1904	Ricinus	.1286	.1800
Flaxseed	.1357	.1899	Safflower	.1360	.1904
Florence, aka Olive	.1340	.1876	Sesame Seed	.1330	.1862
Gigely Tree	.1330	.1862	Shea Butter	.1280	.1792
Goose Fat	.1369	.1916	Shortening (veg.)	.1360	.1904
Grapeseed	.1265	.1771	Soybean	.1350	.1890
Hazelnut	.1356	.1898	Sunflower Seed	.1340	.1876
Hemp Seed	.1345	.1883	Sweet Oil	.1340	.1876
Java Cotton	.1370	.1918	Tallow, bear	.1390	.1946
Jjoba	.0690	.0966	Tallow, beef	.1405	.1967

Kapok	.1370	.1918	Tallow, chinese vegetable	.1345	.1883
Karite Butter (Shea)	.1280	.1792	Tallow, deer	.1379	.1930
Katchung	.1360	.1904	Tallow, goat	.1383	.1936
Kukui Nut	.1350	.1890	Tallow, sheep	.1383	.1936
Lanolin	.0741	.1037	Teal/Teel/Til	.1330	.1862
Lard	.1380	.1932	Theobroma	.1370	.1918
Linseed	.1357	.1899	Tung	.1377	.1927
Loccu	.1340	.1876	Walnut	.1353	.1894
Macadamia	.1390	.1946	Wheatgerm	.1310	.1834

A soap made using 32 oz of olive oil, 4.3 oz of sodium hydroxide and 12.3 oz of water will be chemically neutral. These soaps are often quite drying, and there is a vast potential when making soap by hand to alter the characteristics of the finished soap through both the choice of oils used, and by using a technique called SUPERFATTING.

Superfatting is a process whereby up to 10% extra oil is added, without a subsequent calculation and addition of lye to match it, giving a slightly oil bar of soap in the end. Using our recipe calculator the following recipe illustrates the use of a superfatting oil (designated 's.f.' in the Oil Name column).

OIL NAME	SAP	OIL WEIGHT	LYE WEIGHT	WATER WEIGHT
1 <i>Olive (pomace)</i>	0.134	200g (7.14 oz)		
2 <i>Coconut</i>	0.19	250g (8.9 oz)		
3 <i>Sweet Almond</i>	0.136	150g (5.3 oz)		
s.f. <i>Jobba</i>	(0.069)	50g (1.7oz)	-----	
TOTALS	-----	650g (23.2 oz)		

In summary :

OIL WEIGHT is determined by the size of batch desired. The above recipe will make roughly 1kg of soap, or 10 bars of 100g each.

LYE WEIGHT = OIL WEIGHT multiplied by the SAP

WATER WEIGHT = OIL WEIGHT multiplied by 0.38

Now that a recipe has been created, we can gather together our equipment and make soap!!

~ EQUIPMENT NEEDED:

Workshop: Sink and running water Ventilation hood or adequate ventilation in workshop Stove top burner

Safety: Gloves - latex, heavy plastic or natural rubber Apron, non fabric or coated fabric Eye protection Eye wash kit in case of emergency

Implements: Stirring spoons or spatulas - plastic or rubber is best, resistant to alkali Measuring cups - plastic, for oils Pyrex measuring cup - heat resistant, for mixing lye Scales - for measuring oils, lye etc. Stainless steel or enamel soap pan - eight quart Thermometer - 0 - 220 F (18 - 104 C) quick read type Trays or moulds - see section in this booklet on moulds, p. 16 Heavy-duty waxed freezer paper Masking tape Paring knife - sharp, thin bladed for cutting and trimming soap

Note: Though many of the items listed above may be found in a standard kitchen, items used for soap making should be identified as such and kept for these purposes alone.

MIXING THE BATCH

- 1 - Put on safety equipment - apron and rubber gloves.
- 2 - Weigh out the sodium hydroxide carefully and set aside.
- 3 - Weigh out the water - distilled, spring, or rain water - in the stainless steel container



4 - Place the container of water in the bottom of the sink. Ventilation should be close to the sink. Slowly add the sodium hydroxide to the water (NEVER the other way around) while stirring. Should the fumes produced by the reaction of the sodium hydroxide with the water become too much, move away from the mixture for a few seconds, carefully placing any sodium hydroxide that has not yet been added to one side. Return and stir in the remaining alkali. The lye solution will heat up dramatically and should be left, once all of the alkali has been thoroughly dissolved, on one side to cool while the oils are weighed out. The dramatic rise in heat can be experienced by feeling, with a gloved hand, the temperature of the outside surface of the container before and after the lye has been added. This direct experience can be had alongside the more formal demonstration of temperature rise obtained with a thermometer.

5 - Weigh out the oils and place them in the soap pan. (If using oils that are solid at room temperature, place these in the pan first and melt them over low heat. Add any liquid oils once the melted oils have been removed from the heat.)

6 - Cool the lye and the oils independently to 40°C . Water baths can be used for this process, as they can be used to warm either of the ingredients should they cool off too much.



7 - Combine the lye and the oils in the soap making pan



by pouring a slow, even stream of lye into the oils while stirring continuously. From this point onward a consistent stir is essential. Stirring brings the lye and oil into contact with one another and ensures that they don't separate. (It was seen when making tallow that oils and water will quickly separate, given the chance.) The consistency and quality of stirring should not be underestimated, and must be maintained until the soap traces.

8 - The soap is stirred until a small amount of the soap mix drizzled across the surface of the mix leaves a faint trail or pattern before sinking back into the mass. This is called tracing. The stirring time varies, depending on the oils used, the accuracy of measurement, the consistency of the stir, etc. At the trace the soap is ready to be poured into a mould.

9 - Pour the soap into a mould (see page 16 for moulding ideas) and leave covered in an insulated box or container for eighteen to twenty four hours.

10 - After the insulation period uncover the soap, it should be soft enough to be easily cut from the mould but not so soft as to lose its form or structure.



Cut into bars and leave soap to cure for several weeks before use. Pictured left is a simple device made to cut the soap. It is the arm of a hacksaw with the blade replaced by a length of piano wire. The arm is fixed at one end so that it pivots, and creates a controlled cut.

The above process is applicable to any vegetable oil that we may choose to use in soap. For that matter, it can be seen that we can use several different oils in any one soap mixture, and this is often done. Different fats provide very different characteristics to soap, as each fat has its own properties and vagaries. Some oils are good for creating hard bars, others for good lather, still others for their skin care qualities. It is beyond the scope of this booklet to go into the individual types of oils available to us today for the soap pan, and their specific characteristics. Excellent resources for this type of information, which is essential to the small scale soap maker, are found in the resource section of this booklet. The final product will be a result of the combined effect of the different oil characteristics, and the oils must be chosen accordingly.

Once a soap has been made using one primary oil, experiments can be done with other oils or combinations of oils. A good combination to work with is olive, coconut and palm oils.



SUPERFATTED SOAPS

If the oil to lye ratio is calculated exactly, the acid (oils) and alkali (lye) should neutralize each other, resulting in a soap with a neutral to slightly acidic pH. Many soap makers choose to super-fat their soap mix. This is to say that they will calculate their soap recipe to have less lye than is required for thorough saponification in order to have unsaponified oils left in the final bars. This soap is gentler on the skin, and if the unsaponified portion of the soap is an oil such as olive or avocado, the resulting soap will not only clean but it will leave a slight oily layer on the skin. This is considered by many soap makers an ideal situation, as the skin is slightly oily and acidic in its healthy functioning.

Many users of soap made using industrial methods will know from experience that this soap can be drying and harsh on sensitive skins or sensitive areas of the body. Super-fatted soap can avoid this and enhance the skins natural protection. A ten percent proportion of oil left unsaponified is a good start for the soap maker but this, as with all recommendations, should be explored and experimented with once the basic soap making techniques are learned. Super-fatting is a matter of personal preference and exploration.

A soap made with vegetable oils and NaOH will be able to be released from the mould and cut into bars after an insulation and initial curing period of approximately 24 hours. So soap should have cured to the consistency of semi-soft butter - it should hold its form but a knife should cut through it with ease. Once cut into bars, the soap should be left for at least three weeks for thorough curing - the fresh soap is still highly alkali and will temper, harden and mature over time.

~



“The simple act of nurturing the senses might well do far more for the healing of the world than all our programs and inventions.”

As educators we have a great potential to serve our students by providing sense experience of diverse kinds. In our modern world our senses are, on the one hand, exposed to a veritable onslaught of impressions, and on the other hand, all too often neglected in abstract and information-based approaches to teaching and learning.

A curriculum rich in practical craft and land-based learning activities will provide a good context for the cultivation of a healthy sense life.

Soap making as a craft engages very directly a range of sense-activity (smell being an obvious one, but by no means the only one). The images on this page were created through a process whereby students were asked to illustrate their impression of an essential oil.



A small drop of oil was placed on a card and this ‘tester strip’ was the basis for the scent experience. The drawing is an expression, according to the response of a particular student, to an unfamiliar essential oil.

Very striking images arise through this exercise. If done in a group it is a very stimulating and the resulting images create intriguing ‘portraits’ of essential oils. These portraits capture a variety of qualities - gestural, warmth and coolness, expansiveness and contractive tendencies - and much more.

Phenomenology is a method of study which gives a strong emphasis to sense-based engagement with subjects we study. The following process engages a wide variety of sense activity.

Take a fragrant plant, for example a lavender stalk in full flower. Note the observable characteristics of the plant; color (petals, stalk and leaves), form and fragrance of the plant parts. Place the plant in a glass beaker. Place the beaker over a low flame and observe closely the changes that the plant matter goes through. Vapor appears on the sides of the beaker and almost immediately a strong smell of the plant fragrance emerges from the top of the flask. Along with further changes of the plants visible structure, this fragrance will change and become harsh, faint, it will disappear to be replaced by the familiar smell of burning organic matter as the flower stalk blackens and finally disintegrates. Where did the scent go?.... the color?... the form?

By engaging in a process using our sense to inform us of the various aspects of the phenomena, we have a sound basis for developing deeper insight into (in the above instance) the plant as a living being.

A study of the senses in the context of soap making is potentially a very wide ranging study indeed. Rudolf Steiner brought attention to twelve senses that are the basis for our sense life. These senses only very rarely act in isolation, if at all. In what follows, however, I will focus on the sense of smell and explore the way that this sense is engaged in the craft of soap making.



It is invaluable for the teacher or practitioner to explore the senses in light of the craft process, and though only one sense is explored herein, a much fuller picture will emerge if a more complete study of the senses is undertaken in relation to experiential education.

I

RAT OR ROSE?

We have in the English language several sayings that allude to the nature of the sense of smell.

We can “come out smelling like roses”, find that “something smells fishy”, or “smell a rat”.

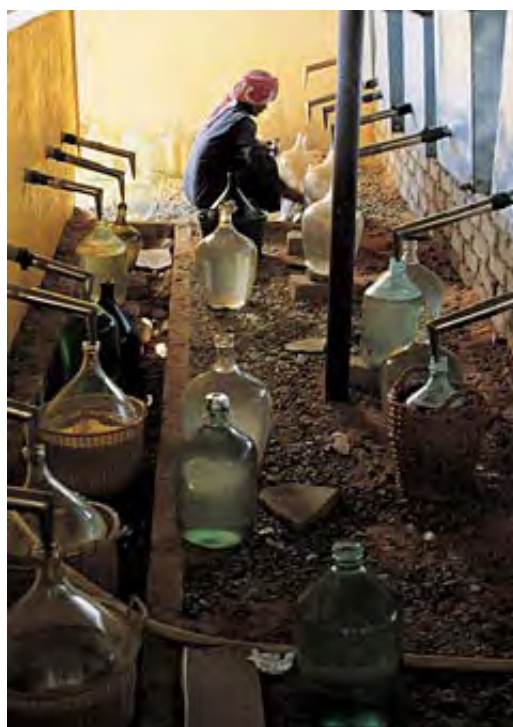
In *The Twelve Senses*, Albert Soesman writes the following;

When you touch, you come into contact with something and you become conscious of part of yourself. With smell you have to breathe in. You really have to take in something that was outside of you. No other sense demonstrates as clearly a feeling of not dealing with a boundary as smell does.

The craft of soap making brings us into contact with the world of aromatic essences - essential oils. In the medieval world, the essential oil was seen as the ‘seat of the soul’ of the plant. It was a specific expression of the individuality of the plant and in the oil the character of the plant expressed itself. The extraction of these essences was often a very time-intensive and painstaking process. Steam distillation is the most straightforward, requiring however a great deal of plant matter (for example lavender heads) to get a relatively small amount of essential oil.

Some plants, rose, jasmine and tuberose for instance, required much more sophisticated techniques of extraction. These include enfleurage and the creation of pomades (pictured below). Enfleurage involved steeping flower petals in purified animal fat and replacing them as soon as their perfumes had penetrated it. (A similar process, called “maceration,” uses hot oil instead of fat.) The perfumed fat was used to make a scented ointment, or unguent. These fragrant balms became known as “pomades,” a term which includes aromatic fatty oils employed both for remedial and for aesthetic purposes.

Whatever the method of extraction, essential oils, absolutes, concretes etc. are very potent and concentrated substances which we should consider as the ‘genie in the bottle’ of the plant in question. It is for this reason that they are used medicinally in aromatherapy, effectively in perfumery and in a wide



variety of other contexts - including foods and beverages.

When it comes to the sense of smell, John Ratey writes the following,

The neuroanatomy of the olfactory tract is unique among the senses. Hearing, a small part of vision, touch and taste all enter the brain through the brainstem and are passed up to the thalamus. From this central way station, millions of neural networks transfer signals to regions of the cortex specialized for each sense...Given the complexity of visual and auditory information, and the corresponding potential for misinterpretation of ambiguous situations, the brain tries to make sense of fine details before making a judgment call. In contrast, the olfactory nerves project directly into the amygdala and olfactory cortex, parts of the limbic system, without any mediation through the thalamus.

Our sense of smell, therefore, is something of an open door to our emotional center, and to our sympathetic nervous system. It is for this reason that it is a particularly influential sense, "the olfactory nerves have a hotline to the emotional brain".



This emotional, instinctual activity of smell is on the one hand one in which we have very little conscious control. We are 'overcome' by a smell. In the animal kingdom, this often dominant sense is the key to the animal identifying what is good or bad for it. Soesman suggests that it is this very sense which is the foundation for our sense of morality. He writes that "without this sense we could never have moral judgment". This is in many ways an astonishing insight. Smell is in so many ways subconscious, instinctual and emotive, how can it be the basis for moral judgement?

The key lies in the ability for us to penetrate to the inwardness, the 'essence', of something which may present a deceptive exterior - perceived by touch and sight for instance. To 'smell a rat' is to realize that something is false underlying a pretense of justness or truthfulness.

We come now to the role of an experiential approach to education through craft that can be specific to the education of our sense life. I say education, but I could equally suggest that what is needed is the re-education or therapeutic education of our sense life. I will elaborate on what is meant by these terms in what follows.

Coming to our Senses

How does a strawberry milkshake get its flavor? With strawberries of course? In his book *Fast Food Nation*, Eric Schlosser found the following list of ingredients make up a typical mass produced strawberry flavor for milkshakes and other desserts.



amyl acetate, amyl butyrate, amyl valerate, anethol, anisyl formate, benzyl acetate, benzyl isobutyrate, butyric acid, cinnamyl isobutyrate, cinnamyl valerate, cognac essential oil, diacetyl, dipropyl ketone, ethyl acetate, ethyl amyl ketone, ethyl butyrate, ethyl cinnamate, ethyl heptanoate, ethyl heptylate, ethyl lactate, ethyl methylphenylglycidate, ethyl nitrate, ethyl propionate, ethyl valerate, heliotropin, hydroxyphenyl-2-butanone, α -ionone, isobutyl anthranilate, isobutyl butyrate, lemon essential oil, maltol, 4-methylacetophenone, methyl anthranilate, methyl benzoate, methyl cinnamate, methyl heptine carbonate, methyl naphthyl ketone, methyl salicylate, mint essential oil, neroli essential oil, nerolin, neryl isobutyrate, orris butter, phenethyl alcohol, rose, rum ether, γ -undecalactone, vanillin and solvent

The realm of scent is no less subject to creative chemical manipulation. If we are looking for a lavender scent, we would be well placed to find a bottle which states that it contains lavender, *lavandula augustifolia*, oil. The latin plant name tells us that it is the true essence of the plant that is in the bottle, in the form of an essential oil.

If we find the word fragrance on our soap, shampoo or perfume instead of the latin name of the plant from which the scent was sourced, we are very likely smelling 4-(4-Hydroxyphenyl)-2-butanone, 3-hydroxy-2-methyl-4-pyrone, 4-hydroxy-3-methylbenzaldehyde, α -ionone, Methyl Sulfide, 2,5-Dimethyl-N(2-pyrazinyl)pyrrole (if it is lavender).

And here we come to the essence of what I mean by 'coming to our senses'. Since the industrial revolution, we have had more and more synthetic scents to contend with. We have quite frankly been inundated with scents that have no connection to the 'essence' - soul alchemically - of a flower or plant, but are conglomerations of chemical ingredients synthesized in many instances from coal tars and petroleum products. These come not from the living world, but from the realm of the dead - the decomposed corpses of once-living organisms.

In Our Twelve Senses, Soesman writes that “ the sense of smell judges good and evil in the quality of odor”. In order to engage the meaning of this statement it is recommended that the reader obtain for him or herself an essential oil, of lavender for instance, and a synthetic fragrance of lavender. A careful comparison should be made, and a comparison made with the responses and impressions from students, colleagues or friends. In this exercise we are presenting ourselves directly with the moral challenge of recognizing, through our sense, the character of an essence - a complexity which is not possible to reproduce in a lab as it derives from the life process of an organism; it is the substantial expression of that organism, and a synthesized mimic produced in a modern laboratory.

Through this experience, and others like it, we are able to approach the insight that as a ‘wellspring of the soul’, the sense of smell holds a vital place. We are able to engage for ourselves the challenging proposal that;

The entire evolution of humanity is embedded in this organ - from our existence as instinctual beings bound to nature to individuals capable of independent judgement, who have received the capacity for smell as a last remnant of instinct in order to be able to judge between good and evil.

Happy smelling.



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There is a vast array of soap making books and herbal books. Listed below are the ones that I have used regularly and found to be very useful.

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