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Louis BOUTARD
Biodynamic Retting

French patents for Biodynamic retting with select plants to produce a Proteus scum that is collected for biodynamic activation of crops, animals, &c...

http://www.merlib.org/node/4238
http://home.t-online.de/home/ostwald.energie

IET-Community: Proceedings of the 1st International Workshop On Natural Energies (IWONE) (9.3-11.3.2001)
5.3 Cedric Mannu: Genesis according to Schauberger: Aether and Life.

Discovery of a New Field [Excerpt]
Aether (Louis Boutard)

Louis Boutard (1880-1958) is one of the French geniuses that we studied and continue to appreciate. The good thing is that such genius makes it easier to understand the ideas of Schauberger, and vice versa. If you know only one of them, the ideas can be hard to understand, and disturbing compared to our little ideas of what the world is.

But as soon as you get ten or thirty such genius, their work, their understanding, and when you see that everything fit in a global unifying view, with the same strong understanding, although with different names and in different matters, then you are helped in your understanding of each one of them.

Boutard's principal discoveries are the origin of electricity, origin of magnetism. He was able to create life (not to transform it in a twisted and mischevious way, as genetic does). He created organic life (totally different from organic matter which is not living at all) from inorganic, by Aether conduction...

...5. Apparatus of induction of special form, in the field of force of which birth takes place, between electro-magnets of a particular design, monstrous protozoa, out of follicular bag rhopalic (in the shape of bludgeon), moving like a torpedo, bisexual (androgynous), and reproducing ad infinitum, visible with the field of the microscope at 300 diameters, whose study was undertaken by third parties apart from Mr. Boutard.

By the direct action of this herculean protozoon on alfalfa (Stipa tenacissima, L.), it assimilates the parenchymas to be nourished and reproduce, immersed in tanks. Mr. Boutard solved the problem, until there considered as insoluble of the integral insulation of cellular fibres (sclarenchymes) of this graminaceous. A tonnage of alfalfa was thus disintegrated and the oakum could be spun of it on industrial trades with jute without preliminary modifications.

This colossal infinitely small, which in water makes clear place of all the micro-organisms other than him, destroyed all victoriously that is pathogenic parasitism. By this rapid and summary enumeration, one sees that the cycle of work of Mr. Louis Boutard extends well since the origin

from the automatic electrodynamic movement until that of the life.

French Patent # 525515

New Form of Conservation of Energy and its mode of application to the steeping of vegetal in order to extracting their cellulose,
either like textile fibres or with paper, or in very other form, and for very other use.

The present invention relates to a new form of conservation of energy with metamorphoses of the embryonic protein materials of vegetal (cryptogams thallophytes non-bacterial, ptéridophytes and muscinées, phanérogames angiospermes and gymnospermes) in bactéroïds and bactériacées, with application, and mode of application with general operational method, of their useful work with the retting of all the vegetables: alfalfa (Stipa tenac.), sparte (Lygeum spartum) cereal straws, and all other, for the integral extraction of their cellulose to the state of textile fibers and paper, or in all other form and for all other use.

If, for the purpose of retting a plant, one considered up to now to be unrettable, to extract intact all textile fibres from them, one puts this one in the normal water of a retting pit, in the same conditions as other textile plants such as flax, hemp or jute, and that it there is left, for example, six months, one realizes at the end of this time that all the alfalfa remained intact in the same state; if one leaves it a longer time there still, it is still the same.

If at the bottom of the retting pit, and at the same time as the alfalfa, one plunges some portions of an unspecified plant of the 3rd section, chicoracées or liguliflorous, all lactescent and bitter (magnesian), of the family composed of Urospermum Dalechampi, for example, one can note the three following phases, as in any vegetal organic decomposition:

1. release of air bubbles of the organic cells;

2. release, during 4 to 5 days, of carbonic gas of fermentation, acid or alcoholic, of glucoses, glucosides and other soluble materials in the water and capable of this fermentation;

3. then hydrogen carbide outburst coming of the organic decomposition of the insoluble matters.

On the surface of the water of the retting pit, which becomes more and more black, a film is formed which thickens in skin, that one can collect and wash, and whose wash water spreads the odor especally in the rivers when water is low.

At the end of approximately three weeks, the alfalfa, removed from the water, is washed and smoothly expressed between two wood rollers, lets free a portion of its chlorophyl, and its strands, if contracted and twisted on itself, as hardened more and more obstinately closed still, while allowing one to see however, by the pressure on the levelled , two limbs tending to separate: upper and outer, wide plate with ribboned fibres very coated on the back with an insoluble varnish (cutin, cutin), covering and locking up (because it is rolled up so hard on itself) a low limb and, fact, inner, composed of multiple beams, parallel in length, as encrusted between them, of cellular fabric and vascular fabric, not less bound.

This time, the alfalfa is attacked, especially that having bathed more close to surface of the retting water.

Or, if instead of immersing at the same time as the alfalfa broken s or seeds of Urospermum Delechampi Desf., they are prepared separately, under the conditions, conventional from aseptic, by eliminating the soluble materials, either before or after their fermentation, one obtains some, at the end of 4 days, a colorless liquid (the chlorophyl remaining intact), somewhat disordered, one small quantity; enseminated in the water of the retting pit with the alfalfa, under the conditions of the

preceding experiment, gives a result entirely identical.

If one operates in the same way with the other ones chicoracées:

Tribu I. - Scoclymées. - Scolymus hispanicus, Sc. maculatus, Sc. grandiflorus, Desf.;

Tribu II - Hyoseridees - Hedypnois polymorphia DC, Koelpinia Linearis Pallas, Catananche lutea, C. arenaria Coss., C. sespitosa Desf;

Tribu IV - Scorzonerees - Asterothrix hispanica DC, Spitzelia Saharac Coss, Deckera aculeata Schultz, Helminthia aculeata DC, Deckera glomerata Pom., Helminthia echiodies Gaertner, Podospermum laciniatum DC, Scorzonera alexandrina Boiss, Scorzonera hispanica;

Tribu V -- Crepidoidees - Zollikofferia spinosa Boiss, Z. arborescens Batt, Z resedifolia Coss, Z. glomerata Boiss, Picridium tingitanum Desf, Andryala integrifolia;

the result is same and the more convincing still.

Now, if one prepares separately, as it has just been said, of the ruffled s, of intact seeds or roughly broken, but not ground nor crushed under grinding wheel, of vegetal of all the family of leguminous plants:

Tribu I. Podalyriées. - Anagyris fetida,

Tribu II. - Lotées. - Erinacea pungens, Boiss, Genista ferox, Poiret, Calycotome spinosa Lam., Cytisus linifolius Lam., Cytisus arboreus Desf., C. triflorus, l'Her., Ononis viscosa, O. natrix, O. angustissima Lam., Trigonella anguina Del, Medicago sativa, M. murex, Wills., Trifolium arvense Desf., Tetragonolobus purpurcus Moench, Lotus prostratus Desf., L. creticus, L. edulis, Anthyllis scicea Lagas, Anthyllis Henoniana Coss., Orephaca betica Boiss, Astragalus hamosus, A. Gombo Coss, A. Caprinus, A. lanigerus Desf., Psoralea bituminosa, Robinia pseudo-acacia, Galega officinalis;

Tribu III - Viciees -- Cicer arietinum, Vivia satica, V. lathyroides, V. lutea, Ervum monanthos, Ervuv Ervilia Willd, Lathyrus sativus, L. cicera, L. niger Wim., Orobus niger, Pisum sativum;

Trbu IV -- Phaseolees -- Phaseolus vulgaris, Ph. lunatus, Dolichus lablab (all fibers and contents);

Tribu V -- Hedysarees -- Ornithopus compressus, Hipposcrepis ciliata Willd., Onobrychis caput-galli Lam., Hedysarum capitatum Desf, H. coronarium;

Cesalpiniees -- ceratonia silqua;

Mimosees -- Acacia horrida Willd;

and that one sows of it of a small quantity the water of the retting pit where the alfalfa already treated like above is hardened, the same phenomena is reproduced, and at the end of a variable time (3 weeks, for example), following the nature of the alfalfa, the temperature of the air and water, and the state of the light, the alfalfa, removed from water, washed and immediately expressed, lets run out its chlorophyl; the two limbs of its levelled separate easily...

Or, if instead of the ferment of aforesaid leguminous plants, one prepares and one is useful oneself of that of the leguminous plants whose characteristic is food in the sandy grounds , such as Anthyllis vulneraria (yellow clover of sands), Lupinus luteus, and numerous others, producing the same phenomena of fermentation, that the alfalfa, thus reprocessed, gives up a portion of its silica, which is eliminated, giving under the friction of the fingers true impression of friable sandstone, of stone-pounce or emery.

It is the same, with a higher degree, if one prepares and one is useful oneself, as he is said above, of the broken leaves or seeds of monocotyledons called "**hammophiles**", of which biological power of resistance, as well with the aridity and the hardness of the ground more inorganic as vegetal as to the météorological and atmospheric influences, is at least equal with that of the alfalfa, such as, among the graminaceous ones: Saccharum cylindricum, Lam. ; Sporobolus arenarius, Gouan = Spor. pungens Kunth, Ammophila arenaria Link, Arundo arenaria, (Sand Rose, oyat, Gourbet); Arthratherum pungens P.B., Aristida pungens Desf., (of the sand dunes of the Sahara desert); Ampelodesmis tenax Link.,

Cypress: Carex halleriana, Asso. (milkwood), Maximum Carex maxima Scop, Cyperus effusus Rottb., (found in the Sahara), Scirpus maritimus; and, the Jonces: Juncus acutus, J. maritimus Lam.

Consequently, vegetables the most effective for the proposed end, will have to thus be those of leguminous plants joining together of the two conditions:

1. to join to the general specific biological character leguminous plants: high content in protein material containing living calcium, the particular biological characters which follow:

a) ***concealment [? recel]***. by combination, alliance or otherwise, of proteic material containing **living magnesium**, as in **bitter chicory** and lactescents, --

b) concealment [? recel] of proteic material containing **living silicon**, as in the **graminaceous ones with glutinous flour**;

2. To have a power of biological resistance to that of the alfalfa.

This is what is produced effectively by the action of the prepared ferments with arborescent or shrubby leguminous plants, or perennial, with linear or rush-like foliage (**genistoïde**), and **evergreen**, of maritime sands or the Sahara on silicious, calcareous, or magnesian soil : Ulex africanus Webb. (African Ajonc); Spartium junceum, Genista Saharae Coss., Retama sphaerocarpa Boiss, Retama Retam Webb., Acanthyllis tragacanthoides Pomel, Coronilla juncea, Acacia albida Willd.

Also their ferments push very far the organic disintegration from the alfalfa, from which they exhaust nitrogen, but not all silica or exactly the bodies having for integral organizing principle the proteic material containing silicon, - and, like consequence, without the alfalfa being really steeped, it is without all its organism being disorganized, leaving free only single cellulose to the fibre state, since its shoddy strands miss flexibility, and that its upper limb remains strawy and glazed.

Any vegetal organism can thus be entirely extracted of nitrogen by nitrogenous or putrid fermentation, and not be disaggregated.

It is thus that nitrogenous or putrid said fermentation is not enough to cause and explain the disorganization or vegetal organic decomposition, and that this vague term is completely unsuitable and vague; - that there is at least, consequently, **silicic fermentation, calcic fermentation, and magnesic fermentation**.

It must consequently be enough to make act on the alfalfa dislocated in strands frayed, whose silicic bodies, which are brittle and without flexibility, remain unattacked, of the silicic biological agents coming from vegetables, such as the **conifers**, endowed with a power of higher biological resistance to that with this one. And however it is nothing! If one - puts, in effect, a fermentin plant nearby, for example, Juniper oxycedrus macrocarpa Sibth et Sm., from sea sand, in the presence of this alfalfa, it is without sensible action... But the experience is not negative, for it furnishes the nitrogen with the ferment by the artificial mean of an ammoniac compound, it starts to act to mix and to assimilate the silicic matter of alfalfa.

All decomposition or disoranization of oranic vegetables is thus nitrogenous, i.e. it is done with the favour and using nitrogen, - but not with its expense. Because the experiments which precede demonstrate:

3a. - That all decomposition is due to the action of a bacteria attacking, in search of food, which requires nitrogen, but which cannot reproduce at the expense of the same proteic matter at the principle of mineral and solar enery which is the principle of life to the same;

b) That, consequently, any decomposition is a biological controlling between a body or material in dynamic movement and another body or material of comparable nature physical and chemical that itself, and being either with the static state, or in dynamic movement, controlling in which the agent bacteric attack a body of comparable nature, and not of another, whether it assimilates or eliminates, provided that its vibrative capacity or biological energy is more intense, if not, it remains inert or dies without development.

In other words, ferment coming of these vegetal having the capacity to assimilate, for example, silicic material of the ground or its vegetables, if its power of biological resistance or vibrative capacity is more intense than that of the other vegetable. In the same way, for the ferment of certain vegetables is able to assimilate either the calcic material, or magnesic material of the ground where it vegetates; and so on for all the other ferments and inorganic; That **there is, consequently, a nitrogenous silicic fermentation, like it there with a nitrogenous calcic fermention, a nitrogenous magnesic fermentation, and so on for all the other ferments.**

2. a) That the silicic bacterial agent attacking, with more intense vibrative capacity, has the capacity to live and to reproduce at the expense of the attacked silicic material with less intense vibrative capacity, and not of another, but always with the necessary assistance of nitrogen; thus in the express condition that the vegetable with the attacked silicic material still conceals nitrogen, since b) the silicic agent bacteric attacking, not having the property to fix nitrogen of the atmospheric air directly, is inactive due to less ammoniacal food...

Moreover, the preceding experiments show that any pectic material or pectose, having an active silicic principle concreted in an insoluble sandstone, covered with a crust of other vascular bodies with vegetable protein; it follows from there that it is thus necessary, doubly necessary, to start by desilicification by retting with a biological discharge comparable with that on the sandstone. After what, nothing can resist more; any obstacle is broken:

1 -- dissolved stony concretion, other bodies containing other principles: calcic and magnesic, not being more with covered under this true living sandstone gangue, are reached and attacked, assimilated or eliminated, bringing the dissociation or total disintegration of the organism;

2 -- when so same the agent bacteric silicic attacker would exhaust all the nitrogen of vegetal attacked, no disadvantage, since the agents bacteric, calcic at least, which will succeed it, will have the capacity, in the absence of nonvolatile nitrogen in the vegetal one to steep, to provide itself some with themselves in addition by fixing that of the atmospheric air directly, just as fixed calcium i.e., directly when it is superheated to be carburized, just as it is easily fixed directly in vitro under certain conditions physical and chemical, just as it it fixed directly, it it protein material state, in all vegetal, the especially leguminous ones, at least at the time of flowering, and immediately for seed (the analogy is thus complete), content of vegetal of nitrogen being probably proportional, in general rule, with their biological calcium content. - whereas the reciprocal one is not possible, and that it would be necessary, in this case of the exhaustion of nitrogen, to artificially feed from it the silicic agent bacteric, of which any vital action stops by fault whereas it remain silica in the vegetal one to steep which is presented to him, where the limit of its development is thus the nitrogen and not not the silicic material; while the limit of the development of the calcic agent bacteric is the exhaustion of calcium, and not that of nitrogen of vegetal to steep, so that it ceases acting only when this vegetal is exhausted of its calcic material and not not of its nitrogen.

It is thus necessary, of an absolute need, to undertake inversely any treatment to steeping having for final purpose the complete disorganization of the vegetal organism in order to extract single fibres from it from cellulose.

And, indeed, if one begins again contrary the aforesaid experiments, their results confirm the examples given. And perfect steeping includes the following phases:

1. Silicic Decrustation : a) Sowing of the retting pit with bactéria, aerobic or not, coming of seeds or broken s of conifers of the tribe of cupressinées, prepared as indicated above:

Cupressus sempervirens (Cypress); Tetraclinis articulata Vahl. (Thuya); Juniperus oxycedrus (Cedar), Jun. communis, Jun. phoenicea, Jun. Sabina (Genevier); or from all other phanerogamete gymnospermes, for example:

1. Gentacea : Ephedra fragilis Desf. (Uvette), Eph. Alenda Desf.;

2. Cycadees;

3. Abietin Conifers : Pinus maritima Lam., P. larix (Meleze), Cedrus atlantica Man., Abies numidica de Lannoy; -- Taxinees: Taxus baccata; , also for example, among the phanerogamete angiosperms, the tamarisks: Tamarix articulata vahlm the famous Tamarisk of Prele in the sands of the Sahara.

At the end of 5 to 10 days, following alfalfa, as well as the conditions of heat and light, this silicic steeping is completed. However it is advantageous to sow, a few days front this term, with a little ferment provided by the Cistines (helioscopics, a yellow flower): Helianthemum sessiliflorum Pers. = Cistus sessiliflorum Desf., from teh region of the Sahara; Helianthemum eremophilum Pomel., Fumana glutinosa Boiss. = Helianthemum glutinosum Pers.; Cistos monspeliensis, C. salviaefolius, C. ladaniferus, or the legumes, as listed here, for the purpose of saving time, and to perfect, by the immediate action of the calcic and magnesic agents in the desilicated members, and as of the first traces of their desilication, the elastic crack of the levelled from now on dislocated,

b) After retting is finished, the fibers are immediately pressed between two rollers (of wood, stone or metal), then washed under a thin stream of water, to remove the debris and chlorophyll, and the silicates and bacteria.

The upper limbs of the alfalfa still adhere to its low limb, but its two edges, remained cutting and hard with the process of the inverse experimental method, are softened; it is not notched, it is not torn; its insoluble varnish has itself disappeared; the beams of fibres of its lower limbs remain smooth and intact parallel, and are not torn off: not only one is not broken. All of the alfalfa becomes flexible and soft.

These general descriptions are confirmed by the facts of experiment, that if one sows the alfalfa to be steeped, instead of the ferments of aforesaid conifers; of a little ferment produced from: 1* Pinis maritimus (maritime pine); 2* Erica arborea (briar heather) ; Quercus suber (cork oak); all three having silicaceous characteristics, the result is satisfactory, then it is operated with 1* Pinus alepensis (Alep pine), 2* Erica multiflora (multiflowered heather) , 3* Quercus ilex (holm oak, yew), not less characteristic of lime soil, retting water takes a color of milk-lime, with little result.

These given generalities are still so exact that one can obtain a result not less satisfying when one puts in an egg a ferment coming from vegetables where fluorine, which silicas cannot resist, is an integral part, although sometimes chemically undetectable in the biological principles of vegetables; as is the case for all the "hammophile" plants, as in the case of the Ash-thorn-bush, Fraxinus dimorpha Coss., found on the Saharan Atlas.

The alfalfa is then ready with being immediately soaked in new water, if possible, for the 2nd

steeping with calcic and magnesic fermentation, including also:

a) Sowing with bacteria, aerobic or not, coming from the leaves or broken seeds of leguminous plants, preferably those whose principles of vegetative life are materials with energies at the same time silicic, calcic and magnesic, to lead to perfect completion of preparation of cellulose fibres. And such as these have much higher amounts: Ulex africanus Webb., etc.

One can join the ferments of the already cited monocotyledonous plants to it: among the graminae, saccharum cylindricum Lam., etc., which will eliminate of the last traces of silicic materials. The experiment confirms, the ferments of leguminous plants can be replaced by those coming of vegetables whose active vegetative principles come mainly from biological calcium; such as:

I. Asclépiades (like leguminous plants. - Soja hispida, Moench, Phaseolus and Dolichus -- milky, fibrous, and voluminous: heliotropics): Cyanchum acutum, Daemia cordata, Rob. Brown., Calotropis procera Willd., etc.

2. Euphorbiacées (with milky juice, and helioscopic). - Euphorbia helioscopia, E. Peplis, E. Guyoniana Boiss, E. luteola Coss., E. paralias, etc.

3. Plantagos : Plantago ciliata Desf., P. ovata Forskall, P. albicans, P. macrorhiza Poir., P. serraria, P. maritima, P. psyllium, etc.

4. The Frankeniaciae -- Frankenia laevis, F. corymbosa Desf., F. pallida Boiss, F. thymifolia Desf., etc.

It is possible to add, at the end of fermentation, ferments of chicoracea already enumerated , to soften fibre.

b) Upon removal from the retting pit, give the plants an immediate soft pressing, as indicated above. The fibres of the low limbs separate in fine and smooth oakum, and the upper limbs are disintegrated, delivering whole cellulose, with high percentage, without waste by rupture.

c) Tow : the fibre is exposed to the light, with shelter from burning sun.

d) Lattice : easier by the conventional means, leaving a whitish thread, long like the leaves of alfalfa (50 to 60 cm. on average), resistant although flexible, unrottable, not very flammable, and comparable with the most beautiful flax, the thread of alfalfa not being other than the celebrated "byssus" [?] of antiguity, as it will be shown later.

Refining and combing: one can, if it is wished, and following the uses for which the fibre can be intended, after or without soft pressing above, to carry out its refining by putting its oakum in a bath with a little ferment coming from toxic plants, and being able to resist a toxin secreted by the alfalfa in oakum, such as:

Renonculacea: Clematis cirrhosa (Viorne), Ranunculus macrophysllus Desf., R. bullatus, R. flabellatus Desf., Ficaria grandiflora Rob., Delphinium Ajacis, D. orientale Gay, D. staphysagrria;

Caryophyles : Agrostema githago, Gerzeau;

Meliacea : Melia Azedarach;

Zygophylae : Peganum harmala (indigenous to the Sahara);

Cucurbitae : Citrullus colocynthis Schrad. (Coloquinte); Bryona dioica Jacq.;

Apocynea : Nerium oleander (Rose laurel;

Convolvulacea : Calystegia sepium, R. Brown (Hedge Bindweed), C. soldanella R. Brown.;

Borraginea : Heliotropum europeum;

Solanacea : Hyoscyamus niger, H. Falezlex Coss., Mandragora automnalis Spr.;

Thymelacea : Thymelaea virgata Endl., T. nitida Desf., Th. microphylla Coss, T. tartonraira Al., Daphne cnidium;

Santalacea : Osyris alba (Rouvet);

Euphorbiacea (Acalypheae) : Mercurialis annua;

Graminae : Lolum temulentum, L. (Ryegrass);

Liliaceae : Scilla maritima; Pancratium maritimum;

Iridaea : Iris junca Poir., I. acorus, L. psudo-acorus, I. fetidissima, etc.

One can in the same way carry out a true biological combing of the oakum by subjecting it to the action ferments coming the crassulacea : Sedum altissimum Poir., Umbilicus pendulinus DC, living on granitic rocks; or of saxifragea : Saxifraga atlantica Boiss., for example.

One can finally destroy the possible future action of the last traces of bactéria used in retting, and reinforce the strength of fibre at the same time, by plunging it a certain time in the extracts of Ombelliferae, of Crucifers, and of Labiae.

When bacterial sowing is successful, its sure index of vitality is a fine film, vitreous and translucent for conifers, more opaque for leguminous plants, which is on the surface of the mother-liquor at the expense nitrogen (and it is a sure indicator of the nitrogen remaining in the vegetables one to steep, when it is agitated with silicic ferment), which has a double role of high importance:

1. That of a prism dissociating the light which it filters, to leave active passage only to the rays of red with yellow, especially with the yellow rays, which are most eminently favourable with the bacteric life, while the full white light is less favourable; and, of the same fact, it moderates the temperature of the retting water, which must be as tepid as possible, since this portion of the solar radiation is caloric, whereas the other one, of blue to purple, is anti-caloric. In practice, one supports the bacterial action by filtering the light with yellow transparencies, and also by taking care that the inner walls of the retting pit are not bright white;

2. It defends all its bacteric life against external dangers by filtering all the atmospheric air necessary with this life, purified of all sporadic aerial germs which could attack it, by being then opposed to the devastations of the dipteres, of Psychoda palustris Meig., or trifasciata Latr., or oscellaris latr., attracted to the the retting ponds, producing the larvae which devastates the bacteria...

Thus, the given geologies make it possible to suppose that by induction alfalfa, graminaceae grown under the hardest climateric conditions, in spite of cold of winter reaching 10*, and summer heat exceeding 60*, under deadly solar radiation, exclusively in a silicaceous soil, calcareous and magnesian, at a high altitude, six months without water,

was to have as biological radioactive principles, in addition to the iron common to all the vegetal ones, as well as potassium and sodium, calcium and magnesium, with silicon; and the experiment of its decomposition using the same principles of biological radiation coming from the protein

materials of other plants (in general, voluble plants: heliotropic and helioscopic, fibrous and lactescent, and with yellow flowers), based on this induction, this one confirmed integrally, since it was enough to make attack the alfalfa by these vegetable protein materials and bring about total decomposition. And as one can, moreover, show by experiment and synthesis: 1* that it is iron in vibrative motion which is the librogene [?] , 2* magnesium the co-fibrogene coagulant, 3* calcium the co-lactogene butyric-casein. 4* and silicon the pectogenic glutinant, it thus follows from there that these are the bodies which integrate organizing portions of silicon, calcium and magnesium, which it is necessary to eliminate by making them assimilate by their homologues with more intense dynamic capacity, in all vegetables from which one wants to release whole cellulose.

Such are the fundamental costs of any total retting, breaking any resistance, the single one which is perfect, without loss nor waste, based on the single one of the scientific methods that it is possible to follow, all other steepings, more or less empirical, being defective. It is that indeed if there is care to renew slowly and lightly by the bottom the warmed water of the retting pit, whose overflow runs out by surface, the ideal steeping current is thus created, without the inherent disadvantages with rivers, since one chooses scientifically a single possible disorganizing agent of the vegetable organism, rather than all others, whereas in the river a multitude of agents of any nature is driven, more or less favourable, never the single required ones, in the middle of a crowd other clearly adverse or harmful, such as Chara fetida, Braun. which makes fibers break. And shown here at the same time is why certain rivers, rightly famous in this respect, have perfect steeping water, whereas the other ones do not steep : the countries which the powerful steeping rivers cross are wooded with conifers: wild genévriers, fir trees and pines, or of ashes with winged seeds; the plains have thousand leguminous plants, slight seeds with spangled brushes, sown by the winds in soft and moving water; and their water like their banks, each season cleaned carefully for the barges and towing, is always cleared of reeds.

This is the single preferred scientific treatment to follow, not only for alfalfa, Ampelodesmos tenax, Link., or Chamaerops humiis, L. (dwarf Palm tree), but for all vegetables from which one wishes to extract cellulose either like textile fibres or with paper, or in every other form: flax, hemp, jute and ramie, etc...

French Patent # 541353
New Form of Conservation of Energy and its mode of application to the steeping of vegetal in order to extracting their cellulose from it,
like textile fibres or with paper, that is to say in very other form, and for very other use.

The present patent concerns two genres of improvement:

1. In the mode of procreation and education of the bacterial ferments;

2. In the method to be followed for their applicalion to retting of alfalfa and other vegetables, in order to extract cellulose from fibres, as well as albuminoid, tannic and glazing matters.

Alfalfa, Stipa tenacissima, is for example a fibrous plant most difficult to ret, presenting problems in its crushing: the upper, outer limbs roll up (constituting the defensive resistance of the leaves); consequently all the science of the retter will have to destroy this defense. Study and experiment show that this is constituted thus :

1. A skin made up of two layers dependent on each other:

a) a translucent outer varnish;

b) strongly resistant cornea layer;

2. A skin made up of two layers dependent one of the other one, of which :

a) a very thin layer of lacquer, unshakeable and insoluble, which becomes deep yellow-gold with alkali, mainly calcic ones, and the aluminous ones, under the influence of which it tends to be reformed unceasingly at the expense of the underlying layer... ; that it covers, of the seven indissolubly joint patches whose is formed the upper limb;

b) An oily horny leather

3. A Hypoderme made of :

a) pale yellow varnish;

b) On straw assemblage.

All the science of retting thus consists of attacking and destroying these three skins as follows :

I. a) Outer varnish of the skin : by means of ferments coming from vegetables whose power of attack and resistance seems to have to be allotted to **bismuth** in a biological state, such as: :

Vitis Vinfira (wild grape) [Ampelidea]

Berberis vulgaris (thorn-vine)l

Berberis hispanica Boiss (Berberidea)

Calligonum comosum, Hér. (the Arta of the Algerian Sahara), (Polygonées).

Piper betel (Betel) [Piperacea];

Piper longum (pepper) [Piperacea], etc.

Preparation of the ferment (which will be always considered in these three states: nascent, young, adult):

Nascent : In chemically and biologically pure water and slightly sweetened (hydromel with 1% e.g.) either with the ordinary honey, or with a mixture of glucose and levulose like date sugar or very ripe grapes, reduced juice by cooking out of unfermented wort, ret ruffled s of the one of vegetal known indicated. (In general, gathered preferably in full sap in spring, then carefully dried with the shelter of the sun)

Theory : The energetic materials which tended to form the future ovum, always with acid reaction, always located (centripetal forces) at the center of the flower, on the one hand, and those which tended to form future pollen, with always sugar reaction, always located (centrifugal forces) at the circumference of the flower, on the other hand, and which, separated in the leaf in insulated cells by tight partitions, passionately tend to meet to fertilize itself: it with what they can arrive only in the flower and at the single moment of flowering, these materials, thus carrying involved in a little sweetened water, being linked by friction, will be fertilized then just like they would have done it with the solar light at the time of flowering to the more perfect state of pollen and seeding. Note the fine translucent film whose network will cover the sweetened water with a subtle veil hymen. The ferment thus does not preexist very formed in the leaf.

Young : After four to five days, add a little vegetal mucilage, coming from marshmallow root (Althea officinalis), flaxseed (Linum usitatissimum), seeds of quince (cydonia vulgaris, Pers.), etc.

Adult : About five days later, add a kind of peptone made up of finely grated horn or hoof of a

ruminant with forked feet like the gazelle (Capra dorcas), previously revivified, in a syrup of honey or fruit juice (dates, raisins, etc.), of vegetable mucilage and of finely grated roots of Aroidea: Arum maculatum (calf-foot), A. italicum Mill, Collocasia antiquorum Schott, reduced to the state of slurry by honey.

After approximately five days, bacterial ferment being thus formed, sow the retting pit for the first attack: varnish of its skin.

After four to five days of bath at the temperature from 20 to 22* C, dry the alfalfa with sunlight.

Then sow in another basin to attack --

I. b) corneal layer of the epidermis.

Preparation of the ferment:

Nascent: In a little honey water, crumpled leaves of vegetables of the family of Rhamneae : Rhamnus catharticus, Rh. oleoides, Rh. lycioides, etc.

Young : vegetale mucilage

Adult: Alfalfa, under the attack, releases nitrogen in abundance, it is above all necessary that the ferment assimilates this nitrogen; for this gives rise to toxins such as hydrogen cyanide, which is reduced to nothingness by the bacteria. Or, if one associates with the ferment a plant material generating hydrogen cyanide, this one then acquires the singular property to assimilate nitrogen in abundance, as a consequence of being able to resist. Therefore, out of milk of apricot cores (Prunus armeniaca) in a syrup of honey or sweet fruit juice, of vegetal mucilage and starch reduced the state of slurry in the honey.

One could also put together in the honeywater the nascent state leaves of Rhamnea and seeds or leaves of the Amygdalea generators of hydrogen cyanide But these last plant materials can be replaced, very preferably, in the slurry with the honey above, by finely grated shoes or horns of a ruminant with forked feet, such as the antelope

After four to five days, the cornea layer disappeared; the surface of the leaf appears wrinkled. Wring the tow dry with heating. Then sow in a new basin to attack:

II. a) The well-minced exudate lacquer of the skin

derme, whose material generator is of comparable nature to that from hairs of alfalfa. Or, if one puts this material of the glume, , prepared in presence of this thin enamel layer, it destroys and assimilates it. A little of it is used like ferment.

Preparation:

Nascent : bays or glumelles of alfalfa flowers in honey water, or leaves of Quercus coccifera (kermes oak).

Juvenile: vegetal mucilage.

Adult: slurry of honey or sweet fruit juice of vegetal mucilage and barley flour ground with the glumelle adherent with the caryopse of this cereal.

The organizing material of enamelled alfalfa also is very similar to that of the peel and the membrane. Covering the internal cavity with the nut shell, peel and membrane, especially with fresh matter, can be advantageous in the preparation of ferments.

Preparation:

Nascent: Fresh nut peel of Juglans regia L., var. macrocarpa (gauge-nut) in honey water.

Juvenile : vegetable mucilage.

Adult: Milk of peach kernel (Amygdalus persica, L.) in an honey slurry or barley flour and vegetal mucilage, ground together with fruit juice.

One can use simply of the leaves of walnut tree or gauge-nut, and also of those of hazel nut (Corylus avellana).

One could also combine, in the honey water of the nascent state, leaves of Juglandea and cores or leaves of Amygdalea (peach) generating hydrogen cyanide.

After four or five days of bath, grind or calender the alfalfa.

The product of disassimilation is an albuminoid which can be precipitated and collected like caseins.

Low limb: It is advantageous to intercalate here the phase of disintegration of the seven fibre beams of the low limb of the leaf of alfalfa, agglomerated between them by biological cement of such nature that the vegetable gum resin generators of the genre ladanum or sandarac will provide leavens capable of assimilating this vegetable cement.

Preparation:

Nascent: in honey water, crumpled leaves of Cistus creticus, Cistus ladaniferus, C. monspeliensis, C. sessiliflorus Desf. = Helianthemum sessiliflorum Pers. (Cistinea), Tetraclinis articulata Vahl. (thuja), Cupresses sempervirens (cypress) [Cupressinea of Conifers].

Young : Vegetable mucilage (gum araganth)

Adult: Peptone of horn of goat (Capra hircus) finely chopped (hoofs or horns) in a syrup of honey or sweet fruit juice, vegetabl e mucilage and starch reduced to the state of slurry to the honey. After four or five days of bath, strong pressing. Dry with heat.

II. b) Oily horn leather : biological materials generating citric acid and tannins are susceptible to attack. Particularly these vegetables of the family Aurantiacéae (citrus fruits) for the citric acid:

Citrus aurantium, subsp. amara = C. bigardia Duham (bigaradier);
Citrus medica, subsp. will bajoura, Bonavia (citron tree);
Citrus medicà, L., subsp. limonum (lemon)
Citrus medica, L., var. acida, Brandis (limettier).

2. Of the family of Gupulifèrea for tannins:

Quercus coccifera, Q. tinctoria (quercitron) meet these two conditions ideally, just like Tamarix articulata Vahl. (Shara tamarisk)

Preparation:

Nascent: In honey water, mixture of crumbled leaves of bigaradier and oak (Q. pseudo-coccifera Desf.), which is the true evergreen oak of old and the vulgar current one, well distinguished by Desfontaines for Q. coccifera, and having biological properties different from the last, and very different from Q. ilex, improperly called evergreen oak in the literature, and that it is necessary to

reject carefully for the treatment of the alfalfa, because of its calcium, which, in the biological state, tends to make reappear in golden yellow crust which covers and protects the entire plant.

Juvenile : Mucilage of tannins from Cytinus hypocistis, or of quinces, etc, with pulverized gall-nut of oaks or of articulated tamarisk (from the Algerian Sahara, punctured by an undetermined insect).

Adult: One can prepare a kind of milk of almonds (Amygdalus communis) with the cores of apricot, but the bitter almond tree presents a serious disadvantage, by its biological calcium, of reviving the yellow enamelled layer of derme. (For this reason, avoid the use of limestones).

Therefore, peptone of finely grated calf hooves or bull horn in a syrup of honey or sweet fruit juice, of mucilage with tannin from Cytinus hypocistis and ordinary sweet chestnuts, reduced to a slurry with honey.

Give a soft pressing after four to five days in the bath.

The upper limb of alfalfa, open and flattened, present then the aspect of a marquetry with seven strawy patches.

III. a) Pale yellow varnish of the hypodermis: The producing vegetable varnish biological materials are capable to destroy it:

Pistacia terebinthus, var. a) vulgaris (terebinth), var. b) atlantica (from the Atlas Mountains), Pistachia lentiscus, Rhus toxicodendron, etc. (Terebinthacea), with which one can associate, to destroy the generating materials of acids citric and malic, those of vegetables producing them especially:

Rosa canina, L. , Rosa sempervirens, L. (wild roses); Rubus fruticosus, L. (brambles), [Rosacées];

Smilax aspera (sasparilla [Smilaceae];

Berberis hispanica Boiss (pine-vine) [Berbéridées].

Preparation:

Nascent: In honey water, a mixture of crumbled leaves of Atlas pistachio tree and wild rose.

Juvenile: Vegetable mucilage with tannin.

Adult: Peptone of horn of sheep or ram (Ovis aries, L.) finely grated in syrup of honey or fruit juice, of mucilage and starch with tannin, in a slurry with honey.

After four to five days of bath, soft pressing to leaving the basin. Of the seven strawy patches of the marquetry which is the upper limb of the alfalfa, that of the medium is separate into two, and the leaf is slotted; the six other ones (three on each side) are still assembled by an insoluble sandstone.

The product of disassimilation is a yellowish varnish which one could extract by evaporation from the water-mother, washing of the residue with the alcohol, which dissolves varnish.

III. b) Strawy hypoderme: The generating materials of malic acid and suberose acid are able to disaggregate it. Are especially under these conditions, for the malic acid, the vegetables of the tribe of Pomacea (Rosaceae):

Malus acerbus, Mer. (sour apple tree);

M. communis Lam., var renetia Durham (pippin, russet), which is excellent when used in the raw

state.

Pirus communis (wild pear);

P. longipes Cosson, Sorbus torminalis Crantz, S. domestica, Crataegus oxycantha (hawthorn);

Crataegus azarollus ;

Cotoneaster Fontanesi Spach, etc.; of the family Suma of Terebinthacea:

Rhus oxycantha Cav. (hawthorn);

Rhus pentaphylla Desf, (five-leaf sumac); of the family Ampelidea ; Vitisvinifera savignon vine, free-climbing wild tall trees); and, for the suberose acid, the vegetables of the family of Cupuliferae: Quercus suber, Q. afares Pomel, or their hybrids: Quercus numidica, Trabut, Q. kabylica Trabut, etc.

Preparation:

Nascent : In honey water, a mixture of crumbled leaves of the two series of the above vegetables.

Juvenile : Vegetal mucilage.

Adult: Peptone of horn of ram (Ovis aries) or of Ovis musimon, Bonap., finely grated in a syrup of honey, vegetal mucilage and starch, reduced to a slurry in the honey.

After four or five days, remove from the retting pit and give a soft pressing. The whole leaf is dislocated. Wring and dry with heat.

For the horn of ram can be substituted the carapace of the tortoise, Testudo mauritanica, Emys orbicularis, Chelone viridis Schu. (sea-tortoise), Chelone imbricata (caret), Thalassochelys caouana Daud, and replace in the syrup, the ordinary starch with the entire tubercular root of Cyclamen europaeum, or Cyclamen africanum Boiss (Primulacea)

It remains to divide the stalks, of fibres thus disaggregated, by means of leavens coming of various Quercus:

Quercus sessiflora Smith , Q. Mirbeckii Dur., etc.

Preparation:

Nascent: In honey water, crumbled leaves of the one of these oaks.

Juvenile: Vegetable mucilage.

Adult: Peptone of horn of goat (Capra hircus, L.) or of ibex (Capra ibex, L.) finely grated in a syrup of honey or fruit juice, gum of mistletoe, and starchy mucilage of the orchis.

Then to redivide the fibres by means of ferments coming from Leguminous plants: Genista Saharae, Coss., Retamaretam, Webb., Calycotome spinosa Lam., Cytisus triflorus L'Her., Spartium junceum, Galega officinalis (lavender), Psoralea bituminosa, etc.

and to refine them with Ervum ervilia, Lathyrus sativus, L. cicera , Medicago divers (lucerne), Trigonella faenum graecum (fenugreek) [Leguminous plants];

Various plantains [Plantaginea]; Carex, Cyperus, Scirpus (rush) (Cyperacea).

Preparation: As for the gum above. One can refine them further by means of leavens coming from vegetables like:

Rhamnus alaternus; R. frangula [Rhamnées]; Viburnum opulus [Caprifoliacea]; jasminum fruticans (wild jasmine) [Olleacea]; Osyris alba [Santalacea].

Preparation: As above.

Remarks. - I. Wild stocks: It is important to employ only the vegetal living one with the very wild state, and not those softened (weakened) by culture, vegetal which, with the morphologic appearances, can appear very similar, but whose biological properties are entirely dissimilar.

II. Law of the lesser-effort: It is important to work in the same retting pit, with vegetables of the same soil, of the same age and same season of harvest; if not, the ferments, following the universal and general law of the lesser effort, will preferably attack those offering less resistance, and the work, being unequal, will remain imperfect.

III. Putridity: All these fermentations are by no means putrid. Substantially they all are odourless or not malodorous. The fact of being putrid comes only from one defective fermentation, coming itself of several causes, of which between other and especially:

1. The bacterial agent attacker imposes on the attacked, who react with violence, often with toxins, so that the attacker perishes: or by faulty food. The molecule is divided into dregs which settle, and in nitrogenous grease which floats. The putrid odor comes then from these corpses of bacteria so attacked, but it cannot assimilate all the disaggregated substances, which spread a putrid odor if they are nitrogenous, or become toxins poisoning the attacker.

3. Agents bacteric of kinds and species different between attack mutually lower succumb and become putrescent.

FR 556674

New form of conservation of energy and its mode of application to the steeping of vegetal in order to extracting their cellulose,
either like fibres textile or with paper, or in very other form, and for very other use.

The purpose of this memoir is to indicate two new kinds of improvement:

1. In the genesis of bacterial ferments;

2. In the method of application to retting alfalfa (Stipa tenacissima), of Lygeum spartum, of Ampelodesmos tenax link., and other vegetables, to extract cellulose in the form of fibresbfrom it, as well as albuminoids, tannins and glazes, and to improve the stripping and combing of it.

Three the above-named graminaceae being taken as examples of the fibrous plants most difficult to steep, the method to be followed here for their grinding:

I. Upper branches -- a) first layer of the epidermis :

Alfalfa, genesis of the attacking ferment:

1. Nascent: in chemically and biologically pure water, and honey, or with a mixture of glucose and levulose like date juice, grapes, or jujubes, reduced by cooking to a syrup not prone to alcoholic fermentation, put young leaves; or branchlets with burgeons of Berberis vulgaris (pine-vine), or B. hispanica Boiss, or Calligonum comosum L'Her. (Arta of the Algerian Sahara) [Polygonea].

2. Young : syrup of mucilage and gum of Malvaceae: (Althaea officinalis, marshmallow), etc., of the Tiliacea : Tilia grandiflora Ehrh. (lime), etc., otherwise it is good to adjoin the crucifers or the resedacea, with a mixture of stearine and margarine (to eliminate the oilein). In this bitter and fatty extract of mucilage and gum, peptone of finely ground horn of Capra dorcas (gazelle), previously exposed to sunlight, in pure water in clear glass.

3. Adult: Starch of fresh leaves or tubers freshly grated (noncooked) of Aroidea: Arum maculatum, A. italicum Mill., Colocasia antiquorum Schott.

Sparte [?] : - The attack is extremely difficult. Genesis of the ferment : gelatinous material from the cells of Spongiaires: Euspongia equina, O. Schmid. (marine sponge), prepared as above.

Diss. - Genesis of wheat: young growths of Chaemaerops humilis (dwarf palm), prepared as above.

Crush before retting.

I. Upper limbs -- b) 2nd layer of the skin:

Alfalfa, genesis of ferment:

1. Nascent : in syrup neutralized as indicated, young leaves or buds of Prunus Mahaleb (Mahaleb prune, from Sainte-Lucie) [Amygdalea].

2. Young : mucilage and gum of Malvaceae as above, or of Cytinus hypocistis.

3. Adolescent : starch of Aroidea as in the preceding.

4. Adult : Extract of bitter nuts or of leaves of peach, Amygdalus persica.

5. Virile : Grains or fresh leaves of ricin (Ricinus communis), or of croton (Croton tiglium).

6. Sparte [?] -- The same.

Wring out...

Upper limbs -- b) second layer of skin :

Alfalfa -- Genesis of ferment :

1. Germination : in srup neutralized (an excellent syrrup is the one from mature fruits of micocoulier (Celtis australis), young leaves or blooming branches of Tamariscinae (Tamariz articulata Vahl. (from the sands of Sahara), Tamarix gallica (French Tamarisk), etc.

2. Young person: mucilage and gum of Malvacées like above, with peptone of horn of male Bovidae (bull).

3. Adolescent : starch of Aroideae l as above.

4. Adult : Soup of finely chopped pieces in pure water, then soaked (preferably - in Tamarisk)

Crush before retting.

III. Low limb. Assembly of beams :

Alfalfa and sparge -- Genesis of ferment :

1. Nascent : In neutral syrup, young leaves or shoots of Cistinees : Cistus sessiflorus Desf. (from the Sahara), Cistus ladaniferus, etc.

2. Young : paste of mucilage and gum of malvacees , with peptone of goat horn (Capra hircus).

3. Adolescent : starch of Aroidees as above.

4. Adult : Soot soaked in pure water, or antimony suflide. Then soak with pulverized rock.

5. Virile : Attack with preconditioned Cyperaceae.
Crush before retting.
The lower limbs are dislocated.

IV. Upper limbs -- first layer of the hypodermis :
Alfalfa and sparge -- Genesis of the ferment :

1. Nascent : in syrup as indicated above, young leaves or shoots of Rosa canina (wild rose), in symbiosis with Pistacia atalantica Desf. (Atlas pistachio).

2. Young : paste of mucilage and gum as above, with peptone of sheep or rams horn (Ovis aries).

3. Adolescent : Starch of Aroidees as in the preceding.

4. Adult : Bile of sheep or ram gall, or crushed seeds and fronds of large ferns : Pteris aquilina, etc.

5. Virile : Emulsion of fresh terebinth of Terebinthacea : Pistacia terebinthus (turpentine), or of Conifers: Pinus larix (larch), Pinus picea (Epicea), Cedrus atlantica, Manetti (Atlas cedar), etc., enzyme with leaves or shoots of Thymeleaceae : Daphne Cnidium (Garou, St-tree), etc.

Attack on Rutacea : Peganum Harmala, Ruta montana Clus. (Mountain rue), etc.

Crush before retting.

The leaves are split by the milieu.

IV. Upper limbs -- b) second layer of the hypodermis.

Alfalfa and sparge -- Genesis of ferment :

1. Nascent : in syrup as above, young leaves or shoots burgeoning from one of the Pomacea : Pirus longipes Coss (wild apple), Sorbus domestica (Cormier apple), Sorbus torminalis Crantz (ALisier), Cratageus azarollus (azalea), or Rhus pentaphylla Desf. (terebinthacea), or ALnus glutinosa Gaert. (alder) (Betulaceae), or Diospyros lotus, in symbiois with Pistacia terebinthus (terebinth pistachio), or Pistacia lentiscus (lentil).

2. Young : paste of mucilage and gum as above with peptone of sheep or ram horn.

3. Adolescent : starch of Aroideae as in the preceding.

4. Adult : gall of sheep or ram, or seeds and fronds of large ferns.

5. Virile : emulsion of terebinth turpentine enzymes as above.

Attack on Rutacea.

Crush before retting.

The upper limbs are dislocated.

VI. Upper limbs -- a) first layer of hypodermic varnish :

Alfalfa and sparge -- Genesis of the ferment :

1. Nascent : in syrup as above, young leaves or sprouts of Myrtacea : Myrtus communis (myrtle) or various Eucalyptus, in symbiosis with Laurineae : Laurus camphora (camphor), :Laurus nobilis (laurel), etc.

2. Young : paste of mucilage and gum of Malvaceae, with peptone of ram horm.

3. Adolescent : starch of Aroideas as in the preceding.

4. Adult : gall of sheep or ram, or seeds and fronds of large ferns.

5. Virile : emulsion of enzymes as above.

Attack on Acantaceaa : Acanthus mollis leaves.

Crush before rettting.

VI. Upper limbs -- b) second layer of hypodermic varnish.

Alfalfa and sparge -- Genesis of ferment :

1. Nascent : in syrup as above, soft buds of Rhamneae : Rhamnus catharticus, Rhamnus oleoides, Rhamnus lycoides, in symbiosis with one or another of the Lycium : Lycium europaeum, etc. (Solaneae).

2. Young : paste of mucilage and gum of Malvacea, with peptone of ram horn.

3. Adolescent : starch of Aroideae as above.

4. Adult : gall of sheep or ram, r seeds and fronds of large ferns.

5. Virile : emulsion of enzymes as above.

Attack on Solanacea : Datura stramonium, Hyoscyamus niger, Hyoscamus Falezlez Coss., Solanum nigrum (morelle). Crush before retting.

VII. Division of layers of fibers -- 1st stage :

Alfafla, sparge, diss, &c. -- Genesis of ferment :

1. Nascent : in syrrup as above, or juniper berries, Juniperus Phoenicea, Jun. oxycedrus, young leaves or sprouts of Genistea of Leguminae L Genista Sahara Coss., Retama retam Webb (broom), Cystisus triflorus L'Her., &c.

2. Young : paste of mucilage and gum of Malvacea as above, with peptone of rams horn and of goat (Capra hircus).

3. Adolescent : Starch of Aroidees as above.

4. Adult : gall of mutton or ram, or seeds and frond of small ferns.

5. Virile : Emulsion of sandarac (dried resin of thuja) or of resin of juniper, enzymate as in the preceding, or with leaves of Thymelaea Tarton-raira Allioni.

Attack on Cucurbitaceae : Citrullus colocynthis Schr.

Press or calendar before retting.

VII. 2nd stage :
Alfalfa, sparge, diss &c. -- Genesis of ferment :

1. Nascent : in syrrup as above, young leaves or sprout of Galegea of Leguminae : Galega officinalis (lavender), psoralea bituminosa, &c.

2. Young : gum of mucilage and gum of Mavacea as above, with peptone of goat horn.

3. Adolescent : Starch of Aroidea as above.

4. Adult : Extract of Valerian, Valeriana officinals (valerian), &c.

5. Virile : Emlsion of sandarach as above.

Attack on asphodeles (Asphodelus ramosus Desf.)

Press or calendar before retting.

VII. 3rd stage.
Alfalfa, sparge, diss,&c -- Genesis of ferment :

1. Nascent: in syrrup of carob and of locust beans and pods of other herbaceous Leguminous plants: Trigonella faenm-graecum (fenugreek), Medicago sativa (lucerne), Lupinus Iuteus (Lupin), Phaca boetica (broadbean), Astragalua lanigerus Desf, Lathyruc cicera (Jarosse), Ervum ervilla Willd., &c.

2. Young L gum of mucilage and gum as Malvacea, as above, with peptone of goat horn.

3. Adolescent : Starch of Aroidees as above.

4. Adult ; Extract of Valerian.

5. Virile : Emulsion of resin (resinous canes) of grains of Ombelliferea : Daucus carota (carrot) &c, enymed as above, or with Thymelaea hirsuta (Algerian Metnane), in the presence of viscous extract of mistletoe or holly.

Press or calendar after retting.

VII. 4th stage (Softening of filaments) :

Alfalfa, sparge, diss, &c -- Genesis of ferment :

1. Nascent : in syrrup of jujubes or of "micocoula", young leaves or sprouts of Viburnum opulus, white bourdaine, Obier, or Rhamnus frangula (Bourdain) or Rhamnus alaternus, or Osyris alba (Rouvet), or Quercus suber (dogwood ?)

2. Young : paste of mucilage and of gum, with peptone of goat horn.

3. Adolescent : Starch of Aroidees as above.

4. Extract of Valerian.

5. Virile : Emulsion of resin of Ombelliferae grains, enzymed as above, in presence of viscous extract of hyacinth : Muscari comosum Mill., Bellavalia mauritanica Pom., &c, or of garlic : Allium chamaemoly, A. triquetrum.

Press or calendar after retting.

VIII. 6 th stage (Stripping and refining of fiber) :

Alfalfa, &c -- Genesis of ferment :

1. Nascent : in syrrup as in the preceding, young leaves or seeds of Verbenacea: Verbena officinalis (Vervain), Vitex agnuscastus , &c, in symbiosis with Labiae : Tecucrium polium, Teucrium chamaedrys, Ajuga iva Schr., Lycopus europaeus, &c.

2. Young : paste of mucilage and gum, with peptone of goat horn.

3. Adolescent : Starch of Aroidees.

4. Adult : Extract of Valerian.

5. Virile : Extract of Lavenula stoecjas (Lavendar rosemary , or or Rosmarinus officinalis (Rosemary) enyzmed as above.

Press or calendar after retting.
